

AiM InfoTech

MoTec M1

Release 1.02



ECU





Supported models

This user guide explains how to connect MoTec M1 series ECUs to AiM devices. Supported models are:

- MoTec M130
- MoTec M142
- MoTec M150
- MoTec M170
- MoTec M181
- MoTec M182
- MoTec M190

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Software configuration

For MoTec M1 Series ECUs to correctly communicate with AiM device, it is necessary to set them up using the dedicated MoTec software. Parameters to set are:

- Protocol: "M1 General"
- Base address: "ID0X640"

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Wiring connection

For MoTec M1 Series ECUs, it is possible to connect to AiM devices through the front connectors. Here below you can see M1 series ECUs connection table.

In case more than one CAN bus is available, AiM recommends to refer to MoTec support to know which one is to be used.

MoTec M130

| Pin | Function | AiM cable |
|-----|-----------|-----------|
| B17 | CAN1 High | CAN+ |
| B18 | CAN1 Low | CAN- |

MoTec M142

| Pin | Function | AiM cable |
|-----|-----------|-----------|
| D17 | CAN1 High | CAN+ |
| D18 | CAN1 Low | CAN- |
| A30 | CAN2 High | CAN+ |
| A31 | CAN2 Low | CAN- |
| A28 | CAN3 High | CAN+ |
| A29 | CAN3 Low | CAN- |

MoTec M150

| Pin | Function | AiM cable |
|-----|-----------|-----------|
| D17 | CAN1 High | CAN+ |
| D18 | CAN1 Low | CAN- |
| A30 | CAN2 High | CAN+ |
| A31 | CAN2 Low | CAN- |
| A28 | CAN3 High | CAN+ |
| A29 | CAN3 Low | CAN- |

**MoTec M170**

| Pin | Function | AiM cable |
|------------|-----------------|------------------|
| A40 | CAN1 High | CAN+ |
| A31 | CAN1 Low | CAN- |

MoTec M181

| Pin | Function | AiM cable |
|------------|-----------------|------------------|
| C24 | CAN1 High | CAN+ |
| C31 | CAN1 Low | CAN- |
| A24 | CAN2 High | CAN+ |
| A31 | CAN2 Low | CAN- |
| A39 | CAN3 High | CAN+ |
| A46 | CAN3 Low | CAN- |

MoTec M182

| Pin | Function | AiM cable |
|------------|-----------------|------------------|
| C24 | CAN1 High | CAN+ |
| C31 | CAN1 Low | CAN- |
| A24 | CAN2 High | CAN+ |
| A31 | CAN2 Low | CAN- |
| A39 | CAN3 High | CAN+ |
| A46 | CAN3 Low | CAN- |

MoTec M190

| Pin | Function | AiM cable |
|------------|-----------------|------------------|
| C24 | CAN1 High | CAN+ |
| C31 | CAN1 Low | CAN- |
| A24 | CAN2 High | CAN+ |
| A31 | CAN2 Low | CAN- |
| A39 | CAN3 High | CAN+ |
| A46 | CAN3 Low | CAN- |

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AiM device configuration

Before connecting the ECU to AiM device set this up using AiM Race Studio software. The parameters to select in the device configuration are:

- ECU manufacturer: **MoTec**
- ECU Model:
 - **M1** for baud rate 1 Mbit
 - **M1_500k** for baud rate 500k

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“MoTec – M1”/“MoTec – M1_500K” protocols

Channels received by AiM loggers connected to “MoTec – M1” and “MoTec – M1_500K” protocols are the same, listed below:

| CHANNEL NAME | FUNCTION |
|---------------------|----------------------------|
| ECU RPM | RPM |
| ECU GEAR | Active gear |
| ECU WH SP FL | Front left wheel speed |
| ECU WH SP RL | Rear left wheel speed |
| ECU WH SP RR | Rear right wheel speed |
| ECU WH SP FR | Front right wheel speed |
| ECU ECT | Engine coolant temperature |
| ECU EXH T | Exhaust gas temperature |
| ECU OIL T | Oil temperature |
| ECU GBOX T | Gearbox temperature |
| ECU IAT | Intake air temperature |
| ECU AIR T | Air temperature |
| ECU AMB T | Ambient air temperature |
| ECU FUEL T | Fuel temperature |
| ECU OIL P | Oil pressure |
| BRK PRESS F | Front brake pressure |
| BRK PRESS R | Rear brake pressure |



| | |
|------------------|---|
| ECU FUEL P | Fuel pressure |
| COOL PRESS | Engine coolant pressure |
| STEER PRESS | Steering wheel pressure |
| ECU MAP | Manifold air pressure |
| ECU BOOST AIM | Boost pressure target |
| ECU BOOST P | Boost pressure |
| ECU AMB P | Ambient air pressure |
| ECU IN CM P2 | Inlet camshaft Bank 2 position |
| ECU EX CM P1 | Exhaust camshaft bank 1 position |
| ECU IN CM AIM | Inlet camshaft AiM |
| ECU IN CM P1 | Inlet camshaft Bank 1 position |
| ECU EX CM AIM | Exhaust camshaft AiM |
| ECU FUEL TIME | Fuel time |
| ING CY1 TRIM KNK | Ignition trim knock cylinder 1 |
| ING CY2 TRIM KNK | Ignition trim knock cylinder 2 |
| ING CY3 TRIM KNK | Ignition trim knock cylinder 3 |
| ING CY4 TRIM KNK | Ignition trim knock cylinder 4 |
| ING CY5 TRIM KNK | Ignition trim knock cylinder 5 |
| ING CY6 TRIM KNK | Ignition trim knock cylinder 6 |
| ING CY7 TRIM KNK | Ignition trim knock cylinder 7 |
| ING CY8 TRIM KNK | Ignition trim knock cylinder 8 |
| ECU IGN TIME | Ignition time |
| ECU EX CM P2 | Exhaust camshaft bank 2 position |
| ECU TRHOTTLE | Throttle position sensor |
| ECU IN CM D2 | Inlet camshaft bank 2 position duty cycle |
| ECU PEDAL POS | Pedal position sensor |
| ECU EX CM D1 | Exhaust camshaft bank 1 position duty cycle |
| ECU EX CM D2 | Exhaust camshaft bank 2 position duty cycle |
| ECU FUE IJ DY | Fuel injection ducy |
| ECU ENG EFICY | Engine efficiency |
| ECU ENG LOAD AVG | Engine load average |
| ECU CY1 KNK | Engine cycle1 Knock level A |
| ECU CY2 KNK | Engine cycle2 Knock level A |
| ECU CY3 KNK | Engine cycle3 Knock level A |
| ECU CY4 KNK | Engine cycle4 Knock level A |
| ECU CY5 KNK | Engine cycle5 Knock level A |
| ECU CY6 KNK | Engine cycle6 Knock level A |
| ECU CY8 KNK | Engine cycle8 Knock level A |



| | |
|------------------|---|
| ECU IGN O LV | Ignition output level |
| ECU FUE O LV | Fuel output level |
| FUEL COMPOSITION | Fuel composition |
| ECU BOOST DTY | Boost duty |
| ECU CLOSE LOOP1 | Closed loop 1 |
| ECU CLOSE LOOP2 | Closed loop 2 |
| ECU IN CM D1 | Inlet camshaft bank 1 position duty cycle |
| ECU ENG RUN | Engine running |
| ENG RUN TIME TOT | Total engine running time |
| ECU V BATT | Battery voltage |
| ECU FUEL | Fuel |
| ECU FUEL USED | Fuel used |
| ECU FUEL LEV | Fuel level |
| ECU ENGINE LOAD | Engine load |
| ECU GEAR LV | Gear level |
| ECU IGN CUT REQ | Ignition cut request |
| ECU IGN TIME ST | Ignition time stage |
| LAUNCH STATE | Launch control state |
| ANTI LAG STATE | Anti-lag state |
| ECU FUE O CN | Fuel output level |
| ECU IGN O CN | Ignition output level |
| ECU CY7 KNK | Engine cycle7 Knock level A |
| WARNING FLAG 1 | Contains the following error messages: |
| = 1 | ECT error |
| = 2 | ECP error |
| = 3 | RPM error |
| = 4 | OILT error |
| = 5 | OILP error |
| = 7 | CRANK error |
| = 8 | FUEP error |
| WARNING FLAG 2 | Contains the following error message: |
| = 8 | KNOCK error |