Professional Electronics
for Automotive and Motorsport

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F42D ECU
Datasheet

The F42D ECU is designed for cost effective entry level engine management. This control unit is lightweight and compact yet features efficient use of its IO complement to allow sophisticated control for engines up to 8 cylinders.

This unit uses a high speed RISC processor with carefully constructed engine tracking code increasing flexibility, efficiency and accuracy under transient conditions. This powerful unit also allows advanced control algorithms yet remains easy to calibrate for the end user.

Standard strategies include turbocharged/supercharged boost control, twin cam, twin vvt, flex fuel, closed loop wideband lambda and many more.

This powerful hardware is packaged within a lightweight CNC aluminum case designed to be installed in harsh environments.

Processing:

- Powerful RISC CPU for advanced strategy execution
- Integrated engine position tracking and output diagnostics

Outputs:

- 14 user configurable general purpose Pulse Width Modulated power outputs, including:
- 4 ignition coil outputs IGBT or TTL (Software configurable)
- 10 general PWM/Port injector outputs

Inputs:

- 7 user configurable general purpose analogue sensor inputs, including 4 bipolar, inductive or hall effect speed / engine position inputs
- 4 dedicated inputs, including:
- 2 crank/camshaft position sensors
- 1 wideband (NTK) lambda sensor interface
- 1 K-type thermocouple sensor interfaces

Interfaces:

- 100 MHz full duplex Ethernet for calibration, configuration and data download
- CAN 2.0B interfaces for communication with other controllers or logging systems
- RS232 serial interface for communication with other controllers or logging systems

Memory:

- 2MB or 512KB[-HT] battery backed internal logging memory
- Ultra-Fast data download via Ethernet
- Time/Date stamped data via real time clock

Power Supply:

- 6V to 32V input voltage range with reverse polarity protection
- 1 regulated 5V sensor supply output with individual short circuit protection
- 2 Separately protected sensor and communication ground input

Physical:

- 50 way D-type connector
- CNC machined black anodized aluminum case
- Maximum dimension including the connector is 120mm x 118mm x 26mm
- Operating temperature -40°C to +85°C or +125°C[-HT]
- Sealed to IP65 (when mated)
- Total mass 280 grams

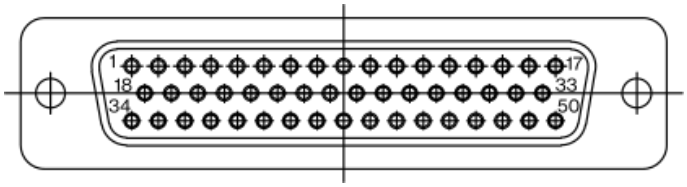
Available Upgrade Features:

- Custom Security

Ordering Information:

Description	Part number
F42D	ECU-D02
F42D-HT (High Temperature)	ECU-D03
50Way Connector Kit	CON-B04

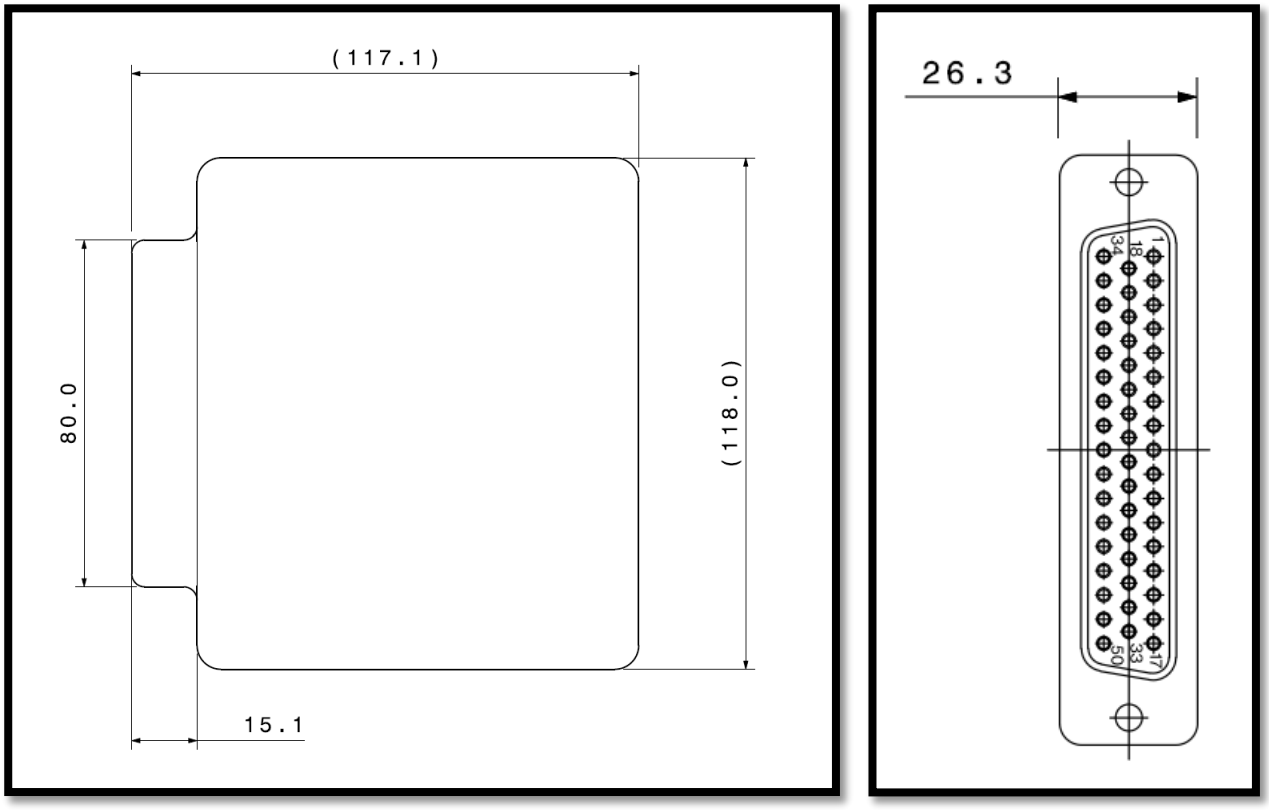
Wiring Information:



View looking into the 50 way connector

Pin	Gauge	Signal Name	Signal Notes
1	24AWG	THERMO+ #01	Thermocouple positive [K-Type]
2	22AWG	FUEL #10	Port fuel injector or low-side PWM 10A peak
3	24AWG	INPUT #07	Analogue input 0-5V, 3kΩ software pullup to 5V
4	24AWG	INPUT #04	Generic input; analogue or frequency; 0-5V, -5V to +5V, 3kΩ (software pullup)
5	24AWG	INPUT #01	Generic input; analogue or frequency; 0-5V, -5V to +5V, 47kΩ (software pullup)
6	24AWG	LAMBDA I #01	Lambda current pump [Ip]
7	24AWG	INPUT #08 / RS232 RX	Analogue input 0-5V, 3kΩ software pullup to 5V or RS232 receive
8	24AWG	CAN HI #01	CAN communication port 120Ω terminated
9	24AWG	LAN TX+	Ethernet PC communication port
10	22AWG	FUEL #08	Port fuel injector or low-side PWM 10A peak
11	22AWG	FUEL #05	Port fuel injector or low-side PWM 10A peak
12	22AWG	FUEL #02	Port fuel injector or low-side PWM 10A peak
13	20AWG	IGNITION #04	Ignition coil can be “NORMAL” or “TTL” (set via software) or low-side PWM
14	20AWG	IGNITION #01	Ignition coil can be “NORMAL” or “TTL” (set via software) or low-side PWM
15	20AWG	IGNITION #02	Ignition coil can be “NORMAL” or “TTL” (set via software) or low-side PWM
16	20AWG	BATTERY SUPPLY	ECU positive, must be as short as possible
17	20AWG	POWER GROUND	ECU negative, must be engine ground and as short as possible
18	20AWG	DO NOT CONNECT	
19	24AWG	5V OUT #01	Regulated 5V sensor supply rail, maximum current capability of 100mA
20	24AWG	INPUT #05	Analogue input 0-5V, 3kΩ software pullup to 5V
21	24AWG	INPUT #02	Generic input; analogue or frequency; 0-5V, -5V to +5V, 3kΩ (software pullup)
22	24AWG	CRANK	Frequency input; 0-5V, -5V to +5V
23	24AWG	SENSOR GROUND #01	Protected sensor ground
24	24AWG	CAN LO #01	CAN communication port 120Ω terminated
25	24AWG	LAN RX-	Ethernet PC communication port
26	24AWG	COMMS GROUND	Protected communication ground
27	22AWG	FUEL #06	Port fuel injector or low-side PWM 10A peak
28	22AWG	FUEL #03	Port fuel injector or low-side PWM 10A peak
29	22AWG	FUEL #01	Port fuel injector or low-side PWM 10A peak
30	20AWG	IGNITION #03	Ignition coil can be “NORMAL” or “TTL” (set via software) or low-side PWM
31	20AWG	PAIRED WITH PIN 14	
32	20AWG	BATTERY SUPPLY	ECU positive, must be as short as possible
33	20AWG	POWER GROUND	ECU negative, must be engine ground and as short as possible
34	24AWG	THERMO- #01	Thermocouple negative [K-Type]
35	22AWG	FUEL #09	Port fuel injector or low-side PWM 10A peak
36	24AWG	INPUT #06	Analogue input 0-5V, 3kΩ software pullup to 5V
37	24AWG	INPUT #03	Generic input; analogue or frequency; 0-5V, -5V to +5V, 3kΩ (software pullup)
38	24AWG	CAM	Frequency input; 0-5V, -5V to +5V
39	24AWG	LAMBDA V #01	Lambda voltage signal [Vs]
40	24AWG	RS232 TX	RS232 transmit
41	24AWG	LAN RX+	Ethernet PC communication port
42	24AWG	LAN TX-	Ethernet PC communication port
43	22AWG	FUEL #07	Port fuel injector or low-side PWM 10A peak
44	22AWG	FUEL #04	Port fuel injector or low-side PWM 10A peak
45	20AWG	PAIRED WITH PIN 13	
46	20AWG	PAIRED WITH PIN 30	
47	20AWG	PAIRED WITH PIN 15	
48	20AWG	BATTERY SUPPLY	ECU positive, must be as short as possible
49	20AWG	POWER GROUND	ECU negative, must be engine ground and as short as possible
50	20AWG	POWER GROUND	ECU negative, must be engine ground and as short as possible

Dimensions:



Warranty and Servicing:

- This equipment comes with a 1 year warranty against manufacturing defects and failures however misuse or damage will not be covered under warranty.
- Warranty may be extended on an annual basis via a system refurbishment scheme.
- This ECU contains a battery which can be returned to Life Racing for a replacement, a charge may be made for this service.