



MXS 1.2 Strada

USER GUIDE 1.00



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MXS 1.2 Strada





1. MXS 1.2 Strada in a few words

What is MXS 1.2 Strada?

MXS 1.2 Strada is the new AiM dash that combines small dimensions, flexibility, usability and that may manage a wide range of channel inputs. It features:

- ECU connection (CAN, RS232 and K-Line)
- 1 speed input
- 1 RPM input
- 8 analog/digital inputs
- 2 analog video camera inputs
- up to 8 configurable display pages
- a huge tracks database to automatically select the track you are racing on
- 6 alarm LEDs
- 10 RGB LEDs that you may configure for clearly showing if you are improving or not.

What about ECU connection?

MXS 1.2 Strada manages CAN, K-Line and RS232 ECU communication lines. Its huge database including more than 1500 ECU protocols is available.

Is MXS 1.2 Strada an expandable logger?

Yes. MXS 1.2 Strada can be connected to various AiM expansions like GPS Module, Channel Expansion, TC Hub and LCU-One CAN to maximize your engine performances and to AiM SmartyCam to see your track performances on your PC with all the values you need in overlay.

Anything else?

You may connect one or two stock video cameras to a dedicated input in order to show a reverse mirror image directly on its display.



MXS Strada is available with two different layouts: race (top) and street (bottom)



2:03.24 LAP TIME 90.0 WATER TEMP 12 OIL PRESS 5500 18.7°C INFO LINE

2. What is in the kit?

MXS 1.2 Strada kit includes:

- MXS 1.2 Strada standard version or with street icons as shown here below
 USB cable
- 14 pins connector harness for ECU connection and power; it is available in two versions:
 - standard for ECUs communicating
 - through CAN/RS232 protocol or with the OBDII connector for ECUs communicating with CAN/RS232 and K-Line.
- 23 pins AMP female connector with pins
 CD for software installation
 MXS 1.2 Strada user manual











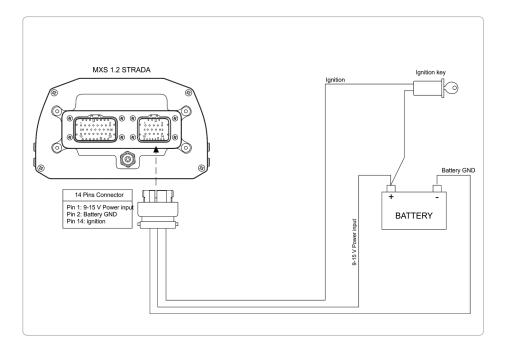
3 Powering

The power is managed by three pins of the 14 pins connector:

Pin 1: Power (9-15 Volts)

- Pin 14: Ignition
- Pin 2: Ground

They must be connected as shown in the following diagram.



4 What you can do via keyboard

MXS 1.2 Strada needs to be configured via software but there are some functions you can manage via the device lateral buttons.



4.1 Set Date/Time

Press "Menu button and this page appears.



The icons are to manage:











Date/Time

me

Backlight

Counters GPS and Tracks

System Info

Here you can:

set time zone

enable/disable Daylight saving time
 set time and date format

Bottom of the page current time and date are shown.

4.2 Set backlight

The brightness of the display and LEDs may be adjusted in two ways, depending on the light captured by a dedicated sensor integrated in the dash

- AUTOMATIC: in case ambient light is higher than a defined threshold, the brightness is reduced
- MANUAL: you may define the brightness of the display and LEDs choosing among some values: 20%, 40%, 60%, 80%,100%





4.3 Counters management

MXS 1.2 Strada features 4 user odometers, labelled User 1 – User 4, plus a non-resettable System Odometer. All odometers are shown on the configuration software Race Studio 3 too (see chapter about MXS 1.2 Strada and the PC). Each odometer can be activated/deactivated

and/or reset. To manage an odometer select it and press "CHANGE".



2.0 Km 1:13.13 2.4 Km

4.4 GPS & Tracks management

MXS 1.2 Strada can of course be used on track thanks to the optional AiM GPS08 Module. This is used for:

- Lap time calculation
- Speed calculation
- Predictive lap time calculation

To calculate these data the system needs to know the start/finish line coordinates of the racetrack where you are racing: MXS 1.2 Strada comes with a long list of the world main tracks, constantly updated by our technicians and automatically loaded to your PC when you run our Analysis Software Race Studio 3.

MXS 1.2 Strada provides two track selection modes: automatic and manual.

Automatic:

MXS Strada 1.2 automatically recognizes the track you are running on, loads the start/finish line and the possible splits coordinates and calculates lap and split times without optical/magnetic receiver.

This is the best mode in most cases.

Manual:

Allows to manually select the track from the internal database.

This mode is to be preferred when multiple track configurations are available nearby. In this case MXS 1.2 Strada would anyway recognize the track but would need at least one complete track lap.

You can scroll the list of available tracks choosing among these options:

- nearest: shows only tracks in a 10 km distance
- all: shows all tracks stored in the system in alphabetical order
- custom: shows only the tracks you have previously created (learning mode)



4.5 System Information

This page shows serial number as well as firmware and booter version of your MXS 1.2 Strada.

	System Info	
Logger		MXS 1.2 STRADA
Serial N.:		5302808
Fw Version		02.22.70
Boot Version		02.22.60
		E) 1

5 MXS 1.2 Strada and the PC

Using AiM Race Studio 3 software you can configure MXS 1.2 Strada, manage its tracks database as well as check other device functions through Race Studio 3 device window.

5.1 Connection to the PC

MXS 1.2 Strada can be connected to the PC using the USB cable you find in the kit: plug it in the cable labelled "USB" of MXS 1.2 Strada 14 pins connector harness and in the PC USB port.

5.2 Configuration of MXS 1.2 Strada

Once MXS 1.2 Strada connected to the PC

- click "Configurations" icon and configurations page appears
- click "New" and new configuration panel appears: select "MXS 1.2 Strada" and press "OK".

* * *	<i>ि</i>	*
2 All Configurations	New Clone Import Export Receive Transmit Delete Device Configurations	
Devices (3) Manual Collections	Name	Q 🕄 Date
	Choose a device Use State Stat	giu 01
Connected Devices	MXS Strads Configuration Name MXS 12 Strads MXS 12 Strads MXS 12 Strads Configuration Name Configuration Nam	ipr 06
No device connected	EVO4S EVO4S SmartyCam HD	
	OK D Cancel	
Trash	Cancel	

This is the list of the features you have to configure:

- Channels: analog and digital sensors that you directly connect to MXS 1.2 Strada.
- ECU: The Engine Control Unit of your vehicle. MXS 1.2 Strada manages CAN, RS232 and K-Line protocols.
- CAN2: in case the system is connected to other CAN devices, beside the ECU, they have to be connected to CAN 2 port
- CAN expansions: other AiM CAN Devices, like, for example, Lambda controller, GPS Module Channel expansions etc.
- Math channels: some calculated channels that may be helpful in some situations
- Some other calculated variables, useful for managing alarms, icons, LEDs.

5.2.1 Channels configuration

Here you can set all the channels related to sensors directly connected to the device. RPM channel is by default enabled: since the direct RPM connection is used when the vehicle does not have an ECU, the software automatically disables it in case you select an ECU protocol. In Chapter 9 you may find some information about the hardware RPM signal connection.

Save As Clo	e Tran	smit							
ECU Stream CAN2 Str	eam CAN E	xpansio	ns Math Channels Sta	tus Variables Parameters	Shift Lights and Alarms	Trigger Con	mmands lo	ons Manager Display SmartyCam Stre	am CAN Output
	ID		Name	Function	Sensor	Unit	Freq	Parameters	
	RPM	•	RPM	Engine 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 ;	
	Ch01		Channel01	Voltage	Generic 0-5 V	mV	20 Hz		
	Ch02		Channel02	Voltage	Generic 0-5 V	mV	20 Hz		
	Ch03		Channel03	Voltage	Generic 0-5 V	mV	20 Hz		
	Ch04		Channel04	Voltage	Generic 0-5 V	mV	20 Hz		
	Ch05		Channel05	Voltage	Generic 0-5 V	mV	20 Hz		
	Ch06		Channel06	Voltage	Generic 0-5 V	mV	20 Hz		
	Ch07		Channel07	Voltage	Generic 0-5 V	mV	20 Hz		
	Ch08		Channel08	Voltage	Generic 0-5 V	mV	20 Hz		
	Accu	◄	GPS Accuracy	GPS Accuracy	AIM GPS	mm	10 Hz		
	Spd	◄	GPS Speed	Vehicle Spd	AIM GPS	km/h 0.1	10 Hz		
	Alt	◄	Altitude	Altitude	AIM GPS	m	10 Hz		
	OdD	◄	Odometer	Odometer Total	AIM ODO	km 0.1	1 Hz		
	Luma		Luminosity	Brightness	AiM Luminosity	%	1 Hz		

To set a channel just click on its line and the related panel shows up.

5.2.2 ECU Connection and configuration

MXS 1.2 Strada can be connected to your vehicle ECU. Documents explaining how to connect your MXS 1.2 Strada to the vehicle ECU are published on our website www.aim-sportline.com. MXS 1.2 Strada can communicates through CAN, RS232 and K-Line communication lines.

The ECU protocol includes 1500 different protocols and is constantly updated by our technicians. In case you have a CAN based ECU and its protocol is not in the database, you may anyway develop it, using the ECU Driver Builder function (see par 5.4).

To load the ECU protocol in MXS 1.2 Strada configuration:

- enter "ECU Stream" tab
- press "Change ECU" button
- select "ECU Manufacturer" and "ECU Model" (in the example FORD/ MUSTANG 2010)
- press OK

els ECU Stream CAN2 Stream	Transmit CAN Expansions Math Channels Stat	tus Variables Parameters Shift Lights and Alarms	Trigger Commands Icons Manager	Display SmartyCam Stream	CAN Output
	ECU: Click	k button to select a ECU protocol	Change ECU 🔹		
	Choose ECU Protocol				
	Manufacturer	Model			
	CORVETTE	* BOSS 302R X05 OF			
	DALLARA	FIESTA			
	DTA	FIESTA ST150			
	DUCATI	FOCUS 2005 07			
	DUCATI_ENERGIA	FOCUS 2008			
	E-RACE	FOCUS PZEV0304			
	ECS	FOCUS_2013			
	ECU_MASTER	FR500C_MS			
	EFI_EUROPE	MUSTANG 2005-9			
	EM	MUSTANG 2010			
	EMS	MUSTANG 2011			
	EMTRON	MUSTANG 2015			
	FERRARI				
	FORD				
	FPT				
	GEMS				
	GET				

You can choose:

Channel name

- Function
- Sensor type
- Measure unit
- Sampling frequency
- Display precision
- Specific parameters

The image below shows an example of two panels: speed panel on the left and analog channel one on the right.

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	IXS 1.2 Strada ≍		1														
	ave Save As	Close	Trans														
Chan	nels ECU Stream	CAN2 Strea	m CAN Ex		ons Math Channels Sta	atus \	Variables Parameters	Sh	ift Lights and Alarms	Trigger Com	mands	Icons Manager	Display	SmartyCam Stream	CAN Output		
			ID		Name	E	unction	Se	insor	Unit	Freq	Paramete					
				•	RPM	Er	ngine RPM	RP	14 Sensor	rpm	20 Hz	max: 16000	factor: /1 ;				
					Speed1	Ve	ehicle Spd	Spe	eed Sensor	km/h 0.1	20 Hz	wheel: 1600	; pulses: 1 ;	:			
					Channel01	Ve	oitage	Ge	neric 0-5 V	mV	20 Hz						
1	Channel Settings			_	-	x	1 200		neric 0-5 V	mV	20 Hz						
	Name	Speed	1	_			age	Ge	Channel Settings		_						
	Function	Vehicle	Spd			\$	age	Ge	Name	Channell	02						
						_	age	Ge	Function	Voltage			_	÷ -			
	Sensor	Speed	Sensor			\$	age	Ge									
	Sampling Frequency	20 Hz		_		\$	age	Ge	Sensor	Generic	0-5 V		_	•			
	Unit of Measure	km/h		-		\$	age	Ge	Sampling Frequency	20 Hz				•			
	Display Precision	_	nal place	_		•	Accuracy	All	Unit of Measure	mV				\$			
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	-						Jde	AB									
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		wheel revolut			1		htness	AB									
								-									
												Sav	e	Cancel			
				_	Save Cance		J										

5.2.3 CAN2 Stream configuration

This page works exactly like ECU Stream one. Here you can find additional CAN modules. To load your additional module CAN protocol:

- enter "CAN2 Stream" tab
- press "Change protocol" button
- select "Manufacturer" and "Model" (in the example (MEGALINE/PADDLESHIFT)
- press OK

MXS	1.2 Strada ∺											
Save	Save As	Close	Transmit									
hannels	ECU Stream	CAN2 Stream	CAN Expansion	Math Cha				larms Trigger Comm		-	Day SmartyCam Stream CAN Output	
					ECU: FC	ORD - N	IUSTANG 2010		Change ECU			
								Enable the CA	N Bus 120 Ohm R	esistor		
					Enabled C	hannels	(Max. 120) 35/35	Silent on CAN	Bus			
					ID		Name	Function	Unit	Freq		
					CC08		RPM	Engine RPM	rpm	10 Hz	·	
					CC09	•	SpeedVeh	Vehicle Spd	kmih 0.1	10 Hz		
					CC13	•	SpeedFL	Wheel Spd	km/h 0.1	10 Hz		
					CC14		SpeedFR	Wheel Spd	kmih 0.1	10 Hz		
					CC15	•	SpeedRL	Wheel Spd	kmlh 0.1	10 Hz		
					CC16		SpeedRR	Wheel Spd	kmih 0.1	10 Hz		
					CC17	•	Gear	Gear	gear	10 Hz		
					CC25		WaterTemp	Water Temp	C 0.1	10 Hz		
					CC04	•	TurboBoost	Number		10 Hz		
					CC21	•	TCSBrakeEvent	Number		10 Hz		
					CC22	•	TCSEngEvent	Number		10 Hz		
					CC23		StabCtrlTeltal	Number	=	10 Hz		
					CC24		StabCtrIMTXT	Number		10 Hz		
					CC34	•	TyreRvMile	Number		10 Hz		
					CC31	•	FuelLevelMean	Percent	% 0.01	10 Hz		
					CC32	•	FuelInst1	Percent	% 0.01	10 Hz		
					CC33		FuelInst2	Percent	% 0.01	10 Hz		

After setting the protocol the system comes back to "ECU Stream" page and shows two check-

■ "Enable the CAN Bus 120 Ohm Resistor": the CAN Bus needs two 120 Ohm resistors at its two extremes. In case your MXS 1.2 Strada is the only device connected to the ECU the 120

Ohm resistor should be enabled, else, very easily, it is already present in the existing network

■ "silent on CAN Bus": usually the ECU aspects an acknowledge signal when transmits a message and, as default, the MXS 1.2 Strada transmits this signal. Sometimes, particularly when there are other devices in the network, MXS 1.2 Strada should not transmit it; in this case, if

you enable this flag, MXS 1.2 Strada remains completely silent.

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Save	Save As	Close	Transmit											
Channels			CAN Expansions	Math Channels	Status Variables	Parameters	Shift Lights and Alarms	Trigger Commands	Icons Manager	Display	SmartyCam Stream	CAN Output		
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				Choose CANZ	Protocol			- 0 - X						
				Manufacture			Model							
				None			PADDLESHIFT							
				BOSCH										
				BRIGHTWAT	ER									
				HEWLAND										
				KMP										
				MEGALINE										
				NEMESIS										
				SEAT_Sport										
				STACK										
				TEVES										
				TEXYS										
				TIRE_WATC										
				WIRELESS_	IOTORSPORT									
							ок 🔓	Cancel						
							18							

box, both disabled:

and should be disabled:

5.2.4 CAN Expansions configuration

MXS 1.2 Strada can be connected to various AiM CAN expansions:

- LCU-One CAN
- Channel Expansions
- TC Hub

At the very first MXS 1.2 Strada connection this page shows up:

Setting LCU-One CAN

To set an LCU-One CAN:

- press "New Expansion" button;
- select "LCU-One CAN" and press OK
- name your LCU One and fill in its serial number or press "Get SN from a connected expansion" to receive the serial number from the connected LCU-One
- select the multiplier to calculate AFR from lambda (in the example "14.57 Gasoline") or add a custom value pressing "Add Custom Value" (the related panel shows up)
- set the LCU One channels double clicking on each channel and setting the panel that shows up
- press "Close" to save and exit

Save Save A: channels ECU Stream New Expansion All CH00 * TCH0 **	m CAN2 Stream CA	(6 characters max.)		Get S.N. a conne		Its and Alarms Trigger Commands I kons Manager ID	isplay Smarty	Cam Stream CAN Output
AII CHX0 ¥ TCH0 ×	Expansion Name			a conne	from			
	Expansion Name			a conne	from			
				Expans	cted ion	💷 Lambda Multiplier Manager		
Multiplier to ca			Fuel Ratio = pounds of air /				New Value	Label for New Value
	14.57 - Gas	soline	Add Custom	Value		Multiplier Lambda Values	14.57	Gasoline
6.40 - M						6.40 - Methanol	^	
9.00 - E	Gasoline					9.00 - Ethanol	_	Add or Modify Current Item
14.60 - 0						14.57 - Gasoline		Remove Current Item
	LPG (Propane)					14.60 - Diesel		Restore Default Values
17.20 - 0						15.50 - LPG (Propane)		
					_	17.20 - CNG	-	
D 🕑 Nam-		Function	Sensor	Unit	Freq			
md 🕑 OLCC	C_Lambda	Lambda	AIM LCU-One Lambda	λ0.01	10 Hz			OK Cancel
IFR 🕑 OLCC	C_AFR	AFR	AIM LCU-One AFR	A/F 0.01	10 Hz			OK Curtor
.Tm 🕑 OLCC	C_LmdTmp	Lambda Temp	AiM LCU-One Temp	C 0.1	10 Hz			
	C_Diagn	Lambda Diagn	AM LCU-One Diago		1 Hz			

Here you can select the CAN expansion you want to set. Select it and press "OK". Each expansion needs to be set filling in the related panel.

Please note: for any further information about AiM LCU-One CAN refer to the related user manual you find in the box or you can download from AiM website www.aim-sportline.com documentation area, products section.

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*	*	13 m		8								(:-	*
MXS	1.2 Strada [™]												
Save	Save As	Close	Transmit										
hannels	ECU Stream	CAN2 Stream	CAN Expansions	Math Channels	Status Variables	Parameters	Shift Lights and Alarms	Trigger Commands	Icons Manager	Display Si	martyCam Stream	CAN Output	
	ew Expansion												
	ew Expension												
					🕎 Select	an Expansion							
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							LCU-One CAN						
					1		LCU-One CAN						
					.00		Channel Expansion						
						O	Channel Expansion						
					.00								
							TC Hub						
						\bigcirc							
							OK	Cancel					
							4						

Setting Channel Expansion

To set a Channel Expansion:

- press "New Expansion" button;
- select "Channel Expansion" and press OK
- name your Channel expansion and fill in its serial number or press "Get SN from a connected expansion" to receive the serial number from the connected Channel Expansion
- set each channel double clicking on each channel and setting the panel that shows up (it works exactly like channels configuration – see the related paragraph)
- press "Close" to save and exit

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AI MXS 1	1.2 Strada 🕫										
Save	Save As Close	Transmit									
Channels	ECU Stream CAN2 Stream	CAN Expansions Math	Channels Status Variable	s Param	eters Shift	Lights an	d Alarms Trigger Comr	mands Icons Manager Display SmartyCam Stream	CAN Outr	put	
Nex	w Expansion										
ALL CCO	[™] CHX1 [™]						🐏 Channel Settings		<u></u>		
							Name	1CHX_Channel03			
.0000	Expansion Nam	e (6 characters max.)	CHX1	Get S.N a conne	from		Function	Voltage	•		
X	Expansion Seria	al Number (S.N.)	0	Expan	ision				-		
ID	Name Name	-					Sensor	Generic 0-5 V	•		
		Function	Sensor	Unit	Freq	1	Sampling Frequency		•		
C01	1CHX_Channel01	Voltage	Generic 0-5 V	mV	20 Hz		Unit of Measure				
C02	CHX_Channel02	Voltage	Generic 0-5 V	mV	20 Hz		Unit of Measure	mV	•		
C03	1CHX_Channel03	Voltage	Generic 0-5 V	mV	20 Hz						
C04	✓ 1CHX_Channel04	Voltage	Generic 0-5 V	mV	20 Hz						
Close											
								Save Cancel			
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l											

Please note: for any further information about AiM Channel expansion refer to the related user manual you find in the box or you can download from AiM website www.aim-sportline.com documentation area, products section.

Setting TC Hub

This CAN expansion only supports K type thermo-couples.

To set a TC Hub:

- press "New Expansion" button;
- select "TC Hub" and press OK
- name your TC Hub expansion and fill in its serial number or press "Get SN from a connected expansion" to receive the serial number from the connected TC Hub
- for each channel set sampling frequency, measure unit and display precision
- press "Close" to save and exit

8 6 🚣 🔂 🖼 😵				(î) (8) (4)
S1 2.5 Strade R e Save As Close Transmit bis ECU Stream CAN2 Stream CAN Expansions Matt New Expansion	n Channels Status Variables	Parameters Shift	arms Trigger Commands Ico	vns Manager Display SmartyCam Stream CAN Output
Expansion Name (6 charácters mar.) Expansion Senal Namber (S.N.) Plane Function Trot, T.Cti Troty, T.Cti Troty, T.Cti Troty, T.Cti Troty, T.Cti Troty, T.Cti Troty, T.Cti Temperature Troty, T.Cti Temperature Troty, T.Cti Temperature	0 Image: Construction of the second sec	Get S.N. from a connected Expansion 20.1 20 Hz 20.1 20 Hz 20.1 20 Hz 20.1 20 Hz	Cannel Settings I Same Punction Sensor Sampling Prequency Unit of Measure Display Precision	ITCH_TC02 Temperature K hype thermocoupe 20 H2 0 C 0 1 decimal place 0 Save Cancel

Please note: for any further information about AiM TC Hub refer to the related user manual you find in the box or you can download from AiM website www.aim-sportline.com documentation area, products section.

5.2.5 Math channels configuration

Here you can create math channels; available options are:

- Bias: considering a relation between two mutually compatible channels it computes which one is prevailing (typically used for suspensions or brakes);
- Bias with threshold: it needs the user to set a threshold value for the considered channels; once these threshold values are both exceeded the system makes the calculation;
- Calculated gear: it calculates the gear position using engine RPM and vehicle speed
- Precalculated gear: it calculates the gear position using Load/Shaft ratio for each gear and for the vehicle axle too
- Linear correction: typically used when a channel is not available in the desired format or if it is wrongly tuned and cannot be tuned again

Each option asks the user to fill in a proper panel.

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* * ** ** ** ** **		<u>?</u> 😤 🐠
All MXS 1.2 Strada ³⁶		
Save Save As Close Transmit		
Channels ECU Stream CAN2 Stream CAN Expansions Math Channels Status Variables	Parameters Shift Lights and Alarms	Trigger Commands Icons Manager Display SmartyCam Stream CAN Output
Add Channel	still available mat	h channels: 37
	Select a Mathematical Channel	
	Channel	Description
	Bias	To calculate the bias of two channels VALUE = CH1 / (CH1 + CH2)
	Bias with Thresholds	To calculate the bias of two channels only if they are greater than specified values VALUE = CH1 / (CH1 + CH2) (if both thresholds are exceeded, else 0)
	Calculated Gear	To calculate the gear position from engine rpm and vehicle speed
	Precalculated Gear	To calculate the gear position from engine rpm and vehicle speed, specifying the gear ratio for each gear and the axie ratio
	Linear Corrector	To multiply a measure by a factor then add an offset value VALUE = (a * CH) + b
		OK. Cancel

5.2.6 Status variables configuration

Status Variables are internal math channels that can have only two different values: 1 (TRUE) or 0 (FALSE). They may be useful for simplifying complex configurations, where it is required to evaluate if to activate alarms, LEDs, Icons etc..

Let us explain with an example: We would like to turn ON a LED and an Icon when Water temperature reaches 100°C and the RPM are higher than 2000. Instead of defining the same logic for managing the icon and for managing the LED, we could define a Status Variable, Water Temp Alarm, and link Icon and LEDs to this variable. In this case, we could define:

Water Temp Alarm is High when:

- Water Temp is higher than 100°C and
- RPM is greater than 2000.

And use Water Temp Alarm for managing Icons and LEDs.

As you may see, the Status Variables are more useful when the logic to be evaluated is complex and involves different channels.

In order to define a Status Variable enter the proper TAB.

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All MXS 1.2 Strada ³⁴	
Save Save As Close Transmit	
Channels ECU Stream CAN2 Stream CAN Expansions Math Channels Status Variables Parameters Shift Lights and Alarms Trigger Commands Icons Manager Display SmartyCam Stream C	AN Output
Add New Variable still available variables 37	
Create New Status Variable	
Name Water Temp Alarm	
Freq 50 Hz +	
add to device logged channels	
is TRUE when All C of the following conditions are true:	
WaterTemp	
else Is FALSE	
Save Cancel	
Save Carter	

The Status variables can be used as any other channel, so they may be seen online, transmitted to the CAN stream, recorded, used for triggering a command or for turning ON a LED or an Icon. Mousing over the Status Variable a summary panel appears on the right as shown here below.

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MXS 1	.2 Strada ≥												
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hannels	ECU Stream	CAN2 Stream	CAN Expansions	Math Channels	Status Variables	Parameters \$	Shift Lights and Alarms	Trigger Co	mmands Icons Mana	ger Display	y SmartyCam St	ream CAN Output	
						Status Variable		Freq Men					
						Water Temp Alarr	n	50 Hz 🖌	· · · ·	Name Wa	ater Temp Alarm		
					-			_	Freq 5	0 Hz			
					C*	Add New Variab	e still available	variables: 36	1	add	to device logged	channels	
					_				is TRUE when th		of the follow	ing conditions are true	E
									WaterTemp	greater that	an C	104,0	
									else is FALSE				
									L				

5.2.7 Parameters configuration

In Parameters page you can set optional GPS and/or optical beacon. Mousing over the question marks a pop up message will explain you the working mode of:

GPS Beacon:

hold lap time for: the time period for which lap time is shown on your MXS 1.2 Strada display

the track width: width that will be considered for any GPS point you set

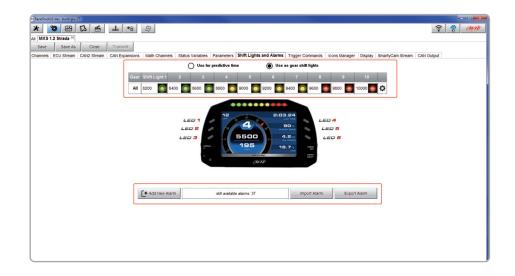
Optical beacon:

ignore additional lap signal for: after receiving an Infrared lap signal, the receiver does not detect another signal for the time period you fix in the related box. This is very useful if more lap transmitters are placed nearby on the side of the track.

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* * * * * * * *	?
All MXS 1.2 Strada ³⁴	
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	1
	Lap Detection
	This is the number of excends that the lag time is held static on the display being examining a dynamic views such as predicting, content or numbing lag.
Hold lap time for 8 sec	ð
GPS Beacon Track Width 10 m	This is the width that will be considered for any GPS points set() is, the width of the start frival line)
Optical Beacon Ignore additional lap signal for	After resching as Till for signed. The reschine cancel reschine another signed for how new many seconds geneficie. This is used to signione additional signed from other possible baseon sources T

5.2.8 Shift Lights and Alarms configuration

In this page you can set shift lights (on top) and set the alarm led (bottom) of your MXS 1.2 Strada.



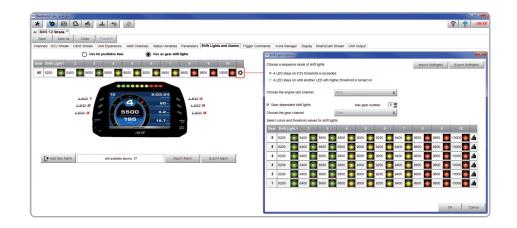
On top you can set your MXS 1.2 Strada shift lights working mode. Available options are:

- shift lights, for helping in changing gear and
- predictive time: for easily understanding if the actual lap is faster or slower than the reference lap.

Use as gear Shift Lights

To use the led bar as shift lights click the icon (🔹) for setting the parameters. You may configure:

- at which RPM value the single LED turns ON
- the sequence mode of the LEDs enabling the desired option:
 - a LED stays on if its threshold is exceeded
- a LED stays on until another LED with higher threshold turns on or
- link the shift lights to the engaged gear enabling the related checkbox;



Use for predictive time

Click the icon (👩) for setting the parameters.

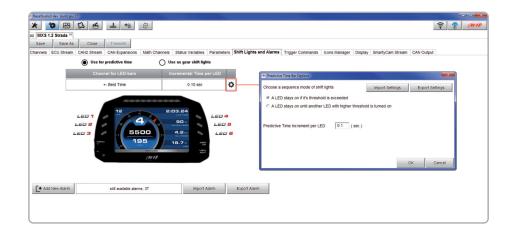
In this case the LEDs colour are fixed in:

Green if the lap time is improving

Red if the lap time is worse than the reference lap

You can define the threshold at which one LED is turned ON. Assuming you fill in "0.10 sec" and your lap time is improving of 0.30 sec toward the reference lap, your MXS 1.2 Strada will switch on 3 LEDs green; if, on the contrary, your lap time is worsening the LEDs will switch on red.

Please note: this option only works if an optional GPS Module is connected.



Create and set MXS 1.2 Strada alarm

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All MXS 1.2 Strada X Solo 2 DL X		
Save Save As Close Transmit		
Channels ECU Stream CAN2 Stream CAN Expansions Math Channels Status Variables Parameters Shift Lights and Alarms Trigger C	commands Icons Manager Display SmartyCam Stream CAN Output	
Use for predictive time Use as gear shift lights	Treate New Alarm	
Gear Shift Light 1 2 3 4 5 6 7 8 9 10	Description	ort Export
÷ 1 8200 🔯 8400 🔯 8600 🔯 8800 🯹 9000 🏹 9200 🯹 9400 🯹 9600 閿 9800 閿 10000 💽 🗘	If AI of the following conditions are true:	
	Speed1 C. Itess than the kmith 0,0	[+
LED 1 12 2:03.24 LED 4	then trigger the following action(s):	
	Message Insert message text	[+
	Until: tondition no longer met	
Export Alarm sbill available alarms: 37 Import Alarm Export Alarm		
E Hourie Hammer annual an annual an annual an annual an annual		
	San	ve Cancel

To set the new alarm:

- define the Alarm name (1)
- you may use a combination of conditions for setting an Alarm and choose if the conditions are to be ALL valid or just one of them (2-4)
- decide which action is to be trigged (5) among displaying a message or a timed popup message, display a measure, switch a LED on or activate an output signal (CAN output page, see the related paragraph)
- decide the alarm ending condition ("Untill" 6) among: condition no longer met, the device is turned off, a button is pushed or data are downloaded
- "+" buttons you find right of the panel are to add new alarms (the top one) or to add new actions to an alarm (bottom one)
- when all operations have been performed press "Save" in "Create New Alarm Panel" and you will come back to "Shift Lights and Alarm" page

5.2.9 Trigger commands configuration

"Trigger Command" executes some specific actions on your MXS 1.2 Strada.

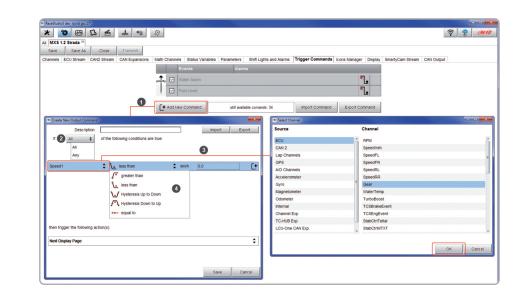
The commands available up to now are:

- set next/previous page
- show camera input page
- reset alarms
- activate pushbuttons 1-4

Other commands will be available in the next software/firmware releases.

You can define the condition that activates a Trigger Command. To add a new command.

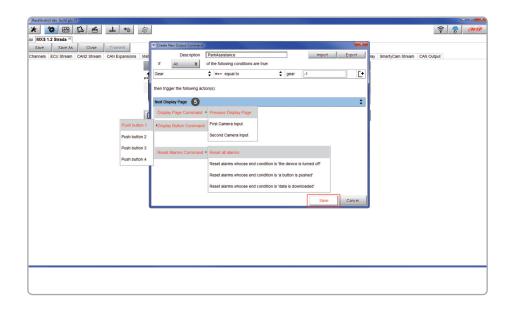
- Press "Add new Command" (1)
- You may use a combination of conditions for setting a Trigger Commands and choose if the conditions are to be ALL valid or just one of them (2-4)



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All MXS 1.2 Strada ³⁴ Solo 2 DL ³⁴		
Save Save As Close Transmit		
Chargesin EGU Olessen OAU Dissessions Math Obenesis Oletus Medebles Desemblers A Child Lie	bts and Alarms Trigger Commands Icons Manager Display SmartyCam Stream CAN Output	
	O Use as gear shift lights	
Description Water Alarm 1 import Export	The Select Channel	x
If 2 AII of the following conditions are true:	Source Channel	
All		
Any	CAN 2 Water Temp Alarm	
Speed1 3 + to less than + km/h 0,0 [+	Lap Channels	
	GPS	
then trigger the following action(s):	A/D Channels	
	Accelerometer Gyro	
Message 🚯 🗘 Insert message text	Magnetometer	
Popup Message timed	Odometer	
	5 Internal	
Display Measure	Z Channel Exp.	
LED ·	TC-HUB Exp.	
Output Signal	L CLI-One CAN Exp	
Coupor Signal	Water Temp Alarm	
Until: 6 🔩 condition no longer met		
	OK Can	e
condition no longer met		
ore the device is turned off		
() a button is pushed P∑ ^A data is downloaded		
1 data is downloaded		
Save Cancel		
		_

decide the action to be performed (5)Click "Save"

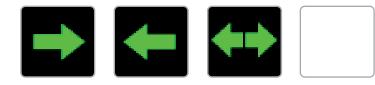
In the Trigger Commands summary page, you can modify/delete the trigger command right clicking on the setting icon placed right of the trigger row.



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All MXS 1.2 Strada 26	
Save Save As Close Transmit	
	ariables Parameters Shift Lights and Alarms Trigger Commands Icons Manager Display SmartyCam Stream CAN Output
Events	Alarms
Water Alarm	ग ्र
Fuel Level	al a
ParkAssistanc	
	Edit Selected Alarm
	Debte Selected Alarm
+ Add New Command	still available comands: 34 Import Command Export Command
Add New Command	still available comands: 34 import Command Export Command
E .	Modify Output Command
	Description ParkAssistance Import Export
	If All of the following conditions are true:
G	iear 🗘 •=- equal to 🌩 gear 📑
th	ien trigger the following action(s):
<u>n</u>	irst Camera Input
	Save Cancel

5.2.10 Icons manager configuration

The "Icon" is a set of images, each one of them to be shown on every page is desired, depending on a fixed condition that, when exists, triggers the proper image.



For example:

- the first image has to be shown when the signal Turn Right is TRUE
- the second when the signal Turn Left is TRUE
- the third when the signal Hazard is TRUE
- the fourth when no signal is TRUE

No all display pages offer the possibility to show icons but our technicians are working for offering more pages with this feature.

To configure an lcon

- press "Add New Icon"
- "Manage Icon" panel shows up
- press "Select" to see the panel showing all images
- select the image you want to set
- the software comes back to "Manage Icon" panel
- set the image conditions according to the channel they are related

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hannels ECU Stream CAN2 Stream CAN Expansions Math Channels		iges	cons manager Display	smartyCam stream C	AN Output	
	icons name in	iges				
r	1				Preview Area	
	Add New Icon still available icon	s: 37 Import	Export			
			Ļ			
Manage Icon	Select a icon to show		and the second second			- 0
Name			a 🚗 👝	(11)		
Show Icon when		2 0 0 0		ϕ ϕ γ	ショショ	
select RPM 🗘 🏌 between values 🗘 rpm 0 0						
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			Custom			
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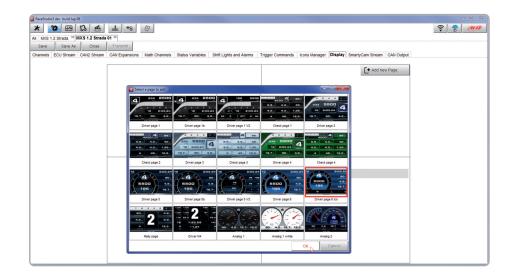
It is possible to use custom images pushing the "Add New Icon" pushbutton. They have to be 64x64 pixels .png format.

5.2.11 Display configuration

MXS 1.2 Strada can have up to eight pages that can be set via software.

enter "Display" tab

- a panel shows up where you can select the display page you prefer (in the example a page with icons bar has been chosen)
- select the page and press "OK"
- repeat the operation for the number of pages you want to set



Once all lcons set "lcons page" shows the icons summary and mousing over an lcon the related panel shows up on the right of the page as shown here below. Here you can also edit and delete an icon using the related icons .



5.2.12 SmartyCam stream setting

MXS 1.2 Strada can be connected to AiM SmartyCam to show the data you wish on SmartyCam video. To set each channel:

- click on it and a setting panel shows up
- t shows all channels and/or sensors that fits the selected function
- in case you do not find the channel or the sensor in the list enable "Enable all channels for functions" checkbox and all channels/sensors will be shown



When the page has been selected two setting panels appears bottom of the page:

on the left a panel that shows as many rows as the fields to be set

■ on the right a panel shows the channels group you can set in that field and all the channels in it included; you can drag and drop the channel you want to set in the desired field or double click on it

■ if you added more display pages the one you are setting is indicated top of the tab as highlighted here below.



5.2.13 CAN Output configuration

Please note: this function is for expert users only.

At very first configuration this panel shows up.

AiM-sv	v X
1	Using custom CAN Output protocol is an advanced feature for expert users. Mistakes can lead to dangerous effects. AiM Tech srl will not be held responsible for any consequences that may result using custom CAN Output. I acknowledge I have read and agree to these conditions. I accept.
	Sì No

You may configure your device to transmit a CAN data stream, both on CAN1 and CAN2, containing the channels required.

To add a payload:

- press "+Add new Payload" and "Set CAN Header details" appears;
- fill in ID CAN (hex), available options are:
 - 11 bits (normal address)
 - 29 bits (extended address)
- select the payload max bytes number (DLC), available options are from 1 to 8 bytes
- select the byte order according to the used processor, available options are:
 - Little endian for Intel processor
 - Big Endian for Motorola processor
- set the sampling frequency among: 1,2, 5, 10 or 20 Hz

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MXS 1.2 Strada 180717 20				
Save Save As Close Transmit				
Channels ECU Stream CAN2 Stream CAN Expansions Math Ch	annels Status Variables Parameters Shift Lights and	Alarms Trigger Commands Icons Manager	Display SmartyCam Stream CAN Output	
an 1 Can 2	With the selected ECU protocol frequency must be set to			
Bit Rate Protocol (bit/s) 500k bit/s	·		Name	
CAN ID (hex) Byte 0	Byte 1 Byte 2 By	rte 3 Byte 4 Byte 5	Byte 6 Byte 7	
Add New Payload			Export Import	
		1 byte		
		2 bytes		
		3 bytes		
set hexadecimu It may have 11	I number for CAN ID payload. bits (normal address) or 29 bits (extended address)	4 bytes		
		5 bytes		
	ID CAN (hex)	6 bytes 7 bytes		
	DLC 8 bytes	8 bytes		
	Byte Order Little Endian +			
	Big Endian			
	Little Endian			
	Frequency 1 Hz •			
		1 Hz		
		2 Hz		
	OK Cancel	5 Hz 10 Hz		
		10 Hz 20 Hz		
		100 T T 10		

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2 Strada 180717 🖂						
Save As Close Transmit						
ECU Stream CAN2 Stream CAN Expansions Math Channels	Status Variables Parameters S	nift Lights and Alarms Trigge	er Commands Icons	Manager 🛕 Displ	ay SmartyCam Str	eam CAN Output
in 2				_		
Bit Rate Protocol (bit/s) 500k bit/s	With the selected ECU protocol frequence	y must be set to 500k bit's and cann	of be changed	Name		
CAN ID (hex) Byte 0	Byte 1 Byte 2		Byte 4	Byte 5	Byte 6	Byte 7
✓ 0x702 NO OU		TIC VALUE: 10'				
Add New Payload					Export	Import
Set CAN Payload Details	Select Channel			Set CAN Paylos	d Details	
	Source	Channel				
Channel Not set 🗘	ECU	A RPM	14	Channel	WaterT	femp (C)
Send this value 0	CAN 2	SpeedVeh				
		SpeedFL		WaterTermi s	ses 1 decimals: set Multin	ler+10 to manage all digits
	Lap Channels GPS			Multiplier (a) 1	
	GPS	E SpeedFR		Multiplier (a Offset (b)	0	
Num Bytes 2 bytes e		E SpeedFR SpeedRL	-		0	vytes 🗢
Num Bytes 2 bytes a	GPS A/D Channels	E SpeedFR		Offset (b)	0	vytes •
	GPS A/D Channels Odometer	SpeedFR SpeedRL SpeedRR		Offset (b)	0	ytes •
1 byte 2 bytes	GPS A/D Channels Odometer Internal	SpeedFR SpeedRL SpeedRR Gear		Offset (b)	0 2 b 2 bytes	vytes •
1 byte	GPS A/D Channels Odometer Internal Channel Exp.	SpeedFR SpeedRL SpeedRR Gear WaterTemp		Offset (b)	0 2 b	ytes =
1 byte 2 bytes	GPS A/D Channels Odometer Internal Channel Exp. TC-HUB Exp.	SpeedFR SpeedRL SpeedRR Gear WaterTemp TurboBoost		Offset (b)	0 2 b 2 bytes	nytes •
1 byte 2 bytes 4 bytes	GPS A/D Channels Odometer Internal Channel Exp. TC-HUB Exp.	SpeedFR SpeedRL SpeedRR Gear WaterTemp TurboBoost	Cancel	Offset (b)	0 2 to 2 bytes 4 bytes	

5.3 Managing a track on MXS 1.2 Strada with Race Studio 3

With Track Manager function of Race Studio 3 you can create, delete and modify tracks, transmit and receive them to/from your MXS 1.2 Strada. Press "Tracks" icon. Please remember: an optional GPS08 Module is needed.



When all channels set your configuration is finished:

press "Save" on the page top keyboard

press "Transmit" to transmit the configuration to MXS 1.2 Strada

Causa	Cours Ao	Cloco	Tranomi
Save	Save As	Close	Transmit

The main page is divided in three columns; on the left:

- on top, the filters that allow to collect many tracks following customized criteria; by default all tracks are shown (light blue "All Tracks" filter in the image below).
- bottom left, the connected devices (in the image, "MXS 1.2 Strada ID 5302808")

The column in the middle shows:

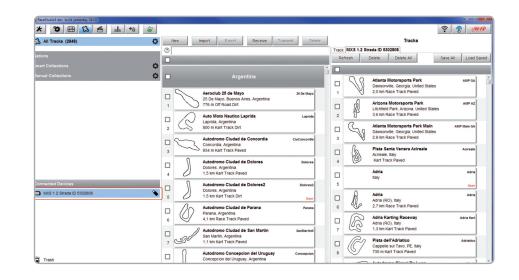
- on top a fast search bar, that allows to select the tracks which satisfy your personal research criteria; by pressing "?" a pop-up window explains research criteria (highlighted in red below), where:
 - long name is the name you see in bold in each track box
 - short name is the track name shown on the display of your MXS 1.2 Strada and is the name you find top right of each track box
 - track city is the name of the city the track is located in
- all the tracks listed in Race Studio 3 database. It automatically updates at start up if a connection to the Internet is available.

The column on the Right shows:

the data sheet of the track you are mousing over.



When your MXS 1.2 Strada is connected it is shown on the left bottom part of the page as said before. Clicking on it all the tracks it contains are shown in the right column of the page



The page keyboards are used to manage the tracks.

The keyboard you find above the central column allows you to:

New Import Export Receive Transmit Delete						
	New	Import	Export	Receive	Transmit	Delete

- New: create a new track
- Import: import one or more tracks you stored in your MXS 1.2 Strada or in another external device
- **Export:** export one or more tracks to a specific PC folder or to another peripheral device
- **Receive:** receive from your connected MXS 1.2 Strada the tracks you created (if no device is connected the button is disabled)
- Transmit: transmit one or more tracks form the PC to your connected MXS 1.2 Strada (if no device is connected the button is disabled)
- Delete: delete one or more tracks from Race Studio 3 Database

The keyboard you find above the right column allows you to:

Refresh	Delete	Delete All	Save All	Load Save
---------	--------	------------	----------	-----------

- Refresh: refresh the track list stored in your connected MXS 1.2 Strada
- Delete: delete one or more tracks from your MXS 1.2 Strada memory
- Delete All: delete all tracks stored in your MXS 1.2 Strada memory
- Save all: save all the tracks stored in your connected MXS 1.2 Strada; it creates a zip file you can load to another AiM device
- Load Saved: load the tracks you previously saved in your connected MXS 1.2 Strada memory

Since the software is constantly updated, may be other information or features will be available soon. Please check our website www.aim-sportline.com, documentation area, software section "Track Manager" manual

5.4 ECU Driver builder

If your vehicle ECU is not included in Race Studio 3 software you can use CAN Driver builder to create your own CAN protocol.

Please note: this Race Studio function is for expert users only.

You can add a new ECU Manufacturer and/or a new ECU model. To do so:

- Press "New" on the top central keyboard
- "New Custom CAN Protocol" panel shows up
- Press "Add Manufacturer" to add a new Manufacturer and "Custom Protocol Manufacturer Manager" panel shows up
- Fill in the Manufacturer name ("Custom" in the example below)
- press "OK"
- If you want to add a new ECU Model for an existing Manufacturer just select the manufacturer and fill in "Edit new model name" box.

RaceStudio3 dev build yesterday 18:10	± * \$			
All Custom CAN	New Clone	Import Export Delete	Authorizations	Custom CAN Protocols
nufacturers nual Collections	Pw Manufacturer	Model CAN Device	Bus Speed Date	File
New Custom CAN Protocol				
Select a Manufacturer	Edit New Model Name			
2D ABIT ADAPTRONIC AEM AIM ALFA ROMEO APRILIA	CAN Device Type ECU ¢	Eutom Protocol Menut	schurer Manager	
ARCTIC_CAT		Custom Manufactur	rers	Current Manufacturer
ASTON_MARTIN AUDI	CAN Bus Speed			Custom
AURION AUTRONIC	1 Mbit/sec \$			Add Current Item
BENTLEY BLACK_BOX Add Manufacturer	Use as Silent by Default			Remove Current Item Empty The List
	OK. Cancel			OK Cancel

You come back to "New Custom CAN Protocol":

- select the ECU Manufacturer you created
- Fill in the Model name in the panel top right box
- Select the CAN Device type; available options are:
 - ECU
 - other CAN Devices
- select the CAN Bus speed; available options are:
 - 125 Kbit/sec
 - 250 Kbits/sec
 - 500 Kbit/sec
 - 1 Mbit/sec
- if your network features multiple devices we suggest to enable "Use a Silent by Default" checkbox
- Press "OK" and a new CAN Driver has been added

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All Custom CAN	New Clone Import Export Delet	te Authorizations Custom CAN Protocols
		d
	Pw Pw Manufacturer Model CAN De	evice Bus Speed Date File
ual Collections		
	New Custom CAN Protocol	
	Select a Manufacturer	Edit New Model Name
	CITROEN	^ Custom
	CORVETTE	
	Custom	CAN Device Type
	DALLARA	ECU +
	DELPHI	
	DTA	ECU
	DUCATI	Other CAN Device
	DUCATI_ENERGIA	CAN Bus Speed
	DYNO	1 Mbit/sec 🗘
	E-RACE	125 Kbit/sec
	ECS	250 Kbit/sec
	ECU MASTER	500 Kbit/sec
	EFI_EUROPE	1 Mbit/sec
	EFI_USA	1 MDIUSEC
	ELECTROMOTIVE	Use as Silent by Default
	Add Manufacturer	
	Add Manufacturer	
		OK Cancel

For further information about how to set the new CAN Driver refer to the CAN Driver builder user manual you can download from www.aim-sportline.com, documentation area software/firmware section

5.5 The device window

MXS 1.2 Strada 180717 34									
All Configurations				MXS	1.2 Strada ID 53	02808			
	Live Measures Propertie	s Settings Track	ks Counters	s Logo Firmware					
	Start Live Measures Sc	rted by Channel Ty	pe Calib	rate mV Values					
	O Sort by	Configuration							
	Sort Alp	habetically							
	Sort by	Channel Type							
					Master				
				A	D channels				
	RPM	0	rpm	Channel02	-16	mV	Channel06	-14	mV
	Speed1	0.0	km/h	Channel03	-15	mV	Channel07	-15	mV
	Logger Temperature	36.2	С	Channel04	-15	mV	Channel08	1	gear
	Channel01	-15	mV	Channel05	-15	mV	Luminosity	0.85	%
				Calcu	lated channels				
Connected Devices	Lap Time	0:59.980 (0)		sGPS (No GPS)	0,0	km/h			
MXS 1.2 Strada ID 5302808	•			CA	N 2 channels				
	FLAG_ABS_OFF			POS_TCS_MAP			I_DIF_PUMP		Α
	POS_DIF_MAP			TORQ_DIF_REF		Nm			
				1			1		

Clicking your MXS 1.2 Strada bottom left of the software page you enter the device window and have these options:

- Live Measures: to check all MXS 1.2 Strada channels; here you can:
 - start live measures
 - sort the channel visualization as you prefer: as managed by the firmware (sort by configuration), alphabetically, by channel type
 - (they will be shown by device then by channel type and at the end by measure type)
 - calibrate sensors that need the calibration
 - show the measure in Mv
- Properties: to name your device, fill in racer's and vehicle name or number,
- championship and venue type (generic or qualifying testing, warm up, race, test type)
- Settings to:
 - set date
 - enable/disable daylight time
 - set time format and time zone
- **Tracks:** to manage the tracks stored in the device memory
- **Counters:** to set reset the device odometers

■ Logo: transmit/receive the logo that shows up when switching MXS 1.2 Strada on; supported image format are JPEG or BMP; always use the most recent WindowsTM versions (Windows8 or Windows10) whose graphic libraries are more updated

Firmware: to check or update your MXS 1.2 Strada firmware version.

6 On the track

MXS 1.2 Strada can show up to eight pages. To scroll them press ">>" lateral button. Pages can change according to the device configuration.

Second is "Summary" page where you see all the last tests with date and place. Select the day you want to see and press "ENTER".

TEST SESSIONS TGDAY COTA Auslin 21/07/2018: Albany GA 20/07/2018: Albany GA 20/07/2018: Albany GA

7 Data recall

At the end of the test you can recall sampled data pressing "MEM/OK".

First is "Today" page. Press "TESTS"

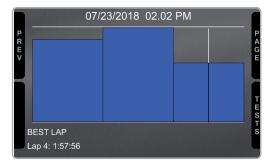
MA	X RPM 10048	MAX SPE	ED 282
Lap	Best Laps	RPM	Km/h
4	1:57:56	10048 5592	280 73
11	1:57:94	10100 5450	277 70
8	1:58:02	10300 5700	278 69

Third is "Summary" page where you see all tests in a box showing time of the test, number of laps and best lap of the test.

Select the test you want to see and press "ENTER".

	Т	ODAY: COTA Aust	in	E.
P R E V	02.02 PM 17 Laps B 1.57.56	12.02 AM 10 Laps B 1.50.46	10.43 AM 11 Laps B 1.54.14	E N T E R
NEXT	09.52 AM 7 Laps B 1.55.56	09.02 AM 9 Laps B 1.53.46	7.39 AM 10 Laps B 1.55.16	BACK

This page is a histogram test summary. Moving the cursor left and right you can see all laps and their lap time.



8 New firmware upgrade

~

Our technicians and engineers are constantly working to improve both the firmware (the application that manages your device) and the software (the application you install on your PC). Each time a new firmware and/or software version is available the icon here above appears with an arrow indicating that something is available for download (otherwise the icon only shows the cloud).

Click it and freely download the new applications.

RaceStudio3 3.16.00			le-	. • • ×
* 🚣 😚 🕉 🗗 😤			(î•	(III)
Connected Devices	Download Install SW Export Import Update Device			
	✓ Name	On the web	On my PC Info	
	Software			
	RaceStudio3	3.16.00	3.16.00	
	Firmware			
	EVO4S	01.26.14	01.26.08	
	🚥 🖌 EVO5	01.26.14	01.26.08	
	🚥 🖌 MXG	01.26.14	01.26.08	
	🚥 🖌 MXL2	01.26.14	01.26.08	
	📼 🖌 MXS	01.26.14	01.26.08	
	📼 🖌 MXS Strada	01.26.14	01.26.08	
	🚥 🖌 MyChron 5	01.24.62	01.24.64	
	SmartyCam HD	01.03.64	01.03.64	

Once the new firmware has been downloaded connect your device to the PC via Wi-Fi to perform a firmware upgrade. In a few seconds the device is ready.

9 RPM

MXS 1.2 Strada can receive RPM value from the ECU. If on the contrary your vehicle does not have an ECU you can sample RPM using pin 21 of MXS 1.2 Strada 23 pins connector.

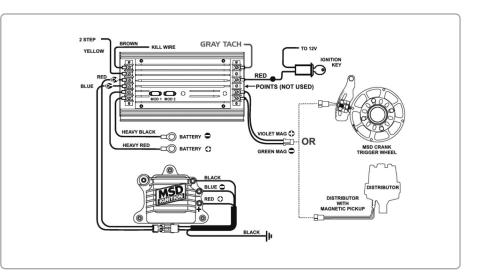
9.1 RPM from ECU

To get the RPM from the ECU you only need to connect your MXS 1.2 Strada to the ECU and it will automatically sample that value.

Please note: if your vehicle ECU can be reached through an OBDII plug, a dedicated harness for MXS 1.2 Strada AMP 14 pins connector is available, as shown at the end of this user guide.

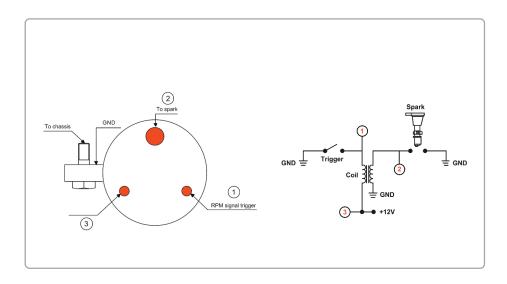
9.2 RPM via a 5-50V square wave or coil (150-400V)

If your vehicle has no ECU you need to connect pin 21 of the device 23 pins connector harness to the ignition system. This way MXS 1.2 Strada can read the signal form the low voltage of the coil (whose peak can be from 150 to 400 V) or from a possible square wave (the peak can be from 5 to 50 V). The image below shows an example of wiring of the ignition system.



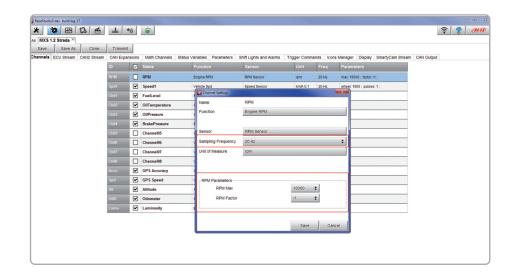
The output labelled "GRAY TACH" gives a 5-50V output that can be directly sampled by MXS 1.2 Strada.

In case the vehicle ignition system has no output you need to connect MXS 1.2 Strada to the low voltage of the coil as shown in the following images.



Point 1: Low voltage of the coil
Point 2: Connected to the spark plug
Point 3: Connected to the +12V of the battery

Once MXS 1.2 Strada connected to RPM signal you need to enable it and set its parameters in channels page of Race Studio 3 as explained in "Channels configuration" paragraph.

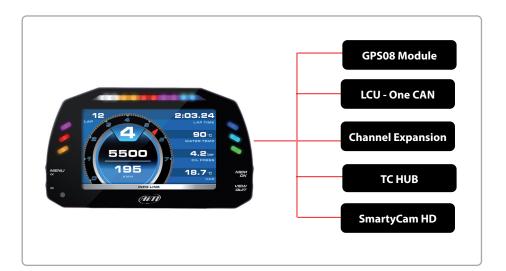


10 Connection with the expansions

Your MXS 1.2 Strada can be connected to AiM GPS08 Module, LCU-One CAN, Channel expansion, TC Hub, SmartyCam HD and SmartyCam GP HD in order to improve its functionality.

Please note that both LCU-one, Channel expansion TC HUB and Smartycam HD have to be configured with Race Studio 3 software as already explained in the related paragraphs ("CAN Expansions configuration", "Channels configuration" and "SmartyCam stream setting").

Moreover, for further information concerning AiM expansions and AiM SmartCam HD refer to the related manuals you can download from "Documentation" area of AiM website

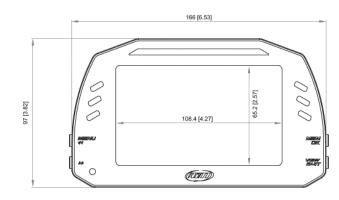


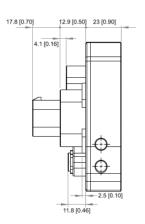


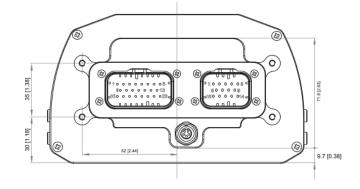
11 Technical specifications and drawings

Display dimensions	5″TFT
Display resolution	800x480 pixels
Contrast	600:1
Brightness	700cd/m² – 1,100 Lumen
Display pages	Up to 8 freely configurable
Backlight	Yes
Ambient light sensor	Yes
Shift lights	10 configurable RGB LEDs
Alarm LEDs	6 configurable RGB LEDs
CAN connections	2
ECU Connection	CAN, RS232, K-Line
External Modules	GPS Module, Channel Expansion, TC Hub,
	Lambda Controller, SmartyCam HD
Analog inputs	8 fully configurable, max 1.000 Hz each
Digital inputs	1 Speed input, coil RPM input
Digital outputs	1 (1Amp max)
Pushbuttons	Metallic
Connectors	2 AMP connectors + 1 Binder connector
Body	Anodized Aluminum
Weight	480g
Dimensions	169.4x97x23mm
Waterproof	IP65

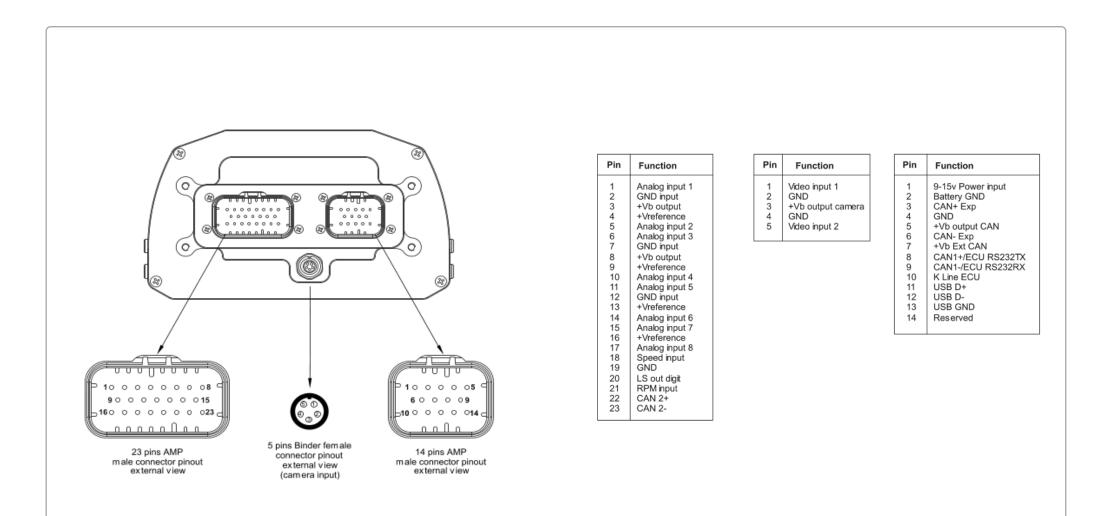
MXS 1.2 Strada dimensions







MXS 1.2 Strada pinout



MXS 1.2 Strada 14 pins AMP connector harness standard version

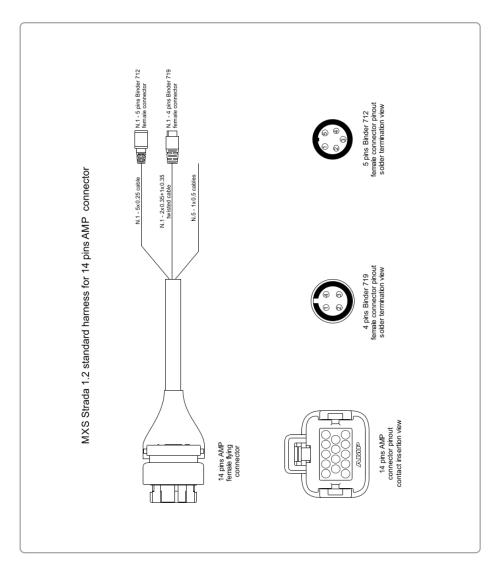
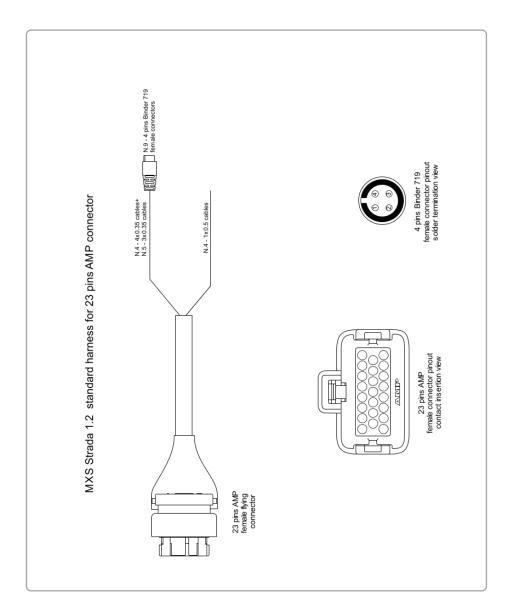


	Table of cable	es ending with 4 pir	ne Binder 719 fem			
				Tale connector		
14 pins AMP connector	Cable colour	Destination connector pin	Cable type	Length	Channel	Label
		Destination				Label

Table of cables ending with 5 pins Binder 712 female connector						
14 pins AMP connector	Cable colour	Destination connector pin	Cable type	Length	Channel	Label
3 4 5 6 7	White Black Red Blue Orange	1 2 3 4 5	5x0.25 mm²	350mm	CAN+ Exp GND Vb out CAN CAN- Exp Vb ext CAN	Exp

Table of not cabled cables						
14 pins AMP connector	Cable colour	Cable type	Length	Label		
2 1	Black Red	1x0.5 mm² 1x0.5 mm²	550mm	Battery GND 9-15V Power input		
8 9	White Blu	1x0.5 mm² 1x0.5 mm²	550mm	CAN1+ /ECU RS232TX CAN1- / ECU RS232RX		
14	Yellow	1x0.5 mm²	550mm	RESERVED		

MXS 1.2 Strada 23 pins AMP connector harness



23 pins AMP Connettor pin	Cable colour	Destination connector pin	Cable type	Length	Channel	Label
1 2 3 4	White Black Red Blue	1 2 3 4	4x0.35mm²	340mm	+Analog channel 1 Analog GND +Vb output +Vreference	Channel
5 2 3 4	White Black Red Blue	1 2 3 4	4x0.35mm²	340mm	+Analog channel 2 Analog GND +Vb output +Vreference	Channel
6 7 8 9	White Black Red Blue	1 2 3 4	4x0.35mm²	360mm	+Analog channel 3 Analog GND +Vb output +Vreference	Channel
10 7 8 9	White Black Red Blue	1 2 3 4	4x0.35mm²	360mm	+Analog channel 4 Analog GND +Vb output +Vreference	Channel
11 2 nc 13	White Black n.c. Blue	1 2 3 4	3x0.35mm²	380mm	+Analog channel 5 Analog GND nc +Vreference	Channel
14 12 nc 13	White Black n.c. Blue	1 2 3 4	3x0.35mm²	380mm	+Analog channel 6 Analog GND nc +Vreference	Channel
15 12 nc 16	White Black n.c. Blue	1 2 3 4	3x0.35mm²	400mm	+Analog channel 7 Analog GND nc +Vreference	Channel
17 12 nc 16	White Black n.c. Blue	1 2 3 4	3x0.35mm²	400mm	+Analog channel 8 Analog GND nc +Vreference	Channel
18 19 3	White Black n.c. Blue	1 2 3 4	3x0.35mm ²	320mm	Speed 1 GND +Vb output nc	Speed

Table of not cabled cables						
23 pins AMP connector pin	Cable colour	Cable type	Length	Label		
20 21 22 23	Red White White Blue	1x0.5 mm² 1x0.5 mm² 1x0.5 mm² 1x0.5 mm²	550mm	Low Side digital output RPM Input CAN2+ CAN2-		



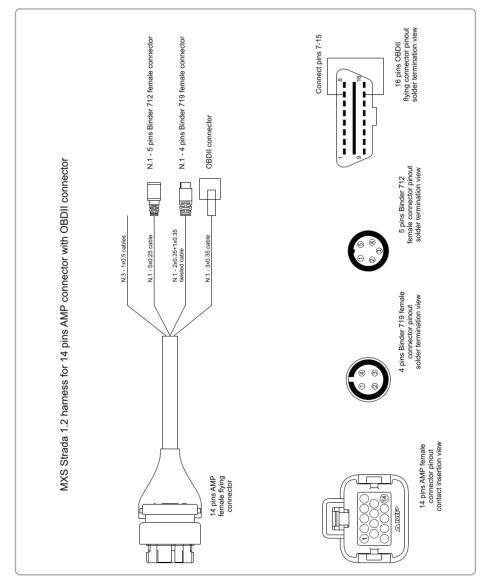


Table of cables ending with 4 pins Binder 719 female connector							
14 pins AMP connector pin	Cable colour	Destination connector pin	Cable type	Length	Channel	Labe	
11 13 12	White twisted Black Blue twisted n.c.	1 2 3 4	twisted 2x0.35+1x0.35	1100 mm	USB D+ USB GND USB D- n.c.	USB	

Table of cables ending with 5 pins Binder 712 female connector							
14 pins AMP Cable connector pin		Destination connector pin	Cable type	Cable type Length Channe		Labe	
3 4 5 6 7	White Black Red Blue Orange	1 2 3 4 5	5x0.25 mm²	350 mm	CAN+ Exp GND Vb out CAN CAN- Exp Vb ext CAN	Exp	

Table of cables ending with OBDII male connector							
14 pins AMP connector pin	Cable colour	Destination connector pin	Cable type	Length	Channel	Labe	
8 9 10	White Black Blue	6 14 7	3x0.35 mm²	1200 mm	CAN1+ ECU CAN1- ECU K-Line ECU	OBDII	

Connect pins 7-15

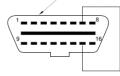


Table of not cabled cables							
Cable colour	Cable type	Length	Label				
Black Red Yellow	1x0.5 mm² 1x0.5 mm² 1x0.5 mm²	550 mm	Battery GND 9-15V Power input RESERVED				
	Cable colour Black Red	Cable colour Cable type Black 1x0.5 mm² Red 1x0.5 mm²	Cable colour Cable type Length Black 1x0.5 mm² 550 mm				