

How to read your FI Light

By: Sdewolfe

The DFI used on the 650R features a FI light on the Speedometer face. This light has three modes of operation; User Mode, Diagnostic Mode 1, Diagnostic Mode 2.

USER MODE

At KEY ON the ECU completes a self test and then checks sensors and actuators. During this time the FI light will be lit. While the FI light is ON you will hear the fuel pump run and the sub-throttle servos move. The tachometer needle swings full scale and back. At the end of the testing (about 3 seconds), the oil pressure light will come on indicating a normal KEY ON, ENGINE OFF event.

If the ECU detects any actuator feedback or sensor input OUT OF RANGE, the FI light will be set ON. It should be noted that the FI light can be set to a false ON state by radio interference, though in practice it would take a very strong local signal to do so. The ECU continues to monitor all sensors as long as the key is ON. If any signal is detected as OUT OF RANGE, the FI light is set ON. The FI light will remain lit as long as the defect is present.

One of two things will happen when the FI light is ON; either the ECU will go into LIMP mode or the ECU will prevent fuel injection, ignition, and/or starter circuit operation until the fault is cleared. The severity of the fault will determine which of the two will happen. For instance, if the ECU cannot detect crank position, it will prevent engine operation altogether. On the other hand, if the ECU cannot determine Intake Air Temperature, it will initiate LIMP mode (Kawasaki calls it FAIL-SAFE mode), assume an IAT temperature of 40C (104F), and allow the engine to operate at that parameter.

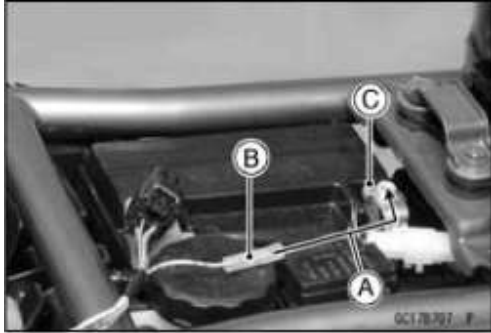
The FI light will go OFF after repair or if the sensor comes back into range for any reason. The ECU will resume normal operation. However, the event is memorized.

The FI light will blink continuously to indicate the vehicle-down sensor is active. When detected, the ECU will shut-off the fuel pump, fuel injectors, starter and ignition. The FI light will remain flashing and the motorcycle will not start until the vehicle-down sensor goes inactive and the ECU is reset by cycling the key OFF.

ON at KEY ON, then OFF
OFF = normal operation
ON = fault detected
BLINK = vehicle down

DIAGNOSTIC MODE 1

Under the seat, along the right sub-frame rail is an orange/black wire with a bullet connector. This is the self-diagnosis terminal. In order to read out the CURRENT Service Codes, ground that wire with the KEY ON. The FI light will begin to flash codes. There will be a 5 second delay and then the codes begin. The first flash is always a LONG (1 sec) followed by either LONG or SHORT (0.5 sec) flashes. LONG flashes indicate TENS and short flashes ONES. One LONG followed by two SHORT = 12. Two LONG, one SHORT = 21. Three LONG, two short = 32, etc. There is an interval of 1.5 seconds between TENS and ONES. There is a 3 second interval between codes.



- A – Shorting Wire
- B - Orange/Black Wire with a Bullet Connector
- C – Battery Negative Terminal

NOTES

For multiple codes, the codes will readout from lowest numerical value to highest. A low battery will cause the light to flash slowly or not at all.

DIAGNOSTIC MODE 2

To recover codes set in memory; KEY ON, touch the self-diagnosis terminal rapidly to ground more than 5 times within 2 seconds. The lead must remain grounded (after 5 groundings) for the remainder of the diagnostic session. The codes will readout exactly as in MODE 1.

CODE Malfunction

- 11_____ Main throttle sensor
- 12_____ Inlet air pressure sensor
- 13_____ Inlet air temperature sensor
- 14_____ Water temperature sensor
- 21_____ Crankshaft sensor
- 24 & 25___ Speed sensor (24 then 25, repeatedly)
- 31_____ Vehicle-down sensor
- 32_____ Subthrottle sensor
- 33_____ Oxygen sensor inactive (Europe)
- 51_____ Ignition Coil #1
- 52_____ Ignition Coil #2
- 56_____ Radiator Fan Relay
- 62_____ Subthrottle valve actuator (sensor in range but not responding)
- 64_____ Air switching valve
- 67_____ Oxygen sensor heater (Europe)
- 94_____ Oxygen sensor out-of-range

To clear codes from the ECU, enter MODE 2, pull the clutch in for more than 5 seconds.

Things the ECU cannot detect:

- F1 light
- Fuel Pump
- Fuel Pump Relay
- DFI Main Relay
- ECU Power and Ground
- Fuel Injectors