AiM Infotech

BMW 1 Series (F20), 2 Series (F22/F23)
OBDII + ECU Connection

Release 1.00

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

1
Car models and years

Supported car models and years are:

- BMW 1 Series (F20) from 2011
- BMW 2 Series (F22/F23) from 2013

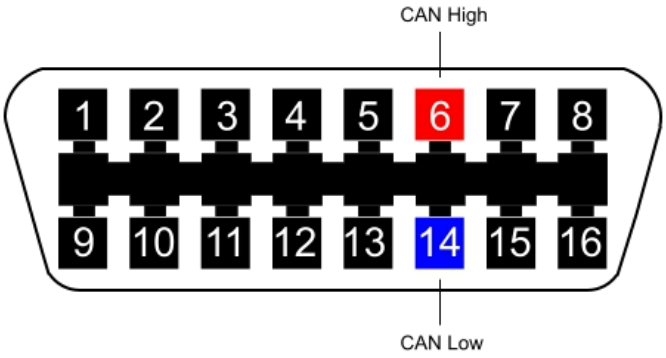
2
Available connections

These car models can be connected to AiM devices through the OBDII plug or going to the car ECU.

2.1
OBDII Connection

These BMW cars feature a bus communication protocol based on CAN on the OBDII plug placed on the car driver side, left of him.

Connector pinout as well as connection table are shown here below



OBDII connector pin	Pin function	AiM cable
6	CAN High	CAN+
14	CAN Low	CAN-

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 High	Blue/Red	CAN+
CAN Low	Red	CAN-

In alternative they can be as below.

Pin function	BMW ECU cable colour	AiM cable label
CAN High	Black	CAN+
CAN Low	Yellow	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 "CAN" if you are using the OBDII plug
    - ECU manufacturer "BMW" and ECU Model "F_21" 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 "CAN" protocol

Channels received by AiM devices connected to "OBDII" "CAN" 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.

4.2
Channels available with "BMW_F21" protocol

Channels received by AiM devices connected to "BMW" "BMW_F21" protocol are:

ID	CHANNEL NAME	FUNCTION
ECU_1	ECU_RPM	RPM
ECU_2	ECU_AIR_PRESS	Intake air pressure
ECU_3	ECU_PEDAL_POS	Pedal position
ECU_4	ECU_WDKBA	Reference Throttle position
ECU_5	ECU_WHS_RL	Rear Left wheel speed
ECU_6	ECU_WHS_RR	Rear Right wheel speed
ECU_7	ECU_WHS_FL	Front left wheel speed
ECU_8	ECU_WHS_FR	Front right wheel speed
ECU_9	ECU_GEAR	Engaged gear
ECU_10	ECU_THROTTLE	Throttle position sensor
ECU_11	ECU_STEER_ANG	Steering angle
ECU_12	ECU_VEH_SPEED	Vehicle speed
ECU_13	ECU_BRK_STATE	Brake status

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.