BMW S1000RR ECU

Racing Data Power

INTRODUCTION

AIM has developed special applications for many of the most common ECUs: by special applications we mean user-friendly systems which allow to easily connect the ECU to our hi-tech data loggers: users need only to install harness between the **logger** and the ECU unit.

Once connected, the **logger** displays (and records, depending on the logger and on the ECU data stream) values like RPM, engine load, throttle position (TPS), air and water temperatures, battery voltage, speed, gear, lambda value (air/fuel ratio) analog channels…

All AIM loggers include – free of charge – **Race Studio 2** software, a powerful tool to configure the system and analyze recorded data on your PC.

**Please note: once the ECU is connected to the logger it is necessary to set it in the logger configuration in Race Studio 2 software:
select "Manufacturer" "BMW" and Model "BIKE_S1000RR".**

Refer to Race Studio Configuration user manual for further information concerning the logger configuration.

AIM suggests to use an AIM logger that does not require stock BMW dash removal like EVO3 Pro/Pista, EVO4, ECU Bridge, SoloDL.

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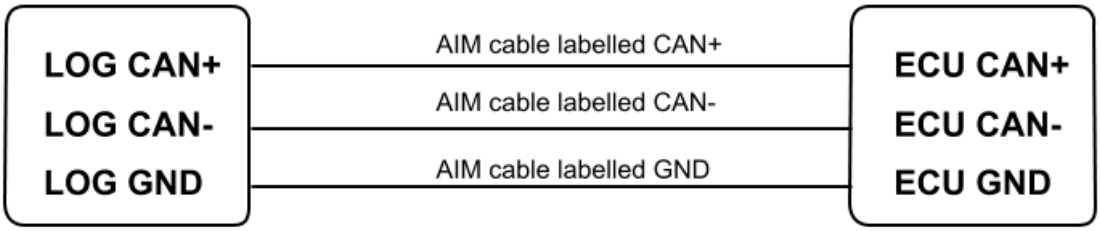
1 – CAN Communication setup

BMW S1000RR bike is equipped with a CAN communication protocol used to configure the ECU itself or to communicate with and external logger.

The standard CAN communication setup is shown here below.

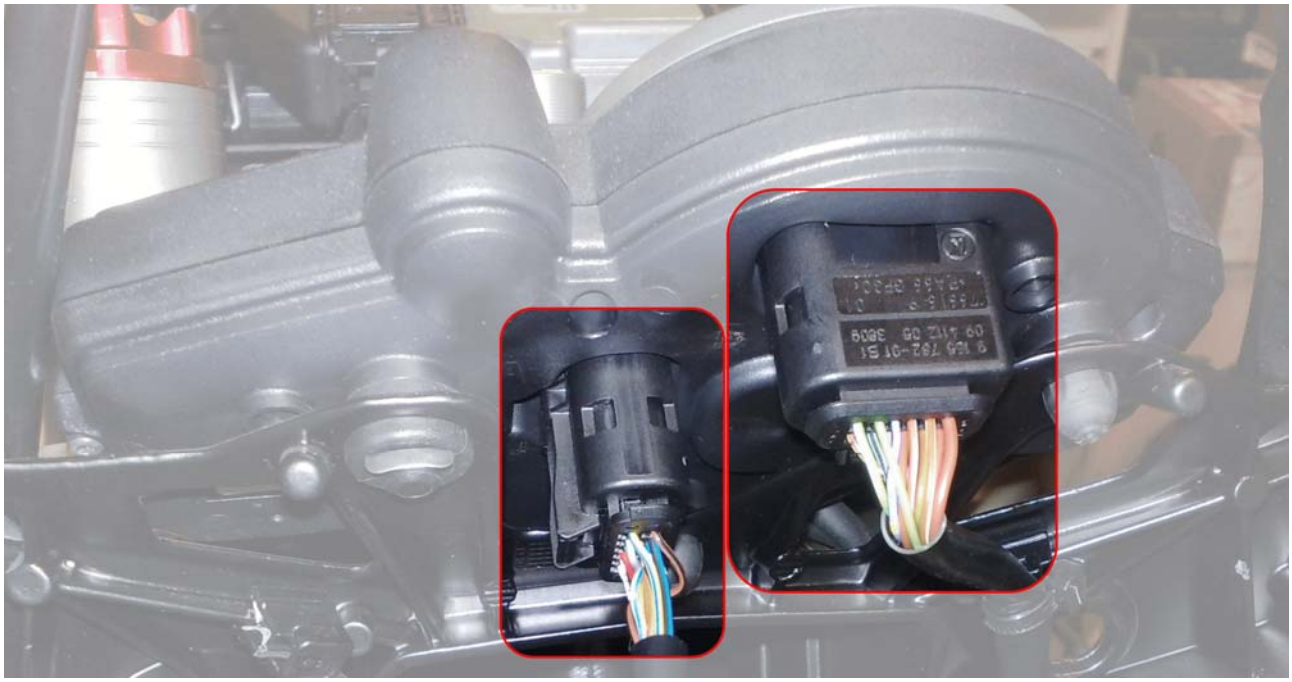


2 – Connection with AIM loggers

BMW S1000RR bike can be connected to AIM loggers in two ways: using BMW stock dash or through the DWA connector.

2.1 – Connection through BMW stock dash

Behind BMW stock dash are two 12 pins connectors: vertical and horizontal shown below.



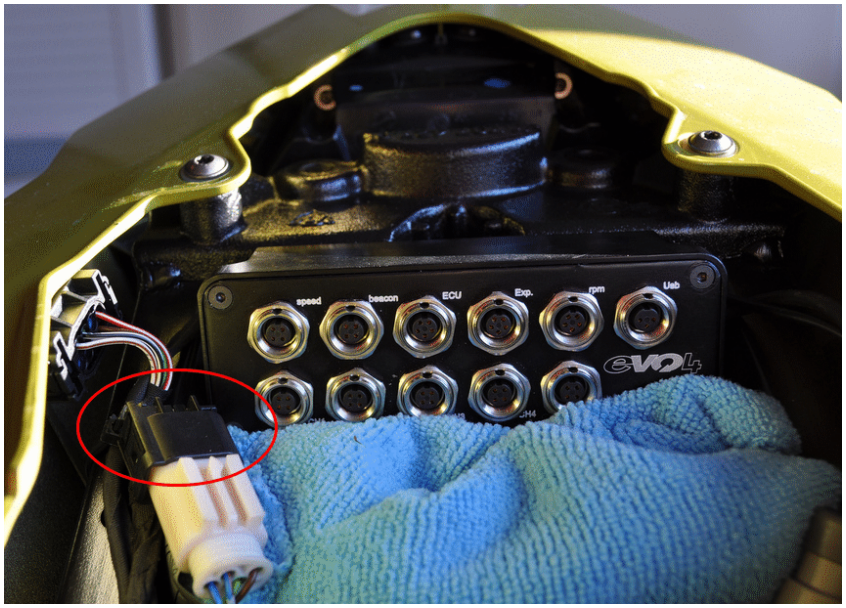
To power AIM logger and connect it to the bike ECU through the stock dash both connectors are needed. The horizontal connector is needed to power the logger while the vertical one supports the CAN bus.

Please note: due to the fact that connector pin number is unknown we are pointing out the wire colours and position.

Horizontal connector (to power AIM logger) wire	**Function**
Second on the left – fluorescent green. Latest on the right – brown	12V (connected to master switch) GND
Vertical connector (to connect AIM logger) wire	**Function**
Second on the right – white with black strip Latest on the right – white with brown strip	CAN+ CAN-

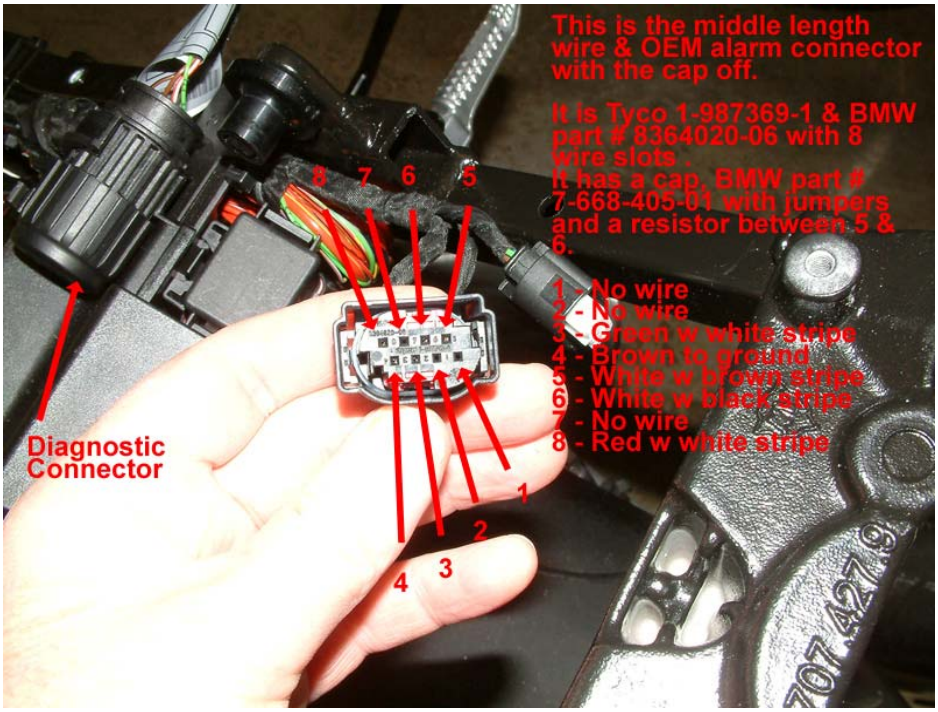
2.2 – Connection through the DWA connector (antitheft)

The DWA connector is under the passenger seat near to the diagnosis connector and is black as shown here below.



With reference to the image below DWA connector is to be connected as follows:

DWA Connector wire	Function
6 – White with black stripe.	CAN+
5 – White with brown stripe	CAN-
4 – Brown	GND



3 – Communication protocol

Channels received by AIM loggers connected to BMW S100RR ECU are:

ID	CHANNEL NAME	FUNCTION
ECU_1	S1_RPM	Engine Speed
ECU_2	S1_THROTTLE	Throttle
ECU_3	S1_GEAR	Gear Sensor
ECU_4	S1_NEUTRAL	Neutral sensor
ECU_5	S1_WATER_TEMP	Water temperature
ECU_6	S1_SEL_MAP	**Selected map – see paragraph 3.1**
ECU_7	S1_CHK_ENGINE	Check engine
ECU_8	S1_SPEED_F	Front speed sensore
ECU_9	S1_HAND_THRT	Manual Throttle
ECU_10	S1_SPEED_R	Rear speed sensor
ECU_11	S1_INTK_AIR_T	Intake air temperature
ECU_12	S1_YAW_RATE	Steering angle speed
ECU_13	S1_ROLL_RATE	Steering angle speed
ECU_14	S1_ACC_LATER	Lateral Accelerometer
ECU_15	S1_ACC_VERTIC	Vertical Accelerometer
ECU_16	S1_TC_INTERV	Traction Control Intervention
ECU_17	S1_TC_OFF	Traction Control in OFF State (warning))
ECU_18	S1_CLUTCH_SW	Clutch Switch
ECU_19	S1_SIDE_STAND	Side stand
ECU_20	S1_BRK_FR_SW	Front Brake
ECU_21	S1_BRK_RR_SW	Rear Brake
ECU_22	S1_ACC_LONGIT	Longitudinal Accelerometer
ECU_24	S1_OIL_PRESS_SW	Oil pressure switch
ECU_25	S1_EWS_CTRL	Immobilizer Control
ECU_26	S1_BRK_FAIL	Brake malfunction (Error)
ECU_27	S1_ABS_OFF	ABS in off State (warning)
ECU_29	S1_MAP_MENU	**Map selection menu – see paragraph 3.1**

3.1 – The map selection

BMW S1000RR ECU allows the user to choose among different Map settings. Channel ECU_6 of Race Studio 2 can show different digits according to the selected Map as follows:

- 1 = Slick
- 2 = Race
- 3 = Sport
- 4 = Rain

The image here below shows a map selection.