

AiM Infotech

Car/bike linear
potentiometer
Race Studio 3 configuration
– suspensions

Release 1.00



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Introduction

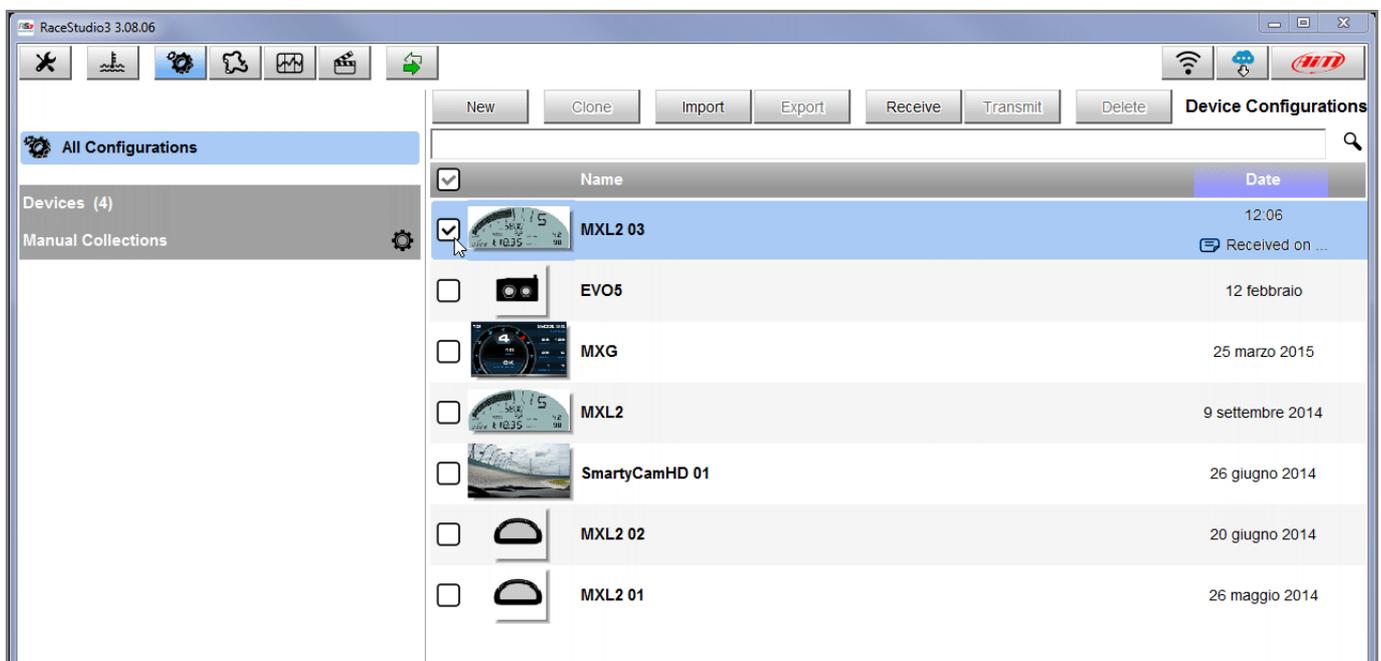
The car/bike linear potentiometer is supported by both AiM configuration software and can measure the dampers compression or extension as well as the steering rotation measured through the rack displacement. In this datasheet you will:

- load it in the logger configuration using **Race Studio 3**
- use it to measure **dampers** compression or extension

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Setup with Race Studio 3

To load the potentiometer in the logger configuration, with the logger switched on and connected to the PC, run the software and select the configuration you are going to load it on.



Enter the configuration (in the example MXL2 03) and the related "Channels" layer.

- Select the channel where to set the potentiometer on – in the example channel 6 (1) and fill in the panel that shows up; tip: you can name the channel (in the example named "Channel06").
- Function: "Position" (2)
- Sensor: "Position Pot. AutoCal" (3 – this implies that the potentiometer will be auto-calibrated as shown in the following pages)
- Fill in the other fields
- Fill "Total Potentiometer travel" box with the potentiometer travel in mm – in the example we used a 75 mm travel potentiometer (4)
- Click "Save"

The screenshot shows the RaceStudio3 3.08.06 interface. The 'Channels' tab is active, displaying a table of channels. Channel06 is selected, and its 'Channel Settings' dialog box is open. The settings are as follows:

ID	Name	Function	Sensor	Unit	Freq	Parameters
RPM	RPM	RPM	RPM Sensor	rpm	20 Hz	max: 16000 ; factor: /1 ;
Spd1	Speed1	Vehicle Spd	Speed Sensor	km/h 0.1	20 Hz	wheel: 1600 ; pulses: 1 ;
Spd2	Speed2	Vehicle Spd	Speed Sensor	km/h 0.1	20 Hz	wheel: 1600 ; pulses: 1 ;
Spd3	Speed3	Vehicle Spd	Speed Sensor	km/h 0.1	20 Hz	wheel: 1600 ; pulses: 1 ;
Spd4	Speed4	Vehicle Spd	Speed Sensor	km/h 0.1	20 Hz	wheel: 1600 ; pulses: 1 ;
Ch01	Channel01	Voltage				
Ch02	Channel02	Voltage				
Ch03	Channel03	Voltage				
Ch04	Channel04	Voltage				
Ch05	Channel05	Voltage				
Ch06	Channel06	Voltage				
Ch07	Channel07	Voltage				
Ch08	Channel08	Voltage				
AccX	AccelerometerX	Inline Acc				
AccY	AccelerometerY	Lateral Acc				
AccZ	AccelerometerZ	Vertical Acc				
GyrX	GyroX	Ang Velocity				
GyrY	GyroY	Ang Velocity				
GyrZ	GyroZ	Ang Velocity	AIM Internal Gyro	deg/s	20 Hz	
Spd	GPS Speed	Vehicle Spd	AIM GPS	km/h 0.1	10 Hz	
OdD	Odometer	Odometer Total	AIM ODO	km 0.1	1 Hz	

The 'Channel Settings' dialog box for Channel06 shows the following configuration:

- Name: Channel06
- Function: Position
- Sensor: Position Pot. AutoCal
- Sampling Frequency: 20 Hz
- Unit of Measure: mm
- Display Precision: no decimal place
- Potentiometer Parameter: Total potentiometer travel [mm] 75

The 'Save' button is highlighted, indicating the configuration is being applied.

When the software comes back to "Channels" layer the potentiometer has been set on the desired channel as shown here below.

- Transmit the configuration to the logger pressing "Transmit" on the top keyboard.

The screenshot shows the RaceStudio3 3.08.06 software interface. The 'Channels' tab is active, displaying a table of configured channels. The 'Transmit' button is highlighted in red. The 'Channel06' row is highlighted in blue and enclosed in a red box.

ID	<input checked="" type="checkbox"/>	Name	Function	Sensor	Unit	Freq	Parameters
RPM	<input checked="" type="checkbox"/>	RPM	RPM	RPM Sensor	rpm	20 Hz	max: 16000 ; factor: /1 ;
Spd1	<input checked="" type="checkbox"/>	Speed1	Vehicle Spd	Speed Sensor	km/h 0.1	20 Hz	wheel: 1600 ; pulses: 1 ;
Spd2	<input checked="" type="checkbox"/>	Speed2	Vehicle Spd	Speed Sensor	km/h 0.1	20 Hz	wheel: 1600 ; pulses: 1 ;
Spd3	<input checked="" type="checkbox"/>	Speed3	Vehicle Spd	Speed Sensor	km/h 0.1	20 Hz	wheel: 1600 ; pulses: 1 ;
Spd4	<input checked="" type="checkbox"/>	Speed4	Vehicle Spd	Speed Sensor	km/h 0.1	20 Hz	wheel: 1600 ; pulses: 1 ;
Ch01	<input checked="" type="checkbox"/>	Channel01	Voltage	Generic 0-5 V	mV	20 Hz	
Ch02	<input checked="" type="checkbox"/>	Channel02	Voltage	Generic 0-5 V	mV	20 Hz	
Ch03	<input checked="" type="checkbox"/>	Channel03	Voltage	Generic 0-5 V	mV	20 Hz	
Ch04	<input checked="" type="checkbox"/>	Channel04	Voltage	Generic 0-5 V	mV	20 Hz	
Ch05	<input checked="" type="checkbox"/>	Channel05	Voltage	Generic 0-5 V	mV	20 Hz	
Ch06	<input checked="" type="checkbox"/>	Channel06	Position	Position Pot. AutoCal	mm	20 Hz	max travel: 75 ;
Ch07	<input checked="" type="checkbox"/>	Channel07	voltage	Generic 0-5 v	mV	20 Hz	
Ch08	<input checked="" type="checkbox"/>	Channel08	Voltage	Generic 0-5 V	mV	20 Hz	
AccX	<input checked="" type="checkbox"/>	AccelerometerX	Inline Accel	AIM Internal Accelerometer	g 0.01	20 Hz	
AccY	<input checked="" type="checkbox"/>	AccelerometerY	Lateral Accel	AIM Internal Accelerometer	g 0.01	20 Hz	
AccZ	<input checked="" type="checkbox"/>	AccelerometerZ	Vertical Accel	AIM Internal Accelerometer	g 0.01	20 Hz	
GyrX	<input checked="" type="checkbox"/>	GyroX	Ang Velocity	AIM Internal Gyro	deg/s	20 Hz	
GyrY	<input checked="" type="checkbox"/>	GyroY	Ang Velocity	AIM Internal Gyro	deg/s	20 Hz	
GyrZ	<input checked="" type="checkbox"/>	GyroZ	Ang Velocity	AIM Internal Gyro	deg/s	20 Hz	
Spd	<input checked="" type="checkbox"/>	GPS Speed	Vehicle Spd	AIM GPS	km/h 0.1	10 Hz	
OdD	<input checked="" type="checkbox"/>	Odometer	Odometer Total	AIM ODO	km 0.1	1 Hz	

To auto-calibrate the potentiometer:

- enter "All" layer and press "Device" (1)
- select the logger – in the example MXL2 ID 410 (2)
- in "Live Measures" layer, keeping the potentiometer in its zero position, select the channel where the potentiometer has been set – in the example channel 6 (3)
- press "Auto Calibrate" (4)

The screenshot shows the RaceStudio3 3.08.06 interface. On the left, the 'All Configurations' panel shows 'Devices (4)' with 'MXL2 ID 410' selected (2). The main window displays the 'MXL2 ID 410' configuration page. The 'Live Measures' tab is selected (1), and the 'Auto Calibrate' button is highlighted (4). The 'Channel06' is selected in the list (3).

MXL2 ID 410	
Live Measures Download Properties Odometers Logo Firmware	
Stop Live Measures Auto Calibrate Calibrate Start Recording mV Values	
Lap Time	0.00.000 (0)
External Voltage	12 mV
Speed1	0.0 km/h
Speed3	0.0 km/h
Channel01	6 mV
Channel03	29 mV
Channel05	30 mV
Channel07	31 mV
AccelerometerX	-0.71 g
AccelerometerZ	0.16 g
GyroY	-0.1 deg/s
SM_RPM	---
SM_PEDAL_ANGLE	%
SM_WHSPD_FR	km/h
SM_WHSPD_RR	km/h
SM_ECT	C
SM_OIL_P	bar
SM_STEERSPEED	deg/s
SM_GEAR	- gear
SM_KICKDOWN	---
SM_FLUFI TFMP	C
Logger Temperature	27.1 C
RPM	0 rpm
Speed2	0.0 km/h
Speed4	0.0 km/h
Channel02	29 mV
Channel04	35 mV
Channel06	0 mm
Channel08	32 mV
AccelerometerY	0.68 g
GyroX	0.5 deg/s
GyroZ	1.3 deg/s
SM_PPS	%
SM_WHSPD_FL	km/h
SM_WHSPD_RL	km/h
SM_VEH_SPEED	km/h
SM_OIL_T	C
SM_STEERANGLE	deg
SM_BRAKE_SW	---
SM_FUEL_LEVEL	l
SM_ATM_PRESS	bar
SM_ENGINE TFMP	C

- Keep the potentiometer in its zero position as shown here below
- Press "Auto calibrate All".

MXL2 ID 410

Autocalibrate All Exit

Name	Instant Value
Channel06	0 mm
AccelerometerX	-0.70 g
AccelerometerY	0.69 g
AccelerometerZ	0.16 g
GyroX	0.2 deg/s
GyroY	-0.1 deg/s
GyroZ	1.3 deg/s

Connected Devices

MXL2 ID 410

No devices in view.

Cestino