Fuel Solenoid

Setpoint group	Engine settings	**Related FW**	1.8.0
Range [units]	Diesel / Gas [-]		
Default value	Diesel	**Alternative config**	NO
Step	[-]		
Comm object	9100	**Related applications**	AMF, MRS
Config level	Advanced		
Setpoint visibility	Always		
Description			
Determines behavior of the Binary output Fuel Solenoid (PAGE 569)			

Diesel:	Output closes before binary output Starter (PAGE 586). Lead of output is adjusted via setpoint **Fuel Solenoid Lead (page 198)**. The output opens if Emergency Stop comes or gen-set is stopped and in pause between repeated starts.
Gas: (Gaseous)	Output closes together with binary output Ignition (PAGE 579) if RPM is over the 30 RPM (fixed value). Output opens after stop command or in pause between repeated start.

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Cranking Attempts

Setpoint group	Engine settings	**Related FW**	1.8.0
Range [units]	1 .. 10 [-]		
Default value	3	**Alternative config**	NO
Step	1		
Comm object	8255	**Related applications**	AMF, MRS
Config level	Standard		
Setpoint visibility	Always		
Description			
Maximal number of cranking attempts.			

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Maximum Cranking Time

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	1 .. 255 [s]		
Default value	5 s	Alternative config	NO
Step	1 s		
Comm object	8256	Related applications	AMF, MRS
Config level	Advanced		
Setpoint visibility	Always		
Description			
Maximum time limit of cranking time.			

> IMPORTANT: There is a protection against broken pinion on starter. In case that there are no RPM after 5 seconds of starting, cranking is interrupted and cranking fail pause follows.

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Cranking Fail Pause

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	5 .. 60 [s]		
Default value	8 s	Alternative config	NO
Step	1 s		
Comm object	8257	Related applications	AMF, MRS
Config level	Advanced		
Setpoint visibility	Always		
Description			
Pause between **Cranking Attempts (page 189)**. PRESTART (PAGE 582) output is active in this pause until Cranking Fail Pause elapses.			

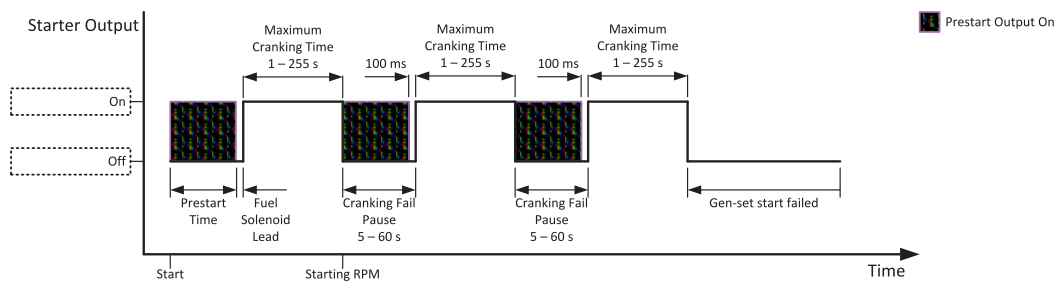🔺 **back to List of setpoints**

Prestart Time

Setpoint group	Engine settings	**Related FW**	1.8.0
Range [units]	0 .. 600 [s]		
Default value	2 s	**Alternative config**	NO
Step	1 s		
Comm object	8394	**Related applications**	AMF, MRS
Config level	Standard		
Setpoint visibility	Always		
Description			

Time of closing of the PRESTART (PAGE 582) output prior to the engine start. Set to zero if you want to leave the output PRESTART (PAGE 582) open.

Image 9.1 Prestart Time

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Starting RPM

Setpoint group	Engine settings	**Related FW**	1.8.0
Range [units]	5 .. 50 [%]		
Default value	25%	**Alternative config**	NO
Step	1 % of **Nominal RPM (page 181)**		
Comm object	8254	**Related applications**	AMF, MRS
Config level	Advanced		
Setpoint visibility	Always		
Description			

This setpoint defines the "firing" speed level as percent value of the **Nominal RPM (page 181)**. If this level is exceeded the engine is considered as started.

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Starting Oil Pressure

Setpoint group	Engine settings	**Related FW**	1.8.0
Range [units]	Disabled / 0,1 .. 10,0 [bar]		
Default value	4,5 bar	**Alternative config**	NO
Step	0,1 bar		
Comm object	9681	**Related applications**	AMF, MRS
Config level	Standard		
Setpoint visibility	Always		
Description			

Oil pressure limit for starting. The controller will stop cranking (STARTER (PAGE 586) goes OFF) if the oil pressure rises above this limit.

Option Disabled - when this option is selected, Oil Pressure value (value from CU analog Oil Pressure, value from ECU analog Oil pressure and state of binary input Oil Pressure) is not used for disengagement of starter and for engine running evaluation.

> **IMPORTANT: Value from analog input has higher priority than value from ECU.**

Glow Plugs Time

Setpoint group	Engine settings	**Related FW**	1.8.0
Range [units]	0 .. **Prestart Time (page 191)** [s]		
Default value	0 s	**Alternative config**	NO
Step	1 s		
Comm object	14412	**Related applications**	AMF, MRS
Config level	Standard		
Setpoint visibility	Always		
Description			

This setpoint defines the time before starting when logical binary output GLOW PLUGS (PAGE 576) will be close.

Idle RPM

Setpoint group	Engine settings	**Related FW**	1.8.0
Range [units]	100 .. 4000 [RPM]		
Default value	900 RPM	**Alternative config**	NO
Step	1 RPM		
Comm object	9946	**Related applications**	AMF, MRS
Config level	Advanced		
Setpoint visibility	Always		
Description			

This setpoint adjusts idle speed of engine.

Subgroup: Choke

Choke Function

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	Disabled /Fixed Time / Temp Based [-]		
Default value	Disabled	Alternative config	NO
Step	[-]		
Comm object	15717	Related applications	MRS. AMF
Config level	Advanced		
Setpoint visibility	Only when LBO CHOKE (PAGE 564) is configured.		
Description			

This setpoint defines choke function behavior.

Disabled	Choke function is disabled and logical binary output CHOKE (PAGE 564) is activated under no circumstances.
Fixed Time	Choke time is fixedly defined by **Choke Time (page 193)** setpoint.
Temp Based	Choke time is calculated using actual engine (coolant) temperature. Setpoints **Choke Start Temp (page 194)** and **Choke Increment (page 195)** are taken into consideration.

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Choke Time

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	0–3600 [s]		
Default value	0 s	Alternative config	NO
Step	1 s		
Comm object	13011	Related applications	MRS. AMF
Config level	Advanced		
Setpoint visibility	Only when LBO CHOKE (PAGE 564) is configured and setpoint **Choke Function (page 193)** = Fixed Time.		
Description			

Defines time logical binary output CHOKE (PAGE 564) is activated for when fixed time is used. When setpoint **Choke Function (page 193)** is set to *Temp Based* value, *Choke Time* value have no effect.

> *Note: If setpoint **Choke Lead (page 197)** is set to nonzero value, total time the CHOKE output is activated still matches value set by Choke Time setpoint. This mean Choke Timeshould be longer than Choke Leadto ensure expected Choke behavior.*
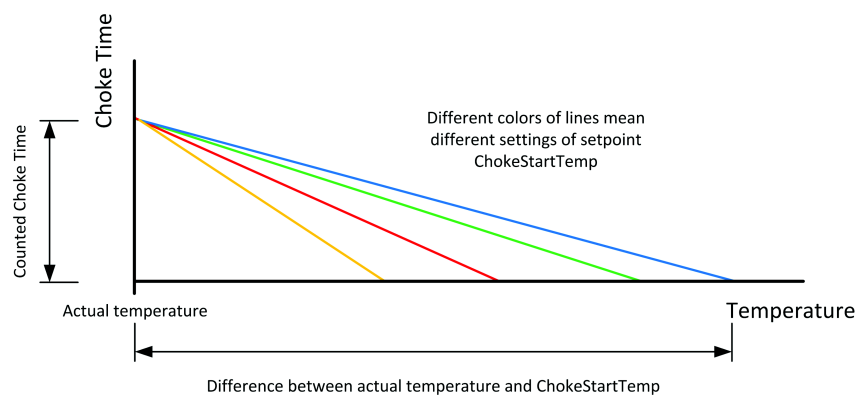
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Choke Start Temp

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	-20,0 .. 80,0 [°C]		
Default value	0,0 °C	Alternative config	NO
Step	0,1 °C		
Comm object	15716	Related applications	MRS. AMF
Config level	Advanced		
Setpoint visibility	Only when LBO CHOKE (PAGE 564) is configured and setpoint **Choke Function (page 193)** = Temp Based.		
Description			

This setpoint adjust the base temperature for Choke function. When temperature will be higher than this setpoint, Choke Time will be always 0. When temperature will be lower than this setpoint, Choke Time will be calculated by curve adjusted via setpoint **Choke Increment (page 195)**. When setpoint **Choke Function (page 193)** is set to *Fixed Time* value, setpoint *Choke Start Temp* has no effect.


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Choke Increment

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	0,00 .. 20,00 [s/°C]		
Default value	0,00 s/°C	Alternative config	NO
Step	0,01 s/°C		
Comm object	15715	Related applications	MRS. AMF
Config level	Advanced		
Setpoint visibility	Only when LBO CHOKE (PAGE 564) is configured and setpoint **Choke Function (page 193)** = Temp Based.		
Description			

This setpoint adjust the maximal time of activation of binary output CHOKE (PAGE 564). Calculated time depends on engine (coolant) temperature. Setpoint adjust curve which is used for calculating actual Choke Time. When setpoint **Choke Function (page 193)** is set to *Fixed Time* value, setpoint *Choke Increment* has no effect.
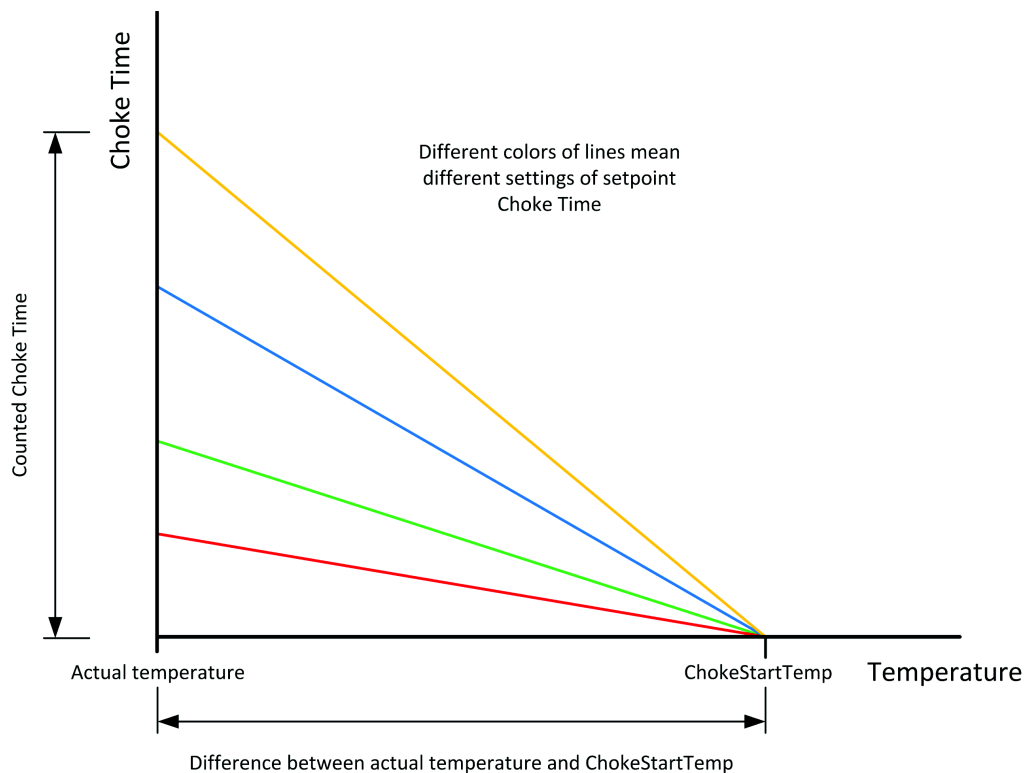
*Note: If setpoint **Choke Lead (page 197)** is set to nonzero value, total time the CHOKE output is activated still matches calculated value (based on actual temperature and setpoints Choke Increment and **Choke Start Temp (page 194)**) This mean that adjusted parameters should ensure that calculated Choke Time will be longer than Choke Leadto ensure expected Choke behavior.*

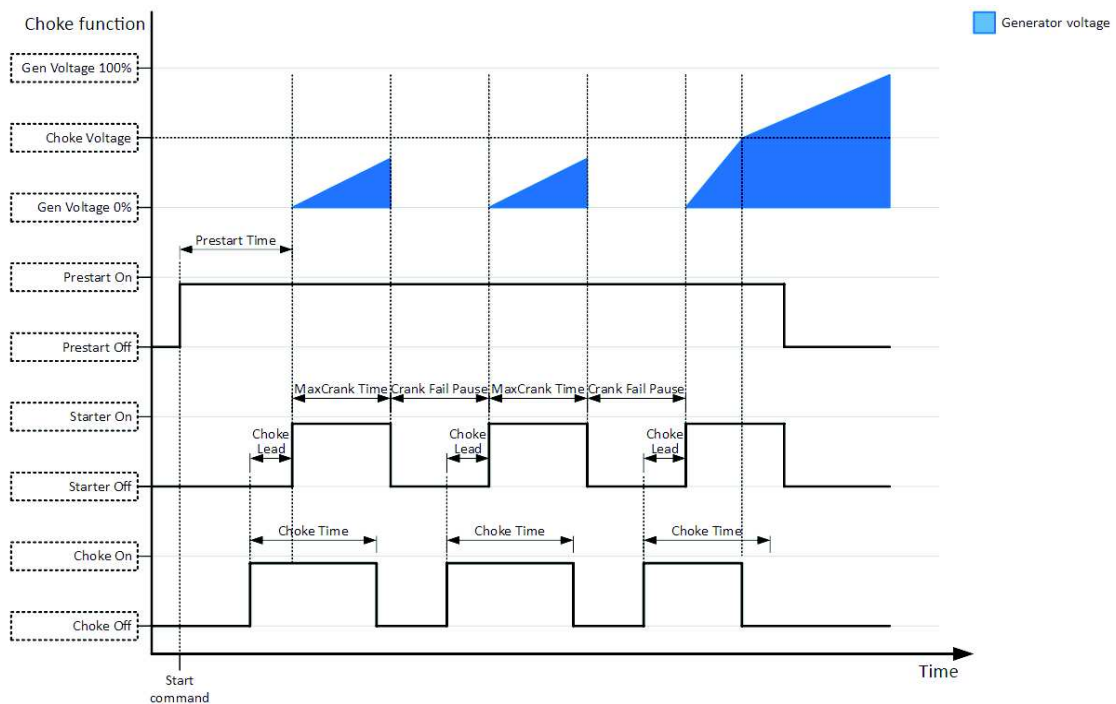🔺 back to List of setpoints

Choke Voltage

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	Disabled / 1–100 [%]		
Default value	Disabled	Alternative config	NO
Step	1 %		
Comm object	15718	Related applications	MRS. AMF
Config level	Advanced		
Setpoint visibility	Only when LBO CHOKE (PAGE 564) is configured.		
Description			

This setpoint adjust threshold level for deactivation of CHOKE (PAGE 564) binary output. When generator voltage is higher than this level, then logical binary output CHOKE is deactivated. In multiphase system it is sufficient to deactivate CHOKE LBO when at least one voltage crosses this threshold. In case setpoint *Choke Voltage* is set to *Disabled* value, no voltage is taken into account and CHOKE LBO isn't deactivated on the voltage basis.

Choke Lead

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	0 .. Prestart Time [s]		
Default value	0 s	Alternative config	NO
Step	1 s		
Comm object	15774	Related applications	MRS. AMF
Config level	Advanced		
Setpoint visibility	Only when LBO CHOKE (PAGE 564) is configured.		
Description			

This setpoint adjust the lead of logical binary output CHOKE. CHOKE (PAGE 564) is activated before logical binary output STARTER (PAGE 586).

> *Note: In case Choke Lead is longer than 8 s (cranking fail pause), Choke Lead will be limited to 8 s (cranking fail pause time). This limitation is applied only for cranking fail pause, Choke Lead in Prestart stays unchanged.*

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Subgroup: Starting Timers

Fuel Solenoid Lead

Setpoint group	Engine settings	**Related FW**	1.8.0
Range [units]	0,0 .. 25,0 [s]		
Default value	0,5 s	**Alternative config**	NO
Step	0,1 s		
Comm object	10525	**Related applications**	AMF, MRS
Config level	Advanced		
Setpoint visibility	Always		
Description			

Delay between **FUEL SOLENOID (PAGE 569)** and **STARTER (PAGE 586)** logical binary inputs. **FUEL SOLENOID (PAGE 569)** is closed before **STARTER (PAGE 586)**. Lead time is adjusted via this setpoint.

Image 9.2 Fuel Solenoid Lead

Note: LBO PRESTART (PAGE 582) goes to logical zero when Fuel Solenoid Lead goes to logical one.

Note: This setpoint is used only for diesel Fuel Solenoid (page 189)

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Idle Time

Setpoint group	Engine settings	**Related FW**	1.8.0
Range [units]	0 .. 600 [s]		
Default value	12 s	**Alternative config**	NO
Step	1 s		
Comm object	9097	**Related applications**	AMF, MRS
Config level	Standard		
Setpoint visibility	Always		
Description			

Idle Time delay starts when RPM exceeds **Starting RPM (page 191)**. Start fail is detected when during Idle state RPM decreases below 2 RPM.

The output **IDLE/NOMINAL (PAGE 579)** remains inactive during the idle period. Binary output Idle/Nominal opens during Cooling period again. This output can be used for switching the governor between idle and
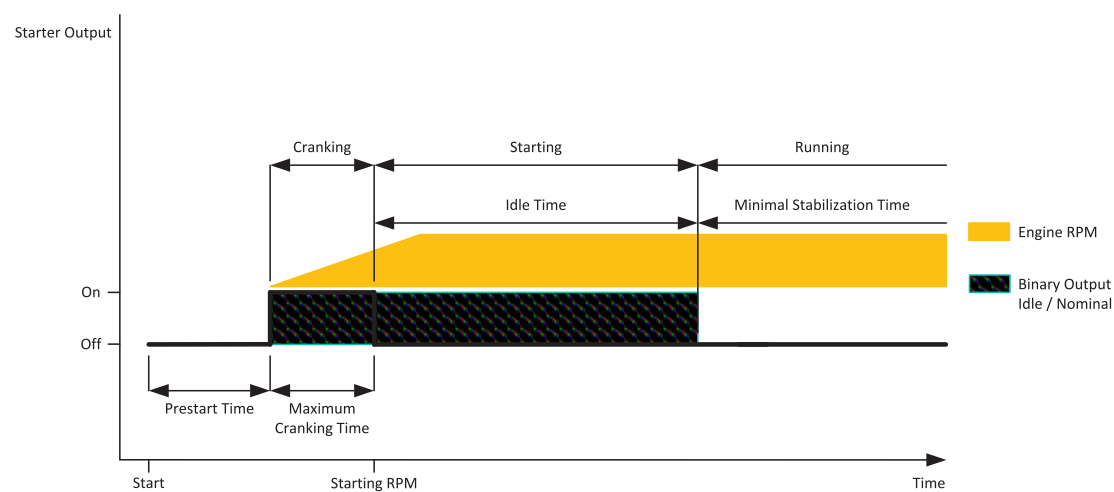
nominal speed.

Image 9.3 Idle Time 1
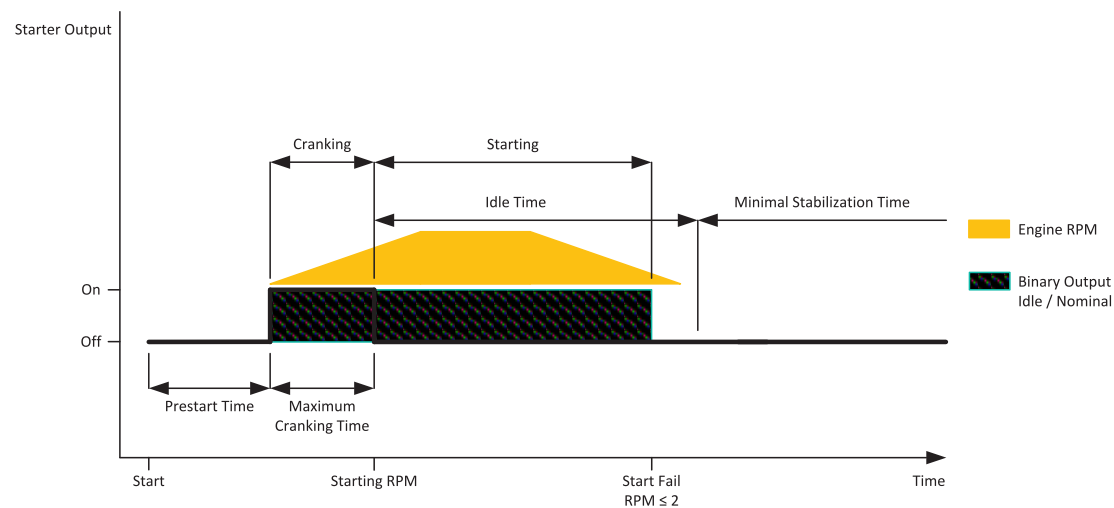
Image 9.4 Idle Time 2

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Minimal Stabilization Time

Setpoint group	Engine settings	**Related FW**	1.8.0
Range [units]	1 .. **Maximal Stabilization Time (page 201)** [s]		
Default value	2 s	**Alternative config**	NO
Step	1 s		
Comm object	8259	**Related applications**	AMF, MRS
Config level	Standard		
Setpoint visibility	Always		
Description			

When the gen-set has been started and the idle timer has elapsed, the controller will wait for a period adjusted by this setpoint before closing GCB, even if the generator voltage and frequency are already in limits.

Image 9.5 Minimal Stabilization Time
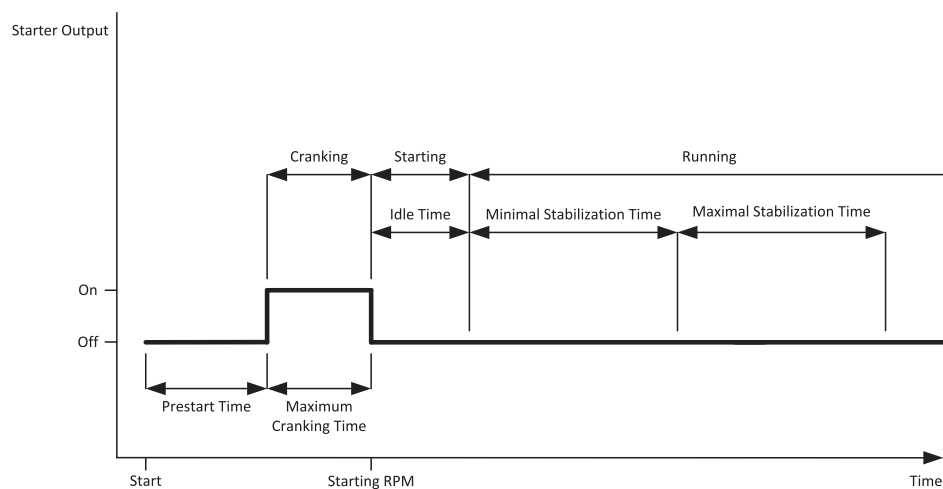
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Maximal Stabilization Time

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	**Minimal Stabilization Time (page 200)** .. 300 [s]		
Default value	10 s	**Alternative config**	NO
Step	1 s		
Comm object	8313	**Related applications**	AMF, MRS
Config level	Advanced		
Setpoint visibility	Always		
Description			

When the gen-set has been started and the idle timer has elapsed, the generator voltage and frequency must get within limits within this period of time, otherwise an appropriate shutdown alarm (generator voltage and/or frequency) is issued.
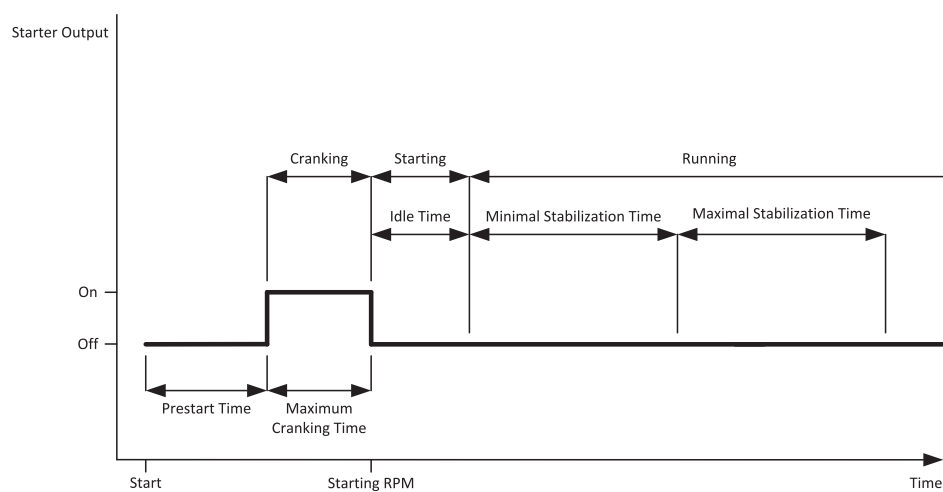
Image 9.6 Maximal Stabilization Time

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Protection Hold Off

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	0,0 .. 300,0 [s]		
Default value	5,0 s	**Alternative config**	YES
Step	0,1 s		
Comm object	10023	**Related applications**	AMF, MRS
Config level	Advanced		
Setpoint visibility	Always		
Description			

During the start of the gen-set, some engine protections have to be blocked (e.g. Oil pressure). The protections are unblocked after the Protect Hold Off. The time starts after reaching Starting RPM.

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Sd Ventilation Time

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	0 .. 60 [s]		
Default value	5 s	Alternative config	NO
Step	1 s		
Comm object	9695	Related applications	AMF, MRS
Config level	Advanced		
Setpoint visibility	Always		
Description			
In case **Fuel Solenoid (page 189)** is set to GAS, the Sd Ventilation Time adjusts the time of the starter to be switched on for engine pre-ventilation in the case of a first start attempt after shutdown or controller switch-on.			

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Subgroup: Stopping

Cooling Speed

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	Idle / Nominal [-]		
Default value	Nominal	Alternative config	NO
Step	[-]		
Comm object	10046	Related applications	AMF, MRS
Config level	Advanced		
Setpoint visibility	Always		
Description			
Selects the function of the binary output IDLE/NOMINAL (PAGE 579) during engine cooling state.			
Idle	Cooling is executed at Idle speed and generator protections are switched off.		
Nominal	Cooling is executed at Nominal speed and generator protections are active.		
Note: When ECU is connected the predefined value 900 RPM for Idle speed is requested.			
Note: Binary output IDLE/NOMINAL (PAGE 579) must be configured and connected to speed governor. Engine Idle speed must be adjusted on speed governor.			

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Subgroup: Stopping Timers

Cooling Time

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	0 .. 3 600 [s]		
Default value	30 s	Alternative config	NO
Step	1 s		
Comm object	8258	Related applications	AMF, MRS
Config level	Standard		
Setpoint visibility	Always		
Description			
Runtime of the unloaded gen-set to cool the engine before stop.			

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Stop Time

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	0 .. 600 [s]		
Default value	60 s	Alternative config	NO
Step	1 s		
Comm object	9815	Related applications	AMF, MRS
Config level	Advanced		
Setpoint visibility	Always		
Description			

Under normal conditions the engine must certainly stop within this period after the FUEL SOLENOID (PAGE 569) has been de-energized and the STOP SOLENOID (PAGE 587) energized. The Stop Solenoid output is deactivated 12 s after last running engine indication went off.
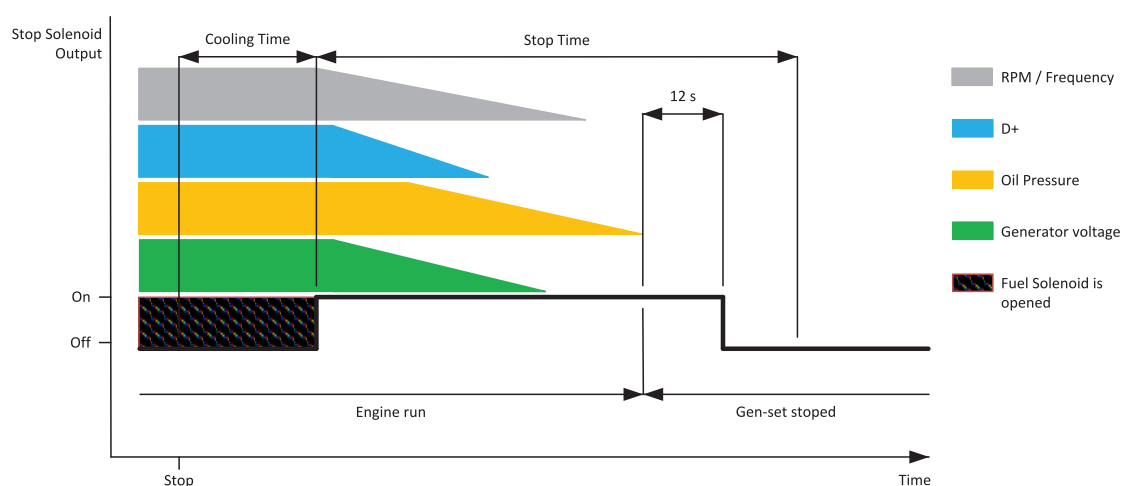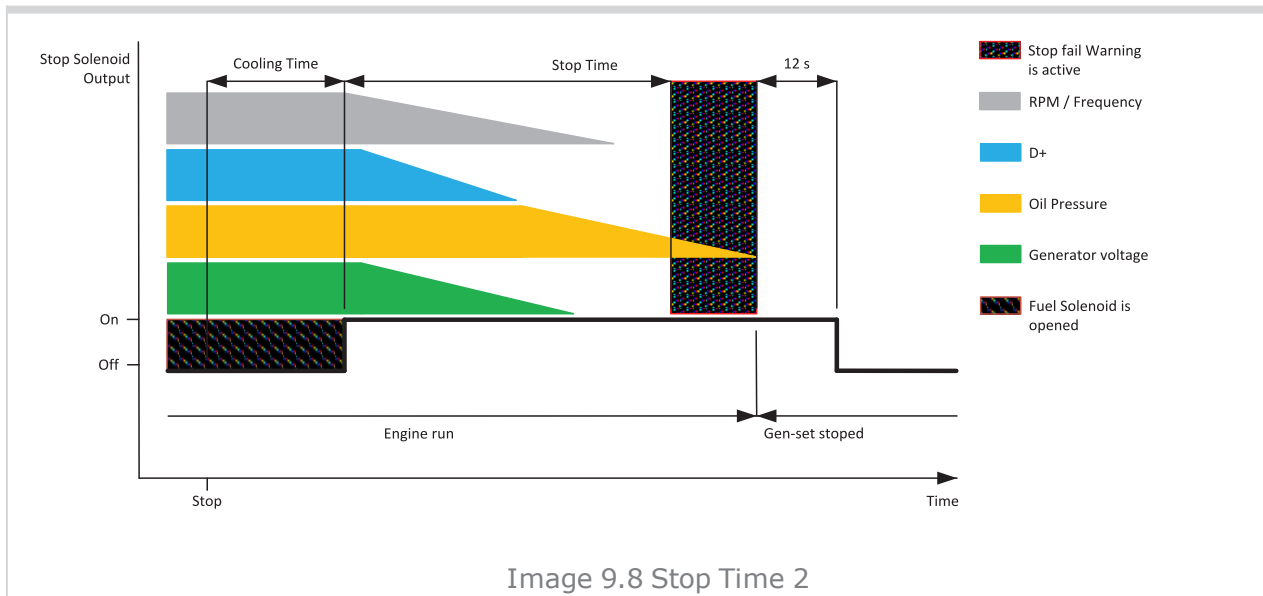

Image 9.7 Stop Time 1

Image 9.8 Stop Time 2

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After Cooling Time

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	0 .. 3 600 [s]		
Default value	180 s	Alternative config	NO
Step	1 s		
Comm object	8662	Related applications	AMF, MRS
Config level	Standard		
Setpoint visibility	Always		
Description			
Runtime of engine after cooling pump. Binary output Cooling pump is closed when the engine starts and opens AfterCool time delayed after gen-set stops.			

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Subgroup: D+ Function

D+ Function

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	Enabled / ChargeFail / Disabled [-]		
Default value	Disabled	Alternative config	NO
Step	[-]		
Comm object	9683	Related applications	AMF, MRS
Config level	Standard		
Setpoint visibility	Always		
Description			
Behavior of D+ terminal.			
Enabled	The D+ terminal is used for both functions – "running engine" detection and charge fail		

detection.

ChargeFail   The D+ terminal is used for charge fail detection only

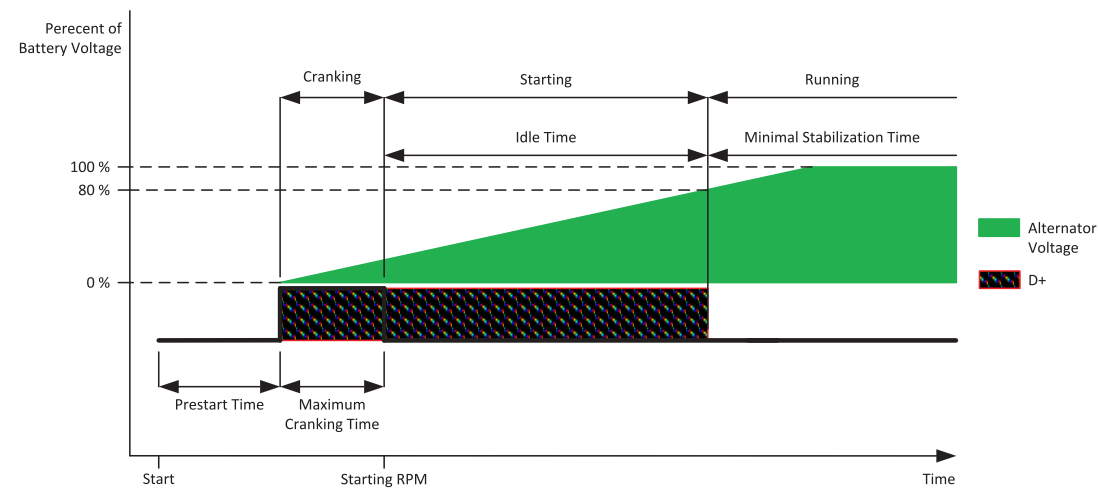Disabled   The D+ terminal is not used.

Image 9.9 D+ Function 1
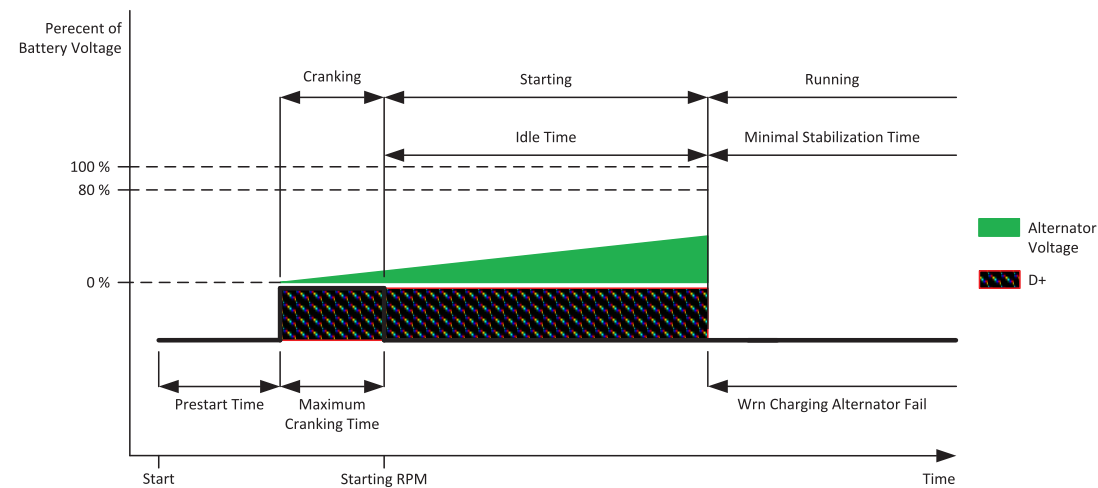
Image 9.10 D+ Function 2

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D+ Treshold

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	0..100 [%]		
Default value	80 %	Alternative config	NO
Step	1 %		
Comm object	14959	Related applications	MRS. AMF
Config level	Advanced		
Setpoint visibility	Only if setpoint **D+ Function (page 204)** is not set to *Disabled* value.		
Description			
This setpoint adjusts threshold level for D+ function.			

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D+ Delay

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	1..255 [s]		
Default value	1 s	Alternative config	NO
Step	1 s		
Comm object	14960	Related applications	MRS. AMF
Config level	Advanced		
Setpoint visibility	Only if setpoint **D+ Function (page 204)** is not set to *Disabled* value.		
Description			
This setpoint adjusts delay for D+ function. This delay is used for:			

- ▶ Alarm Charging Alternator Fail.
- ▶ For engine running condition - disengagement of starter

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D+ Alarm Type

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	No Protec/Wrn/Sd [-]		
Default value	Wrn	Alternative config	NO
Step	[-]		
Comm object	15751	Related applications	MRS. AMF
Config level	Advanced		
Setpoint visibility	Only if setpoint **D+ Function (page 204)** is not set to *Disabled* value.		
Description			
This setpoint adjusts type of alarm Charging Alternator Fail.			

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Subgroup: Engine Protections

Overspeed Sd

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	Underspeed Sd (page 207) .. 200 [%]		
Default value	115%	Alternative config	NO
Step	1 % of **Nominal RPM (page 181)**		
Comm object	8263	Related applications	AMF, MRS
Config level	Standard		
Setpoint visibility	Always		
Description			
Threshold for over speed protection. Relative to the nominal speed.			

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Underspeed Sd

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	0 .. **Overspeed Sd (page 207)** [%]		
Default value	25%	Alternative config	NO
Step	1 % of **Nominal RPM (page 181)**		
Comm object	8260	Related applications	AMF, MRS
Config level	Standard		
Setpoint visibility	Always		
Description			
Threshold for underspeed protection. Relative to the nominal speed.			

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Overspeed Overshot

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	0 .. 50 [%]		
Default value	20%	Alternative config	NO
Step	1 % of **Nominal RPM (page 181)**		
Comm object	14107	Related applications	AMF, MRS
Config level	Standard		
Setpoint visibility	Always		
Description			
This setpoint rise the upper limit of overspeed protection for the time which is defined in setpoint **Overspeed Overshot Period (page 208)**. In this time the upper limit of protection is **Overspeed Sd (page 207)** + Overspeed Overshoot.			

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Overspeed Overshot Period

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	0 .. 255 [s]		
Default value	5 s	Alternative config	NO
Step	1 s		
Comm object	14108	Related applications	AMF, MRS
Config level	Standard		
Setpoint visibility	Conditioned by the setpoint **Overspeed Overshot (page 207)**		
Description			

Time for which is **Overspeed Overshot (page 207)** active. The timer starts in the same time when starter starts.

> *Note: The setpoint is visible only, if **Overspeed Overshot (page 207)** is greater than 0.*

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Oil Pressure Wrn

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	the range is defined by analog sensor curve		
Default value	the value is defined by analog sensor curve	Alternative config	NO
Step	the step is defined by analog sensor curve		
Comm object	12895	Related applications	AMF, MRS
Config level	Standard		
Setpoint visibility	Visible only if the logical analog input OIL PRESSURE (PAGE 623) is configured		
Description			

Warning or history threshold level for OIL PRESSURE (PAGE 623).

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Oil Pressure Sd

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	the range is defined by analog sensor curve		
Default value	the value is defined by analog sensor curve	Alternative config	NO
Step	the step is defined by analog sensor curve		
Comm object	12779	Related applications	AMF, MRS
Config level	Standard		
Setpoint visibility	Visible only if the logical analog input OIL PRESSURE (PAGE 623) is configured		
Description			

Shutdown threshold level for OIL PRESSURE (PAGE 623).

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Oil Pressure Delay

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	0 .. 900 [s]		
Default value	3 s	Alternative config	NO
Step	1 s		
Comm object	14341	Related applications	AMF, MRS
Config level	Standard		
Setpoint visibility	Visible only if the logical analog input OIL PRESSURE (PAGE 623) is configured or logical binary input OIL PRESSURE (PAGE 532) is configured		
Description			
Delay for OIL PRESSURE (PAGE 623).			

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ECU Oil Pressure Wrn

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	the range is defined by ECU sensor curve		
Default value	the value is defined by ECU sensor curve	Alternative config	YES
Step	the step is defined by ECU sensor curve		
Comm object	14426	Related applications	AMF, MRS
Config level	Standard		
Setpoint visibility	Visible only if ECU is configured		
Description			
Warning threshold level for Oil pressure which is send from ECU.			

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ECU Oil Pressure Sd

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	the range is defined by ECU sensor curve		
Default value	the value is defined by ECU sensor curve	Alternative config	NO
Step	the step is defined by ECU sensor curve		
Comm object	14425	Related applications	AMF, MRS
Config level	Standard		
Setpoint visibility	Visible only if ECU is configured		
Description			
Shutdown threshold level for Oil pressure which is send from ECU.			

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ECU Oil Pressure Delay

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	0 .. 900 [s]		
Default value	3 s	Alternative config	NO
Step	1 s		
Comm object	14427	Related applications	AMF, MRS
Config level	Standard		
Setpoint visibility	Visible only if ECU is configured		
Description			
Delay for Oil pressure which is send from ECU.			

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Coolant Temperature Wrn

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	the range is defined by analog sensor curve		
Default value	the value is defined by analog sensor curve	Alternative config	NO
Step	the step is defined by analog sensor curve		
Comm object	12896	Related applications	AMF, MRS
Config level	Standard		
Setpoint visibility	Visible only if the logical analog input COOLANT TEMP (PAGE 620) is configured		
Description			
Warning or history threshold level for COOLANT TEMP (PAGE 620).			

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Coolant Temperature Sd

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	the range is defined by analog sensor curve		
Default value	the value is defined by analog sensor curve	Alternative config	NO
Step	the step is defined by analog sensor curve		
Comm object	12780	Related applications	AMF, MRS
Config level	Standard		
Setpoint visibility	Visible only if the logical analog input COOLANT TEMP (PAGE 620) is configured		
Description			
Shutdown or BOC threshold level for COOLANT TEMP (PAGE 620).			

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Coolant Temperature Delay

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	0 .. 900 [s]		
Default value	5 s	Alternative config	NO
Step	1 s		
Comm object	14342	Related applications	AMF, MRS
Config level	Standard		
Setpoint visibility	Visible only if the logical analog input COOLANT TEMP (PAGE 620) is configured or logical binary input COOLANT TEMP (PAGE 523) is configured		
Description			
Delay for COOLANT TEMP (PAGE 620).			

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ECU Coolant Temperature Wrn

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	the range is defined by ECU sensor curve		
Default value	the value is defined by ECU sensor curve	Alternative config	NO
Step	the step is defined by ECU sensor curve		
Comm object	14429	Related applications	AMF, MRS
Config level	Standard		
Setpoint visibility	Visible only if ECU is configured		
Description			
Warning threshold level for Coolant temperature which is send from ECU.			

🔺 **back to List of setpoints**

ECU Coolant Temperature Sd

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	the range is defined by ECU sensor curve		
Default value	the value is defined by ECU sensor curve	Alternative config	NO
Step	the step is defined by ECU sensor curve		
Comm object	14428	Related applications	AMF, MRS
Config level	Standard		
Setpoint visibility	Visible only if ECU is configured		
Description			
Shutdown or BOC threshold level for Coolant temperature which is send from ECU.			

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ECU Coolant Temperature Delay

Setpoint group	Engine settings	**Related FW**	1.8.0
Range [units]	0 .. 900 [s]		
Default value	5 s	**Alternative config**	NO
Step	1 s		
Comm object	14430	**Related applications**	AMF, MRS
Config level	Standard		
Setpoint visibility	Visible only if ECU is configured		
Description			
Delay for Coolant temperature which is send from ECU.			

🔺 **back to List of setpoints**

Temperature Switch On

Setpoint group	Engine settings	**Related FW**	1.8.0
Range [units]	the range is define by sensor curve (analog or ECU)		
Default value	the value is defined by sensor curve (analog or ECU)	**Alternative config**	NO
Step	the step is defined by sensor curve (analog or ECU)		
Comm object	8688	**Related applications**	AMF, MRS
Config level	Standard		
Setpoint visibility	Visible only if the logical binary output TEMPERATURE SWITCH (PAGE 589) is configured.		
Description			
Threshold level for switching the binary output TEMPERATURE SWITCH (PAGE 589) on.			

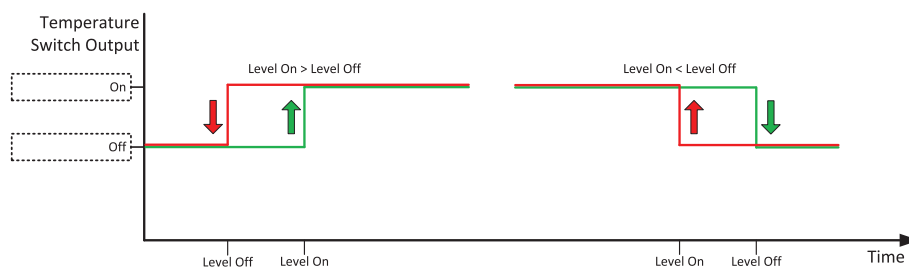> *Note: Value from analog input has higher priority than ECU.*

Image 9.11 Temperature Switch

🔺 **back to List of setpoints**

Temperature Switch Off

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	the range is define by sensor curve (analog or ECU)		
Default value	the value is defined by sensor curve (analog or ECU)	Alternative config	NO
Step	the step is defined by sensor curve (analog or ECU)		
Comm object	8689	Related applications	AMF, MRS
Config level	Standard		
Setpoint visibility	Visible only if the logical binary output TEMPERATURE SWITCH (PAGE 589) is configured.		
Description			

Threshold level for switching the binary output TEMPERATURE SWITCH (PAGE 589) off.

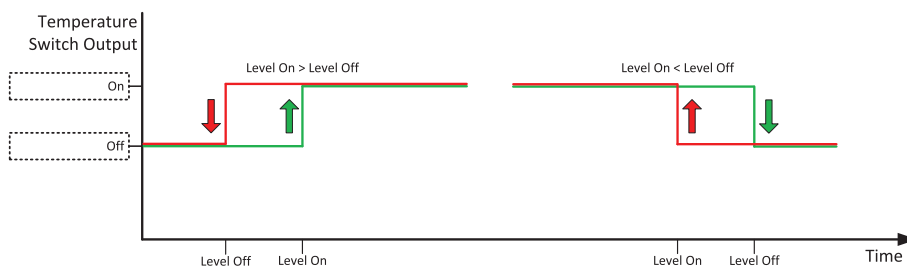> *Note:* Value from analog input has higher priority than ECU.

Image 9.12 Temperature Switch

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Coolant Temperature Low Wrn

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	the range is defined by analog sensor curve		
Default value	the value is defined by analog sensor curve	Alternative config	YES
Step	the step is defined by analog sensor curve		
Comm object	9684	Related applications	AMF, MRS
Config level	Advanced		
Setpoint visibility	Visible only if the logical analog input COOLANT TEMP (PAGE 620) is configured		
Description			

Threshold level for lower limit of COOLANT TEMP (PAGE 620).

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Coolant Temperature Low Delay

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	0 .. 900 [s]		
Default value	5 s	Alternative config	YES
Step	1 s		
Comm object	10270	Related applications	AMF, MRS
Config level	Advanced		
Setpoint visibility	Visible only if the logical analog input COOLANT TEMP (PAGE 620) is configured		
Description			
Delay for **Coolant Temperature Low Wrn (page 213)**.			

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Fuel Level Wrn

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	the range is defined by analog sensor curve		
Default value	the value is defined by analog sensor curve	Alternative config	NO
Step	the step is defined by analog sensor curve		
Comm object	12897	Related applications	AMF, MRS
Config level	Standard		
Setpoint visibility	Visible only if the logical analog input FUEL LEVEL (PAGE 621) is configured		
Description			
Warning or history threshold level for FUEL LEVEL (PAGE 621).			

🔺 **back to List of setpoints**

Fuel Level Sd

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	the range is defined by analog sensor curve		
Default value	the value is defined by analog sensor curve	Alternative config	NO
Step	the step is defined by analog sensor curve		
Comm object	12898	Related applications	AMF, MRS
Config level	Standard		
Setpoint visibility	Visible only if the logical analog input FUEL LEVEL (PAGE 621) is configured		
Description			
Shutdown or BOC threshold level for FUEL LEVEL (PAGE 621).			

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Fuel Level Delay

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	0 .. 900 [s]		
Default value	10 s	Alternative config	NO
Step	1 s		
Comm object	14343	Related applications	AMF, MRS
Config level	Standard		
Setpoint visibility	Visible only if the logical analog input FUEL LEVEL (PAGE 621) is configured or logical binary input FUEL LEVEL (PAGE 527) is configured		
Description			
Delay for FUEL LEVEL (PAGE 621).			

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ECU Fuel Level Wrn

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	the range is defined by ECU sensor curve		
Default value	the value is defined by ECU sensor curve	Alternative config	NO
Step	the step is defined by ECU sensor curve		
Comm object	14432	Related applications	AMF, MRS
Config level	Standard		
Setpoint visibility	Visible only if ECU is configured		
Description			
Warning threshold level for Fuel level which is send from ECU.			

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ECU Fuel Level Sd

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	the range is defined by ECU sensor curve		
Default value	the value is defined by ECU sensor curve	Alternative config	NO
Step	the step is defined by ECU sensor curve		
Comm object	14431	Related applications	AMF, MRS
Config level	Standard		
Setpoint visibility	Visible only if ECU is configured		
Description			
Shutdown or BOC threshold level for Fuel level which is send from ECU.			

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ECU Fuel Level Delay

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	0 .. 900 [s]		
Default value	10 s	Alternative config	NO
Step	1 s		
Comm object	14433	Related applications	AMF, MRS
Config level	Standard		
Setpoint visibility	Visible only if ECU is configuredd		
Description			
Delay for Fuel level which is send from ECU.			

Fuel Tank Volume

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	0 .. 10 000 [l]		
Default value	200 l	Alternative config	YES
Step	1 l		
Comm object	11103	Related applications	AMF, MRS
Config level	Advanced		
Setpoint visibility	Visible only if the logical analog input FUEL LEVEL (PAGE 621) is or ECU is configured		
Description			
Define a capacity of gen-set fuel tank.			

Maximal Fuel Drop

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	Disabled / 1 .. 50 [%/h]		
Default value	25 %/h	Alternative config	NO
Step	1%/h		
Comm object	12373	Related applications	AMF, MRS
Config level	Advanced		
Setpoint visibility	Always		
Description			
Setpoint indicates the maximum allowable drop of fuel in fuel tank per running hour. When the engine is not running the maximal allowed fuel drop-off is preset to 5% of total tank volume per hour.			

Maximal Fuel Drop Delay

Setpoint group	Engine settings	**Related FW**	1.8.0
Range [units]	0 .. 600 [s]		
Default value	5 s	**Alternative config**	NO
Step	s		
Comm object	14683	**Related applications**	AMF, MRS
Config level	Advanced		
Setpoint visibility	Always		
Description			

When the value of fuel drop per hour is higher than **Maximal Fuel Drop (page 216)** this delay stars count down. After count down of this delay alarm **Wrn Fuel Theft (page 646)** is activated.

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Fuel Pump On

Setpoint group	Engine settings	**Related FW**	1.8.0
Range [units]	0 .. **Fuel Pump Off (page 218)** [%]		
Default value	20 %	**Alternative config**	NO
Step	1 %		
Comm object	10100	**Related applications**	AMF, MRS
Config level	Advanced		
Setpoint visibility	Visible only if the logical binary output FUEL PUMP (PAGE 569) is configured and logical binary input FUEL PUMP ON/OFF (PAGE 527) isn't configured		
Description			

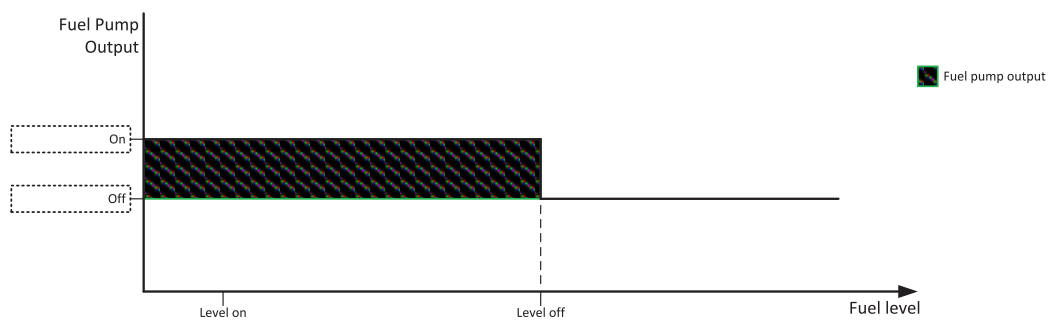Threshold level for switching the binary output FUEL PUMP (PAGE 569) on.

Image 9.13 Fuel Pump On

> **IMPORTANT: When binary input FUEL PUMP ON/OFF (PAGE 527) is configured then binary output FUEL PUMP (PAGE 569) is control by this binary input. Setpoints Fuel Pump On and Fuel Pump Off (page 218) are not evaluated!**

Note: Value from analog input has higher priority than ECU.

Note: This setpoint is visible only if the logical binary output FUEL PUMP (PAGE 569) is configured.

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Fuel Pump Off

Setpoint group	Engine settings	**Related FW**	1.8.0
Range [units]	**Fuel Pump On (page 217)** .. 100 [%]		
Default value	90 %	**Alternative config**	NO
Step	1 %		
Comm object	10101	**Related applications**	AMF, MRS
Config level	Advanced		
Setpoint visibility	Visible only if the logical binary output FUEL PUMP (PAGE 569) is configured and logical binary input FUEL PUMP ON/OFF (PAGE 527) isn't configured		
Description			

Threshold level for switching the binary output FUEL PUMP (PAGE 569) off.
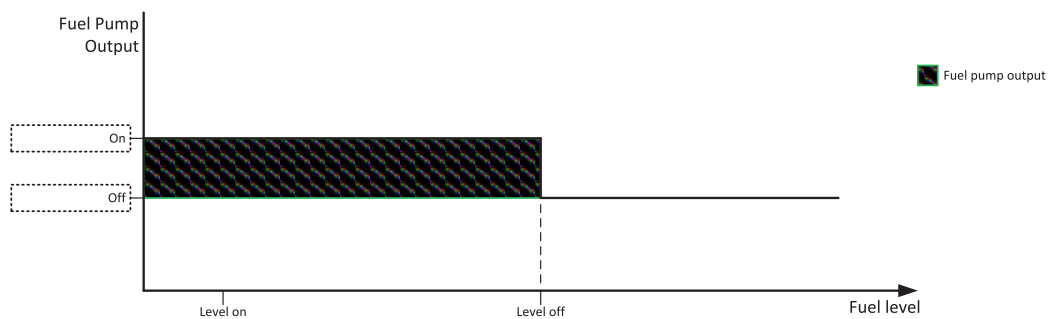

Image 9.14 Fuel Pump Off

> **IMPORTANT: When binary input FUEL PUMP ON/OFF (PAGE 527) is configured then binary output FUEL PUMP (PAGE 569) is control by this binary input. Setpoints Fuel Pump On (page 217) and Fuel Pump Off are not evaluated!**

Note: Value from analog input has higher priority than ECU.

Note: This setpoint is visible only if the logical binary output FUEL PUMP (PAGE 569) is configured.

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Transfer Wrn Delay

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	Disabled / 1 .. 60 [s]		
Default value	30 s	Alternative config	YES
Step	1 s		
Comm object	10685	Related applications	AMF, MRS
Config level	Advanced		
Setpoint visibility	Visible only if the logical binary output FUEL PUMP (PAGE 569) is configured		
Description			

If the controller does not see the fuel increase during fuel transfer within this time alarm **Wrn Fuel Transfer Failed (page 659)** will be displayed and the **FUEL PUMP (PAGE 569)** will be turned off. Alarm **Wrn Fuel Transfer Failed (page 659)** will be displayed but this alarm becomes immediately inactive and it will be possible to delete this message by the Fault reset button. If the fault is deleted the controller will initiate the transfer again.

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Subgroup: Maintenance

Maintenance Timer 1

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	-10 000 ... 9 999 [h] / Disabled		
Default value	1 000 h	Alternative config	NO
Step	1 h		
Comm object	11616	Related applications	AMF, MRS
Config level	Standard		
Setpoint visibility	Always		
Description			

Maintenance timer 1 counts down when engine is running. If reaches zero, an alarm appears, but the timer still counting down into negative values. When the value 10000 is set, than the Maintenance function is disabled and counter does not count. Counter value disappear from controllers statistics.

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Maintenance Timer 2

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	-10 000 ... 9 999 [h] / Disabled		
Default value	1 000 h	Alternative config	NO
Step	1 h		
Comm object	11617	Related applications	AMF, MRS
Config level	Standard		
Setpoint visibility	Always		
Description			
Maintenance timer 2 counts down when engine is running. If reaches zero, an alarm appears, but the timer still counting down into negative values. When the value 10000 is set, than the Maintenance function is disabled and counter does not count. Counter value disappear from controllers statistics.			

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Maintenance Timer 3

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	-10 000 ... 9 999 [h] / Disabled		
Default value	1 000 h	Alternative config	NO
Step	1 h		
Comm object	11618	Related applications	AMF, MRS
Config level	Standard		
Setpoint visibility	Always		
Description			
Maintenance timer 3 counts down when engine is running. If reaches zero, an alarm appears, but the timer still counting down into negative values. When the value 10000 is set, than the Maintenance function is disabled and counter does not count. Counter value disappear from controllers statistics.			

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Subgroup: Battery Protections

Battery Undervoltage

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	8,0 V .. **Battery Overvoltage (page 221)** [V]		
Default value	18,0 V	Alternative config	NO
Step	0,1 V		
Comm object	8387	Related applications	AMF, MRS
Config level	Standard		
Setpoint visibility	Always		
Description			
Warning threshold for low battery voltage.			

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Battery Overvoltage

Setpoint group	Engine settings	**Related FW**	1.8.0
Range [units]	**Battery Undervoltage (page 220)** .. 40,0 [V]		
Default value	36,0 V	**Alternative config**	NO
Step	0,1 V		
Comm object	9587	**Related applications**	AMF, MRS
Config level	Standard		
Setpoint visibility	Always		
Description			
Warning threshold for high battery voltage.			

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Battery <> Voltage Delay

Setpoint group	Engine settings	**Related FW**	1.8.0
Range [units]	0 .. 600 [s]		
Default value	5 s	**Alternative config**	NO
Step	1 s		
Comm object	8383	**Related applications**	AMF, MRS
Config level	Standard		
Setpoint visibility	Always		
Description			
Delay for **Battery Undervoltage (page 220)** and **Battery Overvoltage (page 221)** protection.			

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Battery Charger Fail Delay

Setpoint group	Engine settings	**Related FW**	1.8.0
Range [units]	0 .. 15 [min]		
Default value	5 min	**Alternative config**	NO
Step	1 min		
Comm object	11374	**Related applications**	AMF, MRS
Config level	Advanced		
Setpoint visibility	Conditioned with LBI Battery Charger (page 498)		
Description			
Delay for LBI Battery Charger (page 498).			

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Low Battery Charging Cycle

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	Disabled / 1–240 [min]		
Default value	Disabled	Alternative config	NO
Step	1 min		
Comm object	15766	Related applications	MRS
Config level	Advanced		
Setpoint visibility	Always		
Description			

This setpoint enables battery charging and defines the time gen-set is running for to recharge battery. If battery charging is enabled and battery undervoltage is detected for more than 5 minutes, gen-set is started and will run for time defined in setpoint *Low Battery Charging Cycle*.

Battery charging is only initiated in AUT mode when no Shutdown alarm and Fuel Level alarm is active.

If there is battery undervoltage detected again after previous Charging Cycle is finished (and undervoltage lasts more than 5 minutes) next Charging Cycle is initiated.

If controller is switched to MAN mode during battery charging, gen-set stay running regardless timer (*Low Battery Charging Cycle* setpoint) elapsing. Gen-set is stopped by STOP button or by any SD alarm event only in this case.

If there is *Charging Alternator Fail* alarm occurred during battery recharging period, current battery recharging continues until time is elapsed. Next gen-set start due to battery undervoltage is blocked until controller is restarted.

> IMPORTANT: **If controller is in MAN mode and the battery voltage is under the limit more than 5 minutes engine is started immediately when controller is switched to AUT mode.**

Note: Low Battery Charging function is available only when separate MRS archive is used.

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Subgroup: Pulse Counters

Conversion Coefficient Pulse 1

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	0 ... 1 000 [-]		
Default value	1	Alternative config	NO
Step	1		
Comm object	10994	Related applications	AMF, MRS
Config level	Advanced		
Setpoint visibility	Only if LBI PULSE COUNTER 1 (PAGE 532) is configured		
Description			

This setpoint adjusts the rate of increasing of the Pulse Counter 1 function. The module counts pulses at the input PULSE COUNTER 1 (PAGE 532) and if the input pulses counter reaches value given by this setpoint, the counter value **Pulse Counter 1 (page 469)** is increased by 1 and input pulses counter is reset to 0. Both counter value and input pulses counter are stored in the nonvolatile memory.

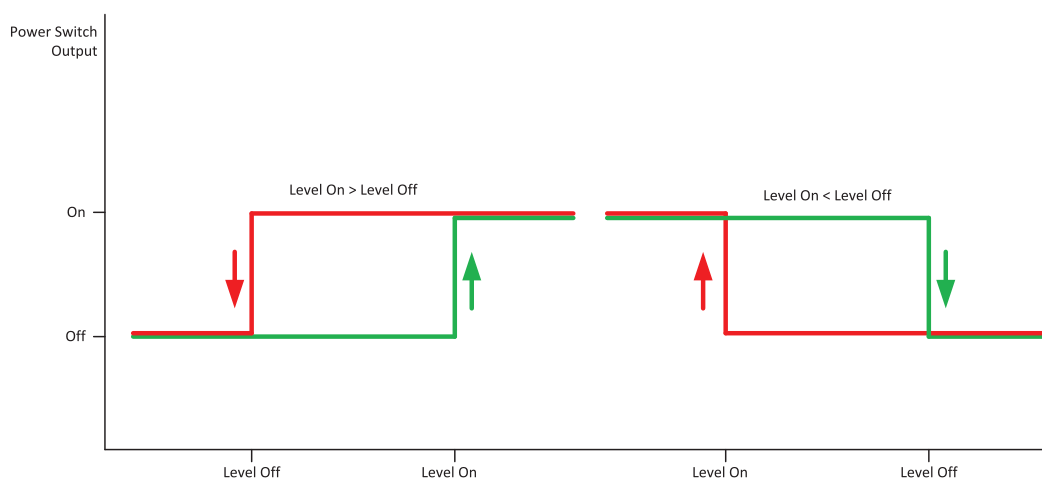 back to List of setpoints

Conversion Coefficient Pulse 2

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	0 … 1 000 [-]		
Default value	1	Alternative config	NO
Step	1		
Comm object	10995	Related applications	AMF, MRS
Config level	Advanced		
Setpoint visibility	Only if LBI **PULSE COUNTER 2 (PAGE 533)** is configured		
Description			

This setpoint adjusts the rate of increasing of the Pulse Counter 2 function. The module counts pulses at the input **PULSE COUNTER 2 (PAGE 533)** and if the input pulses counter reaches value given by this setpoint, the counter value **Pulse Counter 2 (page 469)** is increased by 0,1 and input pulses counter is reset to 0. Both counter value and input pulses counter are stored in the nonvolatile memory.

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Subgroup: Power switch

Power Switch On

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	0 .. 32 000 [kW]		
Default value	100 kW	Alternative config	NO
Step	1 kW		
Comm object	11658	Related applications	AMF, MRS
Config level	Advanced		
Setpoint visibility	Visible only if the logical binary output **POWER SWITCH (PAGE 582)** is configured.		
Description			

Threshold level for switching the binary output **POWER SWITCH (PAGE 582)** on.

Image 9.15 Power Switch Level On < Level Off

Image 9.16 Power Switch Level On > Level Off

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Power Switch Off

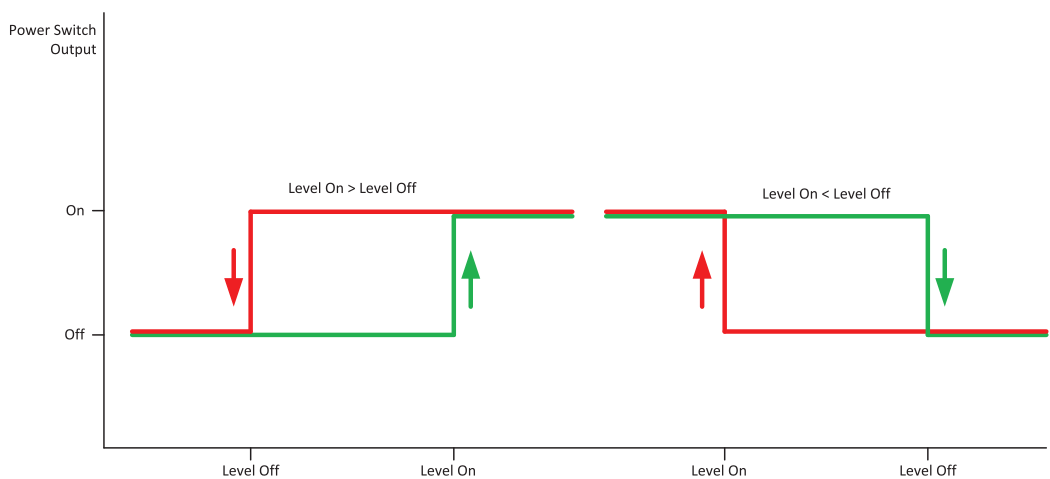| Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	0 .. 32 000 [kW]		
Default value	50 kW	Alternative config	NO
Step	1 kW		
Comm object	11659	Related applications	AMF, MRS
Config level	Advanced		
Setpoint visibility	Visible only if the logical binary output POWER SWITCH (PAGE 582) is configured.		
Description			
Threshold level for switching the binary output POWER SWITCH (PAGE 582) on.			

Image 9.17 Power Switch Level On < Level Off

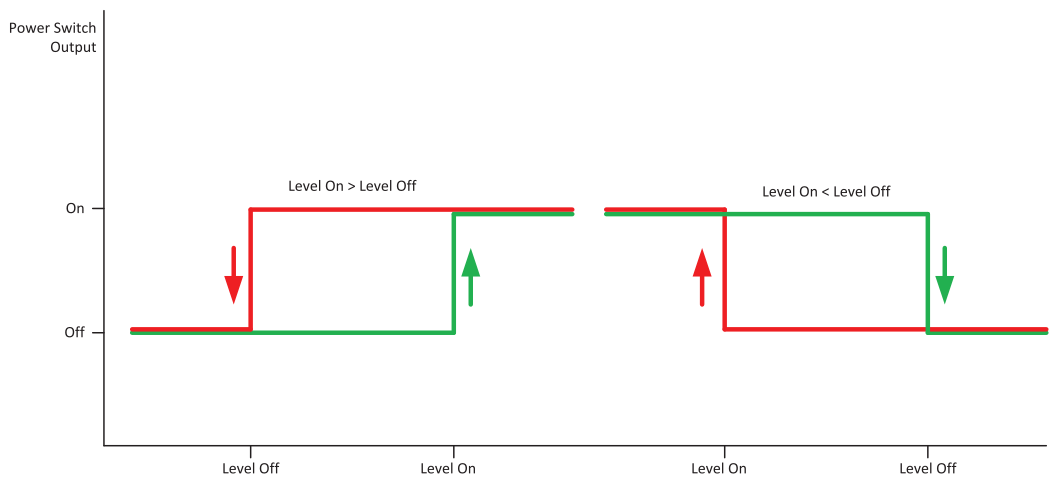Image 9.18 Power Switch Level On > Level Off

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Subgroup: Ventilation

Ventilation Pulse Time

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	0–3600 [s]		
Default value	30 s	Alternative config	NO
Step	1 s		
Comm object	15767	Related applications	MRS. AMF
Config level	Advanced		
Setpoint visibility	Only when logical binary output VENTILATION ON PULSE (PAGE 590) or VENTILATION OFF PULSE (PAGE 589) is configured.		
Description			
This setpoint defines duration of pulse generated on logical binary outputs VENTILATION ON PULSE (PAGE 590) or VENTILATION OFF PULSE (PAGE 589) at the moment when logical binary output VENTILATION (PAGE 589) is activated or deactivated respectively.			

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Subgroup: ECU Settings

ECU Speed Adjustment

Setpoint group	Engine settings	Related FW	1.8.0
Range [units]	0 .. 100 [%]		
Default value	50 %	Alternative config	NO
Step	1 %		
Comm object	9948	Related applications	AMF, MRS
Config level	Advanced		
Setpoint visibility	Visible only if ECU is configured		
Description			
Enables to adjust engine speed in ECU via CAN bus. Nominal speed corresponds to 50%. This setpoint should be used only for Volvo Penta and Scania engines. It has no effect on other engine brands. *Note: To lock this setpoint against editing you also have to lock setpoint **ECU Speed Adjustment 1** (page 341), **ECU Speed Adjustment 2** (page 342) and **ECU Speed Adjustment 3** (page 342).*			

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