

# DIAGNOSTIC AND FAULT CODES

## GENERAL

### MONITORING SYSTEM

The EMS features a monitoring system that self-diagnose its electronic components.

When a predefined condition (engine overheat for example) or a fault occurs, the ECM sends a signal to the multifunction gauge and/or audible signals to a beeper to inform you of this particular condition.

The ECM monitors the following functions and components.

EMS MONITORING
EMS sensors (TAS, TPS, CPS, CAPS, MAPTS, OPS, CTS, RVPS,)
ECM (engine control module)
Fuel injectors
Ignition coils (primary)
12 V low/high voltage and overload
D.E.S.S.
Relays (R1, R2, R3)
Electronic reverse relays
Engine oil pressure
Engine RPM
Coolant temperature
CAN
Starter solenoid
Fuel pump

MULTIFUNCTION GAUGE MONITORING
Multifunction gauge
Sport, standard and ECO mode activation
MODE switch
CAN
Fuel level sensor
ECM

## Subsection 05 (DIAGNOSTIC AND FAULT CODES)

### Engine Overheat Protection

COOLANT TEMP.	ENGINE OPERATING CONDITION	EMS ACTION
Above 70°C (158°F)	<b>Models with a cooling fan:</b> Idling more than 12 minutes <b>Models without a cooling fan:</b> Idling more than 5 minutes	Engine is stopped. 5 seconds before stopping engine: <ul style="list-style-type: none"><li>• Beeper is activated.</li><li>• SHUTDOWN is displayed in multifunction gauge.</li></ul>
Within 111°C (232°F) and 117°C (243°F)	<b>Models with a cooling fan:</b> Idling more than 12 minutes <b>Models without a cooling fan:</b> Idling more than 5 minutes	Beeper is continuously activated. Temperature light is turned ON. ENGINE_TEMP is displayed in multifunction gauge.
Above 110°C (230°F)	Riding	
Above 118°C (244°F)	Idling more than 30 seconds	Engine is stopped. 5 seconds before stopping engine: <ul style="list-style-type: none"><li>• Beeper is activated.</li><li>• SHUTDOWN is displayed in multifunction gauge.</li></ul>
	Riding	Beeper is activated. Temperature light is turned ON. ENGINE_TEMP is displayed in multifunction gauge. Check engine light is turned ON. Engine speed is limited to 5500 RPM. A fault code is set.

### Limp Home Mode

The ECM may automatically set default parameters to ensure the safe operation of the vehicle if a component of the engine management system is not operating properly.

**NOTE:** Sensor failures will not lead automatically to a limp home mode. The check engine LED will turn on and in some cases the beeper.

The engine RPM may be limited if some critical components fail. In this case, releasing throttle and letting the engine return to idle speed may allow normal operation to come back. If it does not work, try removing the tether cord, wait until multifunction gauge turns off then reinstall tether cord.

These performance-reduced modes allow the rider to go back home while minimizing the risk of a complete power loss due to engine failure.

EMS ACTION	CAUSE
Engine speed is limited to 2000 RPM	Tether cord is bad or unread. TPS (throttle position sensor) voltage is too low or too high. Intake leakage. MAPTS (manifold absolute pressure and temperature sensor) is too low or too high.
Engine speed is limited to 2500 RPM	Low engine oil pressure.
Engine speed is limited to 3000 RPM	Brake switch is stuck.
Engine speed is limited to 4500 RPM	TPS (throttle position sensor) connector is disconnected or faulty. IACV (idle air control valve) connector is disconnected or faulty. Low engine oil pressure.
Engine speed is limited to 8500 RPM	Maximum engine RPM allowed.
Engine power is reduced	Transmission is set to reverse.

## Pilot Lamps and Beeper Codes





Warning lights in multifunction gauge and/or a beeper provide signals as vehicle operation feedback or to indicate a problem.

Pilot lamp can flash alone or in combination with another lamp.


Beeper codes will be heard and messages will be displayed to catch your attention.

**NOTE:** Message display is not available on all gauges.







### 1200 4-TEC iTC Models with Standard Gauge


PILOT LAMP(S) ON	BEEPER	DESCRIPTION
	4 short beeps every 30 seconds	Engine is overheating, reduce snowmobile speed and run in loose snow or stop engine immediately and let engine cool down. Check coolant level, refer to <i>MAINTENANCE</i> . Do not run the engine if condition persists.
	Short beeps repeating rapidly	Critical overheat. Stop engine immediately and let engine cool down. Check coolant level, refer to <i>MAINTENANCE</i> . Do not run the engine if condition persists.
	4 short beeps every 5 minutes	Indicate a low or high battery voltage condition.
	4 short beeps	Engine fault.
—	4 short beeps every 5 minutes	Engine RPM limited for protection when certain faults occur.
—	Short beeps repeating rapidly	Shutdown procedure in force due to engine overheating or fuel pump problem, remove tether cord cap from engine cut-off switch.

## Subsection 05 (DIAGNOSTIC AND FAULT CODES)

PILOT LAMP(S) ON	BEEPER	DESCRIPTION
<b>D.E.S.S.</b>	2 short beeps	Good key, vehicle ready to operate.
	2 short beeps, repeating slowly	Unable to read key (bad connection). Make sure the key is clean and correctly snapped on post.
	Short beeps repeating rapidly	Invalid key or key not programmed. Use the proper key for the vehicle or have the programmed.
 (blinking)	—	Fuel level sender problem.

### 1200 4-TEC iTC Models with Premium Gauge

PILOT LAMP(S)		BEEPER	MESSAGE DISPLAY	DESCRIPTION
	Blinking	3 short beeps	REV. FAIL	Reverse did not engage, try again. If reverse still fails to engage, see <i>CHAINCASE AND REVERSE</i> .
	Blinking, then ON	4 short beeps every 30 seconds	ENGINE OVERHEAT	Engine is overheating, run in loose snow or stop engine immediately and let engine cool down. Check coolant level, refer to <i>MAINTENANCE</i> . Do not run the engine if condition persists.
	Blinking, then ON	Short beeps repeating rapidly	ENGINE OVERHEAT	Critical overheat. Stop engine immediately and let engine cool down. Check coolant level, refer to <i>MAINTENANCE</i> . Do not run the engine if condition persists.
	ON	4 short beeps every 5 minutes	LOW OIL	Low engine oil pressure. Stop vehicle in a safe place then, check oil level. Fill to proper level.
	ON	4 short beeps every 5 minutes	LOW BAT	Indicate a low or high battery voltage condition.
			HIGH BAT	
	Blinking, then ON	4 short beeps	CHECK ENGINE	Engine fault.
—		4 short beeps every 5 minutes	KNOCK	Engine detonation (RPM is limited when this condition occurs). – Ensure recommended fuel is used. – Check fuel quality, replace if necessary.
—		4 short beeps every 5 minutes	REV LIMIT	Engine RPM limited for protection when certain faults occur.
—		Short beeps repeating rapidly	SHUTDOWN	Shutdown procedure in force due to engine overheating or fuel pump problem, remove tether cord cap from engine cut-off switch.
—		—	COMMUNICATION	Communication problem between ECM and gauge. Stop engine, remove D.E.S.S. key (tether cord cap). Wait a few minutes, then start engine.

PILOT LAMP(S)		BEEPER	MESSAGE DISPLAY	DESCRIPTION
<b>D.E.S.S.</b>	Blinking	2 short beeps	—	Good key, vehicle ready to operate.
		2 short beeps, repeating slowly	CHECK KEY	Unable to read key (bad connection). Make sure the key is clean and correctly snapped on post.
		Short beeps repeating rapidly	BAD KEY	Invalid key or key not programmed. Use the proper key for the vehicle or have the programmed.
	Blinking	—	—	Fuel level sender problem.
—		—	THROTTLE OPEN	Throttle applied while attempting an engine start (engine cranks but won't run). Release throttle while starting.
—		—	DROWN MODE	Throttle wide open while attempting an engine start (engine cranks but won't run). Release throttle while starting.

## FAULT CODES

A fault code is an indication that a glitch or malfunction is detected by the monitoring system of the vehicle.

When there is a problem, the EMS (engine management system) can provide fault codes to ease the troubleshooting.

The faults registered in the ECM (engine control module) are kept when the battery is disconnected.

Fault codes are broadcast to the CAN bus and can be displayed in B.U.D.S. or in the premium multifunction gauge.

Many fault codes at the same time is likely to be caused by burnt fuse(s), a faulty relay or a problem with the vehicle wiring harness.

When using the service action suggested in the **Fault** section of B.U.D.S., a system circuit designated as ECMB-M1 for instance, actually refers to the ECM "B" connector, pin M1.

**IMPORTANT:** After a problem has been solved, ensure to clear the fault(s) in the ECM using the B.U.D.S. software. This will properly reset their states.

### How to Read Fault Codes Using B.U.D.S. Software

Connect vehicle to the latest applicable B.U.D.S., refer to *COMMUNICATION TOOLS/B.U.D.S. SOFTWARE* subsection.

In B.U.D.S., navigate to the **Faults** page to:

- View active, occurred or all possible faults.

- View basic fault information.
- View detailed fault information with troubleshooting guidelines.
- Clear occurred faults.

For more information pertaining to the faults code status and report, refer to B.U.D.S. online help or to the EMS fault code tables.

### How to Read Fault Codes on the Premium Multifunction Gauge

Fault codes can also be displayed in the premium multifunction gauge. Refer to *DISPLAYING "P" CODES* in *LIGHTS, GAUGE AND ACCESSORIES*.

### How to Find Fault Code Descriptions

For the latest fault code table, use the **Knowledge Center** tab under the **Info Center** menu in BOSS-Web and enter the following search criteria:

- Enclose the search within quotes " "
- Enter: "2016 Ski-Doo DTC Table"