**MyChron Expansion** 

# **User Manual**







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**MyChron4 Expansion** is the new external expansion module that increases **MyChron4** already big potential allowing the connection with other AIM products like **LCU-Lambda Controller**, **GPS** and **SmartyCam**, the on-board camera.

With **MyChron Expansion** it is possible to add 4 analog channels – or three analog channels and a digital one – to **MyChron4**. **MyChron Expansion** can support temperature sensors (only PT100 thermo resistors), potentiometers and displacement sensors – not contact too.

This new expansion is to be considered as an alternative to **MyChron4 eBox Gold/Extreme**.

This manual is to be used as an integration of **MyChron4** user manual. Refer to that document for any further information.



## Chapter 1 – MyChron Expansion and part number



MyChron Expansion is shown here above; Part number is:

kit MyChron Expansion:

X08MYEXUCS;



## **Chapter 2 – How to install and connect MyChron Expansion**

**MyChron Expansion** allows **MyChron4** to sample temperatures, displacements and – configuring channel 1 as digital – a speed. A correct installation of this expansion and its sensors is thereby mandatory to sample correct and consistent data.

#### 2.1 – How to install MyChron Expansion on the kart

Below images show how to install **MyChron Expansion**.





#### 2.2 – How to connect MyChron Expansion to MyChron4

Once correctly installed, **MyChron Expansion** is to be connected to **MyChron4** to be configured. The connection comes plugging **MyChron Expansion** cable in **MyChron4** connector labelled Exp/PC as shown here below.



Warning: connect MyChron Expansion to MyChron4 OFF.



## **Chapter 3 – How to configure MyChron Expansion**

**MyChron Expansion** is to be configured using **MyChron4**. Press "MENU" and select "Control Panel" icon highlighted here below.



Once **MyChron4** is connected to **MyChron Expansion**, its "Control Panel" menu shows additional options. In particular – if channel 1 is configured as speed – its configuration icon appears as shown here below.





#### 3.1 – Sensors Setup (Menu⇒Control panel⇒Sensors Setup)

This additional function appears only when **MyChron4** is connected to **MyChron Expansion** or to **eBox**. Here below is the menu.



View sensors instant values

All channels default setting is "None" and each type of sensor can be set on one channel only.

**Channel 1** can be configured as analog or digital: it can support a speed sensor and shows the speed value on the display. "Speed" is thereby included in this channel available options as shown here above.

**Channels from 2 to 4** can support different sensors and the different labels are written bold in the following list.

- Brake pressure sensor (**PresBrk**);
- Magnetic position sensor: shows exhaust gas valve opening in mm (GasValve);
- Magnetic position sensor: shows the throttle opening percentage, needs calibration and its working range is 0-100% (**MagThrot**);
- Magnetic position sensor: shows brake pedal percentage of travel and its working range is 0-100% (MagBrk);
- Temperature Sensor: shows kart cooling water temperature (WaterTemp)
- Temperature Sensor: shows Cylinder Head Temperature (CHT)
- Throttle Potentiometer: shows throttle pedal percentage of travel and needs calibration (**Throt**);
- Brake Potentiometer: shows brake pedal percentage of travel and needs calibration (PotBrk);
- Steering Potentiometer: is a mid zero potentiometer, shows the steering movement in a range -100/+100 and needs calibration (**Steer**)
- Generic sensor for custom measurement: is a zero based potentiometer and shows sampled values in a 0-100 range (**0-100**).

Once all connected sensors are set it is necessary to set pressure measure unit and to calibrate sensors that need it.

Selecting "View sensors" the display shows sensors instant values and allows the calibration needed.



This screen is only available with the kart engine off; it is thereby necessary to manually move the pedals to change shown values.



Sensors instant values

In case one or more sensors that need calibration are set, the system shows "CAL" button. Otherwise it does not.

#### 3.2 – Speed Setup (Menu⇒Control panel⇒Speed Setup)

It is an additional function that appears in the menu only when **MyChron4** is connected to **MyChron Expansion** and channel 1 is set on "Speed". Selecting this icon the related configuration screen appears.





# 3.3 – Potentiometers calibration (Menu⇒Control panel⇒Sensors Setup⇒View Sensors)

Magnetic position sensor ("**MagAccel**"), throttle ("**Throt**"), brake ("**PotBrk**") and steering ("**Steer**") potentiometer need calibration: press "CAL" button highlighted in "View Sensors" screen here below (paragraph 4.1).

	Sensors			Potentiometers
	Steer	99 ×	Ĩ	calibration button
Í	Throt PresBrk	504 *	E	
	WaterTemp	<b>21</b> ∘c	Ŧ	



#### 3.3.1 – Calibrating the steering potentiometer

The system calibrates the sensors in vertical order. Use "Prox" to scroll. The display shows three screens sequentially: follow its instructions.



When calibration is over the system confirms. To invert set values press "REV".



#### 3.3.2 – Calibrating throttle and brake potentiometer

The display shows two screens sequentially: follow its instructions.





Press strongly the throttle and keep it pressed for at least one second

When calibration is over the system shows confirmation.



When all potentiometers calibration is over press "OK" and the system saves calibration showing confirmation message.



### 3.4 – Setting 0-100 generic sensors (expert users only)

This function manages custom sensors. Values are linked following this calibration curve:

- 0 counts 0 Volt
- 100 counts 5 Volt

Calibration curve is already set and needs no calibration.

# Always refer to the sensors user manuals and datasheets supplied by the sensor manufacturers for any further information.

#### 3.4.1 – Analog channels connectors pinout

5 pins female Binder connector of CH1, CH2, CH3 and CH4 analog channels is shown here below.



#### 3.5 – Where to connect MyChron Expansion additional sensors

Additional sensors are connected to **MyChron Expansion** screwing them in their own connectors. Below image shows connectors position and function.





## Chapter 4 – How to install and configure speed sensors

There are two types of available speed sensors: front wheel speed sensor and rear axle speed sensor. Here below the installation instructions.

#### 4.1 – Installing the front wheel speed sensor





Front wheel speed sensor (above on the left) has to be oriented as shown above on the right, at 5 mm distance from the magnet.

#### 4.2 – Installing the rear axle speed sensor





Rear axle speed sensor shown here above on the left fits an installation on the bearing housing of the axle and can also be provided with a magnetic ring. It is to be installed at 3-5 mm from the magnet (or magnetic ring).



## **Chapter 5 – View data on track**

During the track session it is possible to see different values on the display according also to the sensors installed on the kart. On track **MyChron4** display shows this screen.



Pressing "ON/VIEW" it is possible to view speed – if configured – in spite of RPM digital value (below image).



If power valve sensor is installed and the related channel configured, when power valve opens **MyChron4** display shows an icon as here below.





## **Chapter 6 – Data recall and analysis**

When a track session is over data stored in **MyChron4** can be recalled pressing "MEM/OK".

The first page shown is session summary.



With ">>/OFF" and "MENU/<<" all sessions are scrolled.

Pressing again "MEM/OK", the **second page** – **Lap time histograms** – appears; it is just the same shown by **MyChron4**. Refer to that logger user manual for any further information.

Selecting a lap from histogram page and pressing again "MEM/OK" the **third page** – **RPM graph** – shown here below appears.



">>/OFF" and "MENU/<<" scrolls temperature and RPM punctual values. "ON/VIEW" shows other temperatures in the same page.



#### Pressing again "MEM/OK" the fourth page – power valve graph – appears.



Pressing again "MEM/OK" the fifth page – lap summary – appears.



Use ">>/OFF" and "MENU/<<" to scroll laps and "ON/VIEW" to see temperature values.





## Appendix – Technical drawing