FuelTech
FT700 ECU
System

FuelTech FT700 ECU System User Guide

Contents

FuelTech FT700 ECU System

Product Specifications

- **Model:** VCU FT700 and FT700 PLUS
- **Overall Dimensions (FT700):** 8.62 in (W) x 5.43 in (H) x 3.11 in (D)
- **Overall Dimensions (FT700 PLUS):** 14.45 in (W) x 7.09 in (H) x 3.11 in (D)

Product Usage Instructions

Installation

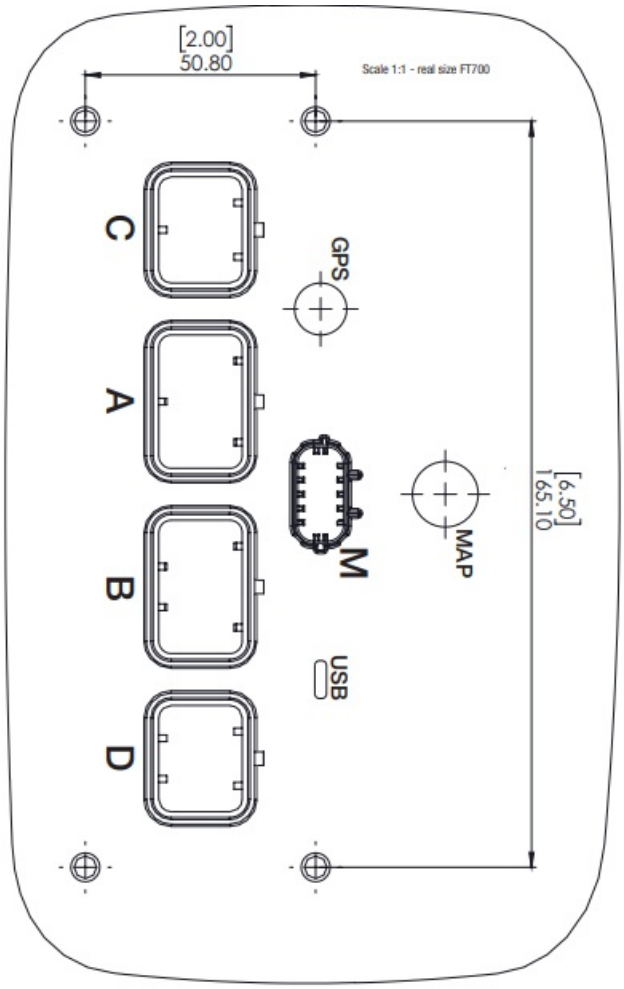
1. Use fixing templates FT700 and FT700 PLUS to mark the hole locations.
2. Ensure the distance between hole centers is 6.50 in horizontally and 2.00 in vertically for both FT700 and FT700 PLUS.
3. Mount the VCU ensuring the overall width and height match the specified measurements for the model.

Harness Connections

- The A connector features various pinouts with corresponding wire colors and functions. Ensure proper connection based on the provided information.
- The B connector harness connection information is not available in this extract.

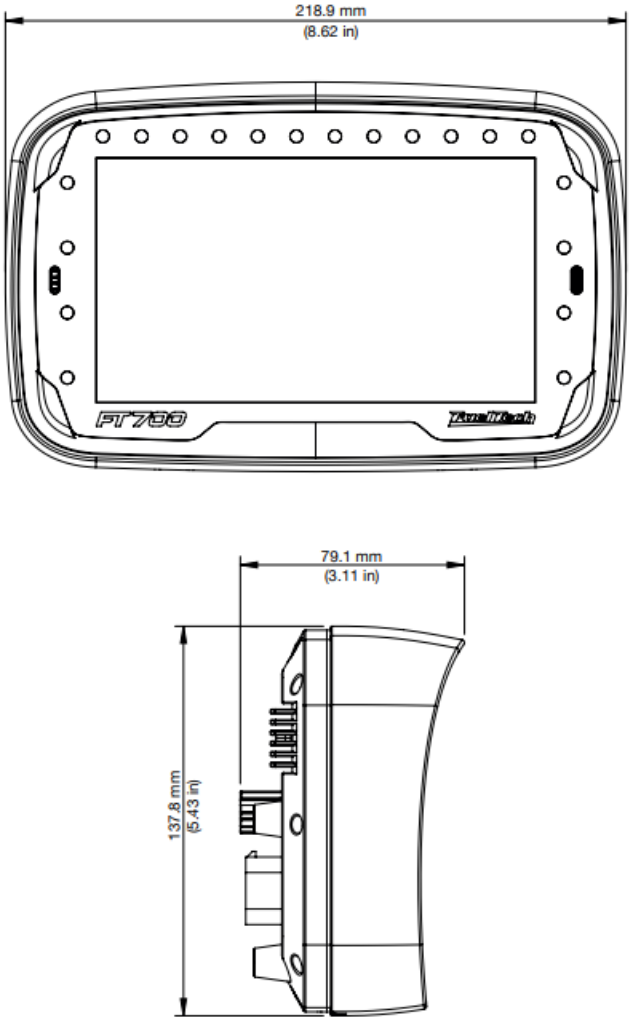
Fixing template FT700 and FT700 PLUS

- Distance between hole centers (FT700 and FT700 PLUS) (horizontal): 6.50 in
- Distance between hole centers (FT700 and FT700 PLUS) (vertical): 2.00 in
- Overall width (VCU FT700) (horizontal): 8.62 in
- Overall height (VCU FT700) (vertical): 5.43 in
- Overall width (VCU FT700 PLUS) (horizontal): 14.45 in
- Overall height (VCU FT700 PLUS) (vertical): 7.09 in



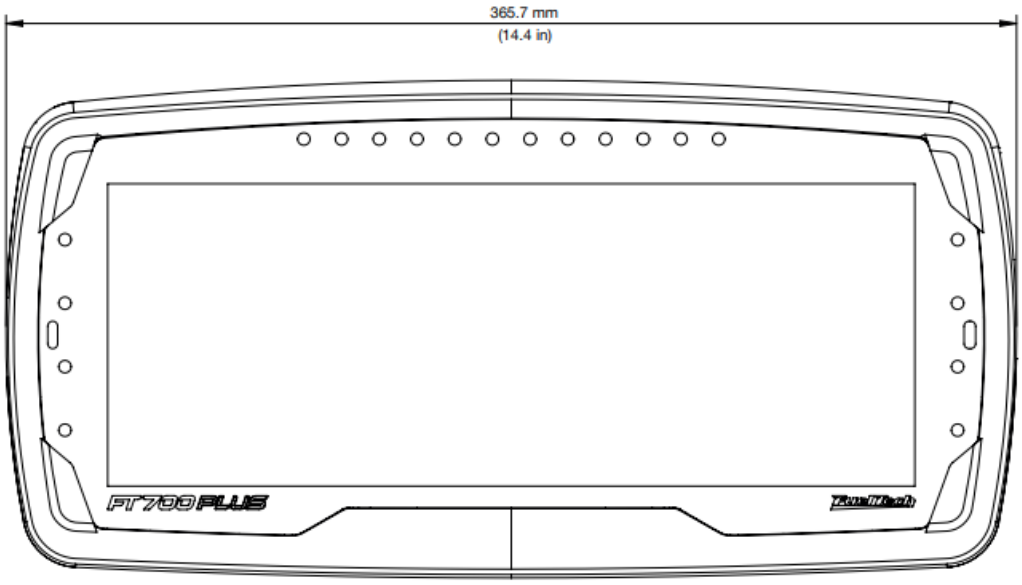
Overall FT700

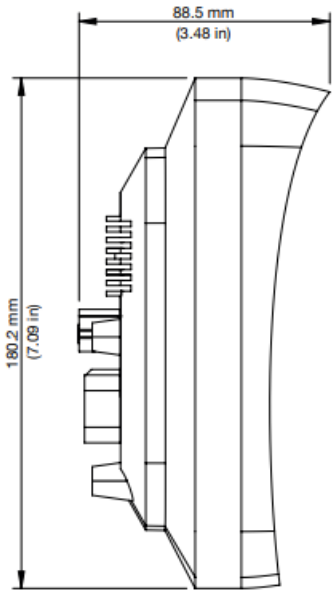
- Overall width (horizontal): 8.62 in
- Overall height (vertical): 5.43 in
- Depth: 3.11 in



Overall FT700 PLUS

- Overall width (horizontal): 8.62 in
- Overall height (vertical): 5.43 in
- Depth: 3.11 in



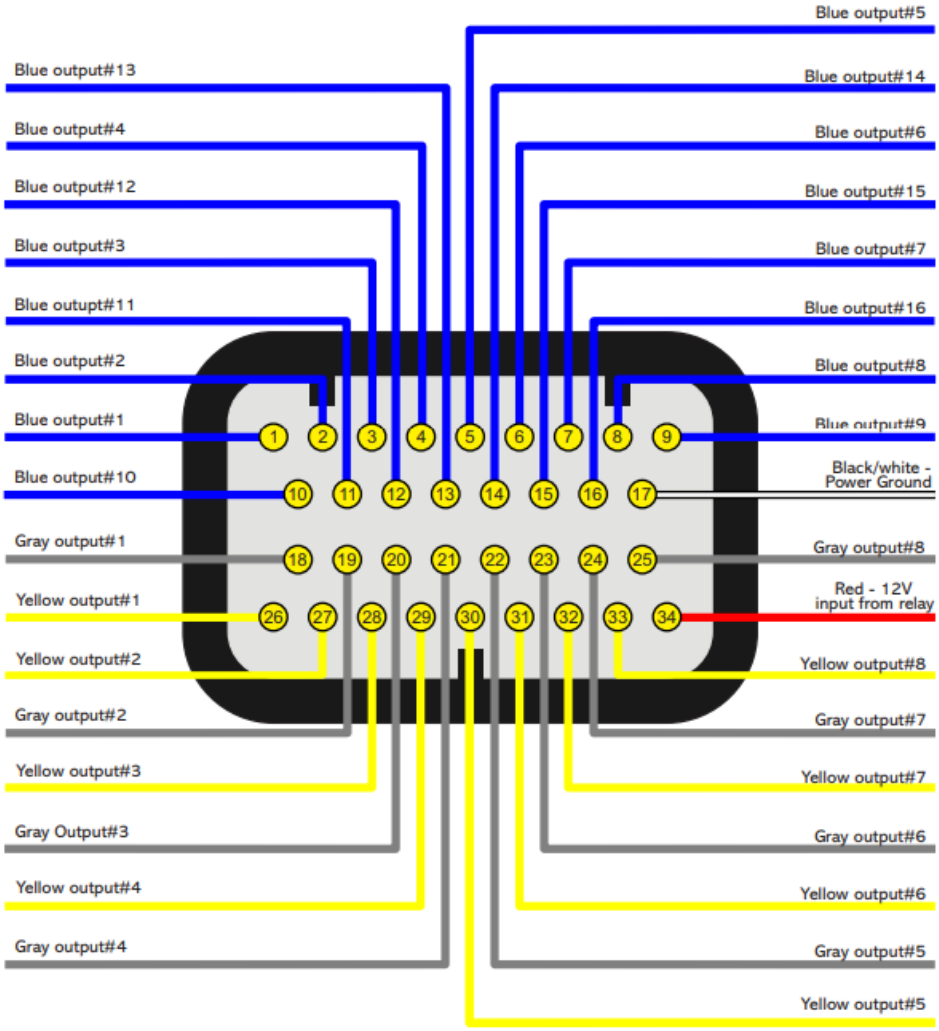


Harness connections A connector

Pin	Wire Color	Function	Information
01	Blue #01	Blue output #01	
02	Blue #02	Blue output #02	
03	Blue #03	Blue output #03	
04	Blue #04	Blue output #04	
05	Blue #05	Blue output #05	
06	Blue #06	Blue output #06	
07	Blue #07	Blue output #07	
08	Blue #08	Blue output #08	
09	Blue #09	Blue output #09	
10	Blue #10	Blue output #10	

11	Blue #11	Blue output #11	These outputs are usually used for injector control. When needed, they can be configured as auxiliary outputs.
12	Blue #12	Blue output #12	
13	Blue #13	Blue output #13	
14	Blue #14	Blue output #14	
15	Blue #15	Blue output #15	
16	Blue #16	Blue output #16	
17	Black/White	Power ground input	**Directly** wired to the battery negative terminal with no seams. Do not tap any other grounds to this wire, it must run clean straight to the battery negative terminal.
18	Gray #01	Gray output #01	These outputs are usually used for ignition control. When needed, they can be set up as injector outputs or auxiliary outputs. By standard, Gray output #8 is used as a tachometer output [1].
19	Gray #02	Gray output #02	
20	Gray #03	Gray output #03	
21	Gray #04	Gray output #04	
22	Gray #05	Gray output #05	
23	Gray #06	Gray output #06	
24	Gray #07	Gray output #07	
25	Gray #08	Gray output #08	
26	Yellow #01	Yellow output #01	Electronic throttle and step motor outputs. Also used as injection or auxiliary outputs (cooling fan, fuel pump, etc.)
27	Yellow #02	Yellow output #02	
28	Yellow #03	Yellow output #03	
29	Yellow #04	Yellow output #04	
30	Yellow #05	Yellow output #05	
31	Yellow #06	Yellow output #06	
32	Yellow #07	Yellow output #07	
33	Yellow #08	Yellow output #08	
34	Red	12V input from relay	Connected to the pin 87 of the Main Relay.

A-connector diagram

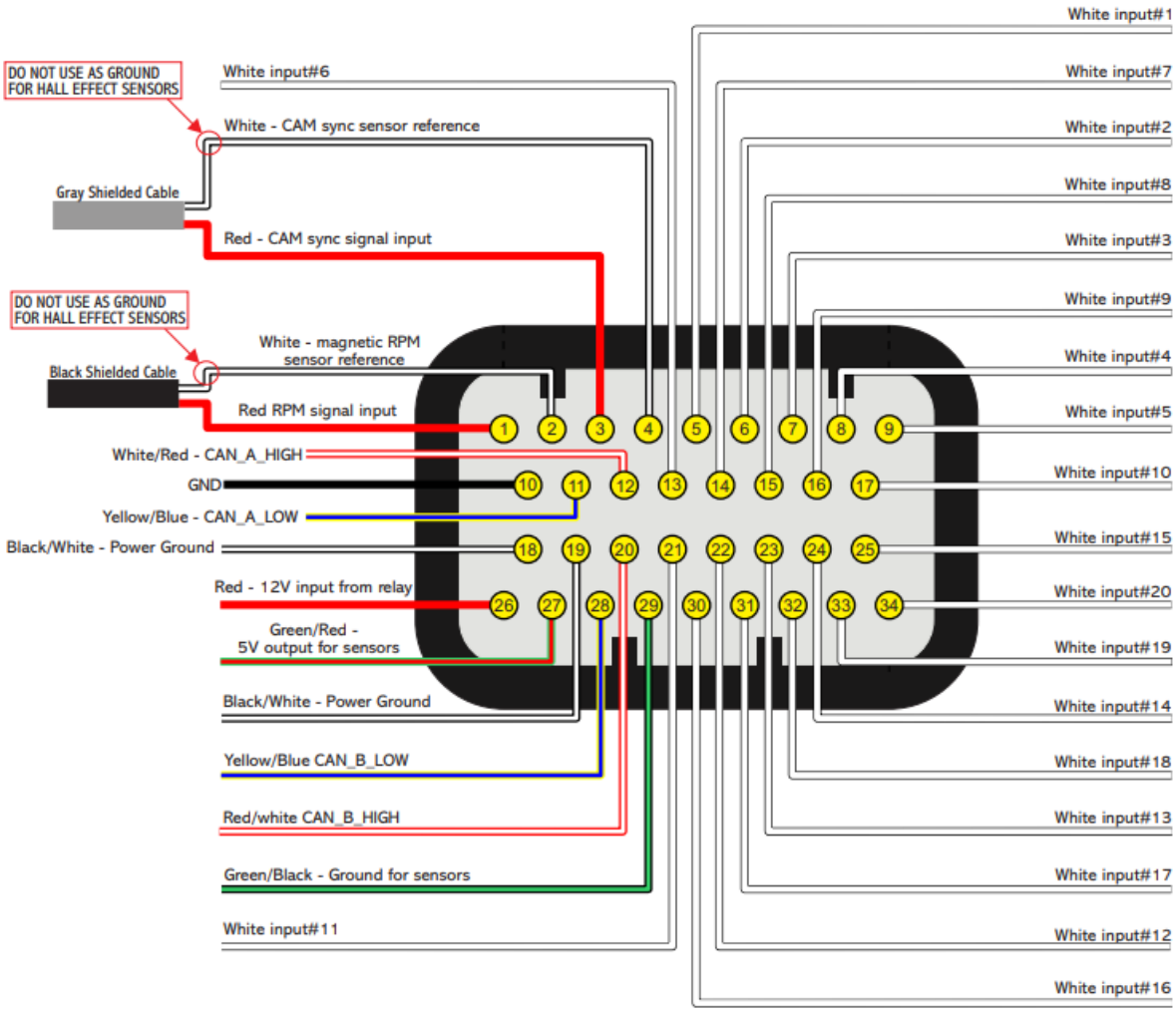


Harness connections B connector

Pin	Wire Color	Function	Information
01	Red	**RPM signal input**	Connected to the crank trigger sensor (hall or magnetic) or to t he distributor. To VR sensors, use the shield wire the sensor s hield. To Hall sensor, use the shield as negative
02	White	Magnetic RPM sensor reference	Connected to the negative wire of the magnetic sensor. When OEM ECU is reading the sensor in parallel, split this wire with OEM sensor negative – Do not connect when using hall effect sensor.
03	Red	Cam sync signal input	Connected to the cam sync sensor (hall or magnetic)
04	White	Cam sync reference in put	Connected to the cam sync sensor (hall or magnetic) – Use the shield as negative to the sensor
05	White #1	White input #1	**Default:** O2 sensor input
06	White #2	White input #2	**Default:** two-step input
07	White #3	White input #3	**Default:** Air conditioning button
08	White #4	White input #4	**Default:** Oil pressure

09	White #5	White input #5	**Default:** Coolant temperature
10	Black	Battery negative input	Connected directly to the battery negative with no seams. **Do not connect this wire to the chassis, engine block or head.**
11	Yellow/Blue	CAN A LOW	CAN A
12	White/Red	CAN A HIGH	
13	White #6	White input #6	**Default:** fuel pressure
14	White #7	White input #7	**Default:** Air temperature
15	White #8	White input #8	**Default:** pedal#2 signal input
16	White #9	White input #9	**Default:** pedal#1 signal input
17	White #10	White input #10	**Default:** MAP signal output, electronic throttle 1B input signal
18	Black/White	Power ground inputs	**Directly** wired to the battery negative terminal with no seams. Do not tap any other grounds to this wire, it must run clean str aight to the battery negative terminal.
19	Black/White		
20	White/Red	CAN B HIGH	CAN B HIGH
21	White #11	White input #11	**Default:** TPS sensor
22	White #12	White input #12	Sensors input
23	White #13	White input #13	
24	White #14	White input #14	
25	White #15	White input #15	
26	Red	12V input from relay	Connected to the pin 87 of the Main Relay
27	Green/Red	5V outputs for sensors	5V voltage output for TPS, electronic throttle and pedal sensor s
28	Yellow/Blue	CAN B LOW	CAN B LOW
29	Green/Black	Ground for sensors	Connected the sensors ground
30	White #16	White input #16	Sensors input
31	White #17	White input #17	
32	White #18	White input #18	
33	White #19	White input #19	Power Shift Input – Blue wire Strain gage sensor (positive sign al)
34	White #20	White input #20	Power Shift Input – Orange wire Strain gage sensor (negative signal)

B-connector diagram



NOTE
When using the GearController function connect the White wire from the shifter to ground for sensors Green/ Black (pin #29).

IMPORTANT
Fuel only: When using this option, the RPM signal input cannot be connected to a coil high voltage signal because the input has no protection and will damage the trigger input on the ecu. Please use a tach output, another rpm source or an ignition coil to tach adapter module to avoid damage to the unit.

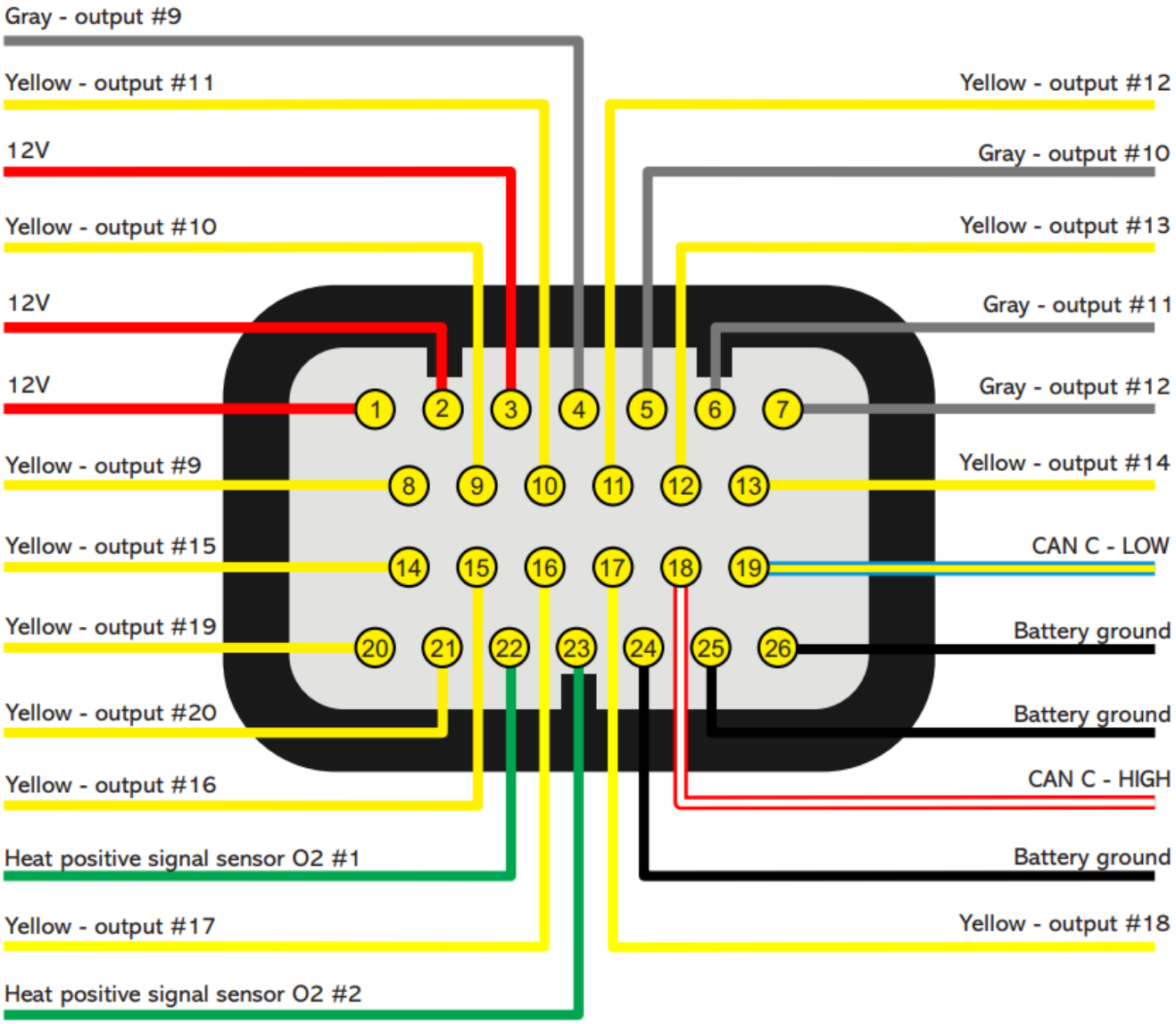
Harness connections C (optional)

Pin	Wire Color	Function	Information
01	Red	12V input from relay	Connected to the pin 87 of the Main Relay
02	Red		
03	Red		
04	Gray #09	Gray output #09	These outputs are usually used for ignition control. When needed, they can be set up as injector outputs or auxiliary outputs. By standard, Gray output #8 is used as a tachometer output [1].
05	Gray #10	Gray output #10	
06	Gray #11	Gray output #11	
07	Gray #12	Gray output #12	
08	Yellow #09	Yellow output #09	Electronic throttle and step motor outputs. Also used a s injection or auxiliary outputs (cooling fan, fuel pump, etc.)
09	Yellow #10	Yellow output #10	
10	Yellow #11	Yellow output #11	
11	Yellow #12	Yellow output #12	
12	Yellow #13	Yellow output #13	
13	Yellow #14	Yellow output #14	
14	Yellow #15	Yellow output #15	
15	Yellow #16	Yellow output #16	
16	Yellow #17	Yellow output #17	
17	Yellow #18	Yellow output #18	
18	White/Red	CAN C (+)	CAN C
19	Blue/Yellow	CAN C (-)	
20	Yellow #19	Yellow output #19	Electronic throttle and step motor outputs. Also used a s injection or auxiliary outputs (cooling fan, fuel pump, etc.)
21	Yellow #20	Yellow output #20	
22	Yellow #21	Yellow output #21	Power supply for O2 sensor heaters 1 and 2***.
23	Yellow #22	Yellow output #22	
24	Black	Battery negative input	Connected directly to the battery negative with no sea ms. **Do not connect this wire to the chassis, engin e block or head.**
25	Black		
26	Black		

IMPORTANT

*** If you do not use the integrated O2 sensor conditioner, these outputs can be used with two extra yellow outputs.

C-connector diagram (optional)



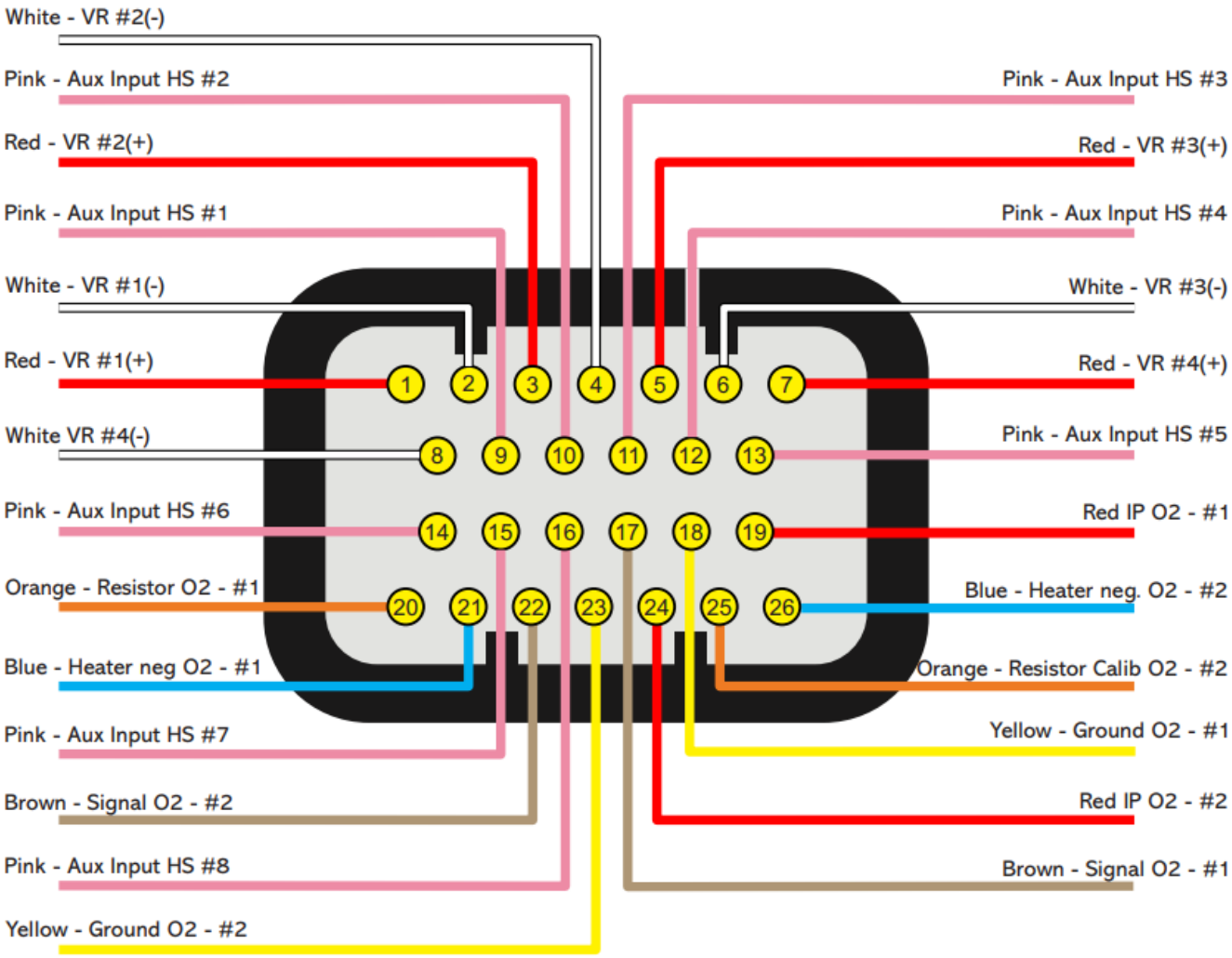
Harness connections D (optional)

Pin	Wire Color	Primary function	Information	Secondary fun ction
01	Red	Input frequency channel #01	Shielded cable for reading RPM and spe ed signals – Frequency #01	Input #21
02	White			Input #22
03	Red	Input frequency channel #02	Shielded cable for reading RPM and spe ed signals – Frequency #02	Input #23
04	White			Input #24
05	Red	Input frequency channel #03	Shielded cable for reading RPM and spe ed signals – Frequency #03	Input #25
06	White			Input #26

07	Red	Input frequency channel #04	Shielded cable for reading RPM and speed signals – Frequency #04	Input #27
08	White			Input #28
09	Pink #01	Input for high speed reading #01	Used for high speed sensors (possibility of 1Msps samples when all channels active or 10Msps for a single channel).	Input #29
10	Pink #02	Input for high speed reading #02		Input #30
11	Pink #03	Input for high speed reading #03		Input #31
12	Pink #04	Input for high speed reading #04		Input #32
13	Pink #05	Input for high speed reading #05		Input #33
14	Pink #06	Input for high speed reading #06		Input #34
15	Pink #07	Input for high speed reading #07		Input #35
16	Pink #08	Input for high speed reading #08		Input #36
17	Brown	Signal	**Connected O2 sensor #1** **NOTE: The Heat positive signal sensor is in connector C, green wire (pin 22)**	
18	Yellow	Ground		
19	Red	IP		
20	Orange	Resistor calibration		
21	Blue	Heater negative		
22	Brown	Signal	**Connected O2 sensor #2** **NOTE: The Heat positive signal sensor is in connector C, green wire (pin 23)**	
23	Yellow	Ground		
24	Red	IP		
25	Orange	Resistor calibration		
26	Blue	Heater negative		

IMPORTANT
Frequency and high speed inputs can be also configured as analog inputs.

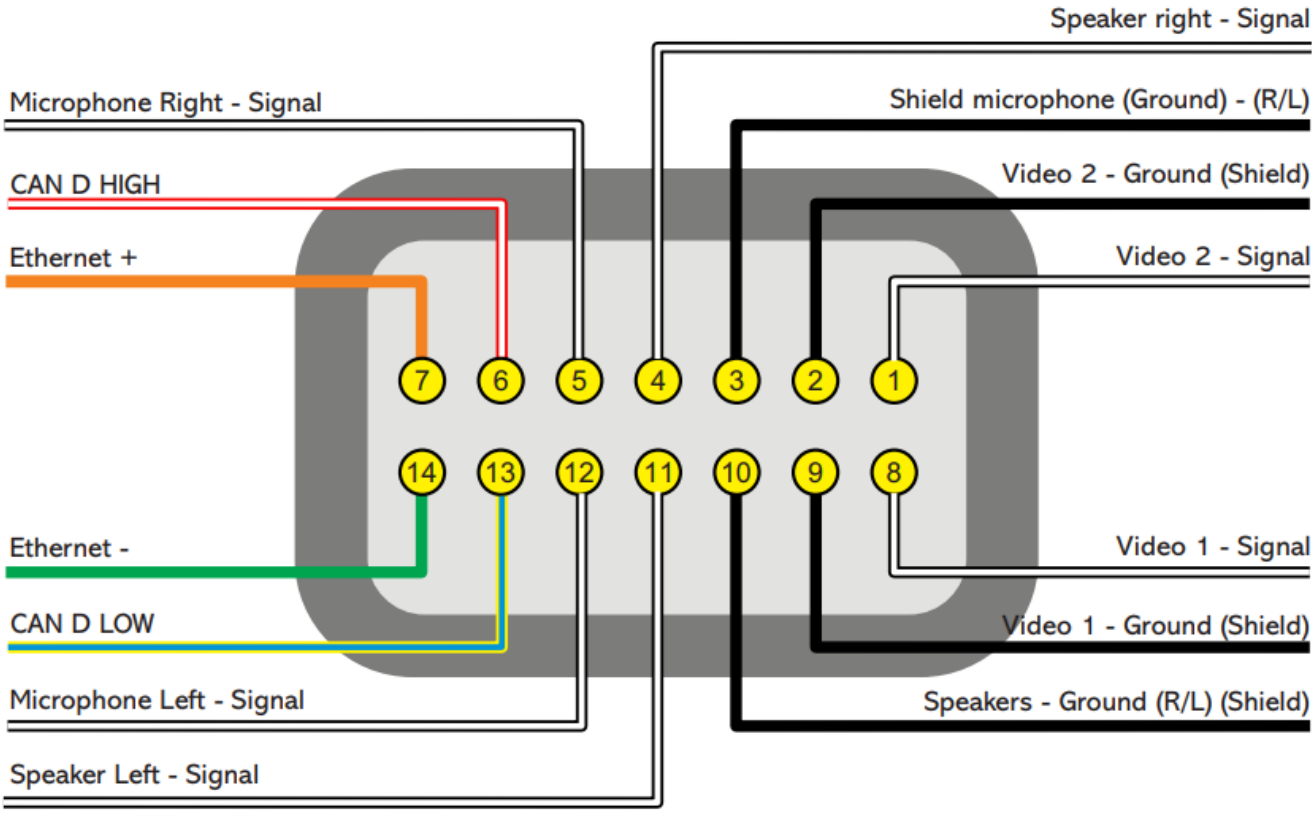
D-connector diagram (optional)



Harness connections M (optional)

Pin	Wire Color	Function	Information
01	Black/White	VI (video #2)	Shielded cable – signal
02	Black	GND VI2 (Ground video #2)	Use the shield as negative to video #2
03	Black	GND MIC (Ground microphone)	Shielded cable to left and right microphone
04	Black/White	AOR (right speaker)	Shielded cable – signal
05	Black/White	AIR (right microphone input)	Shielded cable – signal
06	White/Red	CAN D (+)	CAN D (+)
07	Orange	ETH+ (Ethernet +)	Ethernet communication cable
08	Black/White	VI 1 (video #1)	Shielded cable – signal
09	Black	GND VI1 (Ground video #1)	Use the shield as negative to video #2
10	Black	GND SPK (Ground speaker)	Shielded cable to left and right speaker
11	Black/White	AOL (Left Speaker)	Shielded cable – signal
12	Black/White	AIL (left microphone input)	Shielded cable – signal
13	Yellow/blue	CAN D (-)	CAN D (-)
14	Green	ETH- (Ethernet -)	Ethernet communication cable

M-connector diagram (optional)



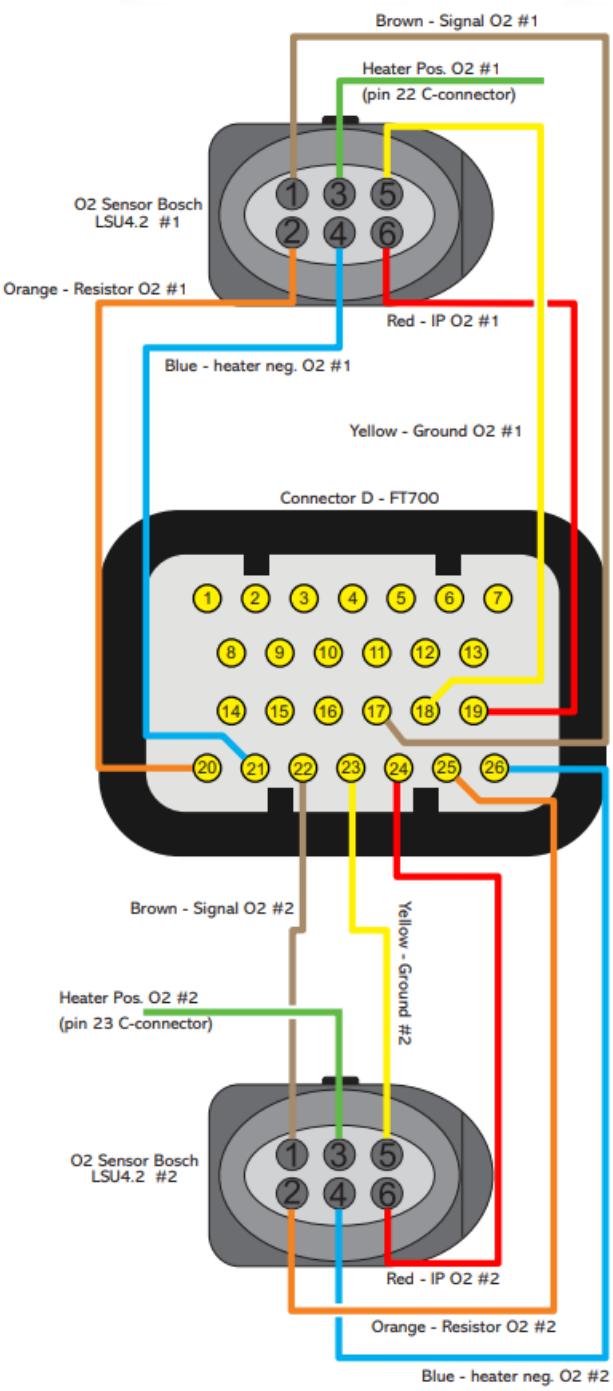
Electrical harness Bosch LSU4.2

- **O2 sensor #1**

Connec FT700	Pin FT700	Pin O2 LSU 4.2	Description
D	17	1	Brown – signal
	18	5	Yellow – ground
	19	6	Red – IP
	20	2	Orange – resistor
	21	4	Blue – heater neg.
C	22	3	Green – heater pos. (comes of C connector – Pin 22)

- **O2 sensor #2**

Connec FT700	Pin FT700	Pin O2 LSU 4.2	Description
D	22	1	Brown – signal
	23	5	Yellow – ground
	24	6	Red – IP
	25	2	Orange – resistor
	26	4	Blue – heater neg.
C	23	3	Green – heater pos. (comes of C connector – Pin 23)



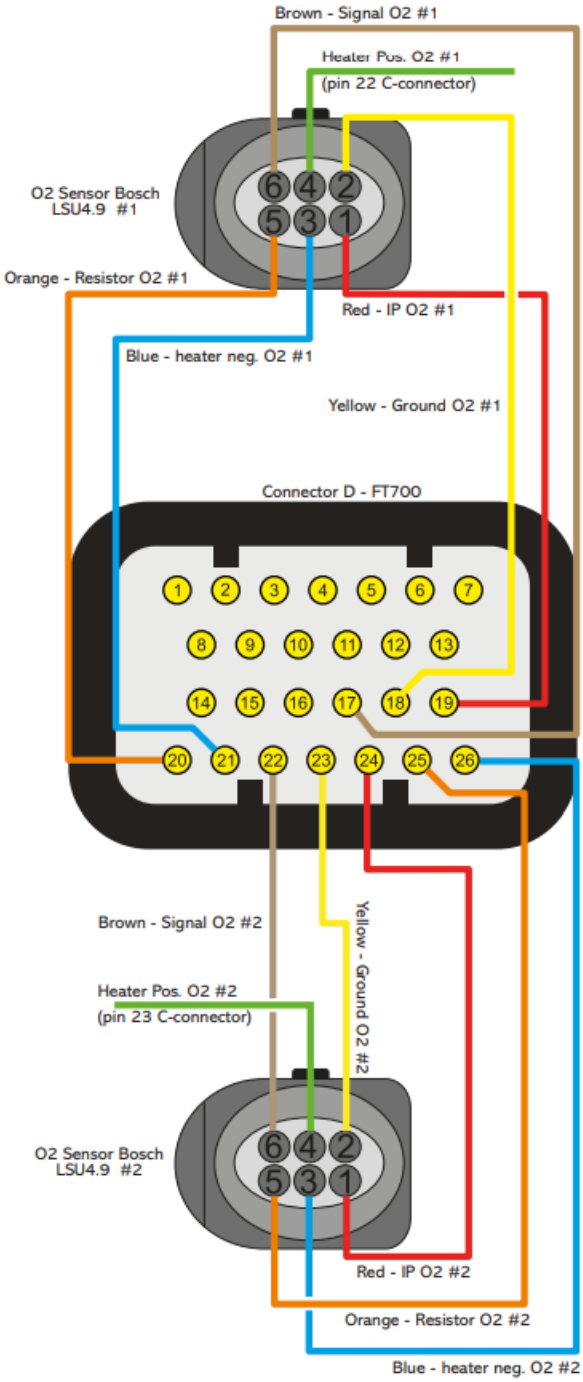
Electrical harness Bosch LSU4.9

- **O2 sensor #1**

Connec FT700	Pin FT700	Pin O2 LSU 4.9	Description
D	17	6	Brown – signal
	18	2	Yellow – ground
	19	1	Red – IP
	20	5	Orange – resistor
	21	3	Blue – heater neg.
C	22	4	Green – heater pos. (comes of C connector – Pin 22)

- **O2 sensor #2**

Connec FT700	Pin FT700	Pin O2 LSU 4.9	Description
D	22	6	Brown – signal
	23	2	Yellow – ground
	24	1	Red – IP
	25	5	Orange – resistor
	26	3	Blue – heater neg.
C	23	4	Green – heater pos. (comes of C connector – Pin 23)



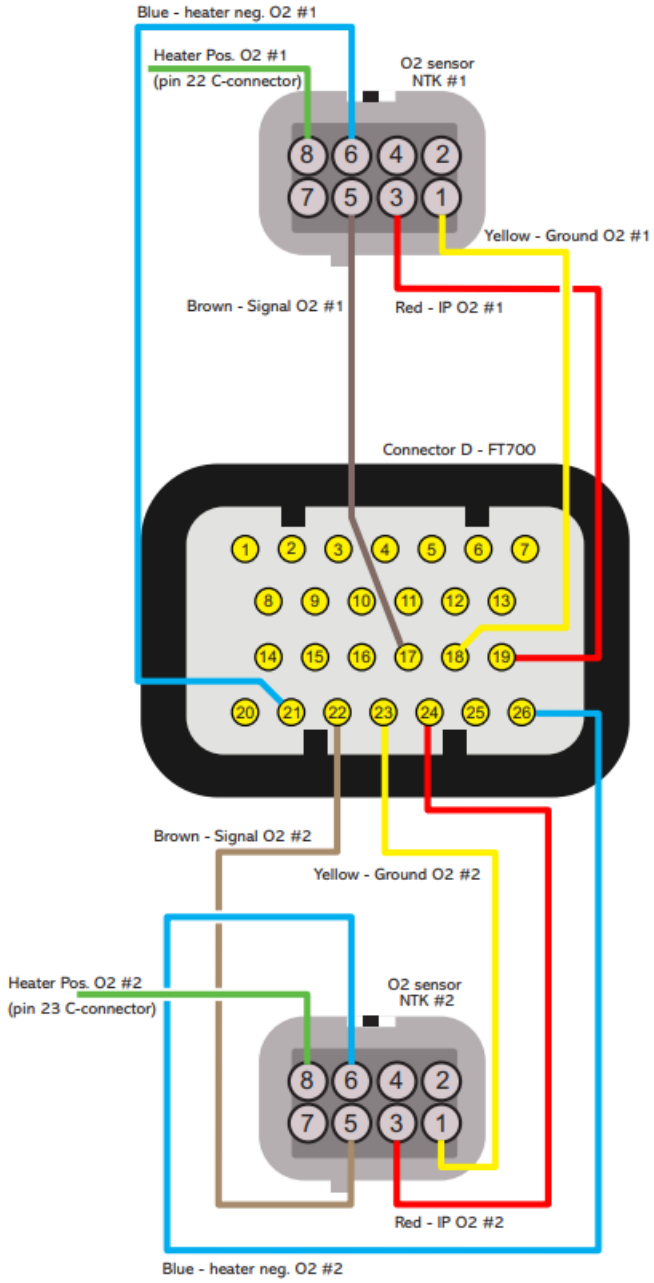
Electrical harness O2 sensor NTK

- **O2 sensor #1**

Connec FT700	Pin FT700	Pin O2 NTK	Description
D	17	5	Brown – signal
	18	1	Yellow – ground
	19	3	Red – IP
	20	–	Not used Orange – resistor
	21	6	Blue – heater neg.
C	22	8	Green – heater pos. (comes of C connector – Pin 22)

- **O2 sensor #2**

Connec FT700	Pin FT700	Pin O2 NTK	Description
D	22	5	Brown – signal
	23	1	Yellow – ground
	24	3	Red – IP
	25	–	Not used Orange – resistor
	26	6	Blue – heater neg.
C	23	8	Green – heater pos. (comes of C connector – Pin 23)



FAQ

Q: What are the typical uses for the Blue outputs?
A: The Blue outputs are commonly used for injector control but can be configured as auxiliary outputs when needed.

Q: How should the power ground input be connected?
A: The power ground input should be directly wired to the battery negative terminal with no seams. Do not tap any other grounds to this wire; it must run clean straight to the battery negative terminal.

Q: What is the standard function of Gray Output #8?
A: By standard, Gray output #8 is used as a tachometer output 1.

Documents / Resources

	**FuelTech FT700 ECU System** [pdf] User Guide FT700, ECU System, System

References

- **User Manual**