AiM Infotech

BMW 3 Series (E46), M3 (E46) OBDII +ECU Connection

Release 1.01

This tutorial explains how to connect BMW cars to AiM devices.

1 Car models and years

Supported car models and years are:

- BMW 3 Series (E46) 2001-2005
- BMW M3 (E46) 2001-2006

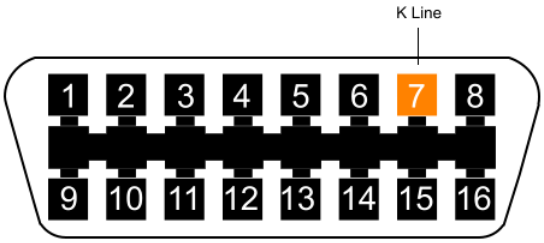
2 Available connections

These car models can be connected to AiM devices through the OBDII plug or going to the car ECU. **Please note**: OBDII connection will not apply to M3 models.

2.1 OBDII Connection

These BMW cars feature a bus communication protocol based on K line on the OBDII plug placed left of the driver. **Please note**: this connection will not apply to M3 models.

Connector pinout as well as connection table are shown here below



OBDII connector pin	Pin function	AiM cable
7	K Line	K line

Please note: if you choose this connection we recommend you to use AiM cables to connect AiM devices. Their part number are:

• ECU Bridge with OBDII plug	X90BGCK12MA
• EVO4 cable (to be plugged in EVO4 connector labelled RPM)	V02563050
• SoloDL cable with OBDII plug	V02569010 (2m length) or V02569090 (1,2m length)
• MXG	37 pins standard cable
• MXL2	37 pins standard cable

2.2 ECU Connection

These BMW cars feature a bus communication protocol based on CAN on the car ECU. Regardless of the stock ECU installed on your car, colours of the cables are always the same, they are twisted and here below they are indicated.

Pin function	BMW ECU cable colour	AiM cable label
CAN 1 High	Yellow/Red	CAN+
CAN 1 Low	Yellow/Brown	CAN-
CAN 2 High	Yellow/Black	CAN+
CAN 2 Low	Yellow/Brown	CAN-

3
AiM Logger configuration

Before connecting the device to the ECU set it up as follows:

- Run Race Studio 2 software and follow this path:
- Device Configuration –> Select the device you are using;
- select the configuration or press “New” to create a new one;
- select
    - ECU manufacturer “OBDII” and ECU Model "ISO9141_2" if you are using the OBDII plug
    - ECU manufacturer "BMW" and ECU Model "BMW_MINI" if you are using the car ECU
- transmit the configuration to the device pressing “Transmit”.

4
Available channels

Channels received by AiM devices change according to the selected protocol.

4.1
Channels available with "ISO9141_2" protocol

Channels received by AiM devices connected to "OBDII" "ISO9141_2" protocol are:

ID	CHANNEL NAME	FUNCTION
ECU_1	OBDII_RPM	RPM
ECU_2	OBDII_SPEED	Speed
ECU_3	OBDII_ECT	Engine coolant temperature
ECU_4	OBDII_TPS	Throttle position sensor
ECU_5	OBDII_IAT	Intake air temperature
ECU_6	OBDII_MAP	Manifold air pressure
ECU_7	OBDII_MAF	Manifold air flow
ECU_8	OBDII_FUEL_LEV	Fuel level
ECU_9	OBDII_PPS	Pedal position sensor

Please note: channels listed above are those polled by AiM devices. They may or may not come across in the data stream depending on models. RPM, TPS, ECT and speed are generally available. Moreover please **remember**: this protocol will not apply to M3 models.

4.2
Channels available with "BMW_MINI" protocol

Channels received by AiM devices connected to "BMW" "BMW_MINI" protocol are:

ID	CHANNEL NAME	FUNCTION
ECU_1	RPM	RPM
ECU_2	SPEED_BMW	Speed
ECU_3	PEDAL_POSITION	Pedal position
ECU_4	BRAKE_SWITCH	Brake switch
ECU_5	BRAKE_PRESSURE	Brake pressure
ECU_6	CLUTCH_SWITCH	Clutch switch
ECU_7	STEER_ANGLE	Steering angle
ECU_8	WATER_TEMP	Engine coolant temperature
ECU_9	ENGINE_OIL_TEMP	Oil temperature
ECU_10	GEARBOX_OILT	Gearbox oil temperature
ECU_11	TEMP_OUTSIDE	Ambient air temperature
ECU_12	FUEL	Fuel level
ECU_13	RPM_TURBO	Turbo RPM
ECU_14	ENGINE_MOMENT	Engine moment
ECU_15	TORQUE	Torque value
ECU_16	ELECTROVALVE_STATE	Electro valve state
ECU_17	FULL_LOAD_ALTERNATOR	Full load alternator
ECU_18	WH_SPD_FR_LF	Front left wheel speed
ECU_19	WH_SPD_FR_RH	Front right wheel speed
ECU_20	WH_SPD_RR_LF	Rear left wheel speed
ECU_21	WH_SPD_RR_RH	Rear right wheel speed
ECU_22	ASC_REG	ASC Switch
ECU_23	MIL_CHK_ENG	Malfunction indication lamp
ECU_24	DSC_REG	DSC switch
ECU_25	ABS_FAIL	ABS Failure

Technical note: not all data channels outlined in the ECU template are validated for each manufacturer model or variant; some of the outlined channels are model and year specific, and therefore may not be applicable.