MXL PRO 05 PLUG & PLAY KIT FOR SUZUKI GSX R YOSHIMURA RACING HARNESS 2004 – 2005 – 1000 cc

Please note: This kit has been designed and developed only for these **Suzuki GSXR** 2004 – 2005 – 1000 cc bikes where an Yoshimura Racing Harness has been installed.

MXL PRO 05 DASH AND DATA LOGGER
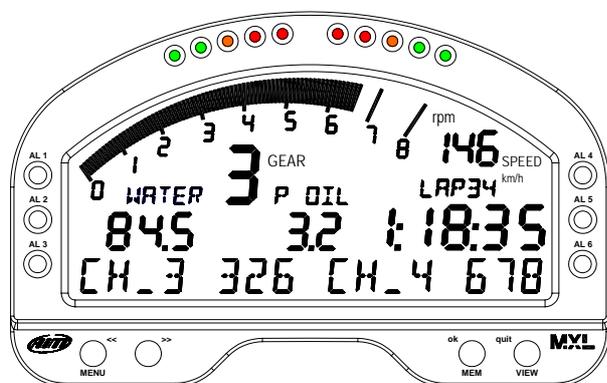
It works like a dash with 6 already configured channels that show:

- RPM
- Speed
- Water Temperature
- Primary TP Valve
- Secondary TP Valve
- Gear

MXL PRO 05 can also receive a beacon signal and records RPM, speed, water temperature. Moreover it has 6 other **free channels**

KIT DESCRIPTION

MXL PRO 05 Yoshimura **Racing Harness** plug and play kit is composed of the following objects:

- **MXL PRO 05**
- Plug and play wiring for **MXL PRO 05**
- Installation kit with a dedicated bracket
- USB cable for Pc interface
- CD-ROM with **Race Studio 2** software
- Infrared beacon receiver and transmitter
- Documentation

MXL PRO 05 kit for **Suzuki GSX-R** Yoshimura **Racing Harness** has been developed for the following year models:

Cubic capacity (cc)	Year 2004	Year 2005
1000	√	√

√ **=** supported
● **=** NOT supported

The **MXL PRO 05** Yoshimura **Racing Harness** version has been designed and developed to be a "plug and play" system you can connect to the Yoshimura **Racing Harness**.

MXL PRO 05 Yoshimura **Racing Harness** version may be used only on track.

The gauge, as the stock dash, is powered by the bike's master switch. Moreover, when installing your **MXL PRO 05** Yoshimura **Racing Harness** version you do not have to cut, to bend or drill anything: each component of the kit has been designed to be plug and play.
The gauge has to be installed using the bracket supplied with the system. The bracket is made in black anodized aluminum, in order to be lightweight and mechanically resistant.

GENERAL NOTES – Read this before installing the system

- Do not cut any wiring: the wiring supplied with the kit is plug and play.

INSTALLATION STEP 1 – Assembling the kit.

The first installation step consists in assembling the kit for **Suzuki GSX-R Yoshimura Racing Harness**.

1. The kit you receive, has already mounted the four anti-vibration mountings on the backside of your **MXL PRO 05**;
2. Install your **MXL PRO 05** on the aluminium bracket. The bracket has to be fixed to your **MXL PRO 05** in correspondence of the 4 anti-vibration mounting and has to be fixed using 4 screws and 4 Grover washers.
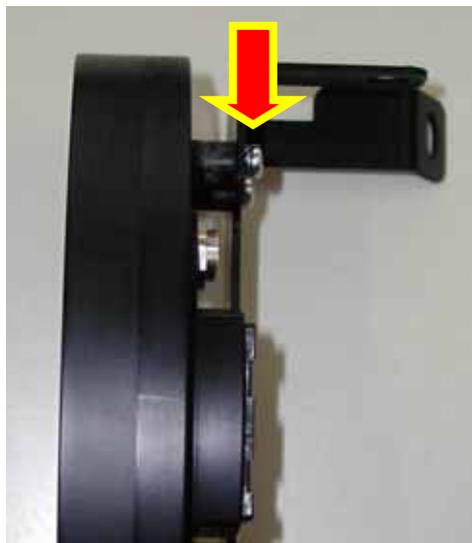

Figure 1: anti-vibration mountings – particular

Figure 2 shows the correct assembly of **MXL PRO 05**, bracket and washers (rear view) for **Suzuki GSX-R Yoshimura Racing Harness 2004**

Figure 2: MXL PRO 05 and bracket for **Suzuki GSX-R Yoshimura Racing Harness 2004** – rear view

INSTALLATION STEP 2 – Wirings connection.

Your **MXL PRO 05** has to be connected to the **Female Furukawa connector** of your Yoshimura **Racing Harness** kit (shown in **Figure 3**). This connector is located on the right side of the bike, near the stock dashboard connector.

Figure 3: Yoshimura Racing kit: ECU on the left and harness on the right

Please note: the **female Furukawa connector** is a 9 pin black connector with a yellow top, as shown in **Figure 4**.
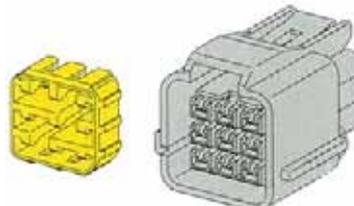

Figure 4: 9 pins Female Furukawa connector.

MXL PRO 05 harness is equipped with a 9 pins **male Furukawa connector** (part number **FW-C-9M-B**) shown in **Figure 5** whose pinout is here below.

- **Pin 1** – Speed
- **Pin 2** – 12V
- **Pin 3** – GND
- **Pin 4** – RPM
- **Pin 5** – TPS1
- **Pin 6** – TPS2
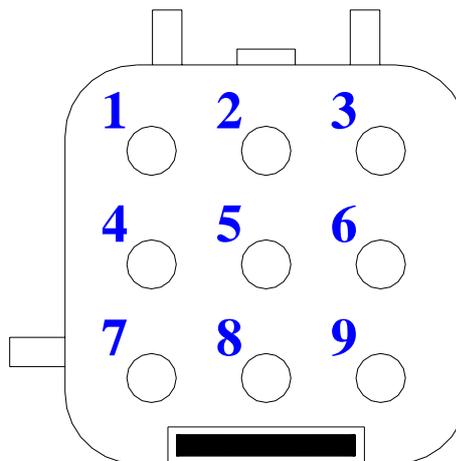- **Pin 7** – EGT
- **Pin 8** – n.c.
- **Pin 9** – GEAR

Figure 5: MXL PRO 05 male Furukawa connector.

MXL PRO 05 `Yoshimura` Racing Harness Configuration [RACE STUDIO 2]

MXL PRO 05 `Yoshimura` **Racing Harness** may be interfaced with the PC to:
- download the data stored in the 16 Mb internal memory;
- upgrade the logger firmware;
- configure **MXL PRO 05**.

When you change, for instance, the RPM upper value or the shift lights; if you wish to add a potentiometer sensor or a gyroscope on your **MXL PRO 05** and you need to calibrate them, when you change the crown or the pinion with a "different teeth number" ones you need to use our software **Race Studio 2**.

The CD-ROM including software, USB drivers, installation documentation and user manual is included in the **MXL PRO 05** `Yoshimura` **Racing Harness** kit. If you have any doubt about software or USB drivers installation, please refer to the installation manual included in the CD-ROM.

The following table shows the input channels for **MXL PRO 05** `Yoshimura` **Racing Harness**.

Ch. 1	Primary TP Valve
Ch. 2	Secondary TP Valve
Ch. 3	ECT – Engine coolant Temperature
Ch. 4	Free input channel – use Race Studio 2
Ch. 5	Free input channel – use Race Studio 2
Ch. 6	Free input channel – use Race Studio 2
Ch. 7	Free input channel – use Race Studio 2
Ch. 8	Free input channel – use Race Studio 2
Ch. 9	Free input channel – use Race Studio 2
Ch. 10	Free input channel – use Race Studio 2
Ch. 11	Free input channel – use Race Studio 2
Ch. 12	"On board" gear sensor

To correctly configure your gauge and use **Race Studio 2**, please follow these instructions.

Run **Race Studio 2** and select "**MXL**" button in the left vertical keyboard.
Press "System manager" button and then "New" button: the window shown in **Figure 6** is prompted.
- Set these configuration parameters:
  Data Logger type: **MXL PRO 05**
  ECU Manufacturer: **None**
  ECU Model: **None**
- Fill in configuration and vehicle name
- Select the unit of Measure for Speed, Temperature and Pressure
- Press OK button.

**Figure 6:** Race Studio 2 – New configuration

Once pressed OK button, System Manager window is prompted on your monitor, as shown in **Figure 7**.

To correctly configure the input channels, please select the configuration you want to set among the available ones (in **Figure 7**, are 16 available configurations: the yellow-highlighted is the selected one) and enable "Channels" layer.

The screenshot in **Figure 8** is prompted.
MXL PRO 05 has 12 channels.
Channels labelled from CH._4 to CH._11 are free and fully configurable. To set them, please click in the correspondent cell (row "CH 4/CH. 7" column "Sensor type") and choose the sensor you have installed on each channel between the pre-defined ones. You can also set channel name and sampling frequency.
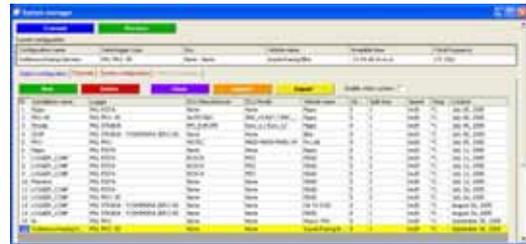
Figure 7: Race Studio 2 – System manager window
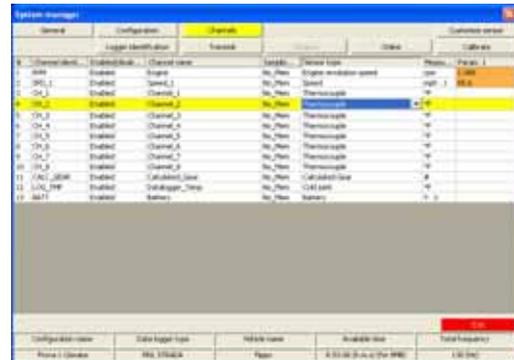
Figure 8: Race Studio 2 – Input channels window

As far as the other channels are concerned, here we suggest you to set them as follow:
Channel 1: Channel name **TPS**
　　　　Sensor Type: **Zero based Pot**.
Channel 2: Channel name **STPS**
　　　　Sensor Type: **gen. linear 0-5V**.
Channel 3: Channel name **ECT**
Sensor Type: **Water Temp. Suzuki GSXR**
Channel 12. Please note: this last channel has to be set in "System Configuration" Layer enabling "**Potentiometer Channel 12**" button in Gear box as shown in **Figure 9**.
　　　　Channel name **Gear**.
　　　　Sensor Type: **potentiometer**

Once all sensors have been correctly set, please press again "Configuration" button.
Configuration window (**Figure 10**) allows you to set RPM, shift lights, Speed, Lap, Channel for alarm threshold value and Measure short name.

Figure 9: Race Studio 2 – System Configuration window

Figure 10: Race Studio 2 – Configuration window

RPM:

Please, DO NOT modify the "Multiply factor" (the default value is **/1**).
To change RPM scale upper limit, please select the desired value among the 7 default ones.

Speed:

The speed sensor on your Suzuki bike is installed on the jackshaft that connects the gearbox to the pinion. The number of pulses per pinion revolution is **4**.
The wheel circumference written in the proper cell is an "equivalent circumference" calculated using the following formula:

$$Equiv\ Circumf = \frac{Wheel\ Circumf * N_p}{N_c}$$

N_p = Pinion teeth number
N_c = Crown teeth number

If you change pinion and/or crown and the new one has a different teeth number, equivalent circumference needs to be re-computed. If you do not want to do it manually, please refer to "Equivalent circumference compute" paragraph.

Shift lights:

You can modify the values inserted in the 5 cells to switch on the led at the desired RPM value.

Gear sensor:

MXL PRO 05 Yoshimura Racing Harness plug & play kit allows you to sample the gear directly from an "on-board" sensor installed inside the gearbox. In order to allow your **MXL PRO 05 Yoshimura Racing Harness** to sample the gear, please set your configuration on **potentiometer Ch_12** and **remember** to calibrate the sensor.

Calibrating auto-calibrating the sensors and transmitting the configuration:

If you have installed a gyroscope (to map tracks) and/or a fork travel potentiometer (or a rear shock travel potentiometer), these sensors have to be calibrated to sample correct data. Please, click on the "Calibrate" button: the screenshot shown in **Figure 11** appears.

The sensors are divided in 2 categories: "to be auto-calibrated" and "to be calibrated" sensors.

Figure 11: Race Studio 2 – Calibration window

"To be auto-calibrated sensors" are:
- Gyroscope
- Potentiometer distance (just in case you have chosen a "Potentiometer distance" sensor for this channel).
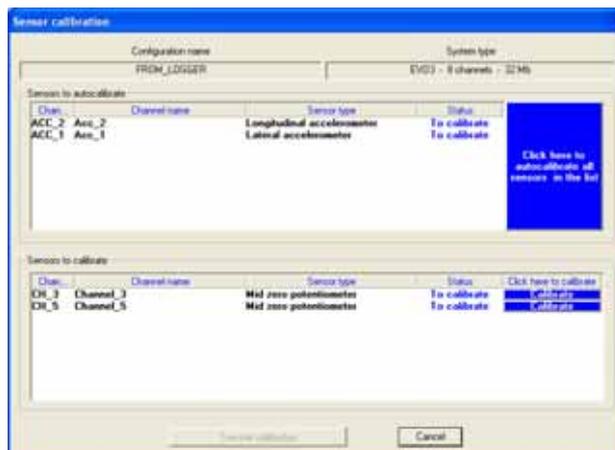
"To be calibrated sensors" are:
- Zero based potentiometer (such as TPS)
- Mid zero potentiometer
- Gear Potentiometer

Please, refer to **MXL** user manual for further information about calibration / auto-calibration procedure.
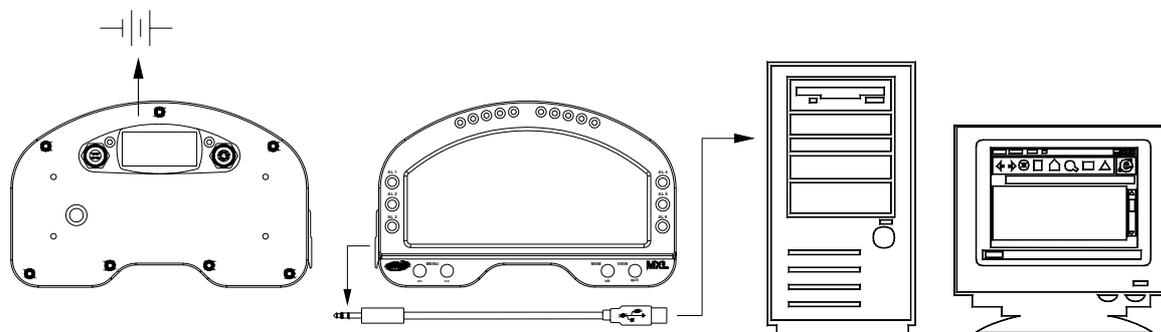Once finished calibrating / auto-calibrating the sensors, you have to transmit the configuration to the logger pressing button "Calibrate" on the top toolbar.

Once you set the desired input channels on your MXL PRO 05 and/or you set the desired threshold values for the alarm led and the shift lights, you have to transmit the configuration to the logger: to do so, please press OK button and then "Transmit" button on the next screenshot.

ATTENTION: before transmitting the configuration, please ensure that the logger is connected to the PC as shown in **Figure 12** and the USB drivers are correctly installed.

Figure 12: How to connect the logger to the PC

EQUIVALENT CIRCUMFERENCE COMPUTE

If you need to compute the equivalent circumference to be inserted in the correspondent "Configuration" window of **Race Studio 2** software, you can use "**Bike.exe**" software you find in **Race Studio 2** software CD. To do so please browse the Cd:

Double click on "**Bike.exe**" icon and the following window appears.
Please:
- insert "Drive gear teeth number"
- insert "Driven gear teeth number"
- select circumference unit of measure
- insert circumference value
- press compute button

Figure 13: Bike.exe – Compute window

The software computes the equivalent circumference and the final value appears in the related cell (red circled in **Figure 14**).
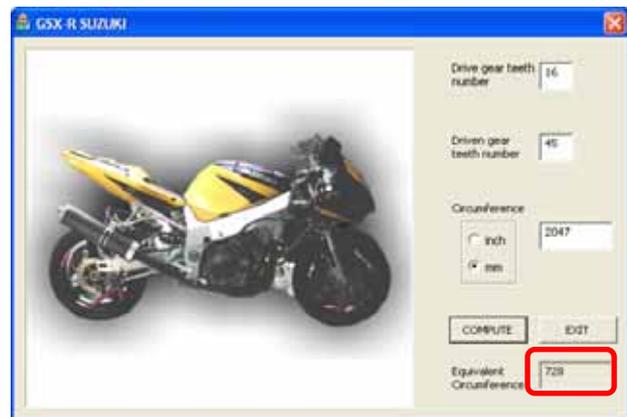

Figure 14: Bike.exe – Equivalent circumference box.

Please insert this value in the related cell of **Race Studio 2** Configuration window (red circled in **Figure 15**).

Figure 15: Race Studio 2 – Configuration window - wheel circumference box.

MXL PRO 05 YOSHIMURA RACING HARNESS MAINTENANCE

MXL PRO 05 Yoshimura Racing Harness plug & play kit does not need any special maintenance. Provided that adequate care is taken of display unit and component, the only required maintenance is periodical upgrading of software and firmware.

This installation manual has been written using the following parameters:

- **Software Version**:   **Race Studio 2.20.17**

- **Firmware Version**:   **MXL 14.47**

To check if new software/firmware versions have been published by *AIM*, please connect to our website www.aim-sportline.com and go to "software download" page where all last software and firmware versions are freely downloadable.

If you find a new software or firmware version, please download and run it and follow the instruction prompted on your Pc monitor.

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