

AiM InfoTech

Legend Cars 890  
MXm kit

Release 1.01

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# 1

## Models and years

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This document explains how to connect AiM MXm to the Legend Cars Engine control Unit (ECU). Compatible models and years are:

- Legend Cars (with 3 cylinders Yamaha 890 engine) 2021 onwards

# 2

## Kit content and part numbers

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AiM designed a specific connection kit to the Legend Cars ECU for MXm. Provided harness into this kit allows to read transmitted data from the ECU via CAN Bus and, at the same time, to power up the system.

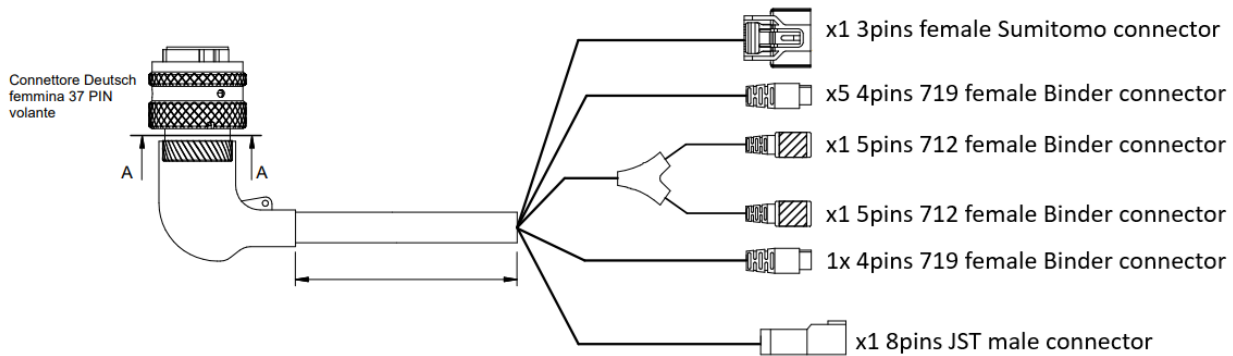
The part number of the MXm kit for Legend Cars is: **X87MXM0011**.

The specific MXm kit for Legend Cars includes:

- MXm
- 37 pins connector harness for Legend Cars (p.n.: **V02573640**)
- 4 pins secondary connector kit for Power Output (up to 15A each)
- Mini-USB cable for PC connection

### 3 Connection

The specific MXm 37pins Deutsch connector harness for Legend Cars allows to connect to the vehicle battery and ECU directly, through the 8 pins white JST connector (labelled "ECU"), and to the on-board gear sensor, through the 3 pins black Sumitomo connector (labelled "CH. 1"). Here below, the harness scheme and input functions, are shown.



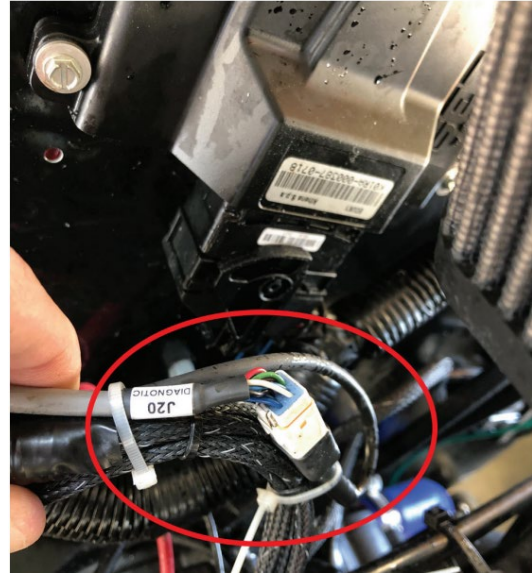
#### Harness connector

- x1 3 pins female Sumitomo connector
- x3 4 pins 719 female connector
- x2 4 pins 719 female connector
- x2 5 pins 712 female Binder ("Y" cable)
- x1 4 pins 719 Binder
- x1 8 pins JST connector

#### Function

- On-Board gear sensor connection
- Analog sensors connection
- Speed inputs
- AiM Expansions connection (labelled "CAN EXP")
- USB connection
- ECU + External power connection (labelled ECU)

- To connect to the vehicle ECU, plug the 8 pins JST connector to the vehicle harness "J20 DIAGNOSTIC" connector, placed under the front bonnet, near the ECU (see picture on the right).



- To connect to the on-board gear sensor, plug the 3 pins Sumitomo connector to the vehicle sensor 3 pins black Sumitomo connector (see picture on the right), placed under the front bonnet, near the front right wheel.



The first analog channel must be used to connect to the on-board gear sensor. The other three MXm analog channels (labelled "CH#") can be used for sensors connection (i.e.: AiM temperature, pressure and position sensors), in order to record additional parameters for driver coaching, chassis analysis and engine monitoring.

The MXm power outputs can be used to drive vehicle equipments, such as additional pumps or fans, independently from the ECU management.

To know more about MXm technical specs, pinouts and how to configure it through RaceStudio 3, refer to the MXm User Guide and to the FAQ/Documentation sections of our website [www.aim-sportline.com](http://www.aim-sportline.com).

## 4 RaceStudio 3 configuration

MXm for Legend Cars are already configured from our factory. The configuration for this specific application is not locked, so all its tabs settings can be modified.

Opening the device configuration, the "ECU Stream" and "Channels" tabs are already set. If the device should be configured from scratch, follow the steps below to set these two tabs:

- **ECU Stream:** press "Change ECU" and set " **LEGEND\_CARS – 890\_CAN\_BUS**" as ECU protocol Manufacturer and Model (following image).

ECU: **LEGEND\_CARS - 890\_CAN\_BUS (ver. 02.00.02) 500 Kbit/sec** Change ECU ⓘ

Enable the CAN Bus 120 Ohm Resistor  
 Silent on CAN Bus

Enabled Channels (Max. 120) 14 / 14


ID	<input checked="" type="checkbox"/>	Name	Function	Unit	Freq
CC01	<input checked="" type="checkbox"/>	RPM	Engine RPM	rpm	10 Hz
CC02	<input checked="" type="checkbox"/>	TPS	Percent Throttle Load	% 0.01	10 Hz
CC04	<input checked="" type="checkbox"/>	ECT	Water Temperature	C 0.1	10 Hz
CC05	<input checked="" type="checkbox"/>	IAT	Intake Air Temperature	C 0.1	10 Hz
CC06	<input checked="" type="checkbox"/>	BARO	Pressure	bar 0.01	10 Hz
CC07	<input checked="" type="checkbox"/>	BATTERY VOLTAGE	Voltage	V 0.1	10 Hz
CC09	<input checked="" type="checkbox"/>	INJ TIME 2	Injection Advance Time	ms	10 Hz
CC10	<input checked="" type="checkbox"/>	INJ TIME 3	Injection Advance Time	ms	10 Hz
CC11	<input checked="" type="checkbox"/>	INJ TIME 1	Injection Advance Time	ms	10 Hz
CC12	<input checked="" type="checkbox"/>	SPARK2	Ignition Adv Angle	deg 0.1	10 Hz
CC13	<input checked="" type="checkbox"/>	SPARK3	Ignition Adv Angle	deg 0.1	10 Hz
CC14	<input checked="" type="checkbox"/>	SPARK1	Ignition Adv Angle	deg 0.1	10 Hz
CC15	<input checked="" type="checkbox"/>	DELTA OPEN WTPS	Rate	%s 0.1	10 Hz
CC16	<input checked="" type="checkbox"/>	DELTA CLOSE WTPS	Rate	%s 0.1	10 Hz

- Channels:** set the analog channel 1 (labelled "Ch.01") Function as "Gear" and Sensor as Gear "Potentiometer", specifying the maximum number of gears and ticking the "Use reverse gear" box, then transmit the configuration to the device.

The image shows a 'Channel Settings' dialog box with the following fields:

- Name: GEAR
- Function: Gear
- Sensor: Gear Potentiometer
- Sampling Frequency: 20 Hz
- Unit of Measure: gear
- Gear Parameters:
  - Set gears number: 6
  - Use reverse gear:

Buttons: Save, Cancel

Turn on the MXm and connect it to RaceStudio 3, enter the Connected Device menu: Live Measures tab will be displayed. Clicking "Calibrate" button , it is possible to read the gears voltage, engaging each of them (following image). Once done, press "Save" and "transmit" to set this new configuration to your MXm.

The image shows the RaceStudio 3 interface with the 'Live Measures' tab selected. The interface displays the following information:

- MXm ID 6600452
- Buttons: Get values, Save, Abort
- Instruction: Move potentiometer into each gear and click 'Set', then click 'Save'
- Measurement table:

Channel	Value (mV)	Action
1	200 mV	Set
2	966 mV	Set
3	1733 mV	Set
4	2500 mV	Set
5	3266 mV	Set
6	4033 mV	Set
N	4800 mV	Set



## 5

# “LEGEND – 890 CAN BUS Protocol

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Channels received by AiM devices configured with "LEGEND – 890 CAN BUS" protocol are:

<b>CHANNEL NAME</b>	<b>FUNCTION</b>
RPM	Engine RPM
TPS	Throttle position sensor
ECT	Engine coolant temperature
IAT	Intake air temperature
BARO	Barometric pressure
BATTERY VOLTAGE	Battery voltage
INJ TIME 1	Injection time 1
INJ TIME 2	Injection time 2
INJ TIME 3	Injection time 3
SPARK1	Sparkplug 1
SPARK2	Sparkplug 2
SPARK3	Sparkplug 3
DELTA OPEN WTPS	Opening delta WTPS
DELTA CLOSE WTPS	Closing delta WTPS