



Service Information System

Shutdown SIS

[Previous Screen](#)

◀ Product: MARINE ENGINE
 Model: C280-16 MARINE ENGINE TDX
 Configuration: C280-16 MARINE TDX00001-UP

Systems Operation

Marine Monitoring System II

Media Number -REN2490-06

Publication Date -01/08/2008

Date Updated -11/08/2008

i01432017

Alarms and Shutdowns

SMCS - 7490

Engine Alarms

The control will display an alarm if an event is detected. Running the engine during abnormal conditions may cause engine damage. Table 1 gives the following information on each alarm:

- The name of each alarm
- The analog setpoint of each alarm
- The time delay of each alarm
- The indication of a contact for each alarm

Table 1

Description of Alarm	Time Delay	Analog Setpoint	Contact
"AC/OC pump pressure low alarm"	5 sec	35 kPa (5 psi)	X
"AC/OC water inlet temperature high alarm"	5 sec	60 °C (140 °F)	
"Air start pressure low alarm"	20 sec	750 kPa (108 psi)	X
"Auxiliary 4-20mA #1 alarm"	5 sec	Set by user	
"Auxiliary 4-20mA #2 alarm"	5 sec	Set by user	

"Auxiliary alarm #1 alarm"	5 sec		X
"Auxiliary alarm #2 alarm"	5 sec		X
"Auxiliary alarm #3 alarm"	5 sec		X
"Auxiliary temperature #1 alarm"	5 sec	Set by user	
"Auxiliary temperature #2 alarm"	5 sec	Set by user	
"Ball head backup mode alarm"	5 sec		X
"Engine crank terminate alarm"	5 sec		
"Engine crank terminate time delay alarm"	5 sec		
"Engine failed to remote start"	10 sec		
"Engine oil step alarm"	5 sec		X
"Exhaust port #1 temperature deviation alarm"	5 sec	Cylinder Average ± 50 °C (122 °F)	
"Exhaust port #1 temperature high alarm"	5 sec	550 °C (1022 °F)	
"Exhaust port #2 temperature deviation alarm"	5 sec	Cylinder Average ± 50 °C (122 °F)	
"Exhaust port #2 temperature high alarm"	5 sec	550 °C (1022 °F)	
"Exhaust port #3 temperature deviation alarm"	5 sec	Cylinder Average ± 50 °C (122 °F)	
"Exhaust port #3 temperature high alarm"	5 sec	550 °C (1022 °F)	
"Exhaust port #4 temperature deviation alarm"	5 sec	Cylinder Average ± 50 °C (122 °F)	
"Exhaust port #4 temperature high alarm"	5 sec	550 °C (1022 °F)	
"Exhaust port #5 temperature deviation alarm"	5 sec	Cylinder Average ± 50 °C (122 °F)	
"Exhaust port #5 temperature high alarm"	5 sec	550 °C (1022 °F)	

"Exhaust port #6 temperature deviation alarm"	5 sec	Cylinder Average ± 50 °C (122 °F)	
"Exhaust port #6 temperature high alarm"	5 sec	550 °C (1022 °F)	
"Exhaust port #7 temperature deviation alarm"	5 sec	Cylinder Average ± 50 °C (122 °F)	
"Exhaust port #7 temperature high alarm"	5 sec	550 °C (1022 °F)	
"Exhaust port #8 temperature deviation alarm"	5 sec	Cylinder Average ± 50 °C (122 °F)	
"Exhaust port #8 temperature high alarm"	5 sec	550 °C (1022 °F)	
"Exhaust port #9 temperature deviation alarm"	5 sec	Cylinder Average ± 50 °C (122 °F)	
"Exhaust port #9 temperature high alarm"	5 sec	550 °C (1022 °F)	
"Exhaust port #10 temperature deviation alarm"	5 sec	Cylinder Average ± 50 °C (122 °F)	
"Exhaust port #10 temperature high alarm"	5 sec	550 °C (1022 °F)	
"Exhaust port #11 temperature deviation alarm"	5 sec	Cylinder Average ± 50 °C (122 °F)	
"Exhaust port #11 temperature high alarm"	5 sec	550 °C (1022 °F)	
"Exhaust port #12 temperature deviation alarm"	5 sec	Cylinder Average ± 50 °C (122 °F)	
"Exhaust port #12 temperature high alarm"	5 sec	550 °C (1022 °F)	
"Exhaust port #13 temperature deviation alarm"	5 sec	Cylinder Average ± 50 °C (122 °F)	

"Exhaust port #13 temperature high alarm"	5 sec	550 °C (1022 °F)	
"Exhaust port #14 temperature deviation alarm"	5 sec	Cylinder Average ± 50 °C (122 °F)	
"Exhaust port #14 temperature high alarm"	5 sec	550 °C (1022 °F)	
"Exhaust port #15 temperature deviation alarm"	5 sec	Cylinder Average ± 50 °C (122 °F)	
"Exhaust port #15 temperature high alarm"	5 sec	550 °C (1022 °F)	
"Exhaust port #16 temperature deviation alarm"	5 sec	Cylinder Average ± 50 °C (122 °F)	
"Exhaust port #16 temperature high alarm"	5 sec	550 °C (1022 °F)	
"Fuel filter pressure differential alarm"	5 sec	75 kPa (11 psi)	
"Fuel to engine pressure low alarm"	5 sec	260 kPa (38 psi)	
"Fuel to engine temperature high alarm"	5 sec	50 °C (122 °F)	
"Generator drive bearing temperature high alarm"	5 sec	85 °C (185 °F)	
"Generator non-drive bearing temperature high alarm"	5 sec	85 °C (185 °F)	
"Generator stator a temperature high alarm"	5 sec	135 °C (275°F)	
"Generator stator b temperature high alarm"	5 sec	135 °C (275°F)	
"Generator stator c temperature high alarm"	5 sec	135 °C (275°F)	
"Inlet air manifold pressure high alarm"	5 sec	310 kPa (45 psi)	
"Inlet air manifold temperature high alarm"	5 sec	92 °C (198 °F)	

"Jacket water detector alarm"	5 sec		X
"Jacket water inlet pressure low alarm"	5 sec	20/35 kPa (3/5 kPa)	X
"Jacket water outlet temperature high alarm"	5 sec	103 °C (217 °F)	
"Low battery voltage alarm"	5 sec		X
"Low speed low oil pressure contactor failure"	5 sec		X
"Lube oil to engine pressure low alarm"	5 sec	120/320 kPa (17/46)	
"Lube oil to engine temperature high alarm"	5 sec	92 °C (198 °F)	
"Lube oil to filter pressure differential alarm"	5 sec	70 kPa (10 psi)	
"Oil level low alarm"	5 sec		X
"Particle detector alarm"	0 sec		X
"Raw water pressure low alarm"	5 sec	35 kPa (5 psi)	X
"Reduce engine load"	0 sec		
"Relay power not available alarm"	0 sec		X
"Shutdown override alarm"	0 sec		X
"Turbine inlet left/inline temperature high alarm"	5 sec	630 °C (1166 °F)	
"Turbine inlet right temperature high alarm"	5 sec	630 °C (1166 °F)	
"Turbine left/inline overspeed alarm"	5 sec	35000 RPM	
"Turbine outlet left/inline temperature high alarm"	5 sec	550 °C (1022 °F)	
"Turbine outlet right temperature high alarm"	5 sec	550 °C (1022 °F)	
"Turbine right overspeed alarm"	5 sec	35000 RPM	
"Water level low alarm"	5 sec		X

Conditions must be present in order for an alarm to be present. Table 2 gives information on the conditions that are needed in order to generate the alarms.

Table 2

Description of Alarm	Crank Terminate +9 sec	Oil Step	ECS Not in Off/Reset	Fuel Relay OFF	Sensor Failure Inactive	Other
"AC/OC pump pressure low alarm"		X	X	X	Xmitter Only	"Configuration jumpers need to be correctly installed for the optional Xmitter module"
"AC/OC water inlet temperature high alarm"	X		X	X	X	"Configuration jumpers need to be correctly installed for the optional Xmitter module"
"Air start pressure low alarm"			X	X	Xmitter Only	
"Auxiliary 4-20mA #1 alarm"	X		X	X	X	
"Auxiliary 4-20mA #2 alarm"	X		X	X	X	
"Auxiliary alarm #1 alarm"			X	X		
"Auxiliary alarm #2 alarm"			X	X		
"Auxiliary alarm #3 alarm"			X	X		
"Auxiliary temperature #1 alarm"	X		X	X	X	
"Auxiliary temperature #2 alarm"	X		X	X	X	

"Ball head backup mode alarm"			X			"Must be configured on setup screen for reverse acting actuator"
"Engine crank terminate alarm"						"PLC crank terminate has picked up but the Speed switch crank terminate contact has not energized"
"Engine crank terminate time delay alarm"						"PLC crank terminate with time delay has picked up but the speed switch crank terminate time delay contact has not energized"
"Engine failed to remote start"						"Remote start command given, auto start output energized for 10 seconds and crank terminate does not energize"
"Engine oil step alarm"						"PLC oil step has picked up but the speed switch oil step contact has not energized"
"Exhaust port #1 temperature deviation alarm"			X	X	X	"Inlet air manifold pressure must be greater than 100 kPa (14.5 psi) for 5 minutes"
"Exhaust port #1 temperature high alarm"			X	X	X	
"Exhaust port #2 temperature deviation alarm"			X	X	X	"Inlet air manifold pressure must be greater than 100 kPa (14.5 psi) for 5 minutes"
"Exhaust port #2 temperature high alarm"			X	X	X	
"Exhaust port #3 temperature deviation alarm"			X	X	X	"Inlet air manifold pressure must be greater than 100 kPa (14.5 psi) for 5 minutes"
"Exhaust port						

#3 temperature high alarm"			X	X	X	
"Exhaust port #4 temperature deviation alarm"			X	X	X	"Inlet air manifold pressure must be greater than 100 kPa (14.5 psi) for 5 minutes"
"Exhaust port #4 temperature high alarm"			X	X	X	
"Exhaust port #5 temperature deviation alarm"			X	X	X	"Inlet air manifold pressure must be greater than 100 kPa (14.5 psi) for 5 minutes"
"Exhaust port #5 temperature high alarm"			X	X	X	
"Exhaust port #6 temperature deviation alarm"			X	X	X	"Inlet air manifold pressure must be greater than 100 kPa (14.5 psi) for 5 minutes"
"Exhaust port #6 temperature high alarm"			X	X	X	
"Exhaust port #7 temperature deviation alarm"			X	X	X	"Inlet air manifold pressure must be greater than 100 kPa (14.5 psi) for 5 minutes"
"Exhaust port #7 temperature high alarm"			X	X	X	
"Exhaust port #8 temperature deviation alarm"			X	X	X	"Inlet air manifold pressure must be greater than 100 kPa (14.5 psi) for 5 minutes"
"Exhaust port #8 temperature high alarm"			X	X	X	
"Exhaust port #9 temperature deviation alarm"			X	X	X	"Inlet air manifold pressure must be greater than 100 kPa (14.5 psi) for 5 minutes"

"Exhaust port #9 temperature high alarm"			X	X	X	
"Exhaust port #10 temperature deviation alarm"			X	X	X	"Inlet air manifold pressure must be greater than 100 kPa (14.5 psi) for 5 minutes"
"Exhaust port #10 temperature high alarm"			X	X	X	
"Exhaust port #11 temperature deviation alarm"			X	X	X	"Inlet air manifold pressure must be greater than 100 kPa (14.5 psi) for 5 minutes"
"Exhaust port #11 temperature high alarm"			X	X	X	
"Exhaust port #12 temperature deviation alarm"			X	X	X	"Inlet air manifold pressure must be greater than 100 kPa (14.5 psi) for 5 minutes"
"Exhaust port #12 temperature high alarm"			X	X	X	
"Exhaust port #13 temperature deviation alarm"			X	X	X	"Inlet air manifold pressure must be greater than 100 kPa (14.5 psi) for 5 minutes"
"Exhaust port #13 temperature high alarm"			X	X	X	
"Exhaust port #14 temperature deviation"			X	X	X	"Inlet air manifold pressure must be greater than 100 kPa (14.5 psi)"

alarm"						for 5 minutes"
"Exhaust port #14 temperature high alarm"			X	X	X	
"Exhaust port #15 temperature deviation alarm"			X	X	X	"Inlet air manifold pressure must be greater than 100 kPa (14.5 psi) for 5 minutes"
"Exhaust port #15 temperature high alarm"			X	X	X	
"Exhaust port #16 temperature deviation alarm"			X	X	X	"Inlet air manifold pressure must be greater than 100 kPa (14.5 psi) for 5 minutes"
"Exhaust port #16 temperature high alarm"			X	X	X	
"Fuel filter pressure differential alarm"	X		X	X	X & X	
"Fuel to engine pressure low alarm"	X		X	X	X	
"Fuel to engine temperature high alarm"	X		X		X	
"Generator drive bearing temperature high alarm"	X		X		X	"Rear mount genset option selected"
"Generator non-drive bearing temperature high alarm"	X		X		X	"Rear mount genset option selected"

"Generator stator a temperature high alarm"	X		X		X	"Rear mount genset option selected"
"Generator stator b temperature high alarm"	X		X		X	"Rear mount genset option selected"
"Generator stator c temperature high alarm"	X		X		X	"Rear mount genset option selected"
"Inlet air manifold pressure high alarm"	X		X	X	X	
"Inlet air manifold temperature high alarm"	X		X	X	X	
"Jacket water detector alarm"	X		X	X		
"Jacket water inlet pressure low alarm"	X	X	X	X	Xmitter Only	"Configuration jumpers need to be correctly installed for the optional Xmitter module"
"Jacket water outlet temperature high alarm"	X		X	X	X	
"Low battery voltage alarm"			X	X		
"Low speed low oil pressure contactor failure"						
"Lube oil to engine pressure low alarm"	X	X	X	X	X	

"Lube oil to engine temperature high alarm"	X		X	X	X	
"Lube oil to filter pressure differential alarm"	X		X	X	X & X	
"Oil level low alarm"			X	X		
"Particle detector alarm"			X	X		
"Raw water pressure low alarm"		X	X	X	Xmitter Only	"Raw water must be selected on monitor setup & jumpers must be configured for optional module"
"Reduce engine load"			X	X		"Any of the following alarms will trigger this alarm: AC/OC pump pressure alarm, any exhaust cylinder alarm, or right or left turbo inlet temperature alarm"
"Relay power not available alarm"			X			"PLC slot 2 has not failed"
"Shutdown override alarm"			X			"Remote switch closed for shutdown override"
"Turbine inlet left/inline temperature high alarm"			X	X	X	
"Turbine inlet right temperature high alarm"			X	X	X	
"Turbine left/inline overspeed"			X		X	"Sensor must be configured on monitor"

alarm"						
"Turbine outlet left/inline temperature high alarm"			X	X	X	
"Turbine outlet right temperature high alarm"			X	X	X	
"Turbine right overspeed alarm"			X		X	"Sensor must be configured on monitor"
"Water level low alarm"			X	X		

Shutdowns

A shutdown secures the fuel. An emergency shutdown also secures the air to the engine.

A fuel shut off may be located in the actuator for fuel. A fuel shut off may be an input to the governor control. When the fuel shutoff is active, the injectors are driven to the off position. This secures the fuel.

The air shutoff solenoid secures the air. When this solenoid is activated compressed air flows to the air damper. The air releases a pin. When the pin is released, a spring closes the air damper. This secures the combustion air supply from the turbochargers to the aftercooler.

Note: The air damper must be MANUALLY reset before the engine can be restarted. The control panel must also be reset with the "RESET" switch before the control will allow starting. The panel may not be reset until the engine has stopped rotating. Determine the cause of the shutdown and correct the problem prior to engine operation.

Table 3

Description of Shutdown	Time Delay	Analog Setpoint	Contact
"Auxiliary 4-20ma #1 shutdown"	5 sec	Set by user	
"Auxiliary 4-20ma #2 shutdown"	5 sec	Set by user	
"Auxiliary shutdown #1 shutdown"	0 sec		X
"Auxiliary shutdown #2 shutdown"	0 sec		X
"Auxiliary temperature #1 shutdown"	5 sec	Set by user	

"Auxiliary temperature #2 shutdown"	5 sec	Set by user	
"Crankcase pressure high shutdown"	50 mS		X
"Customer shutdown"	0 sec		X
"Emergency stop shutdown"	0 sec		X
"Engine overspeed shutdown"	50 mS	113% Rated	X - ESS
"Generator drive bearing temperature high shutdown"	5 sec	95 °C (203 °F)	
"Generator non-drive bearing temperature high shutdown"	5 sec	95 °C (203 °F)	
"High speed low oil pressure shutdown"	50 mS		X
"Jacket water outlet temperature high shutdown"	3 sec	109 °C (228 °F)	
"Jacket water outlet temperature high shutdown""OPTIONAL"	3 sec	109 C (228 °F)	
"Low speed low oil pressure shutdown"	50 mS		X
"Lube oil to engine pressure low shutdown"	3 sec	105/260 kPa (15/38 psi)	
"Oil mist detector shutdown"	5 sec		X
"Particle detector shutdown"	300 sec		X

Conditions must be present in order for an shutdown to be present. Table 4 gives information on the conditions that are needed in order to generate the shutdown.

Table 4

Description of Shutdown	Crank Terminate +9 sec	Oil Step	ECS Not in Off/Reset	Fuel Relay OFF	Sensor Failure Inactive	Other
"Auxiliary 4-20ma #1 shutdown"	X		X	X	X	"Must be configured on monitor for a shutdown"
"Auxiliary 4-20ma #2 shutdown"	X		X	X	X	"Must be configured on monitor for a shutdown"

"Auxiliary shutdown #1 shutdown"			X			
"Auxiliary shutdown #2 shutdown"			X			
"Auxiliary temperature #1 shutdown"	X		X	X	X	"Must be configured on monitor for a shutdown"
"Auxiliary temperature #2 shutdown"	X		X	X	X	"Must be configured on monitor for a shutdown"
"Crankcase pressure high shutdown"			X			
"Customer shutdown"			X			
"Emergency stop shutdown"						"Voltage on terminal 84"
"Engine overspeed shutdown"				X	X	
"Generator drive bearing temperature high shutdown"	X		X	X	X	"Rear mount genset option must be selected"
"Generator non-drive bearing temperature high shutdown"	X		X	X	X	"Rear mount genset option must be selected"
"High speed low oil pressure shutdown"	X		X			
"Jacket water outlet temperature high shutdown"	X		X	X	X	"Redundant RTD installed"
"Jacket water outlet"	X		X	X	X	"Redundant RTD not"

temperature high shutdown"						installed"
"Low speed low oil pressure shutdown"	X		X			
"Lube oil to engine pressure low shutdown"	Low speed only	High speed only	X	X	X	
"Oil mist detector shutdown"			X			"Oil mist detector ready contact must be closed"
"Particle detector shutdown"	X		X			"If there are 3 contact closures within a set time period or the contact stays closed for 5 minutes a shutdown will occur"