

AiM Infotech

Rotary potentiometer for
car/bike/kart
Race Studio 3 configuration
– steering angle

Release 1.00



1

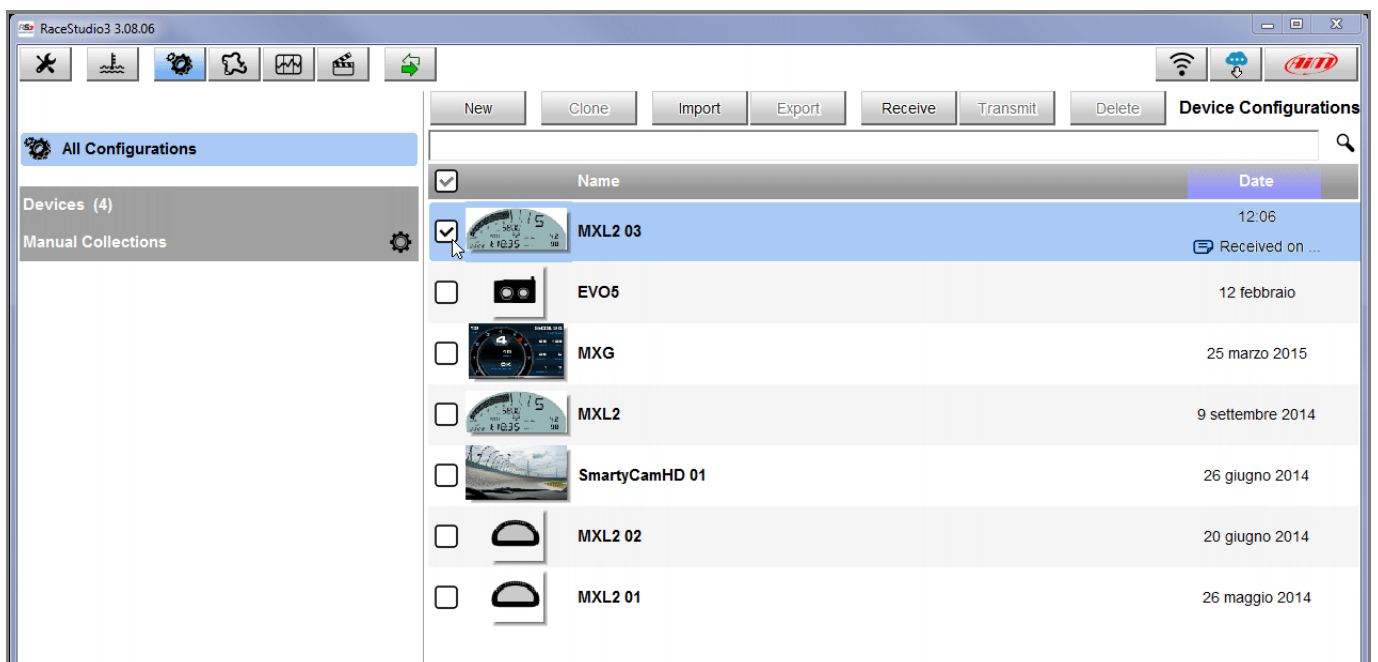
Introduction

This datasheet explains how to set up with Race Studio 2 the rotary potentiometer. AiM loggers can measure the displacement between two points using a sensor (rotary potentiometer) directly connected to the two measure points. This potentiometer can measure the angular displacement like those of the steering wheel.

2

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 5 (1) and fill in the panel that shows up; tip: you can name the channel (in the example "Channel06")
- Function: "Angle" (2)
- Sensor: " Angular Pot. Calib" (3 – this implies that the potentiometer will be calibrated as shown in the following pages)
- Fill in the other fields
- Fill "Total Potentiometer travel" box with the potentiometer travel in degrees: 180° (4)
- Click "Save"

The screenshot shows the RaceStudio3 3.08.06 interface. The 'Channels' tab is active, displaying a table of channels. A 'Channel Settings' dialog box is open for 'Channel05'. The dialog box contains the following fields:

- Name: Channel05
- Function: Angle (2)
- Sensor: Angular Pot. Calib (3)
- Sampling Frequency: 20 Hz
- Unit of Measure: deg
- Display Precision: no decimal place
- Potentiometer Parameter: Total potentiometer travel [deg] 180 (4)

The 'Save' button is highlighted with a mouse cursor.

ID	Name	Function	Sensor	Unit	Freq	Parameters
RPM	RPM	RPM				16000 ; factor: 1 ;
Spd1	Speed1	Vehicle Spd				el: 1600 ; pulses: 1 ;
Spd2	Speed2	Vehicle Spd				el: 1600 ; pulses: 1 ;
Spd3	Speed3	Vehicle Spd				el: 1600 ; pulses: 1 ;
Spd4	Speed4	Vehicle Spd				el: 1600 ; pulses: 1 ;
Ch01	Channel01	Voltage				
Ch02	Channel02	Voltage				
Ch03	Channel03	Voltage				
Ch04	Channel04	Voltage				
Ch05	Channel05	Voltage				
Ch06	Channel06	Position				travel: 50 ;
Ch07	Channel07	Voltage				
Ch08	Channel08	Voltage				
AccX	AccelerometerX	Inline Acc				
AccY	AccelerometerY	Lateral Acc				
AccZ	AccelerometerZ	Vertical Acc				
GyrX	GyroX	Ang Velocity	AIM Internal Gyro	deg/s	20 Hz	
GyrY	GyroY	Ang Velocity	AIM Internal Gyro	deg/s	20 Hz	
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	

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 top toolbar includes buttons for Save, Save As, Close, and Transmit. The 'Channels' tab is active, displaying a table of channel configurations. The 'Channel05' row is highlighted with a red box, indicating it is the selected channel for the potentiometer.

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	Angle	Angular Pot. Calib	deg	20 Hz	max travel: 180 ;
Ch06	<input checked="" type="checkbox"/>	Channel06	Position	Position Pot. AutoCal	mm	20 Hz	max travel: 50 ;
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 calibrate the potentiometer:

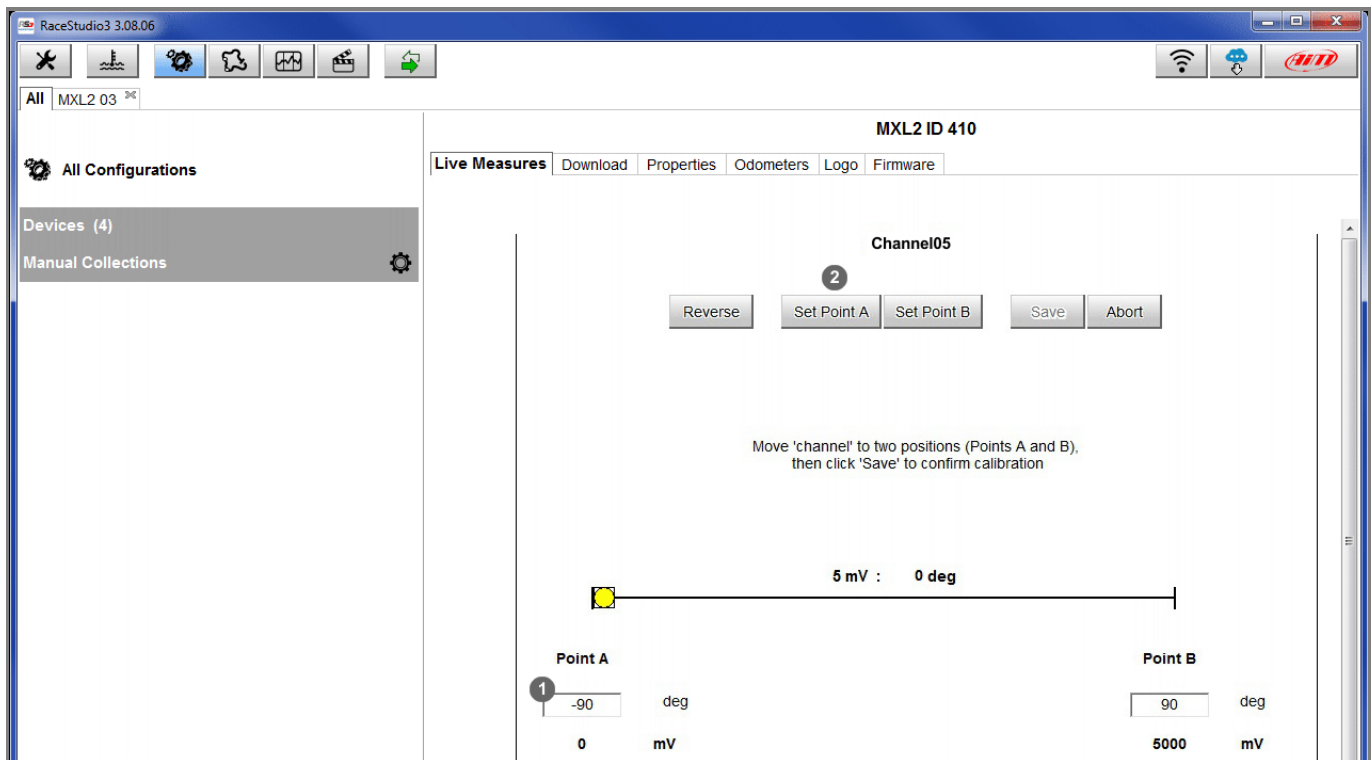
- enter "All" layer and press "Device" (1)
- select the logger – in the example MXL2 ID 410 (2)
- in "Live Measures" layer press "Calibrate" (3) and select the channel where the potentiometer was set (in the example channel 5)

The screenshot shows the RaceStudio3 3.08.06 interface. On the left, the 'All Configurations' panel is open, showing 'Devices (4)' and 'Manual Collections'. The 'Connected Devices' section at the bottom left shows 'MXL2 ID 410' selected, with a '2' indicating this step. The main window displays the 'MXL2 ID 410' configuration page. The 'Live Measures' tab is active, and the 'Calibrate' button is highlighted with a '3', indicating this step. A dropdown menu is open, showing 'Channel05' selected. The main data table lists various sensors and their values.

Parameter	Value	Unit	Parameter	Value	Unit
Lap Time			Logger Temperature	28.0	C
External Voltage	12	mV	RPM	0	rpm
Speed1	0.0	km/h	Speed2	0.0	km/h
Speed3	0.0	km/h	Speed4	0.0	km/h
Channel01	5	mV	Channel02	28	mV
Channel03	29	mV	Channel04	33	mV
Channel05	-90	deg	Channel06	0	mm
Channel07	30	mV	Channel08	31	mV
AccelerometerX	0.00	g	AccelerometerY	0.00	g
AccelerometerZ	0.00	g	GyroX	0.0	deg/s
GyroY	0.0	deg/s	GyroZ	0.0	deg/s
SM_RPM	---	rpm	SM_PPS		%
SM_PEDAL_ANGLE		%	SM_WHSPD_FL		km/h
SM_WHSPD_FR		km/h	SM_WHSPD_RL		km/h
SM_WHSPD_RR		km/h	SM_VEH_SPEED		km/h
SM_ECT		C	SM_OIL_T		C
SM_OIL_P		bar	SM_STEERANGLE		deg
SM_STEERSPEED		deg/s	SM_BRAKE_SW	---	#
SM_GEAR	-	gear	SM_FUEL_LEVEL		l
SM_KICKDOWN	---	#	SM_ATM_PRESS		bar
SM FIUFI TFMP		C	SM ENGINE TFMP		C

The software shows calibration page:

- fill in threshold values -90 and 90 in the proper cells (1)
- keeping the potentiometer completely closed press "Set point A" (2)



- completely open the potentiometer and press "Set point B"
- press "Save"

