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Vehicles and/or Powertrains Affected:			
► Freightliner® M2 Plus and SD Plus	► Detroit Engines	► EATON Endurant Automated Transmissions	► DT12 Automated Transmissions
► Western Star® 47X, 48X, and 49X	► Cummins Engines	► Allison 2000/3000/4000 Transmissions	►

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SCOPE

Application of this document is restricted to models with enhanced CEEA+ electrical architecture. At the time of publication, this includes Freightliner M2 Plus / SD Plus series and Western Star X-Series trucks.

This solution requires that the modules listed in Table 1 are present on the truck.

Module	Description
80S or 80T	PTO1 or PTO2 engagement controls, with “TEM Supplied Request”
157	Remote Stop Start (RSS) controls
35M	QuickFit Programmable Module (QPM), XMC3

Table 1, Required Modules

SYMPTOMS

After the PTO is engaged and while attempting to stop the engine using the RSS control, the engine will not stop since the RSS mode switch in the cab was not pressed beforehand.

ISSUE

The operator must stop doing work with the truck to re-enter the cab and press the RSS mode switch.

SOLUTION

To resolve this issue, simultaneously activate RSS mode and PTO engagement.

Use the existing RSS mode switch base with an alternate switch cap that will simultaneously engage PTO1 or PTO2 and enable RSS mode using a CHEC feature in XMC3. The switch cap will be labeled as Work Mode.

Configuration

Figure 1 illustrates how this solution operates. The existing RSS mode switch is retained and fitted with a work mode switch cap. When pressed, the RSS Mode switch request is transmitted over CAN to XMC3. A CHEC feature monitors this signal and generates a corresponding digital output, which is used as the input to the TEM-supplied PTO engage request pin. This request is then forwarded to the ASAM, which uses the PTO release software to engage the PTO. The RSS mode switch request is also processed as normal by the RSS feature software.

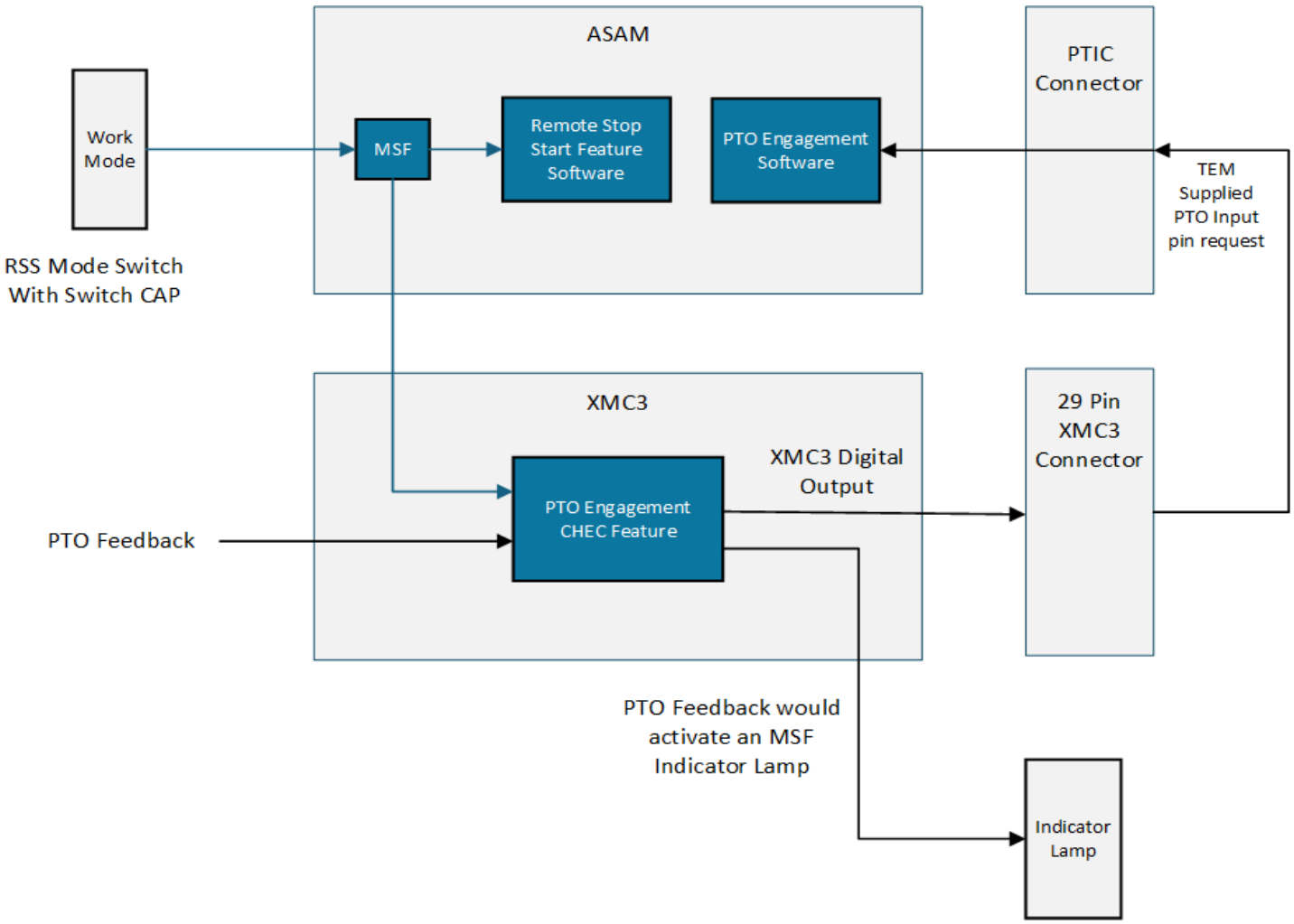

Fig. 1, RSS with PTO Engagement

RSS Mode Switch Status Signal

A CHEC feature will monitor the Chassis CAN bus to detect the RSS mode switch request status signal. Signal information is provided in Table 2.

Signal Name	Message ID	Byte (0-7) / Bit (0-7)	Description	Value
RSS_EnableRq_Stat_ASAM	18FF1131 x	Byte 2 Bits 6,7	RSS Mode Request status.	0 = Not Pressed 1 = Pressed

Table 2, RSS Mode Switch Status Signal

Switch Cap

A Work Mode switch cap is used on the RSS Mode switch body. See Table 3.

Truck Type	Part Number	Description	Qty.
M2 Plus / SD Plus	MQT22G0236	Work Mode Switch CAP for M2 Plus / SD Plus	1
47X, 49X	MQT12G0236	Work Mode Switch CAP for 47X and 49X	1

Table 3, Switch Cap Part Numbers

CHEC Feature

Figure 2 shows CHK0007-003957, which reads the RSS mode switch status signal and generates an active low (GND) output when the RSS mode switch press is detected.

Copy the sample CHEC feature below and modify the digital output to match your truck's available I/O resources.

Digital Output 11 is shown for reference.

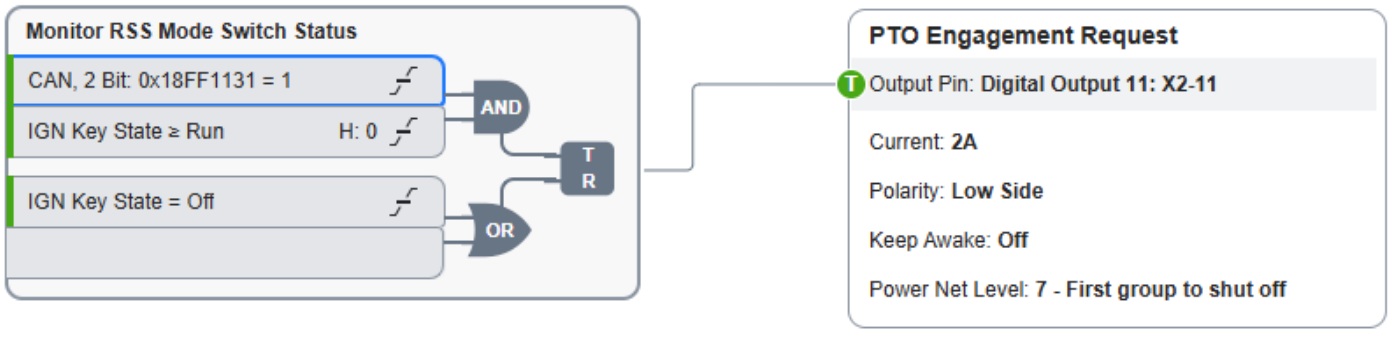

Fig. 2, Sample CHEC Feature to Detect an RSS Mode Request

INSTRUCTIONS

A jumper wire must be installed, and corresponding parameter configuration is required to enable the PTO engagement request.

Components

Step 1. Remove the RSS switch from the dashboard.

Step 2. Remove the RSS switch cap.

Step 3. Install the work mode cap onto the RSS switch base.

Step 4. Reinstall the switch dashboard.

Wiring

Step 5. Determine which digital output pin is used in the CHEC feature.

Step 6. Locate the corresponding cavity at the XMC exterior interface connector.

Step 7. Locate the PTIC connector.

Step 8. Locate the correct PTO input request cavity in the PTIC.

a. For PTO1 engagement: cavity 35.

b. For PTO2 engagement: cavity 39.

Step 9. Install the jumper wire from the selected digital output cavity in the XMC3 exterior interface connector and the selected PTO input request cavity in the PTIC.

Parameters

Depending on whether PTO1 or PTO2 is being used, confirm that the applicable parameter listed in Table 4 has been configured. This adjustment is listed in the PTO1 and PTO2 Engagement Parameters section of the TEM-11-00020 PTO1 and PTO2 Engagement Application and Installation Guide.

ECU	Parameter	Description	Value
SSAM	PTO1_Dash_Switch_or_SAM_Input_PIN	The PTO1 Dash switch or Remote engagement pin can request PTO1 engagement.	Function Available
SSAM	PTO2_Dash_Switch_or_SAM_Input_PIN	The PTO2 Dash switch or Remote engagement pin can request PTO2 engagement.	Function Available

Table 4, PTO Parameters

WARRANTY

This document is informational only. Warranty does not apply.

REFERENCES

Additional resources are listed below.

QPM QuickFit Programmable Module Overview, 35M (XMCs 3 & 4) – WST X-Series

QPM QuickFit Programmable Module Overview, 35M (XMCs 3 & 4) – FTL M2 Plus & SD Plus

Switch Graphics Intro – FTL M2 Plus & SD Plus

Switch Graphics Intro -- WST X-Series

PTIC - Powertrain TEM Interface Connector – Overview WST – X-Series

PTIC - Powertrain TEM Interface Connector – Overview FTL M2 Plus & SD Plus

TEM-11-00020 PTO1 and PTO2 Engagement