



M130 ECU



MoTeC's M1 ECU range begins a new era in engine control. The M1's unique technology redefines the meaning of customisation, delivering total control without compromise. Highly advanced security strategies make these ECUs ideal for both category managed and unrestricted applications.

► FEATURES

- Small and light in robust magnesium enclosure
- Port injection injector type
- Large logging memory
- Latest generation high performance processor
- Suitable for modern engines with DBW, Cam Control and multiple CAN buses
- Advanced logging features, high speed, multiple logs (with access logins)
- I/O expansion using E816, E888 expanders
- Flexible tuning software
- Robust and comprehensive security features
- Programmable injector drive characteristics
- Programmable digital input system for Ref/Sync, wheel speeds etc.
- Programmable trigger levels, diagnostics
- All Low Side and Half Bridge outputs have PWM capability

► CONFIGURATION

The M1 series ECUs come with three configuration options.

Locked Configuration

A locked configuration is appropriate when an ECU contains specific firmware to suit the application. The user can tune the engine in the normal way but the ECU cannot be re-configured for another application.

Standard Configuration

The standard configuration allows the user to load a selection of firmware packages available from MoTeC. They incorporate different levels of functionality and the user can choose one to suit their requirements. Additional packages can be loaded into the ECU as and when requirements change.

Open Configuration

The open configuration provides a fully flexible ECU solution that can be precisely tailored to individual requirements. Third party developers can be trained to use MoTeC M1 Build software to develop their own control strategies.

Intellectual property is protected by the M1 ECU's security system and remains with the ECU owner.

▶ SECURITY

The M1's advanced security system is based on public-key cryptography, the cornerstone of secure internet transactions, so it is virtually impossible to change the ECU function without authorised permission.

Security is enforced by the ECU and protected by a microprocessor with integrated measures to prevent tampering.

A password feature grants different levels of access for different users e.g. an engine tuner, a drive train tuner, and a data analysis engineer.

This is also suitable for Control ECUs. Scrutineering teams can have access to extra information and are able to lock down selected parts of the ECU, while other team members can access selected tuning parameters.

▶ CATEGORY MANAGEMENT

The combination of an advanced security strategy, configurable firmware and a high performance processor make the M1 ECU an ideal choice for categories with restrictions in place for either performance parity or cost containment. Firmware can be written specifically for the category, limiting the functionality to the class requirements.

Multiple data logging sets are available, which can be partitioned with restricted access to allow generation of both judicial (scrutineering) and team data from the same device. The M1 ECU's security system prevents unauthorised access to data and implementation of unspecified functionality.

▶ UPGRADES

- Various Logging Options are available.

The logging licence determines the number of channels and the sample rates available, there are 3 levels available:

- Logging Level 1 Licence

Comes standard with the product. This diagnostic logging includes a fixed log set and rate.

- Logging Level 2 Licence

Is an optional upgrade which includes one fixed log set, 200 channels (including diagnostics) and a maximum 200 Hz sample rate.

- Logging Level 3 Licence

Is an optional upgrade which includes eight fixed log sets, 2000 channels and a maximum 1000 Hz sample rate.

- Configuration:

- Locked Configuration
- Standard Configuration
- Open Configuration

▶ SOFTWARE

- Microsoft Windows™ based software
- PC Tuning software 'Tune' - Used to tune fuel and ignition, set up sensors, outputs and available functions
- PC Software 'Build' - Used to create a custom software package with user specific functions

▶ BASIC SPECIFICATIONS

Injector

- Peak and Hold Injector Outputs: 8
- Low Side Injector Outputs: 2

Ignition

- Outputs: 8

Auxiliary Outputs

- Half Bridge: 6

Inputs

- Universal Digital: 7
- Analogue Voltage: 8
- Analogue Temperature: 4
- Knock: 2

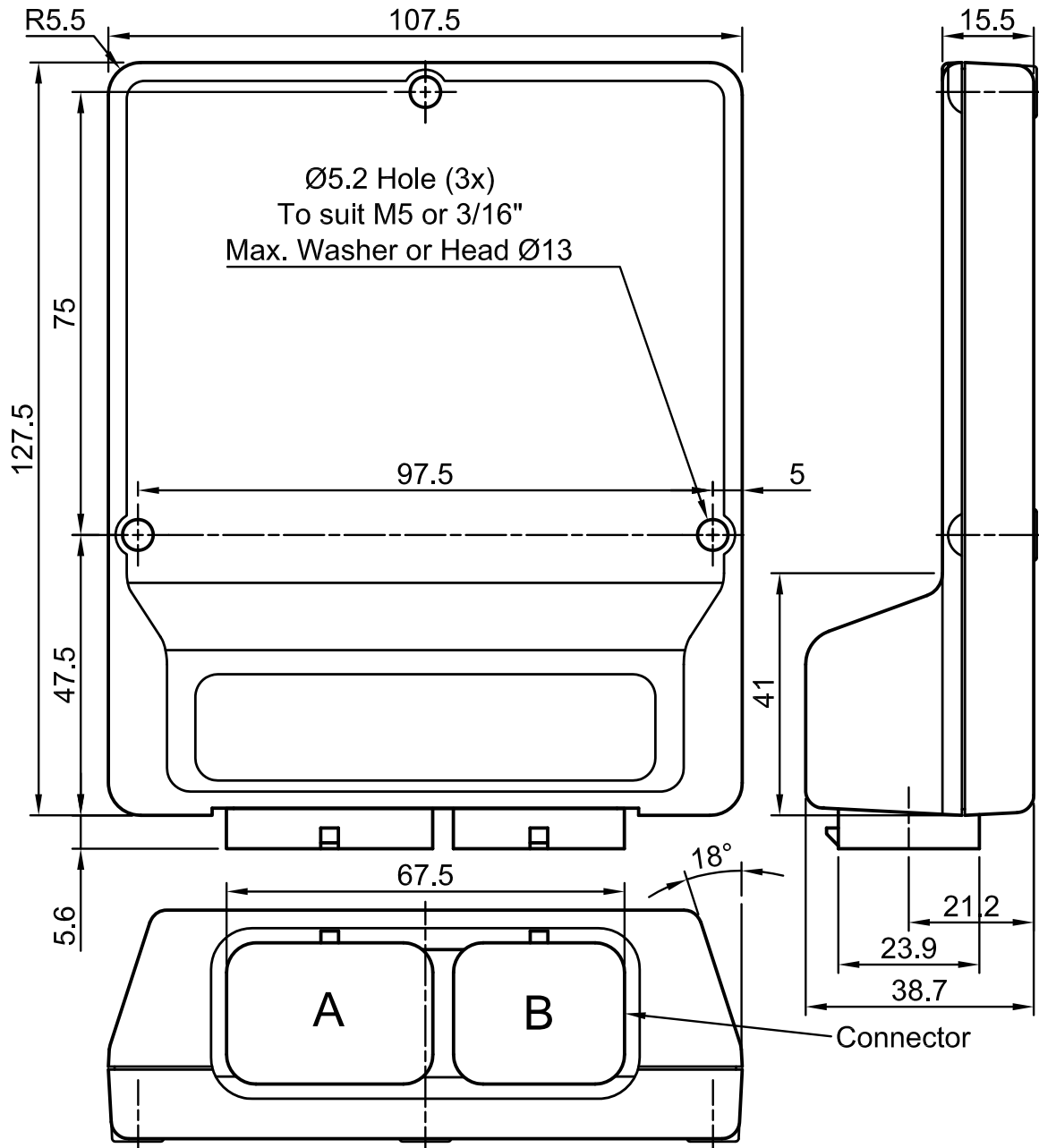
Data

- CAN bus: 1
- Logging Memory: 120 Mb

Physical

- Dimensions: 107.5 x 127.5 x 38.7 mm
- Weight: 300 g
- Connectors:
 - 1 x 34 pin plastic
 - 1 x 26 pin plastic

► DIMENSIONS AND MOUNTING



▶ **M130 PINOUT****M130 Connector A — 34 way**

Mating Connector: Tyco Superseal 34 Position Keying 1 – MoTeC #65044

Pin Number	Designation	Full Name	OE Pin	Function	Description
A01	OUT_HB2	Half Bridge Output 2			
A02	SEN_5V0_A	Sensor 5.0V A			
A03	IGN_LS1	Low Side Ignition 1			
A04	IGN_LS2	Low Side Ignition 2			
A05	IGN_LS3	Low Side Ignition 3			
A06	IGN_LS4	Low Side Ignition 4			
A07	IGN_LS5	Low Side Ignition 5			
A08	IGN_LS6	Low Side Ignition 6			
A09	SEN_5V0_B	Sensor 5.0V B			
A10	BAT_NEG1	Battery Negative			
A11	BAT_NEG2	Battery Negative			
A12	IGN_LS7	Low Side Ignition 7			
A13	IGN_LS8	Low Side Ignition 8			
A14	AV1	Analogue Voltage Input 1			
A15	AV2	Analogue Voltage Input 2			
A16	AV3	Analogue Voltage Input 3			
A17	AV4	Analogue Voltage Input 4			
A18	OUT_HB1	Half Bridge Output 1			
A19	INJ_PH1	Peak Hold Injector 1			
A20	INJ_PH2	Peak Hold Injector 2			
A21	INJ_PH3	Peak Hold Injector 3			
A22	INJ_PH4	Peak Hold Injector 4			
A23	INJ_LS1	Low Side Injector 1			
A24	INJ_LS2	Low Side Injector 2			
A25	AV5	Analogue Voltage Input 5			
A26	BAT_POS	Battery Positive			
A27	INJ_PH5	Peak Hold Injector 5			
A28	INJ_PH6	Peak Hold Injector 6			
A29	INJ_PH7	Peak Hold Injector 7			
A30	INJ_PH8	Peak Hold Injector 8			
A31	OUT_HB3	Half Bridge Output 3			
A32	OUT_HB4	Half Bridge Output 4			
A33	OUT_HB5	Half Bridge Output 5			
A34	OUT_HB6	Half Bridge Output 6			

M130 Connector B — 26 way

Mating Connector: Tyco Superseal 26 Position Keying 1 – MoTeC #65045

Pin Number	Designation	Full Name	OE Pin	Function	Description
B01	UDIG1	Universal Digital Input 1			
B02	UDIG2	Universal Digital Input 2			
B03	AT1	Analogue Temperature Input 1		1k Pull up to SEN_5V_B	
B04	AT2	Analogue Temperature Input 2		1k Pull up to SEN_5V_B	
B05	AT3	Analogue Temperature Input 3		1k Pull up to SEN_5V_A	
B06	AT4	Analogue Temperature Input 4		1k Pull up to SEN_5V_A	
B07	KNOCK1	Knock Input 1			
B08	UDIG3	Universal Digital Input 3			
B09	UDIG4	Universal Digital Input 4			
B10	UDIG5	Universal Digital Input 5			
B11	UDIG6	Universal Digital Input 6			
B12	BAT_BAK	Battery Backup			
B13	KNOCK2	Knock Input 2			
B14	UDIG7	Universal Digital Input 7			
B15	SEN_0V_A	Sensor 0V A			
B16	SEN_0V_B	Sensor 0V B			
B17	CAN_HI	CAN Bus 1 High			
B18	CAN_LO	CAN Bus 1 Low			
B19	SEN_6V3	Sensor 6.3V			
B20	AV6	Analogue Voltage Input 6			
B21	AV7	Analogue Voltage Input 7			
B22	AV8	Analogue Voltage Input 8			
B23	ETH_TX+	Ethernet Transmit+		Ethernet Green/White	
B24	ETH_TX-	Ethernet Transmit-		Ethernet Green	
B25	ETH_RX+	Ethernet Receive+		Ethernet Orange/White	
B26	ETH_RX-	Ethernet Receive-		Ethernet Orange	