International® S13 Integrated (2023)

Overview: *Engine Speed Control-Remote*

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General Overview: Remote Engine Speed Control

RESC and AESC are synonymous.

The Remote Engine Speed Control (RESC) feature allows the operator to control engine speed from outside the vehicle cab, usually in support of (PTO) Power Take Off operations. This feature may also be known as Remote Accelerator Pedal Position (RAPP). Control over engine speed is accomplished by using remote mounted switches and/or throttle controls to turn on the RESC and select the desired engine speed.

The RESC and RAPP features use a combination of remote preset, remote variable and remote pedal enable inputs, which allow the operator to choose the mode of engine speed control operation.

For Remote Engine Speed Control (RESC) applications, additional switches may be required to select preset or variable engine control.

For Remote Accelerator Pedal Position (RAPP) applications, an additional remote throttle control is required to control engine speed.

Programming to support this feature is accomplished within the engine control module (CEM1), the powertrain interface module (PIM) and the transmission control (TCM).

This document will address unique remote engine speed control functionality for the S13 Integrated Engine.

Description and Operation

> *NOTE: Refer to the vehicle operation and maintenance manual, as well as the S13 engine operation and maintenance manual, for additional information on operation and indications.*

The RESC feature remotely provides the operator engine speed control to any installed auxiliary devices. This remote-control panel is located outside of the cab by the installer of the auxiliary device.

Operation

The operational control of the RESC feature consists of, up to, 5 switches located on a control panel outside the cab of the vehicle:

- **"Remote Preset"** switch allows the operator to enable or disable the remote preset AESC functionality.
- **"Remote Variable"** switch allows the operator to enable or disable the remote variable AESC functionality.
- **"Resume/Accel"** switch allows the operator to ramp up the engine or cycle through the presets.
- **"Set/Coast"** switch allows the operator to ramp down the engine or cycle through the presets.

- ▪ **"Remote Pedal Enable"** switch provides additional control to enable remote pedal operation.

The following visual indications may also be remotely mounted and are used in conjunction with RESC:

- ▪ Amber Warning Lamp (AWL)
- ▪ Red Stop Lamp (RSL)
- ▪ Engine Running Output

Remote Preset Switch

Remote preset engine speed control allows the operator to select up to 6 preset engine speeds from outside the cab while the vehicle is stationary. This input will also enable the remote pedal.

Remote Variable Switch

Remote variable engine speed control allows the operator to select any engine speed within the AESC boundaries using controls and a physical switch located outside the cab. This input will also enable the remote pedal.

Remote Pedal

This optional feature gives the operator control of the engine speed outside the cab similar to that of the in-cab accelerator pedal.

Feature Interaction

The RESC feature interacts with the following engine features:

- ▪ In-Cab Engine Speed Control
- ▪ Engine Cooling Fan
- ▪ Idle Shutdown TIMER (IST)
- ▪ Cold Ambient Protection (CAP)

Programmable Parameters

The following programmable parameters are required for RESC and PTO operation. These parameters should be programmed to the engine speed control operation which will best suit the vehicle conditions expected.

Parameters indicated as "Customer Programmable" can be adjusted differently than the production assembly plant setting to meet the customer's needs. If the parameter is indicated as non-customer programmable, the parameter setting is preset from the factory and cannot be changed without authorization.

> *NOTE: There are multiple available RESC configurations. Please see the Parameter Setup section for a few examples and specific setup instructions.*

Parameters for AESC Remote Configurations:

Parameter Value	Description	Possible Values	Cust Pgrm	Recommended Settings
PIM AESC Speed Control - Mode (B10F 004)	This parameter determines the conditions that the Engine Speed Control (AESC) feature will be functional. Set this parameter to enable AESC operation and to choose which inputs are used for control. • **If set to (**Disable**)** – The AESC functionality is disabled. • **If set to (**In Cab Operation Only**)** – Only the in-cab inputs will be able to control AESC. • **If set to (**Operation Remote and In Cab**)** – Both remote and in-cab inputs will be able to control AESC **(See Note 1 & 2)**. • **If set to (**Remote**) –** Only the remote AESC inputs can control AESC **(See Note 2)**. **Note -** The last input received will take priority when Remote and In Cab Operation is selected.	- Disable - Remote Operation Only - In Cab Operation - Remote and In Cab Operation	YES	Customer Chosen
PIM AESC – In Cab Mode (B10F 006)	Set this parameter after selecting In-Cab Or Remote and In-Cab Operation to determine which AESC mode is active. • **If set to (**None**)** – The switches will not be used. Refer to the Remote Engine Speed Control document. • **If set to (**Stationary Preset**)** – The switches will be used to select up to 6 preset engine speeds. Refer to the Stationary Preset section for more information. • **If set to (**Stationary Variable**)** – The switches will be used to adjust the engine speed variably. Refer to the Stationary Variable section for more information. • **If set to (**Mobile Variable**)** – The switches will be used to adjust the engine speed to a desired set point to allow for vehicle movement. Refer to the Mobile Variable section for more information.	- None - Stationary Preset - Stationary Variable - Mobile Variable	YES	Customer Chosen
PIM AESC – In Cab Operator Interface On/Off (B10F 007)	Select this parameter when accelerator or brake are desired to be ignored during engine speed control operation. • **If set to (**Enable**)** – The accelerator and brake are inputs used for AESC operation. • **If set to (**Disable**)** – The accelerator and brake will be ignored during AESC operation. **Note:** Use parameters (B10F 00D), (B10F 00E) and (B10F 01D) to provide the specific input options.	- Off - On	YES	Customer Chosen
PIM AESC - Disable with Brake (B120 002)	Choosing this feature will allow the operator to deactivate AESC operation when the brake pedal is pressed. Otherwise, the brake pedal is ignored and will not deactivate the AESC. **Note 1:** The **AESC – In Cab Operator Interface On/Off** parameter must be set to (0) for this parameter to be recognized by the feature.	- Service Brake is Ignored - Service Brake Disables AESC	YES	Customer Chosen
PIM AESC - Disable with Parking Brake (**B10F 01D**)	Choosing this feature will allow the operator to deactivate AESC operation when the brake pedal is pressed. Otherwise, the brake pedal is ignored and will not deactivate the AESC. **Note 1:** The **AESC – In Cab Operator Interface On/Off** parameter must be set to (Disable) for this parameter to be recognized by the feature.	- Disengaging Parking Brake does not affect AESC - Disengaging Parking Brake Disables AESC	YES	ParkingBrake Disables

Parameter Value	Description	Possible Values	Cust Pgrm	Recommended Settings
PIM AESC - Remote Pedal Enable (B10F 008)	This parameter allows the operator to control the engine speed with a remote throttle pedal. **Note:** Must be set to Enable if engine speed is desired to be controlled by a remote throttle pedal.	- Disable - Enable	YES	Customer Chosen
PIM AESC Remote Preset On/Off Switch Operation Enable (B10F 002)	This parameter sets the AESC Remote Preset On/Off Switch Operation. This allows the operator to cycle between the 6 pre-programmed engine speed set points.	- Disable - Enable	YES	Disable
PIM AESC - Remote Preset Standby Speed for On/Off Switch Operation (B10F 003)	This parameter sets the standby speed when remote Preset AESC is activated. **Note:** AESC Remote Preset Standby Speed for On/ Off Switch Operation Enable (B10F 002) must be enabled	600 – 3000 RPM	YES	Customer Chosen
PIM AESC - Remote Preset Standby Speed for On/Off Switch Operation Enable (B10F 002)	This parameter enables the AESC remote preset standby speed (B10F 003) when remote Preset AESC is activated. **Note:** Remote Preset Standby Speed for On/Off Switch Operation (B10F 003) sets the standby speed the engine maintains when the remote preset switch is activated.	- Disable - Enable	YES	Customer Chosen
PIM AESC - Preset Engine Speed 1 (Set/Coast) (B10F 009)	This parameter sets the running engine speed set point maintained when the First AESC preset speed is selected. .	Range must be between the following settings: • AESC – Minimum Engine Speed (B10F 017) • AESC - Maximum Engine Speed (B10F 00C)	YES	Customer Chosen
PIM AESC - Preset Engine Speed 2 (Resume/Accel (B10F 00A)	This parameter sets the running engine speed set point maintained when the Second AESC preset speed is selected.	Range must be between the following settings: • AESC – Minimum Engine Speed (B10F 017) • AESC Maximum Engine Speed (B10F 00C)	YES	Customer Chosen

Parameter Value	Description	Possible Values	Cust Pgrm	Recommended Settings
PIM AESC - Maximum Engine Speed (B10F 00C)	The maximum engine speed that can be reached using any AESC controls. **Note -** This parameter must be set properly to protect AESC related equipment.	• Low Idle – High Idle (rpm)	YES	Customer Chosen **(See Note 1)**
PIM AESC - Preset Engine Speed 3 (B10F 010)	This parameter sets the running engine speed set point maintained when the Third AESC preset speed is selected. **Note 1:** Presets speeds that will not be used can be set to 0 rpm. Refer to the Stationary Preset section for more information.	Range must be between the following settings: • AESC – Minimum Engine Speed (B10F 017) • AESC Maximum Engine Speed (B10F 00C)	YES	Customer Chosen **(See Note 1)**
PIM AESC - Preset Engine Speed 4 (B10F 011)	This parameter sets the running engine speed set point maintained when the Fourth AESC preset speed is selected. **Note 1:** Presets speeds that will not be used can be set to 0 rpm. Refer to the Stationary Preset section for more information.	Range must be between the following settings: • AESC – Minimum Engine Speed (B10F 017) • AESC Maximum Engine Speed (B10F 00C)	YES	Customer Chosen **(See Note 1)**
PIM AESC - Preset Engine Speed 5 (B10F 012)	This parameter sets the running engine speed set point maintained when the Fifth AESC preset speed is selected. **Note 1:** Presets speeds that will not be used can be set to 0 rpm. Refer to the Stationary Preset section for more information.	Range must be between the following settings: • AESC – Minimum Engine Speed (B10F 017) • AESC Maximum Engine Speed (B10F 00C)	YES	Customer Chosen **(See Note 1)**
PIM AESC - Preset Engine Speed 6 (B10F 013)	This parameter sets the running engine speed set point maintained when the Sixth AESC preset speed is selected. **Note 1:** Presets speeds that will not be used can be set to 0 rpm. Refer to the Stationary Preset section for more information.	Range must be between the following settings: • AESC – Minimum Engine Speed (B10F 017) • AESC Maximum Engine Speed (B10F 00C)	YES	Customer Chosen **(See Note 1)**
PIM AESC - Engine Speed Limit with VSS Fault (B10F 014)	This parameter sets the maximum engine speed allowed when an active vehicle speed sensor (VSS) fault exists, and AESC engine speed control is active. Above this engine speed, AESC cannot be activated; however, if this speed is exceeded while in AESC, AESC will be deactivated. This parameter might be useful in preventing the operator from over speeding or overloading the equipment.	Low Idle – High Idle (rpm)	YES	Customer Chosen

Parameter Value	Description	Possible Values	Cust Pgrm	Recommended Settings
PIM AESC - Maximum Vehicle Speed (B10F 005)	This parameter sets the maximum vehicle speed with AESC active, if vehicle speed goes above the limit, AESC disables and goes into standby. Cannot re-enable AESC until vehicle speed is reduced below limit.	0-40 km/h (roughly 25mph).	YES	Customer Chosen
PIM AESC - Load Application (B113 002)	This parameter determines how hard the engine will work to achieve the desired speed. • **If set to (0)** - The engine speed response will be relaxed/soft. • **If set to (1)** - The engine speed response will be slow. • **If set to (2)** - The engine speed response will be medium. • **If set to (3)** - The engine speed response will be fast. • **If set to (4)** - The engine speed response will be aggressive.	0: Relaxed/Soft 1: Slow 2: Medium 3: Fast 4: Aggressive	YES	1: Slow
PIM AESC - Maximum Engine Load (B10F 015)	The engine speed control will be limited or deactivated if this parameter value is reached. **Note -** The functionality of this parameter is dependent on the AESC Speed Controlled to Engine Load (B10F 01C) parameter setting.	Set between 0 and 100% based on the recommendations for the AESC equipment.	YES	Customer Chosen
PIM AESC - Maximum Engine Load Time (B10F 015)	This parameter sets the time that the AESC will remain active while the engine load is at a maximum threshold.	Set between 0 and 32 seconds.	YES	A setting of 5 seconds is recommended.
PIM AESC - Preset Engine Speed Select (B10F 01B)	This parameter sets the first selected preset level (1, 2, 3, 4, 5, or 6) when remote Preset AESC is activated. **Note -** This parameter can only have six valid preset values as 1, 2, 3, 4, 5 or 6.	- Off - Preset Speed 1 - Preset Speed 2 - Preset Speed 3 - Preset Speed 4 - Preset Speed 5 - Preset Speed 6	YES	Customer Chosen
PIM AESC Speed controlled to Engine Load (B10F 01C)	This parameter selects whether the AESC engine speed control is limited or deactivated if an engine load threshold is reached. • **If set to (Off) –** AESC will continue to run regardless of the engine load % • If **set to (On) –** The Maximum Engine Load parameter and AESC will disable when the engine load % is met for a certain amount of time. The Speed Controlled to Engine Load parameter does not limit engine speed.	- Off - On	YES	A setting of On is recommended.
PIM AESC Disable with Parking Brake (B10F 01D)	This parameter selects whether the AESC engine speed control is deactivated if the park brake is released. • **If set to (**Parking Brake Does Not Change**) –** Engine speed control will not be deactivated if the park brake is released. • **If set to (**Parking Brake Disables**) –** Engine speed control will be deactivated if the park brake is released.	- Parking Brake Does Not Change - Parking Brake Disables	YES	Customer Chosen

Parameter Value	Description	Possible Values	Cust Pgrm	Recommended Settings
PIM AESC - Disable with Brake (B120 002)	Choosing this feature will allow the operator to deactivate AESC operation when the brake pedal is pressed. Otherwise, the brake pedal is ignored and will not deactivate the AESC. **Note 1:** The **AESC** – In Cab Operator Interface On/Off parameter must be set to (Disable) for this parameter to be recognized by the feature.	- Service Brake is Ignored - Service Brake Disables AESC	YES	Customer Chosen
PIM Cruise Control/AESC On/Off Switch Input Selection (B101 005)	This parameter selects the source for the Cruise Control/AESC On/Off Switch. ▪ **If set to (**Hardwired Input**) – T**he Cruise Control/AESC On/Off Switch signal is sensed from a hardwired input. ▪ **If set to (**Can**) – T**he Cruise Control/AESC On/Off Switch is sensed on the J1939 data link.	- Hardwired Input - Can	YES	Customer Chosen
PIM Cruise Control **Set**/**Coast** Switch Input Selection (B101 006)	This parameter selects the source for the Cruise Control Resume/Accelerate Switch. ▪ **If set to (**Hardwired Input**) – T**he Cruise Control Resume/Accelerate Switch signal is sensed from a hardwired input. ▪ **If set to (**Can**) – T**he Cruise Control Resume/Accelerate Switch is sensed on the J1939 data link. ▪ **If set to (**Both**) – T**he Cruise Control Resume/Accelerate Switch is sensed on both the hardwired input and the J1939 data link.	- Hardwired Input - Can - Both	YES	- Both
PIM Cruise Control Resume/Accelerate Switch Input Selection (B101 007)	This parameter selects the source for the Cruise Control Resume/Accelerate Switch. ▪ **If set to (**Hardwired Input**) – T**he Cruise Control Resume/Accelerate Switch signal is sensed from a hardwired input. ▪ **If set to (**Can**) – T**he Cruise Control Resume/Accelerate Switch is sensed on the J1939 data link. ▪ **If set to (**Both**) – T**he Cruise Control Resume/Accelerate Switch is sensed on both the hardwired input and the J1939 data link.	- Hardwired Input - Can - Both	YES	- Both
PIM Remote AESC Programmed Speed Switch Input Selection (B10F 020)	This parameter sets how the programmed speed switch input signal is provided to the ECM - (Hardwire or CAN). ● **If set to (**Hardwired**) –** The switch input is on a hardwired circuit. ● **If set to (**CAN**)** The switch input is provided on the data link	- Hardwired Input - CAN Input 1	YES	Customer Chosen
PIM Remote AESC Variable Speed Switch Input Selection (B10F 021)	This parameter sets how the variable speed switch input signal is provided to the ECM - (Hardwire or CAN). ● **If set to (**Hardwired**) –** The switch input is on a hardwired circuit. ● **If set to (**CAN**)** The switch input is provided on the data link	- Hardwired Input - CAN Input 1	YES	Customer Chosen

Parameter Value	Description	Possible Values	Cust Pgrm	Recommended Settings
PIM Master Switch for Setting Source (B100 000)	This parameter selects how the ECM sees the switch for setting Source addresses. • **If set to (**Individual Selection**) –** The switch input is on a hardwired circuit. • **If set to (CAN1)** The switch input is provided on the data link	- Individual Selection - CAN	ENGINEE RING	Individual Selection

Parameters for Remote Pedal Configurations:

Parameter Value	Description	Possible Values	Cust Pgrm	Recommended Settings
PIM AESC -Remote Accelerator Enable Switch (B10F 01F)	This parameter enables another input to the ECM that must be applied to allow the remote pedal input to be affect the engine speed: **Note:** (B10F 008) AESC - Remote Pedal Enable must also be enabled.	- Disable - Enable	YES	Customer Chosen
PIM AESC -Remote Accelerator Switch Input Selection (B10F 023)	This parameter sets how the remote accelerator switch input signal is provided to the ECM - (Hardwire/CAN or disabled).	- Hardwired Input - CAN Input 1 - Remote Accelerator Pedal Disabled	YES	Customer Chosen
PIM AESC -Remote Accelerator Pedal Input Selection (B112 002)	This parameter sets how the accelerator pedal input signal is provided to the ECM - (Hardwire/CAN or disabled).	- Hardwired Input - CAN Input 1 - Remote Accelerator Pedal Disabled	YES	Customer Chosen

Preliminary Parameter Setup

Use the following settings to get the engine to respond to the PIM inputs.

After the programming is set so that the engine will respond, adjust each parameter, one at a time, to achieve optimal performance.

ID	Name	Setting	Value
	Setup for VARIABLE operation		
B10F 002	AESC Remote Preset On/Off Switch Operation Enable	Disable	
B10F 004	AESC Speed Control - Mode	remote or remote and in cab	
B10F 006	AESC - In Cab Mode	stationary variable	
B10F 007	AESC In-Cab Operator Interface On / Off	disable	
B10F 008	AESC - Remote Pedal Enable	enable	
B10F 009	AESC - Preset Engine Speed 1 (Set)	xxxx	RPM
B10F 00A	AESC - Preset Engine Speed 2 (Resume)	xxxx	RPM
B10F 00B	AESC - Engine Speed Throttle Ramp Rate	100	RPM/s
B10F 00C	AESC - Maximum Engine Speed	xxxx	RPM
B120 002	AESC - Disable with Brake	brake disables	
B10F 00F	AESC - Disable with APS	APS overrides set speed	
B10F 010	AESC - Preset Engine Speed 3	same as preset 2 if 2 speeds are being used	RPM
B10F 011	AESC - Preset Engine Speed 4	xxxx	RPM
B10F 012	AESC - Preset Engine Speed 5	xxxx	RPM
B10F 013	AESC - Preset Engine Speed 6	xxxx	RPM
B10F 014	AESC - Engine Speed Limit with VSS Fault	600	RPM
B10F 015	AESC - Maximum Engine Load	100	%

B10F 017	AESC - Minimum Engine Speed	600	RPM
B10F 018	AESC - Engine Speed Throttle Down Ramp Rate	100	RPM/s
B10F 019	AESC - Bump Up/Down Step	100	RPM
B10F 01A	AESC - Maximum Engine Load Time	8	s
B10F 01B	AESC - Preset Engine Speed Select	preset 1 (even if more than 1 preset spd)	
B10F 01C	AESC - Speed Controlled to Engine Load	off	
B113 000	Transfer Case Switch Signal Source	If available, for split shaft mode, must be set to Hardwired	
B10F 01E	Transfer Case Input Mode Select	Driveline engaged or split shaft engaged. If split shaft, C3-27 needs a ground when split shaft operation is enabled	
B10F 01F	Remote Accelerator Enable Switch	disable	
B104 002	Brake Pedal Switch Input Selection	can	
B101 005	Cruise Control/AESC On/Off Switch Input Selection	can	
B101 006	Cruise Control Set/Coast Switch Input Selection	both	
B101 007	Cruise Control Resume/Accelerate Switch Input Selection	both	
B10F 023	Remote Accelerator Switch Input Selection	can	
B103 003	Engine Brake Switch 1 Input Selection	can	
B10F 020	Remote AESC Programmed Speed Switch Input Selection	can	
B10F 021	Remote AESC Variable Speed Switch Input Selection	Hardwire	
B112 002	Remote Accelerator Pedal Position Input Selection		
B100 000	Master Switch for Setting Source Addresses	ENGINEERING	

Setup for PRESET operation

ID	Name	Setting	Value
B10F 002	AESC Remote Preset On/Off Switch Operation Enable	Disable	
B10F 004	AESC Speed Control - Mode	remote or remote and in cab	
B10F 006	AESC - In Cab Mode	stationary preset	
B10F 007	AESC In-Cab Operator Interface On / Off	disable	
B10F 008	AESC - Remote Pedal Enable	enable	
B10F 009	AESC - Preset Engine Speed 1 (Set)	xxxx	RPM
B10F 00A	AESC - Preset Engine Speed 2 (Resume)	xxxx	RPM
B10F 00B	AESC - Engine Speed Throttle Ramp Rate	100	RPM/s
B10F 00C	AESC - Maximum Engine Speed	xxxx	RPM
B120 002	AESC - Disable with Brake	brake disables	
B10F 00F	AESC - Disable with APS	APS overrides set speed	
B10F 010	AESC - Preset Engine Speed 3	same as preset 2 if 2 speeds are being used	RPM
B10F 011	AESC - Preset Engine Speed 4	xxxx	RPM
B10F 012	AESC - Preset Engine Speed 5	xxxx	RPM
B10F 013	AESC - Preset Engine Speed 6	xxxx	RPM
B10F 014	AESC - Engine Speed Limit with VSS Fault	600	RPM
B10F 015	AESC - Maximum Engine Load	100	%
B10F 017	AESC - Minimum Engine Speed	600	RPM
B10F 018	AESC - Engine Speed Throttle Down Ramp Rate	100	RPM/s
B10F 019	AESC - Bump Up/Down Step	100	RPM
B10F 01A	AESC - Maximum Engine Load Time	8	s

B10F 01B	AESC - Preset Engine Speed Select	preset 1 (even if more than 1 preset spd)
B10F 01C	AESC - Speed Controlled to Engine Load	off
B113 000	Transfer Case Switch Signal Source	If available, for split shaft mode, must be set to Hardwired
B10F 01E	Transfer Case Input Mode Select	Driveline engaged or split shaft engaged. If split shaft, C3-27 needs a ground when split shaft operation is enabled
B10F 01F	Remote Accelerator Enable Switch	disable
B104 002	Brake Pedal Switch Input Selection	can
B101 005	Cruise Control/AESC On/Off Switch Input Selection	can
B101 006	Cruise Control Set/Coast Switch Input Selection	both
B101 007	Cruise Control Resume/Accelerate Switch Input Selection	both
B10F 023	Remote Accelerator Switch Input Selection	hardwire
B103 003	Engine Brake Switch 1 Input Selection	can
B10F 020	Remote AESC Programmed Speed Switch Input Selection	hardwire
B10F 021	Remote AESC Variable Speed Switch Input Selection	can
B112 002	Remote Accelerator Pedal Position Input Selection	hardwire
B100 000	Master Switch for Setting Source Addresses	Individual Selection ENGINEERING

Remote throttle and preset speed Setup

	Something using out riggers for preset and then remote throttle for Crane, derrick.		
ID	**Name**	**Setting**	**Value**
B10F 002	AESC Remote Preset On/Off Switch Operation Enable	Disable	
B10F 004	AESC Speed Control - Mode	remote or remote and in cab	
B10F 006	AESC - In Cab Mode	stationary preset	
B10F 007	AESC In-Cab Operator Interface On / Off	disable	
B10F 008	AESC - Remote Pedal Enable	enable	
B10F 009	AESC - Preset Engine Speed 1 (Set)	xxxx	RPM
B10F 00A	AESC - Preset Engine Speed 2 (Resume)	xxxx	RPM
B10F 00B	AESC - Engine Speed Throttle Ramp Rate	100	RPM/s
B10F 00C	AESC - Maximum Engine Speed	xxxx	RPM
B120 002	AESC - Disable with Brake	brake disables	
B10F 00F	AESC - Disable with APS	APS overrides set speed	
B10F 010	AESC - Preset Engine Speed 3	same as preset 2 if 2 speeds are being used	RPM
B10F 011	AESC - Preset Engine Speed 4	xxxx	RPM
B10F 012	AESC - Preset Engine Speed 5	xxxx	RPM
B10F 013	AESC - Preset Engine Speed 6	xxxx	RPM
B10F 014	AESC - Engine Speed Limit with VSS Fault	600	RPM
B10F 015	AESC - Maximum Engine Load	100	%
B10F 017	AESC - Minimum Engine Speed	600	RPM
B10F 018	AESC - Engine Speed Throttle Down Ramp Rate	100	RPM/s
B10F 019	AESC - Bump Up/Down Step	100	RPM
B10F 01A	AESC - Maximum Engine Load Time	8	s

B10F 01B	AESC - Preset Engine Speed Select	preset 1 (even if more than 1 preset spd)
B10F 01C	AESC - Speed Controlled to Engine Load	off
B113 000	Transfer Case Switch Signal Source	If available, for split shaft mode, must be set to Hardwired
B10F 01E	Transfer Case Input Mode Select	Driveline engaged or split shaft engaged. If split shaft, C3-27 needs a ground when split shaft operation is enabled.
B10F 01F	Remote Accelerator Enable Switch	disable
B104 002	Brake Pedal Switch Input Selection	can
B101 006	Cruise Control/AESC On/Off Switch Input Selection	can
B101 006	Cruise Control Set/Coast Switch Input Selection	both
B101 007	Cruise Control Resume/Accelerate Switch Input Selection	both
B10F 023	Remote Accelerator Switch Input Selection	hardwire
B10F 020	Remote AESC Programmed Speed Switch Input Selection	hardwire
B10F 021	Remote AESC Variable Speed Switch Input Selection	hardwire
B10F 023	Remote Accelerator Pedal Input Selection	hardwire
A800 015	Master Switch for Setting Source Addresses	hardwire

Sample scenario for 2 preset speeds and a remote pedal

2 presets for out riggers/boom, and remote/variable for auger/winch, (com ED truck or power company truck)

ID	Name	Setting	Value
B10F 002	AESC Remote Preset On/Off Switch Operation Enable	Disable	
B10F 004	AESC Speed Control - Mode	remote or remote in cab or in cab	
B10F 006	AESC - In Cab Mode	stationary preset	
B10F 007	AESC In-Cab Operator Interface On / Off	disable	
B10F 008	AESC - Remote Pedal Enable	enabled for remote pedal only	
B10F 009	AESC - Preset Engine Speed 1 (Set)	xxxx	
B10F 00A	AESC - Preset Engine Speed 2 (Resume)	xxxx	
B10F 00B	AESC - Engine Speed Throttle Ramp Rate	100	
B10F 00C	AESC - Maximum Engine Speed	xxxx	
B120 002	AESC - Disable with Brake	brake disables	
B10F 00F	AESC - Disable with APS	APS overrides set speed	
B10F 010	AESC - Preset Engine Speed 3	same as preset 2 if 2 speeds are being used	
B10F 011	AESC - Preset Engine Speed 4	0	
B10F 012	AESC - Preset Engine Speed 5	0	
B10F 013	AESC - Preset Engine Speed 6	0	
B10F 014	AESC - Engine Speed Limit with VSS Fault	600	RPM
B10F 015	AESC - Maximum Engine Load	100	%
B10F 017	AESC - Minimum Engine Speed	600	RPM
B10F 018	AESC - Engine Speed Throttle Down Ramp Rate	100	RPM/s
B10F 019	AESC - Bump Up/Down Step	100	

B10F 01A	AESC - Maximum Engine Load Time	8	s
B10F 01B	AESC - Preset Engine Speed Select	preset 1 (even if more than 1 preset spd)	
B10F 01C	AESC - Speed Controlled to Engine Load	off	
B113 000	Transfer Case Switch Signal Source	If available, for split shaft mode, must be set to Hardwired	
B10F 01E	Transfer Case Input Mode Select	Driveline engaged or split shaft engaged. If split shaft, C3-27 needs a ground when split shaft operation is enabled	
B10F 01F	Remote Accelerator Enable Switch	disable	
B104 002	Brake Pedal Switch Input Selection	can	
B101 006	Cruise Control/AESC On/Off Switch Input Selection	can	
B101 006	Cruise Control Set/Coast Switch Input Selection	both	
B101 007	Cruise Control Resume/Accelerate Switch Input Selection	both	.
B10F 023	Remote Accelerator Switch Input Selection	hardwire	
B103 003	Engine Brake Switch 1 Input Selection	can	
B10F 020	Remote AESC Programmed Speed Switch Input Selection	hardwire	
B10F 021	Remote AESC Variable Speed Switch Input Selection	hardwire	
B10F 023	Remote Accelerator Pedal Input Selection	hardwire	
B100 000	Master Switch for Setting Source Addresses	hardwire	

Application Parameter Setup

Possible AESC Applications:

The AESC feature is application specific. This section briefly describes a few examples of AESC configuration and operation. This configuration will likely need to be modified to meet the needs of the actual application that the owner/operator requires.

> *Please review the description and operation section and the programmable parameters for a better understanding of how the various RESC parameters might be best configured for your vehicle.*

EXAMPLE A - Typical Split - Shaft Scenario

Typical split-shaft applications may include fire pump, sewer evacuation, etc.

This example is applicable for general split-shaft operation using stationary AESC mode and with preset (s) for elevated engine speed. The presets are activated remotely OR via the cruise control switches.

Adjust parameters as follows:

Parameter Name	Action Required
AESC - Mode (B10F 004)	Select - Enabled - Remote and In Cab Operation
AESC - In Cab AESC Mode (B10F 006)	Select one of the following: - None - Stationary Preset - Stationary Variable - Mobile Variable
Transfer Case Input Mode Select (B10F 01E)	Select - Split Shaft Operation
AESC - Remote Pedal Enable (B10F 008)	Select - Disable - Enable
(Optional) - AESC - Preset Engine Speed 1 (SET/COAST) (B10F 009)	Set this to 900
(Optional) - AESC - Preset Engine Speed 2 (RESUME/ACCEL) (B10F 00A)	Set this to 1100
(Optional) - AESC - Preset Engine Speed 3 (B10F 010)	Set this to 0
(Optional) – AESC - Preset Engine Speed 4 (B10F 011)	Set this to 0
(Optional) - AESC - Preset Engine Speed 5 (B10F 012)	Set this to 0
(Optional) - AESC - Preset Engine Speed 6 (B10F 013)	Set this to 0
(Optional) - AESC – In Cab Operator Interface (B10F 007)	Select - Disable NOTE: The accelerator, and brake, will be ignored during AESC operation.

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Parameter Name	Action Required
(Optional) – AESC - Maximum Engine Speed (B10F 00C)	Check the recommendations for the AESC equipment.
AESC - Engine Speed Limit with VSS Fault (B10F 014)	Set this to the value of the AESC Maximum Engine Speed (B10F 00C) parameter setting referenced in the In-Cab AESC document
AESC - Engine Load Limit Select (B10F 01C) This parameter selects whether the AESC engine speed control is limited or deactivated if an engine load threshold is reached. If set to - Engine speed control will be deactivated if the engine speed reaches the Maximum Engine Load (B10F 015) parameter setting. If set to - Engine speed will be limited if the engine speed reaches the Maximum Engine Load (B10F 015) parameter setting.	A setting of 1 is recommended.
AESC - Maximum Engine Load (B10F 015) The engine speed control will be limited or deactivated if this parameter value is reached. Note : The functionality of this parameter is dependent on the Engine Load Limit Select (B10F 01C) parameter setting.	Set between 30 and 100% based on the recommendations for the AESC equipment. NOTE: A setting of 100% is recommended.
AESC - Maximum Engine Load Time (B10F 01A) This parameter sets the time that the AESC will remain active while the engine load is at a maximum threshold.	A setting of 5 (seconds) is recommended.
AESC - Preset Engine Speed Select (B10F 01B) If enabled, the engine speed will be ramped immediately after the remote preset switch is enabled. Normal engine speed control AESC conditions apply. If set to - Remote preset functions work as described in the Remote Preset section. This is considered normal operation. If set from 1 - - When the remote preset switch is enabled, the engine will ramp up (from idle speed) to the engine speed value set for the respective preset.	Set to any of the following values: - Off - Preset Speed 1 - Preset Speed 2 - Preset Speed 3 - Preset Speed 4 - Preset Speed 5 - Preset Speed 6
Cruise Control Set/Coast Switch Input Selection (B101 006)	Both
Cruise Control Resume/Accel Switch Input Selection (B101 007)	Both

Operation:

1. Ensure that the vehicle is completely stopped and that the parking brake is set.

2. Place the transmission in neutral.

3. Engage the split-shaft mechanism.

4. Place the transmission into the appropriate drive gear. Refer to the appropriate transmission documentation for specific instructions (Eaton, Allison, etc.).

5. Continue with desired engine speed control operation.

EXAMPLE B - Typical Utility Bucket Truck

Typical utility bucket applications may include tree trimmers, lineman bucket trucks, lamp repair trucks, etc.

This example is applicable for general utility bucket operation using a mechanical PTO with preset(s) for elevated engine speed for a stabilizing outrigger. The presets are activated remotely OR via the cruise control switches.

NOTE: Propane trucks and tow trucks may use similar settings.

Adjust parameters as follows:

Parameter Name	Action Required
AESC - Mode (B10F 004)	Select **-** Enabled – Remote and In Cab Operation
AESC – In Cab AESC Mode (B10F 006)	Select one of the following: **-** None **-** Stationary Preset **-** Stationary Variable
Transfer Case Input Mode Select (B10F 01E)	Select - Neutral Operation
AESC - Remote Pedal Enable (B10F 008)	Select - Disable
(Optional) AESC - Preset Engine Speed 1 (SET/COAST) (B10F 009)	Set this to 900
(Optional) AESC - Preset Engine Speed 2 (RESUME/ACCEL) (B10F 00A)	Set this to 1100
(Optional) AESC - Preset Engine Speed 3 (B10F 010)	Set this to 0
(Optional) AESC - Preset Engine Speed 4 (B10F 011)	Set this to 0
(Optional) AESC - Preset Engine Speed 5 (B10F 012)	Set this to 0
(Optional) AESC - Preset Engine Speed 6 (B10F 013)	Set this to 0
(Optional) AESC – In Cab Operator Interface (B10F 007)	Select - Disable NOTE: The accelerator, and brake, will be ignored during AESC operation.

Parameter Name	Action Required
(Optional) AESC - Maximum Engine Speed (B10F 00C)	Check the recommendations for the AESC equipment.
AESC - Engine Speed Limit with VSS Fault (B10F 014)	Set this to the value of the AESC Maximum Engine speed. (B10F 00C) parameter setting.
AESC - Engine Load Limit Select (B10F 01C) This parameter selects whether the AESC engine speed control is limited or deactivated if an engine load threshold is reached. If set to - Engine speed control will be deactivated if the engine speed reaches the Maximum Engine Load (B10F 015) parameter setting. If set to - Engine speed will be limited if the engine speed reaches the Maximum Engine Load (B10F 015) parameter setting.	A setting of 1 is recommended.
AESC - Maximum Engine Load (B10F 015) The engine speed control will be limited or deactivated if this parameter value is reached. Note - The functionality of this parameter is dependent on the Engine Load Limit Select (B10F 01C) parameter setting.	Set between 30 and 100% based on the recommendations for the AESC equipment. NOTE: A setting of 100% is recommended.
AESC - Maximum Engine Load Time (B10F 01A) This parameter sets the time that the AESC will remain active while the engine load is at a maximum threshold.	A setting of 5 (seconds) is recommended.
AESC - Preset Engine Speed Select (B10F 01B) If enabled, the engine speed will be ramped immediately after the remote preset switch is enabled. Normal engine speed control AESC conditions apply. If set to - Remote preset functions work as described in the Remote Preset section. This is considered normal operation. If set from 1 - - When the remote preset switch is enabled, the engine will ramp up (from idle speed) to the engine speed value set for the respective preset.	Set to any of the following values: - Off - Preset Speed 1 - Preset Speed 2 - Preset Speed 3 - Preset Speed 4 - Preset Speed 5 - Preset Speed 6
Cruise Control Set/Coast Switch Input Selection (B101 006)	Both
Cruise Control Resume/Accel Switch Input Selection (B101 007)	Both

Operation:

1. Engage the mechanical PTO device.

2. Ramp the engine to the desired preset speed according to the equipment.

3. Continue with desired utility bucket operation.

EXAMPLE C - Typical Utility Derrick Digger

Derrick diggers are commonly used for digging holes for utility poles, ditches, etc.

This example is applicable for general utility derrick digger operation using a mechanical PTO with preset (s) for elevated engine speed for a stabilizing outrigger, variable engine speed control and remote pedal for digging from the perch. The presets are activated remotely OR via the cruise control switches.

> *NOTE: Oil field trucks may use similar settings.*

Adjust parameters as follows:

Parameter Name	Action Required
AESC - Mode (B10F 004)	Select - Enabled – Remote and In Cab Operation
AESC – In Cab AESC Mode (B10F 006)	Select one of the following: - None - Stationary Preset - Stationary Variable
Transfer Case Input Mode Select (B10F 01E**)**	Select - Neutral Operation
AESC - Remote Pedal Enable (B10F 008)	Select - Enable
(Optional) AESC - Preset Engine Speed 1 (SET/COAST) (B10F 009)	Set this to 620
(Optional) AESC - Preset Engine Speed 2 (RESUME/ACCEL) (B10F 00A)	Set this to 1200
(Optional) AESC - Preset Engine Speed 3 (B10F 010)	Set this to 0
(Optional) AESC - Preset Engine Speed 4 (B10F 011)	Set this to 0
(Optional) AESC - Preset Engine Speed 5 (B10F 012)	Set this to 0
(Optional) AESC - Preset Engine Speed 6 (B10F 013)	Set this to 0

Parameter Name	Action Required

(Optional) AESC - In-Cab Operator Interface (B10F 007)
 	
Select this parameter when accelerator or brake are desired to be ignored during engine speed control operation.
 	
If set to 0 :
The accelerator or brake are inputs used for AESC operation.
 	
If set to 1 :
The accelerator or brake will be ignored during AESC operation.
 	
Note: Use parameters (B10F 00D), (75110) and (B10F 00F) to provide the specific input options.
	Select - ON
	
	    or
	    - OFF

(Optional) AESC - Maximum Engine Speed (B10F 00C)	Check the recommendations for the AESC equipment.
AESC - Engine Speed Limit with VSS Fault (B10F 014)	Set this to the value of the AESC Maximum Engine Speed. (B10F 00C) parameter setting.
AESC - Engine Load Limit Select (B10F 01C) This parameter selects whether the AESC engine speed control is limited or deactivated if an engine load threshold is reached. If set to - Engine speed control will be deactivated if the engine speed reaches the Maximum Engine Load (B10F 015) parameter setting. If set to - Engine speed will be limited if the engine speed reaches the Maximum Engine Load (B10F 015) parameter setting.	A setting of 1 is recommended.
AESC - Maximum Engine Load (B10F 015) The engine speed control will be limited or deactivated if this parameter value is reached. Note - The functionality of this parameter is dependent on the Engine Load Limit Select (B10F 01C) parameter setting.	Set between 30 and 100% based on the recommendations for the AESC equipment. NOTE: A setting of 100% is recommended.
AESC - Maximum Engine Load Time (B10F 01A) This parameter sets the time that the AESC will remain active while the engine load is at a maximum threshold.	A setting of 5 (seconds) is recommended.
AESC - Preset Engine Speed Select (B10F 01B) If enabled, the engine speed will be ramped immediately after the remote preset switch is enabled. Normal engine speed control AESC conditions apply. If set to -	Set to any of the following values: - Off - Preset Speed 1 - Preset Speed 2 - Preset Speed 3 - Preset Speed 4

Parameter Name	Action Required
Remote preset functions work as described in the Remote Preset section. This is considered normal operation. If set from 1 - - When the remote preset switch is enabled, the engine will ramp up (from idle speed) to the engine speed value set for the respective preset.	- Preset Speed 5 - Preset Speed 6
Cruise Control Set/Coast Switch Input Selection (B101 006)	Both
Cruise Control Resume/Accel Switch Input Selection (B101 007)	Both

Operation:

1. Engage the mechanical PTO device.

2. Activate remote preset engine speed.

3. Operate outriggers.

4. REMOTE CONTROL: a. Activate remote variable, b. Operate

digger (adjusting engine speed variably as required)

- OR-

5. PEDESTAL: a. Activate remote pedal, b. Operate digger

EXAMPLE D - Typical Construction Dump Scenario

Typical construction dump applications may include dump bodies, landscape dumps, etc.

This example is applicable for general construction dump operation using a mechanical PTO with preset (s) for elevated engine speed for raising and lowering the dump body. The presets are activated remotely OR via the cruise control switches.

Adjust parameters as follows:

Parameter Name	Action Required
AESC - Mode (B10F 004)	Select - Enabled - Remote and In Cab Operation.
AESC – In Cab AESC Mode (B10F 006)	Select one of the following: - None - Stationary Preset - Stationary Variable - Mobile Variable

Parameter Name	Action Required
Transfer Case Input Mode Select(B10F 01E)	Select - Neutral Operation
AESC - Remote Pedal Enable (B10F 008)	Select - Disable
(Optional) AESC - Preset Engine Speed 1 (SET/COAST) (B10F 009)	Set this to 1100
(Optional) AESC - Preset Engine Speed 2 (RESUME/ACCEL) (B10F 00A)	Set this to 0
(Optional) AESC - Preset Engine Speed 3 (B10F 010)	Set this to 0
(Optional) AESC - Preset Engine Speed 4 (B10F 011)	Set this to 0
(Optional) AESC - Preset Engine Speed 5 (B10F 012)	Set this to 0
(Optional) AESC - Preset Engine Speed 6 (B10F 013)	Set this to 0
(Optional) AESC – In Cab Operator Interface (B10F 007) Select this parameter when accelerator or brake are desired to be ignored during engine speed control operation. If set to - The accelerator or brake are inputs used for AESC operation. If set to - The accelerator or brake will be ignored during AESC operation. Note: Use parameters (B10F 00D), (75110) and (B10F 00F) to provide the specific input options.	Select - ON or - OFF
(Optional) AESC - Maximum Engine Speed (B10F 00C)	Check the recommendations for the AESC equipment.
AESC - Engine Speed Limit with VSS Fault (B10F 014)	Set this to the value of the AESC Maximum Engine Speed (B10F 00C) parameter setting.
AESC - Engine Load Limit Select (B10F 01C) This parameter selects whether the AESC engine speed control is limited or deactivated if an engine load threshold is reached. If set to - Engine speed control will be deactivated if the engine speed reaches the Maximum Engine Load (B10F 015) parameter setting. If set to - Engine speed will be limited if the engine speed reaches the Maximum Engine Load (B10F 015) parameter setting.	A setting of 1 is recommended.

Parameter Name	Action Required
AESC - Maximum Engine Load (B10F 015) The engine speed control will be limited or deactivated if this parameter value is reached. Note - The functionality of this parameter is dependent on the Engine Load Limit Select (B10F 01C) parameter setting.	Set between 30 and 100% based on the recommendations for the AESC equipment. NOTE: A setting of 100% is recommended.
AESC - Maximum Engine Load Time (B10F 01A) This parameter sets the time that the AESC will remain active while the engine load is at a maximum threshold.	A setting of 5 (seconds) is recommended.
AESC - Preset Engine Speed Select (B10F 01B) If enabled, the engine speed will be ramped immediately after the remote preset switch is enabled. Normal engine speed control AESC conditions apply. If set to - Remote preset functions work as described in the Remote Preset section. This is considered normal operation. If set from 1 - - When the remote preset switch is enabled, the engine will ramp up (from idle speed) to the engine speed value set for the respective preset.	Set to any of the following values: - Off - Preset Speed 1 - Preset Speed 2 - Preset Speed 3 - Preset Speed 4 - Preset Speed 5 - Preset Speed 6

Operation:

1. Engage the mechanical PTO device.

2. Ramp the engine to the desired preset speed according to the equipment.

3. Continue with desired construction dump body operation.

Frequently Asked Questions

Can the RESC feature be used for split-shaft operation, such as a fire pump application?

Yes, refer to the Split-Shaft AESC/PTO section and Example A in the Parameter Setup section for more information.

How do I configure my engine parameters for utility derrick digger operation?

Refer to "Example C" in the Parameter Setup section for more information.

Definitions/Acronyms

The following terms are referenced in this document:

Acronym	Definition
AESC	Auxiliary Engine Speed Control
CAP	Cold Ambient Protection
ECM	Engine Control Module
IST	Idle Shutdown Timer
PTO	Power Take Off
RAS	Resume/Accel Switch
RESC	Remote Engine Speed Control
RAPP	Remote Accelerator Pedal Position
SCS	Speed Control Switch
VSS	Vehicle Speed Sensor