

FuelTech



PRO550
WIRING HARNESS

OWNER'S MANUAL

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2. Presentation

The FuelTech PRO550 harness is the proper link between the FuelTech FT550 ECU and all of your engine sensors and actuators.

This harness has all the components needed to make a plug'n'play installation on an engine. It has all the relays and fuses needed for the system on a standard setup, a firewall connector to make it easier to remove and every connector has its own label.

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

Specifications:

- 8 injector outputs
- FuelTech Peak and Hold PRO external driver ready
- Dual FuelTech NanoPRO ready
- GM Style intake air temperature sensor ready
- GM Style engine temperature sensor ready
- 4 pressure sensor ready for fuel, oil wastegate and back-pressure/another 0-5V sensor
- High output relays
- 2 EGT-4
- 2 Extra output connectors for generic use
- 1 Extra Inputs connector for generic use
- Firewall CPC Connector
- Crank and Cam connectors (hall and VR options)

Dimensions (in package): 20" x 20" x 5"

Weight: 11 lbs.

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 on 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 PRO550 Wiring Harness is a complete plug n' play wiring solution to be used with a FuelTech FT550 ECU. It has all the connectors, relays and fuses directly built-in and can be used with nearly any application with 8 injectors.

driver for setups utilizing 8 low impedance injectors. When using high impedance injectors, Peak and Hold is not needed. In this case, only a bypass connector is required.

There are 2 relays to power the complete system, separating the injectors from the electronics.

4.1 PRO550 V8 Harness

The PRO550 is a FuelTech FT550 harness designed for systems with up to 8 staged injectors, and FuelTech 2x Wideband NanoPRO with Bosch LSU 4.2 sensors to run sequential, semi-sequential or multipoint injection. It is already wired for FuelTech Peak and Hold PRO



- 1 - FT550 Connector A, B and CAN bus
- 2 - Relays and fuse
- 3 - Auxiliary connectors

5. PRO550 V8 components

Main/Outputs (Inner)

This is the section that will be installed in the inner side of the car. On this part you will find the connections to all the units, the wires related to the power supply (+12V to battery, ground to battery, ground to chassis, +12V switched), relays and fuses. Check below to see all of the connectors and where they are connected:



- **FuelTech FT550 A and B connectors:** Direct connection to FT550, both connectors must be securely installed.
- **FuelTech Peak and Hold PRO:** This is the driver module needed to fire low impedance injectors. When the system uses high impedance injectors, jumper connector are required. If the Peak and Hold PRO or the jumper wires are not being used, the injectors will not fire.
- **2x FuelTech Wideband NanoPRO:** These connectors go to the FuelTech Wideband NanoPRO module, it's capable of reading the Bosch O2 sensors and send the information to log in the FT550.
- **2x 40A Relay:** The system has 2 relays to power everything. The Main Relay powers the ECU, Wideband NanoPRO, Peak and Hold PRO drivers, sensors and Outputs B connector. The Injector Relay powers only the primary injectors.
- **+12V Switched wire:** This wire goes to the ignition key and is responsible for turning on all 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 and CAN B Connectors:** CAN A and CAN B can operate FT-CAN 1.0, FT-CAN 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 dataloggers or dash.
- **Output Connectors:** Outputs A has 4 blue wires and 4 yellow wires to use as general output. Outputs B has 8 Gray wires to use as general output.

- **Inputs Connector:** Inputs connector has 5 white wires to use as general inputs for 0 to 5V analog sensors.
- **Main Inner 37-way circular:** The Main connector is a 37-way Tyco CPC connector which contains all necessary inputs to run an engine.

This connector can be attached to the firewall.

Main Engine



- **Female 37-way circular connector:** The Main connector is a 37-way Tyco CPC connector which contains all necessary inputs to run an engine. There you will find the following connectors: O2 sensors, Crank Trigger Sensor, Cam Sync Sensor, TPS, Oil Pressure, Fuel Pressure, Wastegate Pressure, Engine Temperature, Intake Air Temperature, Back Pressure or any 0-5V sensor and the 8 injectors.
- **Throttle position sensor:** The TPS measures the throttle position. The PRO550 harness has a 3-way Weather Pack connector and almost any 0-5V TPS can be used.
- **Back pressure sensor:** This input can be used to read the back pressure, any other pressure with a FuelTech PS sensor or any 0-5V sensor. It also can read an external MAP sensor.
- **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):** PRO550 harness is ready for both crank trigger (VR) and Cherry GS101201 Hall effect sensor.
- **Cam sync sensor (Hall effect or variable reluctance):** PRO550 harness is ready for Cherry GS101201 Hall effect sensor.
- **Engine temperature sensor:** Ready for GM style CLT sensor.
- **Intake air temperature sensor:** Ready for GM style IAT sensor.
- **2x Bosch wideband O2 sensors:** Designed for Bosch LSU 4.2 O2 sensors.
- **8x fuel Injector outputs:** 8 injector outputs (EV1 connector) which allows sequential fuel injection and individual fuel cylinder trim.
- **Driveshaft sensor:** 3 wires hall effect sensor to read driveshaft RPM.

Coil harness components

This extension allows the use of 8 individual Smart COP coils(w/ integrated igniter) on the ignition system, it has 8 metri-pack 150.2 connectors, 1 relay and 1 fuse (or 2 relays and 2 fuses on the second generation). Check below to see all of the connectors and where they are connected, as well as instructions and specific information for both generations:

Standard components for both generations:

- **Main Inner 24-way circular:** The Main connector is a 24-way Tyco CPC connector which contains the outputs to the 8 individual coils.
- **8x Smart coil connectors:** 8 Smart COP coil outputs (metri-pack 150.2 connectors) which allows either sequential or wasted spark ignition.

First generation:

- **1x 30A Relay:** This Relay will power the coils
- **Outputs B connector:** This connector must be plugged into the "Outputs B" connector on the PRO550 harness.



WARNING

Making changes to the map using FTManager then writing to the ecu with car power on or with a battery charger on it may possibly damage the coils or blow the fuse.

Second generation:

- **2x 30A Relay:** These Relays will power the coils.
- **Peak and Hold PRO connector.**
- **Outputs B connector:** This connector must be plugged into the "Outputs B" connector on the PRO550 harness, To prevent damage of the coils, the separate red wire must be wired to a yellow output in the outputs A connector, the selected yellow output must be set up as a RPM activated output on the map(refer to instructions below). If no yellows are available, this red wire can be inserted in the vacant pin J or a separate switched 12v (With the risk of maybe damaging the coils if ignition is left on for long periods of time).



WARNING

When not using an RPM activated output to trigger the relays, making changes to the map using FTManager then writing to the ecu with car power on or with a battery charger on it may possibly damage the coils or blow the fuse.

Setting up RPM Activated Output and testing the coils:

To set up a yellow output as a RPM Activated Output to trigger the coil relays follow these instructions:

On FTManager: go to Engine Settings>Map options>Other functions then check the RPM activated output checkbox, click on it to go to the set up menu, next change "Enable with RPM above" to 20 and Output signal to Activated at 12v, then go to Sensors and Calibration>Outputs and change the yellow output selected for this to "RPM activated output".

On ECU: Go to Other functions>RPM activated output, first select the yellow output, next select "enable", then on the last screen change the output activation to Activated at 12v.

When using the test feature on the outputs menu available on FTManager to test the coils, you must first change the RPM activated output setting to 0 RPM, so as to trigger the relays with the engine off.

6. Labels

All connectors have proper labels to identify each one. They are labeled by color and description name. The colors are related to their functions:

- **Green:** The green labels are related to the RPM sensors (Crank Trigger and Cam Sync)
- **Yellow:** Input sensors such as TPS, Engine Temp, Air temp, Fuel Pressure, Oil Pressure, Back Pressure or any other 0-5V sensor
- **Blue:** Exclusively to O2 sensors (Bosch)
- **White:** Outputs and Extra connector, Points, CAN
- **Purple:** Peak and Hold PRO and fuel injectors
- **Black:** FT550, Main connector, Battery (-), Power Ground
- **Red:** Battery (+), Main and Injectors relays/fuses

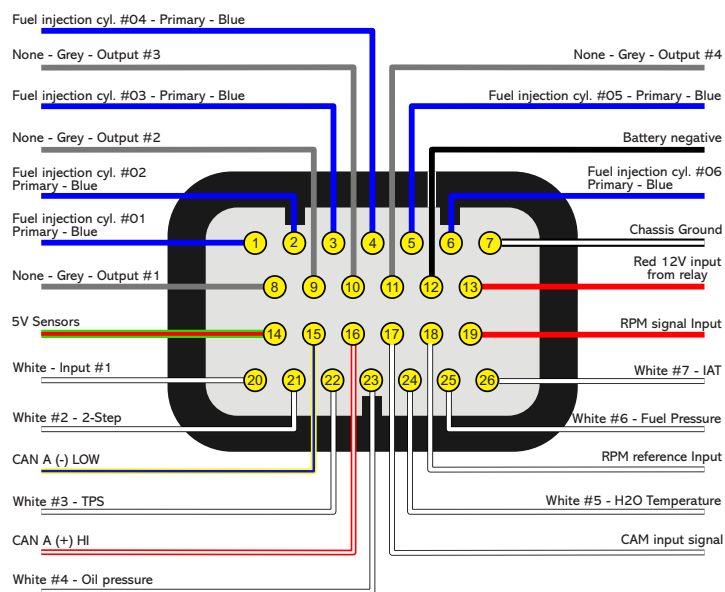


7. Diagrams

7.1 PRO550 diagrams

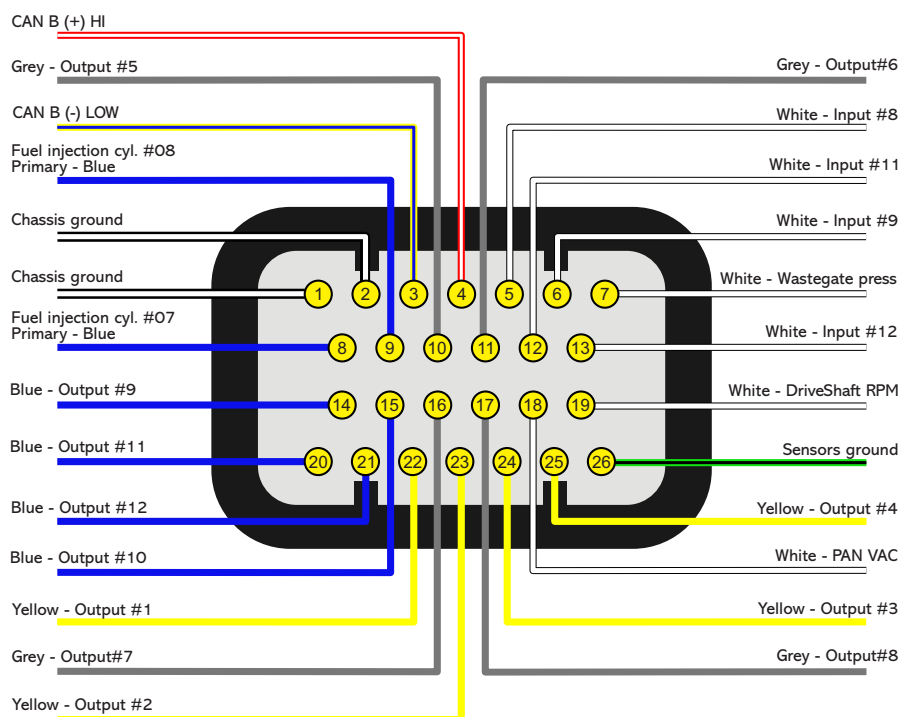
Connector A – PRO550

FT550 #Pin	Wire color	#Pin	Connector	Function
1	Blue #1	26	PRO Injector Driver	#1 injector
2	Blue #2	25	PRO Injector Driver	#2 injector
3	Blue #3	24	PRO Injector Driver	#3 injector
4	Blue #4	11	PRO Injector Driver	#4 injector
5	Blue #5	21	PRO Injector Driver	#5 injector
6	Blue #6	22	PRO Injector Driver	#6 injector
7	Black/White	-	Power Ground	Power Ground
8	Gray #1	A	Outputs B	Generic Gray output #1
9	Gray #2	B	Outputs B	Generic Gray output #2
10	Gray #3	C	Outputs B	Generic Gray output #3
11	Gray #4	D	Outputs B	Generic Gray output #4
12	Black	-	Battery (-)	Signal ground
13	Red	87	Main Relay	Switched 12V
14	Green/Red	E / 9	Extra inputs / J1 Inner	5V supply sensors
15	Yellow / Blue	2 / 15 / 12	CAN_A (INNER) / J1 Inner / PRO Injector Driver / NanoPRO L/R	CAN_A_LOW
16	White / Red	4 / 14 / 16 / 6	CAN_A (INNER) / J1 Inner / PRO Injector Driver / NanoPRO L/R	CAN_A_HIGH
17	White - Shielded cable	11	J1 Inner	Cam sync input - positive signal
18	White - Shielded cable	4	J1 Inner	RPM input - negative signal
19	Red - Shielded cable	8	J1 Inner	RPM input - positive signal
20	White #1	A	Extra Inputs	Generic White Input #1
21	White #2	-	2-Step/Transbrake	2-Step / Transbrake IN
22	White #3	6	J1 Inner	TPS Input
23	White #4	5	J1 Inner	Oil pressure Input
24	White #5	3	J1 Inner	Coolant Temperature Input
25	White #6	2	J1 Inner	Fuel Pressure Input
26	White #7	1	J1 Inner	Air Temperature Input



Connector B – PRO550

FT550 #Pin	Wire color	#Pin	Connector	Function
1	Black / White	-	Power Ground	Power Ground
2	Black / White	-	Power Ground	Power Ground
3	Yellow / Blue	1	CAN_B	CAN_B_LOW
4	White / Red	2	CAN_B	CAN_B_HIGH
5	White #8	B	Extra Inputs	Generic White Input #2
6	White #9	C	Extra Inputs	Generic White Input #3
7	White #10	12	J1 Inner	Wastegate Pressure Input
8	Blue #7	23	PRO Injector Driver	#7 injector
9	Blue #8	10	PRO Injector Driver	#8 injector
10	Gray #5	E	Outputs B	Generic Gray Output #5
11	Gray #6	F	Outputs B	Generic Gray Output #6
12	White #11	F	Extra Inputs	Generic White Input #4
13	White #12	G	Extra Inputs	Generic White Input #5
14	Blue #9	A	Outputs A	Generic Blue Output #1
15	Blue #10	B	Outputs A	Generic Blue Output #2
16	Gray #7	G	Outputs B	Generic Gray Output #7
17	Gray #8	H	Outputs B	Generic Gray Output #8
18	White #13	10	J1 Inner	Generic White Input #6
19	White #14	2	DriveShaft RPM	DriveShaft Input
20	Blue #11	C	Outputs A	Generic Blue Output #3
21	Blue #12	D	Outputs A	Generic Blue Output #4
22	Yellow #1	H	Outputs A	Generic Yellow Output #5
23	Yellow #2	G	Outputs A	Generic Yellow Output #6
24	Yellow #3	F	Outputs A	Generic Yellow Output #7
25	Yellow #4	E	Outputs A	Generic Yellow Output #8
26	Green / Black	D / 3 / 11	Extra Inputs / DriveShaft RPM / NanoPRO	Sensors Ground



7.2 Main engine(37-way CPC connector J1 Inner)

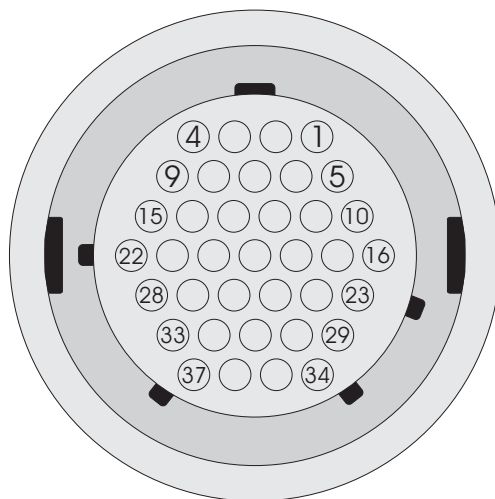
37-way #Pin	Wire color	Connector		#Pin		Function
		Inner Side	Engine Side	Inner Side	Engine Side	
1	White #7	FT550 A	Air Temp	26	B	Air Temperature Input
2	White #6	FT550 A	Fuel Pressure	25	C	Fuel Pressure Input
3	White #5	FT550 A	H ₂ O	24	B	Engine Temperature Input
4	White - Shielded cable - Crank	FT550 A	Crank VR	18	1	RPM Input - Negative Signal
5	White #4	FT550 A	Oil Pressure	23	C	Oil Pressure Input
6	White #11	FT550 A	TPS	22	B	TPS Input
7	Shielded	FT550 A	Signal Ground	-	-	Negative Battery
8	Red - Shielded Cable - Crank	FT550 A	Crank VR	19	2	RPM Input - Positive Signal
			Crank Hall		A	
9	Green/Red	FT550 A	TPS	14	C	5V Supply
			Back Pressure		B	
			Fuel Pressure			
			Wastegate press			
			Oil Pressure			
10	White #13	FT550 B	Back Pressure	18	C	Back Pressure Input
11	White - Shielded Cable - Cam	FT550 A	Cam VR	17	B	Cam Sync Input - Negative Signal
			Cam Hall		C	
12	White #10	FT550 B	Wastegate Pressure	7	C	Wastegate Pressure Input
13	Red	Main Relay	CRANK HALL	87	C	Switched 12V
			CAM HALL		A	
			EGT-4 - A		1	
			EGT-4 - B		1	
14	White / Red	FT550 A	CAN_A	4	2	CAN_A_HIGH
			EGT-4 - A		4	
			EGT-4 - B			
15	Yellow / Blue	FT550 A	CAN_A	3	1	CAN_A_LOW
			EGT-4 - A		3	
			EGT-4 - B			
16	Purple	P&H PRO	Injector #1	26	2	Primary #1 Injector
17			Injector #2	25		Primary #2 Injector
18			Injector #3	24		Primary #3 Injector
19			Injector #4	11		Primary #4 Injector
20			Injector #5	21		Primary #5 Injector
21			Injector #6	22		Primary #6 Injector
22			Injector #7	23		Primary #7 Injector
23			Injector #8	10		Primary #8 Injector
24	Red	Inj Relay	Injector #1	87	1	Switched 12V
			Injector #3			
			Injector #5			
			Injector #7			
25	Red	Inj Relay	Injector #2	87	1	Switched 12V
			Injector #4			
			Injector #6			
			Injector #8			

37-way #Pin	Wire color	Connector		#Pin		Function
		Inner Side	Engine Side	Inner Side	Engine Side	
26	Blue	NanoPRO #1 Left	O2 Sensor #1 Left	9	4	Left O2 Sensor
27	Brown			3	1	
28	Green			8	3	
29	Yellow			2	5	
30	Orange			7	2	
31	Red			1	6	
32	Blue	NanoPRO #2 Right	O2 Sensor #2 Right	9	4	Right O2 Sensor
33	Brown			3	1	
34	Green			8	3	
35	Yellow			2	5	
36	Orange			7	2	
37	Red			1	6	

Ford Configuration

Injectors have different allocation in the CPC for the Ford version:

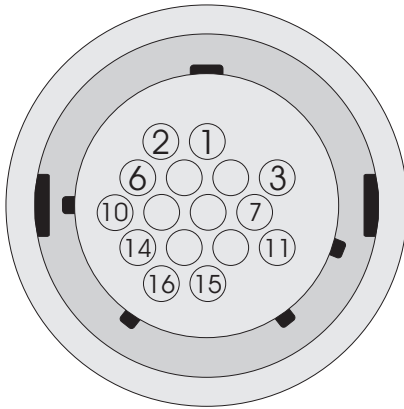
37-way #Pin	Wire color	Connector		#Pin		Function
		Inner Side	Engine Side	Inner Side	Engine Side	
16	Purple	P&H PRO	Injector #1	26	2	Primary #1 Injector
17			Injector #2	24		Primary #2 Injector
18			Injector #3	21		Primary #3 Injector
19			Injector #4	25		Primary #4 Injector
20			Injector #5	11		Primary #5 Injector
21			Injector #6	22		Primary #6 Injector
22			Injector #7	23		Primary #7 Injector
23			Injector #8	10		Primary #8 Injector



37-way CPC connector - Front view

7.3 FTSPARK-8 (16-way CPC connector)

16-Way #Pin	Function
1	Serial bus from FT550
2	Power Level
3	Can Low
4	Can Hi
5	Not Used
6	Not Used
7	Not Used
8	Power 12V +
9	Power 12V +
10	Power 12V +
11	Power 12V +
12	Signal GND
13	Power GND
14	Power GND
15	Power GND
16	Not Used



16-way CPC connector - Front view

8. Connectors

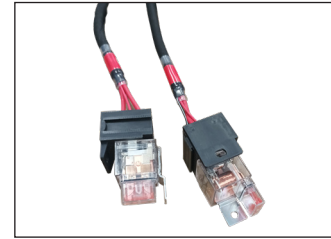
8.1 Firewall Circular Connector

The CPC connector is both safe and user friendly and offers the perfect connection solution for the harness through the firewall, by having keys that doesn't allow connection in the wrong position.



8.2 Relay and Fuses

All relays available in the PRO550 Harness are automotive sealed heavy duty type. The relay max current is 40A followed by a 40A fuse. There is a main relay for the FuelTech units such as ECU, O2 conditioner and sensors. The other relay is for the fuel injectors.



8.3 Crank Trigger and Cam Sync sensor

The harness is ready to Cherry GS101201 sensor for the crank trigger. For the cam sync sensor, it is designed cam sync kit and a hall effect sensor.

Crank Trigger

Crank trigger connector is standard for MSD VR crank sensor and Cherry Hall effect sensor, as the following table.

Sensor	Sensor pin/wire	Harness wire
Cherry GS101201	A	12V
	B	White wire from Crank Hall
	C	Battery's negative
MSD 8276	Purple	Red wire from Crank VR
	Green	Black wire from Crank VR
MSD 8154	Red	Red wire from Crank VR
	Black	Black wire from Crank VR
Electrimotion	1	Black wire from Crank VR
	2	Red wire from Crank VR

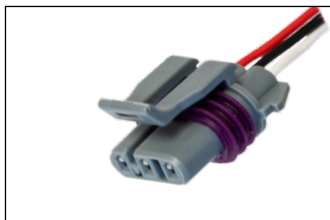
Cam Sync sensor

The PRO550 is made to read the MSD 2346 Cam Sync kit and Cherry GS101201. With MSD 2346, the purple wire must go to the white wire from Cam VR and the green wire must go to the black wire from Cam VR. If for any reason the sensor is not wired like this, swap the wires to match and connect like below:

Sensor	Sensor pin/wire	Harness wire
Cherry GS101201	A	12V
	B	White wire from Crank Hall
	C	Battery's negative
MSD 2346	Purple	Red wire from Cam VR
	Green	Black wire from Cam VR
Pro Mag 44	Black/Orange	Red wire from Cam VR
	Black/Purple	Black wire from Cam VR
Electrimotion	1	Black wire from Cam VR
	2	Red wire from Cam VR

If the connector of the sensor is different it can be replaced, however wiring order must follow the next table:

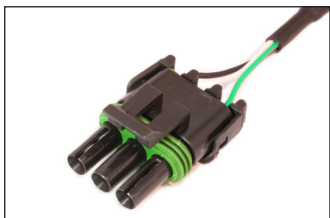
Connector	Wire color	Function
Crank / CAM VR	Black	Low reference
	Red	RPM Signal
Crank / CAM Hall	Red	12V
	White	RPM Signal
	Black	Ground



8.4 TPS

TPS is a potentiometer that informs the throttle position. FT550 can read almost any 0-5V TPS. The PRO550 harness uses a 3-way male Weather Pack connector.

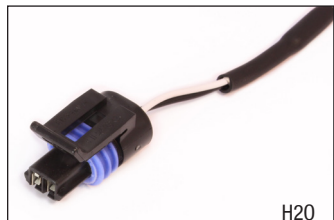
- Pin A: signal ground;
- Pin B: signal output;
- Pin C: 5V supply.



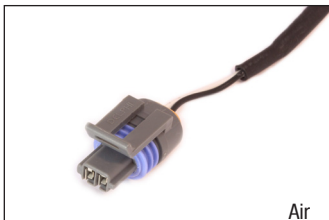
8.5 H2O and Air Temperature

The PRO550 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.



H2O

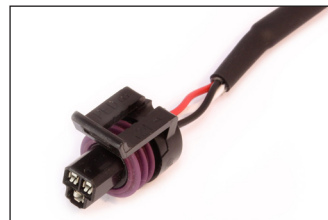


Air

8.6 Oil, Fuel and Wastegate Pressure

The oil, fuel and Wastegate pressure sensor connectors are designed for the PS-150, PS-300 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).



8.7 Injectors

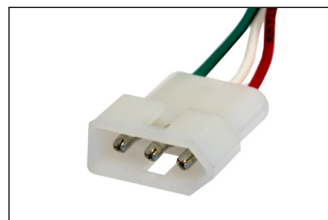
There are 8 injector outputs available. All injector connectors are Bosch EV1 style.



8.8 Driveshaft RPM

Hall effect sensor that reads a collar with magnets attached to the driveshaft, showing traction wheel speed in the ECU. More magnets in the collar will bring more resolution early in the launch.

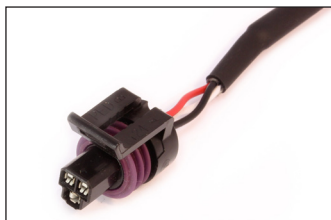
- Pin 1: 12V
- Pin 2: Analog output
- Pin 3: Sensor ground



8.9 Back Pressure

This is a generic input pressure normally used to read back pressure. It can also be used as a MAP sensor input or any other 0-5V sensor. PRO550 harness comes with a Delphi MetriPack 150 connector and uses the white input #2, which is also available at Extra connector. When the back pressure connector is being used, the white #2 in the Extra connector can't be used.

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



NOTE

Do not connect the pressure sensor directly to the exhaust manifold. Use a pipe between the sensor and the heat source to prevent overheating.

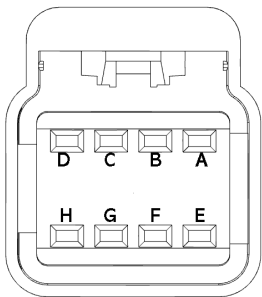
8.10 Extra Connections

Inputs: The inputs connector can be used to read any 0 to 5V analog sensor and it has a 5V output for sensors (green with red stripe) and a 12V output from Relay.

Outputs: The output connectors can be used for almost any kind of purpose, activating solenoids (some need relays), loads or be connected to Coil harness and Secondary Injector Harness. These connectors have signal outputs (blue, Gray and yellow), ground and 12v from relay wires.

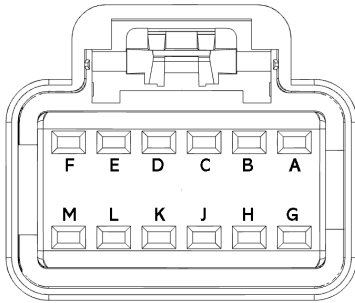
White inputs

INPUTS		
Pin	FT550 Extra Inputs	Function/Sensor
A	White input #1	
B	White input #8	
C	White input #9	
D	Green / Black	Ground sensors
E	Green / Red	5V sensors
F	White input #11	
G	White input #12	
H	Red	12V input from relay



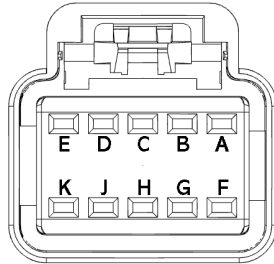
Outputs A

OUTPUTS A		
Pin	FT550 Extra Outputs	Function/Sensor
A	Blue output #9	
B	Blue output #10	
C	Blue output #11	
D	Blue output #12	
E	Yellow output #4	
F	Yellow output #3	
G	Yellow output #2	
H	Yellow output #1	
J	Red	12V input from relay
K	Black	Negative battery
L	NOT USED	
M	NOT USED	



Outputs B

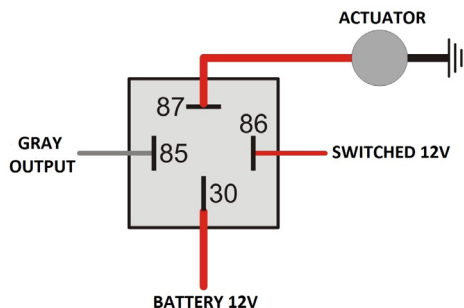
OUTPUTS B		
Pin	FT550 Extra Outputs	Function/Sensor
A	Gray output #1	
B	Gray output #2	
C	Gray output #3	
D	Gray output #4	
E	Gray output #5	
F	Gray output #6	
G	Gray output #7	
H	Gray output #8	
J	Red	12V input from relay
K	Black	Negative battery



Gray - Outputs - FORD configuration

OUTPUTS B - Grey		
Pin	FT550 Extra Gray Outputs	Function/Sensor
A	Gray output #1	Cylinder 5
B	Gray output #2	Cylinder 1
C	Gray output #3	Cylinder 6
D	Gray output #4	Cylinder 2
E	Gray output #5	Cylinder 7
F	Gray output #6	Cylinder 3
G	Gray output #7	Cylinder 8
H	Gray output #8	Cylinder 4
J	Red	12V sensors
K	Black	Negative battery

If the system being activated requires a 12v trigger, the yellow outputs are capable of ground or 12v. If no yellow outputs are available, it's possible to drive a relay by ground using one of the gray outputs to get the proper 12v by following this diagram:

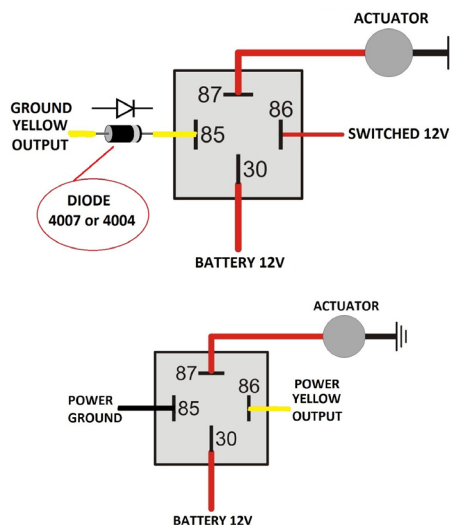


Yellow outputs are specialized outputs. They are HALF BRIDGE or PUSH PULL type outputs. This means that they can feed 5A both by negative or positive. This is important and necessary to control Electronic drive-by-wire throttle (DC motors) and stepper motor 4 wire idle control valves. They can be also used to control any type of LO SIDE or HI SIDE actuator (LO SIDE means the ECU will switch ground to activate the device, HI SIDE means the ECU will switch 12V to activate the device), noting that they'll always rest at the opposite of what they're set to trigger (If set to trigger at 12v, it'll rest at ground).

When used to trigger by ground, it's possible for the internal coil of the relay to backfeed 12v into the ECU and keep it turned on even after the ignition is turned off. To prevent this, use the same switched 12v source as the ECU for the relay coil, or change the circuit to trigger by 12v.

If that is not possible, then a diode (4004 or 4007) must be wired in series with the yellow output to filter out this backfeed.

Both ways of wiring this output described above, are shown in the following diagrams:



There are some relays with a built-in diode, like Hella 003437101.

9. Standard Sensors

9.1 Fuel and Oil Pressure

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

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

FuelTech PS-150/300/1500 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



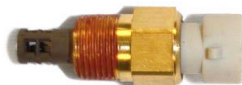
FuelTech part numbers:

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

9.2 Intake Air Temperature

With this sensor, the ECU can monitor the intake air temperature and perform real time compensations. One of its pins is connected to the battery negative, the other to the white #7 wire.

Part numbers: FuelTech 5005100015 or GM 25036751



9.3 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. One of its pins is connected to the battery negative, the other to the white #5 wire.

Part numbers: FuelTech 5005100016 or GM 12146312



10. Meters and adapter wires

10.1 FuelTech NanoPRO

The NanoPRO 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 or yet 9.55 to 146.9AFR (Gas), if necessary. For further information, check the FuelTech NanoPRO 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 NanoPRO 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. Peak and Hold PRO - External Injector Driver

Peak and Hold PRO driver is designed to control the current on low impedance injectors. The FuelTech Peak and Hold PRO has 8 outputs and in the PRO Wiring Harness will run one injector per channel.

Considering one injector per channel application: 2A/0.5A – Bosch 1600cc, Ford Racing 1600cc 4A/1A – Siemens Deka 225lb/hr, Precision 225lb/hr and FTINJECTORS 8A/2A – Precision 550lb/hr, Billet Atomizer, Moran Some earlier 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 connector 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 FT550 and injectors.



12. Troubleshooting

Issue	Solution
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
FT550 doesn't read cranking	1. Check crank trigger and cam sync connections (chapter 8.3)
	2. Check sensor gap
	3. Check diagnostic panel for RPM signal
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 FT550 firmware version
	2. Check if read and write buttons get colored when FT550 is connected

13. 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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