

# Dynagen TG410 DTC Display and Clear | Jan 24, 2023

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## Table of Contents

Introduction and Background .....	2
Clear Active Fault Procedure.....	4
View Stored Fault Procedure .....	4
Example of Clearing Fault with Engine Shutdown Fault Action.....	5
Change Log.....	8

## Introduction and Background

The purpose of this document is to detail the procedure and requirements for clearing ECU fault codes with the Dynagen TG410 control panel. ECU faults are also referred to as DTCs, Diagnostic Trouble Codes. The figures and language used in this manual used an engine package with the following accessories:

- Dynagen TG410 control panel with **firmware v1.94.02 or later**
- Electronic engine with SECM70 ECU (does not need to be in an EPA certified configuration). ECU should have **v43.08 or later** software installed.
  - o This is due to CAN message transmission rate issue in v43.06. Messages EEC1, EEC2 and EEC3 were being sent too quickly in v43.06 software. In TG410 firmware v1.92.02 and later, the ability to read message EEC3 was added (the ability to read messages EEC1 and EEC2 already existing). Since they are being sent by the ECU too quickly, it overflows a memory buffer in the TG410 and starts displaying “n/a” intermittently for CAN parameters like Coolant Temperature and Oil Pressure on the front panel display.

Faults can be issued by both the ECU and TG410. A fault issued by the ECU will always have an SPN (Suspect Parameter Number), FMI (Failure Mode Indicator) and OCC (Occurance Count) displayed. If the notification was issued by the TG410, a simple description of the fault will be displayed.

An example of an active ECU fault with key ON, engine OFF is shown in *Figure 1*:

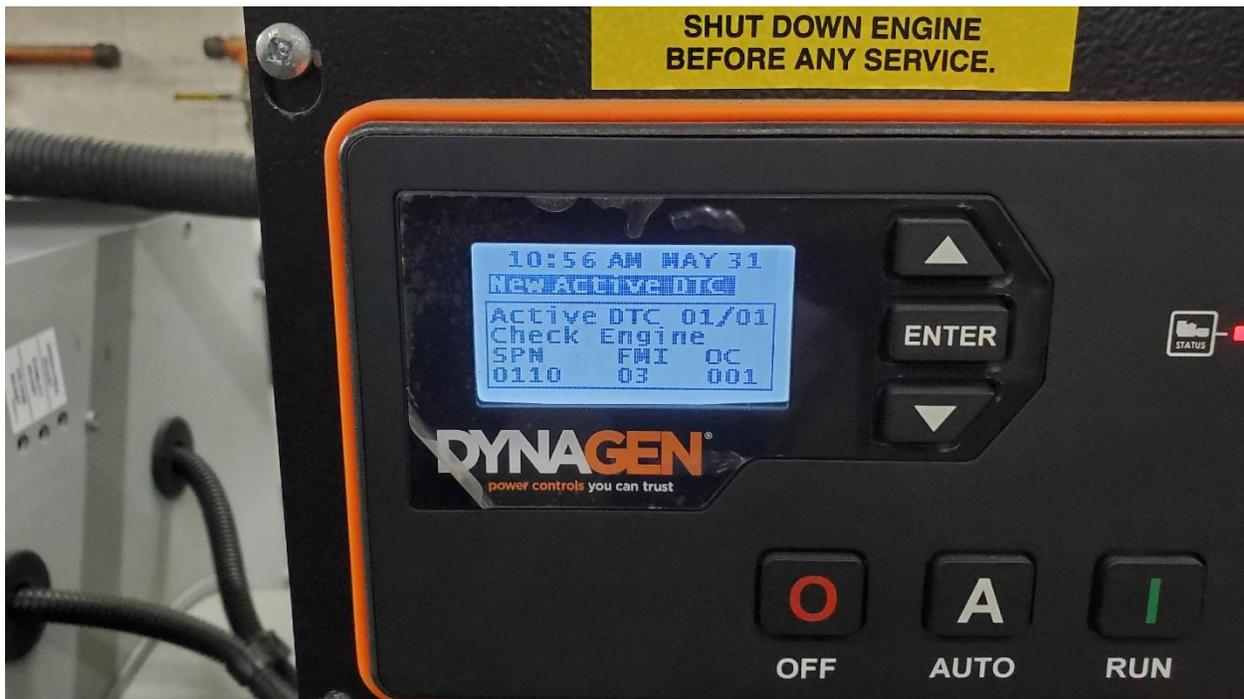


Figure 1. TG410 display with key ON, engine OFF

An example of a fault issued by the TG410 is a shutdown message “Low Oil Level” accompanied by a red LED status indicator.

It is also important to note the difference between an “Active” and “Stored” ECU fault and the TG410’s behavior in response to each:

### **ACTIVE ECU Fault**

An active ECU fault is a fault that has met the malfunction criteria set in the ECU and has not been cleared or met the criteria for the fault to be considered resolved. In the case of the PG+ fueling system, most faults will remain active until a complete Key ON, Engine start and run and Key OFF cycle is completed without violating the fault’s malfunction criteria.

When an Active ECU fault is present, it will not be possible to hide the fault and view CAN parameters such as ECT (Engine Coolant Temperature) and Oil Pressure. To view these parameters, the active fault must be cleared.

### **STORED ECU Fault**

A stored ECU fault is a fault that was previously active, but has since met the criteria to be considered resolved. As mentioned above in the case of the PG+ fueling system, a fault will become stored when a complete Key ON, Engine start and run and Key OFF cycle is completed without violating the fault’s malfunction criteria.

When a Stored ECU fault is present, it will not be displayed on the front panel and in order to view the Up and Down arrows must be pressed at the same time. See section *View Stored Fault Procedure* for more information.

**IMPORTANT:** The action of clearing an Active ECU fault completely clears the fault from the ECU’s fault log. It does not set the fault from Active to Stored which would leave the fault in the ECU’s fault log and effectively “hide” it from the front panel display. If the fault is cleared from the ECU’s fault log, it will no longer be able to be viewed with the diagnostic software, Toolkit. Performing this action does not clear any faults that are Stored in the ECU’s fault log.

For more information about J1939 messaging on the Dynagen products, Cattron has available a J1939 reference manual at the following link:

<https://www.cattron.com/media/h1bjbbp2/dynagen-tough-series-j1939-reference-manual-en.pdf>

## Clear Active Fault Procedure

1. Start with key ON, engine OFF. This is accomplished by hitting the Auto button and waiting for approximately 5 seconds. When the ECU and fueling system is powered, an audible click from the relays will be heard.
2. Clear faults by pressing and holding the Up and Down arrow buttons simultaneously for approximately 6 seconds. A message “Clean Active DTC” will be displayed. See *Figure 2* below.



*Figure 2. Front panel display during Clear Active Faults action*

3. Complete a key cycle of the control panel. Allowing the ECU to power down completely is not required.
4. Restart engine. If the issue was previously resolved, the fault won't reappear and the engine will continue to run.

## View Stored Fault Procedure

1. Start with key ON, engine OFF. This is accomplished by hitting the Auto button and waiting for approximately 5 seconds. When the ECU and fueling system is powered, an audible click from the relays will be heard.
2. Similar to the Clear Fault procedure, the up and down arrows will be used. However, instead of pressure and holding the buttons simultaneously, press both buttons once simultaneously.

## Example of Clearing Fault with Engine Shutdown Fault Action

The following is an example of attempting to clear a fault with an “Engine Shutdown” fault action associated with it. The fault being used is SPN 110 FMI 03.

1. The engine is running normally and fault 110.03 is set (unplugging the ECT sensor connector). The front panel display will look as shown in *Figure 3* after the X/Y time programmed in the ECU:



Figure 3. Example: DTC 110.03 fault is set while the engine is running normally

2. Since the fault was issued by the ECU, the ECU will manage the engine shutdown. When the engine shuts down, the TG410 will still be in Manual Run mode with generator faults still active. As a result, the trigger for either “Under Voltage” or “Under Frequency” will be set and the associated message will be displayed. See *Figure 4* as an example: **NOTE:** the fault that caused the engine shutdown can only be viewed after completing a TG410 key cycle and putting it back into key ON, engine OFF mode.



Figure 4. Front panel display after engine has shutdown by ECU shutdown

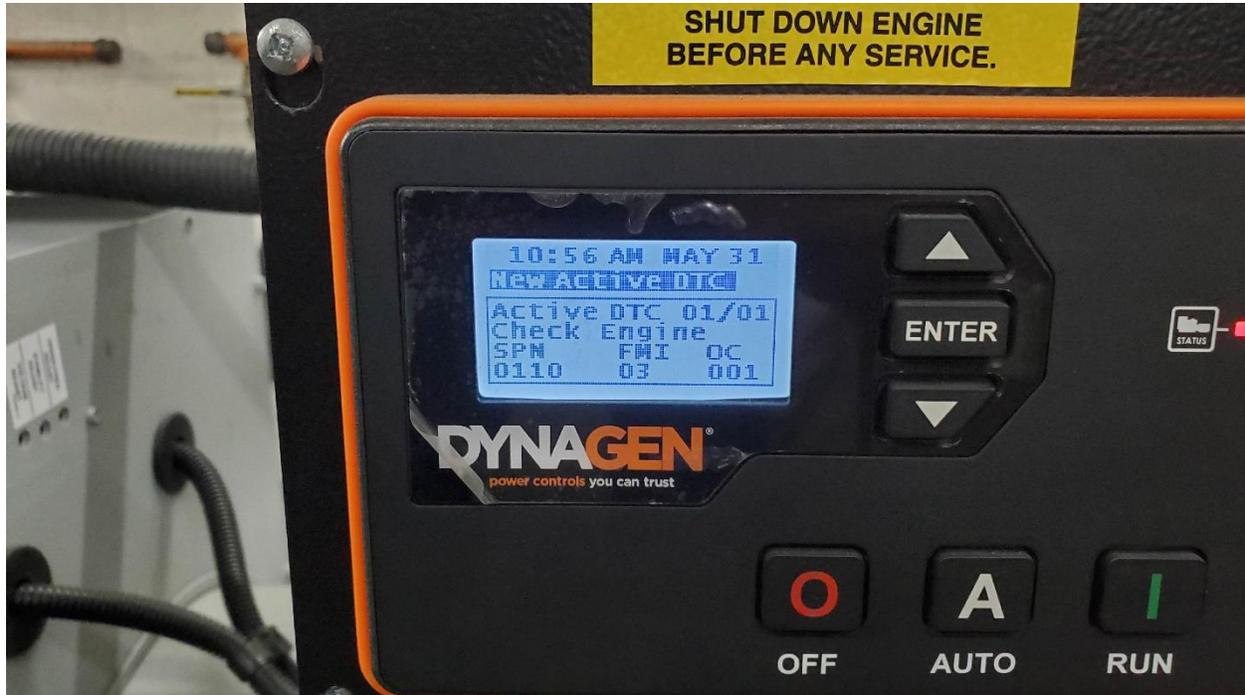
3. Follow the on-screen instructions and hit the “OFF” button. In this example, the fault will go uncorrected and therefore will stay Active. The engine is able to be restarted. However, it will shut down again depending on the X/Y fault time programmed for the fault. In the case of fault 110.03, this is approximately 12.5 seconds. With the current warmup time setting of 15s in the TG410, the display will look like Figure 5. Note the Status LED is illuminated RED and the TG410 is still in Warm-up mode.



Figure 5. Engine restarted and shut down again by ECU; root cause of fault not corrected

## Dynagen TG410 DTC Display and Clear

4. Hit "OFF" to exit, correct the root cause of the fault (reconnect ECT sensor connector in this example) and hit the "AUTO" button to put the engine in key ON, engine OFF mode. At this point, the fault is still active as the PG+ system requires the engine run start and run without triggering the fault. The screen will appear as shown in *Figure 6*.



*Figure 6. Front panel display with active fault and key ON, engine OFF*

5. To clear the fault (and be able to view CAN parameters such as ECT and Oil Pressure), follow the steps in the Procedure section. The engine will then be able to be restarted and ran normally.

Change Log

Revision	Date	Description of Change(s)	Approval
A	Jan 24, 2023	Initial Release	AJV