Spitronics - ECU - Diagnostic Codes - Reference

Introduction

The Spitronics Engine Control Unit continuously monitors sensor inputs, operating conditions and internal controller functions.

When an abnormal condition or system event occurs, the controller records a **Diagnostic Trouble Code (DTC)** in the Diagnostic Log.

Each log entry contains:

- Timestamp
- Diagnostic code number
- Status type
- Description

These codes assist installers and technicians in diagnosing installation problems, signal faults and controller operating conditions.

Diagnostic Code List

Status Types

= Error – Critical fault affecting operation.
= Warning – Operating limit reached or abnormal condition.
= Information – Normal system event or limiter activation.

Code	Type	Description
1	Error	Missing crank pulses
2	Error	Too many crank pulses or spikes detected
3	Error	Incorrect crank TDC slot
4	Error	Missing TDC pulse
5	Error	Missing home pulse
6	Information	Engine stopped – No pulses
7	Warning	Fuel pressure safety cut-out
8	Information	Economy fuel cut-out
9	Information	RPM limiter reached
10	Information	Maximum boost limiter reached
11	Warning	Water temperature limiter reached
12	Information	Launch limiter reached
13	Warning	Lambda control limits reached
14	Warning	Battery low voltage limit reached
15	Warning	Selection refreshed – Confirm driver placement

Code	Type	Description
16	Information	Timing retarded
17	Information	Flood control injector cut-out
18	Information	Flat-shift activated
19	Information	Ignition power switched off
20	Warning	Sponsor counter depleted
21	Information	Anti-Lag activated
22	Information	Hardware class does not support this feature
23	Information	Speed limiter reached
24	Information	Bootloader not present
25	Warning	Coil overcharge limit reached
26	Information	Test mode selected
27	Information	Map reloaded
28	Error	MAP sensor error
29	Error	TPS sensor failure
30	Error	Lambda sensor failure
31	Error	Water temperature sensor failure
32	Error	Air temperature sensor failure
33	Error	Altitude sensor failure
34	Error	Fuel pressure sensor failure
35	Error	Potentiometer sensor failure
36	Information	Dual injector activated
37	Error	Pedal sensor failure
38	Error	MAP sensor overflow
39	Warning	Ignition switched off
40	Warning	Battery power switched off

Security / Activation Diagnostics

Code	Description
221	Serial Number 1 Failure
222	Serial Number 2 Failure
223	Activation Number 1 Failure
224	Activation Number 2 Failure
225	Activation Number 3 Failure

Communication Diagnostics

Code	Description
231	Receive Data Table Error
232	Receive Single Byte Error

Code	Description
233	Receive Multiple Byte Error
241	Transmit ID Error
242	Transmit Trigger Error
243	Transmit Data Table Error
244	Transmit Real Time Error
245	Transmit Limits Error

Firmware Diagnostics

Code	Description
250	Start Code
251	Hardware Class Below Firmware Class
252	Incorrect Firmware Type Loaded
253	Code Space Is Erased
254	Incorrect Firmware Number Loaded

Diagnostic Code Details (Extended Codes)

ECU Diagnostics

DTC 1 – Missing Crank Pulses

Type: Error

Description

The controller does not detect a valid crankshaft position signal.

Possible Causes

- crank sensor wiring fault
- incorrect trigger configuration
- incorrect sensor polarity
- excessive sensor gap
- damaged trigger wheel

Remedy

1. Verify crank sensor wiring.
2. Confirm trigger type in ECU setup.
3. Check sensor polarity.
4. Inspect trigger wheel and sensor gap.

Reference

Trigger Setup Manual

DTC 2 – Too Many Crank Pulses or Spikes

Type: Error

Description

The ECU detected excessive crank pulses or electrical noise on the crank signal.

Possible Causes

- electrical interference
- incorrect sensor wiring
- damaged sensor cable
- poor grounding

Remedy

1. Inspect crank sensor wiring.
2. Ensure shielded cable is used.
3. Verify proper grounding.
4. Inspect trigger wheel.

Reference

Trigger Setup Manual

DTC 3 – Incorrect Crank TDC Slot

Type: Error

Description

The crank trigger pattern does not match the configured TDC position.

Possible Causes

- incorrect trigger configuration
- incorrect TDC reference
- incorrect trigger wheel pattern

Remedy

1. Verify trigger wheel type.
2. Check TDC reference position.
3. Confirm correct trigger configuration.

Reference

Trigger Setup Manual

DTC 4 – Missing TDC Pulse

Type: Error

Description

The ECU did not detect a valid Top Dead Centre reference pulse.

Possible Causes

- faulty TDC sensor
- wiring fault
- incorrect trigger configuration

Remedy

1. Inspect TDC sensor wiring.
2. Check sensor operation.
3. Verify trigger configuration.

Reference

Trigger Setup Manual

DTC 5 – Missing Home Pulse

Type: Error

Description
The ECU did not detect the expected home or sync signal used for engine synchronisation.
Possible Causes
- faulty cam sensor
- wiring fault
- incorrect trigger setup

Remedy
1. Inspect cam/home sensor wiring.
2. Verify sensor operation.
3. Confirm trigger setup.

Reference
Trigger Setup Manual

DTC 6 – Engine Stopped – No Pulses

Type: Information
Description
The ECU detected that the engine has stopped due to loss of RPM pulses.
Possible Causes
- engine switched off
- engine stall

Remedy
No action required.

DTC 7 – Fuel Pressure Safety Cut-Out

Type: Warning
Description
Fuel pressure dropped below the configured safety limit.
Possible Causes
- fuel pump failure
- blocked fuel filter
- fuel pressure regulator fault
- fuel pressure sensor fault

Remedy
1. Check fuel pressure.
2. Inspect fuel pump and wiring.
3. Inspect fuel pressure regulator.

Reference
Fuel System Manual

DTC 8 – Economy Fuel Cut-Out

Type: Information
Description
The ECU activated the economy fuel cut-out function during deceleration.
Possible Causes
- vehicle decelerating with closed throttle
- fuel cut enabled for fuel economy

Remedy
No action required.

DTC 9 – RPM Limiter Reached

Type: Information
Description
The engine reached the configured maximum RPM limit.
Possible Causes

- engine speed exceeded RPM limit

Remedy
No action required.

DTC 10 – Maximum Boost Limiter Reached

Type: Information
Description
Boost pressure exceeded the configured maximum boost limit.
Possible Causes

- excessive boost pressure
- incorrect boost control setup

Remedy

1. Verify boost control settings.
2. Inspect boost control system.

Reference
Boost Control Manual

DTC 11 – Water Temperature Limiter Reached

Type: Warning
Description
Engine coolant temperature exceeded the configured limit.
Possible Causes

- overheating engine
- cooling system failure
- faulty temperature sensor

Remedy

1. Inspect cooling system.
2. Verify coolant level.
3. Check radiator and fans.

DTC 12 – Launch Limiter Reached

Type: Information
Description
The engine reached the configured launch control RPM limit.
Possible Causes

- launch control activated
- engine speed reached launch limiter

Remedy
No action required.

DTC 13 – Lambda Control Limits Reached

Type: Warning

Description

The lambda control system reached its maximum correction limit while attempting to maintain the target air-fuel ratio.

Possible Causes

- incorrect base fuel map
- faulty lambda sensor
- fuel pressure problem
- intake air leak

Remedy

1. Verify base fuel calibration.
2. Inspect lambda sensor operation.
3. Check fuel pressure and fuel system.

Reference

Fuel Calibration Manual

DTC 14 – Battery Low Voltage Limit Reached

Type: Warning

Description

The ECU supply voltage dropped below the minimum operating limit.

Possible Causes

- weak battery
- faulty alternator
- poor electrical connections
- wiring voltage drop

Remedy

1. Check battery voltage.
2. Inspect power wiring.
3. Verify charging system.

Reference

Electrical Installation Manual

DTC 16 – Timing Retarded

Type: Information

Description

The ECU temporarily retarded ignition timing due to a configured control strategy.

Possible Causes

- temperature protection strategy
- boost control strategy
- knock or safety protection

Remedy

No action required unless the condition occurs frequently.

DTC 17 – Flood Control Injector Cut-Out

Type: Information

Description

Flood control activated due to excessive throttle during engine start.

Possible Causes

- accelerator pedal fully pressed during cranking

Remedy

Release accelerator pedal while starting engine.

DTC 18 – Flat-Shift Activated

Type: Information

Description

Flat-shift mode activated during gear change.

Remedy

No action required.

DTC 19 – Ignition Power Switched Off

Type: Information

Description

The ignition output power stage was switched off.

Possible Causes

- ignition switched off
- safety shutdown activated
- system shutdown event

Remedy

No action required.

DTC 20 – Sponsor Counter Depleted

Type: Warning

Description

The sponsor counter reached its configured limit.

Possible Causes

- sponsor usage limit reached
- feature usage limit reached

Remedy

Contact the system administrator or dealer to reset the counter.

DTC 21 – Anti-Lag Activated

Type: Information

Description

Anti-lag system activated.

Remedy

No action required.

DTC 22 – Hardware Class Does Not Support This Feature

Type: Information

Description

A function was requested that is not supported by the current controller hardware class.

Possible Causes

- configuration enabled feature not available on hardware
- incorrect firmware or configuration

Remedy

Verify hardware compatibility for the selected feature.

DTC 23 – Speed Limiter Reached

Type: Information

Description

Vehicle speed exceeded the configured speed limiter threshold.

Possible Causes

- vehicle reached configured speed limit

Remedy

No action required.

DTC 25 – Coil Overcharge Limit Reached

Type: Warning

Description

The ignition coil charge time exceeded the configured safety limit.

Possible Causes

- incorrect dwell setting
- incompatible ignition coil
- ignition driver overload

Remedy

1. Verify ignition coil dwell settings.
2. Confirm compatible ignition coil type.
3. Inspect ignition driver configuration.

Reference

Ignition Setup Manual

DTC 26 – Test Mode Selected

Type: Information

Description

The ECU is operating in diagnostic or test mode.

Possible Causes

- test mode manually enabled
- diagnostic procedure active

Remedy

Disable test mode when normal operation is required.

DTC 27 – Map Reloaded

Type: Information

Description

The ECU reloaded the active calibration map.

Possible Causes

- Driver selected a different map
- map edited in software
- ECU restarted
- communication reconnected

Remedy

No action required.

DTC 28 – MAP Sensor Error

Type: Error

Description

The manifold pressure sensor signal is invalid.

Possible Causes

- sensor wiring fault
- sensor failure
- vacuum hose disconnected

Remedy

1. Inspect sensor wiring.
2. Check vacuum hose.
3. Replace sensor if necessary.

Reference

Map Sensor Manual

DTC 29 – TPS Sensor Failure

Type: Error

Description

The throttle position sensor signal is invalid.

Possible Causes

- wiring fault
- sensor failure
- incorrect calibration

Remedy

1. Inspect TPS wiring.
2. Recalibrate TPS.
3. Replace sensor if necessary.

Reference

TPS Sensor Manual

DTC 30 – Lambda Sensor Failure

Type: Error

Description

The ECU detected an invalid signal from the lambda sensor.

Possible Causes

- wiring fault
- sensor failure
- incorrect sensor calibration

Remedy

1. Inspect lambda sensor wiring.
2. Verify sensor operation.
3. Replace sensor if necessary.

Reference

Lambda Sensor Manual

DTC 31 – Water Temperature Sensor Failure

Type: Error

Description

The ECU detected an invalid coolant temperature signal.

Possible Causes

- sensor wiring fault
- sensor failure
- incorrect sensor type

Remedy

1. Inspect sensor wiring.
2. Verify correct sensor type.
3. Replace sensor if necessary.

Reference

Water Temperature Sensor Manual

DTC 34 – Fuel Pressure Sensor Failure

Type: Error

Description

The ECU detected an invalid fuel pressure signal.

Possible Causes

- wiring fault
- sensor failure
- sensor calibration error

Remedy

1. Inspect wiring.
2. Verify fuel pressure sensor operation.

Reference

Fuel Pressure Sensor Manual

DTC 36 – Dual Injector Activated

Type: Information

Description

The ECU activated the secondary injector system.

Possible Causes

- high load condition
- dual injector strategy enabled

Remedy

No action required.

Reference

Fuel Injection Setup Manual

DTC 37 – Pedal Sensor Failure

Type: Error

Description

The ECU detected an invalid accelerator pedal signal.

Possible Causes

- pedal sensor fault
- wiring fault
- calibration error

Remedy

1. Inspect pedal sensor wiring.
2. Verify calibration.
3. Replace sensor if required.

Reference

Pedal TPS Sensor Manual

DTC 38 – MAP Sensor Overflow

Type: Error

Description

The ECU detected a manifold pressure signal that exceeds the valid measurement range of the MAP sensor.

Possible Causes

- boost pressure exceeding sensor range
- incorrect MAP sensor selected in software
- wiring fault causing incorrect voltage reading
- sensor failure

Remedy

1. Verify correct MAP sensor type is selected in the ECU setup.
2. Check wiring to the MAP sensor.
3. Inspect boost pressure and vacuum connections.
4. Replace the MAP sensor if necessary.

Reference

Map Sensor Manual

DTC 39 – Ignition Switched Off

Type: Warning

Description

The ignition input signal to the controller was switched off.

Possible Causes

- ignition key switched off
- ignition wiring interruption
- faulty ignition switch
- power supply interruption

Remedy

1. Verify ignition switch operation.
2. Inspect ignition supply wiring to the ECU.
3. Check battery and power connections.

Reference

Electrical Installation Manual

DTC 40 – Battery Power Switched Off

Type: Warning

Description

Battery power to the controller was removed or interrupted.

Possible Causes

- battery disconnected
- loose battery terminal
- main power supply wiring fault
- blown fuse

Remedy

1. Inspect battery terminals and connections.
2. Check ECU power wiring and fuse.
3. Verify stable power supply to the controller.

Reference

Electrical Installation Manual

Activation Diagnostics

DTC 221 – Serial Number 1 Failure

Type: Error

Description

The controller detected an invalid or corrupted Serial Number 1 value.

Possible Causes

- internal memory corruption
- incorrect firmware loaded
- hardware identification mismatch

Remedy

1. Reload correct firmware.
2. Verify correct product firmware is used.
3. Contact Spitronics technical support if the problem persists.

DTC 222 – Serial Number 2 Failure

Type: Error

Description

The controller detected an invalid Serial Number 2 value stored in internal memory.

Possible Causes

- firmware mismatch
- corrupted internal memory

Remedy

1. Reload correct firmware.
2. Restart the controller.
3. Contact technical support if the problem persists.

DTC 223 – Activation Number 1 Failure

Type: Error

Description

The controller detected an invalid activation number.

Possible Causes

- incorrect activation key
- corrupted activation data
- firmware mismatch

Remedy

1. Verify activation key.
2. Reload correct firmware if necessary.

DTC 224 – Activation Number 2 Failure

Type: Error

Description

Activation number validation failed during system startup.

Possible Causes

- invalid activation key
- corrupted activation memory

Remedy

1. Verify product activation data.
2. Reload firmware if required.

DTC 225 – Activation Number 3 Failure

Type: Error

Description

The controller failed to validate the third activation parameter.

Possible Causes

- incorrect firmware
- activation data corruption

Remedy

1. Verify activation configuration.
2. Reload firmware if necessary.

Communication Diagnostics

DTC 231 – Receive Data Table Error

Type: Error

Description

An error occurred while receiving a data table from the communication interface.

Possible Causes

- corrupted communication data
- unstable communication link
- software communication interruption

Remedy

1. Restart communication with the controller.
2. Reload calibration data if necessary.

DTC 232 – Receive Single Byte Error

Type: Error

Description

The controller detected an error while receiving a single byte of data.

Possible Causes

- communication noise
- unstable connection
- corrupted data packet

Remedy

1. Restart software communication.
2. Check communication cable or interface.

DTC 233 – Receive Multiple Byte Error

Type: Error

Description

An error occurred while receiving a multi-byte data packet.

Possible Causes

- communication interruption
- corrupted data transmission

Remedy

1. Restart communication session.
2. Reload data if required.

DTC 241 – Transmit ID Error

Type: Error

Description

The controller detected an error while transmitting an identification message.

Possible Causes

- communication protocol mismatch
- corrupted transmission data

Remedy

1. Restart communication with the controller.

DTC 242 – Transmit Trigger Error

Type: Error

Description

An error occurred while transmitting a trigger message.

Possible Causes

- communication timing error
- protocol mismatch

Remedy

Restart communication session.

DTC 243 – Transmit Data Table Error

Type: Error

Description

The controller encountered an error while transmitting calibration table data.

Possible Causes

- corrupted data table
- communication interruption

Remedy

Reload calibration map.

DTC 244 – Transmit Real Time Error

Type: Error

Description

The controller encountered an error while transmitting real-time data.

Possible Causes

- unstable communication connection
- software interruption

Remedy

Restart communication with the ECU.

DTC 245 – Transmit Limits Error

Type: Error

Description

The controller detected an error while transmitting system limits or configuration data.

Possible Causes

- corrupted configuration data
- communication interruption

Remedy

Reload calibration data.

Firmware Diagnostics

DTC 250 – Start Code

Type: Information

Description

Indicates that the controller firmware has started successfully.

Remedy

No action required.

DTC 251 – Hardware Class Below Firmware Class

Type: Error

Description

The firmware loaded requires a hardware class higher than the current controller hardware.

Possible Causes

- incorrect firmware version loaded

Remedy

1. Load firmware compatible with the controller hardware.

DTC 252 – Incorrect Firmware Type Loaded

Type: Error

Description

The firmware type loaded does not match the controller product type.

Possible Causes

- incorrect firmware selected

Remedy

1. Load the correct firmware for the controller.

DTC 253 – Code Space Is Erased

Type: Error

Description

The controller firmware code space is empty or corrupted.

Possible Causes

- incomplete firmware programming
- memory corruption

Remedy

1. Reload firmware.

DTC 254 – Incorrect Firmware Number Loaded

Type: Error

Description

The firmware number does not match the controller requirements.

Possible Causes

- incorrect firmware package

Remedy

1. Install correct firmware version.