

TECHNICAL DOCUMENTATION	01/04/2003	GAUGE	MyChron 3 XG
Notes: MyChron 3 XG technical documentation, dimensions and pinout			

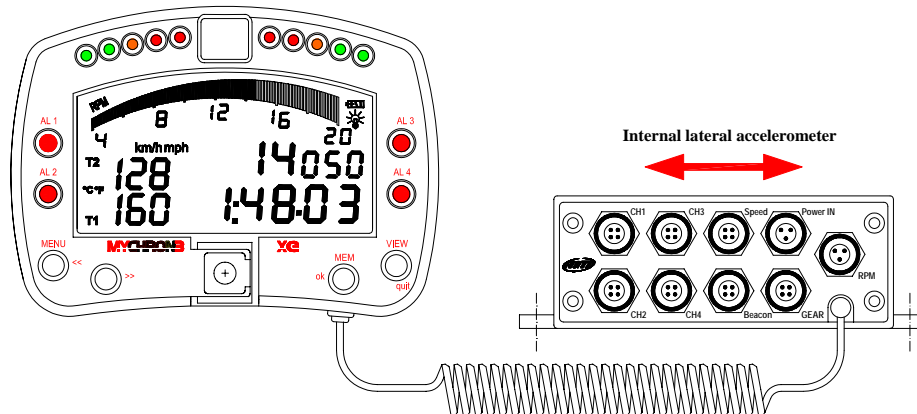


Figure 1: MyChron 3 XG

Introduction

MyChron 3 XG represents the new generation of Aim data acquisition systems for car racing. **MyChron 3 XG** monitors and displays RPM, 4 fully configurable analog inputs (pressure, temperature, potentiometers, Lambda sond and Pitot tube speed sensors), speed, current gear number, lateral G-force and lap (split) times. It also has a backlight, which can be switched on during night racing

The logger records the following parameters:

- 4 analog inputs: the user may choose the analog inputs among pressure sensors, temperature sensors (VDO, thermocouples, thermoresistances), potentiometers (linear and circular), Lambda sond and Pitot tube speed sensors;
- engine's RPM, sampled either from the ECU (square wave signal) or from the coil;
- lap and split times;
- engaged gear number: the gauge is able to sample the gear number either using an "on-board" gear sensor or calculating them using the speed vs. RPM ratio;
- 1 speed input;
- lateral G-force: the G-force sensor is mounted inside the "Junction box";
- logger temperature;

Data is stored in a huge 2 Mbytes internal flash memory and may be downloaded to a PC through an USB cable.

Please, refer to the following drawing to get further information concerning the gauge's display.

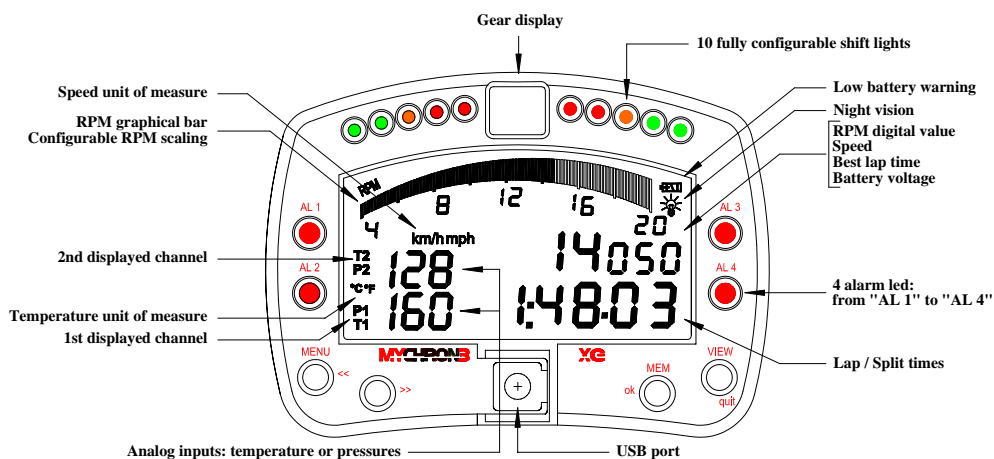


Figure 2: MyChron 3 XG display

Installation notes

- It is recommended to choose a place where both the display unit and the “Junction box” are not in contact with oil or fuel, make sure that the gauge is not installed too close to heat sources and protect the instrument from vibrations.
- We remind you that your **MyChron 3 XG** is not equipped with internal batteries, and so it needs to be powered by an external power source (i.e. the car’s battery).
- Once the gauge has been correctly installed, you may plug all the sensors inside the female connectors located on the Junction box’s front panel.



Figure 3: How to correctly install your MyChron 3 XG (Junction box’s top side view)

In order to correctly measure the lateral g-force using the internal accelerometer, it is suggested to install the gauge with the Junction box’s front panel perpendicular to the vehicle’s speed, as shown in Figure 3.

How to connect MyChron 3 XG to the PC

In order to connect your **MyChron 3 XG** to the PC, please use the USB data download cable and plug it both in the gauge’s USB port and in the PC’s USB port, as explained in Figure 4. Moreover, **it is reminded to use a 9-15 Volts external power source** in order to be able to switch on the gauge.

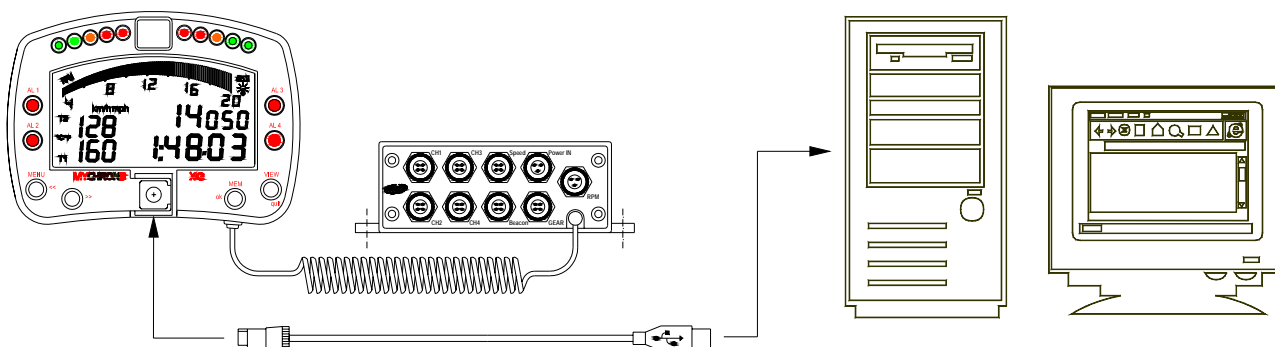


Figure 4: How to connect your MyChron 3 XG to the PC

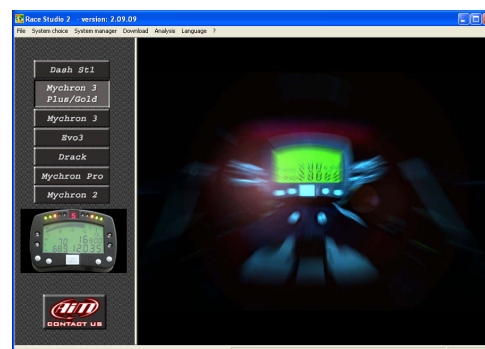
Software

Once the data logger has been installed and the sensors have been plugged in it, in order to acquire consistent and correct information, it is necessary to configure the data logger. For a correct configuration, please use **Race Studio 2**, a software properly developed by Aim to configure its instruments and to analyze stored data.

In **Race Studio 2** main window, shown here on the right, it is possible to choose your data logger. Please, select “MyChron 3 Plus/Gold” and, then, press “System manager” button

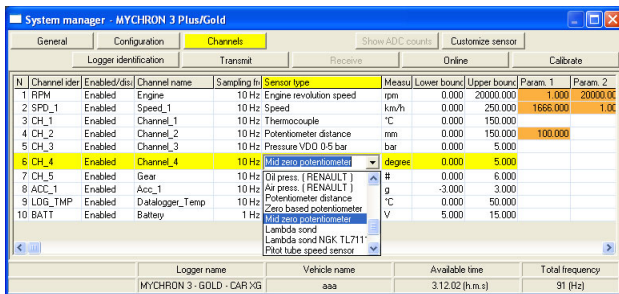
Now, please follow these configuration steps:

1. Set the desired input channels;
2. Configure the input channels;
3. Transmit the configuration to the logger;
4. Calibrate/autocalibrate the sensors;
5. Transmit the configuration to the logger.



1) How to set the input channels

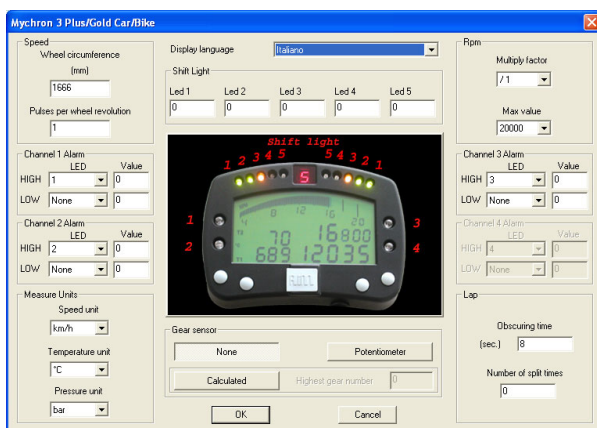
Press “Channels” button to set the sensors you have installed on your gauge. It will appear the following screenshot.



In order to set an input channel, double-click on the cell corresponding to the desired input channel: it will appear the screenshot shown in the previous picture. Select the desired input channel among the available ones.

2) How to configure the gauge

Once set the desired input channels, press button “Configuration” button to set the RPM maximum value, the temperature measure unit, the RPM factor, the split numbers etc... It will appear the following screenshot.



To correctly configure your **MyChron 3 XG** it is necessary to set all the parameters reported in this dialog box:

- Display language.
- RPM multiply factor.
- Maximum RPM value.
- Temperature, pressure and speed measure unit.
- The alarm values for the 4 analog inputs.
- Pulses per wheel revolution.
- Wheel circumference.
- Obscuring time.
- Number of splits.
- Shift lights.
- Gear sensor (None, “On-board”, Calculated).

Please, refer to the user’s manual in order to get further information concerning gauge’s configuration.

3) How to transmit the configuration

Once you set the input channels and you have configured them, you have to transmit the configuration to the instrument by pressing the “Transmit” button.

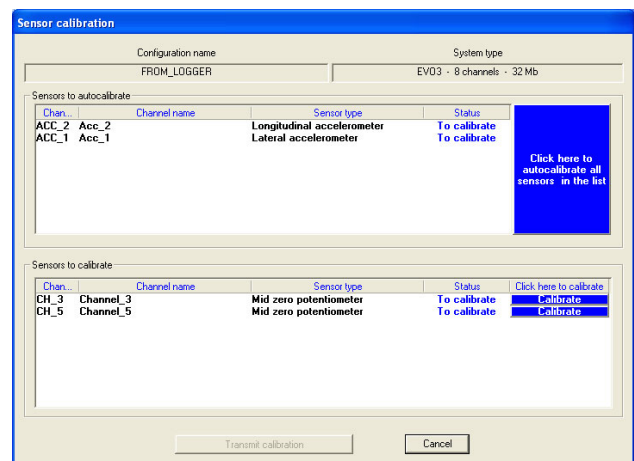
It is reminded that, in order to transmit the configuration, the gauge must be switched on and connected to the PC, as shown in Figure 4.

4) How to calibrate/autocalibrate the sensors

Once the configuration has been transmitted to the PC you have to calibrate/autocalibrate the sensors.

The internal lateral accelerometer and the “potentiometer distance” need to be autocalibrated, while “Mid zero potentiometer”, “zero based potentiometer” and the “on-board gear sensor” need to be calibrated.

Please press “calibrate” button and it will appear the following screenshot.



Please follow these instructions:

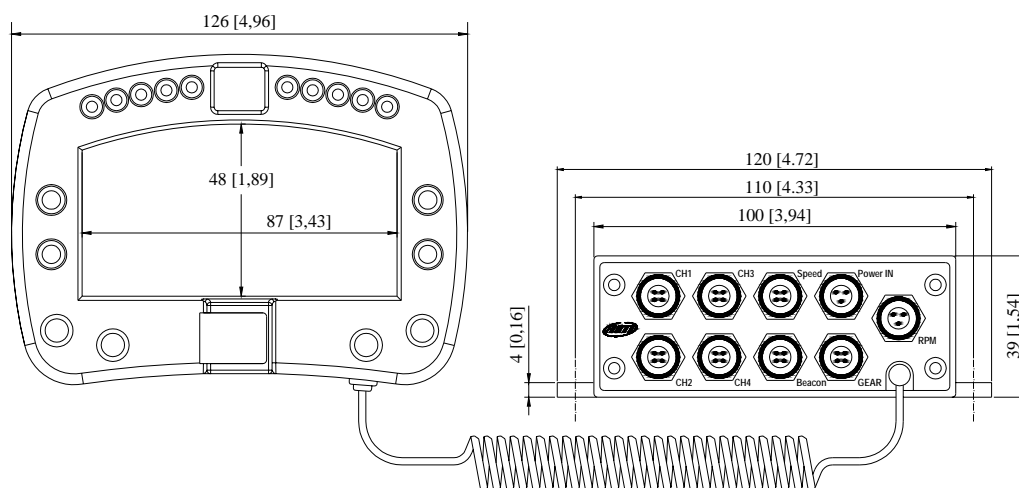
- The G-force sensor and the “potentiometer distance” sensor need to be autocalibrated pressing button “Click here to autocalibrate all sensors in the list”.
- To calibrate the “on-board” gear sensor, the “Mid zero potentiometer” or the “zero based potentiometer”, please click on the corresponding “Calibrate” button and follow the instructions prompted on your PC’s monitor.

It is reminded that the calibration/autocalibration procedure is fundamental in order to acquire correct data.

5) Re-transmit the configuration

Once the calibration/autocalibration has finished, it is absolutely necessary to re-transmit the configuration to your **MyChron 3 XG** pressing the “Transmit” button.

Dimensions



Dimensions in millimeters [inches]

Channels 1÷4 pinout

Pin	Function	Pin	Function
1	Analog signal input	3	+V battery
2	GND	4	V reference

Speed channel pinout

Pin	Function	Pin	Function
1	Speed signal input	3	+V battery
2	GND	4	Not connected

Beacon channel pinout

Pin	Function	Pin	Function
1	Magnetic / Optic codified lap	3	+V battery
2	GND	4	Optic not codified lap

Gear channel pinout

Pin	Function	Pin	Function
1	Gear signal input	3	+V battery
2	GND	4	V reference

“Power in” channel pinout

Pin	Function	Pin	Function
1	9-15 V power input	3	GND
2	GND		

RPM channel pinout

Pin	Function
1	RPM 150-400 V input (coil)
2	GND
3	RPM 8-50 V square wave (ECU)

Note: when connecting the RPM channel, it is reminded to connect either the RPM signal sampled from the coil or the other one sampled from the ECU, not both. Moreover, do not connect the RPM “coil” signal on the RPM “ECU” input.



3 & 4 pins female Binder 712 connectors pinout: external view

Technical characteristics

General characteristics	Value
Input channels	4
Internal memory	2 Mbytes flash EPROM
PC interface	300 kbyte/sec USB port
Max sampling frequency per channel	Up to 200 Hz
Total sampling frequency	500 Hz
Internal g-sensor	±5g
External power	From 9 to 15 VDC
Voltage output (V reference)	4.5 V (for potentiometers)

Other characteristics	Value
MyChron 3 PG dimensions	126x92x24 mm
Display dimensions	87x48 mm
Environmental	IP 65