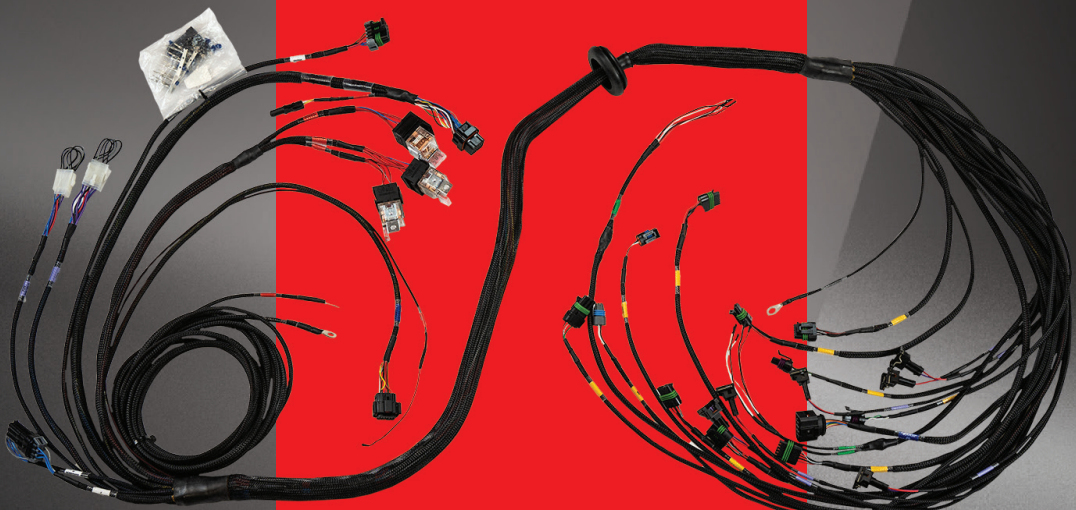
FuelTech



OWNER'S MANUAL

WIRING HARNESS
6 CYLINDER

1. Index

2. Presentation

The FuelTech FT450/FT550 6 Cylinder Universal A and B Harnesses were designed to be a universal fit for 6 cylinder engines.

The Universal A Harness has all the components needed to make a easy installation on a 6 in line or V6 engine. With a few modifications this harness can fit many applications, saving time at the wiring process.

The Expansion B Harness will fit 6 cylinder projects with 12 injectors, controlled by a FT550 ECU. The Expansion B Harness also changes the setup to sequential ignition and sequential primary injectors, using the Fuel/ignition Mode connector.

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

Specifications

- 6 EV1 injector connectors (12 if using FT550 and Expansion B Harness)
- FuelTech Peak and Hold external driver ready (both A and B Harnesses)
- FuelTech WB-O2 NANO ready (one)
- Intake air temperature sensor ready (GM style connector)
- Engine Temperature (coolant) sensor ready
- Fuel and oil pressure sensor ready
- Extra output connector for custom use
- Crank and Cam (Hall and VR) loose wires

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.

Manual version 1.1 –
November/2021

4. Overview

The Fueltech FT450/FT550 6 Cylinder Universal A Harness is a wiring solution to be used with a FuelTech FT450 or FT550 ECU. It has all the connectors, relays and fuses directly built-in and can be used with nearly any application with 6 injectors and 6 coils. The FT550 6 Cylinder Expansion B Harness is a wiring solution for a 12 injectors setup.

4.1 FT450/FT550 - 6 Cylinder Universal A Harness

This harness was designed for vehicles with 6 injectors, 6 smart coils and a FuelTech Wideband Nano O2 with Bosch LSU 4.2 sensor, ready to run semi-sequential injection and wasted spark. Able to run sequential injection on primary injectors and sequential ignition. Full sequential is only possible using FT550 ECU and 4 Cyl Expansion harness, please see section 4.2 for this setup.

The harness is ready for low impedance injectors setup, wired for FuelTech Peak and Hold driver.

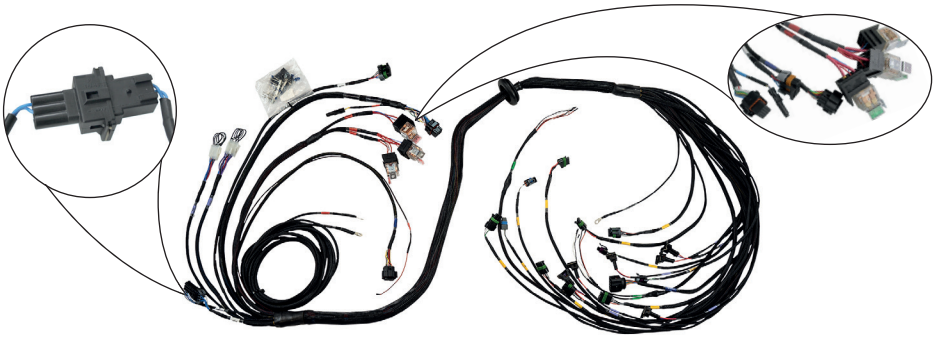
When using high impedance injectors, a Peak and Hold driver is not needed and in this case, only a bypass connector is required (jumper included).

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

There is also a Head Ground wire, that must be tied to the engine head. The engine MUST have it's own ground wire in good condition (not included).

NOTE

For the Harnesses correct operation, when using only the A Harness, the "FUEL/IGNITION MODE" and the "WASTED SPARK" connectors must be connected to each other. When using FT550 ECU combined with both A and B Harnesses, the "WASTED SPARK" connector, at the A Harness, remains disconnected, the "FUEL/IGNITION MODE" must be connected to the "SEQUENTIAL" connector at the B Expansion Harness. Older harnesses versions may show "FT550 EXPANSION" names at theese connectors.



4.2 FT550 - 6 Cylinder Expansion B Harness

The FT550 Expansion B Harness makes a FT550 ECU installation faster and easier. This harness must be used along with the FT450/ FT550 6 Cylinder Universal A Harness.

The Expansion B Harness (only available for FT550 ECU) adds 6 secondary injectors connectors (EV-1) sequentially wired, Extra Inputs and Extra Outputs connectors, CAN B port and FuelTech Shift Knob with Strain Gauge connector. Also, by connecting the A Harness to the B Expansion Harness, using the "FUEL/IGNITION MODE" connector, the primary injectors turn to sequential, as well as the ignition.

The Expansion Harness is wired for 6 secondary injectors, the harness has a FuelTech Peak and Hold connector, allowing the use of low impedance secondary injectors (jumper connector included for high impedance application).
When using FT550 Expansion Harness, follow this procedure:

1- Using the FTManager software, go to Engine Settings, then Advanced map options and select Manual mode for "Fuel Injection pins assignment mode".

2- At Engine Settings menu, then fuel Injection and select:

- Set Fuel Primary mode as Sequential, using 4 outputs
- Enable and set Fuel Secondary mode as Sequential, using 4 outputs.

3- Now go to Sensors and Calibration menu, then Outputs. Configure Fuel and Ignition outputs as following:

- Blue #1: Fuel Injector cyl.#01 - Primary
- Blue #2: Fuel Injector cyl.#02 - Primary
- Blue #6: Fuel Pump or RPM activated output
- Blue #7: Fuel Injector cyl.#03 - Primary
- Blue #8: Fuel Injector cyl.#04 - Primary
- Blue #9: Fuel Injector cyl.#01 - Secondary
- Blue #10: Fuel Injector cyl.#02 - Secondary
- Blue #11: Fuel Injector cyl.#03 - Secondary
- Blue #12: Fuel Injector cyl.#04 - Secondary
- Gray #1: Cylinder #01 ignition
- Gray #2: Cylinder #02 ignition
- Gray #5: Cylinder #03 ignition
- Gray #6: Cylinder #04 ignition

NOTE

In order to select those output settings, Fuel Injection Pins Assignment mode must be set as MANUAL. On FTManager, go to Engine Settings menu, then Advanced map options.

Doing this procedure, the harness and the ECU will be ready to run full sequential, using jumpers and high impedance injectors or Peak and Hold and low impedance injectors (check out the right P&H for your low impedance injector)

5. Diagrams

5.1 FT450/FT550 6 Cylinder - A Connector

FT450	Color	Pin	Connector	Function
#1	Blue #1	#4	Peak and Hold	Injector output #1 - Fuel Primary
		#C	Wasted Spark	Injector output #6 - Fuel Primary
#2	Blue #2	#2	Peak and Hold	Injector output #2 - Fuel Primary
		#B	Wasted Spark	Injector output #5 - Fuel Primary
#3	Blue #3	#5	Peak and Hold	Injector output #3 - Fuel Primary
		#A	Wasted Spark	Injector output #4 - Fuel Primary
#4	Blue #4	#4	Extra	Wastegate increase
#5	Blue #5	#5	Extra	Wastegate decrease
#6	Blue #6	#6	Extra	Auxiliary Output - Fuel Pump and relays
#7	Black/White	-	(-) BAT ground	Chassis ground
#8	Gray #1	A	Coil 1	Ignition output #1
		#F	Wasted Spark	
#9	Gray #2	A	Coil 2	Ignition output #2
		#E	Wasted Spark	
#10	Gray #3	A	Coil 3	Ignition output #3
		#D	Wasted Spark	
#11	Gray #4	#3	Extra	Thermatic Fan
#12	Black	-	(-) BAT signal	Ground
#13	Red	-	87 main relay	12V input from relay
#14	Green/Red	C	TPS	5V output sensors
		B	Oil pressure	
		#9	Extra	
		B	Fuel pressure	
#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 VR/HALL	Cam Sync signal input
#18	White	-	CRANK VR	RPM reference input
#19	Red	-	CRANK VR / Hall	RPM signal input
#20	White #1	#1	Extra	White input #1
#21	White #2	#2	Extra	White input #2
#22	White #3	B	TPS	White input #3 (TPS)

FT450	Color	Pin	Connector	Function
#23	White #4	C	Oil pressure	White input #4 (Oil pressure)
#24	White #5	B	Coolant temperature	White input #5 (Coolant temperature)
#25	White #6	C	Fuel pressure	White input #6 (Fuel pressure)
#26	White #7	B	Air temperature (IAT)	White input #7 (Air temperature)

5.2 FT550 6 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	A	Extra Inputs	Auxiliary Input #8
#6	White #9	B	Extra Inputs	Auxiliary Input #9
#7	White #10	C	Extra Inputs	Auxiliary Input #10
#8	Blue #7	A	Sequential	Blue Output #7 (primary injector #4)
#9	Blue #8	B	Sequential	Blue Output #8 (primary injector #5)
#10	Gray #5	C	Sequential	Gray Output #5 (ignition cyl #4)
#11	Gray #6	D	Sequential	Gray Output #6 (ignition cyl #5)
#12	White #11	D	Extra Inputs	Auxiliary Input #11
#13	White #12	E	Extra Inputs	Auxiliary Input #12
#14	Blue #9	C	Sequential	Blue Output #9 (primary injector #6)
#15	Blue #10	#1	Secondary PH	Injector output #10 - fuel secondary #1
		#4	Secondary PH	Injector output #10 - fuel secondary #6
#16	Gray #7	F	Sequential	Gray Output #7 (Ignition cyl #6)
#17	Gray #8	#8	Extra Outputs	Gray Output #8
#18	White #13	#2	GEAR	Auxiliary Input #13
#19	White #14	#3	GEAR	Auxiliary Input #14
#20	Blue #11	#2	Secondary PH	Injector output #11 - fuel secondary #2
		#3	Secondary PH	Injector output #11 - fuel secondary #5
#21	Blue #12	#4	Secondary PH	Injector output #12 - fuel secondary #3
		#5	Secondary PH	Injector output #12 - fuel secondary #4
#22	Yellow #1	A	Extra Outputs	Yellow Output #1
#23	Yellow #2	B	Extra Outputs	Yellow Output #2
#24	Yellow #3	C	Extra Outputs	Yellow Output #3
#25	Yellow #4	D	Extra Outputs	Yellow Output #4
#26	Green/Black	#1	GEAR	Ground for Sensors
		#4	GEAR	

5.3 6 Cyl Universal A Harness Components (FT450)

- FuelTech FT450/FT550 A connector: Goes to FT450 or FT550 ECU, connector A.

- 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

- WB-O2 NANO connector: Goes to a FuelTech Wideband O2 NANO. The O2 conditioner is responsible for reading the Bosch O2 sensor and send the info to the ECU trough CAN.

- 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. Coils Relay spowers coils only.

- +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.

- Cyl Head Ground: This wire must be grounded at the cylinder head.

- 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.

- Extra Connector: The extra connector has 3 blue outputs, 1 gray output, 5V for sensors 2 white inputs, 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 must be crimped to the connector that matches the vehicle's Hall effect or VR sensor.

- Cam sync sensor (Hall effect or variable reluctance): Wires are unterminated and must be crimped to the connector that matches the vehicle's Hall effect or VR sensor.

- Engine temperature coolant sensor: Ready for GM style CLT sensor.

- Intake air temperature sensor: Ready for GM style IAT sensor.

- 1x Bosch wideband O2 sensors: Designed for Bosch LSU 4.2 O2 sensor.

- 6x (FT450/FT550) fuel Injector outputs: Four EV1 connector for primary injectors and 6 EV1 connector for secondary injectors using Expansion B Harness.
- Expansion connectors: Use this connectors to switch from wasted spark and semi-sequential/multipoint injection to full-sequential when using FT550 combined with “B Expansion Harness”.

5.4 6 Cyl Expansion B Harness Components (FT550)

- FuelTech FT550 B connector: Goes to FT550 ECU, connector B.

- 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

- 1x 40A Relay: The harness has a relay and fuse for the secondary injectors.

- Sequential Connector: This connector must be plugged to the Fuel/Ignition Mode Connector, at the Universal A Harnnes, in order to switch the setup to sequential ignition and sequential fuel injection for primary injectors.

- 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 B Connector: Deutsch connector to use a second CAN port. Allows to use a second CAN protocol.

- Extra Output Connector: The extra connector has 4 yellow outputs, 1 gray output, 5V for sensors, 12v and ground.

- Extra Input Connector: The extra connector has 5 white inputs, 5V for sensors, 12v and ground.

- 6x FT550 fuel Injector connectors: 6 injector connectors (EV1 connector) is wired semi-sequential for secondary injectors.

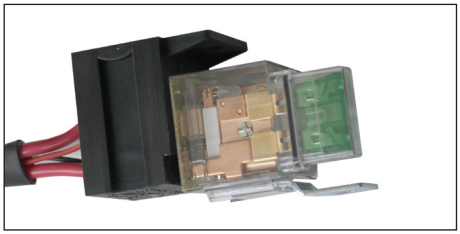
- GEARSHIFT Connector: Dedicated connector to use FuelTech Shift Knob or FuelTech Shifter Handle

6. Harness Connectors

6.1 Relay and Fuses

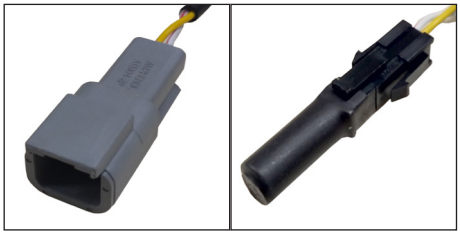
All relays available in the Harness are automotive type with a 40A capacity, integrated 40A fuse and an ON status LED.

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 Expansion Connectors:

The 6 Cyl Universal A Harnnes is wired as wasted spark and semi-sequential fuel injection. However, combined with the Expansion B Harness and a FT550 ECU the setup changes to sequential ignition and sequential primary injectors.

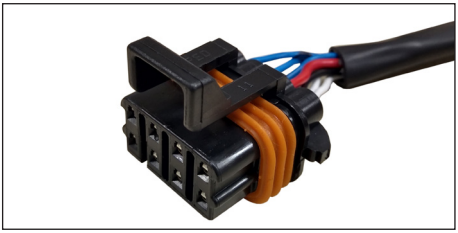
Fuel/Ignition Mode: This connector must be plugged to the must be plugged to Wasted Spark connector when using FT450 and Universal A Harness only.

In case both A and B harnesses are being installed, the Fuel/Ignition Mode Connector, at the Universal A Harnnes, must be plugged to the Sequential connector, at the Expansion B Harness, in order to setup sequential ignition and sequential fuel injection for primary injectors.

6.4 Extra Connectors

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.



FT450/FT550 - 6 Cylinder Universal A

Pin	Color	Function
1	White #1	White input #1 - Free
2	White #2	White input #2 - Free
3	Gray #4	Thermatic Fan
4	Blue #4	Wastegate Increase
5	Blue #5	Wastegate Decrease
6	Blue #6	Fuel pump / relays
7	Red	12V
8	Black	Ground

FT550 - 6 Cylinder Expansion B

Pin	Color	Function
1	White #8	White input #8 - spare
2	White #9	White input #9 - spare
3	White #10	White input #10 - spare
4	White #11	White input #11 - spare
5	White #12	White input #12 - spare
6	-	-
7	Red	12V
8	Black	Ground

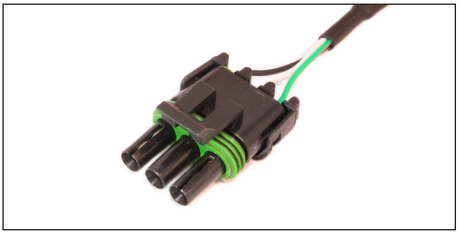
FT550 - 6 Cyl Expansion B - EXTRA OUTPUTS Connector

Pin	Color	Function
1	Yellow #1	Yellow output #1 - spare
2	Yellow #2	Yellow output #2 - spare
3	Yellow #3	Yellow output #3 - spare
4	Yellow #4	Yellow output #4 - spare
6	Black	Ground
7	Red	12V Switched
8	Gray #8	Gray output #8 - spare

6.5 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.

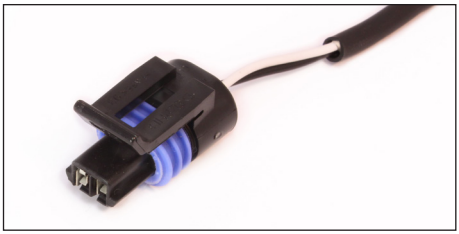
- Pin A: signal ground
- Pin B: signal output
- Pin C: 5V supply

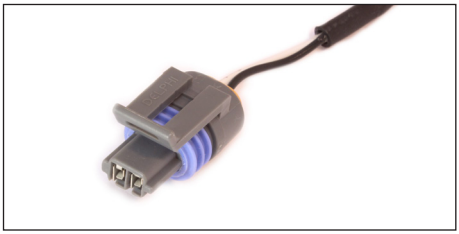


6.6 Coolant and Air Temperature

The Harness has 2 temperature inputs. One input is for the engine coolant temperature 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

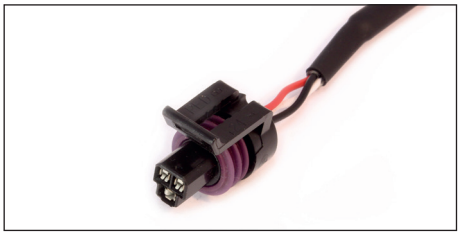




6.7 Oil, Fuel and Wastegate Pressure

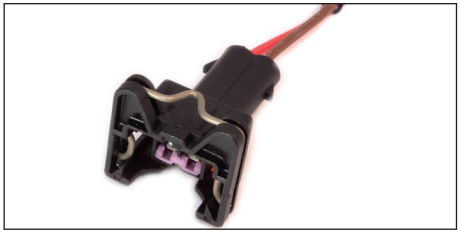
The oil, fuel and wastegate pressure sensor connectors are designed for the PS-150, PS-300, PS-500 and PS-1500 sensors; ranging from 150 to 1500 psi, with a Packard style 3-way connector. It has a 5V ground and signal.

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



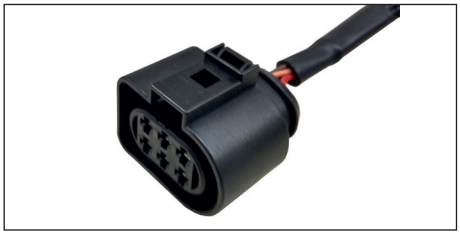
6.8 Injectors

There are 6 injector outputs available. All injector connectors are Bosch EV1 style.



6.9 WB-O2 Nano Connector

The WB-O2 NANO has a 12-way sealed connector with 3 wire groups. One group has the O2 sensor (PN: 3022000965) connector, the second is for CAN communication, and the third is power and analog output.



6.10 Coil Connector

This harness was designed to be used with six FuelTech Smart Coils, wired as wasted spark when using.

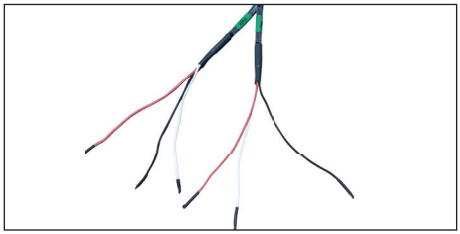
6.11 Expansion connectors:

The "Fuel/Ignition Mode" connector must be pluged to "Wasted Spark" connector if using FT450 and "A Universal Harness", otherwise, when using FT550 and both "A" and "B Expansion Harness" it must be plugged to the "Sequential" connector, at the expansion harness. Early harness version may show "expansion F" and "expansion M" at the harness labels.

6.12 Crank Hall/Crank VR

Unterminated wires. Color code:

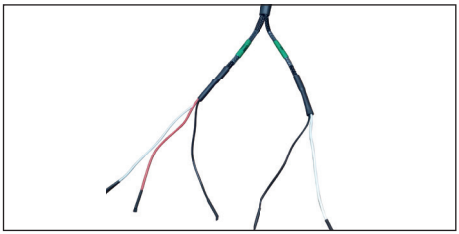
Crank Hall:	Crank VR:
Black: Ground	**Black:** Shield (Grounded)
Red: 12V	**Red:** RPM signal
White: RPM signal	**White:** VR Reference



6.13 Cam Hall/Cam VR

Unterminated wires. Color code:

CAM Hall:	CAM VR:
Black: Ground	**Black:** Ground
Red: 12V	
White: Signal	**White:** Signal



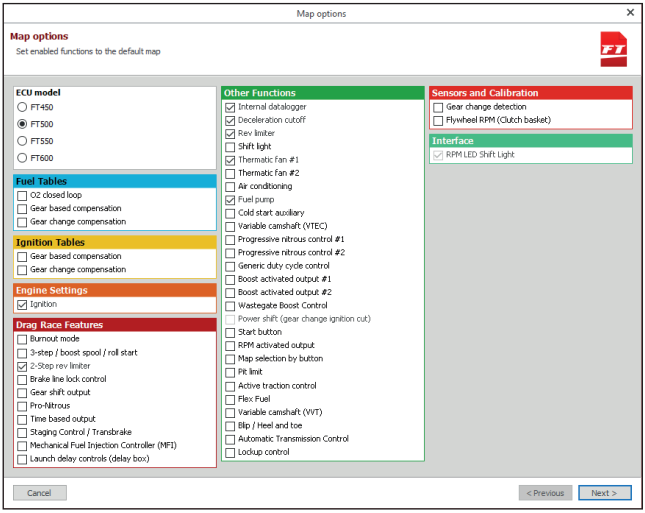
IMPORTANT

Unused wires and wire shield must never be grounded! They must be isolated.

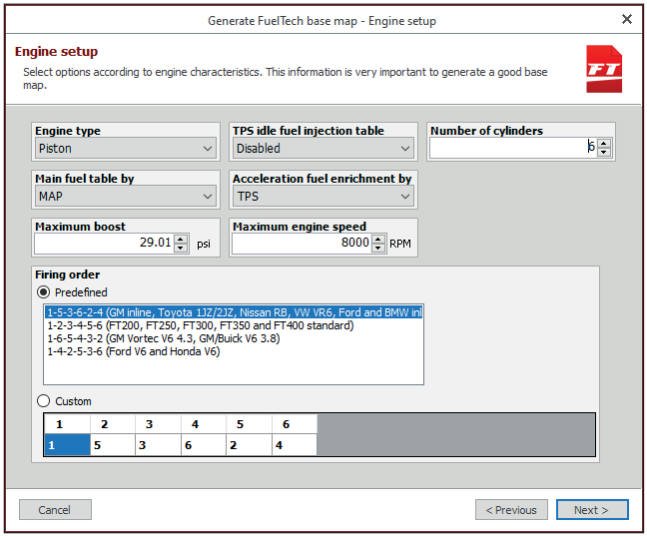
7. Generating a FuelTech base map

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.



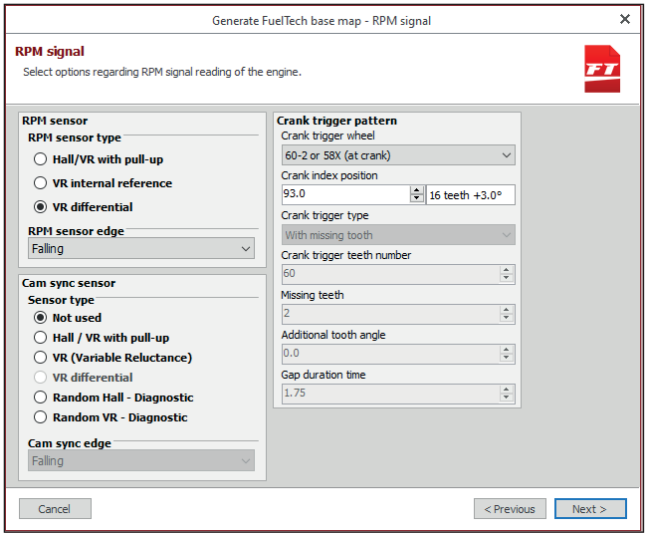
5. Next step is to configure engine settings (engine type, main fuel table, max RPM, etc).



6. 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.

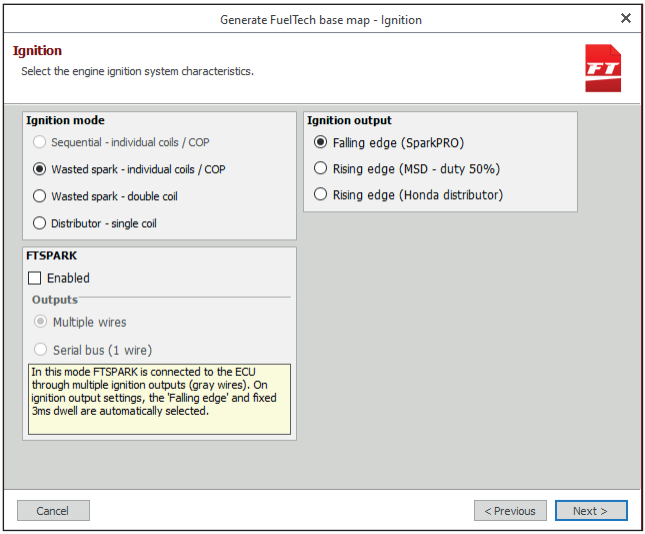
Cam sync: FuelTech universal harness is ready for VR and Hall effect sensor, just choose the one you wired.



7. Ignition: select ignition settings.

FuelTech FT450 pre-made harness is wired as wasted spark using only 3 ignition outputs, so the right option is Wasted spark – double coil.

FuelTech FT550 and expansion 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.



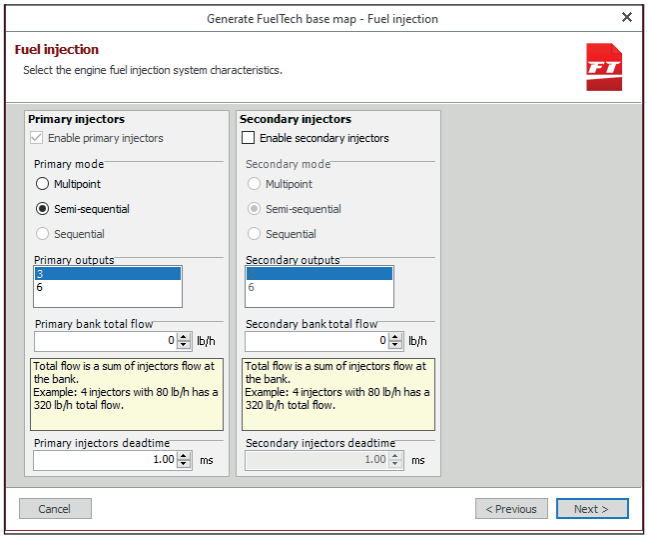
8. Fuel Injection settings:

FuelTech FT450 pre-made harness is wired as semi sequential using only 3 injection outputs, so the correct setup is Semi sequential – 3outputs.

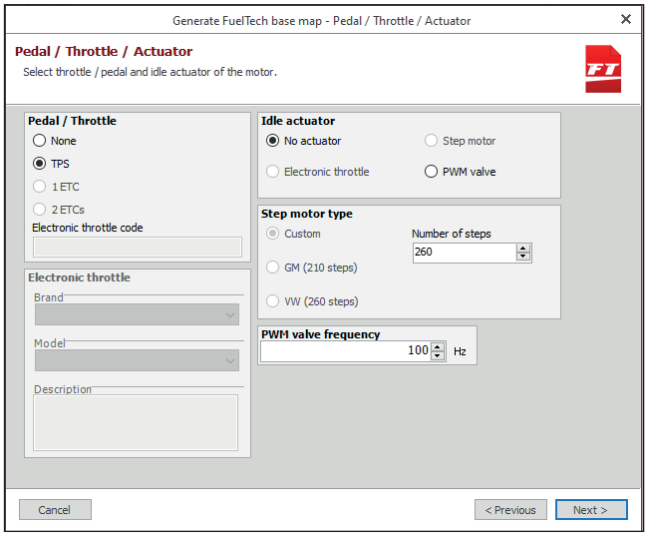
FuelTech FT550 and expansion pre-made expansion harness has primary injectors turning to sequential, so it must be configured as sequential - 6 outputs. For secondary injectors configure it as semi-sequential - 3 outputs.

NOTE

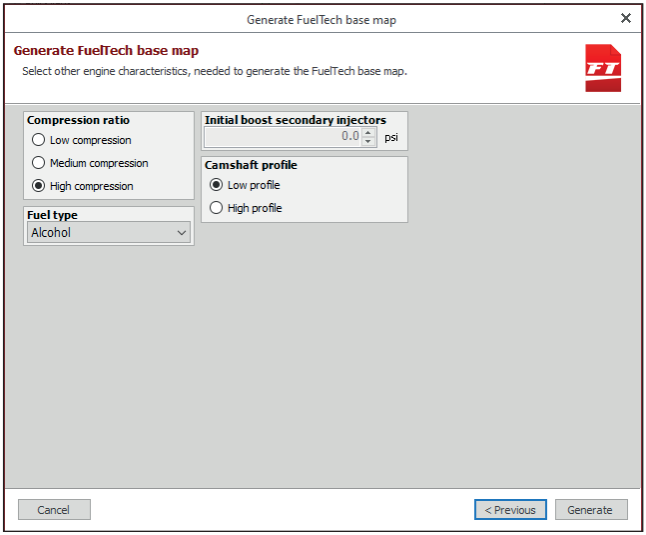
Using FT550 harness with cam sync not enabled, the software won't let sequential option available, so in those cases Multipoint or semi sequential can be selected, always using 6 outputs.



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:



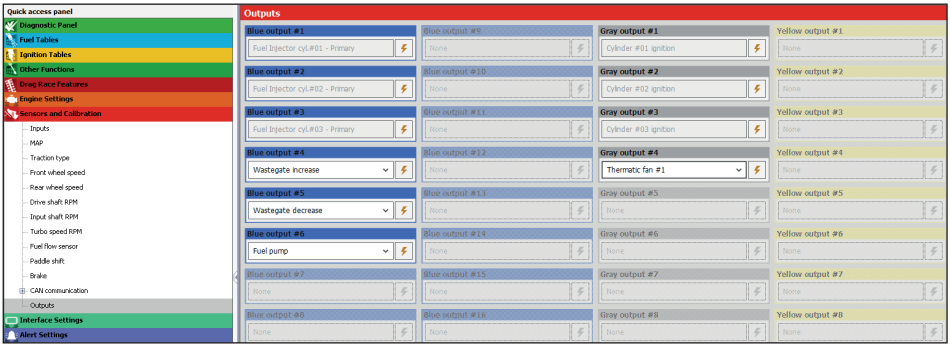
10. Last option is related to the engine characteristics such as compression ratio, fuel and camshaft profile. When everything is according to the engine just click Generate.



7.1 Outputs configuration:

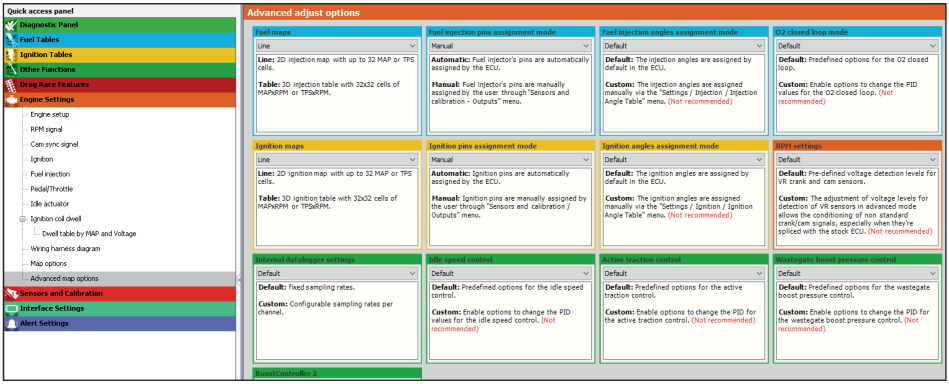
To match the harness and the software configuration, some outputs must be allocated not as the FuelTech Default options.

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

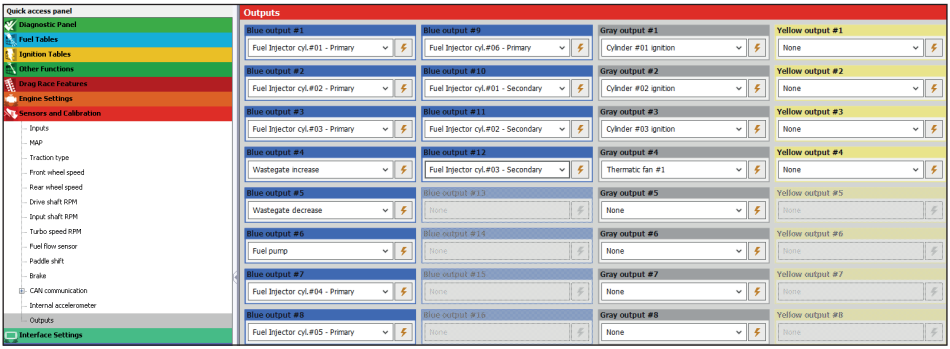


FuelTech FT550 and expansion harness require the following modifications:

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.

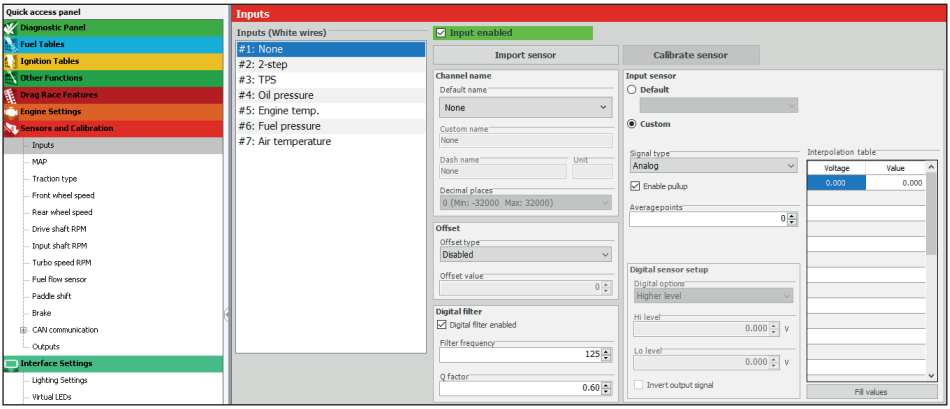


2. Go to the menu Sensors and Calibration / Outputs and configure the outputs as the following image, considering Primary and Secondary injectors bank:

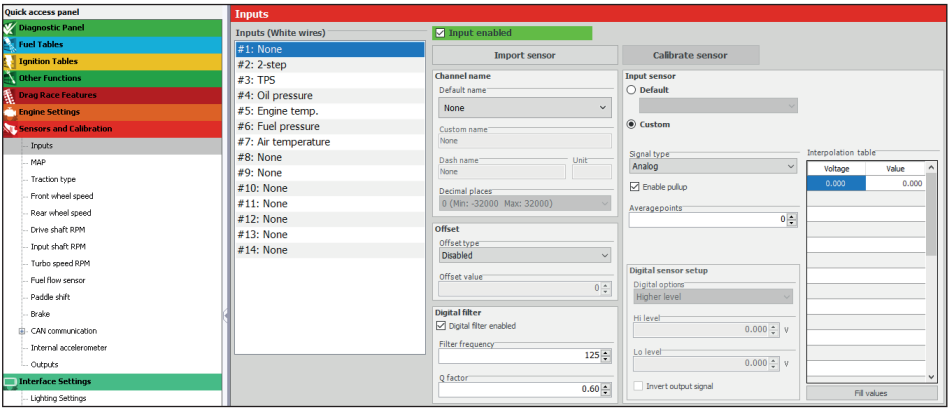


7.2 Inputs configuration:

FuelTech FT450 Harness:



FuelTech FT550 and expansion Harness:



8. Standard Sensors

8.1 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

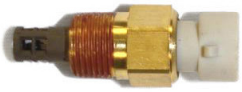
FuelTech part numbers:

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

8.2 Intake Air Temperature

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

Part numbers: FuelTech 5005100015.



8.3 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 coolant temperature. On air cooled engines, install this sensor reading the engine oil temperature.

Part numbers: FuelTech 5005100016.

9. 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 – FT INJECTOR Precision 550lb/hr, Billet Atomizer, Moran, FT Injector 720 and 520lb/hr

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, jumpers 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.

10. Meters and Adapter Wires

10.1 FuelTech WB-O2 Nano or NanoPRO

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.

10.2 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.

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

455 Wilbanks Dr.
Ball Ground, GA, 30107, USA

Phone: +1 678-493-3835

E-mail: info@FuelTech.net
www.FuelTech.net

FuelTechUSA