MoTeC
L180 - ENCLOSED LOGGER

The **L180 Enclosed Logger is a powerful control device and fully programmable data logger all in one compact unit. It comes standard with 250 MB internal memory and can be upgraded to USB Logging for additional data capacity and flexibility. The USB Logging upgrade also increases the internal memory to 500 MB.**

The L180 acquires data from other devices, such as an ECU, for logging and telemetry. It can be used in a wide range of applications as a standalone logger, or integrated with other electronic devices such as displays and PDMs.

▶ FEATURES

- Suitable for bikes, cars, marine and industrial applications
- Optional USB logging (includes 500 MB internal logging)
- Supports T2 Telemetry (optional)
- Supports Wideband Lambda from MoTeC PLMs or LTCs
- GPS Lap Timing
- Tell Tales
- Diagnostic Logging
- Preserved Channels
- Running Min/Max, Timers, PID Control, Engine Log.
- Easily integrates with MoTeC CAN based devices, such as ECUs and expanders.

▶ ACCESSORIES

- 62206: L180 LOOM
- 61279: CABLE - USB A PANEL TO MINI B
  (This cable is required for USB Logging)
- 61280: MOTEC 32 GB DATA PLUG
- 61292: KINGSTON 32 GB USB3 FLASH DRIVE

▶ OPTIONAL UPGRADES

- 29702: L180 44 I/O (see Specifications and Pinout)
  - 10 extra analogue voltage inputs (AV11 to AV20)
  - 4 extra analogue temperature inputs (AT5 to AT8)
- 29715: L180 USB LOGGING + 500 MB INTERNAL LOGGING
- 29721: L180 PRO ANALYSIS
- 29724: L180 T2 TELEMETRY
- 29706: L180 ADVANCED FUNCTIONS
  - Advanced Maths
  - Channel Maths
  - 16 x 2D Tables (instead of 4)
  - 16 x 3D Tables (instead of 4)
  - 50 User conditions (instead of 20)

▶ SPECIFICATIONS

Logging

- 250 MB internal logging memory
- Optional USB logging to a removable storage device
  - Includes upgrade to 500 MB internal memory
- Logging rates up to 1000 samples per second
- i2 Standard data analysis software included (Pro Analysis upgrade available)

Removable USB Storage Device Options

- Kingston 32 GB USB3 Flash Drive – fast, low weight and low cost, not mechanically latched or waterproof.
- MoTeC 32 GB USB3 Data Plug – mechanically latched, waterproof with anodised housing, ideal for exposure to the elements and vibration.

Alternative USB storage devices may be used but are not recommended.

Inputs (* denotes number available with I/O upgrade)

- 10 (20*) analogue voltage inputs:
  - 4 (8*) x 0 to 5.46 V, 1.33 mV resolution
  - 6 (12*) x 0 to 15.0 V, 3.66 mV resolution
- 4 (8 with I/O upgrade) analogue temperature inputs
  - 0 to 15 V, 3.66 mV resolution
- 4 x Digital inputs
- 2 x Switch inputs
- 4 x Speed inputs
- 3 x Composite video inputs

Outputs

- 6 x low side outputs PWM or switched operation
- 1.0 Amp max, current limited, thermal overload protected

Expanders

Fully compatible with E816, E888, VIM and SVIM Expanders.

Internal Sensors

- 3-axis accelerometer, detection range: +/- 5G
- Dash temperature sensor
- Sensor supply voltage
- Battery voltage

Communications

- 4 x configurable CAN buses, with individually programmable CAN bus speeds. One can be used as RS232 Receive. Only two of the CAN buses support VIM/SVIM Expanders.
- 2 x Dedicated RS232 ports

Power Supply

- Operating voltage: 6 to 32 V DC
- Operating current: 0.4 A typical at 14 V (excluding sensor currents)
- Reverse battery protection
- Battery transient protection

Sensor Supply Currents

- 5 V sensor supply: 0.25 A maximum
- 8 V sensor supply: 0.25 A maximum

Operating Temperature

- Internal: -20°C to 80°C
- Typical ambient temperature range (free air): -20°C to 65°C

Ingress Protection (IP) Rating

- IP67 dust tight, protected against water immersion (up to 30 minute submersion to depth of at least 15 cm)

> ⇨ IP rating is dependent upon the user ensuring that the connector entries are waterproof, which, as a minimum, requires all unused wire cavitites on the connector to be plugged.

Physical

- Size: 134.5 x 103.9 x 20.2 mm excluding connectors
- Weight 350 g
- 1 x 79 pin Autosport connector
- 1 x mini USB3 port (type B)

▶ COMPATIBILITY

- MoTeC ECUs: All (some earlier models may require an additional adaptor in conjunction with the RS232 adaptor)
- MoTeC Displays/Loggers: All
- MoTeC Accessories: VIM, SVIM, E816, E888, SLM, PLM, LTC, BR2, PDM, GPS, VCS etc.
- Many non-MoTeC devices

▶ SOFTWARE

Windows-based Manager software for device setup and management of the data logging system, providing:

- Configuration of the inputs, outputs, data logging and calculations
- Offline generation of a configuration file that can then be sent to the device.
- Channel monitoring
- Firmware updating and extensive help screens

i2 Data Analysis software (Standard or optional Pro) provides the tools for comprehensive data analysis.

ETHERNET WIRING

Ethernet Connector		MoTeC Loom Colour	C185	
Pin	Function		Pin	Function
1	Ethernet TX +	Orange/White	77	Ethernet RX +
2	Ethernet TX -	Orange	78	Ethernet RX -
3	Ethernet RX +	Green/White	67	Ethernet TX +
6	Ethernet RX -	Green	68	Ethernet TX -

⇨ The wiring specified is the preferred cross-over configuration. However, the wiring can also be configured as straight-through. Cat 5 Ethernet cable must be used.
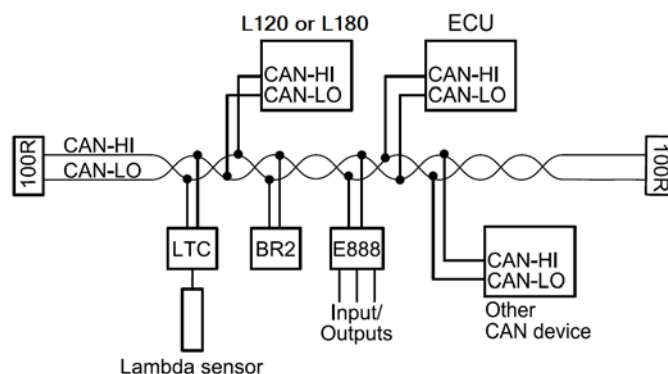
Pin Numbering
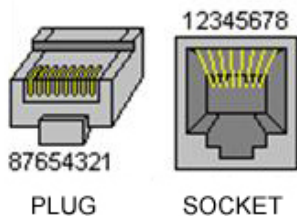
ECU WIRING

When using an M4, M48 or M8 ECU, the L180 should be connected via RS232. For some ECUs, a PCI cable may also be required.

The Display Logger should be connected via the CAN bus when using an M1 or 'Hundred Series' ECU (M400/M600/M800/M880) or M84, and any number of other CAN devices. Example:
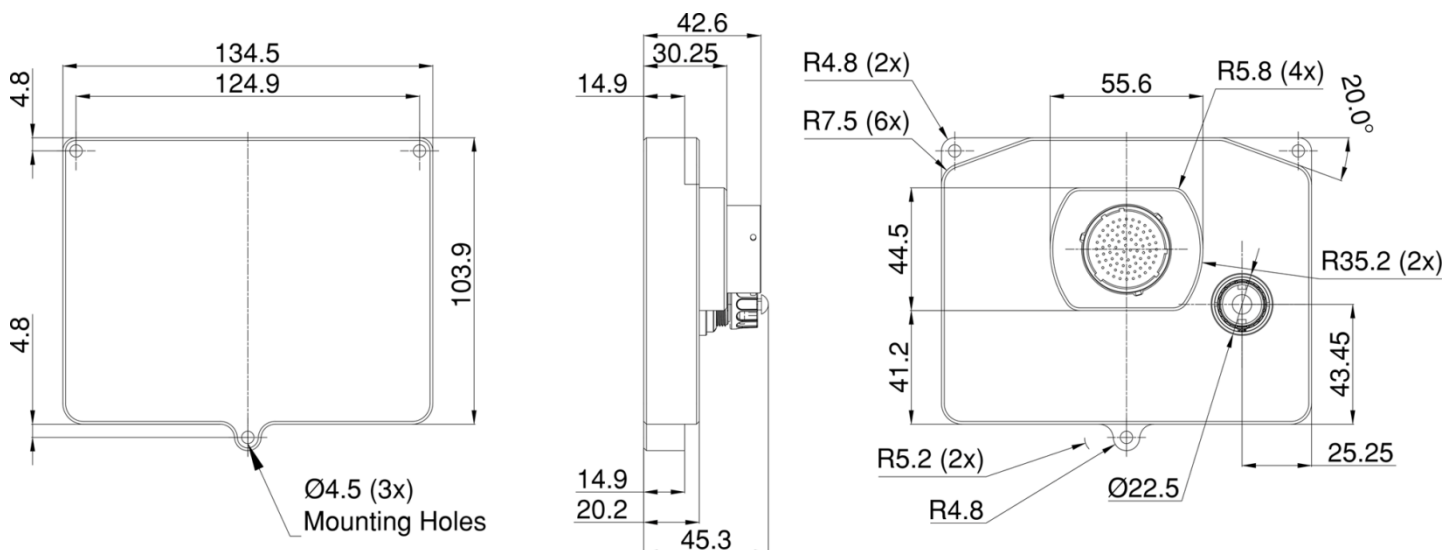

Detailed wiring information is available in the user manual at www.motec.com/downloads.

DIMENSIONS AND MOUNTING

Measurements in mm.

⇨ **Note:** Do not remove any part of the casing. The case provides electromagnetic screening to avoid interference with other equipment, and is also essential for thermal management. Thermal management may be compromised if mounted in a confined space, refer to the operating specifications.
Ensure product is not stressed when mounted.

▶ PINOUT

Mating Connector: Part number 68086

Pin	Name	Standard Function	Pin	Name	Standard Function
1	AV15	Analogue Voltage Input 15 (with 44 I/O upgrade)	41	AT7	Analogue Temp Input 7 (with 44 I/O upgrade)
2	AV16	Analogue Voltage Input 16 (with 44 I/O upgrade)	42	AT8	Analogue Temp Input 8 (with 44 I/O upgrade)
3	AV17	Analogue Voltage Input 17 (with 44 I/O upgrade)	43	0V	Sensor 0 V
4	AV18	Analogue Voltage Input 18 (with 44 I/O upgrade)	44	5V	Sensor 5 V
5	AV19	Analogue Voltage Input 19 (with 44 I/O upgrade)	45	AV1	Analogue Voltage Input 1
6	0V	Sensor 0 V	46	AV2	Analogue Voltage Input 2
7	BAT-	Battery Negative	47	AV3	Analogue Voltage Input 3
8	BAT+	Battery Positive	48	AV4	Analogue Voltage Input 4
9	AUX1	Auxiliary Output 1	49	AV5	Analogue Voltage Input 5
10	AUX2	Auxiliary Output 2	50	AV6	Analogue Voltage Input 6
11	AUX3	Auxiliary Output 3	51	0V	Sensor 0 V
12	AUX4	Auxiliary Output 4	52	DIG1	Digital Input 1
13	AUX5	Auxiliary Output 5	53	DIG2	Digital Input 2
14	AUX6/ LIN	Auxiliary Output 6	54	DIG3	Digital Input 3
15	RS232-2 TX	RS232-2 Transmit Output	55	DIG4	Digital Input 4
16	RS232-2 RX	RS232-2 Receive Input	56	0V	Sensor 0 V
17	0V	Sensor 0 V	57	SW1	Switch Input 1
18	5V	Sensor 5 V	58	SW2	Switch Input 2
19	AV7	Analogue Voltage Input 7	59	CAN4L	CAN 4 Low
20	AV8	Analogue Voltage Input 8	60	CAN4H	CAN 4 High
21	AV9	Analogue Voltage Input 9	61	0V	Sensor 0 V
22	AV10	Analogue Voltage Input 10	62	8V	Sensor 8 V
23	AV11	Analogue Voltage Input 11 (with 44 I/O upgrade)	63	SPD1	Speed Input 1
24	AV12	Analogue Voltage Input 12 (with 44 I/O upgrade)	64	SPD2	Speed Input 2
25	AV13	Analogue Voltage Input 13 (with 44 I/O upgrade)	65	SPD3	Speed Input 3
26	AV14	Analogue Voltage Input 14 (with 44 I/O upgrade)	66	SPD4	Speed Input 4
27	0V	Sensor 0 V	67	E-TX+	Ethernet Transmit +
28	5V	Sensor 5 V	68	E-TX-	Ethernet Transmit -
29	VID1	Video Input 1	69	AV20	Analogue Voltage Input 20 (with I/O upgrade)
30	VID2	Video Input 2	70	RS232-1 TX	RS232 Transmit Output
31	VID3	Video Input 3	71	CAN3L	CAN 3 Low
32	VID4	Video Input 4	72	CAN3H	CAN 3 High
33	0V	Sensor 0 V	73	CAN1L	CAN 1 Low
34	AT1	Analogue Temp Input 1	74	CAN1H	CAN 1 High
35	AT2	Analogue Temp Input 2	75	CAN2L	CAN 2 Low/ RS232 Ground Input
36	AT3	Analogue Temp Input 3	76	CAN2H	CAN2 High/ RS232 Receive Input
37	AT4	Analogue Temp Input 4	77	E-RX+	Ethernet Receive +
38	AT5	Analogue Temp Input 5 (with 44 I/O upgrade)	78	E-RX-	Ethernet Receive -
39	AT6	Analogue Temp Input 6 (with 44 I/O upgrade)	79	RS232-1 RX	RS232 Receive Input
40	0V	Sensor 0 V			