

FuelTech



OWNER'S MANUAL

WIRING HARNESS

4 CYLINDER

1. Index

2.	Presentation	5
3.	Warnings and Warranty Terms	6
4.	Overview	7
	4.1 FT450/FT550 - 4 Cylinder Universal Harness.....	7
	4.2 FT550 Expansion Harness	8
5.	Diagrams	10
	5.1 FT450/FT550 4 Cylinder - A Connector	10
	5.2 FT550 4 Cylinder - B Connector	11
	5.3 Harness Components.....	12
6.	Harness Connectors.....	13
	6.1 Relay and Fuses.....	13
	6.2 CAN Bus Connector.....	13
	6.3 Extra Connections	13
	6.4 TPS	14
	6.5 H2O and Air Temperature	14
	6.6 Oil, Fuel and Wastegate Pressure.....	14
	6.7 Injectors	14
	6.8 WB-O2 Nano Connector	14
	6.9 Coil Connector	14
	6.10 GEARSHIFT Sensor	14
	6.11 Crank Hall/Crank VR.....	15
	6.12 Cam Hall/Cam VR	15
7.	Standard Sensors	16
	7.1 Fuel and Oil Pressure.....	16
	7.2 Intake Air Temperature	16
	7.3 Engine Temperature.....	16
8.	Peak and Hold - External Injector Driver	17
9.	Meters and Adapter Wires	17
	9.1 FuelTech WB-O2 Nano.....	17
	9.2 Bosch LSU 4.2 Wideband O2 Sensor.....	17

4 Cylinder Wiring Harness

- 10. Generating a FuelTech base map 18
 - 10.1 Outputs configuration:..... 22
 - 10.2 Inputs configuration:..... 24
- 11. Troubleshooting 25
- 12. FuelTech Latest Manuals and Software..... 25

2. Presentation

The Fueltech FT450/FT550 4 Cylinder universal harness was developed to be installed on 4 cylinder engines.

This harness has all the components needed to make a plug and play installation on an engine with a standard setup.

The insulation and connectors are moisture, heat and oil resistant.

Specifications

- 4 injectors outputs (FT450) / 8 injectors outputs (FT550)
- FuelTech Peak and Hold external drivers ready
- FuelTech WB-Nano O2 ready
- GM Style intake air temperature sensor ready
- GM Style engine temperature sensor ready
- 2 pressure sensor ready for fuel, oil / another 0-5V sensor
- Extra output connector for generic use
- Crank and Cam connectors (hall and VR options included)
- Relay to injectors and coils driven by negative through blue #6 - **It's mandatory to configure blue #6 as a fuel pump or RPM activated output.**

4 Cylinder Wiring Harness

3. Warnings and Warranty Terms

The use of this equipment implies in total accordance with the terms described in this manual and exempts the manufacturer from any responsibility regarding to product misuse.

Read all the information in this manual before starting the product installation.

This product must be installed and tuned by specialized auto shops and/or personnel with experience in engine tuning.

Before starting any electrical installation, disconnect the battery.

The inobservance of any of the warnings or precautions described in this manual might cause engine damage and lead to the invalidation of this products warranty. The improper adjustment of the product might cause engine damage.

This product does not have a certification for the use on aircrafts or any flying vehicles, as it was not designed for such use or purpose. In some countries where an annual inspection of vehicles is enforced, no modification in the OEM ECU is permitted. Be informed about local laws and regulations prior to the product installation.

Limited Warranty

All products manufactured by FUELTECH are warranted to be free from defects in material and workmanship for one year following the date of original purchase. Warranty claim must be made by original owner with proof of purchase from an authorized reseller. This

warranty does not include sensors or other products that FUELTECH carries but did not manufacture. If a product is found defective, such products will, at FUELTECH's option, be replaced or repaired at no cost. All products alleged by Purchaser to be defective must be returned to FUELTECH, postage prepaid, within the one year warranty period.

This limited warranty does not cover labor or other costs or expenses incidental to the repair and/or replacement of products or parts. This limited warranty does not apply to any product which has been subject to misuse, mishandling, misapplication, neglect (including but not limited to improper maintenance), accident, improper installation, tampered seal, modification (including but not limited to use of unauthorized parts or attachments), or adjustment or repair performed by anyone other than FUELTECH.

The parties hereto expressly agree that the purchaser's sole and exclusive remedy against FUELTECH shall be for the repair or replacement of the defective product as provided in this limited warranty. This exclusive remedy shall not be deemed to have failed of its essential purpose so long as FUELTECH is willing and able to repair or replace defective goods.

FUELTECH reserves the right to request additional information such as, but not limited to, tune up and log files in order to evaluate a claim.

Seal violation voids warranty and renders loss of access to update releases.

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4. Overview

The FuelTech FT450/FT550 4 Cylinder universal harness is a plug and play wiring solution to be used with a FuelTech FT450/FT550 ECU. It has all the connectors, relays and fuses directly built-in and can be used with nearly any application with 4 injectors and 4 coils.

4.1 FT450/FT550 - 4 Cylinder Universal Harness

This harness was designed for systems with up to 4 injectors (FT450) or 8 injectors (FT550), 4 smart coils and a FuelTech Wideband Nano O2 with Bosch LSU 4.2 sensor, setup to run sequential (using FT550 expansion harness) semi-sequential or multipoint injection and wasted spark.

It is already wired for FuelTech Peak and Hold drivers when using 4 low impedance injectors.

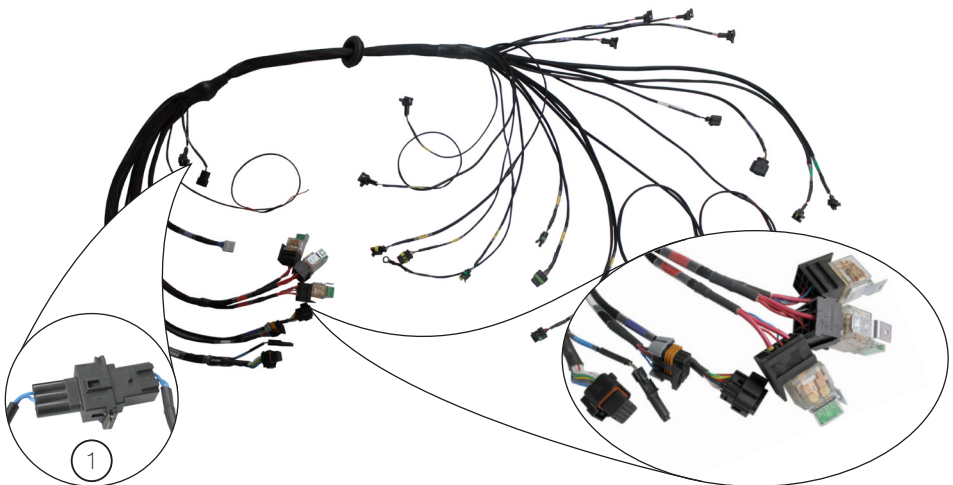
When using high impedance injectors, a Peak and Hold driver is not needed and in this case, only a bypass connector (jumper wires sold separately) is required.

There are 3 separate relays to power the whole system, separating the injectors and coils from the electronics.



NOTE

For the correct operation of the harness, FT550 EXPANSION M and FT550 EXPANSION F connectors must be connected to each other. If using the FT550 expansion harness, plug the male connector from the main harness to the female connector on the expansion harness. In this case the female connector of this main harness remains disconnected.



4 Cylinder Wiring Harness

4.2 FT550 Expansion Harness

The FT550 Expansion harness makes a FT550 installation faster and easier and it must be used along with the FT450 4 cylinder main harness. In the main harness only the FT450/FT550 A connector is wired, while in the FT550 Expansion harness has A and B connectors. The B connector adds 4 more Injectors connectors wired sequentially, Extra Inputs, Extra Outputs connectors, CAN B port and FuelTech Shift Knob with Strain Gauge connector.

This will connect the main harness and the expansion harness and will have 8 injectors wired separately, allowing to control them sequentially. All the secondary injectors are wired straight from the ECU, so only high impedance injectors can be used.

If your project has low impedance injectors in the second bank and high impedance injectors in the primary bank, follow this procedure:

- 1- Connect the Peak and Hold module in the main harness.
- 2- Connectors 1A, 2A, 3A and 4A (located in the main harness) must be connected to the secondary bank injectors.
- 3- Connectors 1B, 2B, 3B, and 4B (located in the expansion harness) must be connected to the primary bank injectors.
- 4- In the FTManager software, go to Engine Settings menu, then Fuel injection and select:
 - Set Primary as your settings allow and select 4 outputs.
 - Set Secondary as your settings allow and select 4 outputs.
- 5- Using the FTManager software, configure the outputs as following:
 - Blue 1: Fuel injection cyl.#01 – Secondary
 - Blue 2: Fuel injection cyl.#02 – Secondary
 - Blue 3: Fuel injection cyl.#03 – Secondary
 - Blue 4: Fuel injection cyl.#04 – Secondary
 - Blue 9: Fuel injection cyl.#01 – Primary
 - Blue 10: Fuel injection cyl.#02 – Primary
 - Blue 11: Fuel injection cyl.#03 – Primary
 - Blue 12: Fuel injection cyl.#04 – Primary

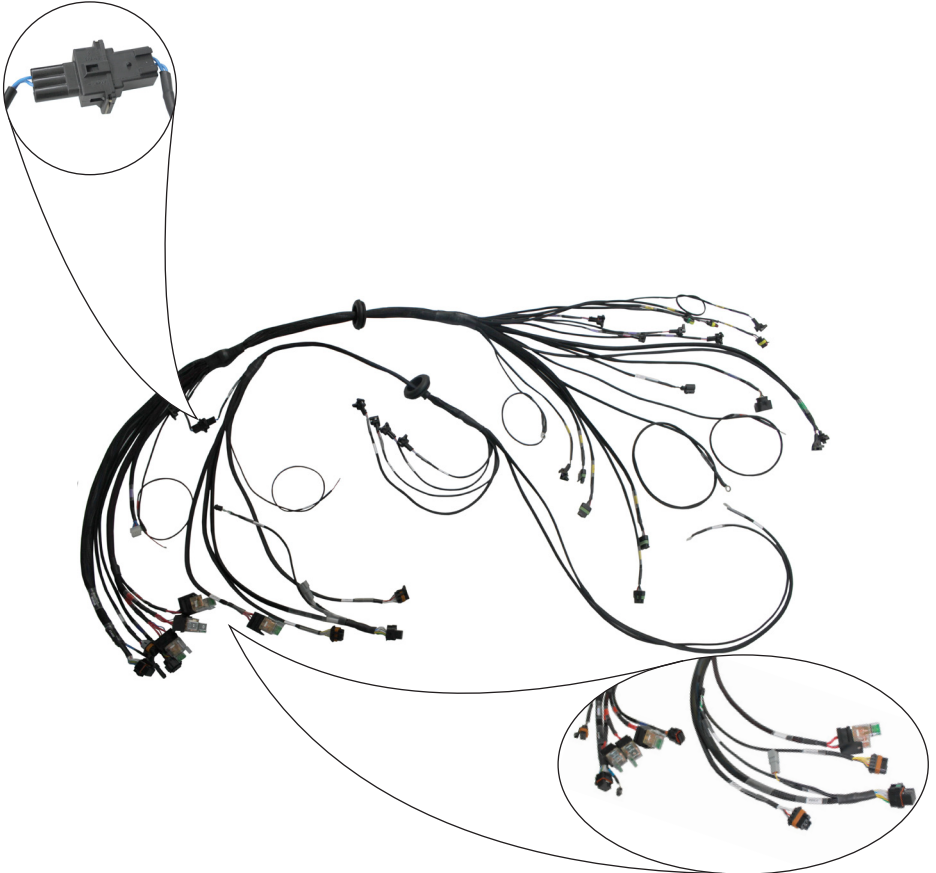
4 Cylinder Wiring Harness



NOTE

In order to change injectors outputs settings, is required to have Fuel Injection Pins Assignment mode as Manual. To set it this way, go to Engine Setting menu, then Advanced map options.

Doing this procedure, the harness and the ECU will be ready to run 4 low impedance injectors.



4 Cylinder Wiring Harness

5. Diagrams

5.1 FT450/FT550 4 Cylinder - A Connector

FT450	Color	Pin	Connector	Function
#1	Blue #1	#4	Peak and Hold	Injector output #1 - Fuel Primary
		#1	FT550 Expansion F	Injector output #4 - Fuel Primary
#2	Blue #2	#2	Peak and Hold	Injector output #2 - Fuel Primary
		#2	FT550 Expansion F	Injector output #3 - Fuel Primary
#3	Blue #3	C	Extra	Auxiliary Output
#4	Blue #4	D	Extra	Auxiliary Output
#5	Blue #5	E	Extra	Auxiliary Output
#6	Blue #6	F	Extra	Auxiliary Output - Fuel Pump and relays
#7	Black/White	-	(-) BAT ground	Chassis ground
#8	Gray #1	A / 4	Coil 1 / FT550 Expansion F	Ignition output #1
#9	Gray #2	A / 3	Coil 2 / FT550 Expansion F	Ignition output #2
#10	Gray #3	A	Extra	Auxiliary Output
#11	Gray #4	B	Extra	Auxiliary Output
#12	Black	-	(-) BAT signal	Ground
#13	Red	-	87 main relay	12V input from relay
#14	Green/Red		TPS / Oil pressure / Extra / Fuel pressure	5V output sensors
#15	Blue/Yellow	#3	CAN Female	CAN A (LOW)
		#12	WB-O2 NANO	
#16	White/Red	#4	CAN Female	CAN A (HIGH)
		#6	WB-O2 NANO	
#17	White	-	Cam Hall / Cam VR	Cam Sync signal input
#18	White	-	CRANK VR	RPM reference input
#19	Red	-	CRANK VR / Hall	RPM signal input
#20	White #1	K	Extra	White input #1 (wastegate pressure)
#21	White #2	-	2-STEP	White input #2 (2-Step)
#22	White #3	#3	TPS	White input #3 (TPS)
#23	White #4	#2	Oil pressure	White input #4 (Oil pressure)
#24	White #5	#1	H ₂ O temperature	White input #5 (H ₂ O temperature)
#25	White #6	#2	Fuel pressure	White input #6 (Fuel pressure)
#26	White #7	#1	Air temperature	White input #7 (Air temperature)

5.2 FT550 4 Cylinder - B Connector

FT550	Wire color	Pin	Connector	Function
#1	Black/White	-	(-) BAT ground	Chassis ground
#2	Black/White	-	(-) BAT ground	Chassis ground
#3	Blue/Yellow	#1	CAN Female	CAN_B (LOW)
#4	White/Red	#2	CAN Female	CAN_B (HIGH)
#5	White #8	#1	Extra	Auxiliary Input #8
#6	White #9	#2	Extra	Auxiliary Input #9
#7	White #10	#3	Extra	Auxiliary Input #10
#8	Blue #7	#2	FT550 Expansion F	Injector output #3 - Fuel Primary
#9	Blue #8	#1	FT550 Expansion F	Injector output #4 - Fuel Primary
#10	Gray #5	E	FT550 Expansion F	Ignition output #3
#11	Gray #6	F	FT550 Expansion F	Ignition output #4
#12	White #11	D	Extra	Auxiliary Input #11
#13	White #12	E	Extra	Auxiliary Input #12
#14	Blue #9	#3	1B	Injector output #1 - Fuel Secondary
#15	Blue #10	#2	2B	Injector output #2 - Fuel Secondary
#16	Gray #7	G	Extra	Gray Output #7
#17	Gray #8	H	Extra	Gray Output #8
#18	White #13	#2	GEAR	Auxiliary Input #13
#19	White #14	#3	GEAR	Auxiliary Input #14
#20	Blue #11	#2	3B	Injector output #3 - Fuel Secondary
#21	Blue #12	#2	4B	Injector output #4 - Fuel Secondary
#22	Yellow #1	A	Extra	Yellow Output #1
#23	Yellow #2	B	Extra	Yellow Output #2
#24	Yellow #3	C	Extra	Yellow Output #3
#25	Yellow #4	D	Extra	Yellow Output #4
#26	Green/Black	#1	GEAR	Sensors Ground
		#4	GEAR	

4 Cylinder Wiring Harness

5.3 Harness Components

- **FuelTech FT450/FT550 A connector:** Direct connection to FT450 or FT550.
- **FuelTech Peak and Hold:** This is the driver needed to fire low impedance injectors. When the system uses high impedance injectors, jumper wires are required. If a Peak and Hold or the jumper wires are not being used, the injectors will not fire. PN - jumper - 2001000071
- **FuelTech Wideband Nano O2:** This connector goes to a FuelTech Wideband Nano O2 module, it's capable of reading the Bosch O2 sensor and send the information to log in the ECU.
- **3x 40A Relay:** The system has 3 relays to power everything. The Main Relay powers the ECU, Wideband Nano O2, Peak and Hold drivers, sensors and extra connector. The Injector Relay powers only the primary injectors. And the Coils Relay supplies power to the coils.
- **+12V Switched wire:** This wire goes to the ignition key and is responsible for powering the relays.
- **Battery ground and battery positive:** It is the system power supply and must be connected exactly as the following: Battery (+) goes directly to the battery's positive or kill switch. Battery (-) MUST GO ONLY on the battery's negative terminal
- **CAN A Connector:** CAN A can operate FTCAN 1.0, FTCAN 2.0 or CAN OEM. Both protocols work with any FuelTech module that communicates over CAN bus and are able to broadcast data for external data loggers or dash.
- **CAN B Connector:** Deutsch connector to use a second CAN port. Allows to use a second CAN protocol.
- **Extra Connector:** The extra connector has 4 blue outputs, 2 gray outputs, 5V for sensors 1 white input, 12v and ground.
- **Throttle position sensor:** The TPS measures the throttle position. The harness has a 3-way Weather Pack connector and almost any 0-5V TPS can be used.
- **Fuel pressure sensor:** This input can be used to read fuel pressure using a FuelTech PS sensor or SSI P51 Packard sensor.
- **Oil pressure sensor:** This input can be used to read oil pressure using a FuelTech PS sensor or SSI P51 Packard sensor.
- **Crank trigger sensor (Hall effect or variable reluctance):** Wires are unterminated and ready to receive a VR or Hall effect sensor
- **Cam sync sensor (Hall effect or variable reluctance):** Wires are unterminated and ready to receive a VR or Hall effect sensor
- **Engine temperature sensor:** Ready for GM style CLT sensor.
- **Intake air temperature sensor:** Ready for GM style IAT sensor.
- **Bosch wideband O2 sensors:** Designed for Bosch LSU 4.2 O2 sensor.
- **4x (FT450) / 8x (FT550) fuel Injector outputs:** 4/8 injector outputs (EV1 connector) which allows semi-sequential or multipoint fuel injection and individual fuel cylinder trim.
- **2-step wire:** White input number 2, can be used on a 2-step button or something similar.
- **GEARSHIFT Connector:** Dedicated connector to use FuelTech Shift Knob or FuelTech Shifter Handle

6. Harness Connectors

FT450/FT550 - 4 Cylinder - EXTRA connector

Pin	Color	Function
A	Gray #3	Gray output #3 - Free
B	Gray #4	Gray output #4 - Free
C	Blue #3	Blue output #3 - Free
D	Blue #4	Blue output #4 - Free
E	Blue #5	Blue output #5 - Free
F	Blue #6	Fuel pump / relays
G	Red	12V
H	Black	Ground
J	Green/Red	5V output sensors
K	White #1	Wastegate pressure

FT550 - 4 Cylinder - EXTRA INPUTS Connector

Pin	Color	Function
A	White #8	White input #8 - Free
B	White #9	White input #9 - Free
C	White #10	White input #10 - Free
D	White #11	White input #11 - Free
E	White #12	White input #12 - Free
F	-	-
G	Red	12V
H	Black	Ground

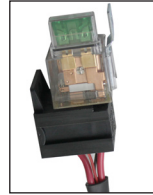
FT550 - 4 Cylinder - EXTRA OUTPUT Connector

Pin	Color	Function
A	Yellow #1	Yellow output #1 - Free
B	Yellow #2	Yellow output #2 - Free
C	Yellow #3	Yellow output #3 - Free
D	Yellow #4	Yellow output #4 - Free
G	Gray #7	Gray output #7 - Free
H	Gray #8	Gray output #8 - Free

6.1 Relay and Fuses

All relays available in the Harness are automotive type with a 40A capacity, integrated 40A fuse and an ON status LED.

There is a main relay for the FuelTech units such as ECU, O2 conditioner and sensors, 1 relay is for the fuel injectors and other relay is for the coils.



6.2 CAN Bus Connector

The harness has a CAN bus connection. CAN B Connector: Deutsch connector to use a second CAN port. Allows to use a second CAN protocol.



6.3 Extra Connections

Input: The white input can be used to read any 0 to 5V analog sensor and the connector also has a 5V output for sensors (green with red stripe) and a 12V output from the main relay.

Outputs: The gray, blue and yellow outputs can be used for almost any kind of purpose, activating solenoids (some need relays), loads and general output.

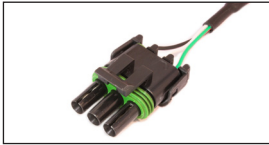


4 Cylinder Wiring Harness

6.4 TPS

TPS is a potentiometer that informs the throttle position. The ECU can read almost any 0-5V TPS. The harness uses a 3-way male Weather Pack connector.

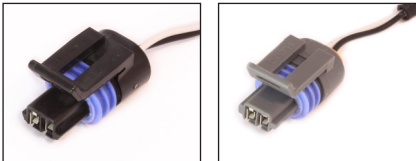
- Pin A: signal ground
- Pin B: signal output
- Pin C: 5V supply



6.5 H2O and Air Temperature

The Harness has 2 temperature inputs. One input is for the engine temperature (H2O) and the other is for the intake air temperature (AIR). Both sensors are GM style and uses Metri-Pack 150.2 connectors.

- Pin A: signal output
- Pin B: battery's negative



6.6 Oil, Fuel and Wastegate Pressure

The oil, fuel and wastegate pressure sensor connectors are designed for the PS-150, PS-300, PS-500 and PS-1500 sensors; ranging from 150 to 1500 psi, with a Packard style 3-way connector. It has a 5V ground and signal.

- Pin A: battery's negative (black)
- Pin B: 5V supply (green/red)
- Pin C: signal output (white)



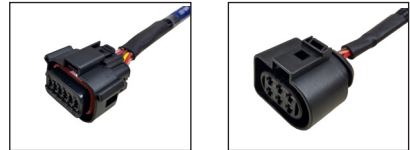
6.7 Injectors

There are 4 injector outputs available. All injector connectors are Bosch EV1 style.



6.8 WB-O2 Nano Connector

The WB-O2 NANO has a 12 ways connector with 3 wire groups. One has the connector for the O2 sensor (Part number 3022000965), the second is for CAN communication and the third is responsible for the power and analog output.



6.9 Coil Connector

This harness is finished to FuelTech Smart Coil plug.



6.10 GEARSHIFT Sensor

For manual transmission cars with dog engagement is possible to connect a FuelTech Shift Knob or a FuelTech Shifter Handle to use the Power Shift (gear change ignition cut) feature. When using this shifter White inputs #13 and #14 must be configured as Strain Gauge P and Strain Gauge N.

6.11 Crank Hall/Crank VR

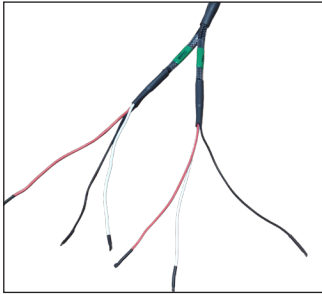
Wires are unterminated pinout:

Crank Hall:

- **Black:** Ground
- **Red:** 12V
- **White:** RPM signal

Crank VR:

- **Black:** Shield (Grounded)
- **Red:** RPM signal
- **White:** VR Reference



6.12 Cam Hall/Cam VR

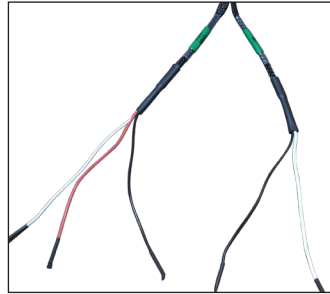
Wires are unterminated pinout:

Cam Hall:

- **Black:** Ground
- **Red:** 12V
- **White:** Signal

Cam VR:

- **Black:** Ground
- **White:** Signal



IMPORTANT

Wires not used must be isolated. Shield when not used must be isolated (do not ground it).

4 Cylinder Wiring Harness

7. Standard Sensors

7.1 Fuel and Oil Pressure

FuelTech PS-150/300/500/1500 are high precision sensors responsible for general pressure readings (fuel, oil, boost, exhaust back pressure, etc.)

They can be purchased on-line at www.fueltech.net or from an authorized FuelTech dealer (check the website to locate the dealer nearest to you).

FuelTech PS-150/300/500/1500 sensor below:

- Connection: 1/8" - 27NPT
- Pressure Range: 0 to 150/300/1500psi
- Power Voltage: 5V
- Output Scale: 0.5-4.5V
- Electric Connector: 3-way Metri Pack 150
 - Pin 1: Battery's Negative
 - Pin 2: 5V supply
 - Pin 3: Output signal

FuelTech part numbers:

- 5005100020 - 0-150 psi sensor
- 5005100021 - 0-300 psi sensor
- 5005100217 - 0-500 psi sensor
- 5005100022 - 0-1500 psi sensor



7.2 Intake Air Temperature

With this sensor, the ECU can monitor the intake air temperature and perform real time compensations.

Part numbers: FuelTech 5005100015.



7.3 Engine Temperature

This sensor is very important for a good running engine, as varying engine temperatures dramatically affect an engine's fuel and timing requirements.

On water cooled engines, place this sensor near the engine head, reading the water temperature. On air cooled engines, install this sensor reading the engine oil temperature.

Part numbers: FuelTech 5005100016.



8. Peak and Hold - External Injector Driver

Peak and Hold drivers are designed to control the current on low impedance injectors. The FuelTech Peak and Hold has 4 outputs and in the Harness will run one injector per channel. There are 3 different versions of Peak and Hold available to fire different injectors, according to the resistance of the injector. The only differences between the versions are the peak current and the hold current.

Considering one injector per channel application:

- 2A/0.5A – Bosch 1600cc, Ford Racing 1600cc
- 4A/1A – Siemens Deka 225lb/hr, Precision 225lb/hr
- 8A/2A – Precision 550lb/hr, Billet Atomizer, Moran

Some earlier Billet Atomizer and Moran injectors require a 4A/1A driver. Contact FuelTech tech support to confirm correct Peak and Hold drivers before purchasing.

When using high impedance injectors without Peak and Hold drivers, jumper wires must be connected to the Peak and Hold plugs in the harness. If the jumper wires are not being used then the injectors won't fire since there will be no continuity between the FT450/FT550 and injectors.



9. Meters and Adapter Wires

9.1 FuelTech WB-O2 Nano

The WB-O2 Nano has a 12-way connector with 3 wire groups. One of them has the connector for the O2 sensor, the second makes the CAN communication.

By default, the analog output is set to values of 8.7AFR to 16.2AFR Gas, but can be configured to 5.14AFR to 17.6AFR Gas or 9.55 to 19.11AFR or 9.55 to 58.80AFR, 9.55 to 146.9AFR (Gas) or yet in Lambda, if necessary. For further information, check the FuelTech WB-O2 Nano manual.



9.2 Bosch LSU 4.2 Wideband O2 Sensor

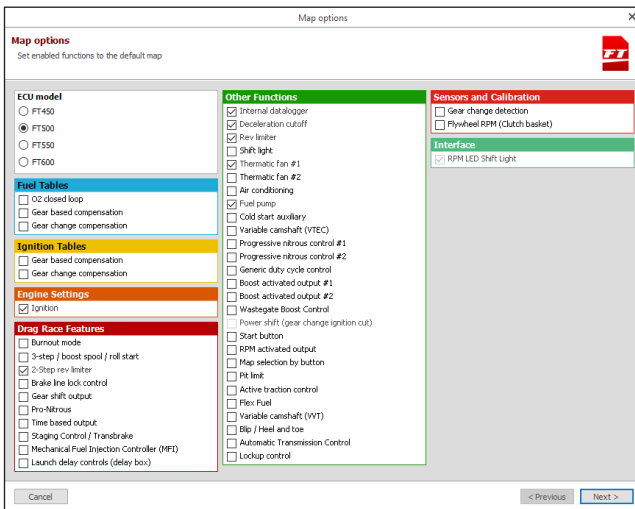
The BOSCH LSU 4.2 is a wideband O2 sensor that can be used with both the WB-O2 Nano and Alcohol O2. When using LSU 4.2 with our Alcohol O2 reader, an adapter harness is required, as well as free air calibration. Check the Alcohol O2 manual for further instructions.



10. Generating a FuelTech base map

That's the first step to have the engine running, follow the instructions according to the harness installation.

1. Open the software FTManager and connect the ECU using the USB cable.
2. Click on "File/New".
3. Under "Map Options" select ECU model that you have.
4. Select the features you want to enable.



- Next step is to configure engine settings (engine type, main fuel table, max RPM, etc).

Generate FuelTech base map - Engine setup

Engine setup
Select options according to engine characteristics. This information is very important to generate a good base map.

Engine type
Piston

Main fuel table by
MAP

Maximum boost
29.01 psi

TPS idle fuel injection table
Disabled

Acceleration fuel enrichment by
TPS

Maximum engine speed
8000 RPM

Number of cylinders
4

Firing order

Predefined

- 1-3-4-2 (VW AP, VW Golf, Chevrolet, Ford, Fiat, Honda, etc)
- 1-2-3-4 (FT200, FT250, FT300, FT350 and FT400 standard)
- 1-3-2-4 (Subaru)
- 1-4-3-2 (Aircooled VW)
- 1-2-4-3 (Most motorcycle)

Custom

1	2	3	4
1	3	4	2

- Next step will be the setup of the RPM signal and cam sync pattern.

RPM Signal: FuelTech universal harness is ready for VR and Hall effect sensor, just choose the one you wired.

Cam sync: FuelTech universal harness is ready for VR and Hall effect sensor, just choose the one you wired.

Generate FuelTech base map - RPM signal

RPM signal
Select options regarding RPM signal reading of the engine.

RPM sensor

RPM sensor type

Hall/VR with pull-up

VR internal reference

VR differential

RPM sensor edge
Falling

Cam sync sensor

Sensor type

Not used

Hall / VR with pull-up

VR (Variable Reluctance)

VR differential

Random Hall - Diagnostic

Random VR - Diagnostic

Cam sync edge
Falling

Crank trigger pattern

Crank trigger wheel
60-2 or 58X (at crank)

Crank index position
93.0 16 teeth +3.0°

Crank trigger type
With missing tooth

Crank trigger teeth number
60

Missing teeth
2

Additional tooth angle
0.0

Gap duration time
1.75

4 Cylinder Wiring Harness

7. Ignition: select ignition settings.

FuelTech FT450 pre-made harness is wired as wasted spark using only 2 ignition outputs, so the right option is Wasted spark – double coil.

FuelTech FT550 pre-made harness is wired as sequential and must be configured as Sequential – Individual coils / COP. In case you don't have a cam sync sensor, select Wasted spark - individual coils / COP.

Generate FuelTech base map - Ignition

Ignition
Select the engine ignition system characteristics.

Ignition mode

- Sequential - individual coils / COP
- Wasted spark - individual coils / COP
- Wasted spark - double coil
- Distributor - single coil

Ignition output

- Falling edge (SparkPRO)
- Rising edge (MSD - duty 50%)
- Rising edge (Honda distributor)

FTSPARK

Enabled

Outputs

- Multiple wires
- Serial bus (1 wire)

In this mode FTSPARK is connected to the ECU through multiple ignition outputs (gray wires). On ignition output settings, the 'Falling edge' and fixed 3ms dwell are automatically selected.

Cancel < Previous Next >

8. Fuel Injection settings:

FuelTech FT450 pre-made harness is wired as semi sequential using only 2 injection outputs, so the right option is Semi sequential – 2 outputs.

FuelTech FT550 pre-made harness is wired as sequential and must be configured as Sequential – 4 outputs. When using the secondary injectors configure it as Sequential – 4 outputs.



NOTE

Using FT550 harness with cam sync not enabled, the software won't let sequential option available, so in those cases Multipoint or semi sequential can be selected, always using 4 outputs.

Generate FuelTech base map - Fuel injection

Fuel injection

Select the engine fuel injection system characteristics.

Primary injectors

Enable primary injectors

Primary mode

Multipoint

Semi-sequential

Sequential

Primary outputs

2

4

Primary bank total flow

0 lb/h

Total flow is a sum of injectors flow at the bank.
Example: 4 injectors with 80 lb/h has a 320 lb/h total flow.

Primary injectors deadtime

1.00 ms

Secondary injectors

Enable secondary injectors

Secondary mode

Multipoint

Semi-sequential

Sequential

Secondary outputs

4

Secondary bank total flow

0 lb/h

Total flow is a sum of injectors flow at the bank.
Example: 4 injectors with 80 lb/h has a 320 lb/h total flow.

Secondary injectors deadtime

1.00 ms

Cancel < Previous Next >

4 Cylinder Wiring Harness

9. Pedal/Throttle/Accelerator option will pre-set an input to match the harness that has a TPS connector and no idle speed control valve, so the basic setup is the following option:

Generate FuelTech base map - Pedal / Throttle / Actuator

Pedal / Throttle / Actuator

Select throttle / pedal and idle actuator of the motor.

Pedal / Throttle

None

TPS

1 ETC

2 ETCs

Electronic throttle code

Electronic throttle

Brand

Model

Description

Idle actuator

No actuator

Step motor

Electronic throttle

PWM valve

Step motor type

Custom

Number of steps

GM (210 steps)

VW (260 steps)

PWM valve frequency

100 Hz

Cancel < Previous Next >

10. Last option is related to the engine characteristics as compression ratio, fuel and camshaft profile. When everything is according to the engine just click Generate.

Generate FuelTech base map

Generate FuelTech base map

Select other engine characteristics, needed to generate the FuelTech base map.

Compression ratio

Low compression

Medium compression

High compression

Fuel type

Alcohol

Initial boost secondary injectors

0.0 psi

Camshaft profile

Low profile

High profile

Cancel < Previous Generate

10.1 Outputs configuration:

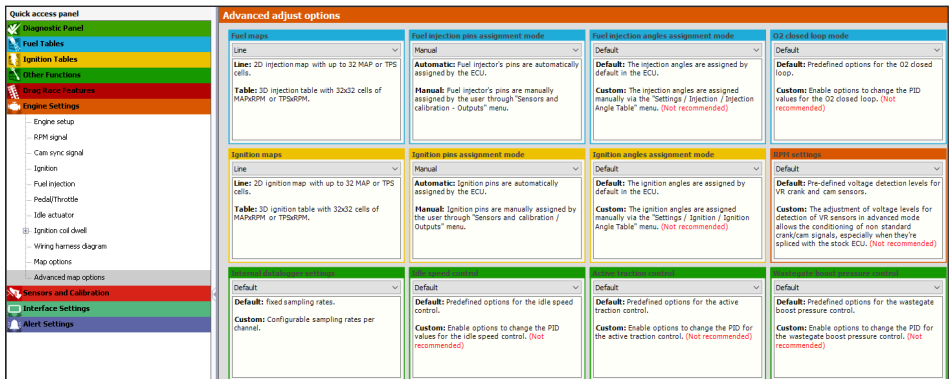
To match the harness and the software configuration, some outputs must be allocated not as the FuelTech Default options.

FuelTech FT450 harness doesn't require any change. Outputs will be like following:



FuelTech FT550 harness require the following modifications:

1. Go to Engine settings / Advanced map options. Select the drop-down bar of Fuel injection pins assignment mode box and mark as Manual. The Ignition pins assignment options must also be changed to Manual.



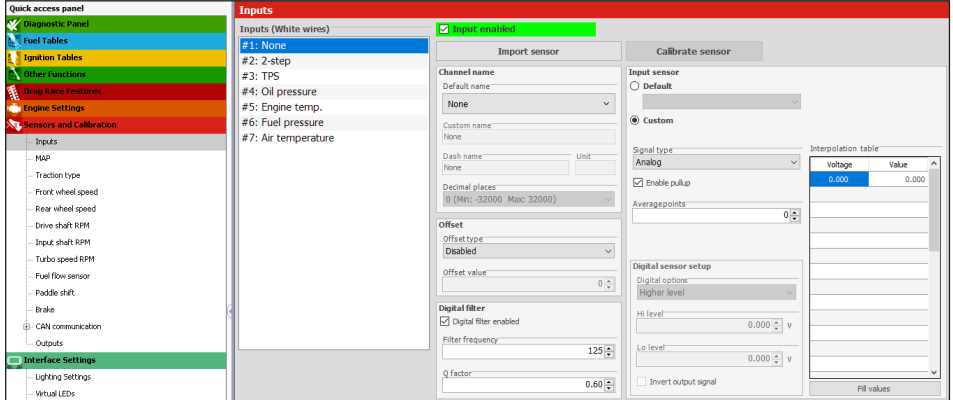
4 Cylinder Wiring Harness

- Go to the menu Sensors and Calibration / Outputs and configure the outputs as the following image, considering Primary and Secondary injectors as follows:



10.2 Inputs configuration:

FuelTech FT450 Harness:



4 Cylinder Wiring Harness

11. Troubleshooting

Issue	Solution
FT450/ FT550 Unit doesn't turn on	1. Check battery voltage
	2. Check power and ground cables
	3. Check Switched 12V cable
	4. Check ECU harness cables
FT450/FT550 doesn't read cranking	1. Check crank trigger and Cam sync connections
	2. Check sensor gap
	3. Check diagnostic panel for RPM signal
FT450/FT550 reads RPM but engine doesn't start	1. Check if there is spark and injector pulse
	2. Check fuel pressure
	3. Check crank trigger alignment and TPS calibration
	4. Check if outputs are activated and properly configured
	5. Check the O2 sensor reading
Engine runs but doesn't idle	1. Check TPS calibration
	2. Check timing with a timing light
	3. Check TPS idle table and adjustment
	4. Check O2 sensor reading
Engine spits & sputters	1. Check O2 sensor reading
	2. Check ignition calibration and firing order
ECU won't communicate to PC	1. Ensure your software version is compatible with your FT450 firmware version
	2. Check if read and write buttons get colored when FT450 is connected

12. FuelTech Latest Manuals and Software

You can access all updated manuals and software at the FuelTech website:

www.fueltech.net/manuals

www.fueltech.net/software

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