



**Enhanced Remote Power Module Integration Guide for
International® HV, HX, LT, MV, RH and 2021 and Newer HX Vehicles.**

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Table of Contents

1. Revision Summary Table.....	5
2. Forward:	6
3. Enhanced Remote Power Modules:.....	8
3.1. Enhanced Remote Power Module Composite View and Connectors	9
3.2. J1 and J2 Enhanced Remote Power Module CAN, 12 Volt and Ground Pass-through Connector	10
3.3. J3 Enhanced Remote Power Module Power Connections	12
3.4. J4 Enhanced Remote Power Module 16-Way Analog In and High Side Driver Output Connector	16
3.5. J5 Enhanced Remote Power Module 16-Way Input/Output Connector.....	17
4. ERPМ I/O Body Builder Harnesses - Includes connectors for J4 and J5	18
4.1. 60ABT: BDY INTG, RPM I/O HARNESS Includes One Harness with 12 Input Blunt Cut Wires and 17 Output Blunt Cut Wires, for use with One ERPМ	18
4.2. 60ABU: BDY INTG, RPM I/O HARNESS Includes Two Harnesses with 12 Input Blunt Cut Wires and 17 Output Blunt Cut Wires, for use with Two ERPМs.	20
5. Parts Associated with ERPМ Features	20
6. Engine Speed Control with ERPМ.....	22
6.1. 60AJH: BCM PROG, EXT ENGINE SPD CONT'L for Emergency Power Output ERPМ and Utility Application, for use with External Engine Speed Control	22
6.2. 60AJA: BDY INTG, THROTTLE CONTROL Accommodation for Single Customer Mounted External Engine Speed Control Switch, Programmable Mode for Various Switch Actions and Engine Speed Control Option; Useable Only While Vehicle is Stopped, and the Park Brake is Applied (requires one Enhanced Remote Power Module (ERPМ) input).	27
6.3. 60AJE: BDY INTG, THROTTLE CONTROL Accommodation for On Demand Engine Speed for Single Customer-Mounted Pressure Switch, Programmable Mode for Various Switch Actions, Useable Only While Vehicle is Stopped, and the Park Brake is Applied (requires 1 Enhanced Remote Power Module input).	30
6.4. 60AJG: BDY INTG, THROTTLE CONTROL Accommodation for Single Customer Mounted External Engine Control Switch, for Utility Applications, Programmable Mode for Various Switch Actions and Engine Speed Control Option, Only with Vehicle Stopped and Park Brake is Applied (requires one Enhanced Remote Power Module ERPМ input).....	34
6.5. 60AJJ: BDY INTG, THROTTLE CONTROL Accommodation for Single Customer Mounted Momentary Switch, for Refuse Applications, Programmable Mode Various Switch Actions, Useable Only While Vehicle is Stopped, and the Park Brake is Applied (requires one Enhanced Remote Power Module ERPМ input).	37
7. Indicator Lights and Alarms with Enhanced Remote Power Modules.....	40
7.1. 60AJC: BDY INTG, INDICATOR LIGHTS (2) One for Gate Open and One for Alarm in Cab with the ERPМ. Includes Audible Alarm, Programmable Mode for Various Switch Action (requires 2 Enhanced Remote Power Module (ERPМ) inputs).	40
7.2. 60AJD: BDY INTG, INDICATOR LIGHTS (2) One for Boom Out of Stow, One for Outriggers Deployed, Includes Audible Alarm and Interlock to Parking Brake, Programmable Mode for Various Switch Actions (requires 2 ERPМ inputs).	44
7.3. 60AJK: INDICATOR LIGHTS (2), One for Body Up, One for Gate Open, Includes Audible Alarm, Programmable Mode for Various Switch Actions (Requires 2-RPM Inputs).	48
8. Power Features using Enhanced Remote Power Modules.....	52
8.1. 60ACE: BDY INTG, SWITCH DUAL OUTPUT 2-Position Latched Rocker, Backlit, with "ON" Indicator Mounted on Dash, for 1; Auxiliary Load 40-AMP Maximum; Power Available Only in "Ignition (IGN)" or "Accessory" Position; Controls Two Remote Power Module (ERPМs) Outputs (requires two ERPМ outputs).	52
8.2. 60ACC: BDY INTG, SWITCH, INTERLOCKED 2-Position Latched Rocker, Backlit, with "ON" Indicator Mounted on Dash for 1; Auxiliary Load 20-Ampere (AMP) Maximum; Output will disengage when Vehicle Exceeds 30-MPH, Programmable; Power Available Only in "Ignition (IGN)" or "Accessory" Position (requires one Enhanced Remote Power Module (ERPМ) output).....	54
8.3. 60ACH: BDY: INTG, SWITCH, INTERLOCKED (2) 2-Position Latched Rockers, Backlit, with "ON" Indicator Mounted on Dash, for 2; Auxiliary Load each 20-AMP Maximum; Outputs will	

Disengage when Vehicle Exceeds 30-MPH, Programmable; Power Available Only in "IGN" or "Accessory" Position (requires two ERPM outputs).....	59
8.4. 60ACS: BDY INTG, SWITCH MOMNTRY 3POS Rocker, Backlit, with "ON" Indicator Mounted on Dash, Latching Software, for 1 Auxiliary Load 20-amp. Maximum: Power Available Only in "Ignition" or "Accessory" Position, Output Also Controlled by a Customer Remote Mounted Switch (requires 1 Enhanced Remote Power Module input and 1 output).....	67
8.5. 60ACT: BDY INTG, SWITCH MOMNTRY 3 POS Rocker, Backlit, with "ON" Indicator Mounted on Dash, Latching Software, for 2; Auxiliary Load 20 amp. Maximum: Power Available Only in "Ignition" or "Accessory" Position, Output Also Controlled by a Customer Remote Mounted Switch (requires 2 Remote Power Module inputs & 2 outputs).....	70
8.6. 60ACU: BDY INTG, SWITCH MOMNTRY 3-POS (3) Rocker, Backlit, with "ON" Indicator Mounted on Dash, Latching Software, for 3; Auxiliary Load 20-AMP Maximum; Power Available Only in "IGN" or "Accessory" Position, Output Also Controlled by a Customer Remote-Mounted Switch (requires three ERPM inputs and three outputs).....	74
8.7. 60ADB: BDY INTG, SWITCH MOMNTRY 3POS (5) Rocker, Backlit, with "ON" Indicator Mounted on Dash, Latching Software, for 5; Auxiliary Load 20 amp. Maximum: Power Available Only in "Ignition" or "Accessory" Position, Output Also Controlled by a Customer Remote Mounted Switch (requires 5 Remote Power Module inputs & 5 outputs).....	80

9. Enhanced Remote Power Modules 83

9.1. 60ADL, 60ADZ, 60AEM, 60AEN and 60AER:	83
These feature codes are very similar. The difference is in where the modules are located.	83
60ADL: BDY INTG, REMOTE POWER MODULE Mounted Inside Cab Behind Driver Seat, Up to 12 Inputs (6 Analog & 6 Tri-State) and 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, (1) 5VREF, Max 100 amp Total, Includes One Switch Pack with Latched Switches.....	83
60AEM: BDY INTG, ENHANCED REMOTE POWER MODULE Mounted at End of Frame, Up to 12 Inputs (6 Analog & 6 Tri-State) and 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, (1) 5VREF, Max 100 amp Total, Includes One Switch Pack with Latched Switches.....	84
60AER: BDY INTG, ENHANCED REMOTE POWER MODULE Mounted Behind Battery Box, Up to 12 Inputs (6 Analog & 6 Tri-State) and 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, & (1) 5VR), Max 100 amp Total, Includes One Switch Pack with Latched Switches.....	84
9.2. 60ADM, 60ADV, 60AEA 60AEG and 60AES.....	88
These feature codes are very similar. The difference is in where the modules are located.	88
60ADM: BDY INTG, REMOTE POWER MODULE (2) Mounted Inside Cab Behind Driver Seat, Each Up to 12 Inputs (6 Analog & 6 Tri-State) and 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, (1) 5VR, Max 100 amp Total, Includes Two Switch Packs with Latched Switches.....	88
60ADV: BDY INTG, REMOTE POWER MODULE (2) : One Behind Driver Seat, One Behind Passenger Seat, Each Up to 12 Inputs (6 Analog & 6 Tri-State) & 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, (1) 5VR), Max 100 amp Total, Includes Two Switch Packs with Latched Switches.....	88
60AEA: BDY INTG, REMOTE POWER MODULE (2) Mounted Under Cab, Each Up to 12 Inputs (6 Analog & 6 Tri-State) and 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, & (1) 5VREF, Max 100 amp Total, Includes Two Switch Packs with Latched Switches.....	88
60AEG: BDY INTG, REMOTE POWER MODULE (2) Mounted Under Bunk, Left Luggage Compartment, Each Up to 12 Inputs (6 Analog & 6 Tri-State) & 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, (1) 5VREF, Max 100 amp Total, Includes Two Switch Packs with Latched Switches.....	89
60AES: BDY INTG, REMOTE POWER MODULE (2) Mounted Behind Battery Box, Each Up to 12 Inputs (6 Analog & 6 Tri-State) and 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, & (1) 5VREF, Max 100 amp Total, Includes Two Switch Packs with Latched Switches.....	89
9.3. 60ADN, 60ADX and 60AEK.....	92
These feature codes are very similar. The difference is in where the modules are located.	92
60ADN: BDY INTG, REMOTE POWER MODULE (3) Mounted Inside Cab Behind Driver Seat, Each Up to 12 Inputs (6 Analog & 6 Tri-State) and 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, (1) 5VR, Max 100 amp Total, Includes Three Switch Packs with Latched Switches.....	92
60ADX: BDY INTG, ENHANCED REMOTE POWER MODULE (3) : One Behind Driver Seat, Two Behind Passenger Seat, Each Up to 12 Inputs (6 Analog & 6 Tri-State) & 17 Outputs (6 High Current,	

Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, (1) 5VREF, Max 100 amp Total, Includes Three Switch Packs with 18 Latched Switches.....	93
60AEK: BDY INTG, REMOTE POWER MODULE (3) Mounted Under Bunk, Left Luggage Compartment, Each Up to 12 Inputs (6 Analog & 6 Tri-State) & 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, (1) 5VREF, Max 100 amp Total, Includes Three Switch Packs with Latched Switches.....	93
9.4. 60ADP and 60AET.....	98
These feature codes are very similar. The difference is in where the modules are located.....	98
9.5. 60ADR and 60AEJ.....	102
These feature codes are very similar. The difference is in where the modules are located.....	102
60ADR: BDY INTG, REMOTE POWER MODULE (3) Mounted Inside Cab Behind Driver Seat, Each Up to 12 Inputs (6 Analog & 6 Tri-State) and 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, (1) 5VREF, Max 100 amp Total, Includes Three Modules with Hardware Only.....	102
60AEJ: BDY INTG, REMOTE POWER MODULE (3) Mounted Under Bunk, Left Luggage Compartment, Each Up to 12 Inputs (6 Analog & 6 Tri-State) & 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (1) 5A, (1) 5VREF, Max 100 amp Total, Includes Three Modules with Hardware only.....	102
9.6. 60ADS and 60AEH:.....	104
These feature codes are very similar. The difference is in where the modules are located.....	104
60ADS: BDY INTG, REMOTE POWER MODULE (3) Mounted Inside Cab Behind Driver Seat, Each Up to 12 Inputs (6 Analog & 6 Tri-State) and 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, (1) 5VREF, Max 100 amp Total, Includes Two Modules w/Switch Packs Containing 6 Latched Switches, 1 Module Hardware Only.....	104
9.7. 60ADT, 60AED and 60AEL:.....	108
These feature codes are very similar. The difference is in where the modules are located.....	108
60ADT: BDY INTG, REMOTE POWER MODULE Mounted Inside Cab Behind Driver Seat, Up to 12 Inputs (6 Analog & 6 Tri-State) and 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, (1) 5VREF, Max 100 amp Total, Includes One Switch Pack with momentary Switches.....	108
60AED: BDY INTG, REMOTE POWER MODULE Mounted Under Cab, Up to 12 Inputs (6 Analog & 6 Tri-State) and 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, & (1) 5VREF, Max 100 amp Total, Includes One Switch Pack with Momentary Switches.....	108
60AEL: BDY INTG, REMOTE PWR MOD, REAR Mounted at End of Frame, Up to 12 Inputs (6 Analog & 6 Tri-State) and 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, (1) 5VRF, Max 100 amp Total, Includes One Switch Pack with Momentary Switches.....	108
9.8. 60ADU, 60ADW and 60AEC.....	114
These feature codes are very similar. The difference is in where the modules are located.....	114
60ADU: BDY INTG, REMOTE POWER MODULE (2) Mounted Inside Cab Behind Driver Seat, Each Up to 12 Inputs (6 Analog & 6 Tri-State) and 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, (1) 5VREF, Max 100 amp Total, Includes Two Switch Packs with Momentary Switches.....	114
60ADW: BDY INTG, ENHANCED REMOTE POWER MODULE (2) : One Behind Driver Seat, One Behind Passenger Seat, Each Up to 12 Inputs (6 Analog & 6 Tri-State) & 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, (1) 5VREF, Max 100 amp Total, Includes Two Switch Packs with 12 Momentary switches.....	114
60AEC: BDY INTG, REMOTE POWER MODULE (2) Mounted Under Cab, Up to 12 Inputs (6 Analog & 6 Tri-State) and 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, & (1) 5VREF, Max 100 amp Total, Includes Two Switch Packs with Momentary Switches.....	114
9.9. 60ADY: BDY INTG, ENHANCED REMOTE POWER MODULE (3) : One Behind Driver Seat, Two Behind Passenger Seat, Each Up to 12 Inputs (6 Analog & 6 Tri-State) & 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, (1) 5VREF, Max 100 amp Total, Includes Three Switch Packs with 18 Momentary Switches.....	120
9.10. 60AEB and 60AEE.....	126
These feature codes are very similar. The difference is in where the modules are located.....	126
60AEB: BDY INTG, REMOTE POWER MODULE (2) Mounted Under Cab, Each Up to 12 Inputs (6 Analog & 6 Tri-State) and 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, & (1) 5VR), Max 100 amp Total, Includes One Module with Switch Pack Containing 6 Latched Switches, One Module with Hardware Only.....	126
60AEE: BDY INTG, REMOTE POWER MODULE (2) Mounted Under Bunk, Left Luggage Compartment, Each Up to 12 Inputs (6 Analog & 6 Tri-State) & 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, (1) 5VREF, Max 100 amp Total, Includes One Module w/ Switch Pack Containing 6 Latched Switches, One Module Hardware Only.....	126
9.11. 60AEP: BDY INTG, POWER MODULE AUX (1) Mounted at End of Frame, Up to 12 Inputs (6 Analog & 6 Tri-State) and 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low	

Current, 2 PWM, (2) 5A, (1) 5VR), Max 100 amp Total, Includes One Module with Hardware Only	129
9.12. Codes Added in Conjunction with other ERPM Codes.....	131
10. Enhanced Remote Power Module PTO Support	139
10.1. 16WLM: HOUR METER, PTO for Customer Provided PTO; Indicator Light and Hour meter in Gauge Cluster Includes Return Wire for PTO Feedback Switch	139
10.2. 60ABA: BDY INTG, PTO ACCOMMODATION for Monitoring Cable Shift Engaged PTO, With Indicator Light and Audible Alarm in Gauge Cluster (requires one Enhanced Remote Power Module (ERPM) input).....	144
10.3. 60ABB: BDY INTG, PTO ACCOMMODATION for Muncie Lectra-Shift PTO Engagement and Disengagement, With Switch Mounted on Dash; Includes Indicator Light and Audible Alarm in Gauge Cluster (requires one ERPM input and one output).....	148
10.4. 60ABE: BDY INTG, PTO ACCOMMODATION for Electric over Hydraulic PTO, With Switch Mounted on Dash, Includes Audible Alarm and Indicator Light in Gauge Cluster (Requires one ERPM input and one output). This feature does Not Include Solenoids.....	158
10.5. 60ABK: BDY INTG, PTO ACCOMMODATION. Accommodation for Electric over Air, Non-Clutched PTO Engagement and Disengagement does not Include Air Solenoid, With Switch Mounted on Dash, Includes Audible Alarm and Indicator Light in Gauge Cluster (requires one ERPM input and one output).....	168
10.6. 60ABL: BDY INTG, PTO ACCOMMODATION. Accommodation for Electric over Air, Clutched PTO Engagement and Disengagement, does not Include Air Solenoid, With Switch Mounted on Dash, Includes Audible Alarm and Indicator Light in Gauge Cluster (requires one ERPM input and one output).....	178
11. Advanced Logic Used with an ERPM	188
11.1. Sample of Tri-State Logic.....	188
11.2 Samples of 20 Amp Output Logic.....	189
11.2.1 Standard 20 Amp Output Logic	190
11.2.2 Advanced 20 Amp Output Logic.....	192
11.3 Sample of 5 Amp Output Logic.....	195
11.4 Sample of Logic Using an Analog Input.....	198
11.5 Low and High Side Drivers.....	201
11.5.1 Low Side Driver Example	201
11.5.2 High Side Driver Example	202
11.6 Half Bridge.....	204
11.7 Full Bridge.....	208
11.7.1 Full Bridge Example 1	208
11.7.2 Full Bridge Example 2	214
11.8 220	

1. Revision Summary Table

REVISION	DATE	SECTION	CHANGE DESCRIPTION	REASON FOR CHANGE	REVISED BY
01	11/11/2025	ALL	INITIAL	INITIATION OF DOCUMENT	SCHNELLENBERGER

2. Forward:

WARNING - This manual includes a diverse set of truck chassis system and subsystem integration features which contain the potential for both simple and complex operational situations and interactions when integrated in combination with a truck chassis and truck mounted equipment. It is the responsibility of persons performing truck chassis and, or truck mounted equipment system integration and testing to fully understand the plurality of operational outcomes and take the appropriate as well as necessary precautions to avoid property damage, personal injury up to and including death when performing system integration and, or test in association with the content of this document.

Note - In this manual, International® provides information about its different products to assist those who wish to modify these products for individual applications. International® does not recommend or approve any firm nor make any judgements on the quality of the work performed by a particular firm. Individuals who use the services of a Body Builder must satisfy themselves with the quality of the work.

The party installing a body, a fifth wheel, any other equipment, or making any modifications to complete the vehicle for delivery and make it road-ready is responsible to see that the completed vehicle complies with all applicable certification procedures and safety standards, as may be set forth in Federal, State, and local statutes, rules and regulations.

Specifications, descriptions, and illustrative material in this literature are as accurate as it was known at the time of publication but are subject to change without notice. Illustrations are not always to scale and may include optional equipment and accessories but may not include all standard equipment.

Safety Information:

IMPORTANT - Read the following before starting the service procedure.

You must follow your company's safety procedures when you service or repair equipment. Be sure to understand all the procedures and instructions before you begin work on the unit. Some procedures require the use of special tools for safe and correct service. Failure to use these special tools when required can cause injury to service personnel or damage to vehicle components.

DISCLAIMER: INTERNATIONAL® DOES NOT TAKE ANY RESPONSIBILITY FOR CUSTOMER OR BODY BUILDER WIRING.

NOTE - Aftermarket installed wiring must comply with the following guidelines:

1. Sealed switches and connectors must be used for switches and connections that are exposed to the weather or to salt spray emanating from the vehicle's tires.
2. Route and clip wiring to minimize chafing and exposure to weather. Use conduit, loom, and/or tape to achieve this.
3. Fuse all power leads as close to the power source as possible. Remember fuses protect the wiring - size fuses accordingly.
4. All ground connections that will be made to the frame or body must be connected to clean bare metal. Remove all dirt, paint, grease, and rust that would insulate the terminal from ground. After connecting the ground, seal the connection with a good quality grease or surface sealant to protect the connection from corrosion.
5. Spliced wires should be twisted together and soldered. Use a heat shrink tube with a meltable inner wall to seal the connection. Do not expose splices to the weather.

WARNING - To avoid serious personal injury, possible death, or damage to the vehicle, make sure the transmission is in neutral, parking brake is set, and the wheels are blocked before undertaking service procedures. In addition, turn off the engine when you leave the vehicle. Never leave the vehicle unattended with the engine running.

WARNING - To avoid personal injury, possible death, or damage to the vehicle when adding electrical features, disconnect batteries. Reconnect batteries when installation is complete.

When disconnecting battery terminals, always disconnect the ground terminal first. When reconnecting, always connect the ground terminal last.

To prevent injury to the eyes, face, limbs, and body, it is imperative that lighted materials, flames, or sparks be kept away from the vent openings of the battery. The gas mixture in the battery cells, which escapes through the vents, could ignite and/or cause an explosion. This is particularly true when jumper cables are being used.

In addition, inhaling of gas produced by the normal operation of the battery could result in partial or permanent damage to the respiratory system.

Always wear eye protection when working around batteries. Do not attempt to jump-start a vehicle having a frozen battery because the battery may explode. If a frozen battery is suspected, examine all fill vents on the battery. If ice can be seen, do not attempt to start with jumper cables as long as the battery remains frozen. Thaw out the battery and recharge.

Do not check battery condition by shorting (flashing) across terminals.

Warning - Failure to observe these instructions could result in personal injury and/or damage to the vehicle.

Battery cable terminals must be clean and tight. Use hot water and common baking soda for removing terminal corrosion and for cleaning the top of the battery. Brighten the contact surface with steel wool, apply a light coat of lubricant sealing grease such as Fleetrite® 472141-C1 or equivalent and reassemble. Be sure the terminals are clamped tightly, and that the battery is clamped securely in place.

When working around the terminals and battery, use extra care to avoid shorting. A good practice is to insulate pliers and screwdrivers.

3. Enhanced Remote Power Modules:

Enhanced Remote power modules provide a method of distributing and controlling power to various device loads on the vehicle, both inside and outside the cab, without running high current wires from in-cab switches to the loads or splicing into existing wiring.

Note: A maximum of three ERPMs may be connected to the vehicle not to exceed the maximum of 100-amp max per module. Options to use more than 3 ERPMs may be available in the future. The modules can be relocated from their factory mounting locations providing the data link and power architecture is not compromised in the process.

The ERPM connects to the BCM via the Body Builder J1939 datalink (the current BCM can control up to three ERPMs on the vehicle).

ERPM1 communicates as source address 225, ERPM2 communicates on source address 226 and ERPM3 communicates on source address 227.

The only factory-installed wires connected to the ERPM are battery power for driving the loads and power, ground, and datalink circuits. Connectors for Body Builder-installed inputs and outputs are also available.

Each ERPM has six independently controllable, 20 Ampere (AMP) outputs (100 maximum per ERPM) with virtual (software programmable) fusing similar to the BCM. If higher current capacity is needed to support a component, two outputs can be paralleled, or the ERPM can control a high current relay while still maintaining logic and diagnostic capability without having to wire to the inside of the cab.

The maximum current available for the sum of the ERPM outputs is 100 amps. The outputs available include:

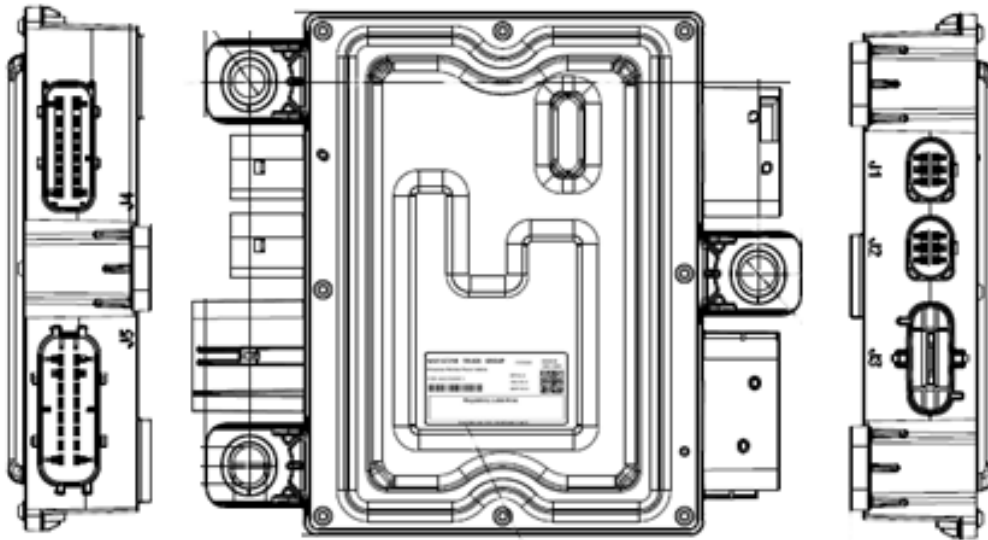
- 6 pulse-width modulated high current outputs with a capacity of 20 amps maximum per channel
- 3 low current high side drivers
- 3 low current low side drivers
- 2 H bridge, pulse-width modulated, outputs with a capacity of 10 amps each.
- 5-volt reference sensor supply
- 2 5 Amp high side drivers

Since the ERPM connects to the BCM, via the datalink, it also serves as an “integration gateway” to the BCM and the vehicle electrical system. The inputs on each ERPM allow information from body accessories to be communicated to the BCM and processed for interlocks, operator information/warning, etc. These inputs also allow the Body Builder to add body-mounted switches to turn on or off the same electrical devices controlled by in-cab switches. The eRPM available inputs include:

- 6 Analog 0-5 V feeds
- 6 Tristate 12V, float, Ground

Additional information concerning the use of ERPMs is contained in the applicable feature sections that follow.

3.1. Enhanced Remote Power Module Composite View and Connectors

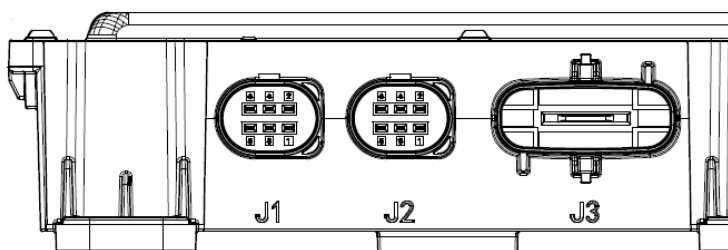


Remote Power Module End and Top Views

PART NUMBER	DESCRIPTION
4413332C1	ENHANCED REMOTE POWER MODULE

Enhanced Remote Power Module

3.2. J1 and J2 Enhanced Remote Power Module CAN, 12 Volt and Ground Pass-through Connector



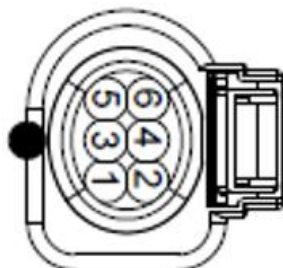
Mating Connector Part Number 4441529C1

4086472C1 001 A, TERMINAL, CABLE, RECEPTACLE, TIN(20-18 AWG)

4086475C1 001 A, TERMINAL, CABLE, RECEPTACLE, TIN(20-16 AWG)

3573653C1 Wire Seal 18 AWG

41904084C1 Wire Seal 16 AWG

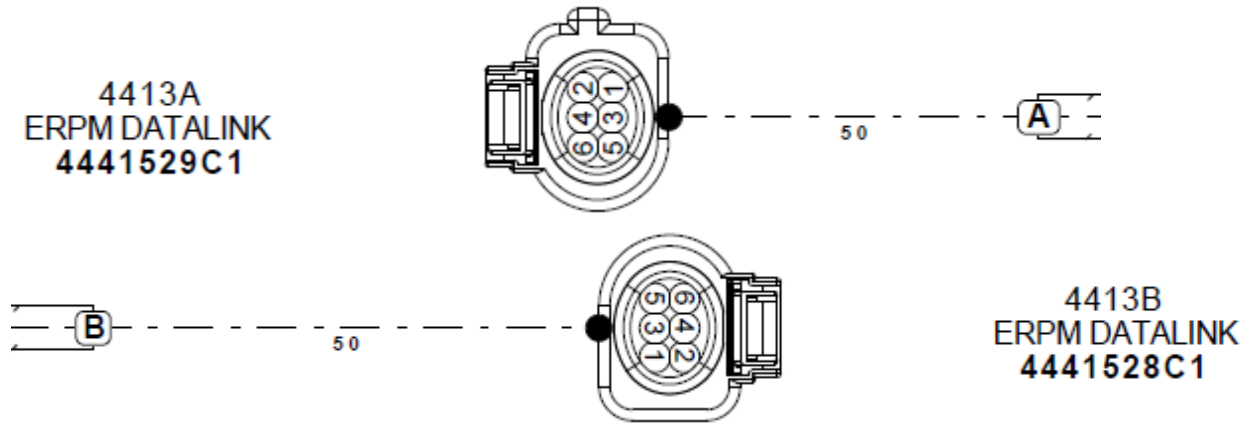


**4410B
ERPM DATALINK CONNECTOR
4441529C1**

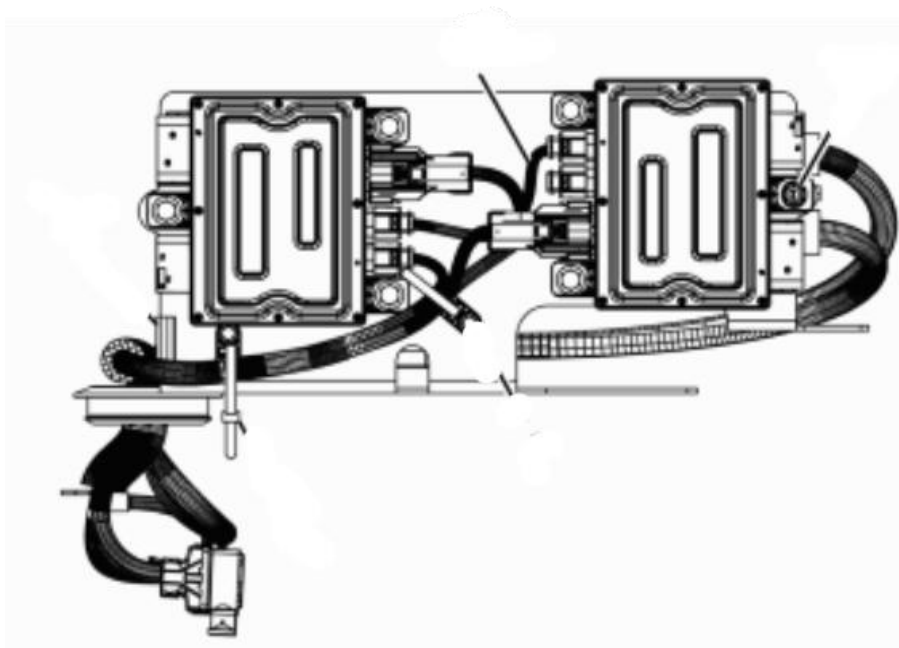
Pin No.	Pin Definition	Function	Nominal Current	Maximum Current	Plating
J1-1	No Connect	NSMT	NC	NC	Tin
J1-2	Ground	Pass Through	0.5A	5A	Tin
J1-3	SAE J1939+	Pass Through	2mA	100mA	Tin
J1-4	SAE J1939-	Pass Through	2mA	100mA	Tin
J1-5	SAE J1939 Shield	Pass Through	0A	0A	Tin
J1-6	Battery	Pass Through	0.5A	5A	Tin
J2-1	No Connect	NSMT	NC	NC	Tin
J2-2	Ground	Pass Through	0.5A	5A	Tin
J2-3	SAE J1939+	Pass Through	2mA	100mA	Tin
J2-4	SAE J1939-	Pass Through	2mA	100mA	Tin
J2-5	SAE J1939 Shield	Pass Through	0A	0A	Tin
J2-6	Battery	Pass Through	0.5A	5A	Tin

The datalink connection is provided at a splice into the Body Builder J1939 datalink. All vehicles currently built have this data link and the terminating resistor as the N2 telematics device uses this same data link.

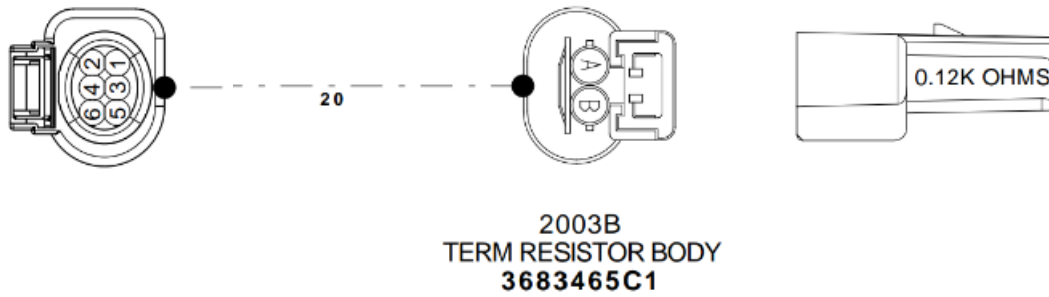
6739469C92 ERPM to ERPM Jumper



6-Way J1939 Datalink ERPM to ERPM Connector



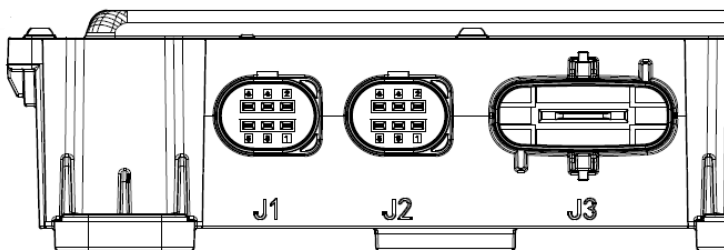
If one of the ERPMs is the last device on the datalink, part number 6751511C92 Jumper Harness, ERPM, which includes the terminating resistor must be connected to J1 or J2.



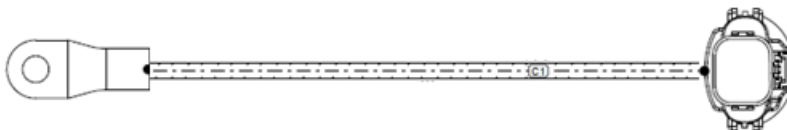
Additional Components		
Part Number	Qty	Part Description
3573833C1	1	Connector Lock
3683466C1	1	Connector Lock
3769112C91	1	J1939 120 OHM 1 WATT ASSEMBLY

6751511C92 Jumper Harness, ERPM, Terminating Resistor

3.3. J3 Enhanced Remote Power Module Power Connections



Enhanced Remote Power Module Battery Power Connector



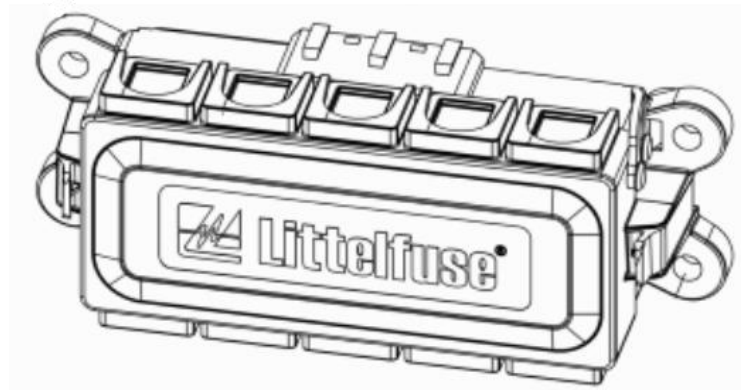
ERPM Power Feed 600mm 6743990C1



J3 Enhanced Remote Power Module High Current Battery Connector

Note: It is recommended to order the 6743990C91 harness instead of the J3 connector, as the connector is difficult to source and the one on the harness is sonic welded.

The high current connection for this harness is provided at a Power Distribution Center (PDC) or at a fuse panel like the one shown below.

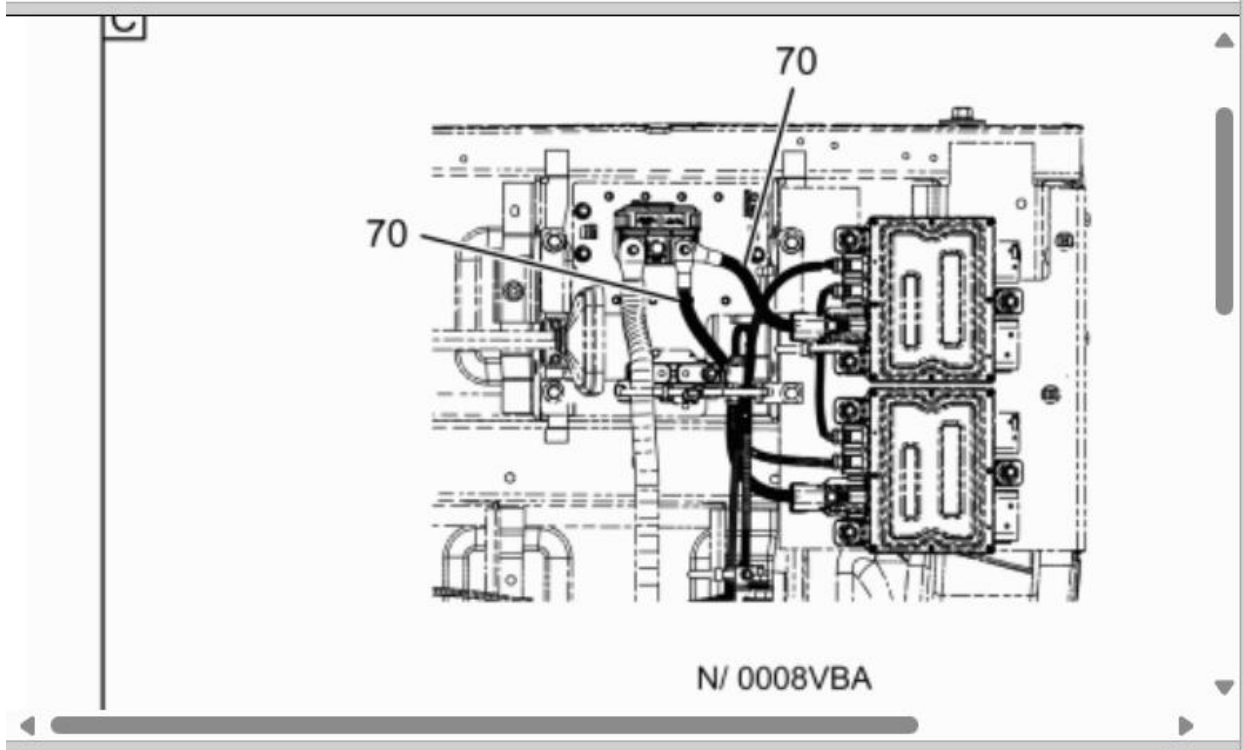


PDM Block Fuse
4516094C91 or 92

ERPMS POWER LEADS

Figure 1XRK9 Art Number 08855001704.gif Engr Dwg Number N08009631208

Page 4 of 5



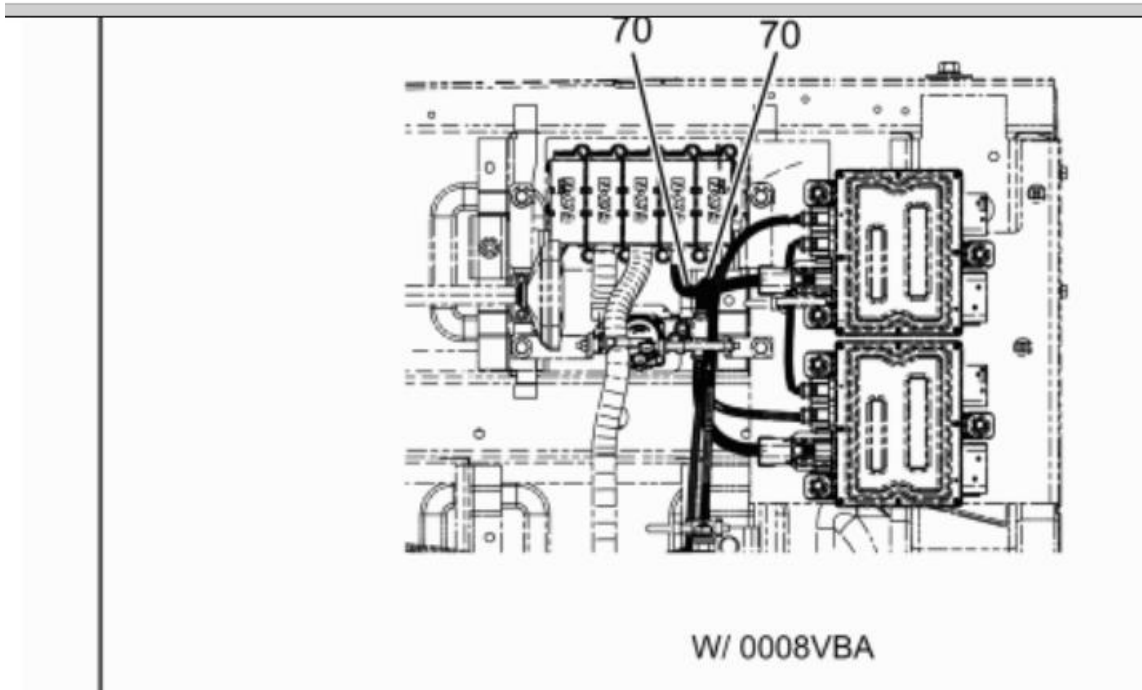
Parts Build List for Figure 1XRK9

<input type="checkbox"/>	Item	Part Number	Description	<input type="checkbox"/>
<input type="checkbox"/>	70	6739965C91	Harness, Chassis Wiring , Erpm Power Feed 600mm	673!
<input type="checkbox"/>	70	6739965C92	Harness, Chassis Wiring , Erpm Power Feed 600mm	

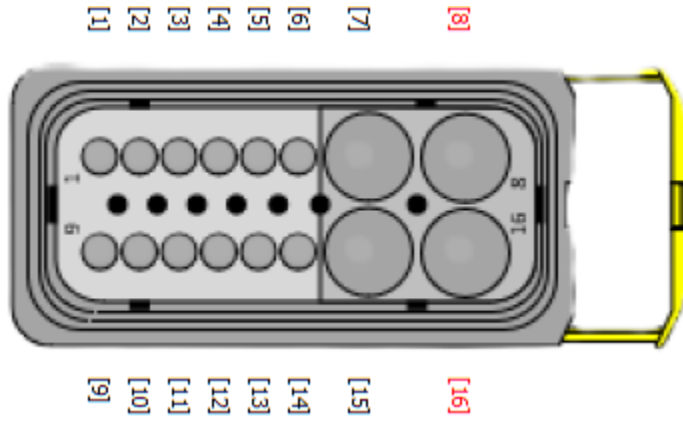
ERPMS POWER LEADS

Figure 1XRK9 Art Number 08855001704.gif Engr Dwg Number N08009631208

Page 4 of 5 ← →



3.4. J4 Enhanced Remote Power Module 16-Way Analog In and High Side Driver Output Connector

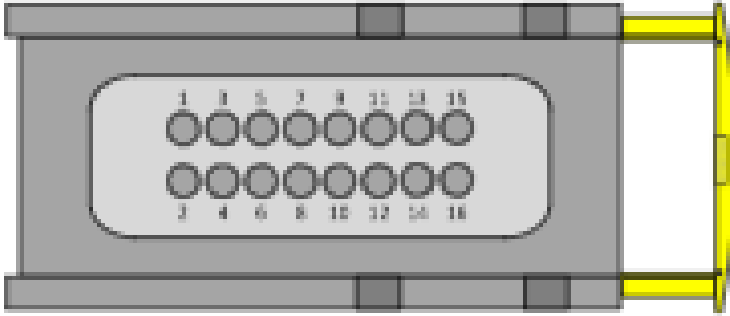


J4-1	5 Amp Output 1	HSD		5A	Tin
J4-2	Analog In 1			2mA	Tin
J4-3	Analog In 2			2mA	Tin
J4-4	Analog In 3			2mA	Tin
J4-5	Analog In 4			2mA	Tin
J4-6	Analog In 5			2mA	Tin
J4-7	Analog In 6			2mA	Tin
J4-8	Sensor Supply Return	VCC5V		80mA	Tin
J4-9	5 Amp Output 2	HSD		5A	Tin
J4-10	HSD 1	HSD		1A	Tin
J4-11	HSD 2	HSD		1A	Tin
J4-12	HSD 3	HSD		1A	Tin
J4-13	LSD 1	LSD		1A	Tin
J4-14	LSD 2	LSD		1A	Tin
J4-15	LSD 3	LSD		1A	Tin
J4-16	ZVR		80mA	250mA	Tin

J4 Enhanced Remote Power Module 16-Way Input and Output Connector

3.5. J5 Enhanced Remote Power Module 16-Way Input/Output Connector

J5 female connector (1718149-1) terminals 1-968857-1 16Pcs



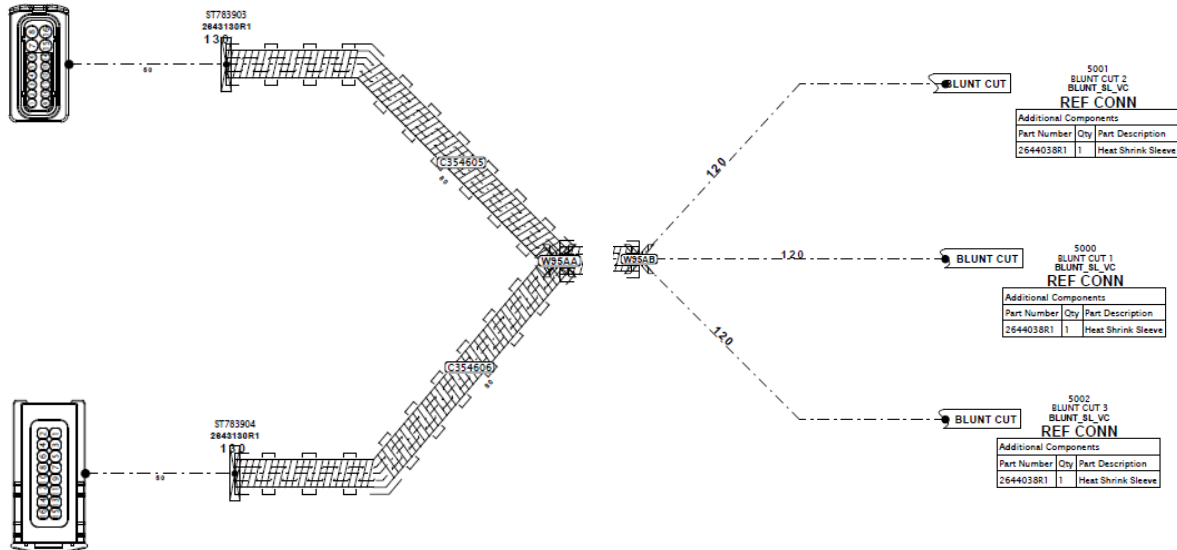
Connector 4441531C1
 Terminal 3830798C1 14/16 AWG
 Terminal 38307982C1 18 AWG
 Wire seal 3532128C1 18ga
 Wire seal 3509903C1 14ga

J5-1	20 Amp Output 5	HSD		20A	Tin
J5-2	H-Bridge 1			5A	Tin
J5-3	GND		5A	12.5A	Tin
J5-4	H-Bridge 2			5A	Tin
J5-5	20 Amp Output 6	HSD		20A	Tin
J5-6	H-Bridge Ground			17.5A	Tin
J5-7	Tri-State Input 6	Wake Up		2mA	Tin
J5-8	Tri-State Input 5	Wake Up		2mA	Tin
J5-9	20 Amp Output 3	HSD		20A	Tin
J5-10	Tri-State Input 4	Wake Up		2mA	Tin
J5-11	Tri-State Input 3	Wake Up		2mA	Tin
J5-12	20 Amp Output 4	HSD		20A	Tin
J5-13	20 Amp Output 2	HSD		20A	Tin
J5-14	Tri-State Input 2	Wake Up		2mA	Tin
J5-15	Tri-State Input 1	Wake Up		2mA	Tin
J5-16	20 Amp Output 1	HSD		20A	Tin

J5 Enhanced Remote Power Module 16-Way Input/Output Connectors

4. ERPM I/O Body Builder Harnesses - Includes connectors for J4 and J5

4.1. **60ABT: BDY INTG, RPM I/O HARNESS** Includes One Harness with 12 Input Blunt Cut Wires and 17 Output Blunt Cut Wires, for use with One ERPM



4626462C91

Connector and Pin		Circuit Label	
1001 1	J4 1	IN1	5 Amp output 1 HSD
1001 2	J4 2	IN2	Analog In
1001 3	J4 3	IN3	Analog In
1001 4	J4 4	IN4	Analog In
1001 5	J4 5	IN5	Analog In
1001 6	J4 6	IN6	Analog In
1001 7	J4 7	IN7	Analog In
1001 8	J4 8	OUT1	5 Volt Ref Return (GND)
1001 9	J4 9	OUT2	5 Amp output 1 HSD
1001 10	J4 10	OUT3	1 Amp High Side Driver
1001 11	J4 11	OUT4	1 Amp High Side Driver
1001 12	J4 12	OUT5	1 Amp High Side Driver
1001 13	J4 13	OUT6	1 Amp Low Side Driver
1001 14	J4 14	OUT7	1 Amp Low Side Driver
1001 15	J4 15	OUT8	1 Amp Low Side Driver
1001 16	J4 16	ZVR1	5 Vref 80ma
1002 1	J5 1	OUT9	20 Amp Output 5
1002 2	J5 2	OUT10	H-Bridge 1

1002 3	J5 3	GND 1	
1002 4	J5 4	OUT11	H-Bridge 2
1002 5	J5 5	OUT12	20 Amp Output 6
1002 6	J5 6	GND 2	H Bridge Ground
1002 7	J5 7	IN8	TRI State Input
1002 8	J5 8	IN9	TRI State Input
1002 9	J5 9	OUT13	20 Amp Output 3
1002 10	J5 10	IN10	TRI State Input
1002 11	J5 11	IN11	TRI State Input
1002 12	J5 12	OUT14	20 Amp Output 4
1002 13	J5 13	OUT15	20 Amp Output 2
1002 14	J5 14	IN12	TRI State Input
1002 15	J5 15	IN13	TRI State Input
1002 16	J5 16	OUT16	20 Amp Output 1

Feature Applicability to Vehicle Platforms:

- Heavy Vocational (HV)

Parts Associated with This Feature:

PART NUMBER	DESCRIPTION
4626462C91	HARNESS, JUMPER, ERPM BODY INTEGRATION

Parts Associated with ERPM I/O Expansion Harness Feature.

Parts Associated with This Feature:

PART NUMBER	DESCRIPTION
4441531C1	Connector J5 16 Pin
3830798C1	Terminal 16-gauge TYCO A-1-968857-1
	Seal 16 gauge

REMOTE POWER MODULE J5 16-WAY CONNECTOR

Parts Associated with This Feature:

PART NUMBER	DESCRIPTION
61332205C1	Connector J4 16 Pin
4086475C1	Terminal 16 gauge 1418884-1
3830799C1	Terminal 12-gauge TYCO A-1-1719506-1
	Seal 12 Gauge
	Seal 16 Gauge

REMOTE POWER MODULE J4 16-WAY CONNECTOR

4.2. 60ABU: BDY INTG, RPM I/O HARNESS Includes Two Harnesses with 12 Input Blunt Cut Wires and 17 Output Blunt Cut Wires, for use with Two ERPMs.

Parts Associated with This Feature:

PART NUMBER	DESCRIPTION
4626462C91	HARNESS, JUMPER, ERPM BODY INTEGRATION

Parts Associated with I/O Expansion Harness Features

Feature Applicability to Vehicle Platforms:

- Heavy Vocational (HV)

5. Parts Associated with ERPM Features

The parts list below applies to ERPM features. Double check and include harness with both connectors.

PART NUMBER	DESCRIPTION
4102431C1	SWITCH, ELECTRONIC, BLANK WINDOW ROCKER - 2 POS - BISTABLE
4057689C2	HOUSING, SWITCH*6-PACK DIN MULT
4413332C1	ERPM BY ITSELF
4626462C91	HARNESS, JUMPER, ERPM BODY INTEGRATION

Switches, ERPM, Output Terminal Part Numbers

PART NUMBER	DESCRIPTION
ENHANCED REMOTE POWER MODULE RELATED PARTS	
4413332C1	ENHANCED REMOTE POWER MODULE
4626462C91	HARNESS, ERPM J4 and J5 to Blunt cut for BODY INTEGRATION
ERPM J1 and J2 6-WAY CONNECTOR	
6739469C91	ERPM to ERPM Jumper
4441529C1	J1 6-WAY CONNECTOR BODY
4441529C1	J2 6-WAY CONNECTOR BODY
4086472C1	18-GAUGE TERMINAL
4086475C1	16-GAUGE TERMINAL
3573653C1	18-GAUGE WIRE SEAL
41904084C1	16-GAUGE WIRE SEAL
ERPM J3 CONNECTOR	
6739965C91	Harness, Chassis Wiring, ERPM Power Feed 600mm
ERPM J4 16-WAY CONNECTOR	

4626462C91	HARNESS, JUMPER, ERPM BODY INTEGRATION
6132205C1	J4 16-WAY CONNECTOR BODY
	12-GAUGE TERMINAL Pins 1-6 and 9-14
	12-GAUGE CABLE SEAL Pins 1-6 and 9-14
4086475C1	16-GAUGE TERMINAL Pins 1-6 and 9-14
4194084C1	16-GAUGE CABLE SEAL Pins 1-6 and 9-14
4086472C1	18-20 GAUGE TERMINAL Pins 1-6 and 9-14
3573653C1	18-GAUGE CABLE SEAL Pins 1-6 and 9-14
3830798C1	14 & 16-GAUGE TERMINAL Pins 7, 8, 15 and 16
3509903C1	16-GAUGE CABLE SEAL Pins 7, 8, 15 and 16
3830799C1	12-GAUGE TERMINAL Pins 7, 8, 15 and 16
3575783C1	12 -GAUGE CABLE SEAL Pins 7, 8, 15 and 16
3830792C1	18-GAUGE TERMINAL Pins 7, 8, 15 and 16
3532128C1	18-GAUGE CABLE SEAL Pins 7, 8, 15 and 16
	CONNECTOR LOCK
	CAP LOCK
	CAVITY PLUG
ERPM J5 16-WAY CONNECTOR	
4626462C91	HARNESS, JUMPER, ERPM BODY INTEGRATION
444153C1	J5 16-WAY CONNECTOR
	12-GAUGE TERMINAL
	12-GAUGE CABLE SEAL
3830798C1	14 & 16-GAUGE TERMINAL
3509903C1	16-GAUGE CABLE SEAL
3830792C1	18-GAUGE TERMINAL
3532128C1	18-GAUGE CABLE SEAL
	CAVITY PLUG
MULTIPLEX SWITCH-PACK PARTS	
4057689C5	HOUSING, SWITCH 6-PACK DIN MULTIPLEX
4102431C1	SWITCH, ELECTRONIC, BLANK WINDOW ROCKER - 2 POS - BISTABLE
3766091C1	Switch, Electronic, Blank Window Rocker- 3 Position /momentary
76-WAY CONNECTOR (THERMAL PROTECTION BARRIER PASS THROUGH)	
3574285C1	76-WAY CONNECTOR WIRE TERMINAL FEMALE 14-GUAGE
3574288C1	76-WAY CONNECTOR WIRE TERMINAL FEMALE 16-GUAGE
2003343C1	76-WAY CONNECTOR WIRE TERMINAL FEMALE 18-GUAGE

3549416C1	76-WAY CONNECTOR WIRE TERMINAL MALE 14-GUAGE
3549417C1	76-WAY CONNECTOR WIRE TERMINAL MALE 16-GUAGE
35494118C1	76-WAY CONNECTOR WIRE TERMINAL MALE 18-GUAGE
BODY CONTROL MODULE J5/J6 CONNECTOR PARTS	
3522073C1	32-WAY BODY CONTROLLER J5 (1601/1602) CONNECTOR WIRE TERMINAL 18/20-GAUGE
3534303C1	32-WAY BODY CONTROLLER J5 (1601/1602) CONNECTOR WIRE TERMINAL 20/22-GAUGE
3544878C1	18-WAY BODY CONTROLLER J6 (1606/2023) CONNECTOR WIRE TERMINAL 12-14-GAUGE [GT280]
3544877C1	18-WAY BODY CONTROLLER J6 (1606/2023) CONNECTOR WIRE TERMINAL 14/16-GAUGE [GT280]
3544876C1	18-WAY BODY CONTROLLER J6 (1606/2023) CONNECTOR WIRE TERMINAL 16/18-GAUGE [GT280]
3544875C1	18-WAY BODY CONTROLLER J6 (1606/2023) CONNECTOR WIRE TERMINAL 18/20-GAUGE [GT280]
3544884C1	18-WAY BODY CONTROLLER J6 (1606/2023) CONNECTOR WIRE TERMINAL 16/18-GAUGE [GT150]
3544883C1	18-WAY BODY CONTROLLER J6 (1606/2023) CONNECTOR WIRE TERMINAL 20/22-GAUGE [GT150]
DATA LINK TERMINATING RESISTOR	
3769112C91	RESISTOR, ELECT TERMINATING
6751511C92	Jumper Harness, ERPM, Terminating resistor

Parts Associated with ERPM Features

6. Engine Speed Control with ERPM

6.1. 60AJH: BCM PROG, EXT ENGINE SPD CONT'L for Emergency Power Output ERPM and Utility Application, for use with External Engine Speed Control

Feature Applicability to Vehicle Platforms:

- Heavy Vocational (HV)

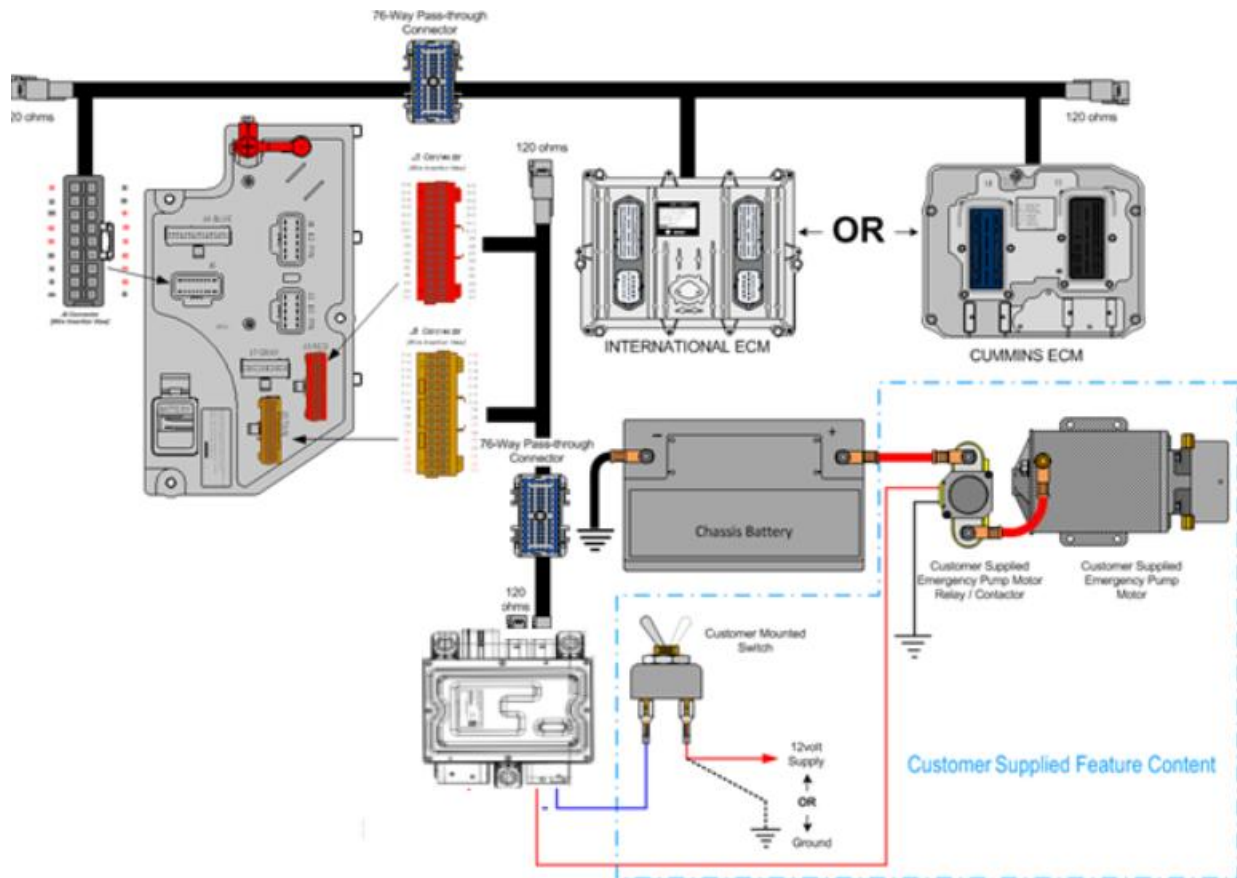
Extended Description: Stationary Remote engine speed control preset 1 is interlocked to park brake and transmission in neutral or park and vehicle speed and engine running or optional PTO interlock; when engine is not running, the GND input will turn on a 12-volt, 20-Ampere (AMP) RPM output used to control an emergency pump.

A Truck Equipment Manufacturer or customer-mounted single momentary switch is used to control engine speed from a remote location. When the operator moves the

switch to the up position or the switch closes for the first time, the switch supplies GND or 12-volts to the RPM input which activates Engine Speed Preset 1. When the operator moves the switch to the down position or the switch opens, the engine will remain at Engine Speed Preset 1. When the operator moves the switch to the up position or the switch closes for the second time, engine speed control preset 1 is deactivated returning the engine to idle. When the engine is not running and the operator moves the switch to the up position and holds or the switch closes and holds, the switch will supply a GND signal to the RPM input which then turns on a 12-volt, 20- AMP RPM output used for emergency pump control.

This feature is commonly used for the utility application to remotely elevate engine speed to a single preset and maintain the engine speed until the operator brings the engine back to idle through a second action. This feature also provides an emergency pump control output from the Remote Power Module (RPM) when the engine is not running. Engine preset 1 must be programmed in the Engine Control Module (ECM) parameters with the appropriate service tool. This feature also requires that feature 12VXU be ordered on the vehicle or in-cab stationary Preset throttle control be set up with the appropriate engine service tool if feature 60AJH is installed in the field.

System Block Diagram



Body Controller Software Feature Codes:

Note: 597795 - BCM PROG, ERPM1 Module enabler is required when using ERPM1.

Note: 0597816 must be configured with one of the following PTO Engine-Ramping Features: 0597842, 0597843, 0597844, or 0597845

- 597816 - BCM PROG, EXT ENGINE SPD CONT'L for Emergency Power Output ERPM and Utility Application, for use with External Engine Speed Control

Body Controller Software Feature Code Parameters:

Parameter	ID	Description	Default	Units	Min	Max	Step
TEM_Ext_Eng_Speed_Control_Mode	2035	This parameter sets the mode of operation for the TEM External Engine Speed Control feature	2	List	0	3	1
TEM_Ext_Eng_Spd_Ctrl_PTO_Ilock	2036	If this parameter is set as one, external engine speed controls will be interlocked to PTO request.	0	On/Off	0	1	1
TEM_Ext_Eng_Spd_Ctrl_ERPM_Active_State	4103	This is the active state for the external engine speed control switch	3	No Units	0	3	1
TEM_Emergency_Pump_20A_Param	4067	value for the 20A ERPM output driving the emergency pump in the combination RESC emergency pump feature.	20	Amps	0	20	0.24
TEM_Emergency_Pump_DC_Param	4068	value for the Duty Cycle ERPM output driving the emergency pump in the combination RESC emergency pump feature.	100	Percent	0	100	.4
EM_Ext_Eng_Spd_Ctrl_ERPM_Active_State	4103	This is the active state for the external engine speed control switch	2	List	0	2	1

Parameter Definitions:

- TEM_Ext_Eng_Speed_Control_Mode** – This parameter sets the mode of operation for the TEM External Engine Speed Control feature.
 - 0 – Remote engine speed control does not function
 - 1 – 12 Volts on the engine speed control input causes engine to ramp; ground causes engine to return to idle.
 - 2 – Pulling the engine speed control input momentarily (pulled and released) to its active state causes the engine to ramp; Another momentary active state transition causes engine to return to idle
 - 3 – Engine will ramp for only as long as the engine speed control input is held in its active state
- TEM_Ext_Eng_Spd_Ctrl_PTO_Ilock** – This parameter sets the optional PTO interlock mode ON or OFF. If set ON, the Remote engine speed control preset 1 will be interlocked to all International® pre-engineered PTO features that use a center panel switch. This means that the remote engine speed control will only be allowed to operate if the PTO is being requested to engage. If this parameter is not set, the engine speed control will operate regardless of the PTO request. OFF.
- TEM_Emergency_Pump_20A_Param** – This parameter is used to control the Current Command for the 20A output.

- **TEM_Emergency_Pump_DC_Param**– This sets the Duty Cycle ERPM output driving the emergency pump output.
- **TEM_Ext_Eng_Spd_Ctrl_ERPM_Active_State** – This is the active state for the external engine speed control switch.
 - 0 – RPM input floating (not grounded or at 12 Volts)
 - 1 – RPM input grounded.
 - 2 – RPM input 12

Note/s About Possible Software Feature Conflicts:

0597816 must be configured with one of the following PTO Engine-Ramping Features: 0597842, 0597843, 0597844, or 0597845. These are mutually exclusive.

Parts Associated with This Feature:

Please refer to **Parts Associated with ERPM Features:** in Section 5.

How to Test This Feature:

1. Verify the RPM input labeled Remote_Engine_Speed_Sw_Input (pin position specified Diamond Logic® software) is receiving GND as long as the switch is closed.
2. Verify that the engine ramps to the first preset speed.
3. If the engine does not ramp to the first preset speed, check engine programming to verify that the correct engine speed control parameters are set using (NED) or (INSITE) software.
4. Deactivate the remote engine speed control switch (release GND).
5. Verify the RPM input labeled Remote_Engine_Speed_Sw_Input (pin position specified Diamond Logic® Builder software) is an open circuit when switch is in the down or open position.
6. Verify that the engine returns to idle.
7. Verify 12 volts 20 amps on RPM output connector labeled Utility_Emergency_Pump_Output.

Note: This feature uses body controller-based software controls which can be diagnosed with The International® Diamond Logic® Builder software (see local dealer if not owned).

References:

Refer to the applicable International® Circuit Diagrams and Service Manuals.

6.2. 60AJA: BDY INTG, THROTTLE CONTROL Accommodation for Single Customer Mounted External Engine Speed Control Switch, Programmable Mode for Various Switch Actions and Engine Speed Control Option; Useable Only While Vehicle is Stopped, and the Park Brake is Applied (requires one Enhanced Remote Power Module (ERPM) input).

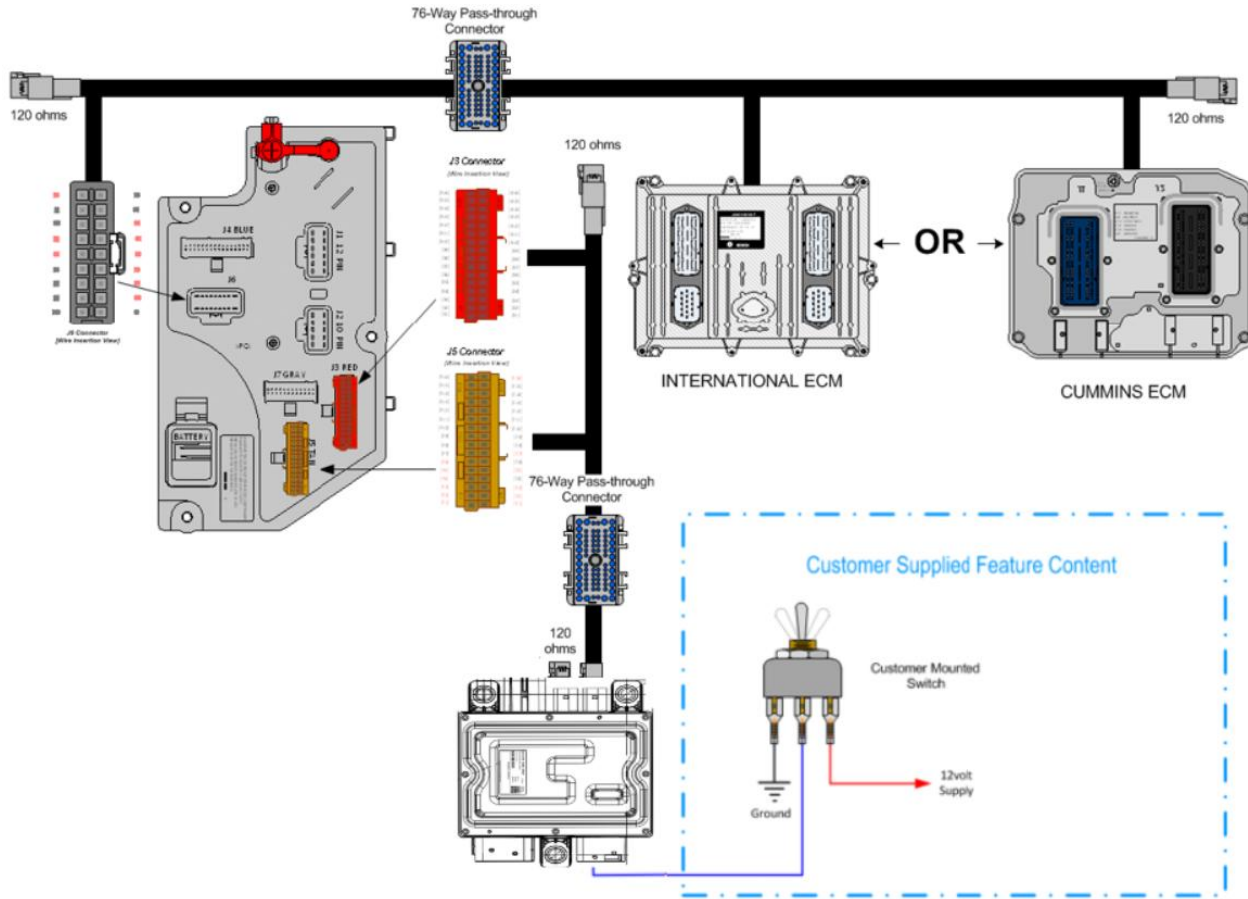
Feature Applicability to Vehicle Platforms:

- Heavy Vocational (HV)

Extended Description: A Truck Equipment Manufacturer (TEM) or customer-mounted single remote center stable, momentary switch is used to control engine speed from a remote location. When the operator moves the switch to the up position, the switch should be wired to supply 12 volts to the RPM input to activate Remote engine speed control preset 1. When the operator returns the switch to the center position or stable position, the engine will remain at preset 1 until the operator moves the switch to the down position. In the down position, the switch is wired to supply a Ground (GND) to the RPM input to deactivate Remote engine speed control preset 1. When the operator returns the switch to the center position or stable position, the engine will remain at idle.

This feature is commonly used for the recovery application or any application that needs to remotely elevate engine speed to a single preset and maintain the engine speed until the operator brings the engine back to idle through a second action. Engine preset 1 must be programmed in the Engine Control Module (ECM) parameters with the appropriate service tool. This feature also requires that feature 12VXU be ordered on the vehicle or in-cab stationary Preset throttle control be set up with the appropriate engine service tool if feature 60AJA is installed in the field.

System Block Diagram



Body Controller Software Feature Codes:

Note: 597795 - BCM PROG, ERPM1 Module enabler is required when using ERPM1.

- 597844 - BCM PROG, EXT ENGINE SPD CONT'L ERPM for Single External Control

Body Controller Software Feature Code Parameters:

Parameter	ID	Description	Default	Units	Min	Max	Step
TEM_Ext_Eng_Speed_Control_Mode	2035	This parameter sets the mode of operation for the TEM External Engine Speed Control feature	3	List	0	3	1
TEM_Ext_Eng_Spd_Ctrl_PTO_Ilock	2036	If this parameter is one, external engine speed controls will be interlocked to PTO request.	0	On/Off	0	1	1

TEM_Ext_Eng_Spd_Ctrl_ERPM_Active_State	4103	This is the active state for the external engine speed control switch	1	No Units	0	3	1
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Parameter Definitions:

- TEM_Ext_Eng_Speed_Control_Mode** – This parameter sets the mode of operation for the TEM External Engine Speed Control feature.
 - 0 – Remote engine speed control does not function
 - 1 – 12 Volts on the engine speed control input causes engine to ramp; ground causes engine to return to idle.
 - 2 – Pulling the engine speed control input momentarily (pulled and released) to its active state causes the engine to ramp; Another momentary active state transition causes engine to return to idle
 - 3 – Engine will ramp for only as long as the engine speed control input is held in its active state
- TEM_Ext_Eng_Spd_Ctrl_PTO_Ilock** – This parameter sets the optional PTO interlock mode ON or OFF. If set ON, the Remote engine speed control preset 1 will be interlocked to all International® pre-engineered PTO features that use a center panel switch. This means that the remote engine speed control will only be allowed to operate if the PTO is being requested to engage. If this parameter is not set, the engine speed control will operate regardless of the PTO request. OFF.
- TEM_Ext_Eng_Spd_Ctrl_ERPM_Active_State** – This is the active state for the external engine speed control switch.
 - 0 – RPM input floating (not grounded or at 12 Volts)
 - 1 – RPM input grounded.
 - 2 – RPM input 12

Note/s About Possible Software Feature Conflicts:

0597842, 0597843, 0597844, and 0597845. are mutually exclusive.

Parts Associated with This Feature:

Please refer to **Parts Associated with ERPM Features:** in Section 5.

How to Test This Feature:

1. Stationary Remote engine speed control preset-1 Activation; Start engine, set park brake, transmission in neutral or park, vehicle speed is less than one MPH, and take the switch to the up position, or supply 12volts on the input pin labeled Remote_Engine_Speed_Sw_Input or use Diamond Logic® Builder to Force the RPM input pin to the 12-volt state.
2. Verify the RPM input labeled Remote_Engine_Speed_Sw_Input (pin position specified Diamond Logic® Builder software) is receiving GND as long as the switch is closed.
3. Verify that the engine ramps to the first preset speed.
4. If engine does not ramp to the first preset speed, check engine programming to verify that the correct engine speed control parameters are set.
5. Deactivate the remote engine speed control switch (release GND).
6. Verify the RPM input labeled Remote_Engine_Speed_Sw_Input (pin position specified Diamond Logic® Builder software) is an open circuit when switch is in the center stable position.
7. Verify that the engine returns to idle.

Note: This feature uses body controller-based software controls which can be diagnosed with The International® Diamond Logic® Builder software (see local dealer if not owned).

References:

Refer to the applicable International® Circuit Diagrams and Service Manuals.

- 6.3. 60AJE:** BDY INTG, THROTTLE CONTROL Accommodation for On Demand Engine Speed for Single Customer-Mounted Pressure Switch, Programmable Mode for Various Switch Actions, Useable Only While Vehicle is Stopped, and the Park Brake is Applied (requires 1 Enhanced Remote Power Module input).

Feature Applicability to Vehicle Platforms:

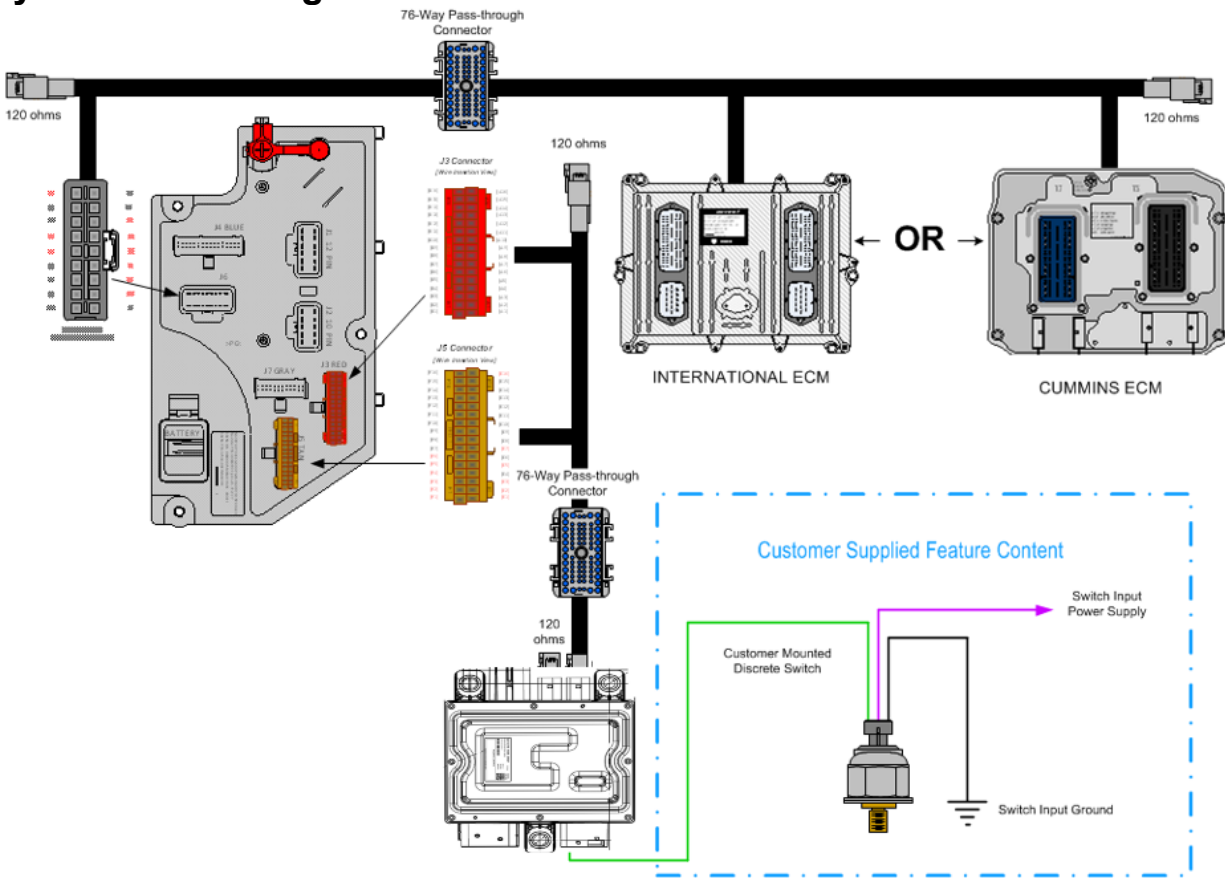
- Heavy Vocational (HV)

Extended Description: A Truck Equipment Manufacturer (TEM) or customer-mounted single remote momentary or latched switch or normally open pressure switch is used to control engine speed from a remote location. When the operator moves the switch to the up position or the pressure switch closes, the switch supplies GND or 12-volts to the RPM input to activate Engine Preset 1 and ramp the engine to it. The engine will

continue to ramp to Engine Speed Preset 1 as long as the switch continues to supply either GND or 12-volts to the RPM input. When the operator moves the switch to the down position or the switch opens, the switch removes the GND or 12-volts to the RPM input to deactivate engine speed control preset 1 returning the engine to idle.

This feature is used for various applications that need to remotely elevate engine speed to a single preset and maintain the engine speed until the operator or system brings the engine back to idle. Engine speed control is maintained on demand with this feature. Engine preset 1 must be programmed in the Engine Control Module (ECM) parameters with the appropriate service tool. This feature also requires that feature 12VXU be ordered on the vehicle or in-cab stationary preset throttle control be set up with the appropriate engine service tool if feature 60AJE is installed in the field.

System Block Diagram



Body Controller Software Feature Codes:

Note: 597795 - BCM PROG, ERPM1 Module enabler is required when using ERPM1.

- 597843 - BCM PROG, EXT ENGINE SPD CONT'L ERPM for On Demand Engine Speed with Utility Application

Body Controller Software Feature Code Parameters:

Parameter	ID	Description	Default	Units	Min	Max	Step
TEM_Ext_Eng_Speed_Control_Mode	2035	This parameter sets the mode of operation for the TEM External Engine Speed Control feature	3	List	0	3	1
TEM_Ext_Eng_Spd_Ctrl_PTO_Ilock	2036	If this parameter is one, external engine speed controls will be interlocked to PTO request.	0	On/Off	0	1	1
TEM_Ext_Eng_Spd_Ctrl_ERPM_Active_State	4103	This is the active state for the external engine speed control switch	1	No Units	0	3	1

Parameter Definitions:

- **TEM_Ext_Eng_Speed_Control_Mode** – This parameter sets the mode of operation for the TEM External Engine Speed Control feature.
 - 0 – Remote engine speed control does not function
 - 1 – 12 Volts on the engine speed control input causes engine to ramp; ground causes engine to return to idle.
 - 2 – Pulling the engine speed control input momentarily (pulled and released) to its active state causes the engine to ramp; Another momentary active state transition causes engine to return to idle
 - 3 – Engine will ramp for only as long as the engine speed control input is held in its active state
- **TEM_Ext_Eng_Spd_Ctrl_PTO_Ilock** – This parameter sets the optional PTO interlock mode ON or OFF. If set ON, the Remote engine speed control preset 1 will be interlocked to all International® pre-engineered PTO features that use a center panel switch. This means that the remote engine speed control will only be allowed to operate if the PTO is being requested to engage. If this parameter is not set, the engine speed control will operate regardless of the PTO request. OFF.
- **TEM_Ext_Eng_Spd_Ctrl_ERPM_Active_State** – This is the active state for the external engine speed control switch.
 - 0 – RPM input floating (not grounded or at 12 Volts)
 - 1 – RPM input grounded.
 - 2 – RPM input 12

Note/s About Possible Software Feature Conflicts:

0597842, 0597843, 0597844, and 0597845. are mutually exclusive.

Parts Associated with This Feature:

Please refer to **Parts Associated with ERPM Features:** in Section 5.

How to Test This Feature:

1. Stationary Remote engine speed control preset-1 Activation; Start engine, set park brake, transmission in neutral or park, vehicle speed is less than one MPH, and take the switch to the closed position, or supply 12volts or GND on the input pin labeled Remote_Engine_Speed_Sw_Input, or use Diamond Logic® Builder to Force the RPM input pin to the 12-volt or GND state.
2. Verify the RPM input labeled Remote_Engine_Speed_Sw_Input (pin position specified Diamond Logic® Builder software) is receiving GND or 12-volts as long as the switch is closed.
3. Verify that the engine ramps to the first preset speed.
4. If engine does not ramp to the first preset speed, check the engine programming to verify that the correct engine speed control parameters are set using (NED) or (INSITE) software.
5. Deactivate the remote engine speed control switch (release GND).
6. Verify the RPM input labeled Remote_Engine_Speed_Sw_Input (pin position specified Diamond Logic® Builder software) is an open circuit when switch is in the down or open position.
7. Verify that the engine returns to idle.

Note: This feature uses body controller-based software controls which can be diagnosed with The International® Diamond Logic® Builder software (see local dealer if not owned).

References:

Refer to the applicable International® Circuit Diagrams and Service Manuals.

- 6.4. 60AJG:** BDY INTG, THROTTLE CONTROL Accommodation for Single Customer Mounted External Engine Control Switch, for Utility Applications, Programmable Mode for Various Switch Actions and Engine Speed Control Option, Only with Vehicle Stopped and Park Brake is Applied (requires one Enhanced Remote Power Module ERPM input).

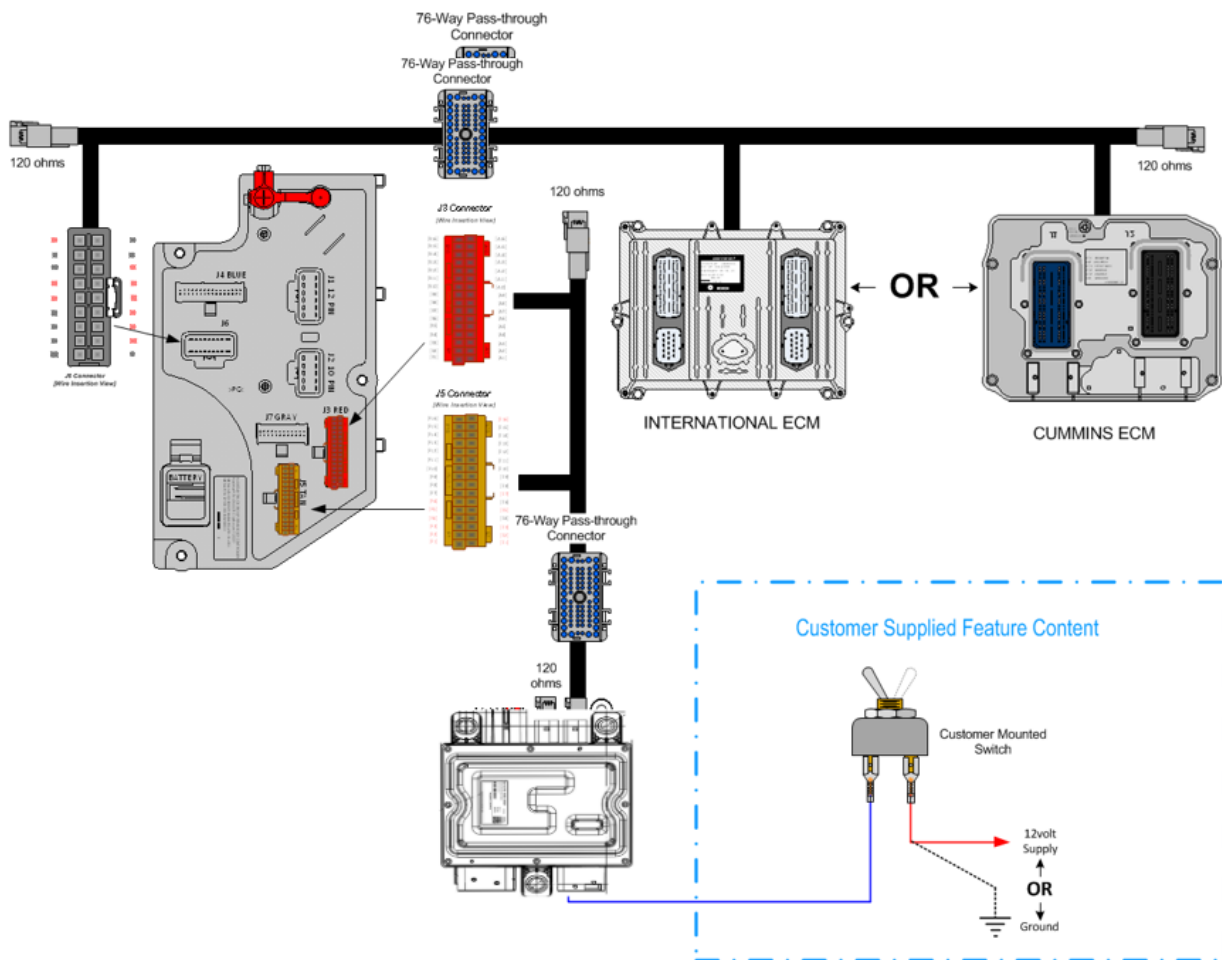
Feature Applicability to Vehicle Platforms:

- Heavy Vocational (HV)

Extended Description: A Truck Equipment Manufacturer or customer-mounted single momentary switch is used to control engine speed from a remote location. When the operator moves the switch to the up position or the switch closes for the first time, the switch supplies GND or 12-volts to the RPM input which activates Engine Speed Preset 1. When the operator moves the switch to the down position or the switch opens, the engine will remain at Engine Speed Preset 1. When the operator moves the switch to the up position or the switch closes for the second time, engine speed control preset 1 is deactivated returning the engine to idle.

This feature is commonly used for utility applications to remotely elevate engine speed to a single preset and maintain the engine speed until the operator brings the engine back to idle through a second action. Engine preset 1 must be programmed in the Engine Control Module (ECM) parameters with the appropriate service tool. This feature also requires that feature 12VXU be ordered on the vehicle or in-cab stationary Preset throttle control be set up with the appropriate engine service tool if feature 60AJG is installed in the field.

System Block Diagram



Body Controller Software Feature Codes:

Note: 597795 - BCM PROG, ERPM1 Module enabler is required when using ERPM1.

- 597845 - BCM PROG, EXT ENGINE SPD CONT'L ERPM for On Demand Engine Speed with Utility Application

Body Controller Software Feature Code Parameters:

Parameter	ID	Description	Default	Units	Min	Max	Step
TEM_Ext_Eng_Speed_Control_Mode	2035	This parameter sets the mode of operation for the TEM External Engine Speed Control feature	3	List	0	3	1
TEM_Ext_Eng_Spd_Ctrl_PTO_Ilock	2036	If this parameter is one, external engine speed controls will be interlocked to PTO request.	0	On/Off	0	1	1
TEM_Ext_Eng_Spd_Ctrl_ERPM_Active_State	4103	This is the active state for the external engine speed control switch	1	No Units	0	3	1

Parameter Definitions:

- TEM_Ext_Eng_Speed_Control_Mode** – This parameter sets the mode of operation for the TEM External Engine Speed Control feature.
 - 0 – Remote engine speed control does not function
 - 1 – 12 Volts on the engine speed control input causes engine to ramp; ground causes engine to return to idle.
 - 2 – Pulling the engine speed control input momentarily (pulled and released) to its active state causes the engine to ramp; Another momentary active state transition causes engine to return to idle
 - 3 – Engine will ramp for only as long as the engine speed control input is held in its active state
- TEM_Ext_Eng_Spd_Ctrl_PTO_Ilock** – This parameter sets the optional PTO interlock mode ON or OFF. If set ON, the Remote engine speed control preset 1 will be interlocked to all International® pre-engineered PTO features that use a center panel switch. This means that the remote engine speed control will only be allowed to operate if the PTO is being requested to engage. If this parameter is not set, the engine speed control will operate regardless of the PTO request. OFF.
- TEM_Ext_Eng_Spd_Ctrl_ERPM_Active_State** – This is the active state for the external engine speed control switch.
 - 0 – RPM input floating (not grounded or at 12 Volts)
 - 1 – RPM input grounded.
 - 2 – RPM input 12

Note/s About Possible Software Feature Conflicts:

0597842, 0597843, 0597844, and 0597845. are mutually exclusive.

Parts Associated with This Feature:

Please refer to **Parts Associated with ERPM Features**: in Section 5.

How to Test This Feature:

1. Stationary Remote engine speed control preset-1 Activation; Start engine, set park brake, transmission in neutral or park, vehicle speed is less than one MPH, and take the switch to the closed position, or supply 12-volts or GND on the input pin labeled Remote_Engine_Speed_Sw_Input, or use Diamond Logic® Builder to Force the RPM input pin to the 12-volt or GND state.
2. Verify the RPM input labeled Remote_Engine_Speed_Sw_Input (pin position specified Diamond Logic® Builder software) is receiving GND or 12-volts as long as the switch is closed.
3. Verify that the engine ramps to the first preset speed.
4. If engine does not ramp to the first preset speed, check the engine programming to verify that the correct engine speed control parameters are set using (NED) or (INSITE) software.
5. Deactivate the remote engine speed control switch (release GND).
6. Verify the RPM input labeled Remote_Engine_Speed_Sw_Input (pin position specified Diamond Logic® Builder software) is an open circuit when switch is in the down or open position.
7. Verify that the engine returns to idle.

Note: This feature uses body controller-based software controls which can be diagnosed with The International® Diamond Logic® Builder software (see local dealer if not owned). References: Refer to the applicable International® Circuit Diagrams and Service Manuals

References:

Refer to the applicable International® Circuit Diagrams and Service Manuals.

- 6.5. 60AJJ:** BDY INTG, THROTTLE CONTROL Accommodation for Single Customer Mounted Momentary Switch, for Refuse Applications, Programmable Mode Various Switch Actions, Useable Only While Vehicle is Stopped, and the Park Brake is Applied (requires one Enhanced Remote Power Module ERPM input).

Feature Applicability to Vehicle Platforms:

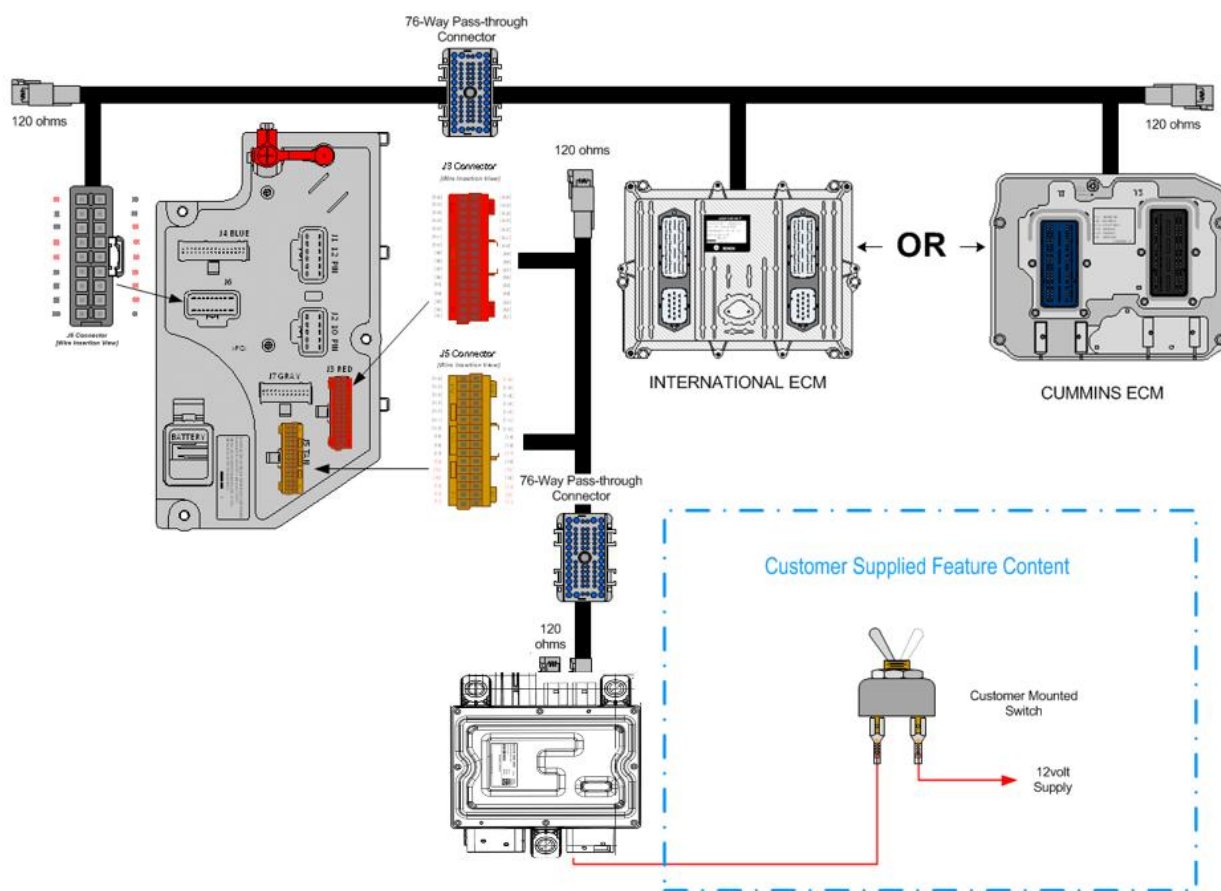
- Heavy Vocational (HV)

Extended Description: A Truck Equipment Manufacturer or customer-mounted single momentary switch is used to control engine speed from a remote location. When the operator moves the switch to the up position or the switch closes, the switch supplies 12-volts to the RPM input which activates Engine Speed Preset 1, the engine will stay at Engine Speed Preset 1 as long as the switch continues to supply 12-volts to the RPM input. When the operator moves the switch to the down position or the switch opens,

12-volts is removed from the RPM input to deactivate remote engine speed control preset 1 returning the engine to idle.

This feature is commonly used for the refuse application to remotely elevate engine speed to a single preset and maintain the engine speed until the remote input is deactivated. Engine preset 1 must be programmed in the Engine Control Module (ECM) parameters with the appropriate service tool. This feature also requires that feature 12VXU be ordered on the vehicle or in-cab stationary Preset throttle control be set up with the appropriate engine service tool if feature 60AJJ is installed in the field.

System Block Diagram



Body Controller Software Feature Codes:

Note: 597795 - BCM PROG, ERPM1 Module enabler is required when using ERPM1.

- 597842 - BCM PROG, EXT ENGINE SPD CONT'L ERPM On Demand Engine Speed for Refuse

Body Controller Software Feature Code Parameters:

Parameter	ID	Description	Default	Units	Min	Max	Step
TEM_Ext_Eng_Speed_Control_Mode	2035	This parameter sets the mode of operation for the TEM External Engine Speed Control feature	3	List	0	3	1
TEM_Ext_Eng_Spd_Ctrl_PTO_Ilock	2036	If this parameter is one, external engine speed controls will be interlocked to PTO request.	0	On/Off	0	1	1
TEM_Ext_Eng_Spd_Ctrl_ERPM_Active_State	4103	This is the active state for the external engine speed control switch	12	No Units	0	3	1

Parameter Definitions:

- TEM_Ext_Eng_Speed_Control_Mode** – This parameter sets the mode of operation for the TEM External Engine Speed Control feature.
 - 0 – Remote engine speed control does not function
 - 1 – 12 Volts on the engine speed control input causes engine to ramp; ground causes engine to return to idle.
 - 2 – Pulling the engine speed control input momentarily (pulled and released) to its active state causes the engine to ramp; Another momentary active state transition causes engine to return to idle
 - 3 – Engine will ramp for only as long as the engine speed control input is held in its active state
- TEM_Ext_Eng_Spd_Ctrl_PTO_Ilock** – This parameter sets the optional PTO interlock mode ON or OFF. If set ON, the Remote engine speed control preset 1 will be interlocked to all International® pre-engineered PTO features that use a center panel switch. This means that the remote engine speed control will only be allowed to operate if the PTO is being requested to engage. If this parameter is not set, the engine speed control will operate regardless of the PTO request. OFF.
- TEM_Ext_Eng_Spd_Ctrl_ERPM_Active_State** – This is the active state for the external engine speed control switch.
 - 0 – RPM input floating (not grounded or at 12 Volts)
 - 1 – RPM input grounded.
 - 2 – RPM input 12

Note/s About Possible Software Feature Conflicts:

0597842, 0597843, 0597844, and 0597845 are mutually exclusive.

Parts Associated with This Feature:

Please refer to **Parts Associated with ERPM Features**: in Section 5.

How to Test This Feature:

1. Stationary Remote engine speed control preset-1 Activation; Start engine, set park brake, transmission in neutral or park, vehicle speed is less than one MPH, and take the switch to the closed position, or supply 12-volts or GND on the input pin labeled Remote_Engine_Speed_Sw_Input, or use Diamond Logic® Builder to Force the RPM input pin to the 12-volt or GND state.
2. Verify the RPM input labeled Remote_Engine_Speed_Sw_Input (pin position specified Diamond Logic® Builder software) is receiving GND or 12-volts as long as the switch is closed.
3. Verify that the engine ramps to the first preset speed.
4. Deactivate the remote engine speed control switch (release GND).
5. Verify the RPM input labeled Remote_Engine_Speed_Sw_Input (pin position specified Diamond Logic® Builder software) is an open circuit when switch is in the down or open position.
6. Verify that the engine returns to idle.

Note: This feature uses body controller-based software controls which can be diagnosed with The International® Diamond Logic® Builder software (see local dealer if not owned). References: Refer to the applicable International® Circuit Diagrams and Service Manuals

References:

Refer to the applicable International® Circuit Diagrams and Service Manuals.

7. Indicator Lights and Alarms with Enhanced Remote Power Modules

- 7.1. 60AJC:** BDY INTG, INDICATOR LIGHTS (2) One for Gate Open and One for Alarm in Cab with the ERPM. Includes Audible Alarm, Programmable Mode for Various Switch Action (requires 2 Enhanced Remote Power Module (ERPM) inputs).

Feature Applicability to Vehicle Platforms:

- Heavy Vocational (HV)

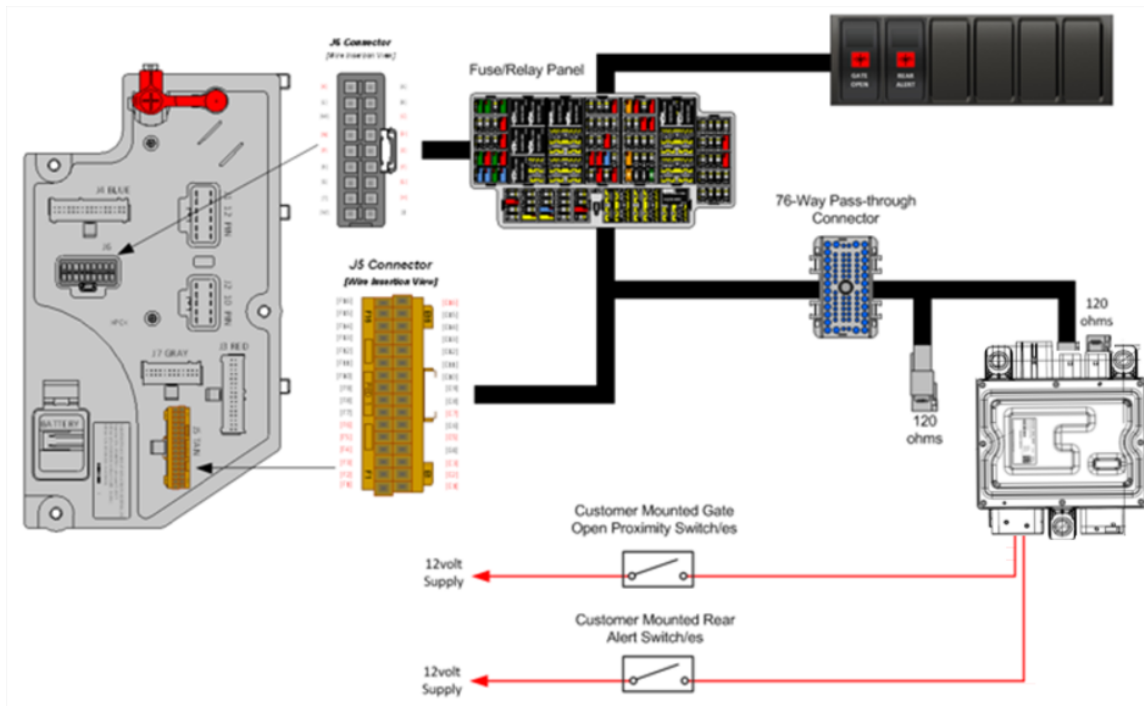
Extended Description: This feature provides a custom alarm package designed for the Refuse/Waste Applications. It provides both an audible and visual alarm for Gate Open and Rear Alert. Red indicator lights are located in the prime viewing area of the driver in

the switch pack. Audible alarm provides a second level of warning to the driver to indicate the status of these two equipment options.

The gate open indicator light is ON constant when the gate open input is active with the park brake set. If the park brake is released, with the gate open input active, the gate open indicator shall flash at 0.6-second intervals, accompanied by an audible alarm. Flexibility is provided through programmable parameters to establish whether the inputs are active high (12V) or active low (GND). See the Diamond Logic® Builder software to set programmable parameters and for pin location.

Alarm in Cab with the ERPM provides the operator with the ability to communicate from the rear of the vehicle to the cab. A customer-mounted switch is wired into the ERPM 16 pin connector (See the Diamond Logic® Builder software for pin location). The ignition (IGN) switch must be in “ignition” for this feature to function. Programmable Parameters allow the customer to establish whether the input is active at 12 volts or active at GND. When the operator activates the customer-mounted switch, the rear alert light in the gauge cluster illuminates and an audible alarm sounds.

System Block Diagram:



Body Controller Software Feature Codes:

Note: 597795 - BCM PROG, ERPM1 Module enabler is required when using ERPM1

- 597827 - BCM PROG, TAILGATE OPEN WARN Light and buzzer, with Reverse Input
- 597831 – BCM PROG, ALARM IN CAB ERPM with External Control

Body Controller Software Feature Code Parameters:

Parameter	ID	Description	Default	Units	Min	Max	Step
<ul style="list-style-type: none"> • 597827 - BCM PROG, TAILGATE OPEN WARN Light and buzzer, with Reverse Input 							
TEM_Tail_Gate_ERPM_Input_Active_State	4100	This parameter is used to set the voltage level that indicates when the tail gate alert should be active. 0 = Open, 1 = GND, 3 = 12V	3	No Units	0	3	1
TEM_Tail_Gate_Park_Brake_Inhibit	2165	When set, the tail gate alert will only sound if the park brake is not set.	0	No Units	0	1	1
TEM_Tail_Gate_ERPM_Transmission_Interlock	4102	This parameter is used to determine how the tail gate alert acts based upon the transmission.	3	No Units	0	3	1
TEM_Tail_Gate_Alarm_Period	2172	Once the audible alarm has stopped continuously beeping and the gate open indicator remains illuminated, this parameter determines the length of time between individual beeps of the audible alarm.	20	seconds	10	60	1
TEM_Tail_Gate_Alarm_Period	2175	This parameter determines the length of time that the audible alarm will beep continuously. If this parameter is set to 0, the audible alarm will beep continuously as long as the gate open indicator is illuminated.	10	seconds	0	60	1

Parameter	ID	Description	Default	Units	Min	Max	Step
<ul style="list-style-type: none"> • 597831 – BCM PROG, ALARM IN CAB ERPM with External Control 							
TEM_Rear_Alert_ERPM_Input_Active_State	4099	This parameter is used to set the voltage level that indicates when the rear alert should be active. 0 = Floating, 1 = Active State Ground, 3 = Active State 12V	2	No Units	0	3	1

Parameter Definitions:

- **597827 - BCM PROG, TAILGATE OPEN WARN Light and buzzer, with Reverse Input**

- **TEM_Tail_Gate_ERPM_Input_Active_State** - This parameter indicates the state that the Body Controller (BCM) will read as active for the customer-installed switch for the tail gate open function (as it goes into the Enhanced Remote Power Module (ERPM) input). This active state will be used to tell the BCM when the tail gate has been opened:
 - 0 = Input active when open circuit
 - 1 = Input active when grounded
 - 2 = Input active when at 12V
- **TEM_Tail_Gate_Park_Brake_Inhibit** – If parameter is turned ON, the tailgate alert will only alert when the Park Brake is released.
- **TEM_Tail_Gate_ERPM_Transmission_Interlock** - This parameter indicates the activation of the tailgate alert based on transmission gear:
 - 0 = Ignores Gear
 - 1 = Alert will only activate if the transmission is NOT in reverse
 - 2 = Alert will only activate if transmission is in reverse
 - 3 = Alert will activate for the tailgate sensor or if the transmission is in reverse
- **TEM_Tail_Gate_Alarm_Period** - This parameter sets the interval time between individual beeps of the audible alarm, after the continuous time for alarm has expired.
- **TEM_Tail_Gate_Alarm_Timeout** - This parameter determines the length of time that the audible alarm will beep continuously after the gate is opened and the park brake is released. If this parameter is set to 0, the audible alarm will beep continuously as long as the gate open indicator is illuminated. Once the audible alarm has stopped continuously beeping (as set by TEM_Tail_Gate_Alarm_Timeout parameter) and the gate open indicator remains illuminated.

Note/s About Possible Software Feature Conflicts:

597827, 597828, 597341, 597342, 597633, and 597345 are mutually exclusive

Parts Associated with This Feature:

Please refer to **Parts Associated with ERPM Features:** in Section 5.

PART NUMBER	DESCRIPTION
3766361C1	LIGHT, INDICATOR, GATE OPEN
3766362C1	LIGHT, INDICATOR, REAR ALERT
3830798C1	J5 16-WAY ERPM CONNECTOR TERMINAL (16-GUAGE)

Indicator Lights and Input Terminal part numbers.

How to Test This Feature:

1. Set Park brake.
2. Open the tailgate.
3. Verify that the input labeled Tail_Gate_Open_Input is receiving the correct voltage (as programmed in the Diamond Logic® Builder software).
4. Verify that the red “Gate Open” indicator light in the switch pack comes on.
5. Release park brake.
6. Verify that indicator light flashes and audible alarm sounds and works according to the set programmable parameters seen above.
7. Close tail gate.
8. Reset park brake.
9. Activate Rear Alert switch.
10. Verify that the input labeled Rear_Alert_Switch_Input is receiving the correct voltage (as programmed in the Diamond Logic® Builder software).
11. Verify that the red “Rear Alert” indicator light in the switch pack comes on and an audible alarm sounds.

Note: This feature uses body controller-based software controls which can be diagnosed with Navistar’s Diamond Logic® Builder software (see local dealer if not owned).

References:

Refer to the applicable International® Circuit Diagrams and Service Manuals

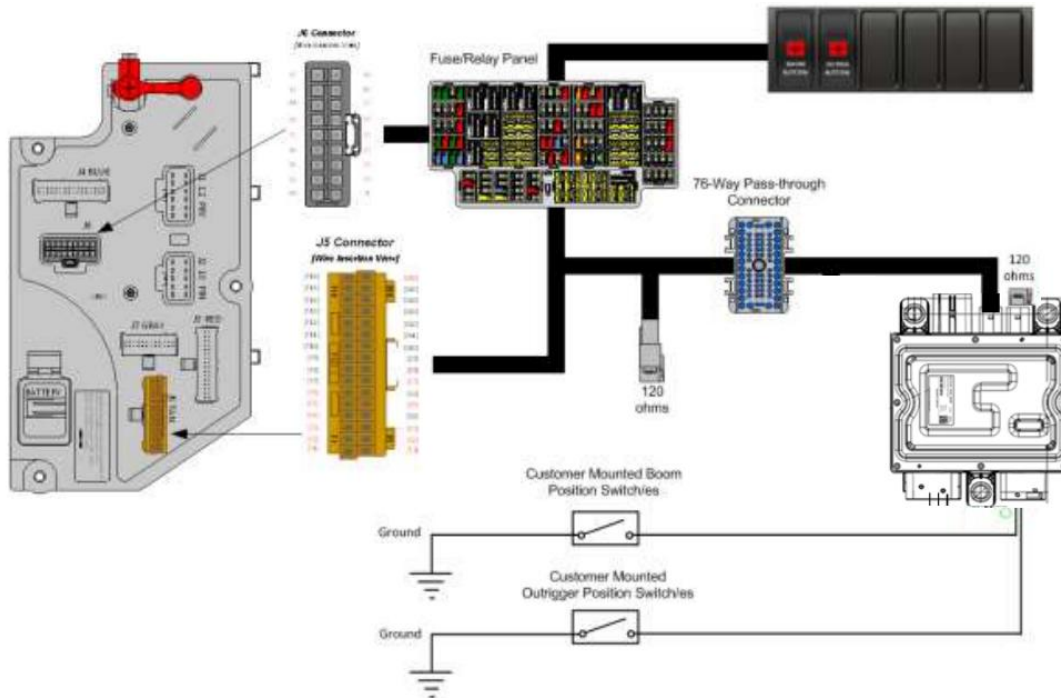
- 7.2. 60AJD:** BDY INTG, INDICATOR LIGHTS (2) One for Boom Out of Stow, One for Outriggers Deployed, Includes Audible Alarm and Interlock to Parking Brake, Programmable Mode for Various Switch Actions (requires 2 ERPM inputs).

Feature Applicability to Vehicle Platforms:

- Heavy Vocational (HV)

Extended Description: This feature provides a custom alarm package designed for the Utility Application. It provides both an audible and visual alarm for Boom Out of Stow and Outriggers Not Stowed. Red indicator lights are in the viewing area of the driver in the switch pack. Audible alarm provides a second level of warning to the driver to indicate the status of these two equipment options. Indicator lights are ON constant when either the boom or outrigger inputs are active with the park brake set. If the park brake is released, with either input active, the respective indicator shall flash at 0.6-second intervals, accompanied by an audible alarm.

System Block Diagram:



Body Controller Software Feature Codes:

Note: 597795 - BCM PROG, ERPM1 Module enabler is required when using ERPM1

- 597829- BCM PROG, OUTRIGGER WARN Light and Buzzer
- 597830 - BCM PROG, AERIAL BOOM WARN ERPM Light and Buzzer

Body Controller Software Feature Code Parameters:

Parameter	ID	Description	Default	Units	Min	Max	Step
597829 - BCM PROG, OUTRIGGER WARN Light and Buzzer							
TEM_Outrig_Deploy_Alarm_Inhibit	2074	If this parameter is set, the audible alarm for the outriggers deployed warning light will be inhibited.	0	No Units	0	1	1
TEM_Consol_Outrig_Deployed_Param	4105	Active state on the ERPM input for the outriggers deployed warning light. 0 = Open, 1 = GND, 3 = 12V	1	No Units	0	3	1
597830 - BCM PROG, AERIAL BOOM WARN Light and Buzzer							
TEM_Boom_Not_Stowed_Alarm_Inhibit	2061	If this parameter is set, the audible alarm for the boom-not-stowed warning light will be inhibited.	0	No Units	0	1	1
TEM_Consol_Boom_Not_Stow_Param	4104	Active state for the ERPM input connected to the Boom switch(es) 0 = Open, 1 = GND, 3 = 12V	1	No Units	0	3	1

Parameter Definitions:

- **597829 - BCM PROG, OUTRIGGER WARN Light and Buzzer**
- **TEM_Outrig_Deploy_Alarm_Inhibit** – This parameter allows control of the outrigger audible alarm. When this parameter is ON the audible alarm only will be disabled. The default is OFF.
- **TEM_Consol_Outrig_Deployed_Param** – This parameter sets the active state of the Enhanced Remote Power Module (ERPM) input connected to the customer installed outrigger switch. This active state indicates when the outriggers are down:
 - 0 = Input active when open circuit
 - 1 = Input active when grounded
 - 2 = Input active when at 12V
- **597830 - BCM PROG, AERIAL BOOM WARN Light and Buzzer**
- **TEM_Boom_Not_Stowed_Alarm_Inhibit** – This parameter allows control of the boom-not-stowed audible alarm. When this parameter is ON the audible alarm only will be disabled. The default is OFF.
- **TEM_Consol_Boom_Not_Stow_Param** – This parameter sets the active state of the Enhanced Remote Power Module (ERPM) input connected to the customer installed boom-stow switch. This active state indicates when the Boom is out of stow:
 - 0 = Input active when open circuit
 - 1 = Input active when grounded
 - 2 = Input active when at 12V

Note/s About Possible Software Feature Conflicts:

597827, 597828, 597341, 597342, 597633 and 597345 are mutually exclusive

Parts Associated with This Feature:

Please refer to **Parts Associated with ERPM Features:** in Section 5.

PART NUMBER	DESCRIPTION
3766358C1	LIGHT, INDICATOR, BOOM UP
3766359C1	LIGHT, INDICATOR, OUTRIG OUT
3830798C1	J5 16-WAY ERPM CONNECTOR TERMINAL (16-GUAGE)

Indicator Lights and Input Terminal part numbers.

How to Test This Feature:

1. Set the park brake.
2. Take boom out of stow.
3. Verify that the ERPM input labeled Boom_Not_Stow_Input is receiving the correct active state voltage (as programmed in the Diamond Logic® Builder software).
4. Verify that the boom up indicator light is on constantly.
5. Take off the parking brake (with boom still out of stow).
6. Verify that the boom up indicator light is now flashing, and the audible alarm is sounding.
7. Set park brake and put boom back in stow.
8. Put outriggers down.
9. Verify that the ERPM input labeled Outrig_Not_Stow_Input is receiving the correct active state voltage (as programmed or the Diamond Logic® Builder software).
10. Verify that the outrigger out indicator light is on constantly.
11. Take off the parking brake (with outriggers still down).
12. Verify that the outrigger out indicator light is now flashing, and the audible alarm is sounding.

Note: This feature uses body controller-based software controls which can be diagnosed with Navistar's Diamond Logic® Builder software (see local dealer if not owned).

References:

Refer to the applicable International® Circuit Diagrams and Service Manuals

7.3. 60AJK: INDICATOR LIGHTS (2), One for Body Up, One for Gate Open, Includes Audible Alarm, Programmable Mode for Various Switch Actions (Requires 2-RPM Inputs).

Feature Applicability to Vehicle Platforms:

- Heavy Vocational (HV)

Extended Description: This feature provides the operator of Dump Box Applications with visual and audible warning indications for a raised dump box body and open dump gate using Body Builder-installed switches. The visual indications that are provided for this feature are a “Body Up” light and a “Gate Open” light. Red indicator lights are located in the prime viewing area of the driver in the switch pack. Audible alarm provides a second level of warning to the driver to indicate the status of these two equipment options.

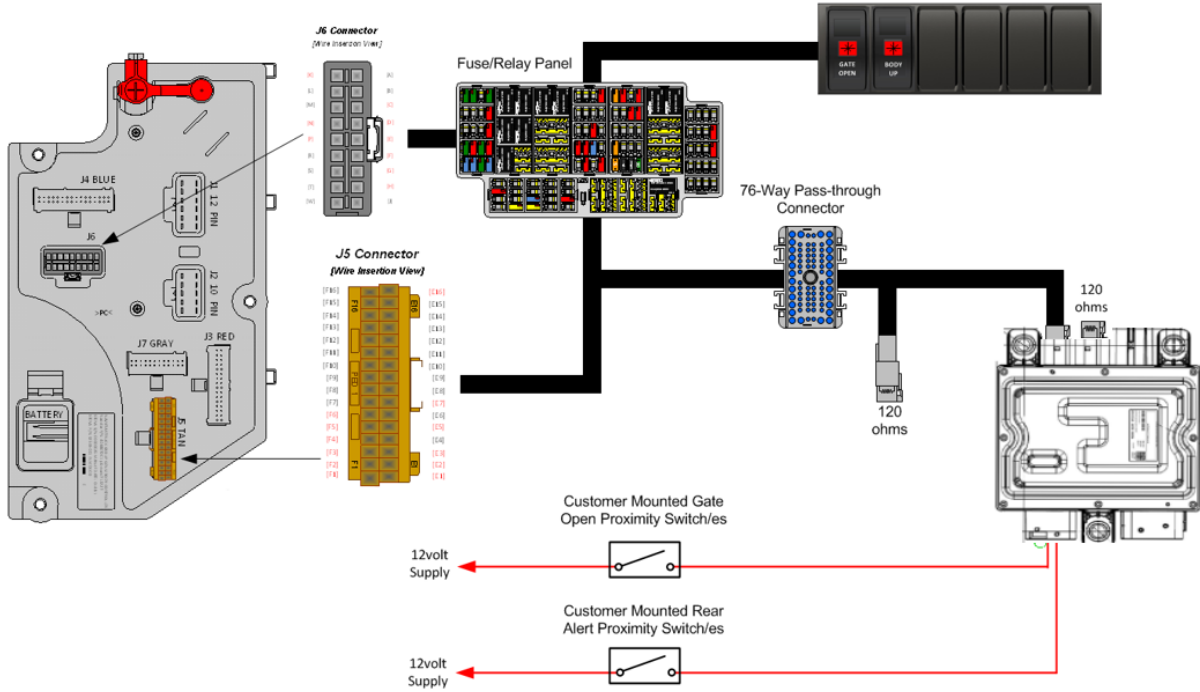
The “Gate Open” indicator light is on constant when the gate open input is active with the park brake set. If the park brake is released, with the gate open input active, the gate open indicator shall flash at 0.6 second intervals, accompanied by an audible alarm. Flexibility is provided through programmable parameters to establish whether the inputs are active high (12V) or active low (GND). See the Diamond Logic® Builder software to set programmable parameters.

For both the “BODY UP” and “GATE OPEN” indications, the associated light will illuminate continuously, and the associated audible alarm (default off) will sound when the corresponding input has entered an active state on the condition that the park brake is set, and the vehicle speed is less than or equal to 10-MPH.

For both the “BODY UP” and “GATE OPEN” indications, the associated light will illuminate in a slow flashing manner and the associated audible alarm (default of five fast beeps) will sound when the corresponding input is in an active state and either the park brake has been released or the vehicle speed has exceeded 10-MPH.

Both the “BODY UP” and “GATE OPEN” lights will be off when the ERPM input is inactive.

System Block Diagram:



Body Controller Software Feature Codes:

Note: 597795 - BCM PROG, ERPM1 Module enabler is required when using ERPM1

- 597826 - BCM PROG, DUMP BODY UP WARN ERPM LT & BUZZ
- 597828 - BCM PROG, TAILGATE OPEN WARN ERPM LT & BUZZ

Body Controller Software Feature Code Parameters:

Parameter	ID	Description	Default	Units	Min	Max	Step
597826 - BCM PROG, DUMP BODY UP WARN ERPM LT & BUZZ							
TEM_Body_Up_Alarm_Beeper	2259	Allows the selection of one of four beeper cadences 0 = Off, 1 = 5 fast beeps, 2 = 3 slow beeps, 3 = continuous beeps	1	No Units	0	3	1
TEM_Body_Up_Beeper	2260	Allows the selection of one of four beeper cadences 0 = Off, 1 = 5 fast beeps, 2 = 3 slow beeps, 3 = continuous beeps	0	No Units	0	3	1
TEM_Body_Up_Input_Active_State	4101	This parameter selects the active state of the BODY UP ERPM input. 0 = Open, 1 = GND, 2 = 12 Volts	3	No Units	0	3	1
597828 - BCM PROG, TAILGATE OPEN WARN ERPM LT & BUZZ							

TEM_Tail_Gate_Input_Active_State	4100	This parameter is used to set the voltage level that indicates when the tail gate alert should be active. 0 = Open, 1 = GND, 2 = 12V	3	No Units	0	3	1
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Parameter Definitions:

- **597826 - BCM PROG, DUMP BODY UP WARN ERPM LT & BUZZ**
- **TEM_Body_UP_Alarm_Beeper** – This parameter allows the customer to set the alarm type for the condition when the dump body has been raised (active) and either the park brake has been released, or the vehicle speed has exceeded 10 MPH. The default alarm type is five fast beeps.
- **TEM_Body_UP_Beeper** - This parameter allows the customer to set the alarm type for the condition when the dump body has been raised (active) and both the park brake is set, and the vehicle speed is equal to or less than 10 MPH. The default alarm type is OFF.
- **TEM_Body_UP_Input_Active_State** - This parameter indicates the state that the Body Controller (BCM) will read as active for the customer-installed switch for the dump body up function (as it goes into the Enhanced Remote Power Module (ERPM) input). This active state will be used to tell the BCM when the dump body has been raised up:
 - 0 = Input active when open circuit
 - 1 = Input active when grounded
 - 2 = Input active when at 12V
- **597828 - BCM PROG, TAILGATE OPEN WARN ERPM LT & BUZZ**
- **TEM_Tail_Gate_Input_Active_State** - This parameter indicates the state that the Body Controller (BCM) will read as active for the customer-installed switch for the dump gate open function (as it goes into the Enhanced Remote Power Module (ERPM) input). This active state will be used to tell the BCM when the dump gate has been opened:
 - 0 = Input active when open circuit
 - 1 = Input active when grounded
 - 2 = Input active when at 12V

Note/s About Possible Software Feature Conflicts:

597827, 597828, 597341, 597342, 597633 and 597345 are mutually exclusive

Parts Associated with This Feature:

Please refer to **Parts Associated with ERPM Features:** in Section 5.

PART NUMBER	PART DESCRIPTION
3766360C1	LIGHT, INDICATOR, BODY UP
3766361C1	LIGHT, INDICATOR, GATE OPEN
3830798C1	16 WAY ERPM CONNECTOR TERMINAL (16-GUAGE)

Parts needed for Dump Box Indicator Lights

How to Test This Feature:

1. Set park brake.
2. Open the tailgate.
3. Verify that the input labeled TEM_Tail_Gate_Input_Active_State input is receiving the correct voltage (as programmed in the Diamond Logic® Builder software).
4. Verify that the Red “Gate Open” indicator light in the switch pack comes on.
5. Release park brake.
6. Verify that indicator light flashes and audible alarm sounds and works according to the set programmable parameters seen above.
7. Close tailgate.
8. Reset park brake.
9. Raise the body.
10. Verify that the input labeled TEM_Body_Up_Input_Active_State is receiving the correct voltage (as programmed in the Diamond Logic® Builder software).
11. Verify that the red “Body Up” indicator light in the switch pack comes on, and an audible alarm sounds.
12. Reset park brake.

Note: This feature uses body controller-based software controls which can be diagnosed with Navistar’s Diamond Logic® Builder software (see local dealer if not owned).

References:

Refer to the applicable International® Circuit Diagrams and Service Manuals

8. Power Features using Enhanced Remote Power Modules

8.1. 60ACE: BDY INTG, SWITCH DUAL OUTPUT 2-Position Latched Rocker, Backlit, with “ON” Indicator Mounted on Dash, for 1; Auxiliary Load 40-AMP Maximum; Power Available Only in “Ignition (IGN)” or “Accessory” Position; Controls Two Remote Power Module (ERPMS) Outputs (requires two ERPM outputs).

Feature Applicability to Vehicle Platforms:

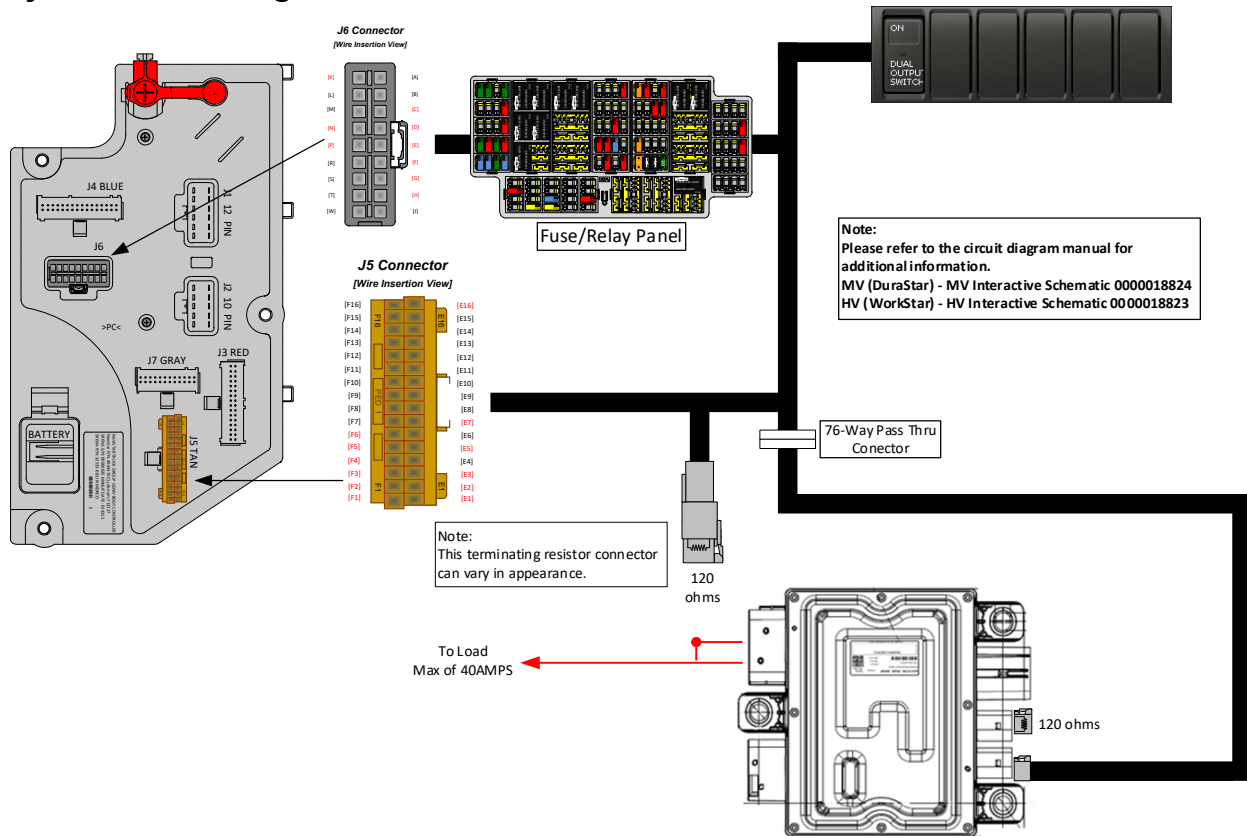
- Heavy Vocational (HV)

Extended Description: This feature provides one two-positioned latched rocker switch that controls one auxiliary load with a 40-AMP maximum. This feature was designed for owners who have a load that requires an ERPM output of greater than 20-AMPS. Two ERPM outputs are required, and power would only be available in IGN or accessory key-state.

Through programmable parameters, the amount of current desired to the two outputs can be adjusted. This allows the body builder to customize the amperage supplied to the ERPM output based on their specific needs.

Please use the Diamond Logic® Builder software to determine pin locations for ERPM inputs and outputs (refer to the CONNECTOR screen view) and to set programmable parameters (refer to the FEATURE screen view).

System Block Diagram:



Body Controller Software Feature Codes:

Note: 597795 - BCM PROG, ERPM1 Module enabler is required when using ERPM1

- 597803 - BCM PROG, DUAL OUTPUT AUX #1 ERPM with single latched switch.

Body Controller Software Feature Code Parameters:

Parameter	ID	Description	Default	Units	Min	Max	Step
TEM_Dual_Load Shed_Level	3351	Loadshed level parameter for TEM_Dual1_Switch	1	No Units	0	3	1
TEM_Dual1_ERPM_Output1_Fuse_Param	4095	This is the maximum current Dual 1 Output 1 is allowed to source before the virtual fusing turns the output off.	20	A	0	20	0.01
TEM_Dual1_ERPM_Output2_Fuse_Param	4096	This is the maximum current Dual 1 Output 2 is allowed to source before the virtual fusing turns the output off.	20	A	0	20	0.01
TEM_Dual1_ERPM_DC_Output1_Param	4097	This is the Duty cycle Dual 1 ERPM Output 1 Parameter	100	Percent	100	Percent	0.4
TEM_Dual1_ERPM_DC_Output2_Param	4098	TEM_Dual1_ERPM_DC_Output2_Parameter	100	Percent	100	Percent	0.4

Parameter Definitions:

- **TEM_Dual_Load Shed_Level** – This is the level at which the Outputs for Dual 1 will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Dual1_ERPM_Output 1_Fuse_Param** – This parameter sets the limit (in AMPS) of the current flowing from Output #1 of Dual 1. If the current exceeds this specified amount, the virtual fusing shuts the output off.
- **TEM_Dual1_ERPM_Output 2_Fuse_Param** – This parameter sets the limit (in AMPS) of the current flowing from Output #2 of Dual 1. If the current exceeds this specified amount, the virtual fusing shuts the output off.
- **TEM_Dual1_ERPM_DC_Output1_Param** – This sets the duty cycle for the ERPM output 1.
- **TEM_Dual2_ERPM_DC_Output1_Param** – This sets the duty cycle for the ERPM output 2.

Note/s About Possible Software Feature Conflicts:

597803 and 597795 cannot be used with 597201 or any other legacy RPM features.

Parts Associated with This Feature:

Please refer to **Parts Associated with ERPM Features:** in Section 5.

How to Test This Feature:

1. Depress the switch.
2. Verify that the desired voltage is being pulled from the ERPM outputs labeled DUAL_OUTPUT_SWITCH_Output1 and DUAL_OUTPUT_SWITCH_Output2.

Note: This feature uses body controller-based software controls which can be diagnosed with Navistar's Diamond Logic® Builder software (see local dealer if not owned).

References:

Refer to the applicable International® Circuit Diagrams and Service Manuals

8.2. 60ACG: BDY INTG, SWITCH, INTERLOCKED 2-Position Latched Rocker, Backlit, with "ON" Indicator Mounted on Dash for 1; Auxiliary Load 20-Ampere (AMP) Maximum; Output will disengage when Vehicle Exceeds 30-MPH, Programmable; Power Available

Only in “Ignition (IGN)” or “Accessory” Position (requires one Enhanced Remote Power Module (ERPM) output).

Feature Applicability to Vehicle Platforms:

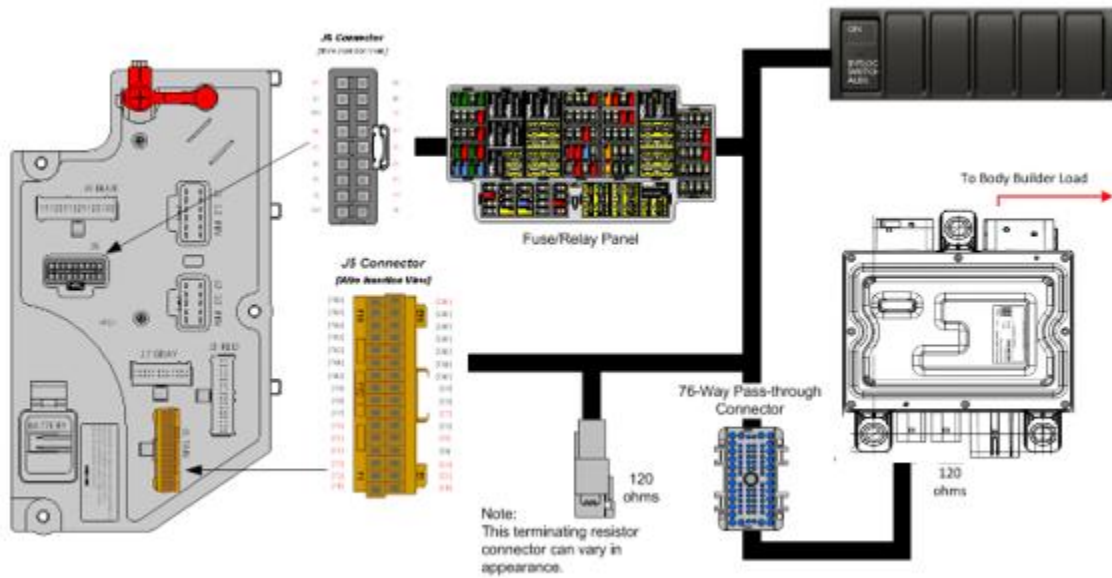
- Heavy Vocational (HV)

Extended Description: Feature 60ACG provides a 2-position latched rocker switch that controls one auxiliary load of 20-Amps maximum and requires one ERPM output. Output will be defaulted to turn off when vehicle speed reaches 30-MPH. The output will only be available in IGN or accessory key-state. This feature is used for applications such as a rear shining light. If the operator forgets to turn the light off before he drives away, the light will shut off when the driver hits 30-MPH.

The body builder can interlock the switch with certain programmable conditions. These conditions can be set as programmable parameters using the Diamond Logic® Builder software. These parameters are listed and explained below.

Please use the Diamond Logic® Builder software to determine pin locations for ERPM inputs and outputs (refer to the CONNECTOR screen view) and to set programmable parameters (refer to the FEATURE screen view).

System Block Diagram:



Body Controller Software Feature Codes:

Note: 597795 - BCM PROG, ERPM1 Module enabler is required when using ERPM1

- 597805 - BCM PROG, INTERLOCK AUX #1 ERPM

Body Controller Software Feature Code Parameters:

Parameter	ID	Description	Default	Units	Min	Max	Step
TEM_Aux1_Inte rlock_Latches_ Off	2006	If this is set, when the output is turned off due to an interlock, it will remain off until the switch is recycled.	OFF	On/Off	n/a	n/a	n/a
TEM_Aux1_Sp eed_Interlock_P aram	2007	The speed parameter for the TEM Aux #1 with Interlocks feature.	30	Mph	0	100	1
TEM_Aux1_Ge ar_Interlock_Pa ram	2008	The transmission gear parameter for the TEM Aux #1 with Interlocks feature (124 is park, 125 is neutral, 126 is first, etc., 251 is park). The default value is 125 (neutral).	125	Number	0	250	1
TEM_Aux1_w_I locks_20A_Out	4055	20A parameter for the ERPM TEM Single output with interlocks feature	20	A	0	20	0.08
TEM_Aux1_w_I locks_DC_Out_ Param	4056	DC parameter for the ERPM TEM Single output with interlocks feature	100	Percent	0	100	0.4
TEM_Aux1_Mis c_Interlock_Pa ram	2033	Miscellaneous or control parameter used for setting the interlock for the auxiliary 1 with interlocks.	10	List	n/a	n/a	n/a

TEM_Aux1_w_I nt_LoadShed_L evel	3345	Loadshed level parameter for TEM Aux1 with Interlocks	1	No Units	0	3	1
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Parameter Definitions:

- TEM_Aux1_Interlock_Latches_Off** – Normally, if the output is deactivated because the interlocking condition is not met, the output will re-activate as soon as the interlocking condition is re-established if the switch is still on. If this behavior is not desirable, the parameter TEM_Aux1_Interlock_Latches_Off parameter can be set. When it is set and the output is deactivated because the interlocking condition is not met, the output will not reactivate when the interlocking condition is re-established even if the switch is.
- TEM_Aux1_Speed_Interlock_Param** – If TEM_Aux1_Misc_Interlock_Param is set to 9 or 10, the speed-interlock parameter (TEM_Aux1_Speed_Interlock_Param) must also be set. This parameter must be set to the actual speed to use in the condition selected by TEM_Aux1_Misc_Interlock_Param (default unit for this parameter is MPH). The speed parameter is only used if TEM_Aux1_Misc_Interlock_Param is set to 9 or 10.
 Example: If you want the output to only turn on when the vehicle is traveling over 15 MPH, you would set TEM_Aux1_Misc_Interlock_Param to 9 and set TEM_Aux1_Speed_Interlock_Param to 15 MPH.
- TEM_Aux1_Gear_Interlock_Param** – If TEM_Aux1_Misc_Interlock_Param is set to 13 or 14 and the vehicle has an automatic transmission, the gear-interlock parameter (TEM_Aux1_Gear_Interlock_Param) must also be set. This parameter must be set to the transmission gear to use in the condition selected by TEM_Aux1_Misc_Interlock_Param. The transmission gear is set as follows:

Setting	Transmission Gear
125	Transmission in Neutral
126	Transmission is in the 1st forward gear
127	Transmission is in the 2nd forward gear
128	Transmission is in the 3rd forward gear
125 + x	Transmission is in the xth forward gear
124	Transmission is in the 1st reverse gear
123	Transmission is in the 2nd reverse gear
125 – y	Transmission is in the yth reverse gear

The transmission gear parameter is only used if TEM_Aux1_Misc_Interlock_Param is set to 13 or 14.

Example: For the output to only come on when the vehicle transmission is in a reverse gear, set TEM_Aux1_Misc_Interlock_Param to 10 and TEM_Aux1_Gear_Interlock_Param to 125.

- **TEM_Aux1_w_llocks_20A_Out_Param** – This parameter sets the limit (in AMPS) of the current flowing from the output. If the current exceeds this specified amount, the virtual fusing shuts the output off.
- **TEM_Aux1_Misc_Interlock_Param** – This parameter (TEM_Aux1_Misc_Interlock_Param) is the master parameter for this feature. The setting for this parameter selects the interlocking condition for the output. The following table indicates which interlocking condition corresponds to which setting for the parameter. To select the interlocking condition simply set the value of this parameter to the corresponding setting on the table.

Setting	Interlocking Condition
0	Apply no interlocks to this output
1	Activate this output when the park brake is set AND the switch is on
2	Activate this output when the park brake is not set AND the switch is on
3	Activate this output when a door is open AND the switch is on
4	Activate this output when all doors are closed AND the switch is on
5	Activate this output when the PTO is engaged AND the switch is on (Requires a PTO feature)
6	Activate this output when the PTO is not engaged AND the switch is on (Requires a PTO feature)
7	Activate this output when the engine is running AND the switch is on
8	Activate this output when the engine is not running AND the switch is on
9	Activate this output when the vehicle speed exceeds the value set in TEM_Aux_1_Speed_Interlock_Param AND the switch is on
10	Activate this output when the vehicle speed is less than the value set in TEM_Aux_1_Speed_Interlock_Param AND the switch is on
11	Activate this output when the vehicle is stopped AND the switch is on
12	Activate this output when the vehicle is moving AND the switch is on
13	Activate this output when the transmission gear is higher than TEM_Aux1_Gear_Interlock_Param AND the switch is on (Requires Automatic Transmission)
14	Activate this output when the transmission gear is lower than TEM_Aux1_Gear_Interlock_Param AND the switch is on (Requires Automatic Transmission)
15	Activate this output when the transmission is in neutral AND the switch is on (Requires Automatic Transmission)
16	Activate this output when the transmission is not in neutral AND the switch is on (Requires Automatic Transmission)

- **TEM_Aux1_w_Int_LoadShed_Level** – This is the level at which the Output for TEM Aux1 will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux1_w_llocks_DC_Out_Param** – This sets the duty cycle for the ERPM output.

Parts Associated with This Feature:

Please refer to **Parts Associated with ERPM Features:** in Section 5.

How to Test This Feature:

1. Depress switch.
2. Verify that the ERPM output labeled INTERLOCKED_SWITCH_AUX1_Output is obtaining the desired voltage (as programmed by the Diamond Logic® Builder software).
3. Verify the functionality of the 30 MPH interlock by violating the parameter (Diamond Logic® Builder software) and determine that the output shuts off.
4. Test all other interlocks by violating the programmable parameters (Diamond Logic® Builder software) to see if the output shuts off.

Note: This feature uses body controller-based software controls which can be diagnosed with Navistar’s Diamond Logic® Builder software (see local dealer if not owned).

References:

Refer to the applicable International® Circuit Diagrams and Service Manuals

- 8.3. 60ACH:** BDY: INTG, SWITCH, INTERLOCKED (2) 2-Position Latched Rockers, Backlit, with “ON” Indicator Mounted on Dash, for 2; Auxiliary Load each 20-AMP Maximum; Outputs will Disengage when Vehicle Exceeds 30-MPH, Programmable; Power Available Only in “IGN” or “Accessory” Position (requires two ERPM outputs).

Feature Applicability to Vehicle Platforms:

- Heavy Vocational (HV)

Extended Description: Feature 60ACH provides TWO 2-position Latched Rocker switches that control two auxiliary loads, each having a 20-Amp maximum and requiring a total of two ERPM outputs. Outputs are defaulted to disengage when vehicle speed reaches 30-MPH. The outputs will only be available in IGN or accessory key-state. This feature is used for applications such as a rear work or scene light. If the operator forgets to turn the light off before he drives away, the light will shut off when the driver hits 30-MPH.

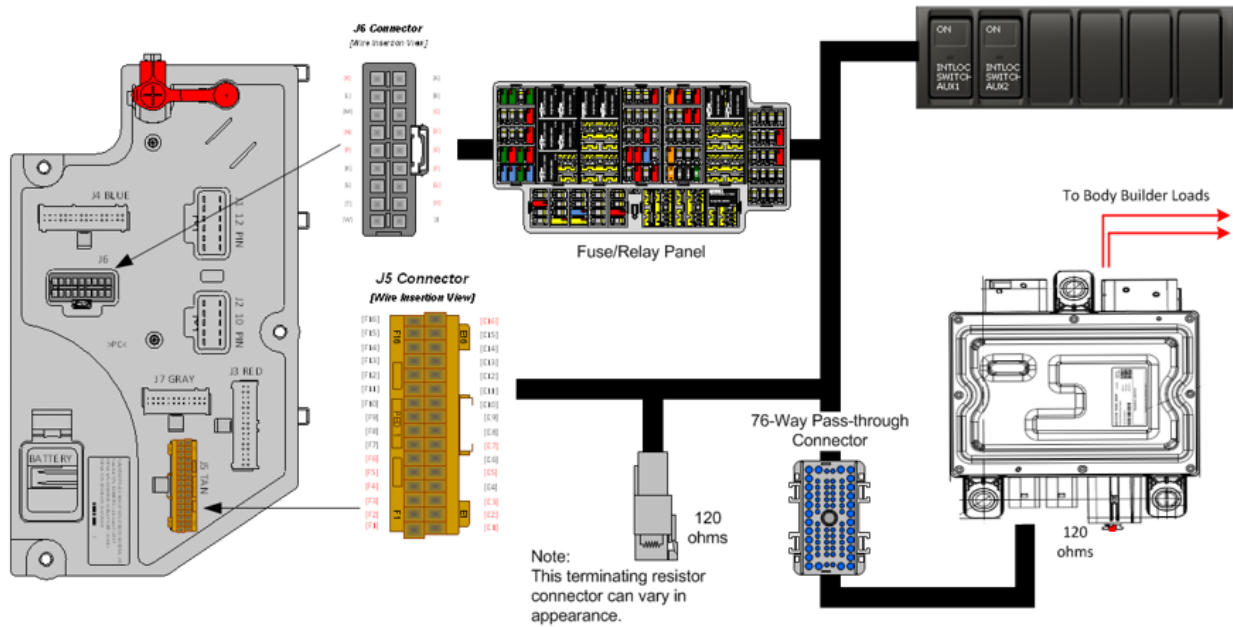
The body builder can interlock the switch with certain programmable conditions. These conditions can be set as programmable parameters using the Diamond Logic® Builder software. These parameters are listed and explained below.

This feature includes two copies of the functionality provided by 60ACG, e.g., two outputs with two switches. Each one of these outputs is the same as that provided by 60ACG. The two outputs in this feature are completely autonomous (independent of

each other). Each of the two outputs has its own set of five parameters as is mentioned in the description for 60ACG.

Please use the Diamond Logic® Builder software to determine pin locations for ERPM inputs and outputs (refer to the CONNECTOR screen view) and to set programmable parameters (refer to the FEATURE screen view).

System Block Diagram:



Body Controller Software Feature Codes:

Note: 597795 - BCM PROG, ERPM1 Module enabler is required when using ERPM1

- 597805 - BCM PROG, INTERLOCK AUX #1 ERPM
- 597806 - BCM PROG, INTERLOCK AUX #2 ERPM
 - Enhanced Remote Power Module required.
 - Can be installed individually.

Body Controller Software Feature Code Parameters:

Parameter	ID	Description	Default	Units	Min	Max	Step
597805 - BCM PROG, INTERLOCK AUX #1							
TEM_Aux1_Inte rlock_Latches_ Off	2006	If this is set, when the output is turned off due to an interlock, it will remain off until the switch is recycled.	OFF	On/Off	n/a	n/a	n/a
TEM_Aux1_Sp eed_Interlock_P aram	2007	The speed parameter for the TEM Aux #1 with Interlocks feature.	30	Mph	0	100	1
TEM_Aux1_Ge ar_Interlock_Pa ram	2008	The transmission gear parameter for the TEM Aux #1 with Interlocks feature (124 is park, 125 is neutral, 126 is first, etc., 251 is park). The default value is 125 (neutral).	125	Number	0	250	1
TEM_Aux1_w_l ocks_20A_Out	4055	20A parameter for the ERPM TEM Single output with interlocks feature	20	A	0	20	0.08

TEM_Aux1_w_I locks_DC_Out_ Param	4056	DC parameter for the ERPM TEM Single output with interlocks feature	100	Percent	0	100	0.4
TEM_Aux1_Mis c_Interlock_Par am	2033	Miscellaneous or control parameter used for setting the interlock for the auxiliary 1 with interlocks.	10	List	n/a	n/a	n/a
TEM_Aux1_w_I nt_LoadShed_L evel	3345	Loadshed level parameter for TEM Aux1 with Interlocks	1	No Units	0	3	1
597806 - BCM PROG, INTERLOCK AUX #2							
TEM_Aux2_Inte rlock_Latches_ Off	2010	If this is set, when the output is turned off due to an interlock, it will remain off until the switch is recycled.	OFF	On/Off	n/a	n/a	n/a
TEM_Aux2_Sp eed_Interlock_P aram	2011	The speed parameter for the TEM Aux #2 with Interlocks feature.	30	Mph	0	100	1
TEM_Aux2_Ge ar_Interlock_Pa ram	2012	The transmission gear parameter for the TEM Aux #2 with Interlocks feature (124 is park, 125 is neutral, 126 is first, etc., 251 is park). The default value is 125 (neutral).	125	Number	0	250	1
TEM_Aux2_Mis c_Interlock_Par am	2034	Miscellaneous or control parameter used for setting the interlock for the auxiliary 2 with interlocks.	10	List	n/a	n/a	n/a
TEM_Aux2_w_I nt_LoadShed_L evel	3346	Loadshed level parameter for TEM Aux2 with Interlocks	1	No Units	0	3	1
TEM_Aux1_w_I locks_20A_Out	4057	20A parameter for the ERPM TEM Single output with interlocks feature	20	A	0	20	0.08
TEM_Aux1_w_I locks_DC_Out_ Param	4058	DC parameter for the ERPM TEM Single output with interlocks feature	100	Percent	0	100	0.4

Parameter Definitions:

- **TEM_Aux1_Interlock_Latches_Off** – Normally, if the output is deactivated because the interlocking condition is not met, the output will re-activate as soon as the interlocking condition is re-established as long as the switch is still on. If this behavior is not desirable, the parameter TEM_Aux1_Interlock_Latches_Off parameter can be set. When it is set and the output is deactivated because the interlocking condition is not met, the output will not reactivate when the interlocking condition is re-established even if the switch is.
- **TEM_Aux1_Speed_Interlock_Param** – If TEM_Aux1_Misc_Interlock_Param is set to 9 or 10, the speed-interlock parameter (TEM_Aux1_Speed_Interlock_Param) must also be set. This parameter must be set to the actual speed to use in the condition selected by TEM_Aux1_Misc_Interlock_Param (default unit for this parameter is MPH). The speed parameter is only used if TEM_Aux1_Misc_Interlock_Param is set to 9 or 10.

Example: If you want the output to only come on when the vehicle is traveling over 15 MPH, you would set TEM_Aux1_Misc_Interlock_Param to 9 and set TEM_Aux1_Speed_Interlock_Param to 15 MPH.

- **TEM_Aux1_Gear_Interlock_Param** – If TEM_Aux1_Misc_Interlock_Param is set to 13 or 14 and the vehicle has an automatic transmission, the gear-interlock parameter (TEM_Aux1_Gear_Interlock_Param) must also be set. This parameter must be set to the transmission gear to use in the condition selected by TEM_Aux1_Misc_Interlock_Param. The transmission gear is set as follows:

Setting	Transmission Gear
125	Transmission in Neutral
126	Transmission is in the 1st forward gear
127	Transmission is in the 2nd forward gear
128	Transmission is in the 3rd forward gear
125 + x	Transmission is in the xth forward gear
124	Transmission is in the 1st reverse gear
123	Transmission is in the 2nd reverse gear
125 – y	Transmission is in the yth reverse gear

The transmission gear parameter is only used if TEM_Aux1_Misc_Interlock_Param is set to 13 or 14.

Example: For the output to only come on when the vehicle transmission is in a reverse gear, set TEM_Aux1_Misc_Interlock_Param to 10 and TEM_Aux1_Gear_Interlock_Param to 125.

- **TEM_Aux1_Misc_Interlock_Param** – This parameter (TEM_Aux1_Misc_Interlock_Param) is the master parameter for this feature. The setting for this parameter selects the interlocking condition for the output. The following table indicates which interlocking condition corresponds to which setting for the parameter. To select the interlocking condition simply set the value of this parameter to the corresponding setting on the table.

Setting	Interlocking Condition
0	Apply no interlocks to this output
1	Activate this output when the park brake is set AND the switch is on
2	Activate this output when the park brake is not set AND the switch is on
3	Activate this output when a door is open AND the switch is on
4	Activate this output when all doors are closed AND the switch is on
5	Activate this output when the PTO is engaged AND the switch is on (Requires a PTO feature)
6	Activate this output when the PTO is not engaged AND the switch is on (Requires a PTO feature)
7	Activate this output when the engine is running AND the switch is on
8	Activate this output when the engine is not running AND the switch is on
9	Activate this output when the vehicle speed exceeds the value set in TEM_Aux_1_Speed_Interlock_Param AND the switch is on
10	Activate this output when the vehicle speed is less than the value set in TEM_Aux_1_Speed_Interlock_Param AND the switch is on.
11	Activate this output when the vehicle is stopped AND the switch is on
12	Activate this output when the vehicle is moving AND the switch is on

13	Activate this output when the transmission gear is higher than TEM_Aux1_Gear_Interlock_Param AND the switch is on (Requires Automatic Transmission)
14	Activate this output when the transmission gear is lower than TEM_Aux1_Gear_Interlock_Param AND the switch is on (Requires Automatic Transmission)
15	Activate this output when the transmission is in neutral AND the switch is on (Requires Automatic Transmission)
16	Activate this output when the transmission is not in neutral AND the switch is on (Requires Automatic Transmission)

- **TEM_Aux1_w_Int_LoadShed_Level** – This is the level at which the Output for TEM Aux1 will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux2_Interlock_Latches_Off** – Normally, if the output is deactivated because the interlocking condition is not met, the output will re-activate as soon as the interlocking condition is re-established as long as the switch is still on. If this behavior is not desirable, the parameter TEM_Aux2_Interlock_Latches_Off parameter can be set. When it is set and the output is deactivated because the interlocking condition is not met, the output will not reactivate when the interlocking condition is re-established even if the switch is.
- **TEM_Aux2_Speed_Interlock_Param** – If TEM_Aux2_Misc_Interlock_Param is set to 9 or 10, the speed-interlock parameter (TEM_Aux2_Speed_Interlock_Param) must also be set. This parameter must be set to the actual speed to use in the condition selected by TEM_Aux2_Misc_Interlock_Param (default unit for this parameter is MPH). The speed parameter is only used if TEM_Aux2_Misc_Interlock_Param is set to 9 or 10.
Example: If you want the output to only come on when the vehicle is traveling over 15 MPH, you would set TEM_Aux2_Misc_Interlock_Param to 9 and set TEM_Aux2_Speed_Interlock_Param to 15 MPH.
- **TEM_Aux2_Gear_Interlock_Param** – If TEM_Aux2_Misc_Interlock_Param is set to 13 or 14 and the vehicle has an automatic transmission, the gear-interlock parameter (TEM_Aux2_Gear_Interlock_Param) must also be set. This parameter must be set to the transmission gear to use in the condition selected by TEM_Aux2_Misc_Interlock_Param. The transmission gear is set as follows:

Setting	Transmission Gear
125	Transmission in Neutral
126	Transmission is in the 1st forward gear
127	Transmission is in the 2nd forward gear
128	Transmission is in the 3rd forward gear
125 + x	Transmission is in the xth forward gear
124	Transmission is in the 1st reverse gear
123	Transmission is in the 2nd reverse gear
125 – y	Transmission is in the yth reverse gear

The transmission gear parameter is only used if TEM_Aux2_Misc_Interlock_Param is set to 13 or 14.

Example: For the output to only come on when the vehicle transmission is in a reverse gear, set TEM_Aux2_Misc_Interlock_Param to 10 and TEM_Aux2_Gear_Interlock_Param to 125.

- **TEM_Aux2_Misc_Interlock_Param** – This parameter (TEM_Aux2_Misc_Interlock_Param) is the master parameter for this feature. The setting for this parameter selects the interlocking condition for the output. The following table indicates which interlocking condition corresponds to which setting for the parameter. To select the interlocking condition simply set the value of this parameter to the corresponding setting on the table.

Setting	Interlocking Condition
0	Apply no interlocks to this output
1	Activate this output when the park brake is set AND the switch is on
2	Activate this output when the park brake is not set AND the switch is on
3	Activate this output when a door is open AND the switch is on
4	Activate this output when all doors are closed AND the switch is on
5	Activate this output when the PTO is engaged AND the switch is on (Requires a PTO feature)
6	Activate this output when the PTO is not engaged AND the switch is on (Requires a PTO feature)
7	Activate this output when the engine is running AND the switch is on
8	Activate this output when the engine is not running AND the switch is on
9	Activate this output when the vehicle speed exceeds the value set in TEM_Aux_1_Speed_Interlock_Param AND the switch is on
10	Activate this output when the vehicle speed is less than the value set in TEM_Aux_1_Speed_Interlock_Param AND the switch is on.
11	Activate this output when the vehicle is stopped AND the switch is on
12	Activate this output when the vehicle is moving AND the switch is on
13	Activate this output when the transmission gear is higher than TEM_Aux1_Gear_Interlock_Param AND the switch is on (Requires Automatic Transmission)
14	Activate this output when the transmission gear is lower than TEM_Aux1_Gear_Interlock_Param AND the switch is on (Requires Automatic Transmission)
15	Activate this output when the transmission is in neutral AND the switch is on (Requires Automatic Transmission)
16	Activate this output when the transmission is not in neutral AND the switch is on (Requires Automatic Transmission)

- **TEM_Aux2_w_Int_LoadShed_Level** – This is the level at which the Output for TEM Aux 2 will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux1_w_Ext_Sw_20A_Param** – This parameter is used to control the Current Command for Dual Aux1 20A Output.
- **TEM_Aux2_w_Ext_Sw_20A_Param** – This parameter is used to control the Current Command for Dual Aux2 20A.
- **TEM_Dual1_ERPM_DC_Output1_Param** – This sets the duty cycle command level1 for Dual Aux1 20A Duty cycle.
- **TEM_Dual2_ERPM_DC_Output1_Param** – This sets the duty cycle command level1 for Dual Aux1 20A Duty cycle.

Parts Associated with This Feature:

Please refer to **Parts Associated with ERPM Features:** in Section 5.

How to Test This Feature:

1. Depress first switch.
2. Verify that the ERPM output labeled INTERLOCKED_SWITCH_AUX1_Output is obtaining the desired voltage (as programmed by the Diamond Logic® Builder software).
3. Verify the functionality of the 30-MPH interlock by violating the parameter (Diamond Logic® Builder software) and determine that the output shuts off.
4. Test all other interlocks by violating the programmable parameters (Diamond Logic® Builder software) to see if the output shuts off.
5. Depress the second switch.
6. Verify that the ERPM output labeled INTERLOCKED_SWITCH_AUX2_Output is obtaining the desired voltage (as programmed by the Diamond Logic® Builder software).
7. Verify the functionality of the 30-MPH interlock by violating the parameter (Diamond Logic® Builder software) and determine that the output shuts off.
8. Test all other interlocks by violating the programmable parameters (Diamond Logic® Builder software) to see if the output shuts off.

Note: This feature uses body controller-based software controls which can be diagnosed with Navistar's Diamond Logic® Builder software (see local dealer if not owned).

References:

Refer to the applicable International® Circuit Diagrams and Service Manuals

8.4. 60ACS: BDY INTG, SWITCH MOMNTRY 3POS Rocker, Backlit, with “ON” Indicator Mounted on Dash, Latching Software, for 1 Auxiliary Load 20-amp. Maximum: Power Available Only in “Ignition” or “Accessory” Position, Output Also Controlled by a Customer Remote Mounted Switch (requires 1 Enhanced Remote Power Module input and 1 output).

Feature Applicability to Vehicle Platforms:

- Heavy Vocational (HV)

Extended Description: This feature provides a three-way switch control function for an ERPM output. An in-cab, 3-position momentary switch controls an ERPM output. In addition, a customer-supplied, remote-mounted momentary switch may be used to control the same ERPM output. This switch must be active at 12-volts and must use Ground (GND) to deactivate the output. Thus, a three-way switch control action may be performed with these two switch inputs. The ERPM output may be turned off or on from either switch; however, an off command from either switch takes precedence and will turn the ERPM output off. This feature is useful when a lamp or other load requires control from both in the cab and from a remote location on the body.

The in-cab switch provides a green lamp in the top section of the switch to indicate when the ERPM output is on. The ERPM provides a 12-Volt output that will source up to 20 Amps. The current output level may be limited through programmable parameters between .1 and 20-Amps in .1-Amp increments. This virtual fusing level is controlled in software and mimics the performance of an SAE Type 2 or 3 circuit breaker.

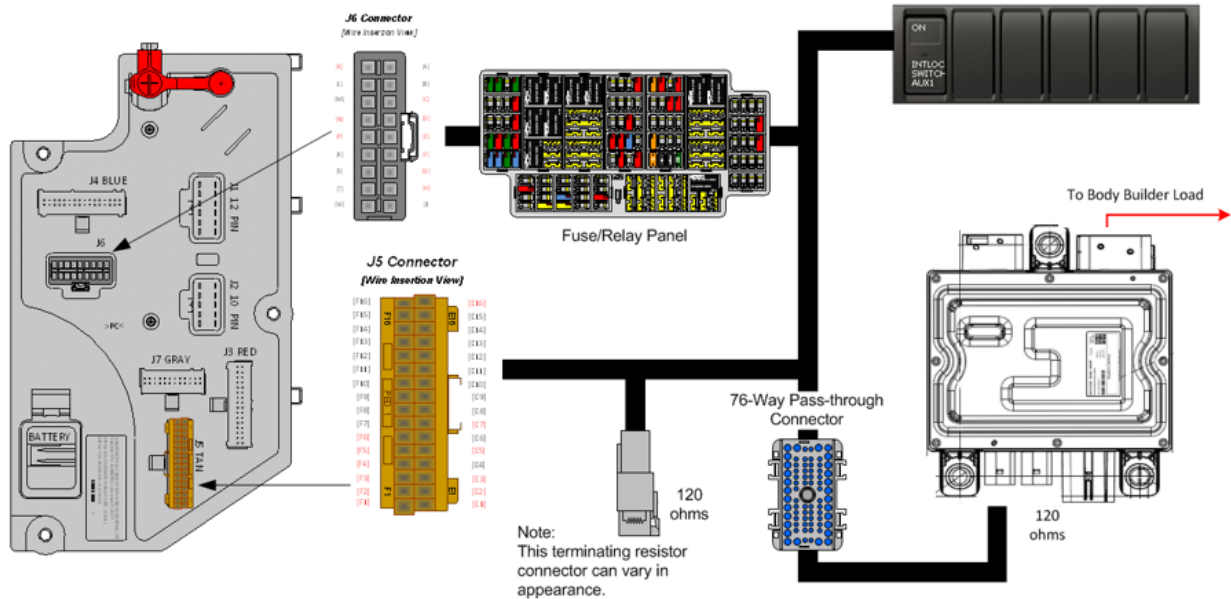
The ERPM output may be activated with the in-cab switch provided that the IGN key is in the accessory or IGN position. The ERPM output may also be activated with the remote switch input with IGN key off or on. It is important to turn off ERPM outputs that have been enabled remotely before leaving a parked vehicle with the IGN key off. Otherwise, the system will remain active and drain the batteries.

The feature can be installed alone or in conjunction with other RPM features.

When ordering 60ACS, include feature 60AEA, 60AEB, 60ADL, 60ADM, 60ADP, 60ADR, 60ADS or 60ADZ. 60ACS uses a single momentary switch in place of one of the latching switches that is provided with the above features. For example, instead of the six latching switches that are provided with 60ADZ, a vehicle with 60ACS will have a switch pack of five latching switches and one momentary switch.

Please use the Diamond Logic® Builder software to determine pin locations for ERPM inputs and outputs (refer to the CONNECTOR screen view) and to set programmable parameters (refer to the FEATURE screen view).

System Block Diagram:



Body Controller Software Feature Codes:

Note: 597795 - BCM PROG, ERPM1 Module enabler is required when using ERPM1

- 597807 - BCM PROG, DUAL CONTROL AUX #1 ERPM SWITCH
 - Enhanced Remote Power Module required (1 output, 1 input)

Body Controller Software Feature Code Parameters:

Parameter	ID	Description	Default	Units	Min	Max	Step
TEM_Aux1_w_Ext_Switch_Init_State	2032	This programmable parameter sets the initial state of ERPM channel used with TEM Auxiliary with external switch #1	OFF	No Units	N/A	N/A	N/A
TEM_Aux1_Dual_Contrl_Loadshed_Level	3352	This is the level at which the TEM AUX1 Outputs will load shed.	1	No Units	0	3	1
TEM_Aux1_w_Ext_Switch_20A_Param	4052	Used to control the Current Command for Dual Aux1 20A Output	20	Amps	0	20	0.08
TEM_Aux1_w_Ext_Switch_DC_Param	4053	Duty Cycle Command level for Dual Aux1 20A Duty cycle	100	Percent	0	100	0.2

Parameter Definitions:

- **TEM_Aux1_w_Ext_Switch_Init_State** – This parameter determines the initial state of TEM_Aux1. The Default setting is OFF or zero; meaning output will be OFF at ignition key-on. When the box is checked, the value is set to ON or ONE; the output will be ON at ignition key-on.

- **TEM_Aux1_Dual_Contrl_Loadshed_Level** – This is the level at which the TEM_Aux1 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux1_w_Ext_Sw_20A_Param** – This parameter is used to control the Current Command for Dual Aux2 20A.
- **TEM_Aux1_ERPM_DC_Output1_Param** – This sets the duty cycle command level1 for Dual Aux1 20A Duty cycle.

Parts Associated with This Feature:

Please refer to **Parts Associated with ERPM Features:** in Section 5.

How to Test This Feature:

1. This feature allows the customer the ability to activate the output when the IGN key is turned from OFF to ACCESSORY or IGN. This functionality is obtained by utilizing Diamond Logic Builder software turning programmable parameters TEM_Aux1_w_Ext_Switch_Init_State ON.
2. Activate the first remote Body Builder installed switch to 12 volts by using a momentary switch action.
3. Verify that the ERPM output labeled 3POS_SWITCH_AUX1_Output is providing the battery volts at rated current levels (as programmed in Diamond Logic® Builder).
4. Verify that the green switch indicator light comes on.
5. Verify that the ERPM input labeled 3POS_SWITCH_AUX1_Input is receiving battery volts from the customer-mounted switch (as programmed in Diamond Logic® Builder).
6. Deactivate the first remote Body Builder installed switch by providing a momentary switch action to GND.
7. Verify that the ERPM output goes OFF.
8. Activate the in-cab switch.
9. Verify that the ERPM output labeled 3POS_SWITCH_AUX1_Output is providing the battery volts (as programmed in Diamond Logic® Builder).
10. Verify that the green switch indicator light comes on.
11. Deactivate the in-cab switch.

Note: This feature uses body controller-based software controls which can be diagnosed with Navistar’s Diamond Logic® Builder software (see local dealer if not owned).

References:

Refer to the applicable International® Circuit Diagrams and Service Manuals

8.5. 60ACT: BDY INTG, SWITCH MOMNTRY 3 POS Rocker, Backlit, with "ON" Indicator Mounted on Dash, Latching Software, for 2; Auxiliary Load 20 amp. Maximum: Power Available Only in "Ignition" or "Accessory" Position, Output Also Controlled by a Customer Remote Mounted Switch (requires 2 Remote Power Module inputs & 2 outputs).

Feature Applicability to Vehicle Platforms:

- Heavy Vocational (HV)

Extended Description: This feature provides three-way switch control function for two ERPM outputs. Each ERPM output is controlled by an in-cab, 3-position momentary switch and a 3-position momentary Body Builder-installed, remote-mounted switch. These customer-installed, remote-mounted switches must be active at 12-volts and must use GND to deactivate the output. Each in-cab, 3-position momentary switch controls an ERPM output. In addition, each customer-supplied, remote-mounted momentary switch may be used to control the respective ERPM outputs. Thus, three-way switch control action may be performed. The ERPM outputs may be turned off or on from either the respective in-cab switch or the respective Body Builder switch; however, an off command from either switch takes precedence and will turn the ERPM output off. This feature is useful when a lamp or other load requires control from both in the cab and from a remote location on the body.

The in-cab switches provide green lamps in the top section of the switches to indicate when the ERPM outputs are on. The ERPM provides 12-Volt outputs that will source up to 20-Amps. The output current level may be limited through programmable parameters between .1 and 20-Amps in .1-Amp increments. This virtual fusing level is controlled in software and mimics the performance of an SAE Type 2 or 3 circuit breaker.

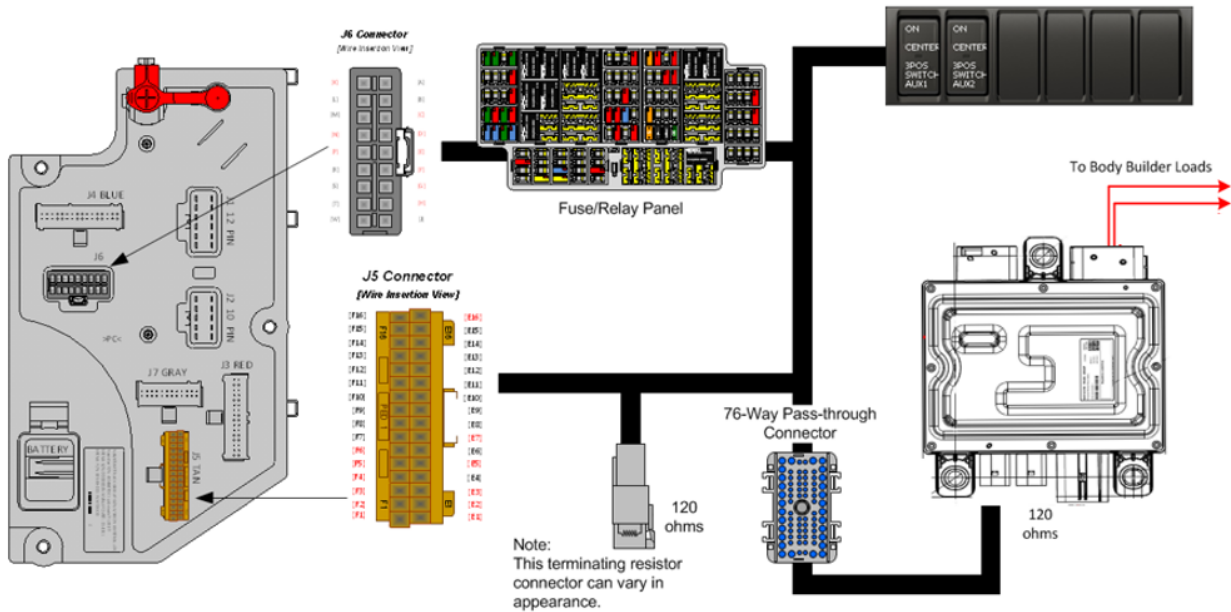
The ERPM outputs may be activated with the respective in-cab switches provided that the IGN key is in the accessory or IGN position. The ERPM outputs may also be activated with the remote switch inputs with IGN key off or on. It is important to turn off ERPM outputs that have been enabled remotely before leaving a parked vehicle with the IGN key off. Otherwise, the system will remain active and drain the batteries.

The feature can be installed alone or in conjunction with other RPM features.

When ordering 60ACT, include 60AEA, 60AEB, 60ADL, 60ADM, 60ADP, 60ADR, 60ADS or 60ADZ. 60ACT uses two momentary switches in place of two of the latching switches that are provided with the above features. For example, instead of the six latching switches that are provided with 60ADZ, a vehicle with 60ACT will have a switch pack of four latching switches and two momentary switches.

Please use the Diamond Logic® Builder software to determine pin locations for ERPM inputs and outputs (refer to the CONNECTOR screen view) and to set programmable parameters (refer to the FEATURE screen view).

System Block Diagram:



Body Controller Software Feature Codes:

Note: 597795 - BCM PROG, ERPM1 Module enabler is required when using ERPM1

- 595808 - BCM PROG, DUAL CONTROL AUX #2 ERPM SWITCHES
 - Enhanced Remote Power Module required (2 outputs, 2 inputs)

Body Controller Software Feature Code Parameters:

Parameter	ID	Description	Default	Units	Min	Max	Step
TEM_Aux1_w_Ext_Switch_Init_State	2032	This programmable parameter sets the initial state of ERPM channel used with TEM Auxiliary with external switch #1	OFF	No Units	N/A	N/A	N/A
TEM_Aux2_w_Ext_Switch_Init_State	2142	This programmable parameter sets the initial state of ERPM channel used with TEM Auxiliary with external switch #2	OFF	No Units	N/A	N/A	N/A
TEM_Aux1_Dual_Control_Loadshed_Level	3352	This is the level at which the TEM AUX1 Outputs will load shed.	1	No Units	0	3	1
TEM_Aux2_Dual_Control_Loadshed_Level	3353	This is the level at which the TEM AUX2 Outputs will load shed.	1	No Units	0	3	1
TEM_Aux1_w_Ext_Switch_20A_Param	4052	Used to control the Current Command for Dual Aux1 20A Output	20	Amps	0	20	.08

TEM_Aux1_w_Ext_Sw_DC_Param	4053	DC Command level1 for Dual Aux1 20A Duty cycle	100	r	0	100	.4
TEM_Aux2_w_Ext_Sw_20A_Param	4059	Used to control the Current Command for Dual Aux2 20A Output	20	Amps	0	20	.08
TEM_Aux2_w_Ext_Sw_DC_Param	4060	DC Command level1 for Dual Aux2 20A Duty cycle	100	r	0	100	.4

Parameter Definitions:

- **TEM_Aux1_w_Ext_Switch_Init_State** – This parameter determines the initial state of TEM_Aux1. The Default setting is OFF or zero; meaning output will be OFF at ignition key-on. When the box is checked, the value is set to ON or ONE; the output will be ON at ignition key-on.
- **TEM_Aux1_Dual_Contrl_Loadshed_Level** – This is the level at which the TEM_Aux1 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux1_w_Ext_Sw_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from TEM_Aux1. If the current exceeds this specified amount, the virtual fusing shuts the output off.
- **TEM_Aux1_w_Ext_Sw_DC_Output1_Param** – This sets the duty cycle command level1 for Dual Aux1 20A Duty cycle.
- **TEM_Aux2_w_Ext_Switch_Init_State** – This parameter determines the initial state of TEM_Aux2. The Default setting is OFF or zero; meaning output will be OFF at ignition key-on. When the box is checked, the value is set to ON or ONE; the output will be ON at ignition key-on.
- **TEM_Aux2_Dual_Contrl_Loadshed_Level** – This is the level at which the TEM_Aux2 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux2_w_Ext_Sw_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from TEM_Aux2. If the current exceeds this specified amount, the virtual fusing shuts the output off.
- **TEM_Aux2_w_Ext_Sw_DC_Param** – This sets the duty cycle command level1 for Dual Aux1 20A Duty cycle.

Parts Associated with This Feature:

Please refer to **Parts Associated with ERPM Features:** in Section 5.

How to Test This Feature:

1. This feature allows the customer the ability to activate the output when the IGN key is turned from off to accessory or IGN. This functionality is obtained by utilizing Diamond Logic Builder software turning programmable parameters (TEM_Aux1_w_Ext_Switch_Init_State and TEM_Aux2_w_Ext_Switch_Init_State) on.
2. Activate the first remote Body Builder installed switch to 12 volts by using a momentary switch action.
3. Verify that the ERPM output labeled 3POS_SWITCH_AUX1_Output is providing the battery volts at rated current levels (as programmed in Diamond Logic® Builder).
4. Verify that the green switch indicator light comes on.
5. Verify that the ERPM input labeled 3POS_SWITCH_AUX1_Input is receiving battery volts from the customer-mounted switch (as programmed in Diamond Logic® Builder).
6. Deactivate the first remote Body Builder installed switch by providing a momentary switch action to GND.
7. Verify that the ERPM output goes OFF.
8. Activate the applicable in-cab switch.
9. Verify that the ERPM output labeled 3POS_SWITCH_AUX1_Output is providing the battery volts (as programmed in Diamond Logic® Builder).
10. Verify that the green switch indicator light comes on.
11. Deactivate the applicable in-cab switch.
12. Activate the second remote Body Builder installed switch to 12 volts by using a momentary switch action.
13. Verify that the ERPM output labeled 3POS_SWITCH_AUX2_Output is providing the battery volts at rated current levels (as programmed in Diamond Logic® Builder).
14. Verify that the green switch indicator light comes on.
15. Verify that the ERPM input labeled 3POS_SWITCH_AUX2_Input is receiving battery volts from the customer-mounted switch (as programmed in Diamond Logic® Builder).
16. Deactivate the second remote Body Builder installed switch by providing a momentary switch action to GND.
17. Verify that the ERPM output goes OFF.
18. Activate the second in-cab switch.
19. Verify that the ERPM output labeled 3POS_SWITCH_AUX2_Output provides the battery volts (as programmed in Diamond Logic® Builder).
20. Verify that the green switch indicator light comes on.
21. Deactivate the second in-cab switch.

Note: This feature uses body controller-based software controls which can be diagnosed with Navistar's Diamond Logic® Builder software (see local dealer if not owned).

References:

Refer to the applicable International® Circuit Diagrams and Service Manuals

8.6. 60ACU: BDY INTG, SWITCH MOMNTRY 3-POS (3) Rocker, Backlit, with “ON” Indicator Mounted on Dash, Latching Software, for 3; Auxiliary Load 20-AMP Maximum; Power Available Only in “IGN” or “Accessory” Position, Output Also Controlled by a Customer Remote-Mounted Switch (requires three ERPM inputs and three outputs).

Feature Applicability to Vehicle Platforms:

- Heavy Vocational (HV)

Extended Description: This feature provides three-way switch control function for three ERPM outputs. Each ERPM output is controlled by an in-cab, 3-position momentary switch and a 3-position momentary Body Builder-installed, remote-mounted switch. These customer-installed, remote-mounted switches must be active at 12-volts and must use GND to deactivate the output. Each in-cab, 3-position momentary switch controls an ERPM output. In addition, each customer-supplied, remote-mounted momentary switch may be used to control the respective ERPM outputs. Thus, three-way switch control action may be performed. The ERPM outputs may be turned off or on from either the respective in-cab switch or the respective Body Builder switch; however, an off command from either switch takes precedence and will turn the ERPM output off. This feature is useful when a lamp or other load requires control from both in the cab and from a remote location on the body.

The in-cab switches provide green lamps in the top section of the switches to indicate when the ERPM outputs are on. The ERPM provides 12-Volt outputs that will source up to 20-Amps. The output current level may be limited through programmable parameters between .1 and 20-Amps in .1-Amp increments. This virtual fusing level is controlled in software and mimics the performance of an SAE Type 2 or 3 circuit breaker.

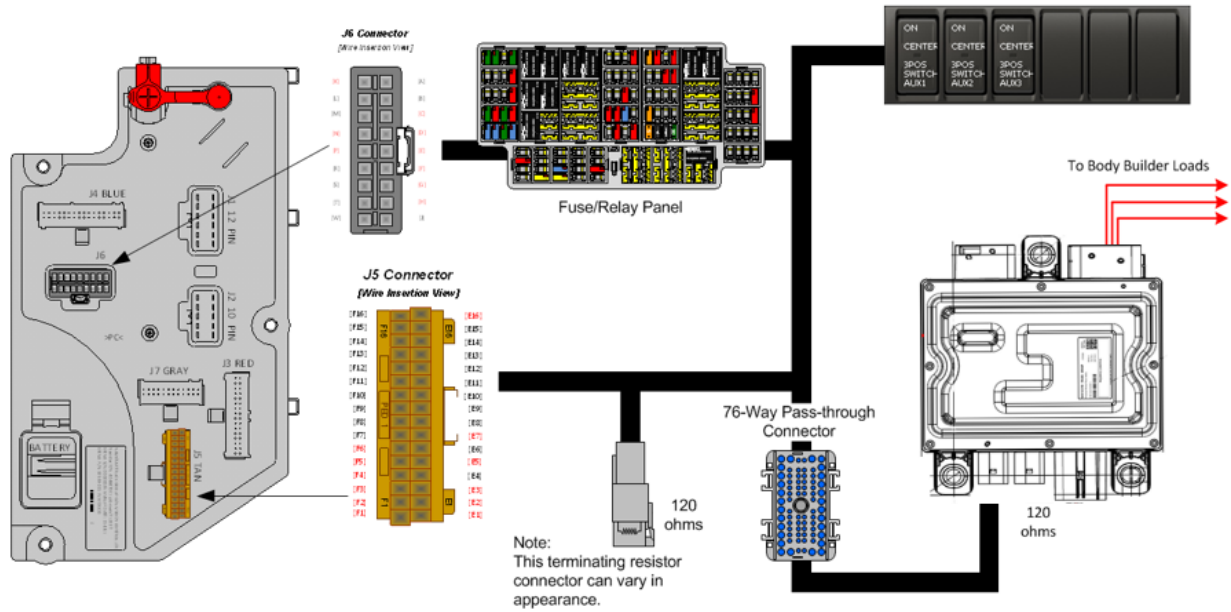
The ERPM outputs may be activated with the respective in-cab switches provided that the IGN key is in the accessory or IGN position. The ERPM outputs may also be activated with the remote switch inputs with IGN key off or on. It is important to turn off ERPM outputs that have been enabled remotely before leaving a parked vehicle with the IGN key off. Otherwise, the system will remain active and drain the batteries.

The feature can be installed alone or in conjunction with other RPM features.

When ordering 60ACU, include 60AEA, 60AEB, 60ADL, 60ADM, 60ADP, 60ADR, 60ADS or 60ADZ. 60ACU uses three momentary switches in place of three of the latching switches that are provided with the above features. For example, instead of the six latching switches that are provided with 60ADZ, a vehicle with 60ACU will have a switch pack of three latching switches and three momentary switches.

Please use the Diamond Logic® Builder software to determine pin locations for ERPM inputs and outputs (refer to the CONNECTOR screen view) and to set programmable parameters (refer to the FEATURE screen view).

System Block Diagram:



Body Controller Software Feature Codes:

Note: 597795 - BCM PROG, ERPM1 Module enabler is required when using ERPM1

- 595809 - BCM PROG, DUAL CONTROL AUX #3 ERPM SWITCHES
 - Enhanced Remote Power Module required (3 outputs, 3 inputs)

Body Controller Software Feature Code Parameters:

Parameter	ID	Description	Default	Units	Min	Max	Step
TEM_Aux1_w_Ext_Switch_Init_State	2032	This programmable parameter sets the initial state of ERPM channel used with TEM Auxiliary with external switch #1	OFF	No Units	N/A	N/A	N/A
TEM_Aux2_w_Ext_Switch_Init_State	2142	This programmable parameter sets the initial state of ERPM channel used with TEM Auxiliary with external switch #2	OFF	No Units	N/A	N/A	N/A
TEM_Aux3_w_Ext_Switch_Init_State	2143	This programmable parameter sets the initial state of ERPM channel used with TEM Auxiliary with external switch #3	OFF	No Units	N/A	N/A	N/A
TEM_Aux1_Dual_Contrl_Loadshed_Level	3352	This is the level at which the TEM AUX1 Outputs will load shed.	1	No Units	0	3	1
TEM_Aux2_Dual_Contrl_Loadshed_Level	3353	This is the level at which the TEM AUX2 Outputs will load shed.	1	No Units	0	3	1
TEM_Aux3_Dual_Contrl_Loadshed_Level	3354	This is the level at which the TEM AUX3 Outputs will load shed.	1	No Units	0	3	1
TEM_Aux1_w_Ext_Switch_20A_Param	4052	Used to control the Current Command for Dual Aux1 20A Output					
TEM_Aux1_w_Ext_Switch_DC_Param	4053	DC Command level1 for Dual Aux1 20A Duty cycle	100	Percent	0	100	.4
TEM_Aux2_w_Ext_Switch_20A_Param	4059	Used to control the Current Command for Dual Aux2 20A Output	20	Amps	0	20	.08
TEM_Aux2_w_Ext_Switch_DC_Param	4060	DC Command level1 for Dual Aux2 20A Duty cycle	100	Percent	0	100	.4
TEM_Aux3_w_Ext_Switch_20A_Param	4061	Used to control the Current Command for Dual Aux3 20A Output	20	Amps	0	20	.08
TEM_Aux3_w_Ext_Switch_DC_Param	4062	DC Command level1 for Dual Aux3 20A Duty cycle	100	Percent	0	100	.4

Parameter Definitions:

- **TEM_Aux1_w_Ext_Switch_Init_State** – This parameter determines the initial state of TEM_Aux1. The Default setting is OFF or zero; meaning output will be OFF at ignition key-on. When the box is checked, the value is set to ON or ONE; the output will be ON at ignition key-on.
- **TEM_Aux1_Dual_Contrl_Loadshed_Level** – This is the level at which the TEM_Aux1 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).

- **TEM_Aux1_w_Ext_Sw_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from TEM_Aux1. If the current exceeds this specified amount, the virtual fusing shuts the output off.
- **TEM_Aux1_w_Ext_Sw_DC_Output1_Param** – This sets the duty cycle command level1 for Dual Aux1 20A Duty cycle.
- **TEM_Aux2_w_Ext_Switch_Init_State** – This parameter determines the initial state of TEM_Aux2. The Default setting is OFF or zero; meaning output will be OFF at ignition key-on. When the box is checked, the value is set to ON or ONE; the output will be ON at ignition key-on.
- **TEM_Aux2_Dual_Contrl_Loadshed_Level** – This is the level at which the TEM_Aux2 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux2_w_Ext_Sw_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from TEM_Aux2. If the current exceeds this specified amount, the virtual fusing shuts the output off
- **TEM_Aux2_w_Ext_Sw_DC_Param** – This sets the duty cycle command level1 for Dual Aux1 20A Duty cycle.
- **TEM_Aux3_w_Ext_Switch_Init_State** – This parameter determines the initial state of TEM_Aux3. The Default setting is OFF or zero; meaning output will be OFF at ignition key-on. When the box is checked, the value is set to ON or ONE; the output will be ON at ignition key-on.
- **TEM_Aux2_Dual_Contrl_Loadshed_Level** – This is the level at which the TEM_Aux2 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux3_w_Ext_Sw_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from TEM_Aux2. If the current exceeds this specified amount, the virtual fusing shuts the output off
- **TEM_Aux3_w_Ext_Sw_DC_Param** – This sets the duty cycle command level1 for Dual Aux1 20A Duty cycle.
- **TEM_Aux3_Dual_Contrl_Loadshed_Level** – This is the level at which the TEM_Aux3 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).

Parts Associated with This Feature:

Please refer to **Parts Associated with ERPM Features:** in Section 5.

How to Test This Feature:

1. This feature allows the customer the ability to activate the output when the IGN key is turned from off to accessory or IGN. This functionality is obtained by utilizing Diamond Logic Builder software turning programmable parameters (TEM_Aux1_w_Ext_Switch_Init_State, TEM_Aux2_w_Ext_Switch_Init_State and TEM_Aux3_w_Ext_Switch_Init_State) on.
2. Activate the first remote Body Builder installed switch to 12 volts by using a momentary switch action.
3. Verify that the ERPM output labeled 3POS_SWITCH_AUX1_Output is providing the battery volts at rated current levels (as programmed in Diamond Logic® Builder).
4. Verify that the green switch indicator light comes on.
5. Verify that the ERPM input labeled 3POS_SWITCH_AUX1_Input is receiving battery volts from the customer-mounted switch (as programmed in Diamond Logic® Builder).
6. Deactivate the first remote Body Builder installed switch by providing a momentary switch action to GND.
7. Verify that the ERPM output goes OFF.
8. Activate the applicable in-cab switch.
9. Verify that the ERPM output labeled 3POS_SWITCH_AUX1_Output is providing the battery volts (as programmed in Diamond Logic® Builder).
10. Verify that the green switch indicator light comes on.
11. Deactivate the applicable in-cab switch.
12. Activate the second remote Body Builder installed switch to 12 volts by using a momentary switch action.
13. Verify that the ERPM output labeled 3POS_SWITCH_AUX2_Output is providing the battery volts at rated current levels (as programmed in Diamond Logic® Builder).
14. Verify that the green switch indicator light comes on.
15. Verify that the ERPM input labeled 3POS_SWITCH_AUX2_Input is receiving battery volts from the customer-mounted switch (as programmed in Diamond Logic® Builder).
16. Deactivate the second remote Body Builder installed switch by providing a momentary switch action to GND.
17. Verify that the ERPM output goes OFF.
18. Activate the second in-cab switch.
19. Verify that the ERPM output labeled 3POS_SWITCH_AUX2_Output provides the battery volts (as programmed in Diamond Logic® Builder).
20. Verify that the green switch indicator light comes on.
21. Deactivate the second in-cab switch.
22. Activate the third remote Body Builder installed switch to 12 volts by using a momentary switch action.
23. Verify that the ERPM output labeled 3POS_SWITCH_AUX3_Output is providing the battery volts at rated current levels (as programmed in Diamond Logic® Builder).
24. Verify that the green switch indicator light comes on.
25. Verify that the ERPM input labeled 3POS_SWITCH_AUX3_Input is receiving battery volts from the customer-mounted switch (as programmed in Diamond Logic® Builder).

26. Deactivate the third remote Body Builder installed switch by providing a momentary switch action to GND.
27. Verify that the ERPM output goes OFF.
28. Activate the third in-cab switch.
29. Verify that the ERPM output labeled 3POS_SWITCH_AUX3_Output is providing the battery volts (as programmed in Diamond Logic® Builder).
30. Verify that the green switch indicator light comes on.
31. Deactivate the third in-cab switch.

Note: This feature uses body controller-based software controls which can be diagnosed with Navistar's Diamond Logic® Builder software (see local dealer if not owned).

References:

Refer to the applicable International® Circuit Diagrams and Service Manuals

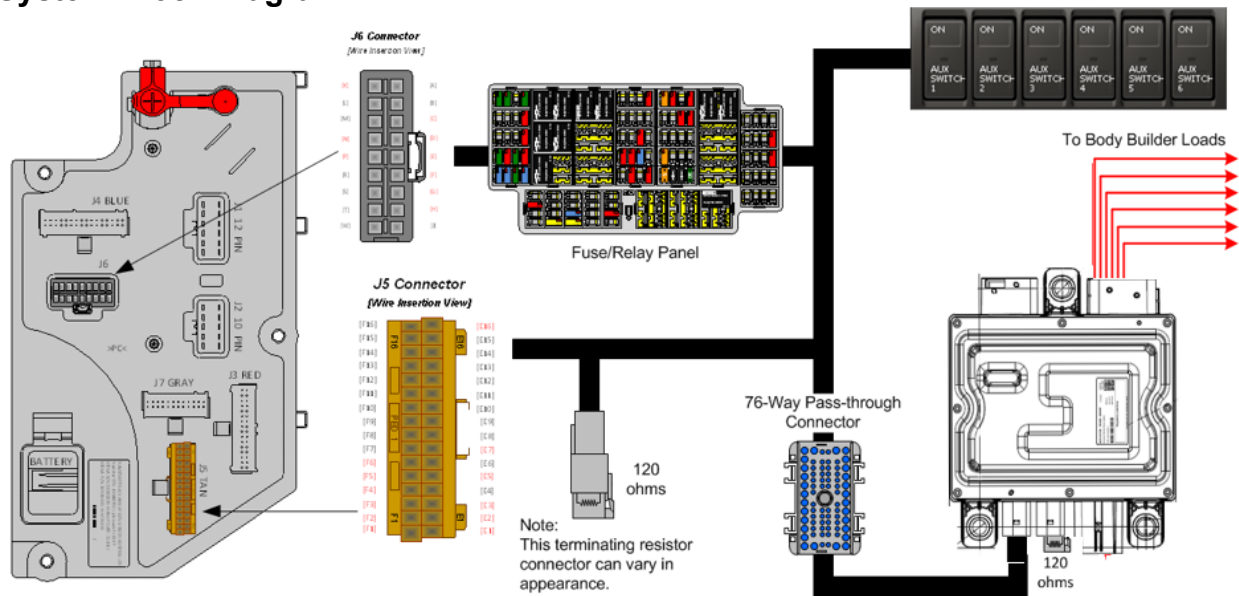
8.7. 60ADB: BDY INTG, SWITCH MOMNTRY 3POS (5) Rocker, Backlit, with "ON" Indicator Mounted on Dash, Latching Software, for 5; Auxiliary Load 20 amp. Maximum: Power Available Only in "Ignition" or "Accessory" Position, Output Also Controlled by a Customer Remote Mounted Switch (requires 5 Remote Power Module inputs & 5 outputs)

Feature Applicability to Vehicle Platforms:

- Heavy Vocational (HV)

Extended Description: Feature 60ADB includes one ERPM with (5) momentary switches, Backlit, with "ON" Indicator Mounted on Dash, Latching Software, for 5; Auxiliary Load 20 amp. Maximum: Power Available Only in "Ignition" or "Accessory" Position, Output Also Controlled by a Customer Remote Mounted Switch (requires 5 Remote Power Module inputs & 5 outputs)

System Block Diagram:



Body Controller Software Feature Codes:

Note: 597795 - BCM PROG, ERPM1 Module enabler is required when using ERPM1
597817 BCM PROG, AUXILIARY LOAD ERPM 5 Momentary Switch

Body Controller Software Feature Code Parameters:

Parameter	ID	Description	Default	Units	Min	Max	Step
TEM_Aux1_w_Ext_Switch_Init_State	2032	This programmable parameter sets the initial state of ERPM channel used with TEM Auxiliary with external switch #1	OFF	No Units	N/A	N/A	N/A
TEM_Aux2_w_Ext_Switch_Init_State	2142	This programmable parameter sets the initial state of ERPM channel used with TEM Auxiliary with external switch #2	OFF	No Units	N/A	N/A	N/A
TEM_Aux3_w_Ext_Switch_Init_State	2143	This programmable parameter sets the initial state of ERPM channel used with TEM Auxiliary with external switch #3	OFF	No Units	N/A	N/A	N/A
TEM_Aux1_Dual_Contrl_Loadshed_Level	3352	This is the level at which the TEM AUX1 Outputs will load shed.	1	No Units	0	3	1
TEM_Aux2_Dual_Contrl_Loadshed_Level	3353	This is the level at which the TEM AUX2 Outputs will load shed.	1	No Units	0	3	1
TEM_Aux3_Dual_Contrl_Loadshed_Level	3354	This is the level at which the TEM AUX3 Outputs will load shed.	1	No Units	0	3	1
TEM_Aux4_Dual_Contrl_Loadshed_Level	3464	This is the level at which the TEM AUX4 Outputs will load shed.	1	No Units	0	3	1
TEM_Aux5_Dual_Contrl_Loadshed_Level	3465	This is the level at which the TEM AUX5 Outputs will load shed.	1	No Units	0	3	1
TEM_Aux1_w_Ext_Sw_20A_Param	4052	Used to control the Current Command for Dual Aux1 20A Output	20	Amps	0	20	.08
TEM_Aux1_w_Ext_Sw_DC_Param	4053	DC Command level1 for Dual Aux1 20A Duty cycle	100	Percent	0	100	.4
TEM_Aux2_w_Ext_Sw_20A_Param	4059	Used to control the Current Command for Dual Aux2 20A Output	20	Amps	0	20	.08
TEM_Aux2_w_Ext_Sw_DC_Param	4060	DC Command level1 for Dual Aux2 20A Duty cycle	100	Percent	0	100	.4
TEM_Aux3_w_Ext_Sw_20A_Param	4061	Used to control the Current Command for Dual Aux3 20A Output	20	Amps	0	20	.08
TEM_Aux3_w_Ext_Sw_DC_Param	4062	DC Command level1 for Dual Aux3 20A Duty cycle	100	Percent	0	100	.4
TEM_Aux4_w_Ext_Sw_20A_Param	4063	Used to control the Current Command for Dual Aux4 20A Output	20	Amps	0	20	.08
TEM_Aux5_w_Ext_Sw_DC_Param	4064	Used to control the Current Command for Dual Aux5 20A Output	20	Amps	0	20	.08
TEM_Aux4_w_Ext_Sw_DC_Param	4065	DC Command level1 for Dual Aux4 20A Duty cycle	100	Percent	0	100	.4
TEM_Aux5_w_Ext_Sw_DC_Param	4066	DC Command level1 for Dual Aux5 20A Duty cycle	100	Percent	0	100	.4

Parameter Definitions:

- **TEM_Aux1_w_Ext_Switch_Init_State** – This parameter determines the initial state of TEM_Aux1. The Default setting is OFF or zero; meaning output will be OFF at ignition key-on. When the box is checked, the value is set to ON or ONE; the output will be ON at ignition key-on.
- **TEM_Aux2_w_Ext_Switch_Init_State** – This parameter determines the initial state of TEM_Aux2. The Default setting is OFF or zero; meaning output will be OFF at ignition key-on. When the box is checked, the value is set to ON or ONE; the output will be ON at ignition key-on.
- **TEM_Aux3_w_Ext_Switch_Init_State** – This parameter determines the initial state of TEM_Aux3. The Default setting is OFF or zero; meaning output will be OFF at ignition key-on. When the box is checked, the value is set to ON or ONE; the output will be ON at ignition key-on.
- **TEM_Aux1_Dual_Contrl_Loadshed_Level** – This is the level at which the TEM_Aux1 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux2_Dual_Contrl_Loadshed_Level** – This is the level at which the TEM_Aux2 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux3_Dual_Contrl_Loadshed_Level** – This is the level at which the TEM_Aux3 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux4_Dual_Contrl_Loadshed_Level** – This is the level at which the TEM_Aux4 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux5_Dual_Contrl_Loadshed_Level** – This is the level at which the TEM_Aux5 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux4_w_Ext_Switch_Init_State** – This parameter determines the initial state of TEM_Aux34. The Default setting is OFF or zero; meaning output will be OFF at ignition key-on. When the box is checked, the value is set to ON or ONE; the output will be ON at ignition key-on.
- **TEM_Aux5_w_Ext_Switch_Init_State** – This parameter determines the initial state of TEM_Aux5. The Default setting is OFF or zero; meaning output will be OFF at ignition key-on. When the box is checked, the value is set to ON or ONE; the output will be ON at ignition key-on.

- **TEM_Aux1_w_Ext_Sw_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from TEM_Aux1. If the current exceeds this specified amount, the virtual fusing shuts the output off.
- **TEM_Aux1_w_Ext_Sw_DC_Output1_Param** – This sets the duty cycle command level1 for Dual Aux1 20A Duty cycle.
- **TEM_Aux2_w_Ext_Sw_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from TEM_Aux2. If the current exceeds this specified amount, the virtual fusing shuts the output off
- **TEM_Aux2_w_Ext_Sw_DC_Param** – This sets the duty cycle command level1 for Dual Aux1 20A Duty cycle.
- **TEM_Aux3_w_Ext_Sw_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from TEM_Aux2. If the current exceeds this specified amount, the virtual fusing shuts the output off
- **TEM_Aux3_w_Ext_Sw_DC_Param** – This sets the duty cycle command level1 for Dual Aux1 20A Duty cycle.
- **TEM_Aux4_w_Ext_Sw_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from TEM_Aux4. If the current exceeds this specified amount, the virtual fusing shuts the output off
- **TEM_Aux5_w_Ext_Sw_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from TEM_Aux5. If the current exceeds this specified amount, the virtual fusing shuts the output off
- **TEM_Aux4_w_Ext_Sw_DC_Param** – This sets the duty cycle command level1 for Dual Aux4 20A Duty cycle.
- **TEM_Aux5_w_Ext_Sw_DC_Param** – This sets the duty cycle command level1 for Dual Aux5 20A Duty cycle.

9. Enhanced Remote Power Modules

9.1. 60ADL, 60ADZ, 60AEM, 60AEN and 60AER:

These feature codes are very similar. The difference is in where the modules are located.

60ADL: BDY INTG, REMOTE POWER MODULE Mounted Inside Cab Behind Driver Seat, Up to 12 Inputs (6 Analog & 6 Tri-State) and 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, (1) 5VREF, Max 100 amp Total, Includes One Switch Pack with Latched Switches

60ADZ: BDY INTG, ENHANCED REMOTE POWER MODULE Mounted Under Cab, Up to 12 Inputs (6 Analog & 6 Tri-State) and 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, & (1) 5VREF, Max 100 amp Total, Includes One Switch Pack with Latched Switches

60AEM: BDY INTG, ENHANCED REMOTE POWER MODULE Mounted at End of Frame, Up to 12 Inputs (6 Analog & 6 Tri-State) and 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, (1) 5VREF, Max 100 amp Total, Includes One Switch Pack with Latched Switches

60AEN: BDY INTG, ENHANCED REMOTE POWER MODULE Mounted Under Bunk, Left Luggage Compartment, Up to 12 Inputs (6 Analog & 6 Tri-State) and 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, (1) 5VREF, Max 100 amp Total, Includes One Switch Pack with Latched Switches

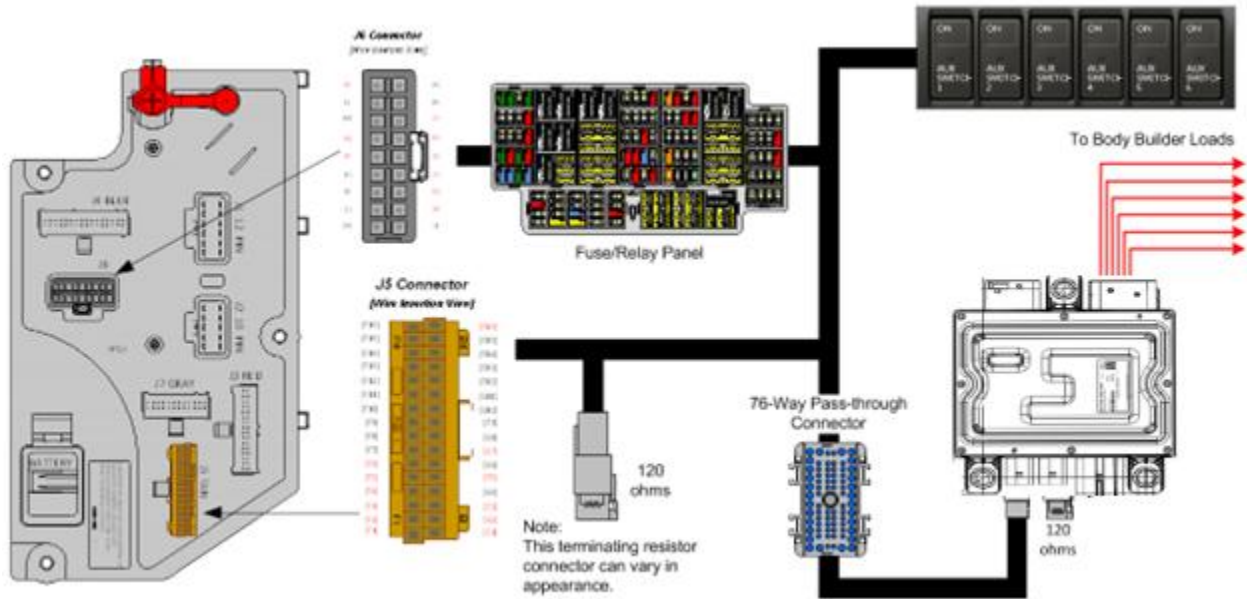
60AER: BDY INTG, ENHANCED REMOTE POWER MODULE Mounted Behind Battery Box, Up to 12 Inputs (6 Analog & 6 Tri-State) and 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, & (1) 5VR), Max 100 amp Total, Includes One Switch Pack with Latched Switches

Feature Applicability to Vehicle Platforms:

- Heavy Vocational (HV)

Extended Description: Feature 60ADL, 60AEM and 60AEN include one Enhanced Remote Power Module (ERPM). Included with this feature are six 2-position latched switches located in the Instrument Panel. Each high current ERPM output can provide up to 20-Amps maximum per output with a total of 100-Amps maximum per module.

System Block Diagram:



Body Controller Software Feature Codes:

This feature can be installed alone or in conjunction with other ERPM features.

Note: When ordered, this sales feature code is configured by special unadvertised software sales feature codes. These codes are determined by the number of additional features that use the ERPM resources.

DLB will show error messages if there are feature code conflicts.

Look at the switch locations in DLB to make changes for optimizing switch pack configurations and ERPM outputs.

See section 8.12 for additional information.

Note: 597795 - BCM PROG, ERPM1 Module enabler is required when using ERPM 1.

- 597802- BCM PROG, AUXILIARY LOAD ERPM FOR (6) ROCKER SWITCHES

Body Controller Software Feature Code Parameters:

Parameter	ID	Description	Default	Units	Min	Max	Step
TEM_Aux1_Loadshed_Level	3273	Loadshed level parameter for TEM Aux Switch 1	1	No Units	0	3	1
TEM_Aux2_Loadshed_Level	3274	Loadshed level parameter for TEM Aux Switch 2	1	No Units	0	3	1

TEM_Aux3_Loadshed_Level	3275	Loadshed level parameter for TEM Aux Switch 3	1	No Units	0	3	1
TEM_Aux4_Loadshed_Level	3276	Loadshed level parameter for TEM Aux Switch 4	1	No Units	0	3	1
TEM_Aux5_Loadshed_Level	3277	Loadshed level parameter for TEM Aux Switch 5	1	No Units	0	3	1
TEM_Aux6_Loadshed_Level	3278	Loadshed level parameter for TEM Aux Switch 6	1	No Units	0	3	1
Aux1_ERPM_20A_Param	4048	Used to control the Current Command for Aux1 ERPM 20A Output	20	Amps	0	20	.08
Aux1_ERPM_20A_DC_Param	4049	DC Command level1 for Aux1 ERPM 20A Duty cycle	100	Percent	0	100	.4
Aux2_ERPM_20A_Param	4069	Used to control the Current Command for Aux2 ERPM 20A Output	20	Amps	0	20	.08
Aux3_ERPM_20A_Param	4070	Used to control the Current Command for Aux3 ERPM 20A Output	20	Amps	0	20	.08
Aux4_ERPM_20A_Param	4071	Used to control the Current Command for Aux4 ERPM 20A Output	20	Amps	0	20	.08
Aux5_ERPM_20A_Param	4072	Used to control the Current Command for Aux5 ERPM 20A Output	20	Amps	0	20	.08
Aux6_ERPM_20A_Param	4073	Used to control the Current Command for Aux6 ERPM 20A Output	20	Amps	0	20	.08
Aux2_ERPM_20A_DC_Param	4074	DC Command level1 for Aux2 ERPM 20A Duty cycle	100	Percent	0	100	.4
Aux3_ERPM_20A_DC_Param	4075	DC Command level1 for Aux3 ERPM 20A Duty cycle	100	Percent	0	100	.4
Aux4_ERPM_20A_DC_Param	4076	DC Command level1 for Aux3 ERPM 20A Duty cycle	100	Percent	0	100	.4
Aux5_ERPM_20A_DC_Param	4077	DC Command level1 for Aux5 ERPM 20A Duty cycle	100	Percent	0	100	.4
Aux6_ERPM_20A_DC_Param	4078	DC Command level1 for Aux6 ERPM 20A Duty cycle	100	Percent	0	100	.4

Parameter Definitions:

- **TEM_Aux1_Loadshed_Level** – This is the level at which the TEM_Aux1 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux2_Loadshed_Level** – This is the level at which the TEM_Aux2 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux3_Loadshed_Level** – This is the level at which the TEM_Aux3 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1)

has the least priority (sheds first), a value of 3 has the highest priority (sheds last).

- **TEM_Aux4 Loadshed_Level** – This is the level at which the TEM_Aux4 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux5 Loadshed_Level** – This is the level at which the TEM_Aux5 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux6 Loadshed_Level** – This is the level at which the TEM_Aux6 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **Aux1_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from TEM_Aux1. If the current exceeds this specified amount, the virtual fusing shuts the output off.
- **Aux1_ERPM_DC_Param** – This sets the duty cycle command level1 for ERPM 1 output 1 20A output.
- **Aux2_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from ERPM 1 output 2. If the current exceeds this specified amount, the virtual fusing shuts the output off
- **Aux3_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from ERPM 1 output 3. If the current exceeds this specified amount, the virtual fusing shuts the output off
- **Aux4_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from ERPM 1 output 4. If the current exceeds this specified amount, the virtual fusing shuts the output off
- **Aux5_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from ERPM 1 output 5. If the current exceeds this specified amount, the virtual fusing shuts the output off
- **Aux6_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from ERPM 1 output 6. If the current exceeds this specified amount, the virtual fusing shuts the output off
- **Aux2_ERPM_DC_Param** – This sets the duty cycle command level1 for ERPM 1 output 2 20A output.
- **Aux3_ERPM_DC_Param** – This sets the duty cycle command level1 for ERPM 1 output 3 20A output.
- **Aux4_ERPM_DC_Param** – This sets the duty cycle command level1 for ERPM 1 output 4 20A output.

- **Aux5_ERPM_DC_Param** – This sets the duty cycle command level1 for ERPM 1 output 6 20A output.
- **Aux6_ERPM_DC_Param** – This sets the duty cycle command level1 for ERPM 1 output 1 20A output.

Parts Associated with This Feature:

Please refer to **Parts Associated with ERPM Features:** in Section 5.

How to Test This Feature:

1. Turn key to accessory or IGN key-state.
2. Activate the applicable in-cab switch.
3. Verify that ERPM output #1 is providing battery voltage.
4. Deactivate applicable in-cab switch.
5. Verify that ERPM output #1 shuts off.
6. Continue the above testing procedure for each ERPM switch location.

Note: This feature uses body controller-based software controls which can be diagnosed with The International® Diamond Logic® Builder software (see local dealer if not owned).

References:

Refer to the applicable International® Circuit Diagrams and Service Manuals.

9.2. 60ADM, 60ADV, 60AEA 60AEG and 60AES

These feature codes are very similar. The difference is in where the modules are located.

60ADM: BDY INTG, REMOTE POWER MODULE (2) Mounted Inside Cab Behind Driver Seat, Each Up to 12 Inputs (6 Analog & 6 Tri-State) and 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, (1) 5VR, Max 100 amp Total, Includes Two Switch Packs with Latched Switches

60ADV: BDY INTG, REMOTE POWER MODULE (2) : One Behind Driver Seat, One Behind Passenger Seat, Each Up to 12 Inputs (6 Analog & 6 Tri-State) & 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, (1) 5VR), Max 100 amp Total, Includes Two Switch Packs with Latched Switches.

60AEA: BDY INTG, REMOTE POWER MODULE (2) Mounted Under Cab, Each Up to 12 Inputs (6 Analog & 6 Tri-State) and 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, & (1) 5VREF, Max 100 amp Total, Includes Two Switch Packs with Latched Switches.

60AEG: BDY INTG, REMOTE POWER MODULE (2) Mounted Under Bunk, Left Luggage Compartment, Each Up to 12 Inputs (6 Analog & 6 Tri-State) & 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, (1) 5VREF, Max 100 amp Total, Includes Two Switch Packs with Latched Switches.

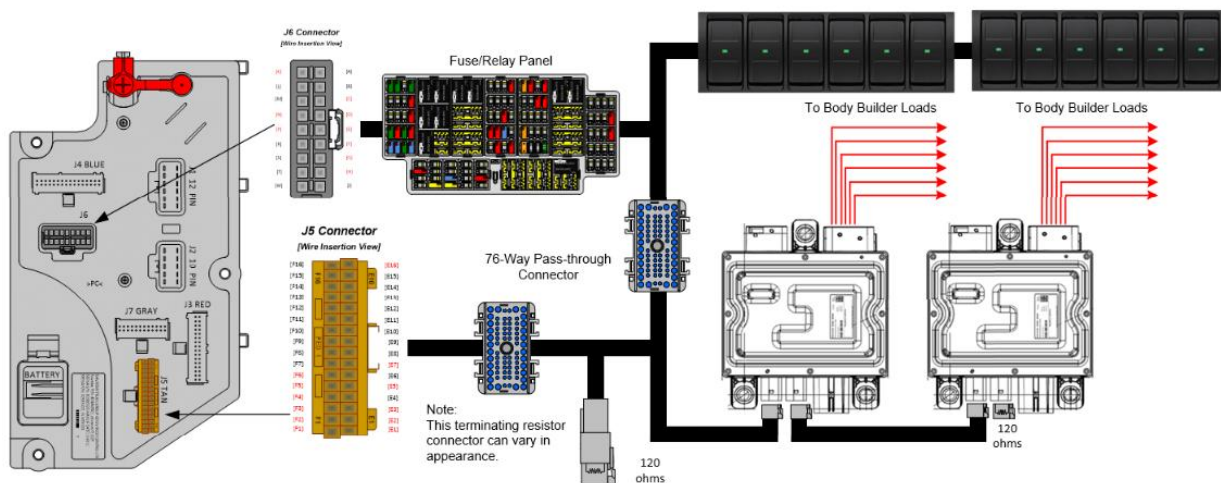
60AES: BDY INTG, REMOTE POWER MODULE (2) Mounted Behind Battery Box, Each Up to 12 Inputs (6 Analog & 6 Tri-State) and 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, & (1) 5VREF, Max 100 amp Total, Includes Two Switch Packs with Latched Switches.

Feature Applicability to Vehicle Platforms:

- Heavy Vocational (HV)

Extended Description: These features include two Enhanced Remote Power Modules (ERPMS). Included with this feature are twelve 2-position latched switches located in the Instrument Panel. Each ERPMS output can provide up to 20-Amps maximum with a total of 100-Amps maximum per module.

System Block Diagram:



Body Controller Software Feature Codes:

Note: 597795 - BCM PROG, ERPMS1 Module enabler is required when using ERPMS 1.

Note: 597796 - BCM PROG, ERPMS2 Module enabler is required when using ERPMS 2.

- 597802- BCM PROG, AUXILIARY LOAD ERPMS FOR (6) ROCKER SWITCHES
- 597804- BCM PROG, ADD AUX SWITCHES ERPMS FOR (6) ROCKER SWITCHES

This feature can be installed alone or in conjunction with other ERPM features.

Note: When ordered, this sales feature code is configured by special unadvertised software sales feature codes. These codes are determined by the number of additional features that use the ERPM resources.

DLB will show error messages if there are feature code conflicts.

You can look at the switch locations in DLB to make changes for optimizing switch pack configurations and ERPM outputs.

See section 8.12 for additional information.

Body Controller Software Feature Code Parameters:

Refer to the parameters for 597802 in the previous section, The following are the parameters for 597804.

Parameter	ID	Description	Default	Units	Min	Max	Step
TEM_Aux7_Loadshed_Level	3339	Loadshed level parameter for TEM Aux Switch 7	1	No Units	0	3	1
TEM_Aux8_Loadshed_Level	3340	Loadshed level parameter for TEM Aux Switch 8	1	No Units	0	3	1
TEM_Aux9_Loadshed_Level	3341	Loadshed level parameter for TEM Aux Switch 9	1	No Units	0	3	1
TEM_Aux10_Loadshed_Level	3402	Loadshed level parameter for TEM Aux Switch 10	1	No Units	0	3	1
TEM_Aux11_Loadshed_Level	3343	Loadshed level parameter for TEM Aux Switch 11	1	No Units	0	3	1
TEM_Aux12_Loadshed_Level	3344	Loadshed level parameter for TEM Aux Switch 12	1	No Units	0	3	1
Aux7_ERPM_20A_Param	4083	Used to control the Current Command for Aux7 ERPM 20A Output	20	Amps	0	20	.08
Aux8_ERPM_20A_DC_Param	4084	DC Command level1 for Aux8 ERPM 20A Duty cycle	100	Percent	0	100	.4
Aux9_ERPM_20A_Param	4085	Used to control the Current Command for Aux9 ERPM 20A Output	20	Amps	0	20	.08
Aux10_ERPM_20A_Param	4086	Used to control the Current Command for Aux10 ERPM 20A Output	20	Amps	0	20	.08
Aux11_ERPM_20A_Param	4087	Used to control the Current Command for Aux11 ERPM 20A Output	20	Amps	0	20	.08
Aux12_ERPM_20A_Param	4088	Used to control the Current Command for Aux12 ERPM 20A Output	20	Amps	0	20	.08
Aux7_ERPM_20A_DC_Param	4089	DC Command level1 for Aux7 ERPM 20A Duty cycle	100	Percent	0	100	.4
Aux8_ERPM_20A_DC_Param	4090	DC Command level1 for Aux8 ERPM 20A Duty cycle	100	Percent	0	100	.4

Aux9_ERPM_20A_DC_Param	4091	DC Command level1 for Aux9 ERPM 20A Duty cycle	100	Percent	0	100	.4
Aux10_ERPM_20A_DC_Param	4092	DC Command level1 for Aux10 ERPM 20A Duty cycle	100	Percent	0	100	.4
Aux11_ERPM_20A_DC_Param	4093	DC Command level1 for Aux11 ERPM 20A Duty cycle	100	Percent	0	100	.4
Aux12_ERPM_20A_DC_Param	4094	DC Command level1 for Aux12 ERPM 20A Duty cycle	100	Percent	0	100	.4

Parameter Definitions:

- **TEM_Aux7_Loadshed_Level** – This is the level at which the TEM_Aux7 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux8_Loadshed_Level** – This is the level at which the TEM_Aux8 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux9_Loadshed_Level** – This is the level at which the TEM_Aux9 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux10_Loadshed_Level** – This is the level at which the TEM_Aux10 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux11_Loadshed_Level** – This is the level at which the TEM_Aux11 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux12_Loadshed_Level** – This is the level at which the TEM_Aux12 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **Aux7_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from TEM_Aux7. If the current exceeds this specified amount, the virtual fusing shuts the output off.
- **Aux7_ERPM_DC_Param** – This sets the duty cycle command level1 for ERPM 1 output 7 20A output.
- **Aux8_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from ERPM 1 output 8. If the current exceeds this specified amount, the virtual fusing shuts the output off

- **Aux9_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from ERPM 1 output 9. If the current exceeds this specified amount, the virtual fusing shuts the output off
- **Aux10_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from ERPM 1 output 10. If the current exceeds this specified amount, the virtual fusing shuts the output off
- **Aux11_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from ERPM 1 output 11. If the current exceeds this specified amount, the virtual fusing shuts the output off
- **Aux12_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from ERPM 1 output 12. If the current exceeds this specified amount, the virtual fusing shuts the output off
- **Aux8_ERPM_DC_Param** – This sets the duty cycle command level1 for ERPM 1 output 8 20A output.

Parts Associated with This Feature:

Please refer to **Parts Associated with ERPM Features:** in Section 5.

How to Test This Feature:

1. Turn key to accessory or IGN key-state.
 2. Activate the applicable in-cab switch.
 3. Verify that ERPM output #1 is providing battery voltage.
 4. Deactivate applicable in-cab switch.
 5. Verify that ERPM output #1 shuts off.
- Continue the above testing procedure for each ERPM switch location.

Note: This feature uses body controller-based software controls which can be diagnosed with The International® Diamond Logic® Builder software (see local dealer if not owned).

References:

Refer to the applicable International® Circuit Diagrams and Service Manuals.

9.3. 60ADN, 60ADX and 60AEK

These feature codes are very similar. The difference is in where the modules are located.

60ADN: BDY INTG, REMOTE POWER MODULE (3) Mounted Inside Cab Behind Driver Seat, Each Up to 12 Inputs (6 Analog & 6 Tri-State) and 17 Outputs (6 High

Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, (1) 5VR, Max 100 amp Total, Includes Three Switch Packs with Latched Switches.

60ADX: BDY INTG, ENHANCED REMOTE POWER MODULE (3) : One Behind Driver Seat, Two Behind Passenger Seat, Each Up to 12 Inputs (6 Analog & 6 Tri-State) & 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, (1) 5VREF, Max 100 amp Total, Includes Three Switch Packs with 18 Latched Switches.

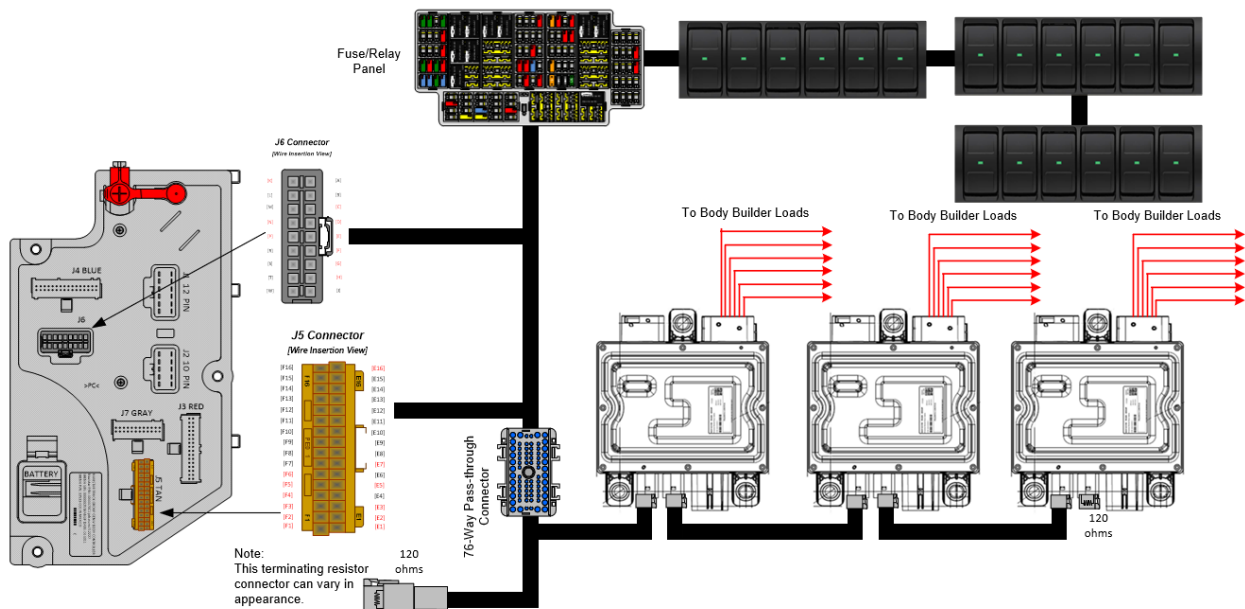
60AEK: BDY INTG, REMOTE POWER MODULE (3) Mounted Under Bunk, Left Luggage Compartment, Each Up to 12 Inputs (6 Analog & 6 Tri-State) & 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, (1) 5VREF, Max 100 amp Total, Includes Three Switch Packs with Latched Switches

Feature Applicability to Vehicle Platforms:

- Heavy Vocational (HV)

Extended Description: These features include three Remote Power Modules (ERPMs) mounted in the cab behind the driver seat. Included with this feature are eighteen 2-position latched switches located in the Instrument Panel. Each ERPM output can provide up to 20-Amps maximum with a total of 100-Amps maximum per module.

System Block Diagram:



• **Body Controller Software Feature Codes:**

- **Note: 597795** - BCM PROG, ERPM1 Module enabler is required when using ERPM 1.
- **Note:597796** - BCM PROG, ERPM2 Module enabler is required when using ERPM 2.
- **Note:597797** - BCM PROG, ERPM3 Module enabler is required when using ERPM 3.
- 597802- BCM PROG, AUXILIARY LOAD ERPM FOR (6) ROCKER SWITCHES
- 597804- BCM PROG, ADD AUX SWITCHES ERPM FOR (6) ROCKER SWITCHES
- 597857- BCM PROG, REMOTE POWER MOD #3

will be available in DLB after R2-2025 goes to E.

Body Controller Software Feature Code Parameters:

Refer to the parameters for 597802 and 597804 in the previous sections, The following are the parameters for 597857.

Parameter	ID	Description	Default	Units	Min	Max	Step
RPM4_Channel13_LoadShed_Level	3272	This is the level at which the RPM3 channel 13 Outputs will load shed	1	No Units	0	3	1
RPM4_Channel14_LoadShed_Level	3315	This is the level at which the RPM3 channel 14 Outputs will load shed	1	No Units	0	3	1
RPM4_Channel15_LoadShed_Level	3316	This is the level at which the RPM3 channel 15 Outputs will load shed	1	No Units	0	3	1
RPM4_Channel16_LoadShed_Level	3317	This is the level at which the RPM3 channel 16 Outputs will load shed	1	No Units	0	3	1
RPM4_Channel17_LoadShed_Level	3318	This is the level at which the RPM3 channel 17 Outputs will load shed	1	No Units	0	3	1
RPM4_Channel18_LoadShed_Level	3319	This is the level at which the RPM3 channel 18 Outputs will load shed	1	No Units	0	3	1
Aux13_ERPM_20A_Param	4173	Used to control the Current Command for Aux13 ERPM 20A Output	20	Amps	0	20	.08
Aux14_ERPM_20A_Param	4174	Used to control the Current Command for Aux14 ERPM 20A Output	20	Amps	0	20	.08
Aux15_ERPM_20A_Param	4175	Used to control the Current Command for Aux15 ERPM 20A Output	20	Amps	0	20	.08

Aux16_ERPM_20A_Param	4176	Used to control the Current Command for Aux16 ERPM 20A Output	20	Amps	0	20	.08
Aux17_ERPM_20A_Param	4177	Used to control the Current Command for Aux17 ERPM 20A Output	20	Amps	0	20	.08
Aux18_ERPM_20A_Param	4178	Used to control the Current Command for Aux18 ERPM 20A Output	20	Amps	0	20	.08
Aux18_ERPM_20A_Param	4179	Used to control the Current Command for Aux18 ERPM 20A Output	20	Amps	0	20	.08
Aux13_ERPM_DC_Param	4181	DC Command level1 for Aux13 ERPM 20A Duty cycle	100	Percent	0	100	.4
Aux14_ERPM_DC_Param	4182	DC Command level1 for Aux14 ERPM 20A Duty cycle	100	Percent	0	100	.4
Aux15_ERPM_DC_Param	4183	DC Command level1 for Aux15 ERPM 20A Duty cycle	100	Percent	0	100	.4
Aux16_ERPM_DC_Param	4184	DC Command level1 for Aux16 ERPM 20A Duty cycle	100	Percent	0	100	.4
Aux17_ERPM_DC_Param	4185	DC Command level1 for Aux17 ERPM 20A Duty cycle	100	Percent	0	100	.4
Aux18_ERPM_DC_Param	4186	DC Command level1 for Aux18 ERPM 20A Duty cycle	100	Percent	0	100	.4

Parameter Definitions:

- **RPM3_Channel13_Loadshed_Level** – This is the level at which the RPM_Channel 13 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **RPM3_Channel14_Loadshed_Level** – This is the level at which the RPM_Channel 14 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **RPM3_Channel15_Loadshed_Level** – This is the level at which the RPM_Channel 15 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **RPM3_Channel16_Loadshed_Level** – This is the level at which the RPM_Channel 16 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **RPM3_Channel17_Loadshed_Level** – This is the level at which the RPM_Channel 17 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).

- **RPM3_Channel18_Loadshed_Level** – This is the level at which the RPM_Channel 18 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **Aux13_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from ERPM Output 13. If the current exceeds this specified amount, the virtual fusing shuts the output off.
- **Aux14_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from ERPM Output 14. If the current exceeds this specified amount, the virtual fusing shuts the output off.
- **Aux15_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from ERPM Output 15. If the current exceeds this specified amount, the virtual fusing shuts the output off.
- **Aux16_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from ERPM Output 16. If the current exceeds this specified amount, the virtual fusing shuts the output off.
- **Aux17_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from ERPM Output 17. If the current exceeds this specified amount, the virtual fusing shuts the output off.
- **Aux18_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from ERPM Output 18. If the current exceeds this specified amount, the virtual fusing shuts the output off.
- **Aux13_ERPM_DC_Param** – This sets the duty cycle command level1 for ERPM Aux13. The range is from 0% to 100%.
- **Aux14_ERPM_DC_Param** – This sets the duty cycle command level1 for ERPM Aux14. The range is from 0% to 100%.
- **Aux15_ERPM_DC_Param** – This sets the duty cycle command level1 for ERPM Aux15. The range is from 0% to 100%.
- **Aux16_ERPM_DC_Param** – This sets the duty cycle command level1 for ERPM Aux16. The range is from 0% to 100%.
- **Aux17_ERPM_DC_Param** – This sets the duty cycle command level1 for ERPM Aux17. The range is from 0% to 100%.
- **Aux18_ERPM_DC_Param** – This sets the duty cycle command level1 for ERPM Aux18. The range is from 0% to 100%.

The feature can be installed alone or in conjunction with other ERPM features.

Note: When ordered, this sales feature code is configured by special unadvertised software sales feature codes. These codes are determined by the number of additional features that use ERPM resources.

DLB will show error messages if there are feature code conflicts.

Switch locations can be seen in DLB, and changes can be made to optimize switch pack configurations and ERPM outputs.
See section 8.12 for additional information.

Parts Associated with This Feature:

Please refer to **Parts Associated with ERPM Features:** in Section 5.

How to Test This Feature:

1. Turn key to accessory or IGN key-state.
2. Activate the applicable in-cab switch.
3. Verify that ERPM output #1 is providing battery voltage.
4. Deactivate applicable in-cab switch.
5. Verify that ERPM output #1 shuts off.

Continue the above testing procedure for each ERPM switch location.

Note: This feature uses body controller-based software controls which can be diagnosed with The International® Diamond Logic® Builder software (see local dealer if not owned).

References:

Refer to the applicable International® Circuit Diagrams and Service Manuals.

9.4. 60ADP and 60AET

These feature codes are very similar. The difference is in where the modules are located.

60ADP: BDY INTG, REMOTE POWER MODULE (2) Mounted Inside Cab Behind Driver Seat, Each Up to 12 inputs (6 Analog & 6 Tri-State) and 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, (1) 5VR, Max 100 amp Total, Includes One Module with Switch Pack Containing 6 Latched Switches, One Module Hardware Only

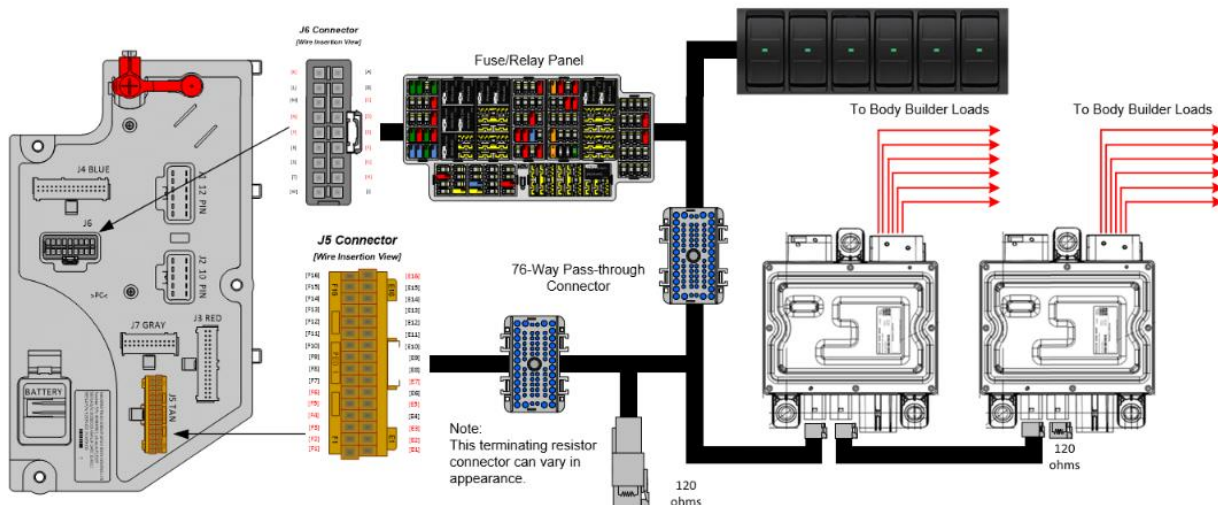
60AET: BDY INTG, ENHANCED REMOTE POWER MODULE (2) Mounted Behind Battery Box, Each Up to 12 Inputs (6 Analog & 6 Tri-State) and 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, & (1) 5VR), Max 100 amp Total, Includes One Module w/Switch Pack Containing 6 Latched Switches, One Module Hardware Only

Feature Applicability to Vehicle Platforms:

- Heavy Vocational (HV)

Extended Description: These features include two Enhanced Remote Power Module (ERPMS). Included with these features are six 2-position latched switches located in the Instrument Panel for control of the outputs on ERPMS 1. ERPMS 2 is included with wiring and hardware only for use with advanced logic. Each ERPMS output can provide up to 20-Amps maximum with a total of 100-Amps maximum per module.

System Block Diagram:



Body Controller Software Feature Codes:

- **Note:** 597795 - BCM PROG, ERPM1 Module enabler is required when using ERPM 1.
- **Note:**597796 - BCM PROG, ERPM2 Module enabler is required when using ERPM 2.
- 597802- BCM PROG, AUXILIARY LOAD ERPM FOR (6) ROCKER SWITCHES

Body Controller Software Feature Code Parameters:

Parameter	ID	Description	Default	Units	Min	Max	Step
TEM_Aux1_Loadshed_Level	3273	Loadshed level parameter for TEM Aux Switch 1	1	No Units	0	3	1
TEM_Aux2_Loadshed_Level	3274	Loadshed level parameter for TEM Aux Switch 2	1	No Units	0	3	1
TEM_Aux3_Loadshed_Level	3275	Loadshed level parameter for TEM Aux Switch 3	1	No Units	0	3	1
TEM_Aux4_Loadshed_Level	3276	Loadshed level parameter for TEM Aux Switch 4	1	No Units	0	3	1
TEM_Aux5_Loadshed_Level	3277	Loadshed level parameter for TEM Aux Switch 5	1	No Units	0	3	1
TEM_Aux6_Loadshed_Level	3278	Loadshed level parameter for TEM Aux Switch 6	1	No Units	0	3	1
Aux1_ERPM_20A_Param	4048	Used to control the Current Command for Aux1 ERPM 20A Output	20	Amps	0	20	.08
Aux1_ERPM_20A_DC_Param	4049	DC Command level1 for Aux1 ERPM 20A Duty cycle	100	Percent	0	100	.4
Aux2_ERPM_20A_Param	4069	Used to control the Current Command for Aux2 ERPM 20A Output	20	Amps	0	20	.08
Aux3_ERPM_20A_Param	4070	Used to control the Current Command for Aux3 ERPM 20A Output	20	Amps	0	20	.08
Aux4_ERPM_20A_Param	4071	Used to control the Current Command for Aux4 ERPM 20A Output	20	Amps	0	20	.08
Aux5_ERPM_20A_Param	4072	Used to control the Current Command for Aux5 ERPM 20A Output	20	Amps	0	20	.08
Aux6_ERPM_20A_Param	4073	Used to control the Current Command for Aux6 ERPM 20A Output	20	Amps	0	20	.08
Aux2_ERPM_20A_DC_Param	4074	DC Command level1 for Aux2 ERPM 20A Duty cycle	100	Percent	0	100	.4
Aux3_ERPM_20A_DC_Param	4075	DC Command level1 for Aux3 ERPM 20A Duty cycle	100	Percent	0	100	.4
Aux4_ERPM_20A_DC_Param	4076	DC Command level1 for Aux3 ERPM 20A Duty cycle	100	Percent	0	100	.4
Aux5_ERPM_20A_DC_Param	4077	DC Command level1 for Aux5 ERPM 20A Duty cycle	100	Percent	0	100	.4

Aux6_ERPM_20A_D C Param	4078	DC Command level1 for Aux6 ERPM 20A Duty cycle	100	Percent	0	100	.4
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Parameter Definitions:

- **TEM_Aux1_Loadshed_Level** – This is the level at which the TEM_Aux1 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux2_Loadshed_Level** – This is the level at which the TEM_Aux2 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux3_Loadshed_Level** – This is the level at which the TEM_Aux3 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux4_Loadshed_Level** – This is the level at which the TEM_Aux4 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux5_Loadshed_Level** – This is the level at which the TEM_Aux5 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux6_Loadshed_Level** – This is the level at which the TEM_Aux6 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **Aux1_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from TEM_Aux1. If the current exceeds this specified amount, the virtual fusing shuts the output off.
- **Aux1_ERPM_DC_Param** – This sets the duty cycle command level1 for ERPM 1 output 1 20A output.
- **Aux2_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from ERPM 1 output 2. If the current exceeds this specified amount, the virtual fusing shuts the output off
- **Aux3_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from ERPM 1 output 3. If the current exceeds this specified amount, the virtual fusing shuts the output off

- **Aux4_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from ERPM 1 output 4. If the current exceeds this specified amount, the virtual fusing shuts the output off
- **Aux5_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from ERPM 1 output 5. If the current exceeds this specified amount, the virtual fusing shuts the output off
- **Aux6_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from ERPM 1 output 6. If the current exceeds this specified amount, the virtual fusing shuts the output off
- **Aux2_ERPM_DC_Param** – This sets the duty cycle command level1 for ERPM 1 output 2 20A output.
- **Aux3_ERPM_DC_Param** – This sets the duty cycle command level1 for ERPM 1 output 3 20A output.
- **Aux4_ERPM_DC_Param** – This sets the duty cycle command level1 for ERPM 1 output 4 20A output.
- **Aux5_ERPM_DC_Param** – This sets the duty cycle command level1 for ERPM 1 output 6 20A output.
- **Aux6_ERPM_DC_Param** – This sets the duty cycle command level1 for ERPM 1 output 1 20A output.

The feature can be installed alone or in conjunction with other ERPM features.

Note: When ordered, this sales feature code is configured by special unadvertised software sales feature codes. These codes are determined by the number of additional features that use the ERPM resources.

DLB will show error messages if there are feature code conflicts.

You can look at the switch locations in DLB to make changes for optimizing switch pack configurations and ERPM outputs.

See section 8.12 for additional information.

Parts Associated with This Feature:

Please refer to **Parts Associated with ERPM Features:** in Section 5.

How to Test This Feature:

1. Turn key to accessory or IGN key-state.
2. Activate the has the least priority (sheds first), a value of 3 has the highest priority switch.
3. Verify that ERPM output #1 is providing battery voltage.
4. Deactivate applicable in-cab switch.
5. Verify that ERPM output #1 shuts off.

Continue the above testing procedure for each ERPM switch location.

Note: This feature uses body controller-based software controls which can be diagnosed with The International® Diamond Logic® Builder software (see local dealer if not owned).

References:

Refer to the applicable International® Circuit Diagrams and Service Manuals.

9.5. 60ADR and 60AEJ

These feature codes are very similar. The difference is in where the modules are located.

60ADR: BDY INTG, REMOTE POWER MODULE (3) Mounted Inside Cab Behind Driver Seat, Each Up to 12 Inputs (6 Analog & 6 Tri-State) and 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, (1) 5VREF, Max 100 amp Total, Includes Three Modules with Hardware Only.

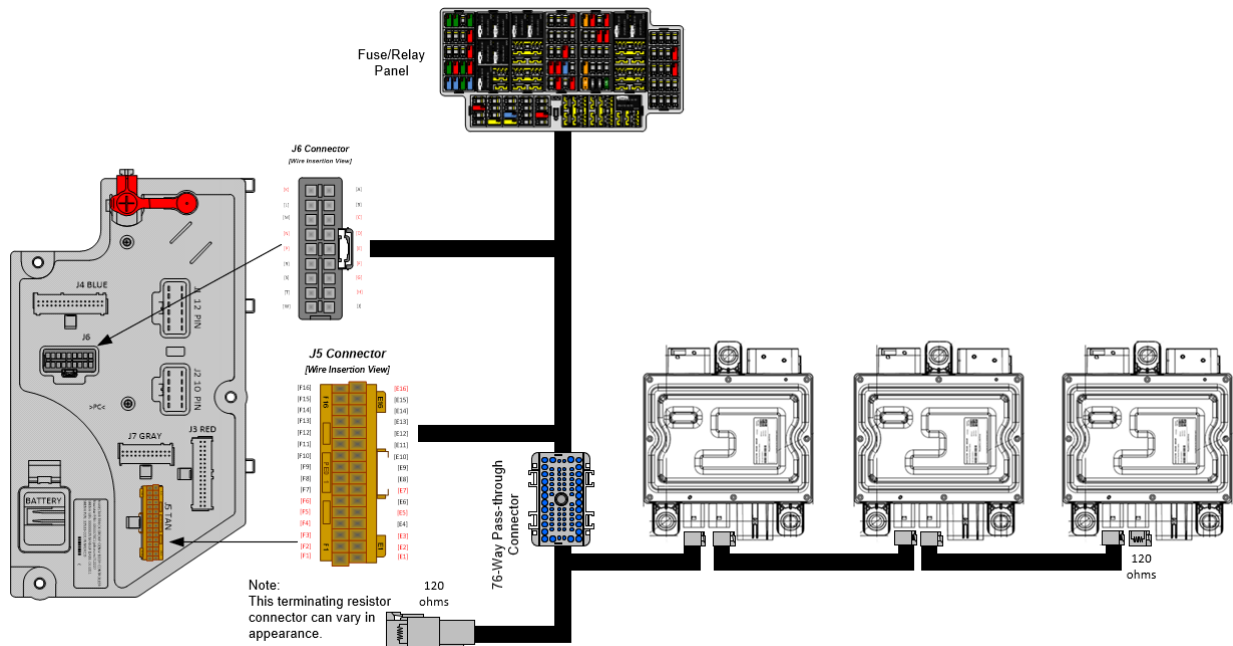
60AEJ: BDY INTG, REMOTE POWER MODULE (3) Mounted Under Bunk, Left Luggage Compartment, Each Up to 12 Inputs (6 Analog & 6 Tri-State) & 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (1) 5A, (1) 5VREF, Max 100 amp Total, Includes Three Modules with Hardware only

Feature Applicability to Vehicle Platforms:

- Heavy Vocational (HV)

Extended Description: These features include three Enhanced Remote Power Module (ERPMS). Included with these features are wiring and hardware only, for all three ERPMS for use with custom logic. Each ERPM output can provide up to 20-Amps maximum with a total of 100-Amps maximum per module.

System Block Diagram:



- **Note:** 597795 - BCM PROG, ERPM1 Module enabler is required when using ERPM 1.
- **Note:** 597796 - BCM PROG, ERPM2 Module enabler is required when using ERPM 2.
- **Note:** 597797 - BCM PROG, ERPM3 Module enabler is required when using ERPM 3.

Parts Associated with This Feature:

Please refer to **Parts Associated with ERPM Features:** in Section 5.

How to Test This Feature:

Verify the ERPM is communicating via the 1939 CAN bus using Diamond Logic Builder software diagnostic mode.

Note: This feature uses body controller-based software controls which can be diagnosed with The International® Diamond Logic® Builder software (see local dealer if not owned).

References:

Refer to the applicable International® Circuit Diagrams and Service Manuals.

9.6. 60ADS and 60AEH:

These feature codes are very similar. The difference is in where the modules are located.

60ADS: BDY INTG, REMOTE POWER MODULE (3) Mounted Inside Cab Behind Driver Seat, Each Up to 12 Inputs (6 Analog & 6 Tri-State) and 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, (1) 5VREF, Max 100 amp Total, Includes Two Modules w/Switch Packs Containing 6 Latched Switches, 1 Module Hardware Only

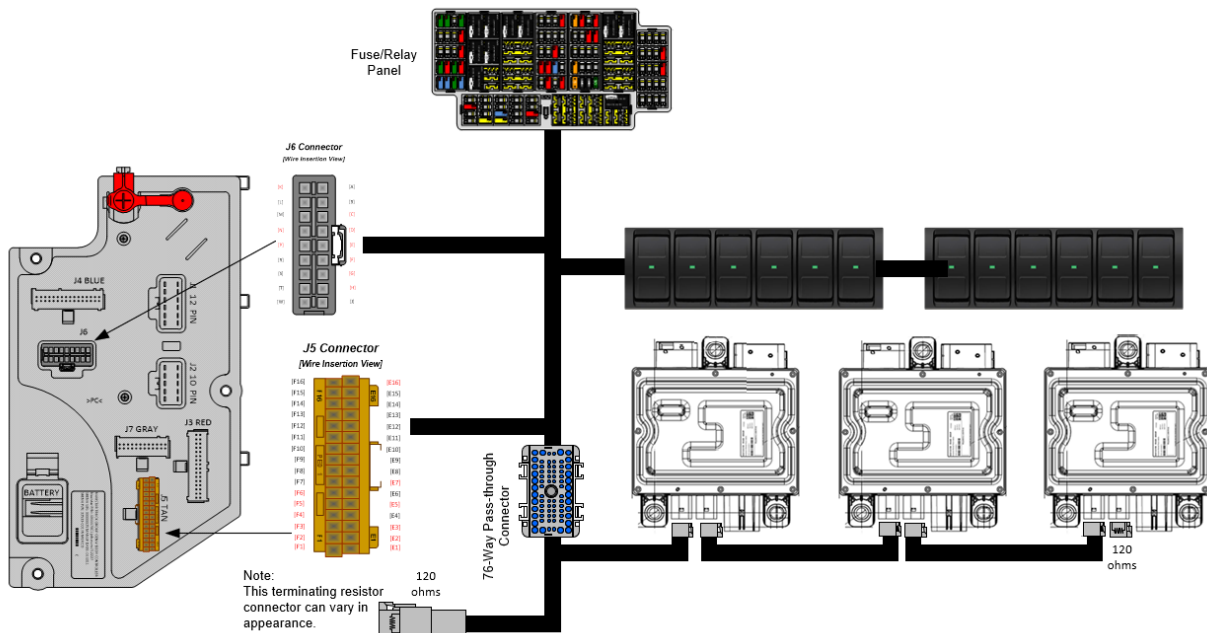
60AEH: BDY INTG, REMOTE POWER MODULE (3) Mounted Under Bunk, Left Luggage Compartment, Each Up to 12 Inputs (6 Analog & 6 Tri-State) & 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2)5A, (1)5VR), Max 100 amp Total, Includes Two Modules w/Switch Packs Containing 6 Latched Switches, One Module Hardware Only

Feature Applicability to Vehicle Platforms:

- Heavy Vocational (HV)

Extended Description: These features include three Enhanced Remote Power Module (ERPMS). Included with these features are 12 switches in 2 switch packs, wiring, and hardware only, for one ERPMS, for use with custom logic. Each ERPMS output can provide up to 20-Amps maximum with a total of 100-Amps maximum per module.

System Block Diagram:



Body Controller Software Feature Codes:

- **Note: 597795** - BCM PROG, ERPM1 Module enabler is required when using ERPM 1.
- **Note:597796** - BCM PROG, ERPM2 Module enabler is required when using ERPM 2.
- **Note:597797** - BCM PROG, ERPM3 Module enabler is required when using ERPM 3.
- 597802- BCM PROG, AUXILIARY LOAD ERPM FOR (6) ROCKER SWITCHES
- 597804- BCM PROG, ADD AUX SWITCHES ERPM FOR (6) ROCKER SWITCHES

Refer to the parameters for 597802 in the previous section, The following are the parameters for 597804.

Parameter	ID	Description	Default	Units	Min	Max	Step
TEM_Aux7_Loadshed_Level	3339	Loadshed level parameter for TEM Aux Switch 7	1	No Units	0	3	1
TEM_Aux8_Loadshed_Level	3340	Loadshed level parameter for TEM Aux Switch 8	1	No Units	0	3	1
TEM_Aux9_Loadshed_Level	3341	Loadshed level parameter for TEM Aux Switch 9	1	No Units	0	3	1
TEM_Aux10_Loadshed_Level	3402	Loadshed level parameter for TEM Aux Switch 10	1	No Units	0	3	1
TEM_Aux11_Loadshed_Level	3343	Loadshed level parameter for TEM Aux Switch 11	1	No Units	0	3	1
TEM_Aux12_Loadshed_Level	3344	Loadshed level parameter for TEM Aux Switch 12	1	No Units	0	3	1
Aux7_ERPM_20A_Param	4083	Used to control the Current Command for Aux7 ERPM 20A Output	20	Amps	0	20	.08
Aux8_ERPM_20A_DC_Param	4084	DC Command level1 for Aux8 ERPM 20A Duty cycle	100	Percent	0	100	.4
Aux9_ERPM_20A_Param	4085	Used to control the Current Command for Aux9 ERPM 20A Output	20	Amps	0	20	.08
Aux10_ERPM_20A_Param	4086	Used to control the Current Command for Aux10 ERPM 20A Output	20	Amps	0	20	.08
Aux11_ERPM_20A_Param	4087	Used to control the Current Command for Aux11 ERPM 20A Output	20	Amps	0	20	.08
Aux12_ERPM_20A_Param	4088	Used to control the Current Command for Aux12 ERPM 20A Output	20	Amps	0	20	.08
Aux7_ERPM_20A_DC_Param	4089	DC Command level1 for Aux7 ERPM 20A Duty cycle	100	Percent	0	100	.4

Aux8_ERPM_20A_DC_Param	4090	DC Command level1 for Aux8 ERPM 20A Duty cycle	100	Percent	0	100	.4
Aux9_ERPM_20A_DC_Param	4091	DC Command level1 for Aux9 ERPM 20A Duty cycle	100	Percent	0	100	.4
Aux10_ERPM_20A_DC_Param	4092	DC Command level1 for Aux10 ERPM 20A Duty cycle	100	Percent	0	100	.4
Aux11_ERPM_20A_DC_Param	4093	DC Command level1 for Aux11 ERPM 20A Duty cycle	100	Percent	0	100	.4
Aux12_ERPM_20A_DC_Param	4094	DC Command level1 for Aux12 ERPM 20A Duty cycle	100	Percent	0	100	.4

Parameter Definitions:

- **TEM_Aux7_Loadshed_Level** – This is the level at which the TEM_Aux7 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux8_Loadshed_Level** – This is the level at which the TEM_Aux8 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux9_Loadshed_Level** – This is the level at which the TEM_Aux9 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux10_Loadshed_Level** – This is the level at which the TEM_Aux10 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux11_Loadshed_Level** – This is the level at which the TEM_Aux11 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux12_Loadshed_Level** – This is the level at which the TEM_Aux12 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **Aux7_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from TEM_Aux7. If the current exceeds this specified amount, the virtual fusing shuts the output off.
- **Aux7_ERPM_DC_Param** – This sets the duty cycle command level1 for ERPM 1 output 7 20A output.

- **Aux8_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from ERPM 1 output 8. If the current exceeds this specified amount, the virtual fusing shuts the output off
- **Aux9_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from ERPM 1 output 9. If the current exceeds this specified amount, the virtual fusing shuts the output off
- **Aux10_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from ERPM 1 output 10. If the current exceeds this specified amount, the virtual fusing shuts the output off
- **Aux11_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from ERPM 1 output 11. If the current exceeds this specified amount, the virtual fusing shuts the output off
- **Aux12_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from ERPM 1 output 12. If the current exceeds this specified amount, the virtual fusing shuts the output off
- **Aux8_ERPM_DC_Param** – This sets the duty cycle command level1 for ERPM 1 output 8 20A output.

The feature can be installed alone or in conjunction with other ERPM features.

Note: When ordered, this sales feature code is configured by special unadvertised software sales feature codes. These codes are determined by the number of additional features that use the ERPM resources.

DLB will show error messages if there are feature code conflicts.

You can look at the switch locations in DLB to make changes for optimizing switch pack configurations and ERPM outputs.

See section 8.12 for additional information.

Parts Associated with This Feature:

Please refer to **Parts Associated with ERPM Features:** in Section 5.

How to Test This Feature:

1. Turn key to accessory or IGN key-state.
2. Activate the applicable in-cab switch.
3. Verify that ERPM output #1 is providing battery voltage.
4. Deactivate applicable in-cab switch.
5. Verify that ERPM output #1 shuts off.

Continue the above testing procedure for each ERPM switch location.

Note: This feature uses body controller-based software controls which can be diagnosed with The International® Diamond Logic® Builder software (see local dealer if not owned).

References:

Refer to the applicable International® Circuit Diagrams and Service Manuals.

9.7. 60ADT, 60AED and 60AEL:

These feature codes are very similar. The difference is in where the modules are located.

60ADT: BDY INTG, REMOTE POWER MODULE Mounted Inside Cab Behind Driver Seat, Up to 12 Inputs (6 Analog & 6 Tri-State) and 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, (1) 5VREF, Max 100 amp Total, Includes One Switch Pack with momentary Switches.

60AED: BDY INTG, REMOTE POWER MODULE Mounted Under Cab, Up to 12 Inputs (6 Analog & 6 Tri-State) and 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, & (1) 5VREF, Max 100 amp Total, Includes One Switch Pack with Momentary Switches.

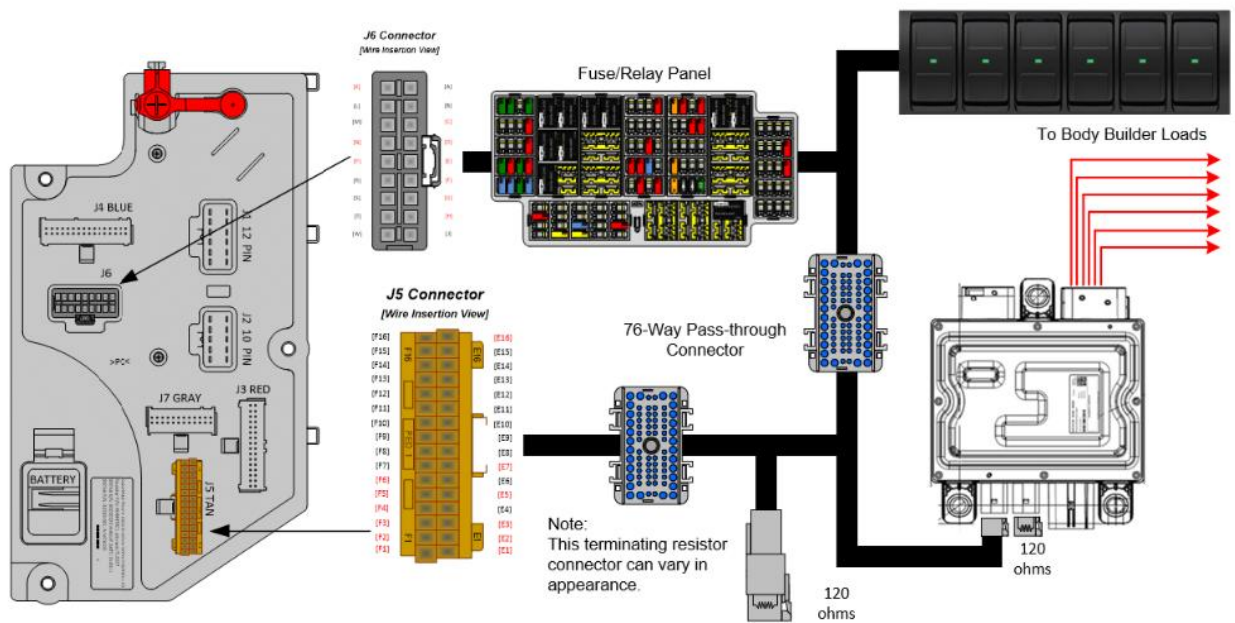
60AEL: BDY INTG, REMOTE PWR MOD, REAR Mounted at End of Frame, Up to 12 Inputs (6 Analog & 6 Tri-State) and 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, (1) 5VRF, Max 100 amp Total, Includes One Switch Pack with Momentary Switches.

Feature Applicability to Vehicle Platforms:

- Heavy Vocational (HV)

Extended Description: These features include one Enhanced Remote Power Module (ERPM). Included with these features are six two-position momentary switches located in the Instrument Panel. Each ERPM output can provide up to 20-Amps maximum with a total of 100-Amps maximum per module.

System Block Diagram:



Body Controller Software Feature Codes:

- **Note: 597795** - BCM PROG, ERPM1 Module enabler is required when using ERPM 1.
- 597818- BCM PROG, REMOTE POWER MOD #1 ERPM

Body Controller Software Feature Code Parameters:

Parameter	ID	Description	Default	Units	Min	Max	Step
PwrMod1_Init_State1_Param	398	If this parameter is set to 1, Output #1 of Remote Power Module #1 will be turned on at ignition key-on, if set to 0 output will be off at key-on.	OFF	No Units	N/A	N/A	N/A
PwrMod1_Init_State2_Param	399	If this parameter is set to 1, Output #2 of Remote Power Module #1 will be turned on at ignition key-on, if set to 0 output will be off at key-on.	OFF	No Units	N/A	N/A	N/A
PwrMod1_Init_State3_Param	400	If this parameter is set to 1, Output #3 of Remote Power Module #1 will be turned on at ignition key-on, if set to 0 output will be off at key-on.	OFF	No Units	N/A	N/A	N/A
PwrMod1_Init_State4_Param	401	If this parameter is set to 1, Output #4 of Remote Power Module #1 will be turned on at ignition key-on, if set to 0 output will be off at key-on.	OFF	No Units	N/A	N/A	N/A
PwrMod1_Init_State5_Param	402	If this parameter is set to 1, Output #5 of Remote Power Module #1 will be turned on at ignition key-on, if set to 0 output will be off at key-on.	OFF	No Units	N/A	N/A	N/A
PwrMod1_Init_State6_Param	403	If this parameter is set to 1, Output #6 of Remote Power Module #1 will	OFF	No Units	N/A	N/A	N/A

		be turned on at ignition key-on, if set to 0 output will be off at key-on.					
RPM1_Channel1_Load Shed_Level	3326	This is the level at which the RPM1 channel 1 Outputs will load shed.	1	No Units	0	3	1
RPM1_Channel2_Load Shed_Level	3327	This is the level at which the RPM1 channel 2 Outputs will load shed.	1	No Units	0	3	1
RPM1_Channel3_Load Shed_Level	3328	This is the level at which the RPM1 channel 3 Outputs will load shed.	1	No Units	0	3	1
RPM1_Channel4_Load Shed_Level	3329	This is the level at which the RPM1 channel 4 Outputs will load shed.	1	No Units	0	3	1
RPM1_Channel5_Load Shed_Level	3330	This is the level at which the RPM1 channel 5 Outputs will load shed.	1	No Units	0	3	1
RPM1_Channel6_Load Shed_Level	3331	This is the level at which the RPM1 channel 6 Outputs will load shed.	1	No Units	0	3	1
PwrMod1_ERPM_20A1_Param	3802	Used to control the Current Command for ERPM1 20A Output 1	20	Amps	0	20	.08
PwrMod1_ERPM_DC1_Param	4000	Duty Cycle Command level1 for ERPM 20A #1	100	Percent	0	100	.4
PwrMod1_ERPM_DC2_Param	4001	Duty Cycle Command level2 for ERPM 20A #1	100	Percent	0	100	.4
PwrMod1_ERPM_DC3_Param	4002	Duty Cycle Command level3 for ERPM 20A #1	100	Percent	0	100	.4
PwrMod1_ERPM_DC4_Param	4003	Duty Cycle Command level4 for ERPM 20A #1	100	Percent	0	100	.4
PwrMod1_ERPM_DC5_Param	4004	Duty Cycle Command level5 for ERPM 20A #1	100	Percent	0	100	.4
PwrMod1_ERPM_DC6_Param	4005	Duty Cycle Command level6 for ERPM 20A #1	100	Percent	0	100	.4
PwrMod1_ERPM_20A2_Param	4022	Used to control the Current Command for ERPM1 20A Output 2	20	Amps	0	20	.08
PwrMod1_ERPM_20A3_Param	4023	Used to control the Current Command for ERPM1 20A Output 3	20	Amps	0	20	.08
PwrMod1_ERPM_20A4_Param	4024	Used to control the Current Command for ERPM1 20A Output 4	20	Amps	0	20	.08
PwrMod1_ERPM_20A5_Param	4025	Used to control the Current Command for ERPM1 20A Output 5	20	Amps	0	20	.08
PwrMod1_ERPM_20A6_Param	4026	Used to control the Current Command for ERPM1 20A Output 6	20	Amps	0	20	.08

Parameter Definitions:

- **PwrMod1_Init_State1_Param**– This parameter determines the initial state of ERPM 1 Output 1. The Default setting is OFF or zero; meaning output will be OFF at ignition key-on. When the box is checked, the value is set to ON or ONE; the output will be ON at ignition key-on.
- **PwrMod1_Init_State2_Param**– This parameter determines the initial state of TEM_Aux2. The Default setting is OFF or zero; meaning output will be OFF at

ignition key-on. When the box is checked, the value is set to ON or ONE; the output will be ON at ignition key-on.

- **PwrMod1_Init_State3_Param**– This parameter determines the initial state of ERPM 1 Output 1. The Default setting is OFF or zero; meaning output will be OFF at ignition key-on. When the box is checked, the value is set to ON or ONE; the output will be ON at ignition key-on.
- **PwrMod1_Init_State4_Param**– This parameter determines the initial state of ERPM 1 Output 1. The Default setting is OFF or zero; meaning output will be OFF at ignition key-on. When the box is checked, the value is set to ON or ONE; the output will be ON at ignition key-on.
- **PwrMod1_Init_State5_Param**– This parameter determines the initial state of ERPM 1 Output 1. The Default setting is OFF or zero; meaning output will be OFF at ignition key-on. When the box is checked, the value is set to ON or ONE; the output will be ON at ignition key-on.
- **RPM1_Channel1_LoadShed_Level**– This is the level at which ERPM 1 Output 1 will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **RPM1_Channel2_LoadShed_Level**– This is the level at which ERPM 1 Output 2 will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **RPM1_Channel3_LoadShed_Level**– This is the level at which ERPM 1 Output 3 will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **RPM1_Channel4_LoadShed_Level**– This is the level at which ERPM 1 Output 4 will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **RPM1_Channel5_LoadShed_Level**– This is the level at which ERPM 1 Output 6 will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **PwrMod1_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from TEM_Aux1. If the current exceeds this specified amount, the virtual fusing shuts the output off.
- **PwrMod1_ERPM_DC_Output1_Param** – This sets the duty cycle command level1 for Dual Aux1 20A Duty cycle.
- **TEM_Aux2_w_Ext_Sw_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from TEM_Aux2. If the current exceeds this specified amount, the virtual fusing shuts the output off

- **TEM_Aux2_w_Ext_Sw_DC_Param** – This sets the duty cycle command level1 for Dual Aux1 20A Duty cycle.
- **TEM_Aux3_w_Ext_Sw_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from TEM_Aux2. If the current exceeds this specified amount, the virtual fusing shuts the output off
- **TEM_Aux3_w_Ext_Sw_DC_Param** – This sets the duty cycle command level1 for Dual Aux1 20A Duty cycle.
- **TEM_Aux4_w_Ext_Sw_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from TEM_Aux4. If the current exceeds this specified amount, the virtual fusing shuts the output off
- **TEM_Aux5_w_Ext_Sw_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from TEM_Aux5. If the current exceeds this specified amount, the virtual fusing shuts the output off
- **TEM_Aux4_w_Ext_Sw_DC_Param** – This sets the duty cycle command level1 for Dual Aux4 20A Duty cycle.
- **TEM_Aux5_w_Ext_Sw_DC_Param** – This sets the duty cycle command level1 for Dual Aux5 20A Duty cycle.

This feature can be installed alone or in conjunction with other ERPM features.

When ordered, this sales feature code is configured by special unadvertised software sales feature codes. These codes are determined by the number of additional features that use ERPM resources. The codes are adjusted to ensure that switch pack configurations and ERPM inputs and output capabilities are not exceeded. DLB may give warnings or error messages if there are feature code conflicts. You can look at the switch locations in DLB to make changes for optimizing switch pack configurations and ERPM outputs.

Parts Associated with This Feature:

Please refer to **Parts Associated with ERPM Features:** in Section 5.

How to Test This Feature:

1. Turn key to accessory or IGN key-state.
2. Activate the applicable in-cab switch.
3. Verify that ERPM output #1 is providing battery voltage.
4. Deactivate applicable in-cab switch.
5. Verify that ERPM output #1 shuts off.

Continue the above testing procedure for each ERPM switch location.

Note: This feature uses body controller-based software controls which can be diagnosed with The International® Diamond Logic® Builder software (see local dealer if not owned).

References:

Refer to the applicable International® Circuit Diagrams and Service Manuals.

9.8. 60ADU, 60ADW and 60AEC

These feature codes are very similar. The difference is in where the modules are located.

60ADU: BDY INTG, REMOTE POWER MODULE (2) Mounted Inside Cab Behind Driver Seat, Each Up to 12 Inputs (6 Analog & 6 Tri-State) and 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, (1) 5VREF, Max 100 amp Total, Includes Two Switch Packs with Momentary Switches

60ADW: BDY INTG, ENHANCED REMOTE POWER MODULE (2) : One Behind Driver Seat, One Behind Passenger Seat, Each Up to 12 Inputs (6 Analog & 6 Tri-State) & 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, (1) 5VREF, Max 100 amp Total, Includes Two Switch Packs with 12 Momentary switches

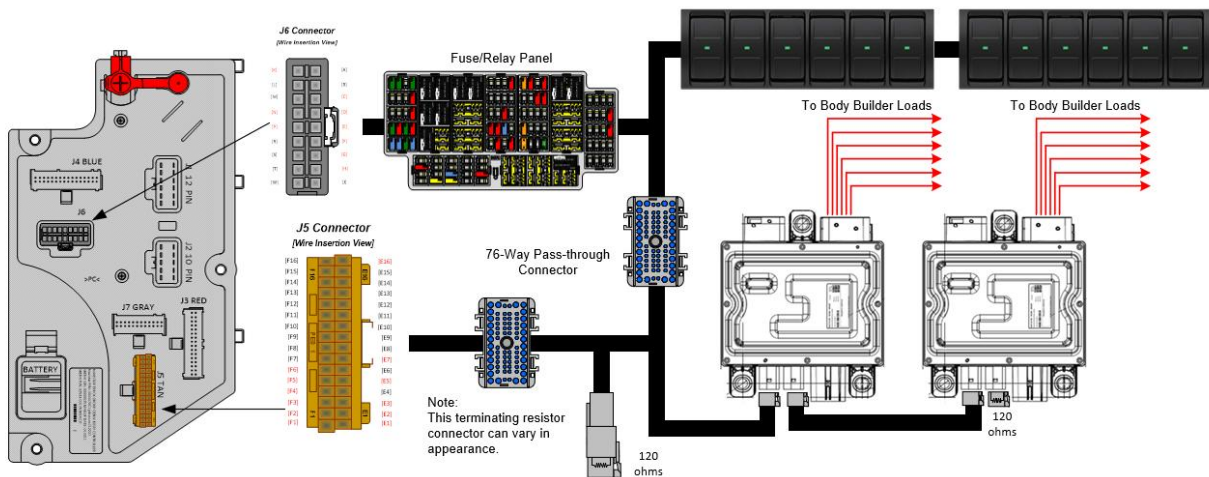
60AEC: BDY INTG, REMOTE POWER MODULE (2) Mounted Under Cab, Up to 12 Inputs (6 Analog & 6 Tri-State) and 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, & (1) 5VREF, Max 100 amp Total, Includes Two Switch Packs with Momentary Switches.

Feature Applicability to Vehicle Platforms:

- Heavy Vocational (HV)

Extended Description: These features include two Remote Power Modules (ERPMs). Included with this feature are twelve two-position momentary switches located in the Instrument Panel. Each ERPM output can provide up to 20-Amps maximum with a total of 100-Amps maximum per module.

System Block Diagram:



Body Controller Software Feature Codes:

- **Note: 597795** - BCM PROG, ERPM1 Module enabler is required when using ERPM 1.
- **Note:597796** - BCM PROG, ERPM2 Module enabler is required when using ERPM 2.
- 597818- BCM PROG, REMOTE POWER MOD #1 ERPM
- 597819- BCM PROG, REMOTE POWER MOD #2 ERPM

Body Controller Software Feature Code Parameters:

597518

Parameter	ID	Description	Default	Units	Min	Max	Step
PwrMod1_Init_State1_Param	398	If this parameter is set to 1, Output #1 of Remote Power Module #1 will be turned on at ignition key-on, if set to 0 output will be off at key-on.	OFF	No Units	N/A	N/A	N/A
PwrMod1_Init_State2_Param	399	If this parameter is set to 1, Output #2 of Remote Power Module #1 will be turned on at ignition key-on, if set to 0 output will be off at key-on.	OFF	No Units	N/A	N/A	N/A
PwrMod1_Init_State3_Param	400	If this parameter is set to 1, Output #3 of Remote Power Module #1 will be turned on at ignition key-on, if set to 0 output will be off at key-on.	OFF	No Units	N/A	N/A	N/A
PwrMod1_Init_State4_Param	401	If this parameter is set to 1, Output #4 of Remote Power Module #1 will be turned on at ignition key-on, if set to 0 output will be off at key-on.	OFF	No Units	N/A	N/A	N/A
PwrMod1_Init_State5_Param	402	If this parameter is set to 1, Output #5 of Remote Power Module #1 will be turned on at ignition key-on, if set to 0 output will be off at key-on.	OFF	No Units	N/A	N/A	N/A
PwrMod1_Init_State6_Param	403	If this parameter is set to 1, Output #6 of Remote Power Module #1 will be turned on at ignition key-on, if set to 0 output will be off at key-on.	OFF	No Units	N/A	N/A	N/A
RPM1_Channel1_Load Shed_Level	3326	This is the level at which the RPM1 channel 1 Outputs will load shed.	1	No Units	0	3	1
RPM1_Channel2_Load Shed_Level	3327	This is the level at which the RPM1 channel 2 Outputs will load shed.	1	No Units	0	3	1
RPM1_Channel3_Load Shed_Level	3328	This is the level at which the RPM1 channel 3 Outputs will load shed.	1	No Units	0	3	1
RPM1_Channel4_Load Shed_Level	3329	This is the level at which the RPM1 channel 4 Outputs will load shed.	1	No Units	0	3	1
RPM1_Channel5_Load Shed_Level	3330	This is the level at which the RPM1 channel 5 Outputs will load shed.	1	No Units	0	3	1
RPM1_Channel6_Load Shed_Level	3331	This is the level at which the RPM1 channel 6 Outputs will load shed.	1	No Units	0	3	1

PwrMod1_ERPM_20 A1_Param	3802	Used to control the Current Command for ERPM1 20A Output 1	20	Amps	0	20	.08
PwrMod1_ERPM_DC 1_Param	4000	Duty Cycle Command level1 for ERPM 20A #1	100	Percent	0	100	.4
PwrMod1_ERPM_DC 2_Param	4001	Duty Cycle Command level2 for ERPM 20A #1	100	Percent	0	100	.4
PwrMod1_ERPM_DC 3_Param	4002	Duty Cycle Command level3 for ERPM 20A #1	100	Percent	0	100	.4
PwrMod1_ERPM_DC 4_Param	4003	Duty Cycle Command level4 for ERPM 20A #1	100	Percent	0	100	.4
PwrMod1_ERPM_DC 5_Param	4004	Duty Cycle Command level5 for ERPM 20A #1	100	Percent	0	100	.4
PwrMod1_ERPM_DC 6_Param	4005	Duty Cycle Command level6 for ERPM 20A #1	100	Percent	0	100	.4
PwrMod1_ERPM_20 A1_Param	4022	Used to control the Current Command for ERPM1 20A Output 2	20	Amps	0	20	.08
PwrMod1_ERPM_20 A1_Param	4023	Used to control the Current Command for ERPM1 20A Output 3	20	Amps	0	20	.08
PwrMod1_ERPM_20 A1_Param	4024	Used to control the Current Command for ERPM1 20A Output 4	20	Amps	0	20	.08
PwrMod1_ERPM_20 A1_Param	4025	Used to control the Current Command for ERPM1 20A Output 5	20	Amps	0	20	.08
PwrMod1_ERPM_20 A1_Param	4026	Used to control the Current Command for ERPM1 20A Output 6	20	Amps	0	20	.08

597519

Parameter	ID	Description	Default	Units	Min	Max	Step
PwrMod2_Init_State1 _Param	41	If this parameter is set to 1, Output #1 of Remote Power Module #1 will be turned on at ignition key-on, if set to 0 output will be off at key-on.	OFF	No Units	N/A	N/A	N/A
PwrMod2_Init_State2 _Param	42	If this parameter is set to 1, Output #2 of Remote Power Module #1 will be turned on at ignition key-on, if set to 0 output will be off at key-on.	OFF	No Units	N/A	N/A	N/A
PwrMod2_Init_State3 _Param	43	If this parameter is set to 1, Output #3 of Remote Power Module #1 will be turned on at ignition key-on, if set to 0 output will be off at key-on.	OFF	No Units	N/A	N/A	N/A
PwrMod2_Init_State4 _Param	44	If this parameter is set to 1, Output #4 of Remote Power Module #1 will be turned on at ignition key-on, if set to 0 output will be off at key-on.	OFF	No Units	N/A	N/A	N/A
PwrMod2_Init_State5 _Param	45	If this parameter is set to 1, Output #5 of Remote Power Module #1 will be turned on at ignition key-on, if set to 0 output will be off at key-on.	OFF	No Units	N/A	N/A	N/A

PwrMod2_Init_State6_Param	46	If this parameter is set to 1, Output #6 of Remote Power Module #1 will be turned on at ignition key-on, if set to 0 output will be off at key-on.	OFF	No Units	N/A	N/A	N/A
RPM2_Channel1_Load Shed_Level	3333	This is the level at which the RPM1 channel 1 Outputs will load shed.	1	No Units	0	3	1
RPM2_Channel2_Load Shed_Level	3334	This is the level at which the RPM1 channel 2 Outputs will load shed.	1	No Units	0	3	1
RPM2_Channel3_Load Shed_Level	3335	This is the level at which the RPM1 channel 3 Outputs will load shed.	1	No Units	0	3	1
RPM2_Channel4_Load Shed_Level	3336	This is the level at which the RPM1 channel 4 Outputs will load shed.	1	No Units	0	3	1
RPM2_Channel5_Load Shed_Level	3337	This is the level at which the RPM1 channel 5 Outputs will load shed.	1	No Units	0	3	1
RPM2_Channel6_Load Shed_Level	3338	This is the level at which the RPM1 channel 6 Outputs will load shed.	1	No Units	0	3	1
PwrMod2_ERPM_20A1_Param	4030	Used to control the Current Command for ERPM1 20A Output 1	20	Amps	0	20	.08
PwrMod2_ERPM_DC1_Param	4006	Duty Cycle Command level1 for ERPM 20A #1	100	Percent	0	100	.4
PwrMod2_ERPM_DC2_Param	4008	Duty Cycle Command level2 for ERPM 20A #1	100	Percent	0	100	.4
PwrMod2_ERPM_DC3_Param	4010	Duty Cycle Command level3 for ERPM 20A #1	100	Percent	0	100	.4
PwrMod2_ERPM_DC4_Param	4012	Duty Cycle Command level4 for ERPM 20A #1	100	Percent	0	100	.4
PwrMod2_ERPM_DC5_Param	4014	Duty Cycle Command level5 for ERPM 20A #1	100	Percent	0	100	.4
PwrMod2_ERPM_DC6_Param	4016	Duty Cycle Command level6 for ERPM 20A #1	100	Percent	0	100	.4
PwrMod2_ERPM_20A2_Param	4031	Used to control the Current Command for ERPM1 20A Output 2	20	Amps	0	20	.08
PwrMod2_ERPM_20A3_Param	4032	Used to control the Current Command for ERPM1 20A Output 3	20	Amps	0	20	.08
PwrMod2_ERPM_20A4_Param	4033	Used to control the Current Command for ERPM1 20A Output 4	20	Amps	0	20	.08
PwrMod2_ERPM_20A5_Param	4034	Used to control the Current Command for ERPM1 20A Output 5	20	Amps	0	20	.08
PwrMod2_ERPM_20A6_Param	4035	Used to control the Current Command for ERPM1 20A Output 6	20	Amps	0	20	.08

Parameter Definitions:

- PwrModX_Init_State1_Param**– This parameter determines the initial state of ERPM X Output 1. The Default setting is OFF or zero; meaning output will be

OFF at ignition key-on. When the box is checked, the value is set to ON or ONE; the output will be ON at ignition key-on.

- **PwrModX_Init_State2_Param**– This parameter determines the initial state of ERPM X Output 2. The Default setting is OFF or zero; meaning output will be OFF at ignition key-on. When the box is checked, the value is set to ON or ONE; the output will be ON at ignition key-on.
- **PwrModX_Init_State3_Param**– This parameter determines the initial state of ERPM X Output 3. The Default setting is OFF or zero; meaning output will be OFF at ignition key-on. When the box is checked, the value is set to ON or ONE; the output will be ON at ignition key-on.
- **PwrModX_Init_State4_Param**– This parameter determines the initial state of ERPM X Output 4. The Default setting is OFF or zero; meaning output will be OFF at ignition key-on. When the box is checked, the value is set to ON or ONE; the output will be ON at ignition key-on.
- **PwrModX_Init_State5_Param**– This parameter determines the initial state of ERPM X Output 5. The Default setting is OFF or zero; meaning output will be OFF at ignition key-on. When the box is checked, the value is set to ON or ONE; the output will be ON at ignition key-on.
- **PwrModX_Init_State6_Param**– This parameter determines the initial state of ERPM X Output 6. The Default setting is OFF or zero; meaning output will be OFF at ignition key-on. When the box is checked, the value is set to ON or ONE; the output will be ON at ignition key-on.
- **RPMX_Channel1_LoadShed_Level**– This is the level at which ERPM X Output 1 will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **RPMX_Channel2_LoadShed_Level**– This is the level at which ERPM 1 Output 2 will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **RPMX_Channel3_LoadShed_Level**– This is the level at which ERPM 1 Output 3 will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **RPMX_Channel4_LoadShed_Level**– This is the level at which ERPM 1 Output 4 will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **RPMX_Channel5_LoadShed_Level**– This is the level at which ERPM 1 Output 6 will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).

- **PwrModX_ERPM_20A1_Param** – This parameter sets the limit (in AMPS) of the current flowing from output 1. If the current exceeds this specified amount, the virtual fusing shuts the output off.
- **PwrModX_ERPM_20A2_Param** – This parameter sets the limit (in AMPS) of the current flowing from output 2. If the current exceeds this specified amount, the virtual fusing shuts the output off.
- **PwrModX_ERPM_20A2_Param** – This parameter sets the limit (in AMPS) of the current flowing from output 2. If the current exceeds this specified amount, the virtual fusing shuts the output off.
- **PwrModX_ERPM_20A3_Param** – This parameter sets the limit (in AMPS) of the current flowing from output 3. If the current exceeds this specified amount, the virtual fusing shuts the output off.
- **PwrModX_ERPM_20A4_Param** – This parameter sets the limit (in AMPS) of the current flowing from output 4. If the current exceeds this specified amount, the virtual fusing shuts the output off.
- **PwrModX_ERPM_20A5_Param** – This parameter sets the limit (in AMPS) of the current flowing from output 5. If the current exceeds this specified amount, the virtual fusing shuts the output off.
- **PwrModX_ERPM_20A6_Param** – This parameter sets the limit (in AMPS) of the current flowing from output 6. If the current exceeds this specified amount, the virtual fusing shuts the output off.
- **PwrModX_ERPM_DC1_Param** – This sets the duty cycle command level for Output 1 20A Duty cycle.
- **PwrModX_ERPM_DC2_Param** – This sets the duty cycle command level1 for Output 2 20A Duty cycle.
- **PwrModX_ERPM_DC3_Param** – This sets the duty cycle command level1 for Output 3 20A Duty cycle.
- **PwrModX_ERPM_DC4_Param** – This sets the duty cycle command level1 for Output 4 20A Duty cycle.
- **PwrModX_ERPM_DC5_Param** – This sets the duty cycle command level1 for Output 5 20A Duty cycle.
- **PwrModX_ERPM_DC6_Param** – This sets the duty cycle command level1 for Output 6 20A Duty cycle.

These features can be installed alone or in conjunction with other ERPM features.

When ordered, these sales feature codes are configured by special unadvertised software sales feature codes. These codes are determined by the number of additional features that use ERPM resources. The codes are adjusted to ensure that switch pack configurations and ERPM inputs and output capabilities are not exceeded.

DLB may give warnings or error messages if there are feature code conflicts. You can look at the switch locations in DLB to make changes for optimizing switch pack configurations and ERPM outputs.

Parts Associated with This Feature:

Please refer to **Parts Associated with ERPM Features:** in Section 5.

How to Test This Feature:

1. Turn key to accessory or IGN key-state.
2. Activate the applicable in-cab switch.
3. Verify that ERPM output #1 is providing battery voltage.
4. Deactivate applicable in-cab switch.
5. Apply 12V to ERPM input #1.
6. Verify that ERPM output #1 is providing battery voltage.
7. Apply GND to ERPM input #1.
8. Verify that ERPM output #1 shuts off.

Continue the above testing procedure for each ERPM switch location.

Note: This feature uses body controller-based software controls which can be diagnosed with The International® Diamond Logic® Builder software (see local dealer if not owned).

References:

Refer to the applicable International® Circuit Diagrams and Service Manuals.

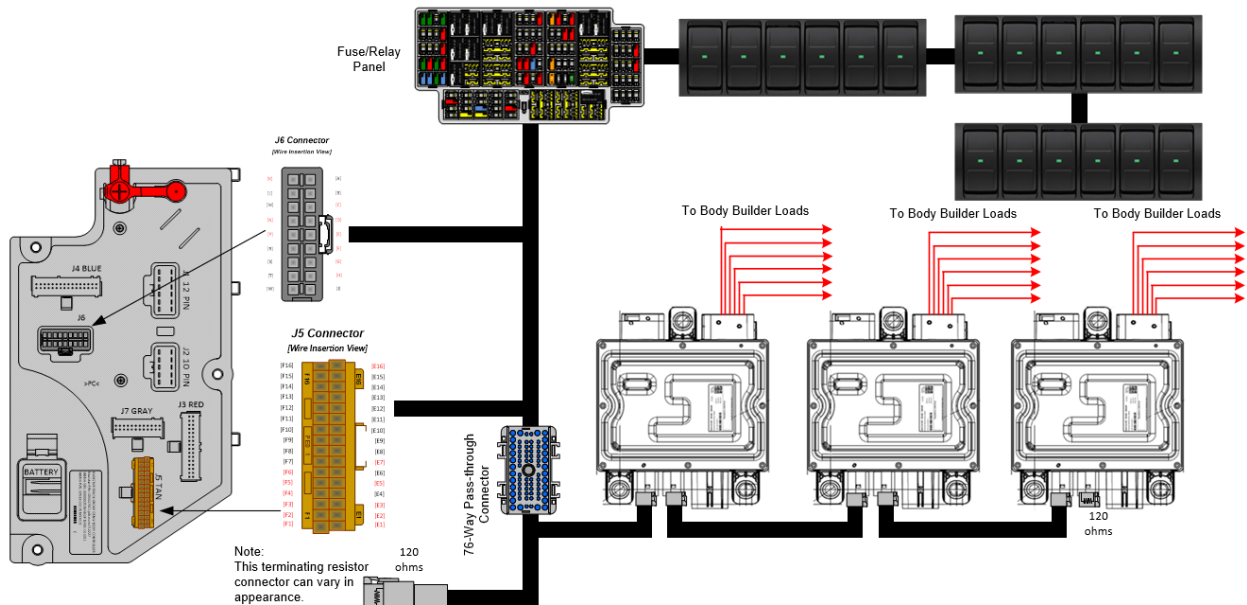
9.9. 60ADY: BDY INTG, ENHANCED REMOTE POWER MODULE (3) : One Behind Driver Seat, Two Behind Passenger Seat, Each Up to 12 Inputs (6 Analog & 6 Tri-State) & 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, (1) 5VREF, Max 100 amp Total, Includes Three Switch Packs with 18 Momentary Switches

Feature Applicability to Vehicle Platforms:

- Heavy Extreme (HX)

Extended Description: Feature 60ADY includes three Remote Power Modules (ERPMS). One mounted in the cab behind the driver's seat and two behind the passenger's seat. Included with this feature are eighteen 2-position momentary switches located in the Instrument Panel. Each ERPM output can provide up to 20-Amps maximum with a total of 100-Amps maximum per module.

System Block Diagram:



- **Body Controller Software Feature Codes:**
- **Note: 597795** - BCM PROG, ERPM1 Module enabler is required when using ERPM 1.
- **Note: 597796** - BCM PROG, ERPM2 Module enabler is required when using ERPM 2.
- **Note: 597797** - BCM PROG, ERPM3 Module enabler is required when using ERPM 3.
- 597818- BCM PROG, REMOTE POWER MOD #1 ERPM
- 597819- BCM PROG, REMOTE POWER MOD #2 ERPM
- 597820 - BCM PROG, REMOTE POWER MOD #3 ERPM

597520

Parameter	ID	Description	Default	Units	Min	Max	Step
PwrMod3_Init_State1_Param	4106	If this parameter is set to 1, Output #1 of Remote Power Module #3 will be turned on at ignition key-on, if set to 0 output will be off at key-on.	OFF	No Units	N/A	N/A	N/A
PwrMod3_Init_State2_Param	4107	If this parameter is set to 1, Output #2 of Remote Power Module #3 will be turned on at ignition key-on, if set to 0 output will be off at key-on.	OFF	No Units	N/A	N/A	N/A

PwrMod3_Init_State3_Param	4108	If this parameter is set to 1, Output #3 of Remote Power Module #3 will be turned on at ignition key-on, if set to 0 output will be off at key-on.	OFF	No Units	N/A	N/A	N/A
PwrMod2_Init_State4_Param	4109	If this parameter is set to 1, Output #4 of Remote Power Module #3 will be turned on at ignition key-on, if set to 0 output will be off at key-on.	OFF	No Units	N/A	N/A	N/A
PwrMod2_Init_State5_Param	4110	If this parameter is set to 1, Output #5 of Remote Power Module #3 will be turned on at ignition key-on, if set to 0 output will be off at key-on.	OFF	No Units	N/A	N/A	N/A
PwrMod3_Init_State6_Param	4111	If this parameter is set to 1, Output #6 of Remote Power Module #3 will be turned on at ignition key-on, if set to 0 output will be off at key-on.	OFF	No Units	N/A	N/A	N/A
RPM2_Channel1_Load Shed_Level	3333	This is the level at which the RPM1 channel 1 Outputs will load shed.	1	No Units	0	3	1
RPM2_Channel2_Load Shed_Level	3334	This is the level at which the RPM1 channel 2 Outputs will load shed.	1	No Units	0	3	1
RPM2_Channel3_Load Shed_Level	3335	This is the level at which the RPM1 channel 3 Outputs will load shed.	1	No Units	0	3	1
RPM2_Channel4_Load Shed_Level	3336	This is the level at which the RPM1 channel 4 Outputs will load shed.	1	No Units	0	3	1
RPM2_Channel5_Load Shed_Level	3337	This is the level at which the RPM1 channel 5 Outputs will load shed.	1	No Units	0	3	1
RPM2_Channel6_Load Shed_Level	3338	This is the level at which the RPM1 channel 6 Outputs will load shed.	1	No Units	0	3	1
PwrMod2_ERPM_20A1_Param	4030	Used to control the Current Command for ERPM1 20A Output 1	20	Amps	0	20	.08
PwrMod2_ERPM_DC1_Param	4006	Duty Cycle Command level1 for ERPM 20A #1	100	Percent	0	100	.4
PwrMod2_ERPM_DC2_Param	4008	Duty Cycle Command level2 for ERPM 20A #1	100	Percent	0	100	.4
PwrMod2_ERPM_DC3_Param	4010	Duty Cycle Command level3 for ERPM 20A #1	100	Percent	0	100	.4
PwrMod2_ERPM_DC4_Param	4012	Duty Cycle Command level4 for ERPM 20A #1	100	Percent	0	100	.4
PwrMod2_ERPM_DC5_Param	4014	Duty Cycle Command level5 for ERPM 20A #1	100	Percent	0	100	.4
PwrMod2_ERPM_DC6_Param	4016	Duty Cycle Command level6 for ERPM 20A #1	100	Percent	0	100	.4
PwrMod2_ERPM_20A2_Param	4031	Used to control the Current Command for ERPM1 20A Output 2	20	Amps	0	20	.08
PwrMod2_ERPM_20A3_Param	4032	Used to control the Current Command for ERPM1 20A Output 3	20	Amps	0	20	.08
PwrMod2_ERPM_20A4_Param	4033	Used to control the Current Command for ERPM1 20A Output 4	20	Amps	0	20	.08
PwrMod2_ERPM_20A5_Param	4034	Used to control the Current Command for ERPM1 20A Output 5	20	Amps	0	20	.08

PwrMod2_ERPM_20 A6_Param	4035	Used to control the Current Command for ERPM1 20A Output 6	20	Amps	0	20	.08
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Parameter Definitions:

- **PwrModX_Init_State1_Param**– This parameter determines the initial state of ERPM X Output 1. The Default setting is OFF or zero; meaning output will be OFF at ignition key-on. When the box is checked, the value is set to ON or ONE; the output will be ON at ignition key-on.
- **PwrModX_Init_State2_Param**– This parameter determines the initial state of ERPM X Output 2. The Default setting is OFF or zero; meaning output will be OFF at ignition key-on. When the box is checked, the value is set to ON or ONE; the output will be ON at ignition key-on.
- **PwrModX_Init_State3_Param**– This parameter determines the initial state of ERPM X Output 3. The Default setting is OFF or zero; meaning output will be OFF at ignition key-on. When the box is checked, the value is set to ON or ONE; the output will be ON at ignition key-on.
- **PwrModX_Init_State4_Param**– This parameter determines the initial state of ERPM X Output 4. The Default setting is OFF or zero; meaning output will be OFF at ignition key-on. When the box is checked, the value is set to ON or ONE; the output will be ON at ignition key-on.
- **PwrModX_Init_State5_Param**– This parameter determines the initial state of ERPM X Output 5. The Default setting is OFF or zero; meaning output will be OFF at ignition key-on. When the box is checked, the value is set to ON or ONE; the output will be ON at ignition key-on.
- **PwrModX_Init_State6_Param**– This parameter determines the initial state of ERPM X Output 6. The Default setting is OFF or zero; meaning output will be OFF at ignition key-on. When the box is checked, the value is set to ON or ONE; the output will be ON at ignition key-on.
- **RPMX_Channel1_LoadShed_Level**– This is the level at which ERPM X Output 1 will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **RPMX_Channel2_LoadShed_Level**– This is the level at which ERPM X Output 2 will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **RPMX_Channel3_LoadShed_Level**– This is the level at which ERPM X Output 3 will load shed. A value of ZERO (0) disables load shed. The value of ONE (1)

has the least priority (sheds first), a value of 3 has the highest priority (sheds last).

- **RPMX_Channel4_LoadShed_Level**– This is the level at which ERPM X Output 4 will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **RPMX_Channel5_LoadShed_Level**– This is the level at which ERPM X Output 6 will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **PwrModX_ERPM_20A1_Param** – This parameter sets the limit (in AMPS) of the current flowing from output 1. If the current exceeds this specified amount, the virtual fusing shuts the output off.
- **PwrModX_ERPM_20A2_Param** – This parameter sets the limit (in AMPS) of the current flowing from output 2. If the current exceeds this specified amount, the virtual fusing shuts the output off.
- **PwrModX_ERPM_20A2_Param** – This parameter sets the limit (in AMPS) of the current flowing from output 2. If the current exceeds this specified amount, the virtual fusing shuts the output off.
- **PwrModX_ERPM_20A3_Param** – This parameter sets the limit (in AMPS) of the current flowing from output 3. If the current exceeds this specified amount, the virtual fusing shuts the output off.
- **PwrModX_ERPM_20A4_Param** – This parameter sets the limit (in AMPS) of the current flowing from output 4. If the current exceeds this specified amount, the virtual fusing shuts the output off.
- **PwrModX_ERPM_20A5_Param** – This parameter sets the limit (in AMPS) of the current flowing from output 5. If the current exceeds this specified amount, the virtual fusing shuts the output off.
- **PwrModX_ERPM_20A6_Param** – This parameter sets the limit (in AMPS) of the current flowing from output 6. If the current exceeds this specified amount, the virtual fusing shuts the output off.
- **PwrModX_ERPM_DC1_Param** – This sets the duty cycle command level for Output 1 20A Duty cycle.
- **PwrModX_ERPM_DC2_Param** – This sets the duty cycle command level1 for Output 2 20A Duty cycle.
- **PwrModX_ERPM_DC3_Param** – This sets the duty cycle command level1 for Output 3 20A Duty cycle.
- **PwrModX_ERPM_DC4_Param** – This sets the duty cycle command level1 for Output 4 20A Duty cycle.

- **PwrModX_ERPM_DC5_Param** – This sets the duty cycle command level1 for Output 5 20A Duty cycle.
- **PwrModX_ERPM_DC6_Param** – This sets the duty cycle command level1 for Output 6 20A Duty cycle.

9.10. 60AEB and 60AEE

These feature codes are very similar. The difference is in where the modules are located.

60AEB: BDY INTG, REMOTE POWER MODULE (2) Mounted Under Cab, Each Up to 12 Inputs (6 Analog & 6 Tri-State) and 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, & (1) 5VR), Max 100 amp Total, Includes One Module with Switch Pack Containing 6 Latched Switches, One Module with Hardware Only.

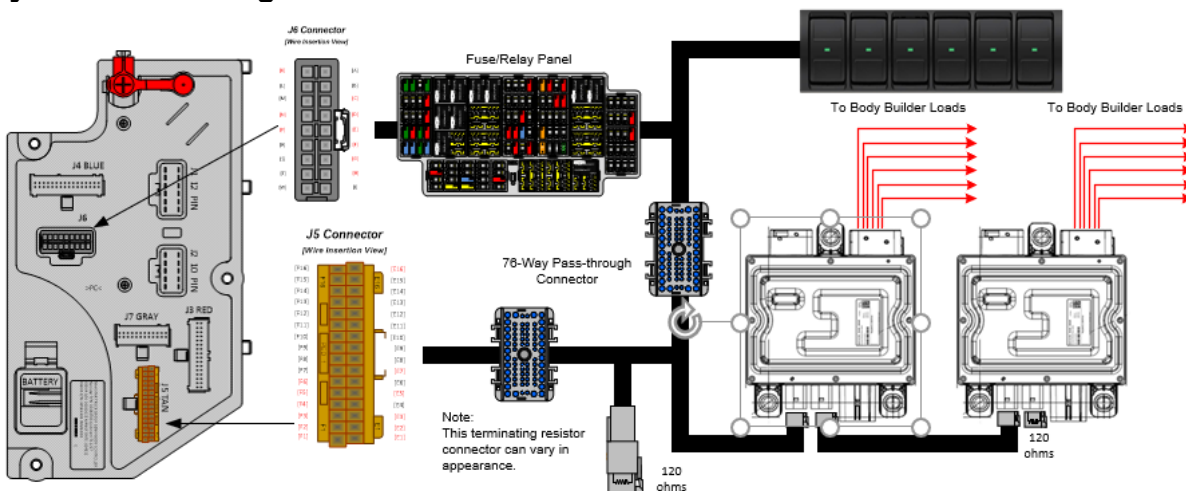
60AEE: BDY INTG, REMOTE POWER MODULE (2) Mounted Under Bunk, Left Luggage Compartment, Each Up to 12 Inputs (6 Analog & 6 Tri-State) & 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, (1) 5VREF, Max 100 amp Total, Includes One Module w/ Switch Pack Containing 6 Latched Switches, One Module Hardware Only.

Feature Applicability to Vehicle Platforms:

- Heavy Vocational (HV)

Extended Description: Feature 60AEB and 60AEE each include two Remote Power Modules (ERPMs). ERPMs with 60AEB are mounted under the cab, while 60AEE ERPMs are in the luggage compartment. Included with these features are six two-position latched switches located in the Instrument Panel. The second ERPM is hardware only for use with custom logic. Each ERPM output can provide up to 20-Amps maximum with a total of 100-Amps maximum per module.

System Block Diagram:



Body Controller Software Feature Codes:

- **Note: 597795** - BCM PROG, ERPM1 Module enabler is required when using ERPM 1.
- **Note:597796** - BCM PROG, ERPM2 Module enabler is required when using ERPM 2.
- **597802**- BCM PROG, AUXILIARY LOAD ERPM FOR (6) ROCKER SWITCHES

Parameter	ID	Description	Default	Units	Min	Max	Step
TEM_Aux1_Loadshed_Level	3273	Loadshed level parameter for TEM Aux Switch 1	1	No Units	0	3	1
TEM_Aux2_Loadshed_Level	3274	Loadshed level parameter for TEM Aux Switch 2	1	No Units	0	3	1
TEM_Aux3_Loadshed_Level	3275	Loadshed level parameter for TEM Aux Switch 3	1	No Units	0	3	1
TEM_Aux4_Loadshed_Level	3276	Loadshed level parameter for TEM Aux Switch 4	1	No Units	0	3	1
TEM_Aux5_Loadshed_Level	3277	Loadshed level parameter for TEM Aux Switch 5	1	No Units	0	3	1
TEM_Aux6_Loadshed_Level	3278	Loadshed level parameter for TEM Aux Switch 6	1	No Units	0	3	1
Aux1_ERPM_20A_Param	4048	Used to control the Current Command for Aux1 ERPM 20A Output	20	Amps	0	20	.08
Aux1_ERPM_20A_DC_Param	4049	DC Command level1 for Aux1 ERPM 20A Duty cycle	100	Percent	0	100	.4
Aux2_ERPM_20A_Param	4069	Used to control the Current Command for Aux2 ERPM 20A Output	20	Amps	0	20	.08
Aux3_ERPM_20A_Param	4070	Used to control the Current Command for Aux3 ERPM 20A Output	20	Amps	0	20	.08
Aux4_ERPM_20A_Param	4071	Used to control the Current Command for Aux4 ERPM 20A Output	20	Amps	0	20	.08
Aux5_ERPM_20A_Param	4072	Used to control the Current Command for Aux5 ERPM 20A Output	20	Amps	0	20	.08
Aux6_ERPM_20A_Param	4073	Used to control the Current Command for Aux6 ERPM 20A Output	20	Amps	0	20	.08
Aux2_ERPM_20A_DC_Param	4074	DC Command level1 for Aux2 ERPM 20A Duty cycle	100	Percent	0	100	.4
Aux3_ERPM_20A_DC_Param	4075	DC Command level1 for Aux3 ERPM 20A Duty cycle	100	Percent	0	100	.4
Aux4_ERPM_20A_DC_Param	4076	DC Command level1 for Aux3 ERPM 20A Duty cycle	100	Percent	0	100	.4
Aux5_ERPM_20A_DC_Param	4077	DC Command level1 for Aux5 ERPM 20A Duty cycle	100	Percent	0	100	.4
Aux6_ERPM_20A_DC_Param	4078	DC Command level1 for Aux6 ERPM 20A Duty cycle	100	Percent	0	100	.4

Parameter Definitions:

- **TEM_Aux1_Loadshed_Level** – This is the level at which the TEM_Aux1 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux2_Loadshed_Level** – This is the level at which the TEM_Aux2 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux3_Loadshed_Level** – This is the level at which the TEM_Aux3 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux4_Loadshed_Level** – This is the level at which the TEM_Aux4 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux5_Loadshed_Level** – This is the level at which the TEM_Aux5 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux6_Loadshed_Level** – This is the level at which the TEM_Aux6 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **Aux1_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from TEM_Aux1. If the current exceeds this specified amount, the virtual fusing shuts the output off.
- **Aux1_ERPM_DC_Param** – This sets the duty cycle command level1 for ERPM 1 output 1 20A output.
- **Aux2_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from ERPM 1 output 2. If the current exceeds this specified amount, the virtual fusing shuts the output off
- **Aux3_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from ERPM 1 output 3. If the current exceeds this specified amount, the virtual fusing shuts the output off
- **Aux4_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from ERPM 1 output 4. If the current exceeds this specified amount, the virtual fusing shuts the output off

- **Aux5_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from ERPM 1 output 5. If the current exceeds this specified amount, the virtual fusing shuts the output off
- **Aux6_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from ERPM 1 output 6. If the current exceeds this specified amount, the virtual fusing shuts the output off
- **Aux2_ERPM_DC_Param** – This sets the duty cycle command level1 for ERPM 1 output 2 20A output.
- **Aux3_ERPM_DC_Param** – This sets the duty cycle command level1 for ERPM 1 output 3 20A output.
- **Aux4_ERPM_DC_Param** – This sets the duty cycle command level1 for ERPM 1 output 4 20A output.
- **Aux5_ERPM_DC_Param** – This sets the duty cycle command level1 for ERPM 1 output 6 20A output.
- **Aux6_ERPM_DC_Param** – This sets the duty cycle command level1 for ERPM 1 output 1 20A output.

This feature can be installed alone or in conjunction with other ERPM features.

When ordered, this sales feature code is configured by special unadvertised software sales feature codes. These codes are determined by the number of additional features that use the ERPM resources. The codes are adjusted to ensure that switch pack configurations and ERPM inputs and output capabilities are not exceeded.

DLB may give warnings or error messages if there are feature code conflicts.

You can look at the switch locations in DLB to make changes for optimizing switch pack configurations and ERPM outputs.

See section 8.12 for additional information.

Parts Associated with This Feature:

Please refer to **Parts Associated with ERPM Features:** in Section 5.

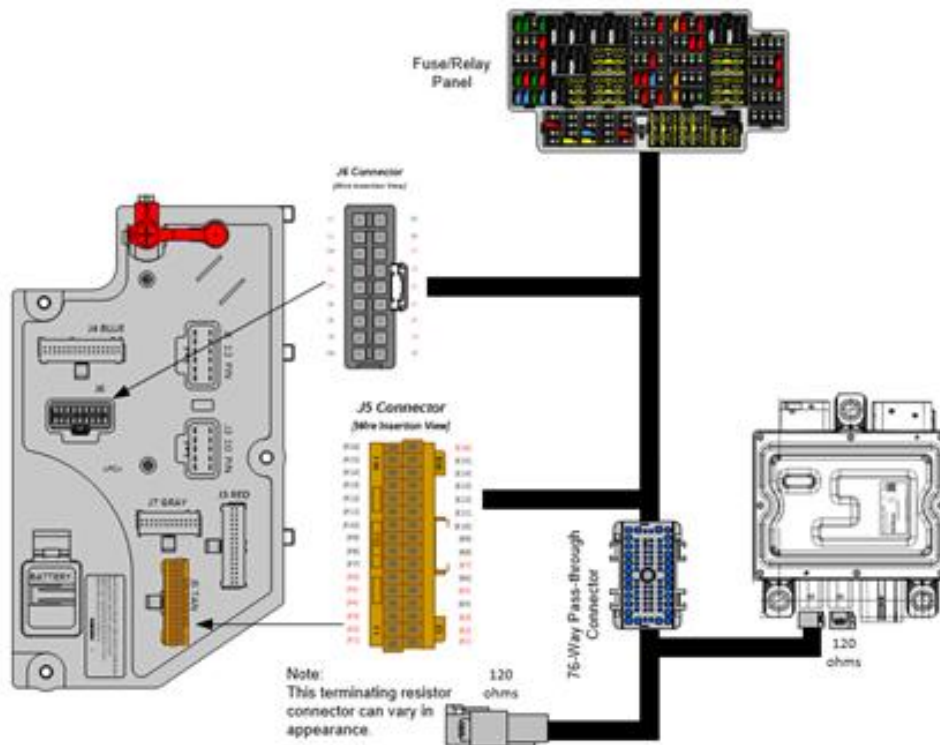
9.11. 60AEP: BDY INTG, POWER MODULE AUX (1) Mounted at End of Frame, Up to 12 Inputs (6 Analog & 6 Tri-State) and 17 Outputs (6 High Current, Max 20 amp per Channel, 6 Low Current, 2 PWM, (2) 5A, (1) 5VR), Max 100 amp Total, Includes One Module with Hardware Only

Feature Applicability to Vehicle Platforms:

- Heavy Vocational (HV)

Extended Description: Feature 60AEP includes one Enhanced Remote Power Module (ERPM) mounted at end of frame. Included with this feature are wiring and hardware only for the ERPM for use with custom logic. The ERPM output can provide up to 20-Amps maximum, per output, with a total of 100-Amps maximum per module.

System Block Diagram:



Note: This feature uses body controller-based software controls which can be diagnosed with The International® Diamond Logic® Builder software (see local dealer if not owned).

References:

Refer to the applicable International® Circuit Diagrams and Service Manuals.

9.12. Codes Added in Conjunction with other ERPM Codes.

The codes are adjusted to ensure that switch pack configurations and ERPM inputs and output capabilities are not exceeded.

DLB may give warnings or error messages if there are feature code conflicts.

You can look at the switch locations in DLB to make changes for optimizing switch pack configurations and ERPM outputs.

The previous features can be installed alone or in conjunction with other ERPM features.

When used with other ERPM features, switches 1-12 are added and configured by special unadvertised software feature codes. These codes are determined by the number of additional features that use the RPM resources.

The following codes should be added after all other features are added to the vehicle.

60ACA = 597821 – This feature should be added if there are features already using five RPM inputs/outputs. (BCM PROG, AUXILIARY LOAD #1)

60ACB = 597798 – This feature should be added if there are features already using four RPM inputs/outputs. (BCM PROG, AUXILIARY LOAD 2 ROCKER SW)

60ACC = 597799 – This feature should be added if there are features already using three RPM inputs/outputs. (BCM PROG, AUXILIARY LOAD 3 ROCKER SW)

60ACD = 597800 – This feature should be added if there are features already using two RPM inputs/outputs. (BCM PROG, AUXILIARY LOAD 4 ROCKER SW)

60ACJ = 597801 – This feature should be added if there are features already using one RPM input/output. (BCM PROG, AUXILIARY LOAD 5 ROCKER SW)

60ACK = 597802 – This feature should be added if there no other features using any RPM inputs/outputs. (BCM PROG, AUXILIARY LOAD 6 ROCKER SW)

60ACV = 597804 – This feature should be added to add the second RPM (60AAB). (BCM PROG, ADDITIONAL 6 AUXILIARY SW)

Body Controller Software Feature Code Parameters:

Parameter	ID	Description	Default	Units	Min	Max	Step
597821 - BCM PROG, AUXILIARY LOAD #1 For Rocker Switch							
TEM_Aux1_Loadshed_Level	3273	Loadshed level parameter for TEM Aux Switch 1	1	No Units	0	3	1

Aux1_ERPM_20A_Param	4048	Used to control the Current Command for Aux1 ERPM 20A Output	20	A	0	20	0.1
Aux1_ERPM_DC_Param	4049	Duty Cycle Command level for Aux1 ERPM 20A	100	Percent	0	100	0.4
597798 - BCM PROG, AUXILIARY LOAD For (2) Rocker Switch							
TEM_Aux1_Loadshed_Level	3273	Loadshed level parameter for TEM Aux Switch 1	1	No Units	0	3	1
TEM_Aux2_Loadshed_Level	3274	Loadshed level parameter for TEM Aux Switch 2	1	No Units	0	3	1
Aux1_ERPM_20A_Param	4048	Used to control the Current Command for Aux1 ERPM 20A Output	20	A	0	20	0.1
Aux1_ERPM_DC_Param	4049	Duty Cycle Command level for Aux1 ERPM 20A	100	Percent	0	100	0.4
Aux2_ERPM_20A_Param	4069	Used to control the Current Command for Aux2 ERPM 20A Output	20	A	0	20	0.1
Aux2_ERPM_DC_Param	4074	Duty Cycle Command level for Aux2 ERPM 20A	100	Percent	0	100	0.4
597799 - BCM PROG, AUXILIARY LOAD For (3) Rocker Switch							
TEM_Aux3_Output_Fuse_Param	1992	This is the maximum current Aux 3 Output can source before the virtual fusing turns the output off.	20	A	0	20	0.1
TEM_Aux1_Loadshed_Level	3273	Loadshed level parameter for TEM Aux Switch 1	1	No Units	0	3	1
TEM_Aux2_Loadshed_Level	3274	Loadshed level parameter for TEM Aux Switch 2	1	No Units	0	3	1
TEM_Aux3_Loadshed_Level	3275	Loadshed level parameter for TEM Aux Switch 3	1	No Units	0	3	1
Aux1_ERPM_20A_Param	4048	Used to control the Current Command for Aux1 ERPM 20A Output	20	A	0	20	0.1
Aux1_ERPM_DC_Param	4049	Duty Cycle Command level for Aux1 ERPM 20A	100	Percent	0	100	0.4
Aux2_ERPM_20A_Param	4069	Used to control the Current Command for Aux2 ERPM 20A Output	20	A	0	20	0.1
Aux3_ERPM_20A_Param	4070	Used to control the Current Command for Aux3 ERPM 20A Output	20	A	0	20	0.1
Aux2_ERPM_DC_Param	4074	Duty Cycle Command level for Aux2 ERPM 20A	100	Percent	0	100	0.4
Aux3_ERPM_DC_Param	4075	Duty Cycle Command level for Aux3 ERPM 20A	100	Percent	0	100	0.4
597800 - BCM PROG, AUXILIARY LOAD For (4) Rocker Switch							
TEM_Aux1_Loadshed_Level	3273	Loadshed level parameter for TEM Aux Switch 1	1	No Units	0	3	1
TEM_Aux2_Loadshed_Level	3274	Loadshed level parameter for TEM Aux Switch 2	1	No Units	0	3	1
TEM_Aux3_Loadshed_Level	3275	Loadshed level parameter for TEM Aux Switch 3	1	No Units	0	3	1
TEM_Aux4_Loadshed_Level	3276	Loadshed level parameter for TEM Aux Switch 4	1	No Units	0	3	1

Aux1_ERPM_20A_P aram	4048	Used to control the Current Command for Aux1 ERPM 20A Output	20	A	0	20	0.1
Aux1_ERPM_DC_Pa ram	4049	Duty Cycle Command level for Aux1 ERPM 20A	100	Percent	0	100	0.4
Aux2_ERPM_20A_P aram	4069	Used to control the Current Command for Aux2 ERPM 20A Output	20	A	0	20	0.1
Aux3_ERPM_20A_P aram	4070	Used to control the Current Command for Aux3 ERPM 20A Output	20	A	0	20	0.1
Aux4_ERPM_20A_P aram	4071	Used to control the Current Command for Aux4 ERPM 20A Output	20	A	0	20	0.1
Aux2_ERPM_DC_Pa ram	4074	Duty Cycle Command level for Aux2 ERPM 20A	100	Percent	0	100	0.4
Aux3_ERPM_DC_Pa ram	4075	Duty Cycle Command level for Aux3 ERPM 20A	100	Percent	0	100	0.4
Aux4_ERPM_DC_Pa ram	4076	Duty Cycle Command level for Aux4 ERPM 20A	100	Percent	0	100	0.4
597801 - BCM PROG, AUXILIARY LOAD For (5) Rocker Switch							
TEM_Aux1_Loadshe d_Level	3273	Loadshed level parameter for TEM Aux Switch 1	1	No Units	0	3	1
TEM_Aux2_Loadshe d_Level	3274	Loadshed level parameter for TEM Aux Switch 2	1	No Units	0	3	1
TEM_Aux3_Loadshe d_Level	3275	Loadshed level parameter for TEM Aux Switch 3	1	No Units	0	3	1
TEM_Aux4_Loadshe d_Level	3276	Loadshed level parameter for TEM Aux Switch 4	1	No Units	0	3	1
TEM_Aux5_Loadshe d_Level	3277	Loadshed level parameter for TEM Aux Switch 5	1	No Units	0	3	1
Aux1_ERPM_20A_P aram	4048	Used to control the Current Command for Aux1 ERPM 20A Output	20	A	0	20	0.1
Aux1_ERPM_DC_Pa ram	4049	Duty Cycle Command level for Aux1 ERPM 20A	100	Percent	0	100	0.4
Aux2_ERPM_20A_P aram	4069	Used to control the Current Command for Aux2 ERPM 20A Output	20	A	0	20	0.1
Aux3_ERPM_20A_P aram	4070	Used to control the Current Command for Aux3 ERPM 20A Output	20	A	0	20	0.1
Aux5_ERPM_20A_P aram	4072	Used to control the Current Command for Aux5 ERPM 20A Output	20	A	0	20	0.1
Aux4_ERPM_20A_P aram	4071	Used to control the Current Command for Aux4 ERPM 20A Output	20	A	0	20	0.1
Aux2_ERPM_DC_Pa ram	4074	Duty Cycle Command level for Aux2 ERPM 20A	100	Percent	0	100	0.4
Aux3_ERPM_DC_Pa ram	4075	Duty Cycle Command level for Aux3 ERPM 20A	100	Percent	0	100	0.4
Aux4_ERPM_DC_Pa ram	4076	Duty Cycle Command level for Aux4 ERPM 20A	100	Percent	0	100	0.4
Aux5_ERPM_DC_Pa ram	4077	Duty Cycle Command level for Aux5 ERPM 20A	100	Percent	0	100	0.4

597802 - BCM PROG, AUXILIARY LOAD For (6) Rocker Switch							
TEM_Aux1_Loadshed_Level	3273	Loadshed level parameter for TEM Aux Switch 1	1	No Units	0	3	1
TEM_Aux2_Loadshed_Level	3274	Loadshed level parameter for TEM Aux Switch 2	1	No Units	0	3	1
TEM_Aux3_Loadshed_Level	3275	Loadshed level parameter for TEM Aux Switch 3	1	No Units	0	3	1
TEM_Aux4_Loadshed_Level	3276	Loadshed level parameter for TEM Aux Switch 4	1	No Units	0	3	1
TEM_Aux5_Loadshed_Level	3277	Loadshed level parameter for TEM Aux Switch 5	1	No Units	0	3	1
TEM_Aux6_Loadshed_Level	3278	Loadshed level parameter for TEM Aux Switch 6	1	No Units	0	3	1
Aux1_ERPM_20A_Param	4048	Used to control the Current Command for Aux1 ERPM 20A Output	20	A	0	20	0.1
Aux1_ERPM_DC_Param	4049	Duty Cycle Command level for Aux1 ERPM 20A	100	Percent	0	100	0.4
Aux2_ERPM_20A_Param	4069	Used to control the Current Command for Aux2 ERPM 20A Output	20	A	0	20	0.1
Aux3_ERPM_20A_Param	4070	Used to control the Current Command for Aux3 ERPM 20A Output	20	A	0	20	0.1
Aux4_ERPM_20A_Param	4071	Used to control the Current Command for Aux4 ERPM 20A Output	20	A	0	20	0.1
Aux5_ERPM_20A_Param	4072	Used to control the Current Command for Aux5 ERPM 20A Output	20	A	0	20	0.1
Aux6_ERPM_20A_Param	4073	Used to control the Current Command for Aux6 ERPM 20A Output	20	A	0	20	0.1
Aux2_ERPM_DC_Param	4074	Duty Cycle Command level for Aux2 ERPM 20A	100	Percent	0	100	0.4
Aux3_ERPM_DC_Param	4075	Duty Cycle Command level for Aux3 ERPM 20A	100	Percent	0	100	0.4
Aux4_ERPM_DC_Param	4076	Duty Cycle Command level for Aux4 ERPM 20A	100	Percent	0	100	0.4
Aux5_ERPM_DC_Param	4077	Duty Cycle Command level for Aux5 ERPM 20A	100	Percent	0	100	0.4
Aux6_ERPM_DC_Param	4078	Duty Cycle Command level for Aux6 ERPM 20A	100	Percent	0	100	0.4
597804 – BCM PROG, ADDITIONAL 6 AUXILIARY SW							
TEM_Aux7_Output_Fuse_Param	2100	This is the maximum current Aux 7 Output can source before the virtual fusing turns the output off.	20	A	0	20	0.1
TEM_Aux8_Output_Fuse_Param	2101	This is the maximum current Aux 8 Output can source before the virtual fusing turns the output off.	20	A	0	20	0.1
TEM_Aux9_Output_Fuse_Param	2102	This is the maximum current Aux 9 Output can source before the virtual fusing turns the output off.	20	A	0	20	0.1
TEM_Aux10_Output_Fuse_Param	2103	This is the maximum current Aux 10 Output can source before the virtual fusing turns the output off.	20	A	0	20	0.1

TEM_Aux11_Output_Fuse_Param	2104	This is the maximum current Aux 11 Output can source before the virtual fusing turns the output off.	20	A	0	20	0.1
TEM_Aux12_Output_Fuse_Param	2105	This is the maximum current Aux 12 Output can source before the virtual fusing turns the output off.	20	A	0	20	0.1
TEM_Aux7_Loadshed_Level	3339	Loadshed level parameter for TEM Aux Switch 7	1	No Units	0	3	1
TEM_Aux8_Loadshed_Level	3340	Loadshed level parameter for TEM Aux Switch 8	1	No Units	0	3	1
TEM_Aux9_Loadshed_Level	3341	Loadshed level parameter for TEM Aux Switch 9	1	No Units	0	3	1
TEM_Aux10_Loadshed_Level	3342	Loadshed level parameter for TEM Aux Switch 10	1	No Units	0	3	1
TEM_Aux11_Loadshed_Level	3343	Loadshed level parameter for TEM Aux Switch 11	1	No Units	0	3	1
TEM_Aux12_Loadshed_Level	3344	Loadshed level parameter for TEM Aux Switch 12	1	No Units	0	3	1
597857- BCM PROG, REMOTE POWER MOD #3							
TEM_Aux13_Output_Fuse_Param	2215	This is the maximum current Aux 13 Output can source before the virtual fusing turns the output off.	20	A	0	20	0.1
TEM_Aux14_Output_Fuse_Param	2216	This is the maximum current Aux 14 Output can source before the virtual fusing turns the output off.	20	A	0	20	0.1
TEM_Aux15_Output_Fuse_Param	2217	This is the maximum current Aux 15 Output can source before the virtual fusing turns the output off.	20	A	0	20	0.1
TEM_Aux16_Output_Fuse_Param	2218	This is the maximum current Aux 16 Output can source before the virtual fusing turns the output off.	20	A	0	20	0.1
TEM_Aux17_Output_Fuse_Param	2219	This is the maximum current Aux 17 Output can source before the virtual fusing turns the output off.	20	A	0	20	0.1
TEM_Aux18_Output_Fuse_Param	2220	This is the maximum current Aux 18 Output can source before the virtual fusing turns the output off.	20	A	0	20	0.1
RPM 3_Channel13_Loadshed_Level	3272	This is the level at which the RPM 3 channel 13 Output will load shed.	1	No Units	0	3	1
RPM 3_Channel14_Loadshed_Level	3315	This is the level at which the RPM 3 channel 14 Output will load shed.	1	No Units	0	3	1
RPM 3_Channel15_Loadshed_Level	3316	This is the level at which the RPM 3 channel 15 Output will load shed.	1	No Units	0	3	1
RPM 3_Channel16_Loadshed_Level	3317	This is the level at which the RPM 3 channel 16 Output will load shed.	1	No Units	0	3	1
RPM 3_Channel17_Loadshed_Level	3318	This is the level at which the RPM 3 channel 18 Output will load shed.	1	No Units	0	3	1
RPM 3_Channel18_Loadshed_Level	3319	This is the level at which the RPM 3 channel 19 Output will load shed.	1	No Units	0	3	1

Parameter Definitions:

- **Aux1_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from the output labeled Aux_Switch_1_Output of RPM #1. Default is set at 20 amps.
- **Aux2_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from the output labeled Aux_Switch_2_Output of RPM #1. Default is set at 20 amps.
- **Aux3_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from the output labeled Aux_Switch_3_Output of RPM #1. Default is set at 20 amps.
- **Aux4_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from the output labeled Aux_Switch_4_Output of RPM #1. Default is set at 20 amps.
- **Aux5_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from the output labeled Aux_Switch_5_Output of RPM #1. Default is set at 20 amps.
- **Aux6_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from the output labeled Aux_Switch_6_Output of RPM #1. Default is set at 20 amps.
- **Aux7_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from the output labeled Aux_Switch_7_Output of RPM #2. Default is set at 20 amps.
- **Aux8_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from the output labeled Aux_Switch_8_Output of RPM #2. Default is set at 20 amps.
- **Aux9_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from the output labeled Aux_Switch_9_Output of RPM #2. Default is set at 20 amps.
- **Aux10_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from the output labeled Aux_Switch_10_Output of RPM #2. Default is set at 20 amps.
- **Aux11_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from the output labeled Aux_Switch_11_Output of RPM #2. Default is set at 20 amps.
- **Aux12_ERPM_20A_Param** – This parameter sets the limit (in AMPS) of the current flowing from the output labeled Aux_Switch_12_Output of RPM #2. Default is set at 20 amps.
- **Aux13_ERPM_20A_Param** – This is the maximum current Aux 13 Output can source before the virtual fusing turns the output off. Default is 20-amps.
- **Aux14_ERPM_20A_Param** – This is the maximum current Aux 14 Output can source before the virtual fusing turns the output off. Default is 20-amps.

- **Aux15_ERPM_20A_Param** – This is the maximum current Aux 15 Output can source before the virtual fusing turns the output off. Default is 20-amps.
- **Aux16_ERPM_20A_Param** – This is the maximum current Aux 16 Output can source before the virtual fusing turns the output off. Default is 20-amps.
- **Aux17_ERPM_20A_Param** – This is the maximum current Aux 17 Output can source before the virtual fusing turns the output off. Default is 20-amps.
- **Aux18_ERPM_20A_Param** – This is the maximum current Aux 18 Output can source before the virtual fusing turns the output off. Default is 20-amps.
- **Aux1_ERPM_DC_Param** – This sets the duty cycle for the PWM output on the Aux1 output. Default is 100-percent.
- **Aux2_ERPM_DC_Param** – This sets the duty cycle for the PWM output on the Aux2 output. Default is 100-percent.
- **Aux3_ERPM_DC_Param** – This sets the duty cycle for the PWM output on the Aux3 output. Default is 100-percent.
- **Aux4_ERPM_DC_Param** – This sets the duty cycle for the PWM output on the Aux4 output. Default is 100-percent.
- **Aux5_ERPM_DC_Param** – This sets the duty cycle for the PWM output on the Aux5 output. Default is 100-percent.
- **Aux6_ERPM_DC_Param** – This sets the duty cycle for the PWM output on the Aux1 output. Default is 100-percent.
- **Aux7_ERPM_DC_Param** – This sets the duty cycle for the PWM output on the Aux1 output. Default is 100-percent.
- **Aux8_ERPM_DC_Param** – This sets the duty cycle for the PWM output on the Aux1 output. Default is 100-percent.
- **Aux9_ERPM_DC_Param** – This sets the duty cycle for the PWM output on the Aux1 output. Default is 100-percent.
- **Aux10_ERPM_DC_Param** – This sets the duty cycle for the PWM output on the Aux1 output. Default is 100-percent.
- **Aux11_ERPM_DC_Param** – This sets the duty cycle for the PWM output on the Aux1 output. Default is 100-percent.
- **Aux12_ERPM_DC_Param** – This sets the duty cycle for the PWM output on the Aux1 output. Default is 100-percent.
- **Aux13_ERPM_DC_Param** – This sets the duty cycle for the PWM output on the Aux1 output. Default is 100-percent.
- **Aux14_ERPM_DC_Param** – This sets the duty cycle for the PWM output on the Aux1 output. Default is 100-percent.
- **Aux15_ERPM_DC_Param** – This sets the duty cycle for the PWM output on the Aux1 output. Default is 100-percent.
- **Aux16_ERPM_DC_Param** – This sets the duty cycle for the PWM output on the Aux1 output. Default is 100-percent.
- **Aux17_ERPM_DC_Param** – This sets the duty cycle for the PWM output on the Aux1 output. Default is 100-percent.

- **Aux18_ERPM_DC_Param** – This sets the duty cycle for the PWM output on the Aux1 output. Default is 100-percent.
- **TEM_Aux1_LoadShed_Level** – This is the level at which the Aux1 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) is the least priority (sheds first), a value of 3 is the highest priority (sheds last).
- **TEM_Aux2_LoadShed_Level** – This is the level at which the Aux2 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux3_LoadShed_Level** – This is the level at which the Aux3 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux4_LoadShed_Level** – This is the level at which the Aux4 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux5_LoadShed_Level** – This is the level at which the Aux5 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux6_LoadShed_Level** – This is the level at which the Aux6 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux7_LoadShed_Level** – This is the level at which the Aux7 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux8_LoadShed_Level** – This is the level at which the Aux8 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux9_LoadShed_Level** – This is the level at which the Aux9 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux10_LoadShed_Level** – This is the level at which the Aux10 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux11_LoadShed_Level** – This is the level at which the Aux11 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **TEM_Aux12_LoadShed_Level** – This is the level at which the Aux12 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **RPM 3 Channel13 LoadShed Level** – This is the level at which the RPM 3 channel 13 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).

- **RPM 3 Channel14 LoadShed Level** – This is the level at which the RPM 3 channel 14 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **RPM 3 Channel15 LoadShed Level** – This is the level at which the RPM 3 channel 15 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **RPM 3 Channel16 LoadShed Level** – This is the level at which the RPM 3 channel 16 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **RPM 3 Channel17 LoadShed Level** – This is the level at which the RPM 3 channel 17 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).
- **RPM 3 Channel18 LoadShed Level** – This is the level at which the RPM 3 channel 18 Output will load shed. A value of ZERO (0) disables load shed. The value of ONE (1) has the least priority (sheds first), a value of 3 has the highest priority (sheds last).

Parts Associated with This Feature:

Please refer to **Parts Associated with ERPM Features**: in Section 5.

10. Enhanced Remote Power Module PTO Support

10.1. 16WLM: HOUR METER, PTO for Customer Provided PTO; Indicator Light and Hour meter in Gauge Cluster Includes Return Wire for PTO Feedback Switch

Note: Not configurable with T14 Transmission feature codes

Feature Applicability to Vehicle Platforms:

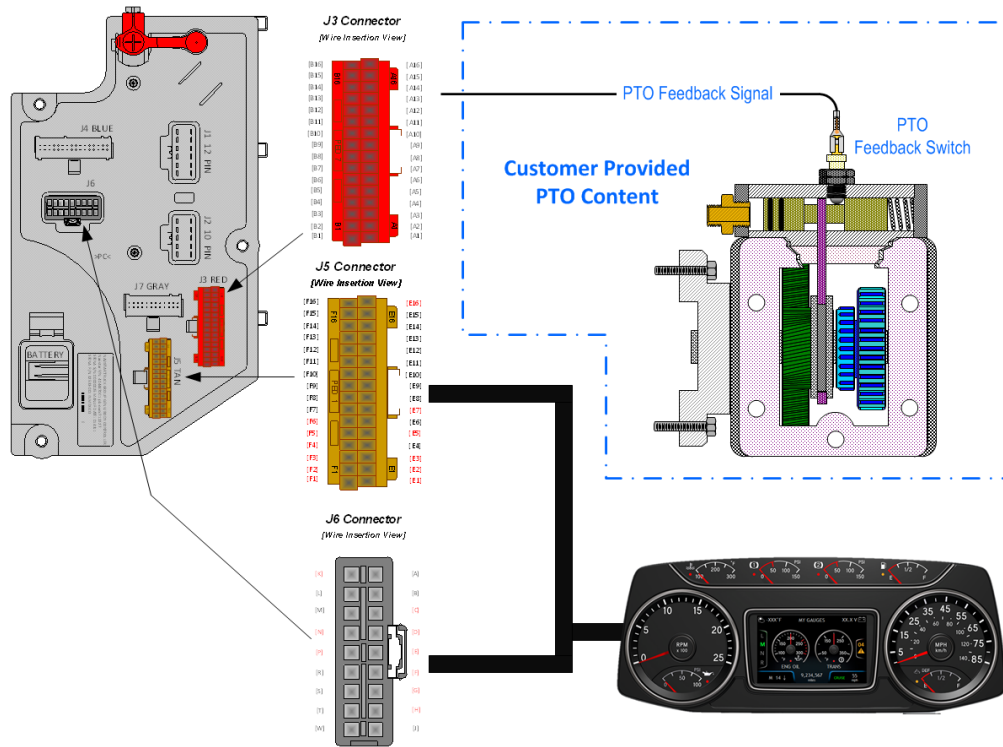
- Heavy Vocational (HV)
- Line Haul Transport (LT)
- Medium Vocational (MV)
- Regional Haul (RH)
- Heavy Extreme (HX) 2021 and Newer

Extended Description: 16WLM provides the customer with a blunt cut wire located in the engine compartment to be wired into a body builder-installed PTO feedback switch. This feature can be ordered in addition to PTO accommodation features that do not utilize Remote Power Module outputs for the solenoid power source. Also included in this

feature is a PTO indicator light in the gauge cluster and a PTO hour meter, which allows the operator to measure stationary PTO hours for maintenance records and fuel tax purposes. To view the hour meter, press the gauge cluster selection button momentarily until the text portion of the display indicates “PTO Hour.”

Note: The hour meter functionality is included when PTO accommodation features, which utilize Remote Power Module outputs for the solenoid power source, are ordered. When this is the case, it is not necessary to order 16WLM.

System Block Diagram:



Body Controller Software Feature Codes:

Note: Mechanical PTO control programming only activates the PTO Indicator and Hour Meter feature.

- 597282 - BCM PROG, PTO HOURMETER HRS DISPLAYED IP (Activates hour meter and PTO warning light in cluster)
- 597279 - BCM PROG, PTO MONITOR INDICATOR (Use with body controller INPUT – NO Remote Power Module)
- 597283 - BCM PROG, PTO MONITOR INDICATOR & ALARM (failure to add this feature will result in an OBD fault condition)
- **Note: if Eaton® Precision™ or Endurant™ Transmission is being used add:**
 - 597276 – BCM PROG, PTO ENABLER J1939 Engagement Consent for Eaton® Precision™ and Endurant™

Body Controller Software Feature Code Parameters:

Parameter	ID	Description	Default	Units	Min	Max	Step
597279 - BCM PROG, PTO MONITOR INDICATOR							
ESC_PTO_En gaged_Param	2199	Active State for the PTO engagement feedback switch.	1	No Units	1	1	1

597282 - BCM PROG, PTO HOURMETER HRS DISPLAYED IP							
NONE							
597283 - BCM PROG, PTO MONITOR INDICATOR & ALARM							
TEM_PTO_PK_Brake_Alarms	2131	if this Parameter is 1, an alarm will sound if the PTO is engaged, and the park brake is released	0	No Units	0	1	1
TEM_PTO_Non_Neut_Alarms	2132	if this Parameter is 1, an alarm will sound if the PTO is engaged, and transmission is taken out of neutral	0	No Units	0	1	1
TEM_PTO_Veh_Spd_Alarms	2133	if this Parameter is 1, an alarm will sound if the PTO is engaged, and the vehicle speed is over TEM_PTO_Veh_Spd_Alarm_Limit	1	No Units	0	1	1
TEM_PTO_Veh_Spd_Alarm_Limit	2134	See TEM_PTO_Veh_Spd_Alarms	5	Mph	3	100	1
TEM_PTO_Eng_Spd_Alarms	2135	if this Parameter is 1, an alarm will sound if the PTO is engaged, and the engine speed is over TEM_PTO_Eng_Spd_Alarm_Limit	1	No Units	0	1	1
TEM_PTO_Eng_Spd_Alarm_Limit	2136	See TEM_PTO_Eng_Spd_Alarms	1400	RPM	0	5000	1
TEM_PTO_Eng_Run_Alarms	2137	if this Parameter is 1, an alarm will sound if the PTO is engaged, and the engine is turned off	0	No Units	0	1	1
TEM_PTO_Air_Pres_Alarms	2138	if this Parameter is 1, an alarm will sound if the primary air pressure is below TEM_PTO_Air_Pres_Alarm_Limit	0	No Units	0	1	1
TEM_PTO_Air_Pres_Alarm_Limit	2139	See TEM_PTO_Air_Pres_Alarms	0	PSI	0	500	1
TEM_RPM_PTO_Engaged_Param	2147	Active State for the TEM PTO engagement feedback switch.	0	No Units	0	3	1

Parameter Definitions:

- **ESC_PTO_Engaged_Param** – Active State for the PTO engagement feedback switch. Ground Input is the only option with Body Controller input.
- **TEM_PTO_PK_Brake_Alarms** – Activates an audible alarm that will sound if the PTO is engaged, and the park brake is released.
- **TEM_PTO_Non_Neut_Alarms** – Activates an audible alarm that will sound if the PTO is engaged, and the transmission is taken out of neutral.
- **TEM_PTO_Veh_Spd_Alarms** – If this parameter is turned on, then an audible alarm will sound if the PTO is engaged, and the vehicle speed is over the value set by TEM_PTO_Veh_Spd_Alarm_Limit. If this parameter is not activated the value in TEM_PTO_Veh_Spd_Alarm_Limit will not activate

- **TEM_PTO_Veh_Spd_Alarm_Limit** – This is the actual physical value required to sound the alarm for TEM_PTO_Veh_Spd_Alarms.
- **TEM_PTO_Eng_Spd_Alarms** – If this parameter is turned on, then an alarm will sound if the PTO is engaged, and the engine speed is over the value set by TEM_PTO_Eng_Spd_Alarm_Limit. If this parameter is not activated the value in TEM_PTO_Eng_Spd_Alarm_Limit will not activate
- **TEM_PTO_Eng_Spd_Alarm_Limit** – This is the actual physical value required to sound the alarm for TEM_PTO_Eng_Spd_Alarms.
- **TEM_PTO_Eng_Run_Alarms** – If this parameter is turned on, then an audible alarm will sound if the PTO is engaged, and the engine is turned off.
- **TEM_PTO_Air_Pres_Alarms** – If this parameter is turned on, then an audible alarm will sound in the cab if the primary air pressure drops below the value specified by TEM_PTO_Air_Pres_Alarm_Limit. If this parameter is not activated the value in TEM_PTO_Air_Pres_Alarm_Limit will not activate
- **TEM_PTO_Air_Pres_Alarm_Limit** – This is the actual physical value required to sound the alarm for TEM_PTO_Air_Pres_Alarms.
- **TEM_RPM_PTO_Engaged_Param** – This parameter indicates the state that the Body Controller (BCM) will read as active for the TEM PTO feedback switch (as it goes into the BCM input). This active state will be used to indicate when the PTO is engaged:
 - 0 = Input active when open circuit
 - 1 = Input active when grounded
 - 2 = not used
 - 3 = Input active when at 12V.

Note/s About Possible Software Feature Conflicts:
597279 and 597283 are mutually exclusive.

Parts Associated with This Feature:

Please refer to **Parts Associated with ERPM Features:** in Section 5.

How to Test This Feature:

1. Customer should apply the correct active state voltage 12V or GND (as programmed in the Diamond Logic® Builder software) to the International-provided PTO engagement feedback wire or the appropriate ERPM pin.
2. Verify that the PTO indicator light in the gauge cluster comes on and stays on as long as the active state voltage is applied.

Note: This feature uses body controller-based software controls which can be diagnosed with The International® Diamond Logic® Builder software (see local dealer if not owned).

References:

Refer to the applicable International® Circuit Diagrams and Service Manuals.

10.2. 60ABA: BDY INTG, PTO ACCOMMODATION for Monitoring Cable Shift Engaged PTO, With Indicator Light and Audible Alarm in Gauge Cluster (requires one Enhanced Remote Power Module (ERPM) input).

Note: Not compatible with T14 Transmission

Feature Applicability to Vehicle Platforms:

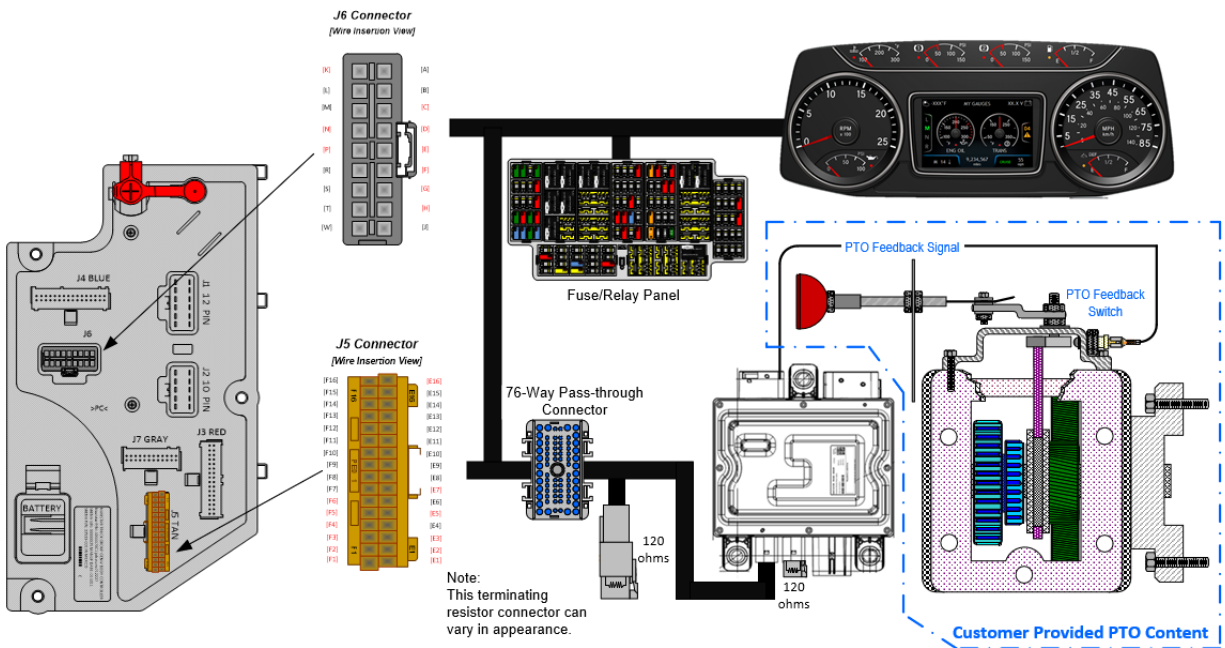
- Heavy Vocational (HV)

Extended Description: This feature utilizes a customer-mounted PTO feedback switch wired to an ERPM input to drive an indicator light in the gauge cluster that allows the operator to determine that the PTO is engaged. An audible alarm is used to warn the operator when the PTO is engaged during unsafe vehicle operating conditions such as when the park brake is released, or the engine speed is too high. Operating limits are established through programmable parameters that are set in the Body Controller (BCM). The ERPM input also drives a PTO hour meter to allow the operator to measure stationary PTO hours for maintenance records and fuel tax purposes. To view the PTO hour meter, press the gauge cluster display selector button momentarily until the text portion of the display indicates “PTO Hour.”

A Cable-Shifted PTO is a gear-to-gear engagement type mechanism. Specific transmission operating modes are required to allow safe engagement of a Cable-Shifted PTO. The PTO gear in the transmission must be stopped before engagement of a Cable-Shifted PTO should be attempted. The clutch must be depressed with the vehicle parked to engage the PTO for a manual transmission. An automatic transmission must be in any driving gear with vehicle parked to engage a Cable-Shifted PTO.

The PTO alarms are controlled by programmable parameters set in the BCM. Factory default settings for these programmable parameters are listed in the tables below. Please use the Diamond Logic® Builder software to determine pin locations for ERPM inputs (refer to the CONNECTOR screen view) and to set programmable parameters (refer to the FEATURE screen view).

System Block Diagram:



Body Controller Software Feature Codes:

- **Note: 597795** - BCM PROG, ERPM1 Module enabler is required when using ERPM 1

Note: Mechanical PTO control: programming only activates PTO Indicator and Hour Meter feature.

- 597282 - BCM PROG, **PTO HOURMETER HRS DISPLAYED IP**
- 597283 - BCM PROG, **PTO MONITOR INDICATOR & ALARM** (failure to add this feature will result in an OBD fault condition)
- **Note: if Eaton® Procision™ or Endurant™ Transmission is being used add:**
 - **597276** – BCM PROG, **PTO ENABLER J1939 Engagement Consent for Eaton® Procision™ and Endurant™**

Body Controller Software Feature Code Parameters:

Parameter	ID	Description	Default	Units	Min	Max	Step
On – Indicates a 1 is set for the parameter							
Off – Indicates a 0 is set in for this parameter							
ENGAGEMENT PARAMETERS							
ALARMS PARAMETERS							

TEM_PTO_Pk_Brake_Alarms	2131	if this Parameter is 1, an alarm will sound if the PTO is engaged, and the park brake is released	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Non_Neut_Alarms	2132	if this Parameter is 1, an alarm will sound if the PTO is engaged, and transmission is taken out of neutral	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Veh_Spd_Alarms	2133	if this Parameter is 1, an alarm will sound if the PTO is engaged, and the vehicle speed is over TEM_PTO_Veh_Spd_Alarm_Limit	ON	N/A	N/A	N/A	N/A
TEM_PTO_Veh_Spd_Alarm_Limit	2134	See TEM_PTO_Veh_Spd_Alarms	3	MPH	3	100	1
TEM_PTO_Eng_Spd_Alarms	2135	if this Parameter is 1, an alarm will sound if the PTO is engaged, and the engine speed is over TEM_PTO_Eng_Spd_Alarm_Limit	ON	N/A	N/A	N/A	N/A
TEM_PTO_Eng_Spd_Alarm_Limit	2136	See TEM_PTO_Eng_Spd_Alarms	1400	ERPM	0	5000	0.1
TEM_PTO_Eng_Run_Alarms	2137	if this Parameter is 1, an alarm will sound if the PTO is engaged, and the engine is turned off	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Air_Pres_Alarms	2138	if this Parameter is 1, an alarm will sound if the primary air pressure is below TEM_PTO_Air_Pres_Alarm_Limit	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Air_Pres_Alarm_Limit	2139	See TEM_PTO_Eng_Spd_Alarms	0	PSI	0	500	1
TEM_ERPM_PTO_Engaged_Param	2147	Active State for the TEM PTO engagement feedback switch.	0	No Units	0	3	1

Parameter Definitions:

- **ALARM PARAMETERS**

These parameters utilize the gauge cluster to sound an alarm to the driver when certain programmable parameters are violated.

- **TEM_PTO_Pk_Brake_Alarms** – If this parameter is turned on, then an audible alarm will sound in the cab if the PTO is engaged, and the park brake is released.
- **TEM_PTO_Non_Neut_Alarms** – If this parameter is turned on, then an audible alarm will sound in the cab if the PTO is engaged, and the transmission is taken out of neutral.
- **TEM_PTO_Veh_Spd_Alarms** – If this is turned on, then an audible alarm will sound if the PTO is engaged, and the vehicle speed is over the value set by TEM_PTO_Veh_Spd_Alarm_Limit
- **TEM_PTO_Veh_Spd_Alarm_Limit** – This parameter sets the physical value for the Vehicle Speed Alarm.
- **TEM_PTO_Eng_Spd_Alarms** – If this is turned on, then an alarm will sound if the PTO is engaged, and the engine speed is over the value set by TEM_PTO_Eng_Spd_Alarm_Limit

- **TEM_PTO_Eng_Spd_Alarm_Limit** – This parameter sets the physical value for the Engine Speed Alarm.
- **TEM_PTO_Eng_Run_Alarms** – If this parameter is turned on, then an audible alarm will sound in the cab if the PTO is engaged, and the engine is turned off.
- **TEM_PTO_Air_Pres_Alarms** – If this parameter is turned on, then an audible alarm will sound in the cab if the primary air pressure drops below the value specified by TEM_PTO_Air_Pres_Alarm_Limit.
- **TEM_PTO_Air_Pres_Alarm_Limit** – This parameter sets the physical value for the Air Pressure Alarm.
- **TEM_ERPM_PTO_Engaged_Param** – This parameter indicates the active state that the body controller (BCM) will read as active for the TEM PTO feedback switch (as it goes into the ERPM input). This active state will be used to indicate when the PTO is engaged:
 - 0 = Input active when open circuit
 - 1 = Input active when grounded
 - 2 = not used
 - 3 = Input active when at 12V.

Note/s About Possible Software Feature Conflicts:

597283 conflicts with 597279

Parts Associated with This Feature:

Please refer to **Parts Associated with ERPM Features:** in Section 5.

How to Test This Feature:

Verify that the ERPM input labeled PTO_Feedback_Switch (pin position specified by the Diamond Logic® Builder software) is receiving the correct voltage (12V or Ground (GND) as specified by the programmable parameter 2147 in the Diamond Logic® Builder software.

Make certain that the PTO indicator light in the gauge cluster illuminates by engaging the PTO.

The audible alarm can be tested by activating a vehicle condition that will sound the alarm based upon

The settings of the programmable parameters. For example, if the park brake interlock is programmed on, release the park brake and engage the PTO. The audible alarms should sound with continuous beeps.

Note: This feature uses body controller-based software controls which can be diagnosed with The International® Diamond Logic® Builder software (see local dealer if not owned).

References:

Refer to the applicable International® Circuit Diagrams and Service Manuals.

10.3. 60ABB: BDY INTG, PTO ACCOMMODATION for Muncie Lectra-Shift PTO Engagement and Disengagement, With Switch Mounted on Dash; Includes Indicator Light and Audible Alarm in Gauge Cluster (requires one ERPM input and one output).

Note: Not compatible with T14 Transmission

Feature Applicability to Vehicle Platforms:

- Heavy Vocational (HV)

Extended Description: This feature provides a center stable, momentary rocker switch in a cab switch pack that drives an ERPM output and a 40-Amp relay that are used to engage and disengage the Muncie® Lectra-Shift PTO. The high current relay output is engaged momentarily to shift in the PTO gear mechanism. Once engaged, the ERPM output is activated to keep the PTO gear in the engaged position. This feature utilizes a customer-mounted PTO feedback switch wired to an ERPM input to drive an indicator light in the gauge cluster that allows the operator to determine that the PTO is engaged.

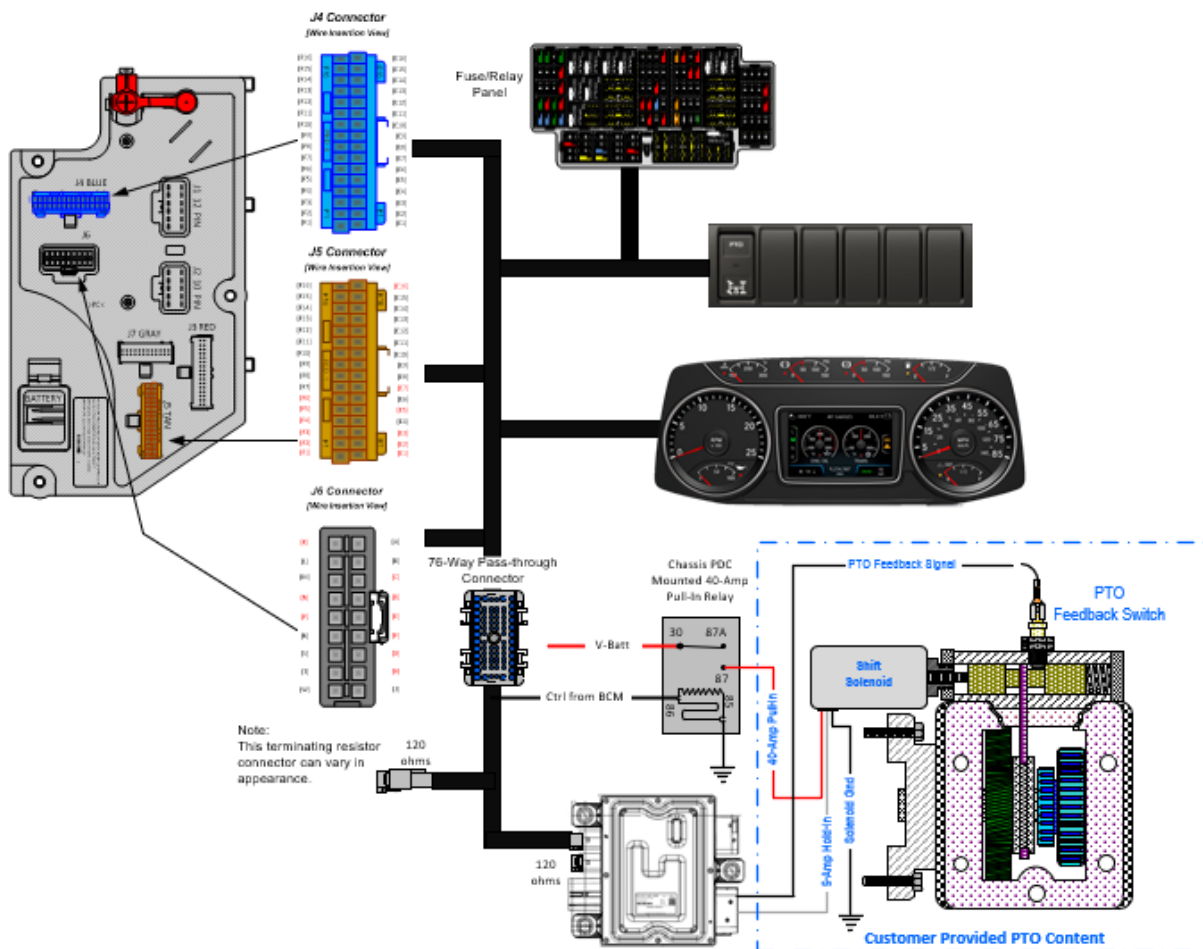
An audible alarm is used to warn the operator when the PTO is engaged during unsafe vehicle operating conditions such as when the park brake is released, or the engine speed is too high. Operating limits are established through programmable parameters that are set in the Body Controller (BCM). The ERPM input also drives a PTO hour meter to allow the operator to measure stationary PTO hours for maintenance records and fuel tax purposes. To view the PTO hour meter, press the gauge cluster display selector button momentarily until the text portion of the display indicates “PTO Hour.”

The Lectra-Shift is a gear-to-gear engagement PTO mechanism. Specific transmission operating modes are required to allow safe engagement of a Lectra-Shift PTO. The PTO gear in the transmission must be stopped before engagement of the Lectra-Shift PTO should be attempted. The clutch must be depressed with the vehicle parked to engage the Lectra-Shift PTO for a manual transmission. An automatic transmission must be in any driving gear with vehicle parked to engage the Lectra-Shift PTO. Engagement, disengagement, and re-engagement parameters should be set according to the type of transmission on which the Lectra-Shift is mounted.

The PTO alarms are controlled by programmable parameters set in the Body Controller (BCM). Factory default settings for these programmable parameters are listed in the tables below. Through programmable parameters, the vehicle can be programmed to customize the number of times that an operator can request a PTO engagement per key cycle. The customer can also customize the maximum time allowed to engage the

solenoid per attempt, and the length of time between a failed engagement attempt and the next time the operator can attempt to engage the PTO. Please use the Diamond Logic® Builder software to determine pin locations for ERPM inputs and outputs (refer to the CONNECTOR screen view) and to set programmable parameters (refer to the FEATURE screen view).

System Block Diagram:



Note: It is important to ensure the Power Take Off (PTO) internal shift mechanism has adequate pneumatic potential communication for the full engagement of the PTO coupling/decoupling mechanism. Full engagement is typically a function of the available pneumatic potential sourced from the chassis primary air pressure supply system which

[can] limit the full power transmission capabilities of the PTO coupling and decoupling mechanism/s.

Note: 597795 - BCM PROG, ERPM1 Module enabler is required when using ERPM 1.

- 597200 - BCM PROG, **PTO CONTROL LOGIC for Dash Switch**
- 597814 - BCM PROG, PTO SHIFT ERPM for Lectra Shift Control, with Latched PTO Switch or 597815 - BCM PROG, PTO SHIFT ERPM for Lectra Shift Control
- 597282 - BCM PROG, **PTO HOURMETER HRS DISPLAYED IP**
- 597283 - BCM PROG, **PTO MONITOR INDICATOR & ALARM** (failure to add this feature will result in an OBD fault condition)
- **Note: Feature 16WLM is automatically included with 60ABB.**
- **Note: if Eaton® Procision™ or Endurant™ Transmission is being used, add:**
 - **597276 – BCM PROG, PTO ENABLER J1939 Engagement Consent for Eaton® Procision™ and Endurant™**

Body Controller Software Feature Code Parameters:

Parameter	ID	Description	Default	Units	Min	Max	Step
On – Indicates a 1 is set for the parameter							
Off – Indicates a 0 is set in for this parameter							
ENGAGEMENT PARAMETERS							
TEM_PTO_PK_Brake_Engmnt_Inhib	2087	If this Parameter is 1, the PTO will not be engaged if the Park Brake is not set.	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Non_Neut_Engmnt_Inhib	2088	If this Parameter is 1, the PTO will not be engaged if the Transmission is not in Neutral or Park	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Neut_Engmnt_Inhib	2089	If this Parameter is 1, the PTO will only be engaged if the Transmission is not in Neutral or Park	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Veh_Spd_Engmnt_Inhib	2090	If this Parameter is 1, the PTO will not be engaged if the vehicle speed is over the value set in TEM_PTO_Veh_Spd_Engmnt_Limit	ON	N/A	N/A	N/A	N/A
TEM_PTO_Veh_Spd_Engmnt_Limit	2091	See TEM_PTO_Veh_Spd_Engmnt_Inhib	3.00	MPH	1	100	1
TEM_PTO_Eng_Spd_Engmnt_Inhib	2092	If this Parameter is 1, the PTO will not be engaged if the engine speed is over the value set in TEM_PTO_Eng_Spd_Engmnt_Limit	ON	N/A	N/A	N/A	N/A
TEM_PTO_Eng_Spd_Engmnt_Limit	2093	See TEM_PTO_Eng_Spd_Engmnt_Inhib	1000	ERPM	100	5000	0.1
TEM_PTO_Cltch_Engmnt_Inhib	2094	If this Parameter is 1, the PTO will not be engaged if the clutch pedal is not depressed	OFF	N/A	N/A	N/A	N/A

TEM_PTO_Brake_Engmnt_Inhib	2095	If this Parameter is 1, the PTO will not be engaged if the brake pedal is not depressed	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Eng_Run_Engmnt_Inhib	2096	If this Parameter is 1, the PTO will not be engaged if the engine is not running	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Air_Pres_Engmnt_Inhib	2097	If this Parameter is 1, the PTO will not be engaged if the primary vehicle air pressure is below TEM_PTO_Air_Pres_Engmnt_Limit	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Air_Pres_Engmnt_Limit	2098	See TEM_PTO_Air_Pres_Engmnt_Inhib	90	PSI	1	500	1
TEM_PTO_Mast_Swtch_Engmnt_Inhib	2099	If this Parameter is 1, the PTO will not be engaged if the vehicle master switch is not ON.	OFF	N/A	N/A	N/A	N/A
DISENGAGEMENT PARAMETERS							
TEM_PTO_Pk_Brake_Disengages	2108	if this Parameter is 1, the PTO will be disengaged if the Park Brake is released	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Non_Neut_Disengages	2109	if this Parameter is 1, the PTO will be disengaged if the transmission is taken out of neutral	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Veh_Spd_Disengages	2110	if this Parameter is 1, the PTO will be disengaged if the vehicle speed is over the value set in TEM_PTO_Veh_Spd_DisEng_Limit	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Veh_Spd_DisEng_Limit	2111	see TEM_PTO_Veh_Spd_Disengages	3	MPH	3	100	1
TEM_PTO_Eng_Spd_Disengages	2112	if this Parameter is 1, the PTO will be disengaged if the vehicle speed is over the value set in TEM_PTO_Eng_Spd_DisEng_Limit	ON	N/A	N/A	N/A	N/A
TEM_PTO_Eng_Spd_DisEng_Limit	2113	see TEM_PTO_Eng_Spd_Disengages	1800	ERPM	0	5000	1
TEM_PTO_Eng_Run_Disengages	2114	If this Parameter is 1, the PTO will be disengaged if the engine is turned off	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Air_Pres_Disengages	2115	if this Parameter is 1, the PTO will be disengaged if the primary air pressure is below the value set in TEM_PTO_Air_Pres_DisEng_Limit	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Air_Pres_DisEng_Limit	2116	see TEM_PTO_Air_Pres_Disengages	80	PSI	0	500	1
TEM_PTO_Ext_Input_Disengages	2117	if this Parameter is 1, the PTO will be disengaged if the external input designated for this purpose is active	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Mast_Swtch_Disengages	2118	if this Parameter is 1, the PTO will be disengaged if the vehicle master switch is not ON	OFF	N/A	N/A	N/A	N/A
RE-ENGAGEMENT PARAMETERS							
TEM_PTO_Key_State_Allow_ReEng	2069	If this parameter is set, the PTO will be allowed to reengage when the key state is returned to run.	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Veh_Spd_Allow_ReEng	2119	if this Parameter is 1, the PTO will be reengaged after a disengage due to vehicle overspeed when the	OFF	N/A	N/A	N/A	N/A

		vehicle speed is below TEM_PTO_Veh_Spd_Engmnt_Limit					
TEM_PTO_Eng_Spd _Allow_ReEng	2120	if this Parameter is 1, the PTO will be reengaged after a disengage due to engine overspeed when the engine speed is below TEM_PTO_Eng_Spd_Engmnt_Limit	ON	N/A	N/A	N/A	N/A
TEM_PTO_Ext_Input _Allow_ReEng	2121	if this Parameter is 1, the PTO will be reengaged after a disengage due to the designated external input when the external input is no longer active	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Eng_Run _Allow_ReEng	2122	if this Parameter is 1, the PTO will be reengaged after a disengage due to the engine stopping when the engine is restarted	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Mast_Swt ch_Allow_ReEng	2123	if this Parameter is 1, the PTO will be reengaged after a disengage due to the master switch being turned off when the master switch is turned on again	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Air_Pres_ Allow_ReEng	2124	if this Parameter is 1, the PTO will be reengaged after a disengage due to low vehicle air pressure when the primary air pressure is over TEM_PTO_Air_Pres_Engmnt_Limit	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Non_Neut _Allow_ReEng	2148	if this Parameter is 1, the PTO will be reengaged after a disengage due to transmission out of neutral when the transmission is placed back into neutral.	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Pk_Brake _Allow_ReEng	2149	if this Parameter is 1, the PTO will be reengaged after a disengage due to park brake released when the park brake is reapplied.	OFF	N/A	N/A	N/A	N/A
ALARMS PARAMETERS							
TEM_PTO_Pk_Brake _Alarms	2131	if this Parameter is 1, an alarm will sound if the PTO is engaged, and the park brake is released	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Non_Neut _Alarms	2132	if this Parameter is 1, an alarm will sound if the PTO is engaged, and transmission is taken out of neutral	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Veh_Spd _Alarms	2133	if this Parameter is 1, an alarm will sound if the PTO is engaged, and the vehicle speed is over TEM_PTO_Veh_Spd_Alarm_Limit	ON	N/A	N/A	N/A	N/A
TEM_PTO_Veh_Spd Alarm_Limit	2134	See TEM_PTO_Veh_Spd_Alarms	3	MPH	3	100	1
TEM_PTO_Eng_Spd _Alarms	2135	if this Parameter is 1, an alarm will sound if the PTO is engaged, and the engine speed is over TEM_PTO_Eng_Spd_Alarm_Limit	ON	N/A	N/A	N/A	N/A
TEM_PTO_Eng_Spd Alarm_Limit	2136	See TEM_PTO_Eng_Spd_Alarms	1400	ERPM	0	5000	0.1
TEM_PTO_Eng_Run _Alarms	2137	if this Parameter is 1, an alarm will sound if the PTO is engaged, and the engine is turned off	OFF	N/A	N/A	N/A	N/A

TEM_PTO_Air_Pres_Alarms	2138	if this Parameter is 1, an alarm will sound if the primary air pressure is below TEM_PTO_Air_Pres_Alarm_Limit	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Air_Pres_Alarm_Limit	2139	See TEM_PTO_Air_Pres_Alarms	0	PSI	0	500	1
TEM_ERPM_PTO_Engaged_Param	2147	Active State for the TEM PTO engagement feedback switch.	0	No Units	0	3	1
Unique for 597814 - BCM PROG, PTO SHIFT for Lectra Shift Control with Latched Switch or 597815 - BCM PROG, PTO SHIFT for Lectra Shift Control							
TEM_PTO_Retaining_20A_Solenoid_Param	4079	ERPM 20A value for the TEM PTO Single Polarity engagement retaining solenoid power	20	Amps	0	20	0.1
TEM_Hyd_PTO_Engage_ERPM_DC_Out_Param	4080	ERPM DC value for the TEM PTO Single Polarity engagement retaining solenoid power.	100	Percent	0	100	.2
TEM_PTO_Allowed_Engagement_Time	2057	Time allowed for engagement of the Lectra shift PTO.	3	seconds	0	10	0.1
TEM_PTO_Lectra_Shift_Max_Retries	2058	The maximum number of times a PTO engagement request can be issued in a key cycle.	0	No Units	0	65535	1
TEM_PTO_Lectra_Shift_Retry_Time	2059	Time frame for retry counting in Lectra shift engagement algorithm.	600	seconds	0	600	1

Parameter Definitions:

• ENGAGEMENT PARAMETERS

These parameters set rules that must be met for the PTO to be engaged.

Example: If TEM_PTO_Air_Pres_Engmnt_Inhib parameter is turned on, the PTO cannot be engaged if the primary vehicle air pressure is below the programmable parameter set by TEM_PTO_Air_Pres_Engmnt_Limit.
for Dash Switch

- **TEM_PTO_PK_Brake_Engmnt_Inhib** – 2087 If this parameter is turned on, then the brake pedal must be depressed for the PTO to engage.
- **TEM_PTO_Non_Neut_Engmnt_Inhib** – 2088 If this parameter is turned on, then the transmission must be in Neutral or Park for the PTO to be engaged.
- **TEM_PTO_Neut_Engmnt_Inhib** – 2089 If this parameter is turned on, then the PTO can only be engaged if the transmission is NOT in Neutral or Park.
- **TEM_PTO_Veh_Spd_Engmnt_Inhib** – 2090 If this parameter is turned on, then the PTO cannot be engaged if the vehicle speed is over the value prescribed by TEM_PTO_Veh_Spd_Engmnt_Limit.
- **TEM_PTO_Veh_Spd_Engmnt_Limit** – 2091 This parameter sets the physical value for the Vehicle Speed Inhibit.
- **TEM_PTO_Eng_Spd_Engmnt_Inhib** – 2092 If this parameter is turned on, then the PTO cannot be engaged if the engine speed is over a certain threshold, which is defined as a programmable parameter in TEM_PTO_Eng_Spd_Engmnt_Limit.

- **TEM_PTO_Eng_Spd_Engmnt_Limit** – 2093 This parameter sets the physical value for the Engine Speed Inhibit.
- **TEM_PTO_Cltch_Engmnt_Inhib** – 2094 If this parameter is turned on, then the clutch pedal must be depressed for the PTO to engage.
- **TEM_PTO_Brake_Engmnt_Inhib** – 2095 If this parameter is turned on, then the brake pedal must be depressed for the PTO to engage.
- **TEM_PTO_Eng_Run_Engmnt_Inhib** – 2096 If this parameter is turned on, then the engine must be running for the PTO to be engaged.
- **TEM_PTO_Air_Pres_Engmnt_Inhib** – 2097 If this parameter is turned on, the PTO cannot be engaged if the primary vehicle air pressure is below the programmable parameter set by TEM_PTO_Air_Pres_Engmnt_Limit.
- **TEM_PTO_Air_Pres_Engmnt_Limit** – 2098 This parameter sets the physical value for the Air Pressure Inhibit.
- **TEM_PTO_Mast_Swtch_Engmnt_Inhib** – 2099 If this parameter is turned on, then the PTO will not be engaged if the vehicle master switch is not ON.
- **DISENGAGEMENT PARAMETERS**
 These parameters set the conditions under which the PTO will be disengaged.
 - **TEM_PTO_Pk_Brake_Disengages** – 2108 If this parameter is turned on, then the PTO will be disengaged if the Park Brake is released.
 - **TEM_PTO_Non_Neut_Disengages** – 2109 If this parameter is turned on, then the PTO will be disengaged if the transmission is taken out of neutral.
 - **TEM_PTO_Veh_Spd_Disengages** – 2110 If this parameter is turned on, then the PTO will be disengaged if the vehicle speed is over the valued specified by TEM_PTO_Veh_Spd_DisEng_Limit.
 - **TEM_PTO_Veh_Spd_DisEng_Limit** – 2111 This parameter sets the physical value for the Vehicle Speed disengagement.
 - **TEM_PTO_Eng_Spd_Disengages** – 2112 If this parameter is turned on, then the PTO will be disengaged if the engine speed rises above the value set by TEM_PTO_Eng_Spd_DisEng_Limit.
 - **TEM_PTO_Eng_Spd_DisEng_Limit** – 2113 This parameter sets the physical value for the Engine Speed disengagement.
 - **TEM_PTO_Eng_Run_Disengages** – 2114 If this parameter is turned on, then the PTO will be disengaged if the engine is turned off.
 - **TEM_PTO_Air_Pres_Disengages** – 2115 If this parameter is turned on, then the PTO will be disengaged if the primary air pressure is below the value set in TEM_PTO_Air_Pres_DisEng_Limit.
 - **TEM_PTO_Air_Pres_DisEng_Limit** – 2116 This parameter sets the physical value for the Air Pressure disengagement.
 - **TEM_PTO_Ext_Input_Disengages** – 2117 If this parameter is turned on, then the PTO will be disengaged if the external input designated for this purpose is active.

- **TEM_PTO_Mast_Swch_Disengages** – 2118 If this parameter is turned on, then the PTO will be disengaged if the vehicle master switch is not ON.
- **Re-ENGAGEMENT PARAMETERS**
These parameters set the conditions under which the PTO will be re-engaged due to a disengagement.
 - **TEM_PTO_Key_State_Allow_ReEng** – 2069 If this parameter is turned on, then the PTO will be allowed to reengage when the key state is returned to run.
 - **TEM_PTO_Veh_Spd_Allow_ReEng** – 2119 If this parameter is turned on, then the PTO will be reengaged (after disengagement due to the vehicle being over the vehicle speed value) when the vehicle speed falls below TEM_PTO_Veh_Spd_Engmnt_Limit.
 - **TEM_PTO_Eng_Spd_Allow_ReEng** – 2120 If this parameter is turned on, then the PTO will be reengaged (after disengagement due to engine overspeed) when the engine speed falls below TEM_PTO_Eng_Spd_Engmnt_Limit.
 - **TEM_PTO_Ext_Input_Allow_ReEng** – 2121 If this parameter is turned on, then the PTO will be reengaged (after a disengage due to the designated external input being in active state) when the external input is no longer in active state.
 - **TEM_PTO_Eng_Run_Allow_ReEng** – 2122 If this parameter is turned on, then the PTO will be reengaged (after disengagement due to engine stopping) when the engine is restarted.
 - **TEM_PTO_Mast_Swch_Allow_ReEng** – 2123 If is turned on, then the PTO will be reengaged after a disengage due to the master switch being turned off when the master switch is turned on again.
 - **TEM_PTO_Air_Pres_Allow_ReEng** – 2124 If this parameter is turned on, then the PTO will be reengaged (after disengagement due to low air pressure) when the primary air pressure rises about the value specified by TEM_PTO_Air_Pres_Engmnt_Limit.
 - **TEM_PTO_Non_Neut_Allow_ReEng** – 2148 If this parameter is turned on, then the PTO will be reengaged (after disengagement due to transmission out of neutral) when the transmission is placed back into neutral.
 - **TEM_PTO_Pk_Brake_Allow_ReEng** – 2149 If this parameter is turned on, then the PTO will be reengaged (after disengagement due to park brake released) when the park brake is reapplied.
- **ALARM PARAMETERS**
These parameters utilize the gauge cluster to sound an alarm to the driver when certain programmable parameters are violated.
 - **TEM_PTO_Pk_Brake_Alarms** – If this parameter is turned on, then an audible alarm will sound in the cab if the PTO is engaged, and the park brake is released.

- **TEM_PTO_Non_Neut_Alarms** – 2132 If this parameter is turned on, then an audible alarm will sound in the cab if the PTO is engaged, and the transmission is taken out of neutral.
- **TEM_PTO_Veh_Spd_Alarms** – 2133 If this is turned on, then an audible alarm will sound if the PTO is engaged, and the vehicle speed is over the value set by TEM_PTO_Veh_Spd_Alarm_Limit
- **TEM_PTO_Veh_Spd_Alarm_Limit** – 2134 This parameter sets the physical value for the Vehicle Speed Alarm.
- **TEM_PTO_Eng_Spd_Alarms** – 2135 If this is turned on, then an alarm will sound if the PTO is engaged, and the engine speed is over the value set by TEM_PTO_Eng_Spd_Alarm_Limit
- **TEM_PTO_Eng_Spd_Alarm_Limit** – 2136 This parameter sets the physical value for the Engine Speed Alarm.
- **TEM_PTO_Eng_Run_Alarms** – 2137 If this parameter is turned on, then an audible alarm will sound in the cab if the PTO is engaged, and the engine is turned off.
- **TEM_PTO_Air_Pres_Alarms** – 2138 If this parameter is turned on, then an audible alarm will sound in the cab if the primary air pressure drops below the value specified by TEM_PTO_Air_Pres_Alarm_Limit.
- **TEM_PTO_Air_Pres_Alarm_Limit** – 2139 This parameter sets the physical value for the Air Pressure Alarm.
- **TEM_ERPM_PTO_Engaged_Param** – 2147 This parameter indicates the active state that the body controller (BCM) will read as active for the TEM PTO feedback switch (as it goes into the ERPM input). This active state will be used to indicate when the PTO is engaged:
 - 0 = Input active when open circuit
 - 1 = Input active when grounded
 - 2 = not used
 - 3 = Input active when at 12V
- Parameters unique to 597814 and 597815
- **TEM_PTO_Allowed_Engagement_Time** – 2057 This parameter sets the maximum time allowed for the solenoid to make one engagement attempt.
- **TEM_PTO_Lectra_Shift_Max_Retries** – 2058 This parameter allows the customer to establish the maximum number of times that the operator can request a PTO engagement per key cycle.
- **TEM_PTO_Lectra_Shift_Retry_Time** – 2059 This parameter sets the time between a failed engagement attempt and the time that the operator can attempt to engage the PTO again.

- **TEM_PTO_Retaining_20A_Solenoid_Param** – 4079 This parameter is the fusing value for the Enhanced Remote Power Module output feeding the retaining coil that holds the electric solenoid in the engaged position. If current exceeds this value, the BCM will turn off the output.
- **TEM_Hyd_PTO_Engage_ERPM_DC_Out_Param** – 4080 This parameter sets the duty cycle for the Enhanced Remote Power Module output feeding the retaining coil that holds the electric solenoid in the engaged position.

Note/s About Possible Software Feature Conflicts:

Only one PTO feature is allowed with 597200.

Also, 597814 conflicts with 597132, 597264, 597277, 597278, 597280, 597304, 597307, 597442, 597443, 597810, 597811, 597812, 597813, 597814, 597815

Additionally, 597283 conflicts with 597279

Parts Associated with This Feature:

Please refer to **Parts Associated with ERPM Features:** at the beginning of Section 5.

How to Test This Feature:

1. Depress the PTO switch in the cab to the ON position. Ensure that all PTO interlock conditions are enabled (as programmed in the Diamond Logic® Builder software).
2. Verify that the pin labeled PTO_Lectra-Shift_Retaining_Solenoid_Output of the 16 pin ERPM output connector has battery voltage level present.
3. Verify that the ERPM input labeled PTO_Feedback_Switch (pin position specified by the Diamond Logic® Builder software) is receiving the correct voltage (12V or GND) as specified by the programmable Parameter 2147 in the Diamond Logic® Builder software.
4. Make certain that the switch indicator lights are functioning by engaging the PTO and verifying that the green light in the top section of the switch illuminates.
5. Make certain that the PTO indicator light in the gauge cluster is functioning by engaging the PTO.
6. The audible alarm can be tested by activating a vehicle condition that will sound the alarm based upon the settings of the programmable parameters. For example, if the park brake interlock is programmed on, release the park brake and engage the PTO. The audible alarms should sound with continuous beeps.

Note: This feature uses body controller-based software controls which can be diagnosed with The International® Diamond Logic® Builder software (see local dealer if not owned).

References:

Refer to the applicable International® Circuit Diagrams and Service Manuals.

10.4. 60ABE: BDY INTG, PTO ACCOMMODATION for Electric over Hydraulic PTO, With Switch Mounted on Dash, Includes Audible Alarm and Indicator Light in Gauge Cluster (Requires one ERPM input and one output). This feature does Not Include Solenoids.

Note: Not compatible with T14 Transmission

Feature Applicability to Vehicle Platforms:

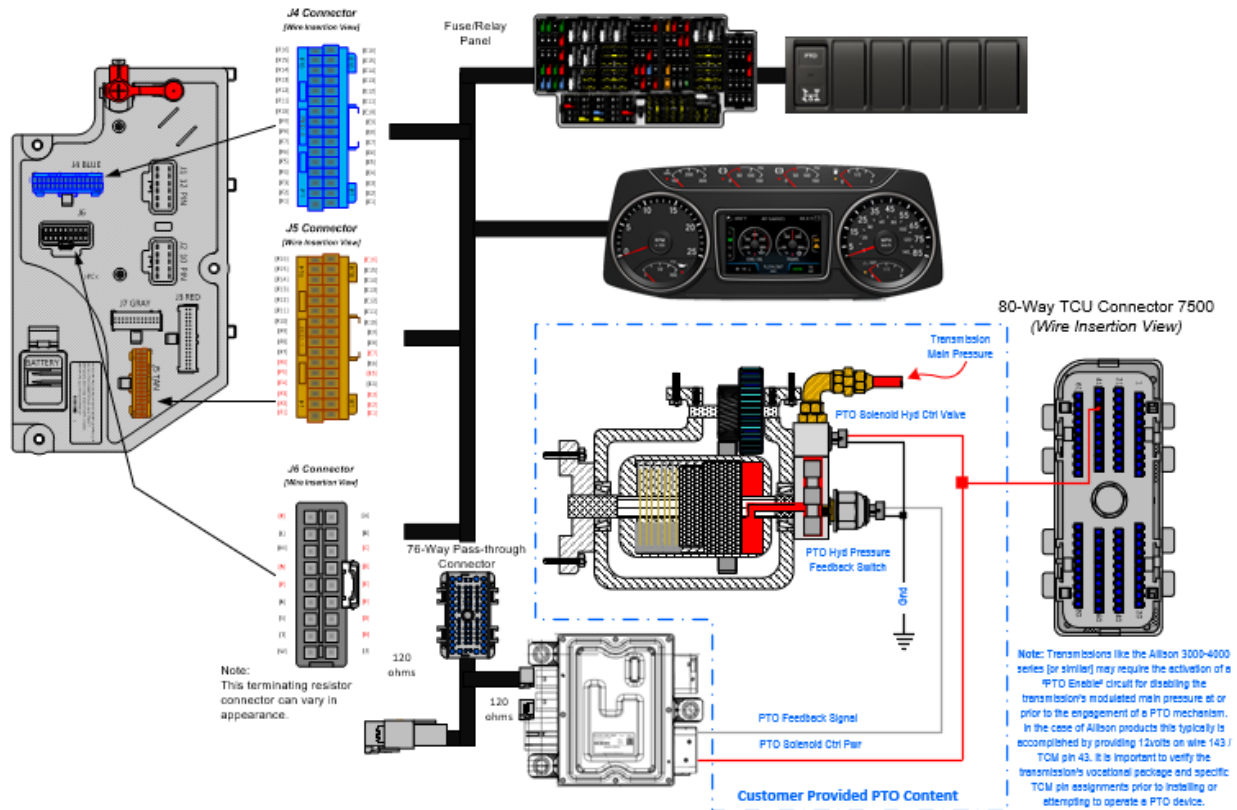
- Heavy Vocational (HV)

Extended Description: This feature provides a 2-position, latched switch in a switch pack to drive one ERPM output to engage an Electric Over Hydraulic PTO. This feature utilizes a customer-mounted PTO feedback switch wired to an ERPM input to drive an indicator light in the gauge cluster that allows the operator to determine that the PTO is engaged. An audible alarm is used to warn the operator when the PTO is engaged during unsafe vehicle operating conditions such as when the park brake is released, or the engine speed is too high. Operating limits are established through programmable parameters that are set in the Body Controller (BCM). The ERPM input also drives a PTO hour meter to allow the operator to measure stationary PTO hours for maintenance records and fuel tax purposes. To view the PTO hour meter, press the gauge cluster display selector button momentarily until the text portion of the display indicates “PTO. Hour.”

The PTO alarms are controlled by programmable parameters set in the Body Controller (BCM). Factory default settings for these programmable parameters are listed in the tables below.

Please use the Diamond Logic® Builder software to determine pin locations for ERPM inputs and outputs (refer to the CONNECTOR screen view) and to set programmable parameters (refer to the FEATURE screen view).

System Block Diagram:



Note: Transmissions such as the Allison automatic series [or similar] may require the activation of a "PTO Enable" circuit for disabling the transmission's modulated main pressure at or prior to the engagement of a PTO mechanism. In the case of Allison products this typically is accomplished by providing 12volts on wire 143 / TCM pin 43. It is important to verify the transmission's vocational package and specific TCM pin assignments prior to installing or attempting to operate a PTO device. It is important to ensure the Power Take Off (PTO) internal shift mechanism has adequate hydraulic potential communication for the full engagement of the PTO coupling/decoupling mechanism. Full engagement is typically a function of the available hydraulic potential sourced from the transmission's main discharge pump [or equivalent] supply system which [can] limit the full power transmission capabilities of the PTO coupling and decoupling mechanism/s.

Note: 597795 - BCM PROG, ERPM1 Module enabler is required when using ERPM 1.

- 597200 - BCM PROG, PTO CONTROL LOGIC for Dash Switch

- 597812 - BCM PROG, PTO SHIFT ERPM for Hydraulic Clutch or Pneumatic Non-Clutch Engagement Accommodation
- 597282 - BCM PROG, **PTO HOURMETER HRS DISPLAYED IP**
- 597283 - BCM PROG, **PTO MONITOR INDICATOR & ALARM**

Note: Feature 16WLM is automatically included with 60ABE.

Note: if Eaton® Procision™ or Endurant™ Transmission is being used, add:

- **597276 – BCM PROG, PTO ENABLER J1939 Engagement Consent for Eaton® Procision™ and Endurant™**

Body Controller Software Feature Code Parameters:

Parameter	ID	Description	Default	Units	Min	Max	Step
On – Indicates a 1 is set for the parameter							
Off – Indicates a 0 is set in for this parameter							
ENGAGEMENT PARAMETERS							
TEM_PTO_PK_Brake_Engmnt_Inhib	2087	If this Parameter is 1, the PTO will not be engaged if the Park Brake is not set.	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Non_Neut_Engmnt_Inhib	2088	If this Parameter is 1, the PTO will not be engaged if the Transmission is not in Neutral or Park	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Neut_Engmnt_Inhib	2089	If this Parameter is 1, the PTO will only be engaged if the Transmission is not in Neutral or Park	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Veh_Spd_Engmnt_Inhib	2090	If this Parameter is 1, the PTO will not be engaged if the vehicle speed is over the value set in TEM_PTO_Veh_Spd_Engmnt_Limit	ON	N/A	N/A	N/A	N/A
TEM_PTO_Veh_Spd_Engmnt_Limit	2091	See TEM_PTO_Veh_Spd_Engmnt_Inhib	3.00	MPH	1	100	1
TEM_PTO_Eng_Spd_Engmnt_Inhib	2092	If this Parameter is 1, the PTO will not be engaged if the engine speed is over the value set in TEM_PTO_Eng_Spd_Engmnt_Limit	ON	N/A	N/A	N/A	N/A
TEM_PTO_Eng_Spd_Engmnt_Limit	2093	See TEM_PTO_Eng_Spd_Engmnt_Inhib	1000	ERPM	100	5000	0.1
TEM_PTO_Clutch_Engmnt_Inhib	2094	If this Parameter is 1, the PTO will not be engaged if the clutch pedal is not depressed	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Brake_Engmnt_Inhib	2095	If this Parameter is 1, the PTO will not be engaged if the brake pedal is not depressed	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Eng_Run_Engmnt_Inhib	2096	If this Parameter is 1, the PTO will not be engaged if the engine is not running	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Air_Pres_Engmnt_Inhib	2097	If this Parameter is 1, the PTO will not be engaged if the primary vehicle air pressure is below TEM_PTO_Air_Pres_Engmnt_Limit	OFF	N/A	N/A	N/A	N/A

TEM_PTO_Air_Pres_Engmnt_Limit	2098	See TEM_PTO_Air_Pres_Engmnt_Inhib	90	PSI	1	500	1
TEM_PTO_Mast_Swtch_Engmnt_Inhib	2099	If this Parameter is 1, the PTO will not be engaged if the vehicle master switch is not ON.	OFF	N/A	N/A	N/A	N/A
DISENGAGEMENT PARAMETERS							
TEM_PTO_Pk_Brake_Disengages	2108	if this Parameter is 1, the PTO will be disengaged if the Park Brake is released	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Non_Neut_Disengages	2109	if this Parameter is 1, the PTO will be disengaged if the transmission is taken out of neutral	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Veh_Spd_Disengages	2110	if this Parameter is 1, the PTO will be disengaged if the vehicle speed is over the value set in TEM_PTO_Veh_Spd_DisEng_Limit	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Veh_Spd_DisEng_Limit	2111	see TEM_PTO_Veh_Spd_Disengages	3	MPH	3	100	1
TEM_PTO_Eng_Spd_Disengages	2112	if this Parameter is 1, the PTO will be disengaged if the vehicle speed is over the value set in TEM_PTO_Eng_Spd_DisEng_Limit	ON	N/A	N/A	N/A	N/A
TEM_PTO_Eng_Spd_DisEng_Limit	2113	see TEM_PTO_Eng_Spd_Disengages	1800	ERPM	0	5000	1
TEM_PTO_Eng_Run_Disengages	2114	If this Parameter is 1, the PTO will be disengaged if the engine is turned off	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Air_Pres_Disengages	2115	if this Parameter is 1, the PTO will be disengaged if the primary air pressure is below the value set in TEM_PTO_Air_Pres_DisEng_Limit	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Air_Pres_DisEng_Limit	2116	see TEM_PTO_Air_Pres_Disengages	80	PSI	0	500	1
TEM_PTO_Ext_Input_Disengages	2117	if this Parameter is 1, the PTO will be disengaged if the external input designated for this purpose is active	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Mast_Swtch_Disengages	2118	if this Parameter is 1, the PTO will be disengaged if the vehicle master switch is not ON	OFF	N/A	N/A	N/A	N/A
RE-ENGAGEMENT PARAMETERS							
TEM_PTO_Key_State_Allow_ReEng	2069	If this parameter is set, the PTO will be allowed to reengage when the key state is returned to run.	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Veh_Spd_Allow_ReEng	2119	if this Parameter is 1, the PTO will be reengaged after a disengage due to vehicle overspeed when the vehicle speed is below TEM_PTO_Veh_Spd_Engmnt_Limit	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Eng_Spd_Allow_ReEng	2120	if this Parameter is 1, the PTO will be reengaged after a disengage due to engine overspeed when the engine speed is below TEM_PTO_Eng_Spd_Engmnt_Limit	ON	N/A	N/A	N/A	N/A
TEM_PTO_Ext_Input_Allow_ReEng	2121	if this Parameter is 1, the PTO will be reengaged after a disengage due to the designated external input	OFF	N/A	N/A	N/A	N/A

		when the external input is no longer active					
TEM_PTO_Eng_Run_Allow_ReEng	2122	if this Parameter is 1, the PTO will be reengaged after a disengage due to the engine stopping when the engine is restarted	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Mast_Swtch_Allow_ReEng	2123	if this Parameter is 1, the PTO will be reengaged after a disengage due to the master switch being turned off when the master switch is turned on again	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Air_Pres_Allow_ReEng	2124	if this Parameter is 1, the PTO will be reengaged after a disengage due to low vehicle air pressure when the primary air pressure is over TEM_PTO_Air_Pres_Engmnt_Limit	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Non_Neut_Allow_ReEng	2148	if this Parameter is 1, the PTO will be reengaged after a disengage due to transmission out of neutral when the transmission is placed back into neutral.	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Pk_Brake_Allow_ReEng	2149	if this Parameter is 1, the PTO will be reengaged after a disengage due to park brake released when the park brake is reapplied.	OFF	N/A	N/A	N/A	N/A
ALARMS PARAMETERS							
TEM_PTO_Pk_Brake_Alarms	2131	if this Parameter is 1, an alarm will sound if the PTO is engaged, and the park brake is released	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Non_Neut_Alarms	2132	if this Parameter is 1, an alarm will sound if the PTO is engaged, and transmission is taken out of neutral	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Veh_Spd_Alarms	2133	if this Parameter is 1, an alarm will sound if the PTO is engaged, and the vehicle speed is over TEM_PTO_Veh_Spd_Alarm_Limit	ON	N/A	N/A	N/A	N/A
TEM_PTO_Veh_Spd_Alarm_Limit	2134	See TEM_PTO_Veh_Spd_Alarms	3	MPH	3	100	1
TEM_PTO_Eng_Spd_Alarms	2135	if this Parameter is 1, an alarm will sound if the PTO is engaged, and the engine speed is over TEM_PTO_Eng_Spd_Alarm_Limit	ON	N/A	N/A	N/A	N/A
TEM_PTO_Eng_Spd_Alarm_Limit	2136	See TEM_PTO_Eng_Spd_Alarms	1400	ERPM	0	5000	0.1
TEM_PTO_Eng_Run_Alarms	2137	if this Parameter is 1, an alarm will sound if the PTO is engaged, and the engine is turned off	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Air_Pres_Alarms	2138	if this Parameter is 1, an alarm will sound if the primary air pressure is below TEM_PTO_Air_Pres_Alarm_Limit	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Air_Pres_Alarm_Limit	2139	See TEM_PTO_Air_Pres_Alarms	0	PSI	0	500	1
TEM_ERPM_PTO_Engaged_Param	2147	Active State for the TEM PTO engagement feedback switch.	0	No Units	0	3	1
Unique for 597812 - BCM PROG, PTO SHIFT ERPM FOR HYD CLUTCH							

TEM_Hyd_PTO_Engage_ERPM_20A_Out_Param	4050	Used to control the current output Hydraulic PTO engagement.	20	Amps	0	20	0.1
TEM_Hyd_PTO_Engage_ERPM_DC_Out_Param	4051	Used to control the Duty cycle output Hydraulic PTO engagement	100	Percent	0	100	.2

Parameter Definitions:

• ENGAGEMENT PARAMETERS

These parameters set rules that must be met for the PTO to be engaged.

Example: If TEM_PTO_Air_Pres_Engmnt_Inhib parameter is turned on, the PTO cannot be engaged if the primary vehicle air pressure is below the programmable parameter set by TEM_PTO_Air_Pres_Engmnt_Limit.
for Dash Switch

- **TEM_PTO_PK_Brake_Engmnt_Inhib** – 2087 If this parameter is turned on, then the brake pedal must be depressed for the PTO to engage.
- **TEM_PTO_Non_Neut_Engmnt_Inhib** – 2088 If this parameter is turned on, then the transmission must be in Neutral or Park for the PTO to be engaged.
- **TEM_PTO_Neut_Engmnt_Inhib** – 2089 If this parameter is turned on, then the PTO can only be engaged if the transmission is NOT in Neutral or Park.
- **TEM_PTO_Veh_Spd_Engmnt_Inhib** – 2090 If this parameter is turned on, then the PTO cannot be engaged if the vehicle speed is over the value prescribed by TEM_PTO_Veh_Spd_Engmnt_Limit.
- **TEM_PTO_Veh_Spd_Engmnt_Limit** – 2091 This parameter sets the physical value for the Vehicle Speed Inhibit.
- **TEM_PTO_Eng_Spd_Engmnt_Inhib** – 2092 If this parameter is turned on, then the PTO cannot be engaged if the engine speed is over a certain threshold, which is defined as a programmable parameter in TEM_PTO_Eng_Spd_Engmnt_Limit.
- **TEM_PTO_Eng_Spd_Engmnt_Limit** – 2093 This parameter sets the physical value for the Engine Speed Inhibit.
- **TEM_PTO_Clutch_Engmnt_Inhib** – 2094 If this parameter is turned on, then the clutch pedal must be depressed for the PTO to engage.
- **TEM_PTO_Brake_Engmnt_Inhib** – 2095 If this parameter is turned on, then the brake pedal must be depressed for the PTO to engage.
- **TEM_PTO_Eng_Run_Engmnt_Inhib** – 2096 If this parameter is turned on, then the engine must be running for the PTO to be engaged.
- **TEM_PTO_Air_Pres_Engmnt_Inhib** – 2097 If this parameter is turned on, the PTO cannot be engaged if the primary vehicle air pressure is below the programmable parameter set by TEM_PTO_Air_Pres_Engmnt_Limit.
- **TEM_PTO_Air_Pres_Engmnt_Limit** – 2098 This parameter sets the physical value for the Air Pressure Inhibit.

- **TEM_PTO_Mast_Swch_Engmnt_Inhib** – 2099 If this parameter is turned on, then the PTO will not be engaged if the vehicle master switch is not ON.

- **DISENGAGEMENT PARAMETERS**

These parameters set the conditions under which the PTO will be disengaged.

- **TEM_PTO_Pk_Brake_Disengages** – 2108 If this parameter is turned on, then the PTO will be disengaged if the Park Brake is released.
- **TEM_PTO_Non_Neut_Disengages** – 2109 If this parameter is turned on, then the PTO will be disengaged if the transmission is taken out of neutral.
- **TEM_PTO_Veh_Spd_Disengages** – 2110 If this parameter is turned on, then the PTO will be disengaged if the vehicle speed is over the valued specified by TEM_PTO_Veh_Spd_DisEng_Limit.
- **TEM_PTO_Veh_Spd_DisEng_Limit** – 2111 This parameter sets the physical value for the Vehicle Speed disengagement.
- **TEM_PTO_Eng_Spd_Disengages** – 2112 If this parameter is turned on, then the PTO will be disengaged if the engine speed rises above the value set by TEM_PTO_Eng_Spd_DisEng_Limit.
- **TEM_PTO_Eng_Spd_DisEng_Limit** – 2113 This parameter sets the physical value for the Engine Speed disengagement.
- **TEM_PTO_Eng_Run_Disengages** – 2114 If this parameter is turned on, then the PTO will be disengaged if the engine is turned off.
- **TEM_PTO_Air_Pres_Disengages** – 2115 If this parameter is turned on, then the PTO will be disengaged if the primary air pressure is below the value set in TEM_PTO_Air_Pres_DisEng_Limit.
- **TEM_PTO_Air_Pres_DisEng_Limit** – 2116 This parameter sets the physical value for the Air Pressure disengagement.
- **TEM_PTO_Ext_Input_Disengages** – 2117 If this parameter is turned on, then the PTO will be disengaged if the external input designated for this purpose is active.
- **TEM_PTO_Mast_Swch_Disengages** – 2118 If this parameter is turned on, then the PTO will be disengaged if the vehicle master switch is not ON.

- **Re-ENGAGEMENT PARAMETERS**

These parameters set the conditions under which the PTO will be re-engaged due to a disengagement.

- **TEM_PTO_Key_State_Allow_ReEng** – 2069 If this parameter is turned on, then the PTO will be allowed to reengage when the key state is returned to run.
- **TEM_PTO_Veh_Spd_Allow_ReEng** – 2119 If this parameter is turned on, then the PTO will be reengaged (after disengagement due to the vehicle being over the vehicle speed value) when the vehicle speed falls below TEM_PTO_Veh_Spd_Engmnt_Limit.

- **TEM_PTO_Eng_Spd_Allow_ReEng** – 2120 If this parameter is turned on, then the PTO will be reengaged (after disengagement due to engine overspeed) when the engine speed falls below TEM_PTO_Eng_Spd_Engmnt_Limit.
- **TEM_PTO_Ext_Input_Allow_ReEng** – 2121 If this parameter is turned on, then the PTO will be reengaged (after a disengage due to the designated external input being in active state) when the external input is no longer in active state.
- **TEM_PTO_Eng_Run_Allow_ReEng** – 2122 If this parameter is turned on, then the PTO will be reengaged (after disengagement due to engine stopping) when the engine is restarted.
- **TEM_PTO_Mast_Swch_Allow_ReEng** – 2123 If is turned on, then the PTO will be reengaged after a disengage due to the master switch being turned off when the master switch is turned on again.
- **TEM_PTO_Air_Pres_Allow_ReEng** – 2124 If this parameter is turned on, then the PTO will be reengaged (after disengagement due to low air pressure) when the primary air pressure rises about the value specified by TEM_PTO_Air_Pres_Engmnt_Limit.
- **TEM_PTO_Non_Neut_Allow_ReEng** – 2148 If this parameter is turned on, then the PTO will be reengaged (after disengagement due to transmission out of neutral) when the transmission is placed back into neutral.
- **TEM_PTO_Pk_Brake_Allow_ReEng** – 2149 If this parameter is turned on, then the PTO will be reengaged (after disengagement due to park brake released) when the park brake is reapplied.
- **ALARM PARAMETERS**
 These parameters utilize the gauge cluster to sound an alarm to the driver when certain programmable parameters are violated.
 - **TEM_PTO_Pk_Brake_Alarms** – If this parameter is turned on, then an audible alarm will sound in the cab if the PTO is engaged, and the park brake is released.
 - **TEM_PTO_Non_Neut_Alarms** – 2132 If this parameter is turned on, then an audible alarm will sound in the cab if the PTO is engaged, and the transmission is taken out of neutral.
 - **TEM_PTO_Veh_Spd_Alarms** – 2133 If this is turned on, then an audible alarm will sound if the PTO is engaged, and the vehicle speed is over the value set by TEM_PTO_Veh_Spd_Alarm_Limit
 - **TEM_PTO_Veh_Spd_Alarm_Limit** – 2134 This parameter sets the physical value for the Vehicle Speed Alarm.
 - **TEM_PTO_Eng_Spd_Alarms** – 2135 If this is turned on, then an alarm will sound if the PTO is engaged, and the engine speed is over the value set by TEM_PTO_Eng_Spd_Alarm_Limit

- **TEM_PTO_Eng_Spd_Alarm_Limit** – 2136 This parameter sets the physical value for the Engine Speed Alarm.
- **TEM_PTO_Eng_Run_Alarms** – 2137 If this parameter is turned on, then an audible alarm will sound in the cab if the PTO is engaged, and the engine is turned off.
- **TEM_PTO_Air_Pres_Alarms** – 2138 If this parameter is turned on, then an audible alarm will sound in the cab if the primary air pressure drops below the value specified by TEM_PTO_Air_Pres_Alarm_Limit.
- **TEM_PTO_Air_Pres_Alarm_Limit** – 2139 This parameter sets the physical value for the Air Pressure Alarm.
- **TEM_ERPM_PTO_Engaged_Param** – 2147 This parameter indicates the active state that the body controller (BCM) will read as active for the TEM PTO feedback switch (as it goes into the ERPM input). This active state will be used to indicate when the PTO is engaged:
 - 0 = Input active when open circuit
 - 1 = Input active when grounded
 - 2 = not used
 - 3 = Input active when at 12V
- **Parameters unique to 597812 - PTO SHIFT ERPM FOR HYD CLUTCH**
- **TEM_Hyd_PTO_Engage_ERPM_20A_Out_Param** – 4050 This parameter sets the current at which the Body Controller will fuse the Enhanced Remote Power Module output that drives the engagement of the PTO. This is used to define the maximum amount of current that can flow through the Enhanced Remote Power Module output.
- **TEM_Hyd_PTO_Engage_ERPM_DC_Out_Param** – 4051 This parameter sets the duty cycle for the Enhanced Remote Power Module output feeding the retaining coil that holds the electric solenoid in the engaged position.

Note/s About Possible Software Feature Conflicts:

Only one PTO feature is allowed with 597200.

Also, 597812 conflicts with 597132, 597264, 597277, 597278, 597280, 597304, 597307, 597442, 597443, 597810, 597811, 597813, 597814, 597815

Additionally, 597283 conflicts with 597279

Parts Associated with This Feature:

Please refer to **Parts Associated with ERPM Features:** at the beginning of Section 5.

How to Test This Feature:

1. To determine if the PTO is working, depress the PTO switch in the cab to the on position. Ensure that all interlock conditions are enabled (as programmed in the Diamond Logic® Builder software).
2. Verify that the pin labeled PTO Output on the 16 pin ERPM connector has the battery voltage level present.
3. Verify that the ERPM input labeled PTO_Feedback_Switch (pin position specified by the Diamond Logic® Builder software) is receiving the correct voltage (12V or GND) as specified by the programmable Parameter 2147 in the Diamond Logic® Builder software.
4. Make certain that the indicator light in the top section of the PTO switch illuminates by engaging the PTO.
5. Make certain that the PTO indicator light in the gauge cluster illuminates by engaging the PTO.
6. The Audible Alarm can be tested by violating the set programmable parameters and determining if the Alarm sounds. For example: If the park brake interlock is programmed ON, release the park brake and engage the PTO. The audible alarm should sound with continuous beeps.

Note: This feature uses body controller-based software controls which can be diagnosed with The International® Diamond Logic® Builder software (see local dealer if not owned).

References:

Refer to the applicable International® Circuit Diagrams and Service Manuals.

10.5. 60ABK: BDY INTG, PTO ACCOMMODATION. Accommodation for Electric over Air, Non-Clutched PTO Engagement and Disengagement does not Include Air Solenoid, With Switch Mounted on Dash, Includes Audible Alarm and Indicator Light in Gauge Cluster (requires one ERPM input and one output).

Note: Not compatible with T14 Transmission

Feature Applicability to Vehicle Platforms:

- Heavy Vocational (HV)

Extended Description: This feature provides a momentary switch in the in-cab switch pack to drive an ERPM output to engage an Electric over Air, Non-Clutched PTO. An ERPM input is used to drive an indicator light in the gauge cluster to indicate when the PTO is engaged. An audible alarm sounds when certain programmable parameters are violated. The ERPM input also drives a PTO hour meter to allow the operator to measure stationary PTO hours for maintenance records and fuel tax purposes. To view the hour meter, press the gauge cluster selection button momentarily until the text portion of the display indicates “PTO Hour.”

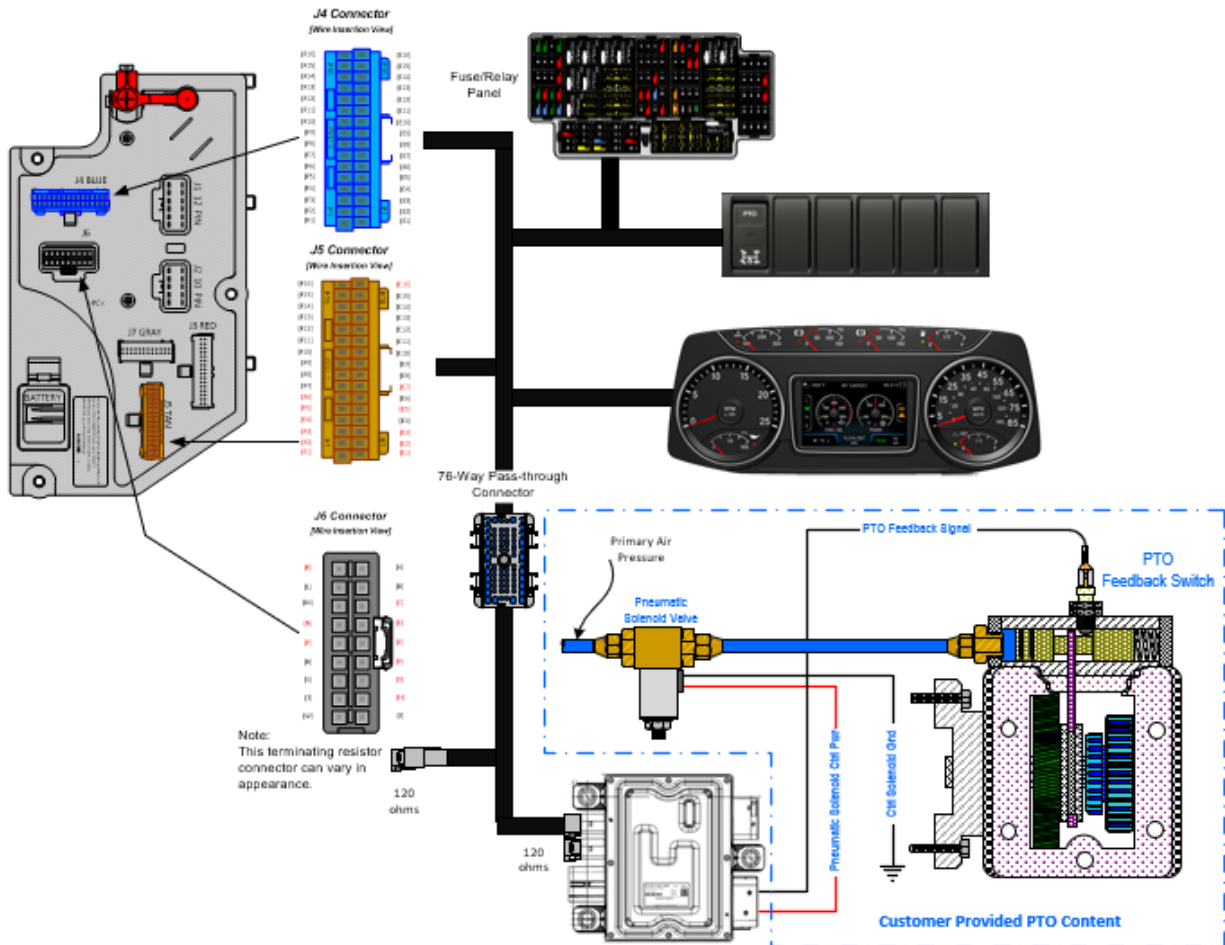
The Non-Clutched air-shifted PTO is a gear-to-gear engagement mechanism. Very specific transmission operating modes are required to allow safe engagement of the PTO. The PTO gear in the transmission must be stopped before engagement of the PTO should be attempted. The clutch must be depressed with the vehicle parked to engage the PTO for a manual transmission. An automatic transmission must be in any driving gear with vehicle parked to engage the PTO. Engagement, disengagement, and re-engagement parameters should be set according to the type of transmission where the Non-Clutched PTO is mounted.

The PTO alarms are controlled by programmable parameters set in the BCM. Through these programmable parameters, the vehicle owner can customize the functionality of the PTO. Factory default settings for these programmable parameters are listed in the tables below.

Please use the Diamond Logic® Builder software to determine pin locations for ERPM inputs and outputs (refer to the CONNECTOR screen view) and to set programmable parameters (refer to the FEATURE screen view).

All re-engagement parameters for Non-Clutched PTOs are defaulted OFF. These parameters are defaulted to OFF because reengaging a Non-Clutched PTO automatically (after it has disengaged) could cause the gears to grind and damage the PTO.

System Block Diagram:



Note: Transmissions as the Allison automatic series [or similar] may require the activation of a “PTO Enable” circuit for disabling the transmission’s modulated main pressure at or prior to the engagement of a PTO mechanism. In the case of Allison products this typically is accomplished by providing 12volts on wire 143 / TCM pin 43. It is important to verify the transmission vocational package and specific TCM pin assignments prior to installing or attempting to operate a PTO device. It is important to ensure the Power Take Off (PTO) internal shift mechanism has adequate hydraulic potential communication for the full engagement of the PTO coupling/decoupling mechanism. Full engagement is typically a function of the available hydraulic potential

sourced from the transmission's main discharge pump [or equivalent] supply system which [can] limit the full power transmission capabilities of the PTO coupling and decoupling mechanism/s.

Body Controller Software Feature Codes:

Note: 597795 - BCM PROG, ERPM1 Module enabler is required when using ERPM 1.

- 597200 - BCM PROG, **PTO CONTROL LOGIC for Dash Switch**
- 597811 - BCM PROG, PTO SHIFT ERPM with Pneumatic Non-Clutch Engagement Accommodation or 597813 BCM PROG, PTO SHIFT ERPM with Pneumatic Non-Clutch Engagement Accommodation with Latched PTO Switch.
- 597282 - BCM PROG, **PTO HOURMETER HRS DISPLAYED IP**
- 597283 - BCM PROG, **PTO MONITOR INDICATOR & ALARM** (failure to add this feature will result in an OBD fault condition)
- **Note: Feature 16WLM is automatically included with 60ABK.**
- **Note: if Eaton® Procision™ or Endurant™ Transmission is being used add:**
 - **597276 – BCM PROG, PTO ENABLER J1939 Engagement Consent for Eaton® Procision™ and Endurant™**

Body Controller Software Feature Code Parameters:

Parameter	ID	Description	Default	Units	Min	Max	Step
On – Indicates a 1 is set for the parameter							
Off – Indicates a 0 is set in for this parameter							
ENGAGEMENT PARAMETERS							
TEM_PTO_PK_Brake_Engmnt_Inhib	2087	If this Parameter is 1, the PTO will not be engaged if the Park Brake is not set.	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Non_Neut_Engmnt_Inhib	2088	If this Parameter is 1, the PTO will not be engaged if the Transmission is not in Neutral or Park	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Neut_Engmnt_Inhib	2089	If this Parameter is 1, the PTO will only be engaged if the Transmission is not in Neutral or Park	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Veh_Spd_Engmnt_Inhib	2090	If this Parameter is 1, the PTO will not be engaged if the vehicle speed is over the value set in TEM_PTO_Veh_Spd_Engmnt_Limit	ON	N/A	N/A	N/A	N/A
TEM_PTO_Veh_Spd_Engmnt_Limit	2091	See TEM_PTO_Veh_Spd_Engmnt_Inhib	3.00	MPH	1	100	1
TEM_PTO_Eng_Spd_Engmnt_Inhib	2092	If this Parameter is 1, the PTO will not be engaged if the engine speed is over the value set in TEM_PTO_Eng_Spd_Engmnt_Limit	ON	N/A	N/A	N/A	N/A

TEM_PTO_Eng_Spd_Engmnt_Limit	2093	See TEM_PTO_Eng_Spd_Engmnt_Inhib	1000	ERPM	100	5000	0.1
TEM_PTO_Cltch_Engmnt_Inhib	2094	If this Parameter is 1, the PTO will not be engaged if the clutch pedal is not depressed	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Brake_Engmnt_Inhib	2095	If this Parameter is 1, the PTO will not be engaged if the brake pedal is not depressed	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Eng_Run_Engmnt_Inhib	2096	If this Parameter is 1, the PTO will not be engaged if the engine is not running	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Air_Pres_Engmnt_Inhib	2097	If this Parameter is 1, the PTO will not be engaged if the primary vehicle air pressure is below TEM_PTO_Air_Pres_Engmnt_Limit	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Air_Pres_Engmnt_Limit	2098	See TEM_PTO_Air_Pres_Engmnt_Inhib	90	PSI	1	500	1
TEM_PTO_Mast_Swtch_Engmnt_Inhib	2099	If this Parameter is 1, the PTO will not be engaged if the vehicle master switch is not ON.	OFF	N/A	N/A	N/A	N/A
DISENGAGEMENT PARAMETERS							
TEM_PTO_Pk_Brake_Disengages	2108	if this Parameter is 1, the PTO will be disengaged if the Park Brake is released	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Non_Neut_Disengages	2109	if this Parameter is 1, the PTO will be disengaged if the transmission is taken out of neutral	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Veh_Spd_Disengages	2110	if this Parameter is 1, the PTO will be disengaged if the vehicle speed is over the value set in TEM_PTO_Veh_Spd_DisEng_Limit	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Veh_Spd_DisEng_Limit	2111	see TEM_PTO_Veh_Spd_Disengages	3	MPH	3	100	1
TEM_PTO_Eng_Spd_Disengages	2112	if this Parameter is 1, the PTO will be disengaged if the vehicle speed is over the value set in TEM_PTO_Eng_Spd_DisEng_Limit	ON	N/A	N/A	N/A	N/A
TEM_PTO_Eng_Spd_DisEng_Limit	2113	see TEM_PTO_Eng_Spd_Disengages	1800	ERPM	0	5000	1
TEM_PTO_Eng_Run_Disengages	2114	If this Parameter is 1, the PTO will be disengaged if the engine is turned off	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Air_Pres_Disengages	2115	if this Parameter is 1, the PTO will be disengaged if the primary air pressure is below the value set in TEM_PTO_Air_Pres_DisEng_Limit	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Air_Pres_DisEng_Limit	2116	see TEM_PTO_Air_Pres_Disengages	80	PSI	0	500	1
TEM_PTO_Ext_Input_Disengages	2117	if this Parameter is 1, the PTO will be disengaged if the external input designated for this purpose is active	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Mast_Swtch_Disengages	2118	if this Parameter is 1, the PTO will be disengaged if the vehicle master switch is not ON	OFF	N/A	N/A	N/A	N/A
RE ENGAGEMENT PARAMETERS							

TEM_PTO_Key_Stat _Allow_ReEng	2069	If this parameter is set, the PTO will be allowed to reengage when the key state is returned to run.	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Veh_Spd _Allow_ReEng	2119	if this Parameter is 1, the PTO will be reengaged after a disengage due to vehicle overspeed when the vehicle speed is below TEM_PTO_Veh_Spd_Engmnt_Limit	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Eng_Spd _Allow_ReEng	2120	if this Parameter is 1, the PTO will be reengaged after a disengage due to engine overspeed when the engine speed is below TEM_PTO_Eng_Spd_Engmnt_Limit	ON	N/A	N/A	N/A	N/A
TEM_PTO_Ext_Input _Allow_ReEng	2121	if this Parameter is 1, the PTO will be reengaged after a disengage due to the designated external input when the external input is no longer active	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Eng_Run _Allow_ReEng	2122	if this Parameter is 1, the PTO will be reengaged after a disengage due to the engine stopping when the engine is restarted	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Mast_Swt ch_Allow_ReEng	2123	if this Parameter is 1, the PTO will be reengaged after a disengage due to the master switch being turned off when the master switch is turned on again	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Air_Pres _Allow_ReEng	2124	if this Parameter is 1, the PTO will be reengaged after a disengage due to low vehicle air pressure when the primary air pressure is over TEM_PTO_Air_Pres_Engmnt_Limit	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Non_Neut _Allow_ReEng	2148	if this Parameter is 1, the PTO will be reengaged after a disengage due to transmission out of neutral when the transmission is placed back into neutral.	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Pk_Brake _Allow_ReEng	2149	if this Parameter is 1, the PTO will be reengaged after a disengage due to park brake released when the park brake is reapplied.	OFF	N/A	N/A	N/A	N/A
ALARMS PARAMETERS							
TEM_PTO_Pk_Brake _Alarms	2131	if this Parameter is 1, an alarm will sound if the PTO is engaged, and the park brake is released	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Non_Neut _Alarms	2132	if this Parameter is 1, an alarm will sound if the PTO is engaged, and transmission is taken out of neutral	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Veh_Spd _Alarms	2133	if this Parameter is 1, an alarm will sound if the PTO is engaged, and the vehicle speed is over TEM_PTO_Veh_Spd_Alarm_Limit	ON	N/A	N/A	N/A	N/A
TEM_PTO_Veh_Spd _Alarm_Limit	2134	See TEM_PTO_Veh_Spd_Alarms	3	MPH	3	100	1
TEM_PTO_Eng_Spd _Alarms	2135	if this Parameter is 1, an alarm will sound if the PTO is engaged, and	ON	N/A	N/A	N/A	N/A

		the engine speed is over TEM_PTO_Eng_Spd_Alarm_Limit					
TEM_PTO_Eng_Spd_Alarm_Limit	2136	See TEM_PTO_Eng_Spd_Alarms	1400	ERPM	0	5000	0.1
TEM_PTO_Eng_Run_Alarms	2137	if this Parameter is 1, an alarm will sound if the PTO is engaged, and the engine is turned off	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Air_Pres_Alarms	2138	if this Parameter is 1, an alarm will sound if the primary air pressure is below TEM_PTO_Air_Pres_Alarm_Limit	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Air_Pres_Alarm_Limit	2139	See TEM_PTO_Air_Pres_Alarms	0	PSI	0	500	1
TEM_ERPM_PTO_Engaged_Param	2147	Active State for the TEM PTO engagement feedback switch.	0	No Units	0	3	1
<ul style="list-style-type: none"> Unique for 597811 - BCM PROG, PTO SHIFT with Pneumatic Non-Clutch Engage and 597813 - BCM PROG, PTO SHIFT with Pneumatic Non-Clutch Engage with Latched Switch 							
TEM_Hyd_PTO_Engage_ERPM_20A_Out_Param	4050	Used to control the current output Hydraulic PTO engagement.	20	Amps	0	20	0.1
TEM_Hyd_PTO_Engage_ERPM_DC_Out_Param	4051	Used to control the Duty cycle output Hydraulic PTO engagement	100	Percent	0	100	.2

Parameter Definitions:

- ENGAGEMENT PARAMETERS**

These parameters set rules that must be met for the PTO to be engaged.

In Example

If TEM_PTO_Air_Pres_Engmnt_Inhib parameter is turned on, the PTO cannot be engaged if the primary vehicle air pressure is below the programmable parameter set by TEM_PTO_Air_Pres_Engmnt_Limit. **for Dash Switch**

- **TEM_PTO_PK_Brake_Engmnt_Inhib** – 2087 If this parameter is turned on, then the brake pedal must be depressed for the PTO to engage.
- **TEM_PTO_Non_Neut_Engmnt_Inhib** – 2088 If this parameter is turned on, then the transmission must be in Neutral or Park for the PTO to be engaged.
- **TEM_PTO_Neut_Engmnt_Inhib** – 2089 If this parameter is turned on, then the PTO can only be engaged if the transmission is NOT in Neutral or Park.
- **TEM_PTO_Veh_Spd_Engmnt_Inhib** – 2090 If this parameter is turned on, then the PTO cannot be engaged if the vehicle speed is over the value prescribed by TEM_PTO_Veh_Spd_Engmnt_Limit.
- **TEM_PTO_Veh_Spd_Engmnt_Limit** – 2091 This parameter sets the physical value for the Vehicle Speed Inhibit.
- **TEM_PTO_Eng_Spd_Engmnt_Inhib** –2092 If this is parameter is turned on, then the PTO cannot be engaged if the engine speed is over a certain threshold,

which is defined as a programmable parameter in TEM_PTO_Eng_Spd_Engmnt_Limit.

- **TEM_PTO_Eng_Spd_Engmnt_Limit** – 2093 This parameter sets the physical value for the Engine Speed Inhibit.
- **TEM_PTO_Clutch_Engmnt_Inhib** – 2094 If this parameter is turned on, then the clutch pedal must be depressed for the PTO to engage.
- **TEM_PTO_Brake_Engmnt_Inhib** – 2095 If this parameter is turned on, then the brake pedal must be depressed for the PTO to engage.
- **TEM_PTO_Eng_Run_Engmnt_Inhib** – 2096 If this parameter is turned on, then the engine must be running for the PTO to be engaged.
- **TEM_PTO_Air_Pres_Engmnt_Inhib** – 2097 If this parameter is turned on, the PTO cannot be engaged if the primary vehicle air pressure is below the programmable parameter set by TEM_PTO_Air_Pres_Engmnt_Limit.
- **TEM_PTO_Air_Pres_Engmnt_Limit** – 2098 This parameter sets the physical value for the Air Pressure Inhibit.
- **TEM_PTO_Mast_Swch_Engmnt_Inhib** – 2099 If this parameter is turned on, then the PTO will not be engaged if the vehicle master switch is not ON.

- **DISENGAGEMENT PARAMETERS**

These parameters set the conditions under which the PTO will be disengaged.

- **TEM_PTO_Pk_Brake_Disengages** – 2108 If this parameter is turned on, then the PTO will be disengaged if the Park Brake is released.
- **TEM_PTO_Non_Neut_Disengages** – 2109 If this parameter is turned on, then the PTO will be disengaged if the transmission is taken out of neutral.
- **TEM_PTO_Veh_Spd_Disengages** – 2110 If this parameter is turned on, then the PTO will be disengaged if the vehicle speed is over the valued specified by TEM_PTO_Veh_Spd_DisEng_Limit.
- **TEM_PTO_Veh_Spd_DisEng_Limit** – 2111 This parameter sets the physical value for the Vehicle Speed disengagement.
- **TEM_PTO_Eng_Spd_Disengages** – 2112 If this parameter is turned on, then the PTO will be disengaged if the engine speed rises above the value set by TEM_PTO_Eng_Spd_DisEng_Limit.
- **TEM_PTO_Eng_Spd_DisEng_Limit** – 2113 This parameter sets the physical value for the Engine Speed disengagement.
- **TEM_PTO_Eng_Run_Disengages** – 2114 If this parameter is turned on, then the PTO will be disengaged if the engine is turned off.
- **TEM_PTO_Air_Pres_Disengages** – 2115 If this parameter is turned on, then the PTO will be disengaged if the primary air pressure is below the value set in TEM_PTO_Air_Pres_DisEng_Limit.
- **TEM_PTO_Air_Pres_DisEng_Limit** – 2116 This parameter sets the physical value for the Air Pressure disengagement.

- **TEM_PTO_Ext_Input_Disengages** – 2117 If this parameter is turned on, then the PTO will be disengaged if the external input designated for this purpose is active.
- **TEM_PTO_Mast_Swch_Disengages** – 2118 If this parameter is turned on, then the PTO will be disengaged if the vehicle master switch is not ON.

- **Re-ENGAGEMENT PARAMETERS**

These parameters set the conditions under which the PTO will be re-engaged due to parameter disengagement.

- **TEM_PTO_Key_State_Allow_ReEng** – 2069 If this parameter is turned on, then the PTO will be allowed to reengage when the key state is returned to run.
- **TEM_PTO_Veh_Spd_Allow_ReEng** – 2119 If this parameter is turned on, then the PTO will be reengaged (after disengagement due to the vehicle being over the vehicle speed value) when the vehicle speed falls below TEM_PTO_Veh_Spd_Engmnt_Limit.
- **TEM_PTO_Eng_Spd_Allow_ReEng** – 2120 If this parameter is turned on, then the PTO will be reengaged (after disengagement due to engine overspeed) when the engine speed falls below TEM_PTO_Eng_Spd_Engmnt_Limit.
- **TEM_PTO_Ext_Input_Allow_ReEng** – 2121 If this parameter is turned on, then the PTO will be reengaged (after a disengage due to the designated external input being in active state) when the external input is no longer in active state.
- **TEM_PTO_Eng_Run_Allow_ReEng** – 2122 If this parameter is turned on, then the PTO will be reengaged (after disengagement due to engine stopping) when the engine is restarted.
- **TEM_PTO_Mast_Swch_Allow_ReEng** – 2123 If is turned on, then the PTO will be reengaged after a disengage due to the master switch being turned off when the master switch is turned on again.
- **TEM_PTO_Air_Pres_Allow_ReEng** – 2124 If this parameter is turned on, then the PTO will be reengaged (after disengagement due to low air pressure) when the primary air pressure rises about the value specified by TEM_PTO_Air_Pres_Engmnt_Limit.
- **TEM_PTO_Non_Neut_Allow_ReEng** – 2148 If this parameter is turned on, then the PTO will be reengaged (after disengagement due to transmission out of neutral) when the transmission is placed back into neutral.
- **TEM_PTO_Pk_Brake_Allow_ReEng** – 2149 If this parameter is turned on, then the PTO will be reengaged (after disengagement due to park brake released) when the park brake is reapplied.

- **ALARM PARAMETERS**

These parameters utilize the gauge cluster to sound an alarm to the driver when certain programmable parameters are violated.

- **TEM_PTO_Pk_Brake_Alarms** – If this parameter is turned on, then an audible alarm will sound in the cab if the PTO is engaged, and the park brake is released.
- **TEM_PTO_Non_Neut_Alarms** – 2132 If this parameter is turned on, then an audible alarm will sound in the cab if the PTO is engaged, and the transmission is taken out of neutral.
- **TEM_PTO_Veh_Spd_Alarms** – 2133 If this is turned on, then an audible alarm will sound if the PTO is engaged, and the vehicle speed is over the value set by TEM_PTO_Veh_Spd_Alarm_Limit
- **TEM_PTO_Veh_Spd_Alarm_Limit** – 2134 This parameter sets the physical value for the Vehicle Speed Alarm.
- **TEM_PTO_Eng_Spd_Alarms** – 2135 If this is turned on, then an alarm will sound if the PTO is engaged, and the engine speed is over the value set by TEM_PTO_Eng_Spd_Alarm_Limit
- **TEM_PTO_Eng_Spd_Alarm_Limit** – 2136 This parameter sets the physical value for the Engine Speed Alarm.
- **TEM_PTO_Eng_Run_Alarms** – 2137 If this parameter is turned on, then an audible alarm will sound in the cab if the PTO is engaged, and the engine is turned off.
- **TEM_PTO_Air_Pres_Alarms** – 2138 If this parameter is turned on, then an audible alarm will sound in the cab if the primary air pressure drops below the value specified by TEM_PTO_Air_Pres_Alarm_Limit.
- **TEM_PTO_Air_Pres_Alarm_Limit** – 2139 This parameter sets the physical value for the Air Pressure Alarm.
- **TEM_ERPM_PTO_Engaged_Param** – 2147 This parameter indicates the active state that the body controller (BCM) will read as active for the TEM PTO feedback switch (as it goes into the ERPM input). This active state will be used to indicate when the PTO is engaged:
 - 0 = Input active when open circuit
 - 1 = Input active when grounded
 - 2 = not used
 - 3 = Input active when at 12V
- **Parameters Unique to 597811 or 597813 - PTO SHIFT with Pneumatic Non-Clutch**
- **TEM_Hyd_PTO_Engage_ERPM_20A_Out_Param** – 4050 This parameter sets the current at which the Body Controller will fuse the Enhanced Remote Power Module output that drives the engagement of the PTO. This is used to define the maximum amount of current that can flow through the Enhanced Remote Power Module output.

- **TEM_Hyd_PTO_Engage_ERPM_DC_Out_Param** – 4051 This parameter sets the duty cycle for the Enhanced Remote Power Module output feeding the retaining coil that holds the electric solenoid in the engaged position.

Note/s About Possible Software Feature Conflicts:

Only one PTO feature is allowed with 597200.

Also, 597811 and 597813 conflict with each other, as well as 597132, 597264, 597277, 597278, 597280, 597304, 597307, 597442, 597443, 597810, 597812, 597814 and 597815

Additionally, 597283 conflicts with 597279

Parts Associated with This Feature:

Please refer to **Parts Associated with ERPM Features:** at the beginning of Section 5.

How to Test This Feature:

1. To determine if the PTO is working, depress the PTO switch in the cab to the on position. Ensure that all interlock conditions are enabled (as programmed in the Diamond Logic® Builder software).
2. Verify that the pin labeled PTO_Output on the 16 pin ERPM connector has the battery voltage level present.
3. Verify that the ERPM input labeled PTO_Feedback_Switch (pin position specified by the Diamond Logic® Builder software) is receiving the correct voltage (12V or GND) as specified by the programmable Parameter 2147 in the Diamond Logic® Builder software.
4. Make certain that the indicator light in the top section of the PTO switch illuminates by engaging the PTO.
5. Make certain that the PTO indicator light in the gauge cluster illuminates by engaging the PTO.
6. The audible alarm can be tested by violating the set programmable parameters and determining if the alarm sounds. For example: If the park brake interlock is programmed ON, release the park brake and engage the PTO. The audible alarm should sound with continuous beeps.

Note: This feature uses body controller-based software controls which can be diagnosed with The International® Diamond Logic® Builder software (see local dealer if not owned).

References:

Refer to the applicable International® Circuit Diagrams and Service Manuals.

10.6. 60ABL: BDY INTG, PTO ACCOMMODATION. Accommodation for Electric over Air, Clutched PTO Engagement and Disengagement, does not Include Air Solenoid, With Switch Mounted on Dash, Includes Audible Alarm and Indicator Light in Gauge Cluster (requires one ERPM input and one output).

Note: Not compatible with T14 Transmission

Feature Applicability to Vehicle Platforms:

- Heavy Vocational (HV)

Extended Description: This feature provides a latched switch in the in-cab switch pack to drive an ERPM output that provides power to engage and disengage the Electric over Air, Clutched PTO. An ERPM input is used to drive an indicator light in the gauge cluster, allowing the operator to discern if the PTO is engaged. An audible alarm sounds when certain programmable parameters are violated. The ERPM input also drives a PTO hour meter to allow the operator to measure stationary PTO hours for maintenance records and fuel tax purposes. To view the hour meter, press the gauge cluster selection button momentarily until the text portion of the display indicates “PTO Hour.”

This PTO feature is a rule-based option. The operation of the PTO is governed by rules of engagement, disengagement, re-engagement, and alarms. These rules are defined through programmable parameters. Through these programmable parameters, the vehicle owner can customize the functionality of the PTO. Factory default settings for these programmable parameters are listed in the tables below.

Please use the Diamond Logic® Builder software to determine pin locations for ERPM inputs and outputs (refer to the CONNECTOR screen view) and to set programmable parameters (refer to the FEATURE screen view).

- 0597810 - BCM PROG, PTO SHIFT ERPM with Pneumatic Engagement Mechanism for Clutch type Electric Over Air PTO
- 597282 - BCM PROG, **PTO HOURMETER HRS DISPLAYED IP**
- 597283 - BCM PROG, **PTO MONITOR INDICATOR & ALARM** (failure to add this feature will result in an OBD fault condition)
- **Note: Feature 16WLM is automatically included with 60ABL**
- **Note: if Eaton® Procision™ or Endurant™ Transmission is being used add:**
 - **597276 – BCM PROG, PTO ENABLER J1939 Engagement Consent for Eaton® Procision™ and Endurant™**

Body Controller Software Feature Code Parameters:

Parameter	ID	Description	Default	Units	Min	Max	Step
On – Indicates a 1 is set for the parameter							
Off – Indicates a 0 is set in for this parameter							
ENGAGEMENT PARAMETERS							
TEM_PTO_PK_Brake_Engmnt_Inhib	2087	If this Parameter is 1, the PTO will not be engaged if the Park Brake is not set.	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Non_Neut_Engmnt_Inhib	2088	If this Parameter is 1, the PTO will not be engaged if the Transmission is not in Neutral or Park	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Neut_Engmnt_Inhib	2089	If this Parameter is 1, the PTO will only be engaged if the Transmission is not in Neutral or Park	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Veh_Spd_Engmnt_Inhib	2090	If this Parameter is 1, the PTO will not be engaged if the vehicle speed is over the value set in TEM_PTO_Veh_Spd_Engmnt_Limit	ON	N/A	N/A	N/A	N/A
TEM_PTO_Veh_Spd_Engmnt_Limit	2091	See TEM_PTO_Veh_Spd_Engmnt_Inhib	3.00	MPH	1	100	1
TEM_PTO_Eng_Spd_Engmnt_Inhib	2092	If this Parameter is 1, the PTO will not be engaged if the engine speed is over the value set in TEM_PTO_Eng_Spd_Engmnt_Limit	ON	N/A	N/A	N/A	N/A
TEM_PTO_Eng_Spd_Engmnt_Limit	2093	See TEM_PTO_Eng_Spd_Engmnt_Inhib	1000	ERPM	100	5000	0.1
TEM_PTO_Clutch_Engmnt_Inhib	2094	If this Parameter is 1, the PTO will not be engaged if the clutch pedal is not depressed	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Brake_Engmnt_Inhib	2095	If this Parameter is 1, the PTO will not be engaged if the brake pedal is not depressed	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Eng_Run_Engmnt_Inhib	2096	If this Parameter is 1, the PTO will not be engaged if the engine is not running	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Air_Pres_Engmnt_Inhib	2097	If this Parameter is 1, the PTO will not be engaged if the primary vehicle air pressure is below TEM_PTO_Air_Pres_Engmnt_Limit	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Air_Pres_Engmnt_Limit	2098	See TEM_PTO_Air_Pres_Engmnt_Inhib	90	PSI	1	500	1

TEM_PTO_Mast_Swtch_Engmnt_Inhib	2099	If this Parameter is 1, the PTO will not be engaged if the vehicle master switch is not ON.	OFF	N/A	N/A	N/A	N/A
DISENGAGEMENT PARAMETERS							
TEM_PTO_Pk_Brake_Disengages	2108	if this Parameter is 1, the PTO will be disengaged if the Park Brake is released	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Non_Neut_Disengages	2109	if this Parameter is 1, the PTO will be disengaged if the transmission is taken out of neutral	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Veh_Spd_Disengages	2110	if this Parameter is 1, the PTO will be disengaged if the vehicle speed is over the value set in TEM_PTO_Veh_Spd_DisEng_Limit	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Veh_Spd_DisEng_Limit	2111	see TEM_PTO_Veh_Spd_Disengages	3	MPH	3	100	1
TEM_PTO_Eng_Spd_Disengages	2112	if this Parameter is 1, the PTO will be disengaged if the vehicle speed is over the value set in TEM_PTO_Eng_Spd_DisEng_Limit	ON	N/A	N/A	N/A	N/A
TEM_PTO_Eng_Spd_DisEng_Limit	2113	see TEM_PTO_Eng_Spd_Disengages	1800	ERPM	0	5000	1
TEM_PTO_Eng_Run_Disengages	2114	If this Parameter is 1, the PTO will be disengaged if the engine is turned off	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Air_Pres_Disengages	2115	if this Parameter is 1, the PTO will be disengaged if the primary air pressure is below the value set in TEM_PTO_Air_Pres_DisEng_Limit	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Air_Pres_DisEng_Limit	2116	see TEM_PTO_Air_Pres_Disengages	80	PSI	0	500	1
TEM_PTO_Ext_Input_Disengages	2117	if this Parameter is 1, the PTO will be disengaged if the external input designated for this purpose is active	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Mast_Swtch_Disengages	2118	if this Parameter is 1, the PTO will be disengaged if the vehicle master switch is not ON	OFF	N/A	N/A	N/A	N/A
RE-ENGAGEMENT PARAMETERS							
TEM_PTO_Key_State_Allow_ReEng	2069	If this parameter is set, the PTO will be allowed to reengage when the key state is returned to run.	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Veh_Spd_Allow_ReEng	2119	if this Parameter is 1, the PTO will be reengaged after a disengage due to vehicle overspeed when the vehicle speed is below TEM_PTO_Veh_Spd_Engmnt_Limit	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Eng_Spd_Allow_ReEng	2120	if this Parameter is 1, the PTO will be reengaged after a disengage due to engine overspeed when the engine speed is below TEM_PTO_Eng_Spd_Engmnt_Limit	ON	N/A	N/A	N/A	N/A
TEM_PTO_Ext_Input_Allow_ReEng	2121	if this Parameter is 1, the PTO will be reengaged after a disengage due to the designated external input when the external input is no longer active	OFF	N/A	N/A	N/A	N/A

TEM_PTO_Eng_Run_Allow_ReEng	2122	if this Parameter is 1, the PTO will be reengaged after a disengage due to the engine stopping when the engine is restarted	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Mast_Swtch_Allow_ReEng	2123	if this Parameter is 1, the PTO will be reengaged after a disengage due to the master switch being turned off when the master switch is turned on again	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Air_Pres_Allow_ReEng	2124	if this Parameter is 1, the PTO will be reengaged after a disengage due to low vehicle air pressure when the primary air pressure is over TEM_PTO_Air_Pres_Engmnt_Limit	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Non_Neut_Allow_ReEng	2148	if this Parameter is 1, the PTO will be reengaged after a disengage due to transmission out of neutral when the transmission is placed back into neutral.	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Pk_Brake_Allow_ReEng	2149	if this Parameter is 1, the PTO will be reengaged after a disengage due to park brake released when the park brake is reapplied.	OFF	N/A	N/A	N/A	N/A
ALARMS PARAMETERS							
TEM_PTO_Pk_Brake_Alarms	2131	if this Parameter is 1, an alarm will sound if the PTO is engaged, and the park brake is released	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Non_Neut_Alarms	2132	if this Parameter is 1, an alarm will sound if the PTO is engaged, and transmission is taken out of neutral	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Veh_Spd_Alarms	2133	if this Parameter is 1, an alarm will sound if the PTO is engaged, and the vehicle speed is over TEM_PTO_Veh_Spd_Alarm_Limit	ON	N/A	N/A	N/A	N/A
TEM_PTO_Veh_Spd_Alarm_Limit	2134	See TEM_PTO_Veh_Spd_Alarms	3	MPH	3	100	1
TEM_PTO_Eng_Spd_Alarms	2135	if this Parameter is 1, an alarm will sound if the PTO is engaged, and the engine speed is over TEM_PTO_Eng_Spd_Alarm_Limit	ON	N/A	N/A	N/A	N/A
TEM_PTO_Eng_Spd_Alarm_Limit	2136	See TEM_PTO_Eng_Spd_Alarms	1400	ERPM	0	5000	0.1
TEM_PTO_Eng_Run_Alarms	2137	if this Parameter is 1, an alarm will sound if the PTO is engaged, and the engine is turned off	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Air_Pres_Alarms	2138	if this Parameter is 1, an alarm will sound if the primary air pressure is below TEM_PTO_Air_Pres_Alarm_Limit	OFF	N/A	N/A	N/A	N/A
TEM_PTO_Air_Pres_Alarm_Limit	2139	See TEM_PTO_Air_Pres_Alarms	0	PSI	0	500	1
TEM_ERPM_PTO_Engaged_Param	2147	Active State for the TEM PTO engagement feedback switch.	0	No Units	0	3	1
Unique for 597810 - BCM PROG, PTO SHIFT ERPM w Pneumatic Engagement Electric Over Air							

TEM_Hyd_PTO_Engage_ERPM_20A_Out_Param	4050	Used to control the current output Hydraulic PTO engagement.	20	Amps	0	20	0.1
TEM_Hyd_PTO_Engage_ERPM_DC_Out_Param	4051	Used to control the Duty cycle output Hydraulic PTO engagement	100	Percent	0	100	.2

Parameter Definitions:

• **ENGAGEMENT PARAMETERS**

These parameters set rules that must be met for the PTO to be engaged.

In Example

If TEM_PTO_Air_Pres_Engmnt_Inhib parameter is turned on, the PTO cannot be engaged if the primary vehicle air pressure is below the programmable parameter set by TEM_PTO_Air_Pres_Engmnt_Limit. **for Dash Switch**

- **TEM_PTO_PK_Brake_Engmnt_Inhib** – 2087 If this parameter is turned on, then the brake pedal must be depressed for the PTO to engage.
- **TEM_PTO_Non_Neut_Engmnt_Inhib** – 2088 If this parameter is turned on, then the transmission must be in Neutral or Park for the PTO to be engaged.
- **TEM_PTO_Neut_Engmnt_Inhib** – 2089 If this parameter is turned on, then the PTO can only be engaged if the transmission is NOT in Neutral or Park.
- **TEM_PTO_Veh_Spd_Engmnt_Inhib** – 2090 If this parameter is turned on, then the PTO cannot be engaged if the vehicle speed is over the value prescribed by TEM_PTO_Veh_Spd_Engmnt_Limit.
- **TEM_PTO_Veh_Spd_Engmnt_Limit** – 2091 This parameter sets the physical value for the Vehicle Speed Inhibit.
- **TEM_PTO_Eng_Spd_Engmnt_Inhib** – 2092 If this is parameter is turned on, then the PTO cannot be engaged if the engine speed is over a certain threshold, which is defined as a programmable parameter in TEM_PTO_Eng_Spd_Engmnt_Limit.
- **TEM_PTO_Eng_Spd_Engmnt_Limit** – 2093 This parameter sets the physical value for the Engine Speed Inhibit.
- **TEM_PTO_Clutch_Engmnt_Inhib** – 2094 If this parameter is turned on, then the clutch pedal must be depressed for the PTO to engage.
- **TEM_PTO_Brake_Engmnt_Inhib** – 2095 If this parameter is turned on, then the brake pedal must be depressed for the PTO to engage.
- **TEM_PTO_Eng_Run_Engmnt_Inhib** – 2096 If this parameter is turned on, then the engine must be running for the PTO to be engaged.
- **TEM_PTO_Air_Pres_Engmnt_Inhib** – 2097 If this parameter is turned on, the PTO cannot be engaged if the primary vehicle air pressure is below the programmable parameter set by TEM_PTO_Air_Pres_Engmnt_Limit.

- **TEM_PTO_Air_Pres_Engmnt_Limit** – 2098 This parameter sets the physical value for the Air Pressure Inhibit.
- **TEM_PTO_Mast_Swch_Engmnt_Inhib** – 2099 If this parameter is turned on, then the PTO will not be engaged if the vehicle master switch is not ON.
- **DISENGAGEMENT PARAMETERS**
 These parameters set the conditions under which the PTO will be disengaged.
 - **TEM_PTO_Pk_Brake_Disengages** – 2108 If this parameter is turned on, then the PTO will be disengaged if the Park Brake is released.
 - **TEM_PTO_Non_Neut_Disengages** – 2109 If this parameter is turned on, then the PTO will be disengaged if the transmission is taken out of neutral.
 - **TEM_PTO_Veh_Spd_Disengages** – 2110 If this parameter is turned on, then the PTO will be disengaged if the vehicle speed is over the value specified by TEM_PTO_Veh_Spd_DisEng_Limit.
 - **TEM_PTO_Veh_Spd_DisEng_Limit** – 2111 This parameter sets the physical value for the Vehicle Speed disengagement.
 - **TEM_PTO_Eng_Spd_Disengages** – 2112 If this parameter is turned on, then the PTO will be disengaged if the engine speed rises above the value set by TEM_PTO_Eng_Spd_DisEng_Limit.
 - **TEM_PTO_Eng_Spd_DisEng_Limit** – 2113 This parameter sets the physical value for the Engine Speed disengagement.
 - **TEM_PTO_Eng_Run_Disengages** – 2114 If this parameter is turned on, then the PTO will be disengaged if the engine is turned off.
 - **TEM_PTO_Air_Pres_Disengages** – 2115 If this parameter is turned on, then the PTO will be disengaged if the primary air pressure is below the value set in TEM_PTO_Air_Pres_DisEng_Limit.
 - **TEM_PTO_Air_Pres_DisEng_Limit** – 2116 This parameter sets the physical value for the Air Pressure disengagement.
 - **TEM_PTO_Ext_Input_Disengages** – 2117 If this parameter is turned on, then the PTO will be disengaged if the external input designated for this purpose is active.
 - **TEM_PTO_Mast_Swch_Disengages** – 2118 If this parameter is turned on, then the PTO will be disengaged if the vehicle master switch is not ON.
- **Re-ENGAGEMENT PARAMETERS**
 These parameters set the conditions under which the PTO will be re-engaged due to a disengagement.
 - **TEM_PTO_Key_State_Allow_ReEng** – 2069 If this parameter is turned on, then the PTO will be allowed to reengage when the key state is returned to run.
 - **TEM_PTO_Veh_Spd_Allow_ReEng** – 2119 If this parameter is turned on, then the PTO will be reengaged (after disengagement due to the vehicle being over

the vehicle speed value) when the vehicle speed falls below TEM_PTO_Veh_Spd_Engmnt_Limit.

- **TEM_PTO_Eng_Spd_Allow_ReEng** – 2120 If this parameter is turned on, then the PTO will be reengaged (after disengagement due to engine overspeed) when the engine speed falls below TEM_PTO_Eng_Spd_Engmnt_Limit.
- **TEM_PTO_Ext_Input_Allow_ReEng** – 2121 If this parameter is turned on, then the PTO will be reengaged (after a disengage due to the designated external input being in active state) when the external input is no longer in active state.
- **TEM_PTO_Eng_Run_Allow_ReEng** – 2122 If this parameter is turned on, then the PTO will be reengaged (after disengagement due to engine stopping) when the engine is restarted.
- **TEM_PTO_Mast_Swch_Allow_ReEng** – 2123 If is turned on, then the PTO will be reengaged after a disengage due to the master switch being turned off when the master switch is turned on again.
- **TEM_PTO_Air_Pres_Allow_ReEng** – 2124 If this parameter is turned on, then the PTO will be reengaged (after disengagement due to low air pressure) when the primary air pressure rises about the value specified by TEM_PTO_Air_Pres_Engmnt_Limit.
- **TEM_PTO_Non_Neut_Allow_ReEng** – 2148 If this parameter is turned on, then the PTO will be reengaged (after disengagement due to transmission out of neutral) when the transmission is placed back into neutral.
- **TEM_PTO_Pk_Brake_Allow_ReEng** – 2149 If this parameter is turned on, then the PTO will be reengaged (after disengagement due to park brake released) when the park brake is reapplied.

- **ALARM PARAMETERS**

These parameters utilize the gauge cluster to sound an alarm to the driver when certain programmable parameters are violated.

- **TEM_PTO_Pk_Brake_Alarms** – If this parameter is turned on, then an audible alarm will sound in the cab if the PTO is engaged, and the park brake is released.
- **TEM_PTO_Non_Neut_Alarms** – 2132 If this parameter is turned on, then an audible alarm will sound in the cab if the PTO is engaged, and the transmission is taken out of neutral.
- **TEM_PTO_Veh_Spd_Alarms** – 2133 If this is turned on, then an audible alarm will sound if the PTO is engaged, and the vehicle speed is over the value set by TEM_PTO_Veh_Spd_Alarm_Limit
- **TEM_PTO_Veh_Spd_Alarm_Limit** – 2134 This parameter sets the physical value for the Vehicle Speed Alarm.

- **TEM_PTO_Eng_Spd_Alarms** – 2135 If this is turned on, then an alarm will sound if the PTO is engaged, and the engine speed is over the value set by TEM_PTO_Eng_Spd_Alarm_Limit
- **TEM_PTO_Eng_Spd_Alarm_Limit** – 2136 This parameter sets the physical value for the Engine Speed Alarm.
- **TEM_PTO_Eng_Run_Alarms** – 2137 If this parameter is turned on, then an audible alarm will sound in the cab if the PTO is engaged, and the engine is turned off.
- **TEM_PTO_Air_Pres_Alarms** – 2138 If this parameter is turned on, then an audible alarm will sound in the cab if the primary air pressure drops below the value specified by TEM_PTO_Air_Pres_Alarm_Limit.
- **TEM_PTO_Air_Pres_Alarm_Limit** – 2139 This parameter sets the physical value for the Air Pressure Alarm.
- **TEM_ERPM_PTO_Engaged_Param** – 2147 This parameter indicates the active state that the body controller (BCM) will read as active for the TEM PTO feedback switch (as it goes into the ERPM input). This active state will be used to indicate when the PTO is engaged:
 - 0 = Input active when open circuit
 - 1 = Input active when grounded
 - 2 = not used
 - 3 = Input active when at 12V

Parameters Unique to 597810 - PTO SHIFT ERPM w Pneumatic Engagement Electric Over Air

- **TEM_Hyd_PTO_Engage_ERPM_20A_Out_Param** – 4050 This parameter sets the current at which the Body Controller will fuse the Enhanced Remote Power Module output that drives the engagement of the PTO. This is used to define the maximum amount of current that can flow through the Enhanced Remote Power Module output.
- **TEM_Hyd_PTO_Engage_ERPM_DC_Out_Param** – 4051 This parameter sets the duty cycle for the Enhanced Remote Power Module output feeding the retaining coil that holds the electric solenoid in the engaged position.

Note/s About Possible Software Feature Conflicts:

Only one PTO feature is allowed with 597200.

Also, 597810 conflicts with 597132, 597264, 597277, 597278, 597280, 597304, 597307, 597442, 597443, 5978101, 597812, 597813, 597814 and 597815

Additionally, 597283 conflicts with 597279.

Parts Associated with This Feature:

Please refer to **Parts Associated with ERPM Features:** at the beginning of Section 5.

How to Test This Feature:

1. To determine if the PTO is working, depress the PTO switch in the cab to the on position. Ensure that all interlock conditions are enabled (as programmed in the Diamond Logic® Builder software).
2. Verify that the pin labeled PTO Output on the 16 pin ERPM connector has the battery voltage level present.
3. Verify that the ERPM input labeled PTO_Feedback_Switch (pin position specified by the Diamond Logic® Builder software) is receiving the correct voltage (12V or GND) as specified by the programmable Parameter 2147 in the Diamond Logic® Builder software.
4. Make certain that the indicator light in the top section of the PTO switch illuminates by engaging the PTO.
5. Make certain that the PTO indicator light in the gauge cluster illuminates by engaging the PTO.
6. The audible alarm can be tested by violating the set programmable parameters and determining if the alarm sounds. For example: If the park brake interlock is programmed ON, release the park brake and engage the PTO. The audible alarm should sound with continuous beeps.

Note: This feature uses body controller-based software controls which can be diagnosed with The International® Diamond Logic® Builder software (see local dealer if not owned).

References:

Refer to the applicable International® Circuit Diagrams and Service Manuals.

11. Advanced Logic Used with an ERPM

Advanced logic can be written to take full advantage of the capabilities of the ERPM.

Tri State, and analog inputs
Full and half H bridge outputs
High and low side drivers
5 amp and 20 Amp outputs
Full and half H bridge outputs

Note - Anytime an ERPM is being used, the ERPM enabler feature codes must be enabled.

0597795 BCM PROG, eRPM1 Module enabler is required to use ERPM 1

0597796 BCM PROG, eRPM2 Module enabler is required to use ERPM 2

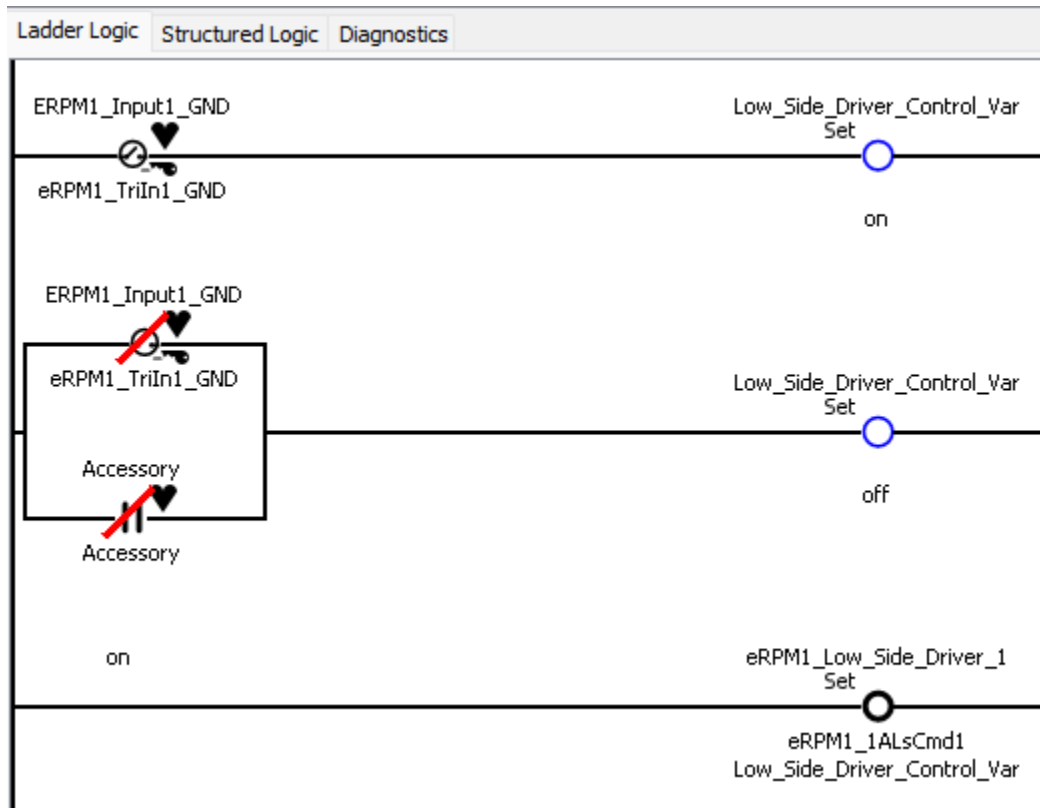
0597797 BCM PROG, eRPM3 Module enabler is required to use ERPM 3

11.1. Sample of Tri-State Logic

The tri-state input logic works very similarly to how they work on the legacy RPM.

Logic can be written to look for a 12 volt, a ground, or no input on a tri state input pin.

The functionality of the logic below is to use a ground input to tri-state input 1, on ERPM1, to control the output low side driver 1 on ERPM1



1st Rung

When the key is on and a ground input is applied at tri-state input 1, on ERPM1, the independent variable, Low_Side_Driver_Control_Var, is set to on.

2nd Rung

When accessory is turned off or the ground input is removed from tri-state input 1, on ERPM1, the independent variable is set to off.

3rd Rung

The output for the low side driver is controlled by the independent variable, Low_Side_Driver_Control, as the status on the output on the bottom of the signal.

11.2 Samples of 20 Amp Output Logic

The 20-amp outputs have new functionality with the introduction of the ERPM. Not only can an output be turned on, as previously done with the Legacy RPM, but the output max current and the Pulse width Modulation (PWM) Duty Cycle can also be configured.

The ERPM also offers signals that can be used as inputs, in advanced logic, that show the status of the max current output and the Pulse width Modulation (PWM) Duty Cycle. These can be used to drive switch indicators, warning lights and be used as interlocks for other outputs.

Writing advanced logic to control the 20-amp outputs can be very different than it is for the 20-amp outputs on the legacy RPM.

There are two different ways to write logic for these outputs.

Logic can be written that follows the legacy RPM standard, or logic can be written to dynamically control the PWM outputs.

11.2.1 Standard 20 Amp Output Logic

Note - Anytime an ERPM is being used, the ERPM enabler feature codes must be enabled.

0597795 BCM PROG, eRPM1 Module enabler is required to use ERPM 1

0597796 BCM PROG, eRPM2 Module enabler is required to use ERPM 2

0597797 BCM PROG, eRPM3 Module enabler is required to use ERPM 3

Under each of these feature codes you will see a list of Parameters for the PWM (Duty Cycle) and maximum current for each output.

Feature	Description	Installed
0597795	BCM PROG, eRPM1 Module enabler	<input checked="" type="checkbox"/>

ID	Parameter	Value	Unit	Description
4005	PwrMod1_ERPM_DC6_Param	100	percent	DC Command level6 for eRPM 20A #1
4004	PwrMod1_ERPM_DC5_Param	30	percent	DC Command level5 for eRPM 20A #1
4003	PwrMod1_ERPM_DC4_Param	10	percent	DC Command level4 for eRPM 20A #1
4002	PwrMod1_ERPM_DC3_Param	60	percent	DC Command level3 for eRPM 20A #1
4001	PwrMod1_ERPM_DC2_Param	70	percent	DC Command level2 for eRPM 20A #1
4000	PwrMod1_ERPM_DC1_Param	80	percent	DC Command level1 for eRPM 20A #1
4026	PwrMod1_ERPM_20A6_Param	3.04	A	Used to control the Current Command for ERPM1 20A Output 6
4025	PwrMod1_ERPM_20A5_Param	12	A	Used to control the Current Command for ERPM1 20A Output 5
4024	PwrMod1_ERPM_20A4_Param	5.04	A	Used to control the Current Command for ERPM1 20A Output 4
4023	PwrMod1_ERPM_20A3_Param	15.04	A	Used to control the Current Command for ERPM1 20A Output 3
4022	PwrMod1_ERPM_20A2_Param	10	A	Used to control the Current Command for ERPM1 20A Output 2
3802	PwrMod1_ERPM_20A1_Param	20	A	Used to control the Current Command for ERPM1 20A Output 1

These parameters configure the PWM and Current values for the advanced logic signals for the 20 Amp outputs.

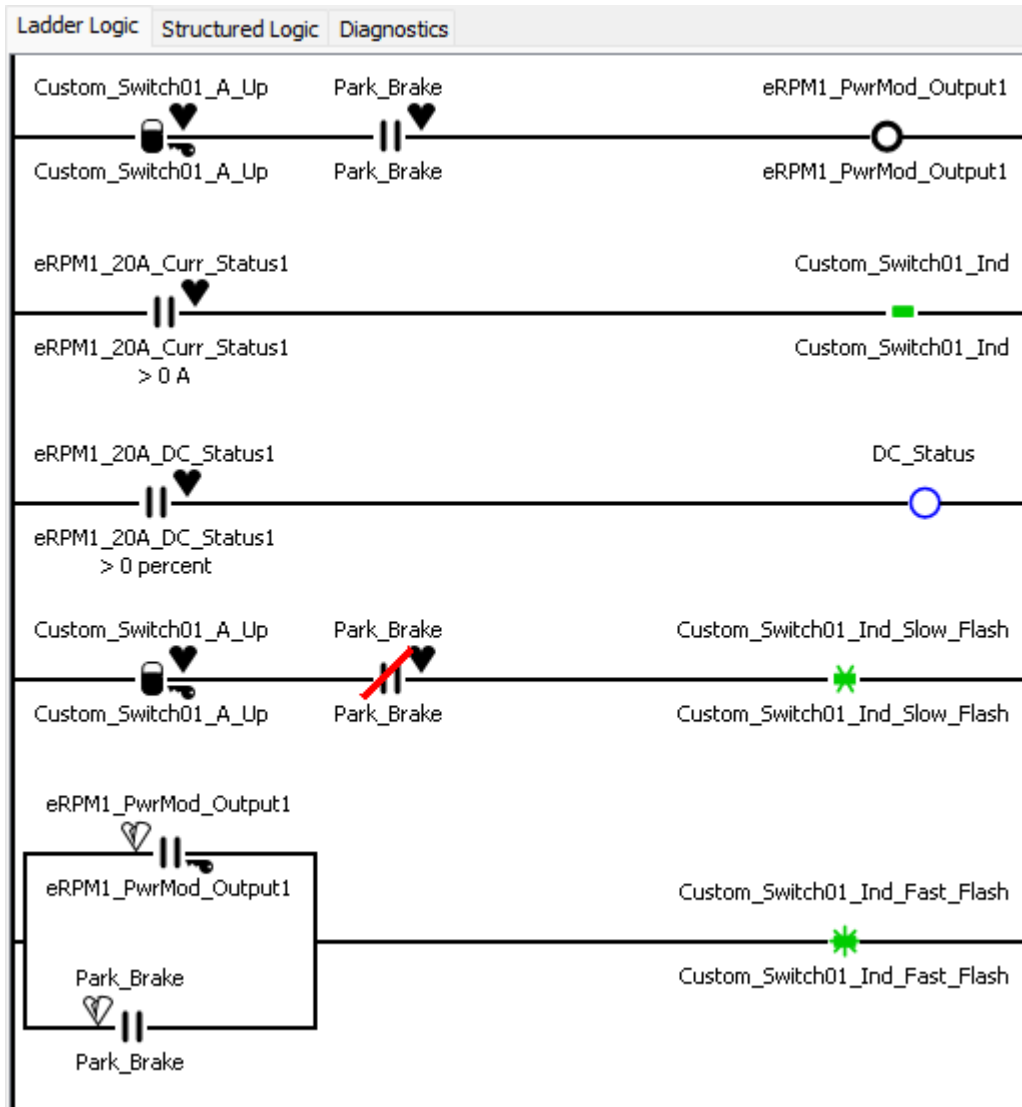
When using the eRPM1, 2 or 3 PwrMod_Output1, 2 ,3, 4, 5 and 6 signals, the PWM (Duty Cycle) and maximum current for each output is determined by the similar parameters, for each output, as shown above.

Note - Other rungs of logic can be used to override these values.

To write logic using the 20 Amp outputs similarly to how they are used for RPMs, use the eRPM1_PwrMod_Output1 Current and Duty Cycle request from Advanced Logic to eRPM1: 20A, Command 1 signal.

In the example below, a 2-position switch is used to control the output on ERPM1 Pin16.

The switch, park brake and Accessory also control the output at that pin.



1st Rung

When the key is on, Park Brake is set and Custom Switch 1 is pressed to the top position, eRPM1_PwrMod_Output1 will be turned on, with the Duty Cycle and maximum output current that is determined by the parameters under the enabler feature code.

2nd Rung

When the key is on and Custom Switch 1 is pressed to the center position, the Independent variable Duty_Cycle_Percent will be set to 50 Percent.

3rd Rung

When the key is on and Custom Switch 1 is pressed to the bottom position or the key is turned off, the Independent variable Duty_Cycle_Percent will be set to 0 Percent.

4th Rung

This rung sets up the duty cycle for pin 16 on ERPM 1 to have an output determined by the value of the Duty_Cycle_Percent independent variable. Notice that this rung does not have anything on the rung input. The output will vary as the Duty_Cycle_Percent variable varies.

5th Rung

When the Duty_Cycle_Percent variable is greater than 0 percent, the Output_Current variable is set to 20 amps.

6th Rung

When the Duty_Cycle_Percent variable equal to 0 percent or the key is turned off, the Output_Current variable is set to 0 amps.

7th Rung

This rung sets up the maximum current that is virtually fused on the output for pin 16 on ERPM 1. Notice that this rung does not have anything on the rung input. The current is determined by the value of independent variable Output_Current.

11.2.2 Advanced 20 Amp Output Logic

Note - Anytime an ERPM is being used, the ERPM enabler feature codes must be enabled.

0597795 BCM PROG, eRPM1 Module enabler is required to use ERPM 1

0597796 BCM PROG, eRPM2 Module enabler is required to use ERPM 2

0597797 BCM PROG, eRPM3 Module enabler is required to use ERPM 3

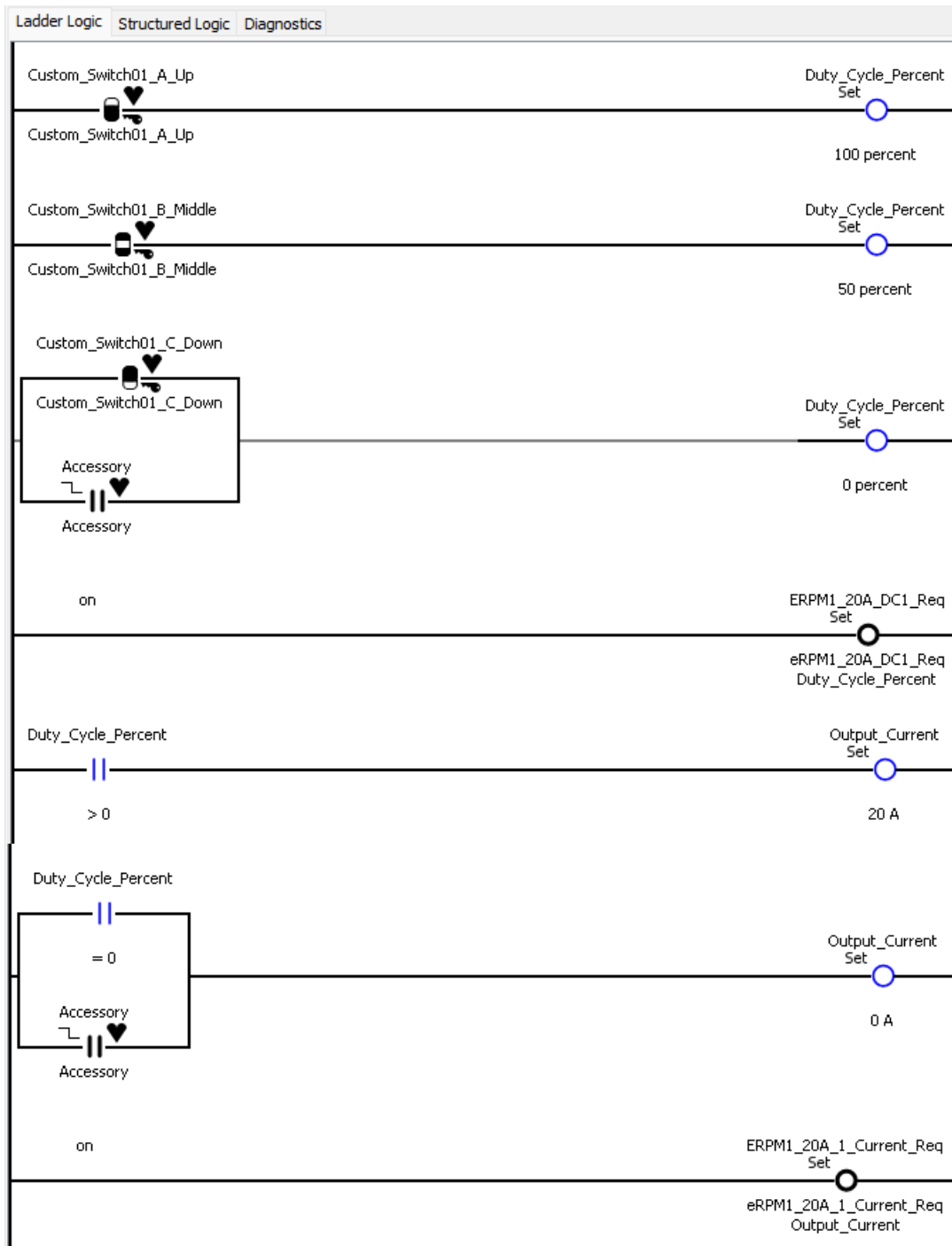
The logic in this example will override the PWM and Current parameters, under each of these feature codes, shown below.

Y	Feature	Description	Installed
	0597795	BCM PROG, eRPM1 Module enabler	<input checked="" type="checkbox"/>

Y	ID	Parameter	Value	Unit	Description
	4005	PwrMod1_ERPM_DC6_Param	100	percent	DC Command level6 for eRPM 20A #1
	4004	PwrMod1_ERPM_DC5_Param	30	percent	DC Command level5 for eRPM 20A #1
	4003	PwrMod1_ERPM_DC4_Param	10	percent	DC Command level4 for eRPM 20A #1
	4002	PwrMod1_ERPM_DC3_Param	60	percent	DC Command level3 for eRPM 20A #1
	4001	PwrMod1_ERPM_DC2_Param	70	percent	DC Command level2 for eRPM 20A #1
	4000	PwrMod1_ERPM_DC1_Param	80	percent	DC Command level1 for eRPM 20A #1
	4026	PwrMod1_ERPM_20A6_Param	3.04	A	Used to control the Current Command for ERPM1 20A Output 6
	4025	PwrMod1_ERPM_20A5_Param	12	A	Used to control the Current Command for ERPM1 20A Output 5
	4024	PwrMod1_ERPM_20A4_Param	5.04	A	Used to control the Current Command for ERPM1 20A Output 4
	4023	PwrMod1_ERPM_20A3_Param	15.04	A	Used to control the Current Command for ERPM1 20A Output 3
	4022	PwrMod1_ERPM_20A2_Param	10	A	Used to control the Current Command for ERPM1 20A Output 2
	3802	PwrMod1_ERPM_20A1_Param	20	A	Used to control the Current Command for ERPM1 20A Output 1

In the example below, a 3-position switch is used to control the duty cycle output on ERPM1 Pin16 for 100%, 50% and 0%

The switch and Accessory also control the output current available at that pin. 20 Amps when the switch is not in the lower position with the key on and 0 Amps when the switch is in the lower position or the Key is turned off.



1st Rung

When the key is on and Custom Switch 1 is pressed to the top position, the Independent variable Duty_Cycle_Percent will be set to 100 Percent.

2nd Rung

When the key is on and Custom Switch 1 is pressed to the center position, the Independent variable Duty_Cycle_Percent will be set to 50 Percent.

3rd Rung

When the key is on and Custom Switch 1 is pressed to the bottom position or the key is turned off, the Independent variable Duty_Cycle_Percent will be set to 0 Percent.

4th Rung

This rung sets up the duty cycle for pin 16 on ERPM 1 to have an output determined by the value of the Duty_Cycle_Percent independent variable. Notice that this rung does not have anything on the rung input. The output will vary as the Duty_Cycle_Percent variable varies.

5th Rung

When the Duty_Cycle_Percent variable is greater than 0 percent, the Output_Current variable is set to 20 amps.

6th Rung

When the Duty_Cycle_Percent variable equal to 0 percent or the key is turned off, the Output_Current variable is set to 0 amps.

7th Rung

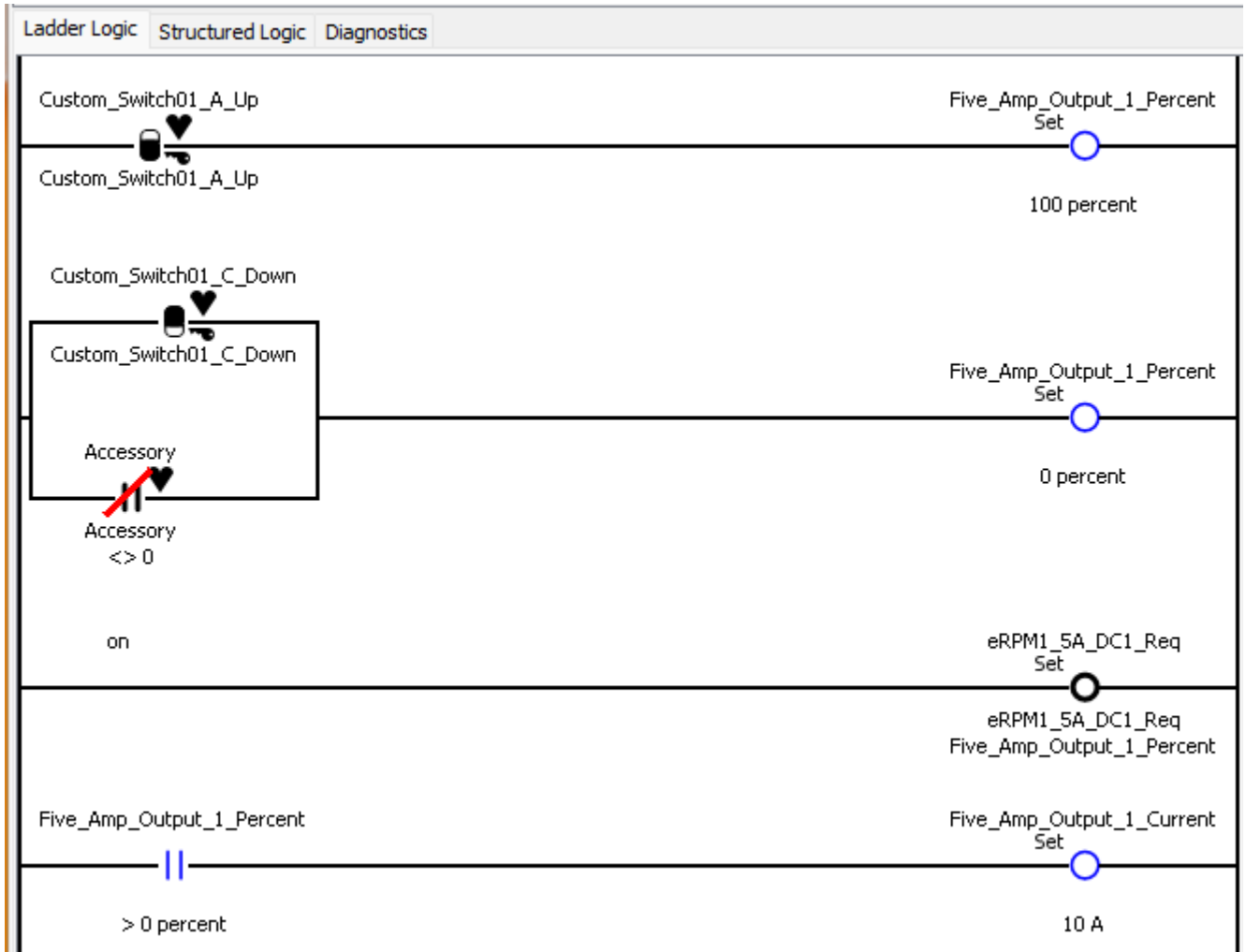
This rung sets up the maximum current that is virtually fused on the output for pin 16 on ERPM 1. Notice that this rung does not have anything on the rung input. The current is determined by the value of independent variable Output Current.

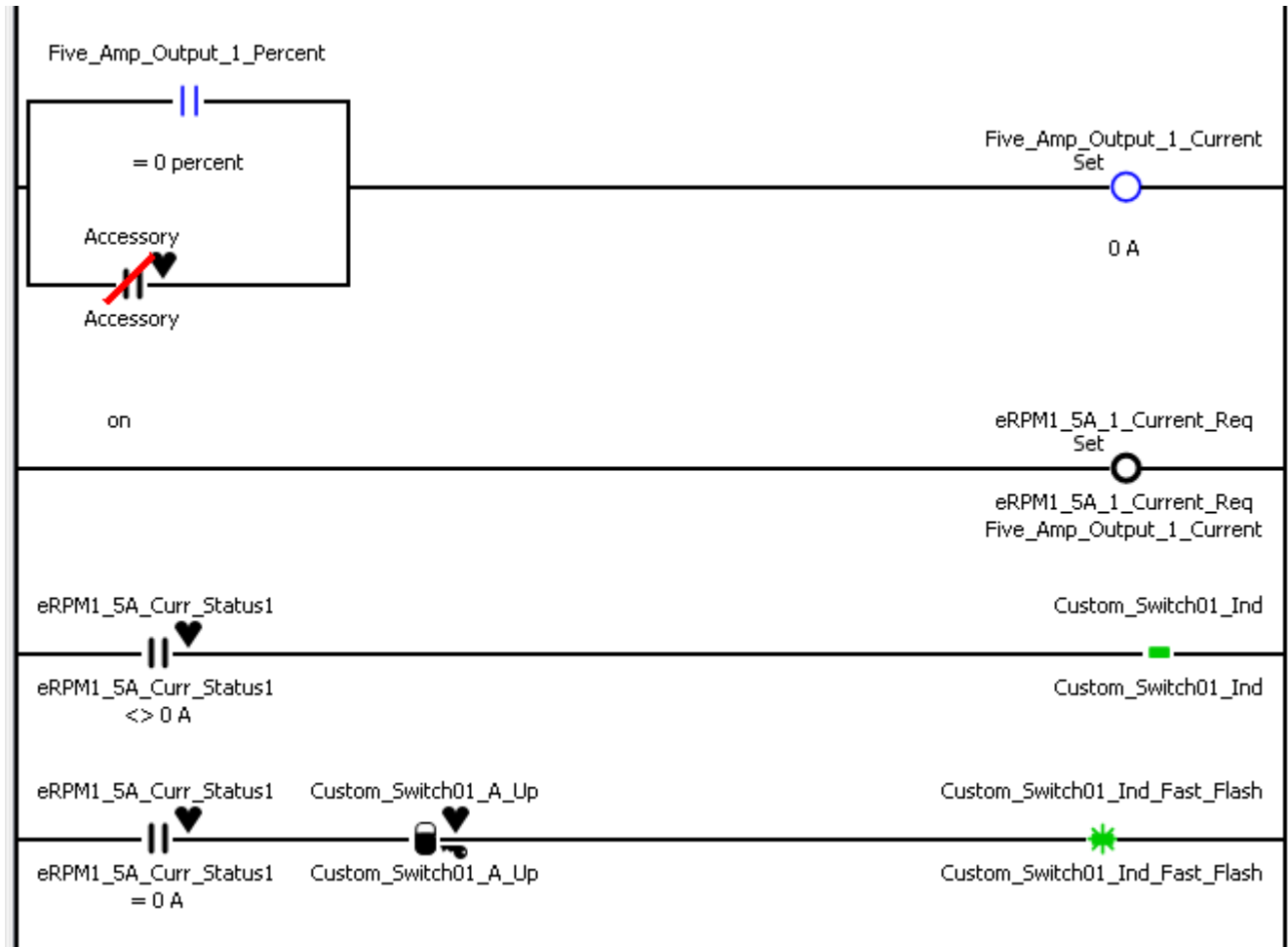
11.3 Sample of 5 Amp Output Logic

Writing advanced logic to control the 5-amp PWM outputs is similar to writing logic for the OPTIONAL ADVANCED LOGIC for the 20 AMP outputs. Currently, there is no option to simply drag the 5-amp output to a rung.

To use a 5-amp output, a rung needs to be added to the logic to determine the PWM duty cycle percentage, and another rung needs to be added to determine the maximum output current.

This logic uses a dash switch and accessory to control the 5-amp output duty cycle, 0 or 100, as well as the maximum current allowed on the circuit, 0 or 5 amps. It also uses the current status feedback to control the switch lighting.





1st Rung

When the key is on and Custom Switch 1 is pressed to the top position, the Independent variable Five_Amp_Outout_1_Percent will be set to 100 Percent.

2nd Rung

When the key is on and Custom Switch 1 is pressed to the bottom position or the key is turned off, the Independent variable Five_Amp_Outout_1_Percent will be set to 0 Percent.

3rd Rung

This rung sets up the duty cycle for pin 1 on ERPM 1, J4 to have an output determined by the value of the Five_Amp_Outout_1_Percent independent variable. Notice that this rung does not have anything on the rung input. The output will vary as the Five_Amp_Outout_1_Percent variable varies.

4th Rung

When the Five_Amp_Outout_1_Percent variable is greater than 0 percent, the Five_Amp_Output_Current variable is set to 5 amps.

5th Rung

When the Duty_Cycle_Percent variable equal to 0 percent or the key is turned off, the Five_Amp_Output_Current variable is set to 0 amps.

6th Rung

This rung sets up the maximum current that is virtually fused on the output for pin 1 on ERPM 1, J4. Notice that this rung does not have anything on the rung input. The current is determined by the value of independent variable Five_Amp_Output_Current.

7th Rung

When the eRPM_5A_Curr_Staus1 does not equal 0 volts, the Custom_Switch01_Ind will be set to turn on solid Green.

8th Rung

When the eRPM_5A_Curr_Staus1 equals 0 volts, the Custom_Switch01_Ind will be set to fast flash..

11.4 Sample of Logic Using an Analog Input.

This section covers how to write advanced logic for the new eRPM analog inputs. The inputs are intended to be used with the Zero Volt Reference and the 5-volt Sensor Supply Return on the J4 connector. The voltage provided to the inputs needs to be a value between 0 and 5 Volts.

Proper syntax must be used in a logic rung to have calculations work as desired. Ensure that the Units for the independent variables are set, if alternating between units, set them to no units or the desired output unit.

Do not use decimals in formulas, use 5/10 instead of .5.

In the backend of DLB analog voltage is scaled in counts of 20, where 1 V =20 counts. Let's take an example where a 0–5V input is scaled to produce a 0–100% duty cycle output.

In this case, mathematically, the transfer function is:

$$\text{DutyCycle Output} = (\text{Input Voltage}/5)*100;$$

Simplifying the mathematical representation: DutyCyle Output= (Input Voltage)*20; To calculate the percentage, we need to factor in the scaled voltage value: 1V=20. The backend multiplies the input voltage by 20, so we must divide by 20 in our calculations to retrieve the intended transfer function output.

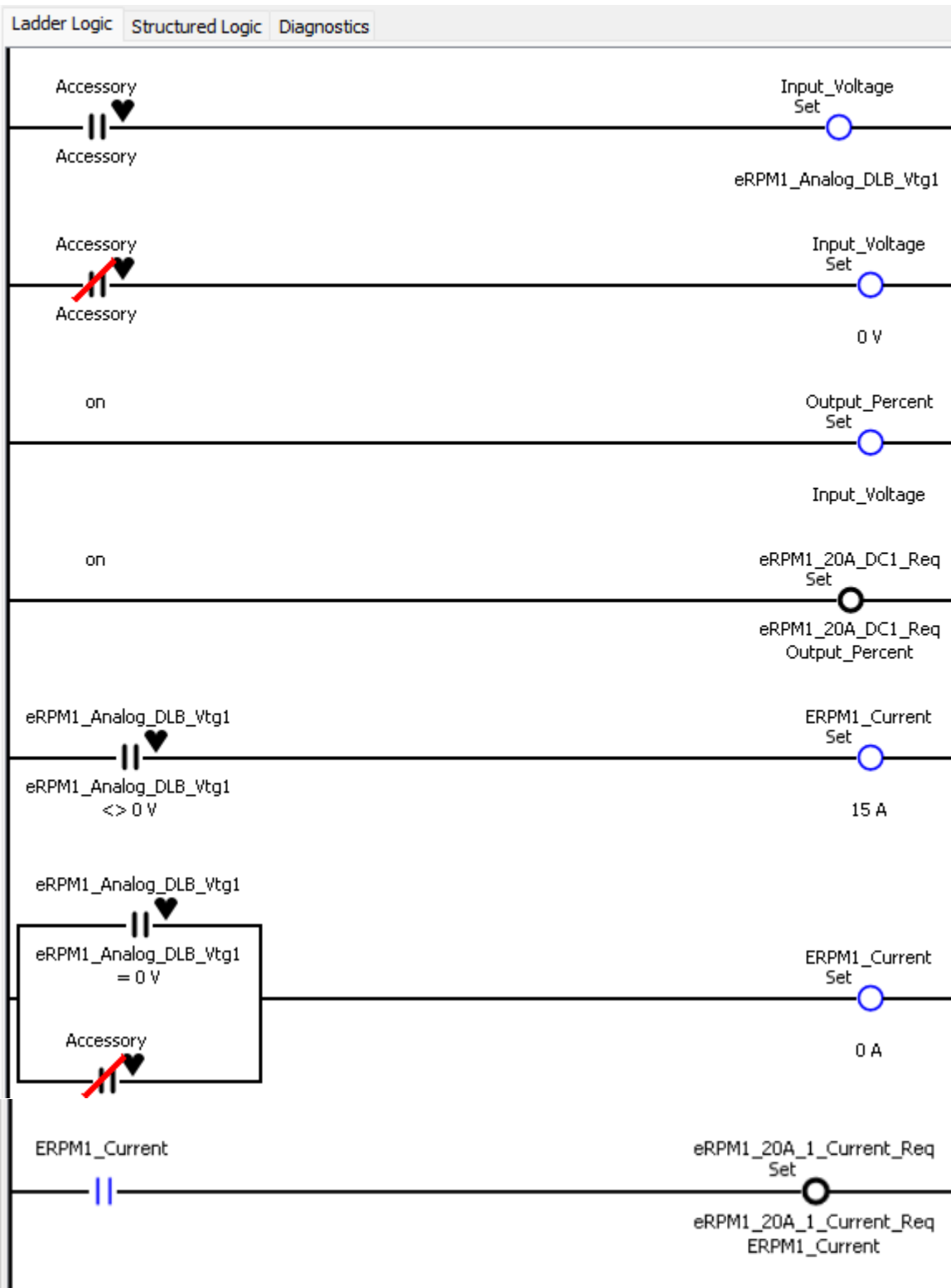
Duty cycle Output=(Input Voltage *20)*(20/20)-- the last expression obviously cancels. The scaled transfer function is:

Duty cycle Output=(Input Voltage *20);

The 20 multiplier happens in the backend when the value is stored for calculations. It does not need to be incorporated into the advanced logic calculation.

In advanced logic, using analog input 1, the logic would look like this:

In this example, the functionality of this logic is to use the ERPM 1 analog input value to variably control the duty cycle on 20A output 1 on ERPM 1. This gives you a range where 0.5 volts has a duty cycle of 10%, 2.5 volts has a duty cycle of 50% and 5 volts has a duty cycle of 100%.



1st Rung

When the key is on, independent variable Input_Voltage is set to match the eRPM1_Analog_DLB_Vtg1 signal at ERPM1, J4 pin 2. Ensure that the UNIT for this variable is set to V.

2nd Rung

When the key is turned off, independent variable Input_Voltage is set to 0.

3rd Rung

On this rung, the Input_Voltage variable is changed to a percentage on the Output_Percent variable. When the value is store in the backend for calculations, it is multiplied by 20. Ensure that the UNIT for this variable is set to percent.

4th Rung

This rung sets the PWM duty cycle for ERPM1 20-amp output 1 to match the value of independent variable Output_Percent.

5th Rung

When eRPM1_Analog_DLB_Vtg1 is greater than 0 volts, independent variable ERPM1_Curent is set to 15 amps.

6th Rung

When the key is off or eRPM1_Analog_DLB_Vtg1 is equal to 0 volts, independent variable ERPM1_Curent is set to 0 amps.

7^h Rung

This rung sets the eRPM1_20A_1_Current_Req to match the value of independent variable ERPM1_Current.

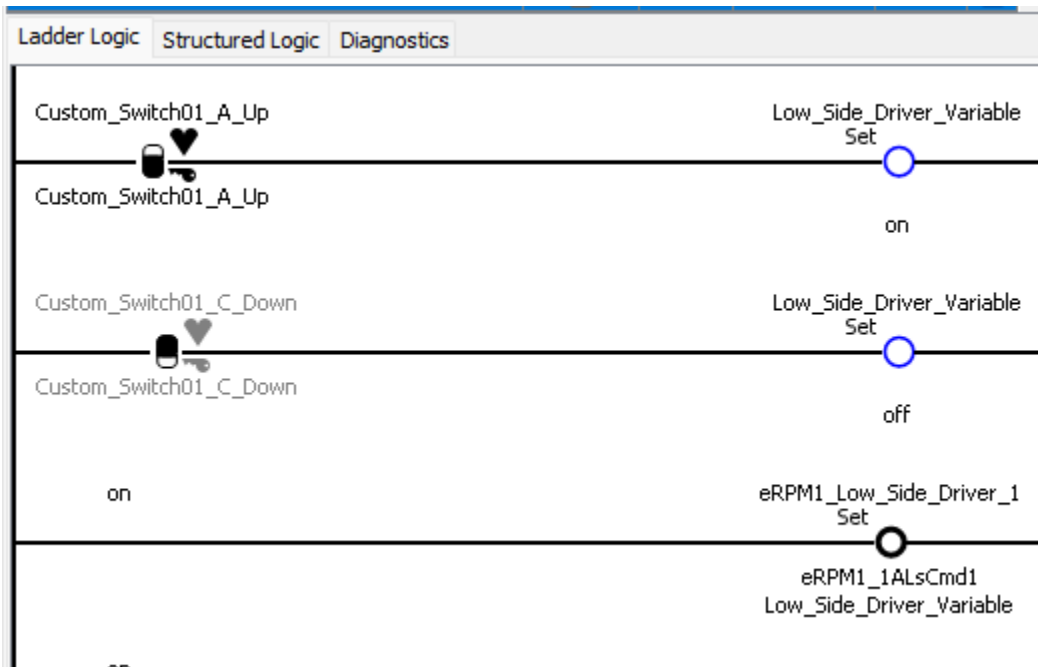
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11.5 Low and High Side Drivers

Writing advanced logic for the outputs for Low Side Drivers and High Side Drivers Is accomplished in a similar manner as writing logic for the legacy RPM.

11.5.1 Low Side Driver Example

In this example, the functionality of this logic is to use Switch 14 and Accessory to control low side driver number 1 on ERPM 2.



1st Rung

When the key is on and Switch_14_On is activated, independent variable Low_Side_Driver_Variable is set to on.

2nd Rung

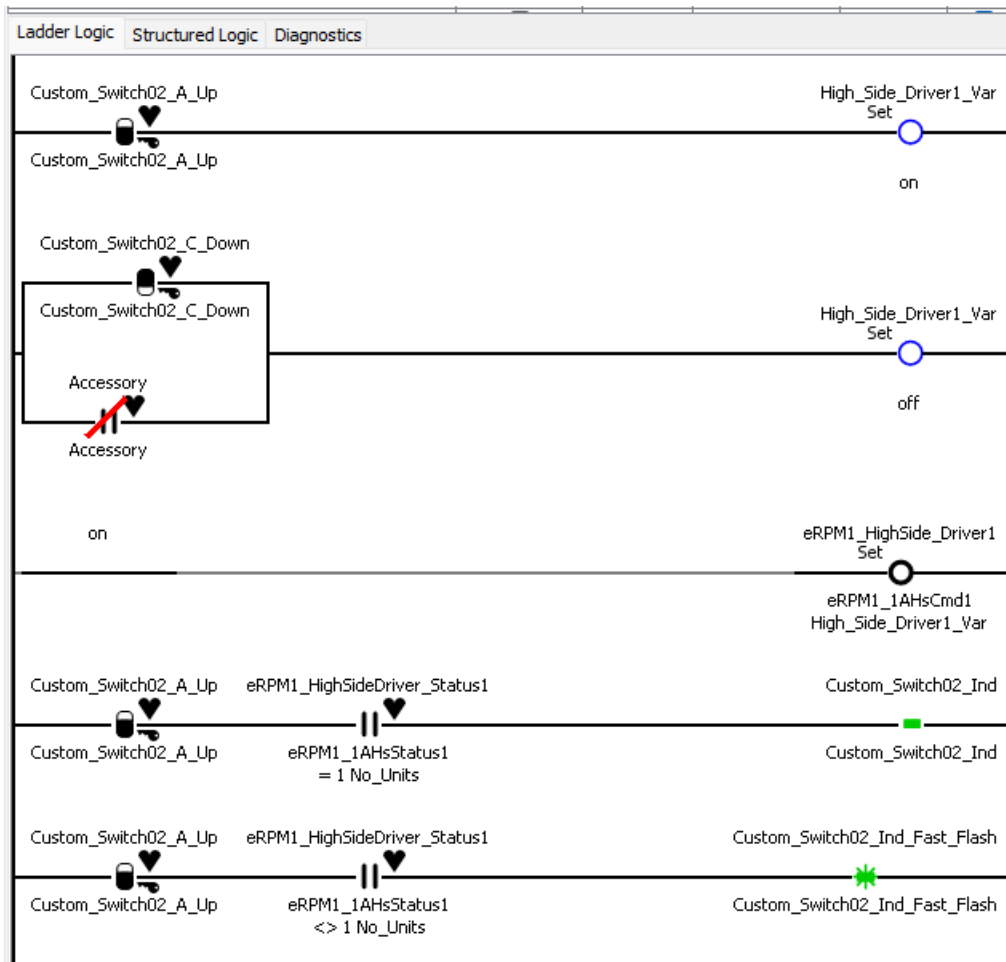
When the key is off or Switch_14_Off is activated, independent variable Low_Side_Driver_Variable is set to off.

3rd Rung

This rung sets eRPM1_Low_Side_Driver_1 to match the value of variable Low_Side_Driver_Variable.

11.5.2 High Side Driver Example

In this example, the functionality of this logic is to use Switch 11 and Accessory to control high side driver number 1 on ERPM 3.



1st Rung

When the key is on and Switch_02_Up is activated, independent variable High_Side_Driver1_Var is set to on.

2nd Rung

When the key is off or Switch_02_Down is activated, independent variable High_Side_Driver1_Var is set to off.

3rd Rung

independent variable High_Side_Driver1 I used to determine the value for the eRPM1_HighSide_Driver1 output.

4th Rung

When the key is on and Switch_02_Up is activated and eRPM1_HighSideDriver_Status1 = 1, The Custom_Switch02_Ind will illuminate solid Green. This indicates the output is on and is working correctly.

5th Rung

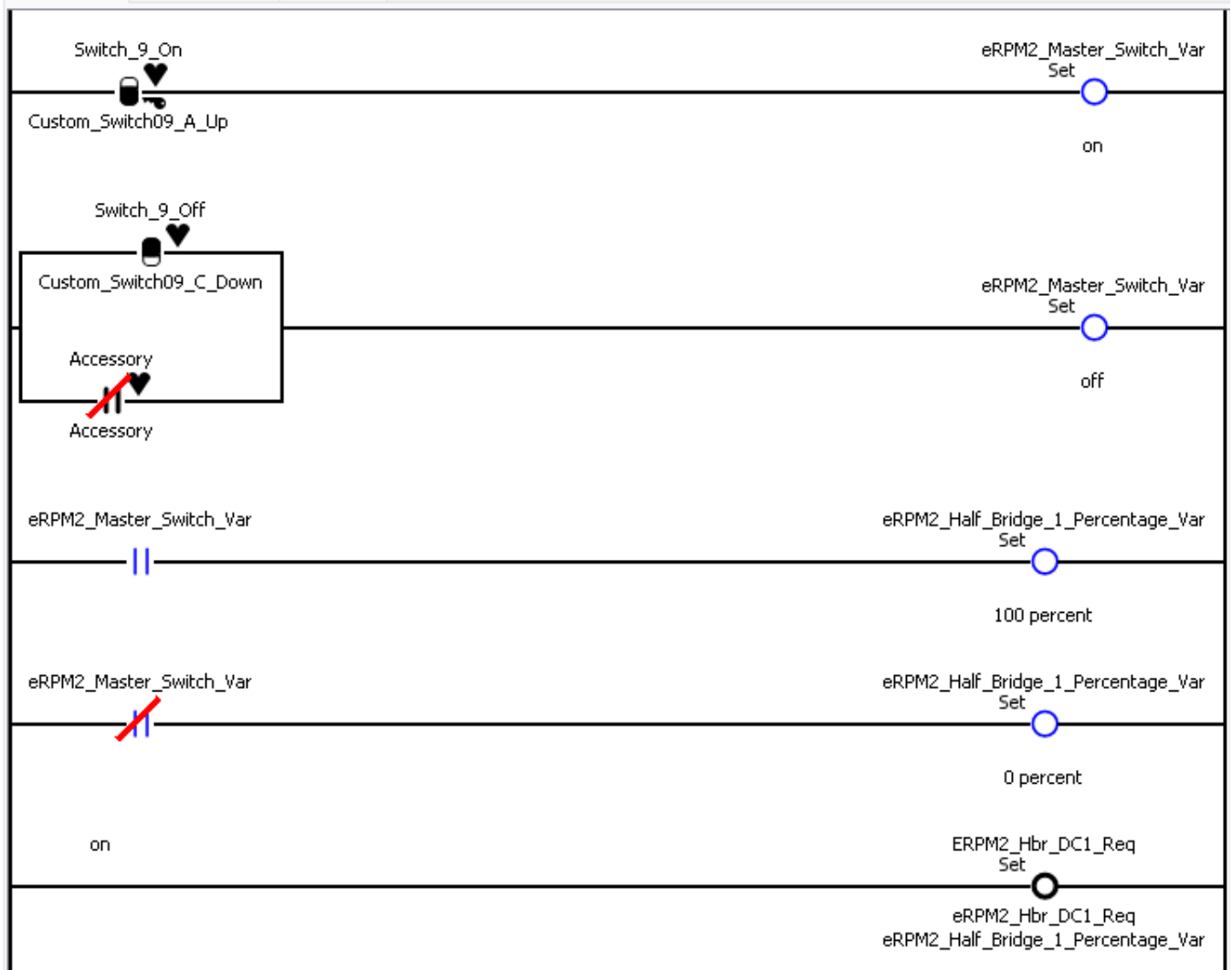
When the key is on and `Switch_02_Up` is activated and `eRPM1_HighSideDriver_Status1` does not = 1, The `Custom_Switch02_Ind` will flash fast. This indicates there is a problem on the high side driver output.

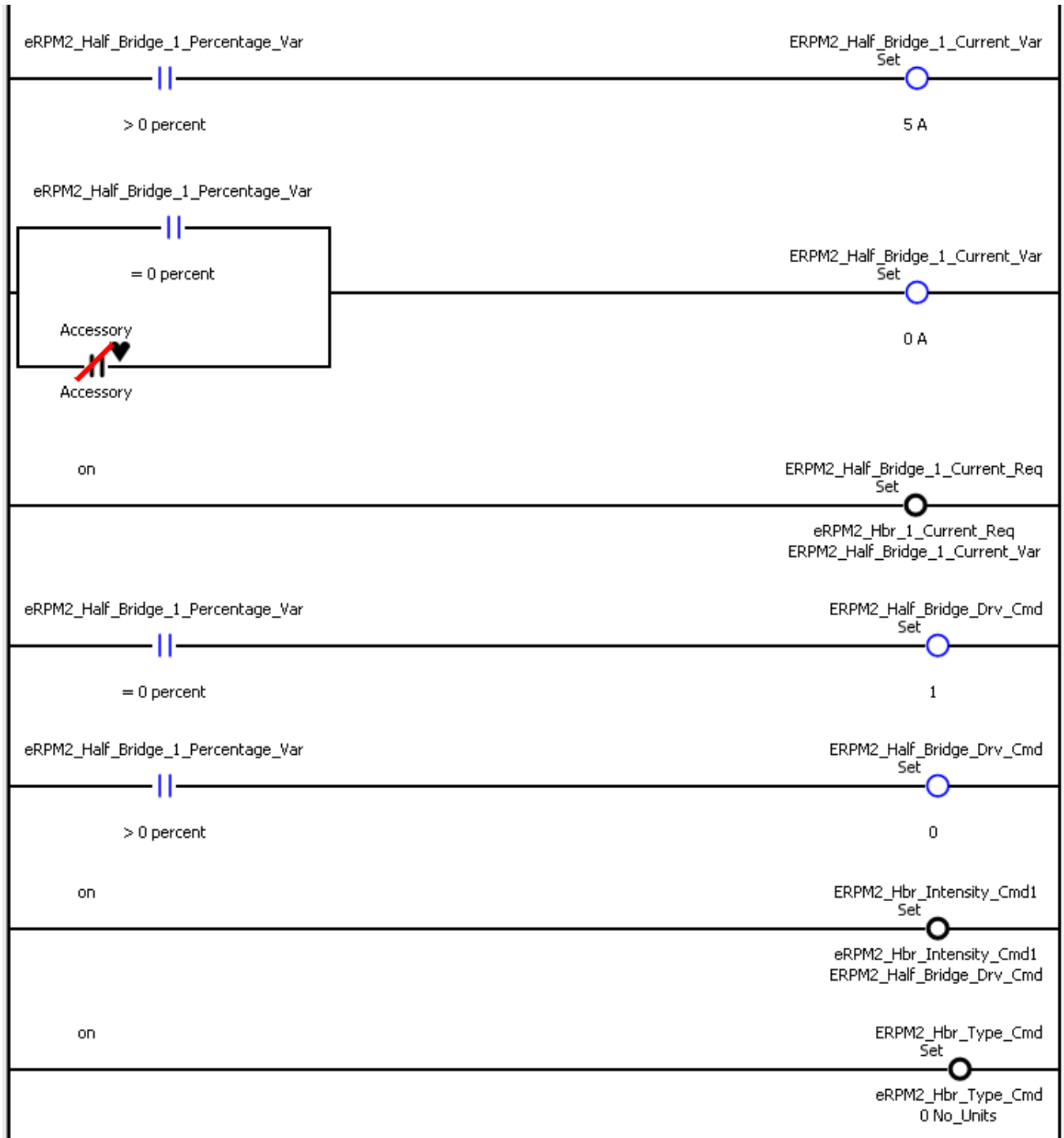
11.6 Half Bridge

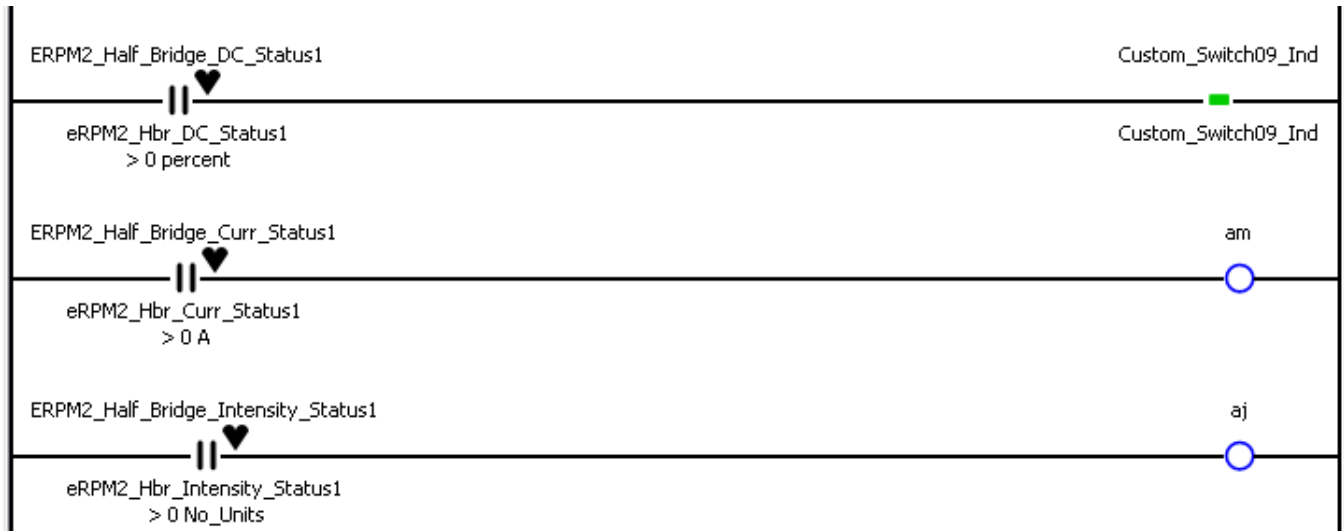
The H bridge logic is similar to the 5-amp PWM output logic. The difference is that the H Bridge has a rung for intensity and a rung for Type as well as the PWM Duty Cycle and Amperage rungs.

In half bridge configurations, an output is connected to a component, with the other side of the circuit connecting to the dedicated H-bridge ground.

In this example, the functionality of this logic is to use Switch 9 and Accessory to control half bridge output number 1 on ERPM 2.







1st Rung

When the key is on and Switch_9_On is activated, independent variable ERPM2_Master_Switch_Var is set to on.

2nd Rung

When the key is off or Switch_9_Off is activated, independent variable ERPM2_Master_Switch_Var is set to off.

3rd Rung

This rung uses the active eRPM2_Master_Switch_Var variable as an input to set eRPM2_Half_Bridge_1_Percentage_Var to 100 percent.

4th Rung

This rung uses the inactive eRPM2_Master_Switch_VAR variable as an input to set eRPM2_Half_Bridge_1_Percentage1 to 0 percent.

5th Rung

This rung sets the eRPM2_Hbr_DC1_Req value to match the value of eRPM2_Half_Bridge_1_Percentage_Var.

6th Rung

When eRPM2_Half_Bridge_1_Percentage_VAr is greater than 0 percent, eRPM2_Half_Bridge_1_Current_Var is set to 5 amps.

7th Rung

When eRPM2_Half_Bridge_1_Percentage_Var equals 0 percent or Accessory is Off, eRPM2_Half_Bridge_1_Current_Var is set to 0 amps.

8th Rung

This rung sets the LB_1205_eRPM2_Half_Bridge_1_Current_Req value to match the value of independent variable eRPM2_Half_Bridge_1_Current_Var.

9th Rung

When eRPM2_Half_Bridge_1_Percentage_var equals 0 percent, independent variable eRPM2_Half_Bridge_Drv_Cmd is set to 1.

10th Rung

When LB_1202_eRPM2_Half_Bridge_1_Percentage1 is greater than 0 percent, independent variable eRPM2_Half_Bridge_Drv_Cmd is set to 0.

11th Rung

This rung sets the eRPM2_Hbr_Intensity_Cmd1 value to match the value of independent variable eRPM2_Half_Bridge_Drv_Cmd.

12th Rung

This rung sets the _eRPM2_Hbr_Intensity_Cmd value to match the value of independent variable eRPM2_Half_Bridge_Drv_Cmd.

13th Rung

This rung sets the eRPM2_Hbr_Type_Cmd value to 0, which is for half bridge.

14th Rung

When ERPM2_Half_Bridge_DC_Status1 is greater than 0 percent Custom_Switch09_Ind is turned on solid.

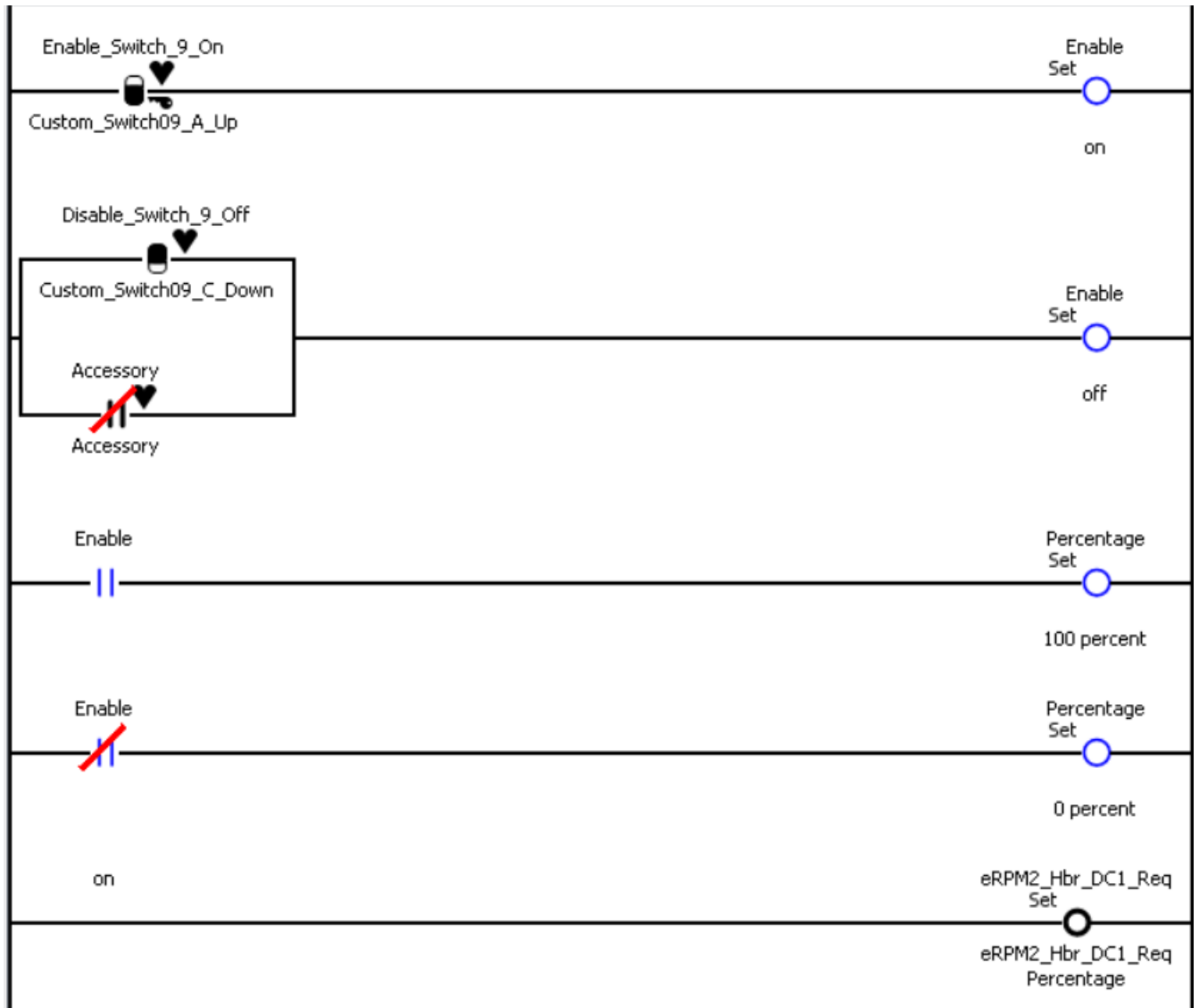
Rungs 15 and 16 show how other status signals are available that could be used to drive other indicators or independent variables.

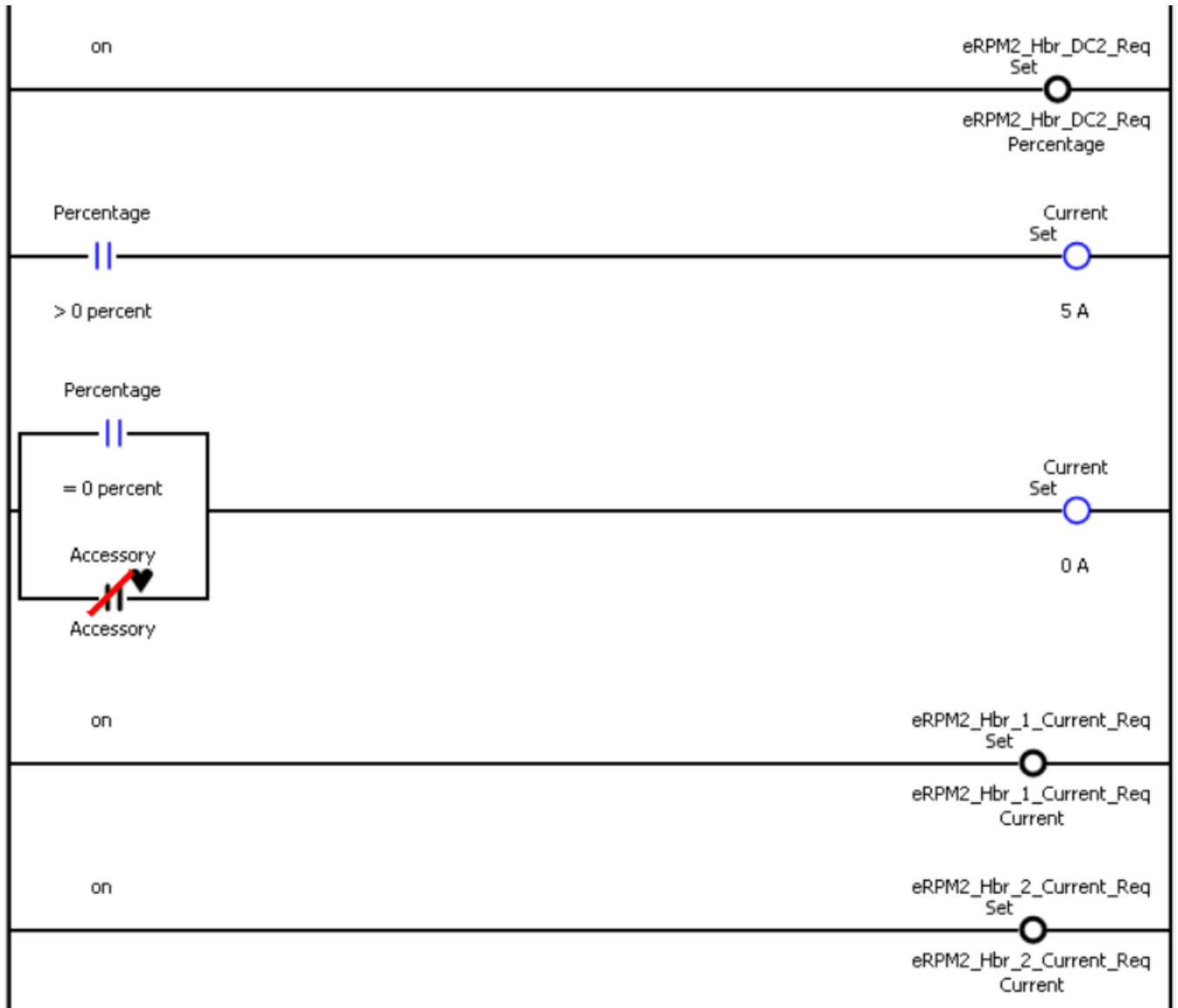
11.7 Full Bridge

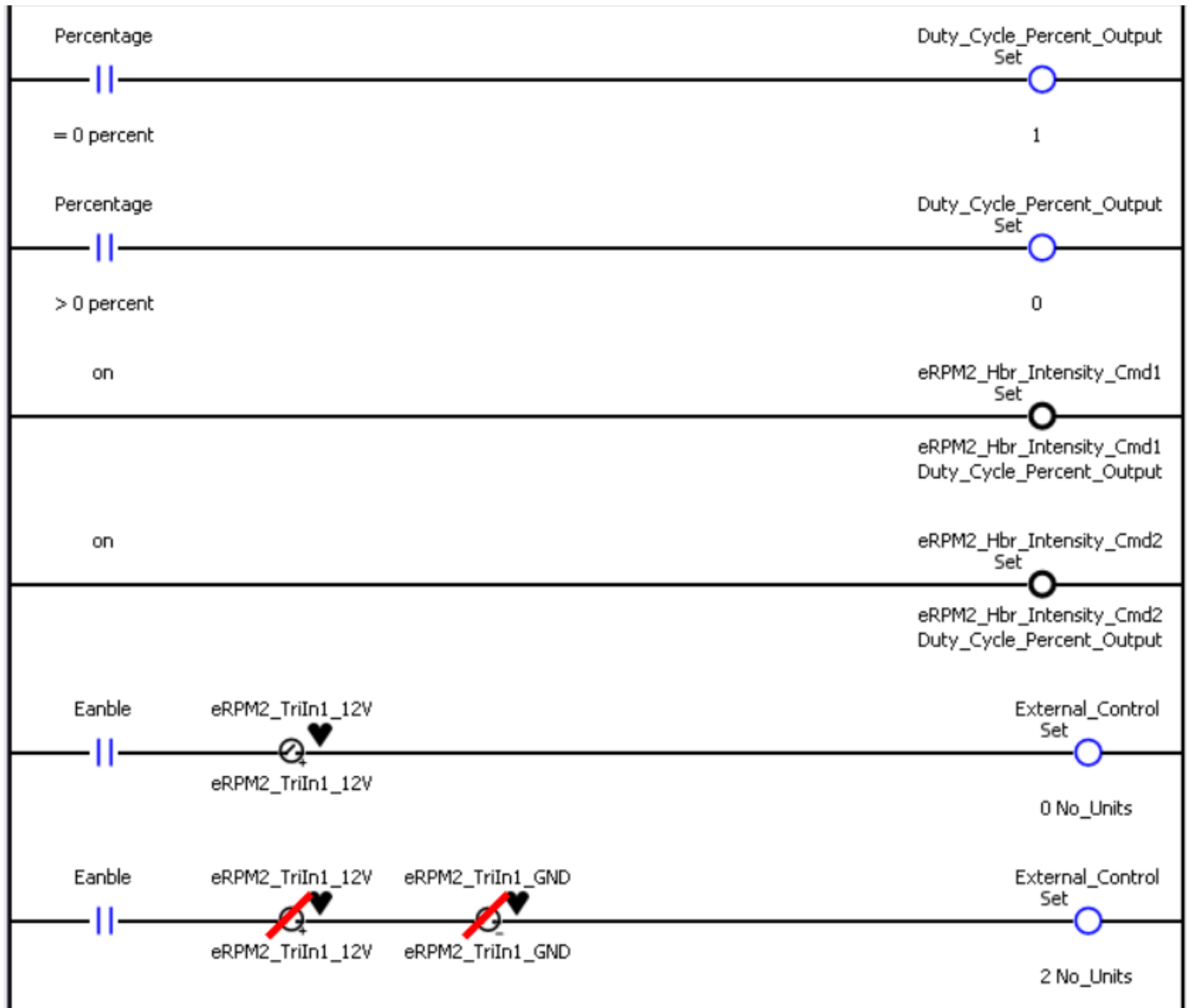
In full bridge configurations, one H-bridge output is connected to a circuit leading to a component, with the other side of the component circuit connecting to the other H-bridge output. This creates a pair of circuits that have reversing polarity, allowing them to drive a component, such as a motor or hydraulic valve, in one direction and then the other.

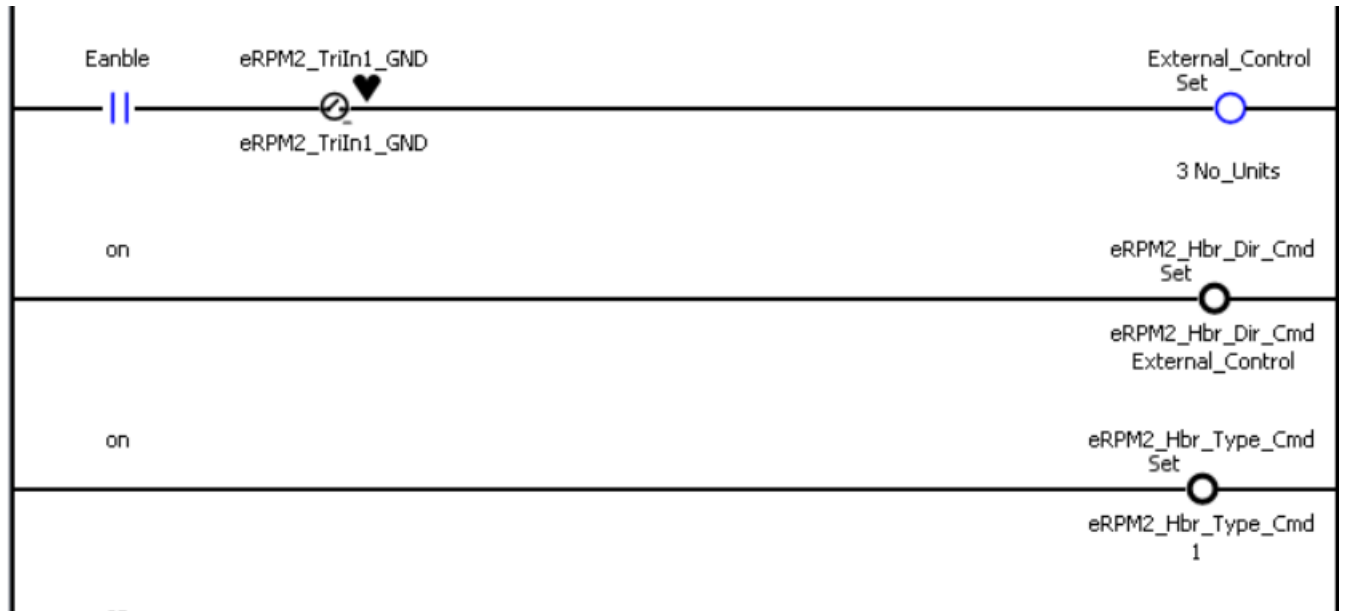
11.7.1 Full Bridge Example 1

In this example, the functionality of this logic is to use 2 half bridges that are combined to create a full bridge feature that can be used to control a device such as a low current motor or hydraulic valve. The logic uses an enable switch to turn on the feature and two ERPM inputs that will control the direction of the motor or hydraulic valve.









1st Rung

When the key is on and Enable_Switch_9_On is activated, independent variable Enable is set to on.

2nd Rung

When the key is off or Disable_Switch_9_Off is activated, independent variable Enable is set to off.

3rd Rung

When independent variable Enable is active, the independent variable Percentage is set to 100%.

4th Rung

When independent variable Enable is inactive, the independent variable Percentage is set to 0%.

5th Rung

This rung sets the value of eRPM2_Hbr_DC1_Req to match the value of the independent variable Percentage.

6th Rung

This rung sets the value of eRPM2_Hbr_DC2_Req to match the value of the independent variable Percentage.

7th Rung

When independent variable Percentage is greater than 0 percent, the independent variable Current is set to 5 amps.

8th Rung

When the key is turned off or independent variable Percentage equals 0 percent, the independent variable Current is set to 0 amps.

9th Rung

This rung sets the value of eRPM2_Hbr_1_Current_Req to match the value of the independent variable Current.

10th Rung

This rung sets the value of eRPM2_Hbr_2_Current_Req to match the value of the independent variable Current.

11th Rung

This rung sets the value of eRPM2_Hbr_2_Current_Req to match the value of the independent variable Current.

12th Rung

When independent variable Percentage equals greater than 0 percent, the independent variable Current is set to 5 amps.

13th Rung

When independent variable Percentage is equal to 0 percent, the independent variable Current is set to 0 amps.

14th Rung

This rung sets the value of eRPM2_Hbr_1_Current_Req to match the value of the independent variable Current.

15th Rung

This rung sets the value of eRPM2_Hbr_2_Current_Req to match the value of the independent variable Current.

16th Rung

When independent variable Percentage is equal to 0 percent, the independent variable Intensity is set to 1.

17th Rung

When independent variable Percentage is greater than 0 percent, the independent variable Intensity is set to 0.

18th Rung

This rung sets the value of eRPM2_Hbr_Intensity_Cmd1 to match the value of the independent variable Intensity.

19th Rung

This rung sets the value of eRPM2_Hbr_Intensity_Cmd2 to match the value of the independent variable Intensity.

20th Rung

When independent variable Enable is active and 12 volts is applied to eRPM2_TriIn1_12V, the independent variable External Control is set to 0.

21st Rung

When independent variable Enable is not active and 12 volts is not applied to eRPM2_TriIn1_12V and ground is not applied to eRPM2_TriIn1_GND, the independent variable External Control is set to 2.

22nd Rung

When independent variable Enable is active and GND is applied to eRPM2_TriIn1_GND, the independent variable External Control is set to 3.

23rd Rung

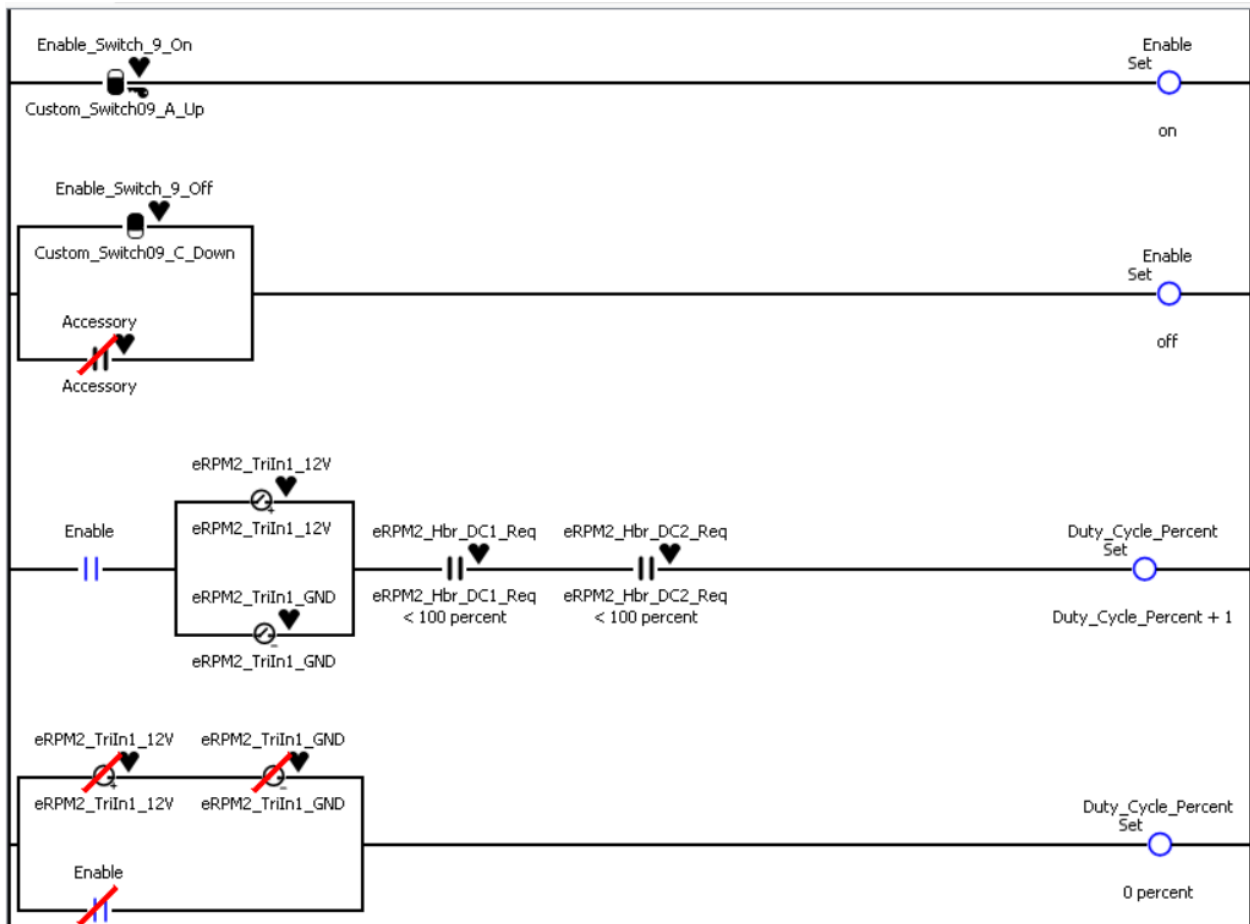
This rung sets the value of eRPM2_Hbr_Dir_Cmd to match the value of the independent variable External Control. This controls the direction of the motor or hydraulic valve.

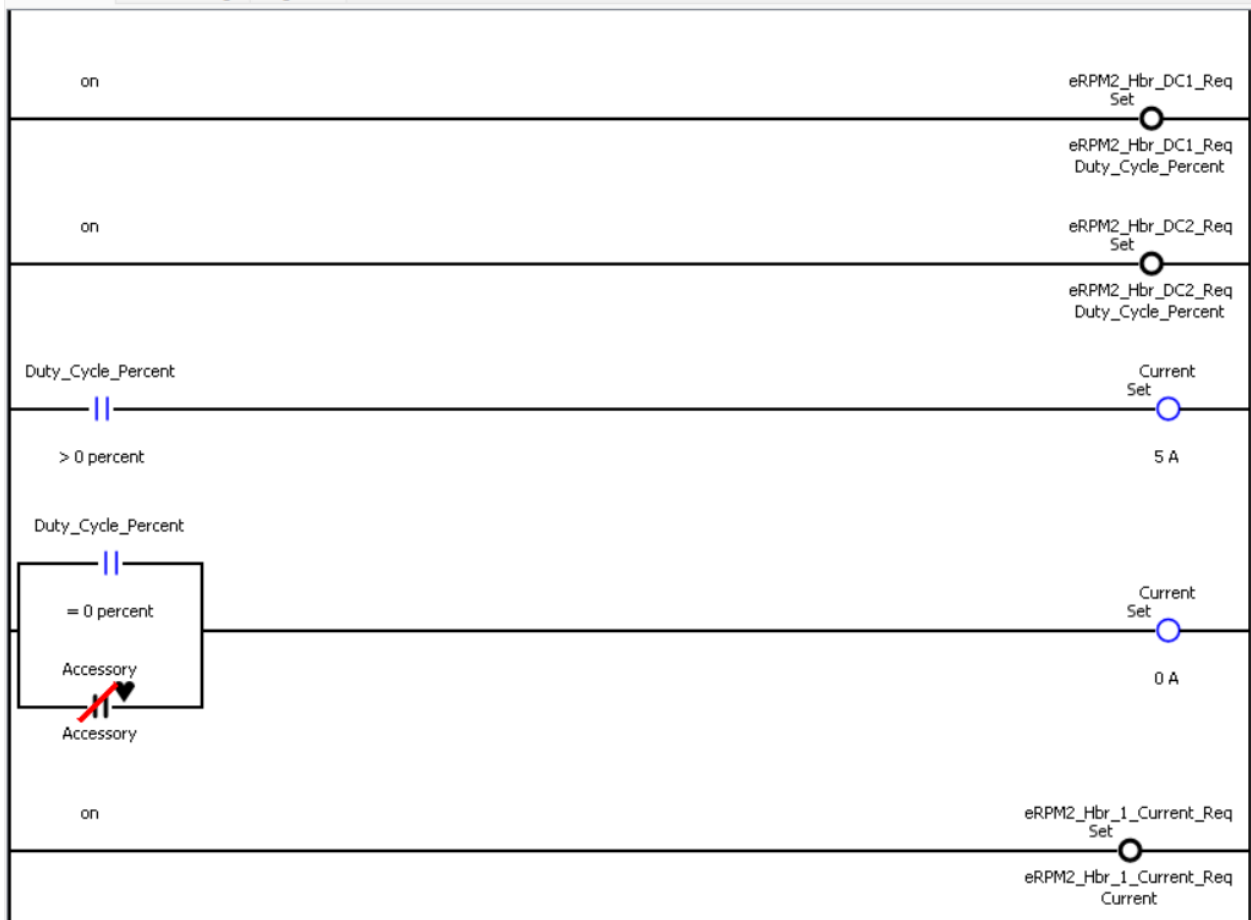
24th Rung

This rung sets the value of eRPM2_Hbr_Type_Cmd to 1, which is full bridge.

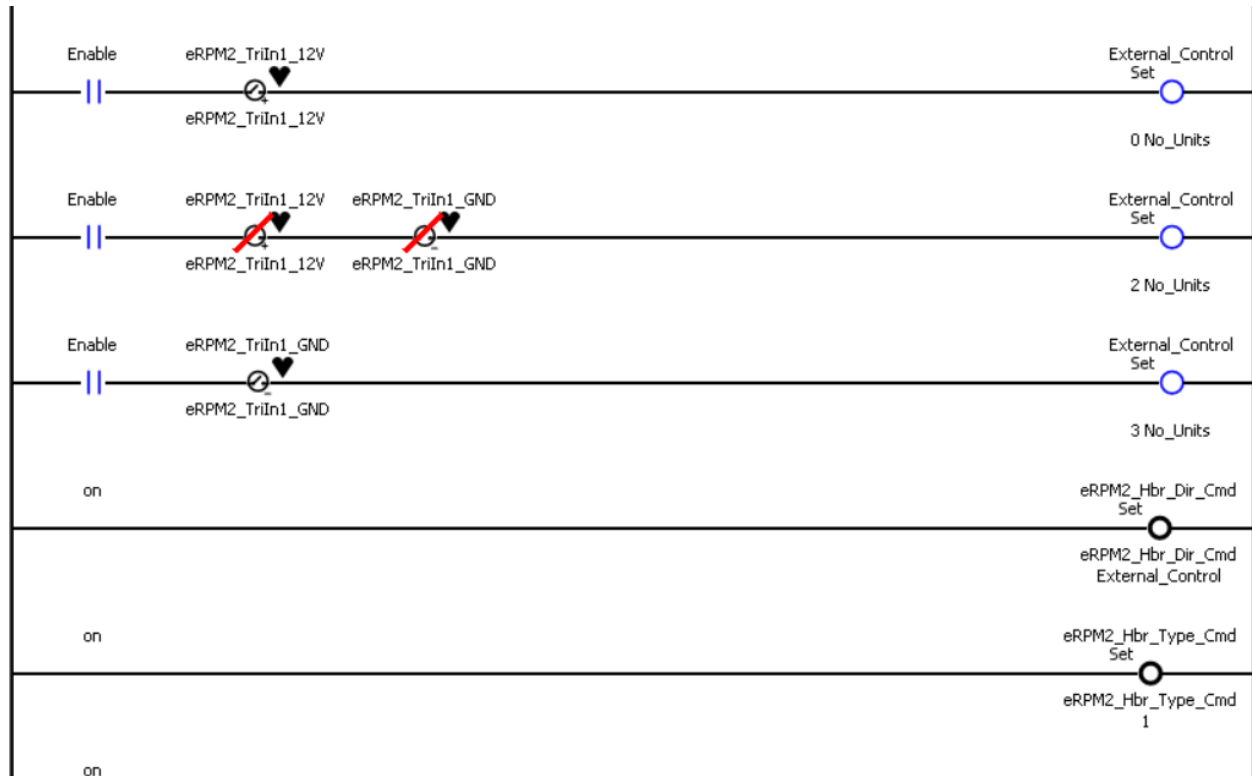
11.7.2 Full Bridge Example 2

In this example, the functionality of this logic is to use 2 half bridges that are combined to create a full bridge feature that can be used to control a device such as a low current motor or hydraulic valve. The logic uses an enable switch to turn on the feature and two ERPM inputs that will control the direction of the motor or hydraulic valve. This logic also uses rungs to control the duty cycle to slow the ramp rate of the outputs.









1st Rung

When the key is on and Enable_Switch_9_On is activated, independent variable Enable is set to on.

2nd Rung

When the key is off or Disable_Switch_9_Off is activated, independent variable Enable is set to off.

3rd Rung

When independent variable Enable is active, the independent variable Percentage is set to 100%.

4th Rung

When independent variable Enable is inactive, the independent variable Percentage is set to 0%.

5th Rung

This rung sets the value of eRPM2_Hbr_DC1_Req to match the value of the independent variable Percentage.

6th Rung

This rung sets the value of eRPM2_Hbr_DC2_Req to match the value of the independent variable Percentage.

7th Rung

When independent variable Percentage is greater than 0 percent, the independent variable Current is set to 5 amps.

8th Rung

When the key is turned off or independent variable Percentage equals 0 percent, the independent variable Current is set to 0 amps.

9th Rung

This rung sets the value of eRPM2_Hbr_1_Current_Req to match the value of the independent variable Current.

10th Rung

This rung sets the value of eRPM2_Hbr_2_Current_Req to match the value of the independent variable Current.

11th Rung

This rung sets the value of eRPM2_Hbr_2_Current_Req to match the value of the independent variable Current.

12th Rung

When independent variable Percentage equals greater than 0 percent, the independent variable Current is set to 5 amps.

13th Rung

When independent variable Percentage is equal to 0 percent, the independent variable Current is set to 0 amps.

14th Rung

This rung sets the value of eRPM2_Hbr_1_Current_Req to match the value of the independent variable Current.

15th Rung

This rung sets the value of eRPM2_Hbr_2_Current_Req to match the value of the independent variable Current.

16th Rung

When independent variable Percentage is equal to 0 percent, the independent variable Intensity is set to 1.

17th Rung

When independent variable Percentage is greater than 0 percent, the independent variable Intensity is set to 0.

18th Rung

This rung sets the value of eRPM2_Hbr_Intensity_Cmd1 to match the value of the independent variable Intensity.

19th Rung

This rung sets the value of eRPM2_Hbr_Intensity_Cmd2 to match the value of the independent variable Intensity.

20th Rung

When independent variable Enable is active and 12 volts is applied to eRPM2_TriIn1_12V, the independent variable External Control is set to 0.

21st Rung

When independent variable Enable is not active and 12 volts is not applied to eRPM2_TriIn1_12V and ground is not applied to eRPM2_TriIn1_GND, the independent variable External Control is set to 2.

22nd Rung

When independent variable Enable is active and GND is applied to eRPM2_TriIn1_GND, the independent variable External Control is set to 3.

23rd Rung

This rung sets the value of eRPM2_Hbr_Dir_Cmd to match the value of the independent variable External Control. This controls the direction of the motor or hydraulic valve.

24th Rung

This rung sets the value of eRPM2_Hbr_Type_Cmd to 1, which is full bridge.

11.8