User Manual

XLog

Release 1.00

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1 – XLog in a few words

XLog is a small, versatile, light and easy to use logger that samples and records channels coming from the vehicle ECU and from the connected CAN expansions. Moreover it features an integrated GPS and an internal Lithium ion battery that keeps it recording for about 6 hours 30 minutes with the Wi-Fi on and for about 10 hours and 30 minutes with Wi-Fi off. It records data both into the internal 4GB not volatile internal memory and in the 16 GB USB-C removable memory key.
XLog allows the user to create math channels as well as a CAN Output using both the channels supplied by the vehicle ECU and these supplied by AiM CAN Expansions. In addition to all these features, the logger allows to setup a second CAN that can be used to connect sensors and other devices that communicate via CAN using existing protocols; in case the protocol is not available it is also possible to create a dedicated one.
All channels can also be displayed on SmartyCam videos when available.
AiM supported expansions are:

- LCU-One CAN
- LCU1S/LCU1S Open
- SmartyCam 3 series
- Channel Expansion
- ACC
- ACC2/ACC2 Open
- ACC3/ACC3 Open
- GPS09C Pro/GPS09c Pro Open
- Shift Light Module (normal or B version)

2 – Available kits

XLog is available in different kits.

XLog RPM 200 kit: **X08XLOGRPM200**

- XLog
- 2m RPM + External power cable
- 2m USB 2.0 Type A – Type C cable
- 16GB Mini USB Drive

XLog OBDII 200 kit: **X08XLOGOBD200**

- XLog
- 2m CAN/OBDII/K-Line + External power cable
- 2m USB 2.0 Type A-Type C cable
- 16GB Mini USB Drive

XLog CAN/RS232 200 kit: **X08XLOGCRS200**

- XLog
- 2m CAN/RS232 + External power cable
- 2m USB 2.0 Type A-Type C cable
- 16GB Mini USB Drive

Accessories and spare parts:

- 2m RPM + External power cable **V02.589.020**
- 2m CAN/OBDII/K-Line + External power cable **V02.589.040**
- 2m CAN/RS232 + External power cable **V02.589.050**
- 2m USB 2.0 Type A-Type C cable **X90TMPC101010**
- 16GB mini USB Drive **3IRUSBD16GB**

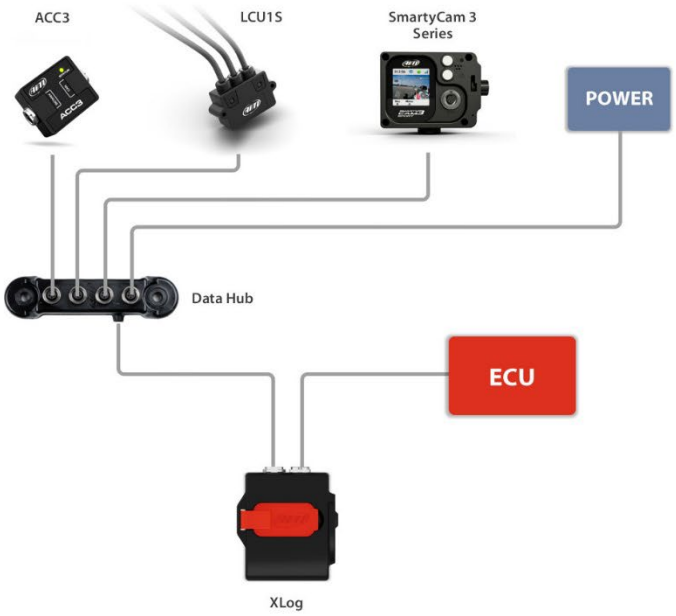
Please note: use the **2m USB2.0 Type A-Type C cable whose part number is X90TMPC101010** you find in the kit to connect XLog to the PC. Any connection using an USB C – USB C cable may not work properly.

3 – XLog expansions and connections

XLog supports the following AiM expansions:

- LCU1S
- LCU1S Open
- LCU1 CAN
- SmartyCam 3 series
- Channel Expansion
- ACC3
- ACC3 Open
- ACC2
- ACC2 Open
- ACC
- GPS09c Pro
- GPS09c Pro Open
- Shift Light Module (normal or B version)
- Volante GT
- Volante GT32 Standalone
- GS Dash Display

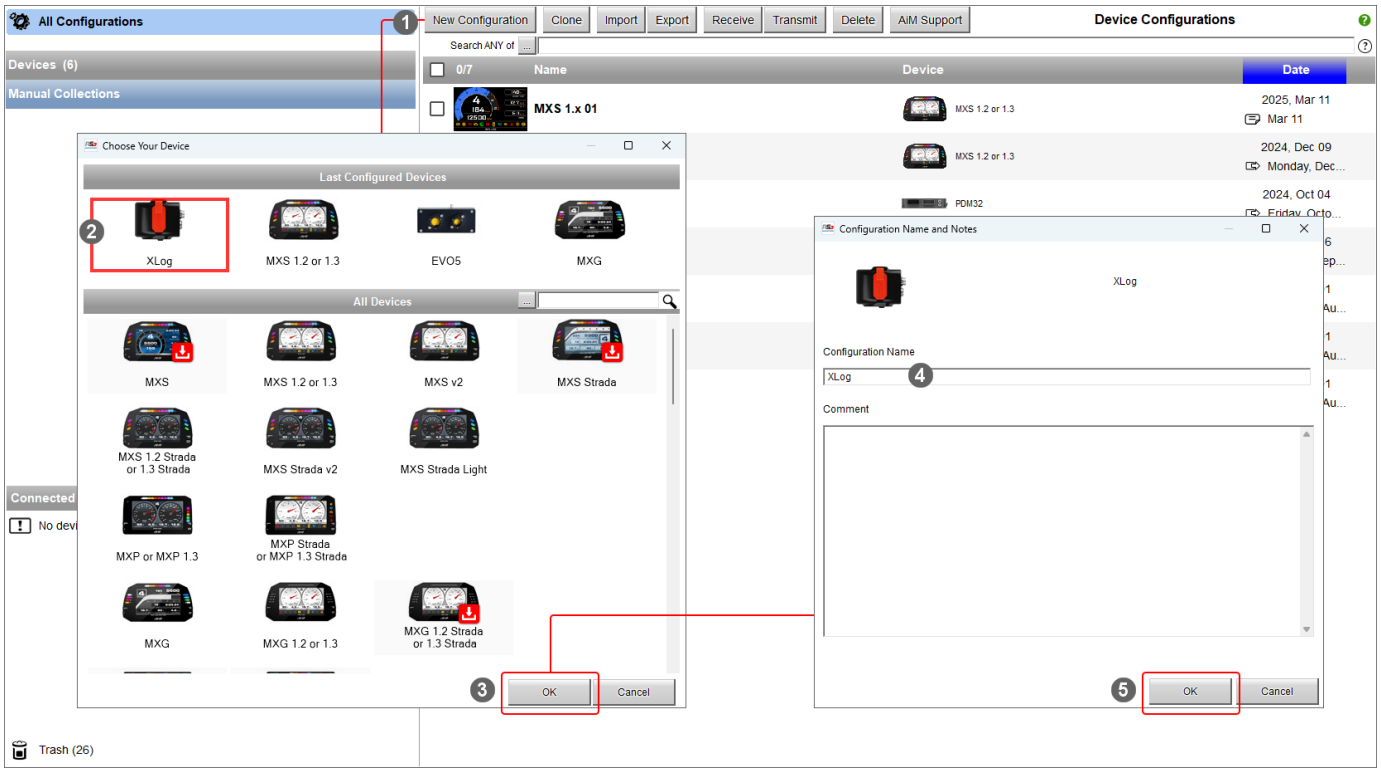
The image below shows an example of AiM CAN Network.



4 – Configuration with RaceStudio 3 software

To configure XLog follow these steps:

- run RaceStudio 3
- press “New Configuration” button on the top right keyboard (**1**)
- select XLog (**2**)
- press “OK” (**3**)
- name the configuration if desired (default name is XLog – **4**)
- press “OK” (**5**).



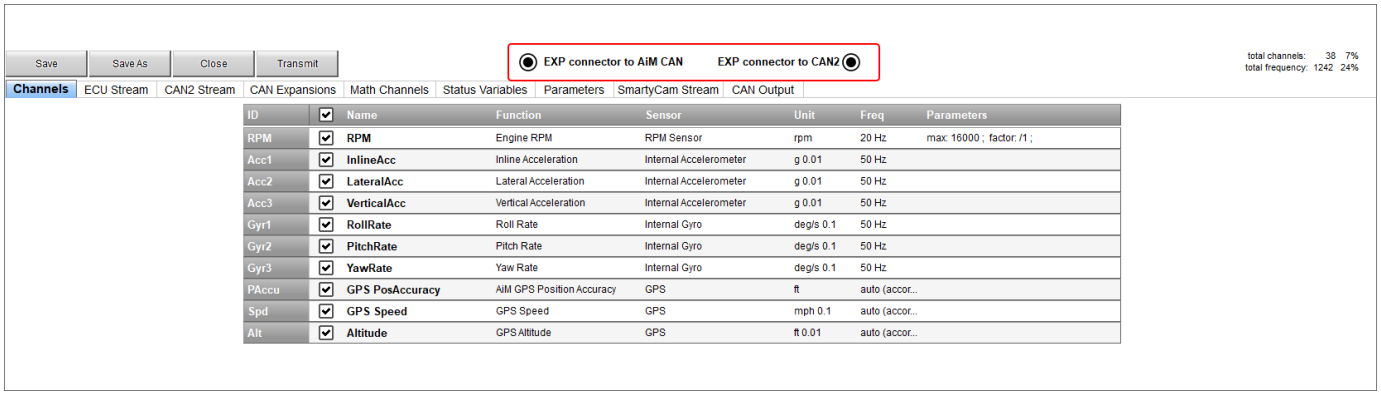
Once the configuration created it is necessary to configure the following tabs:

- Channels
- ECU Stream
- CAN2 Stream
- CAN Expansions
- Math Channels
- Status Variables
- Parameters
- SmartyCam Stream
- CAN Output

4.1 – Channels configuration

As the configuration is created, the software enters “Channels” tab. XLog features two mutually alternative CAN connections:

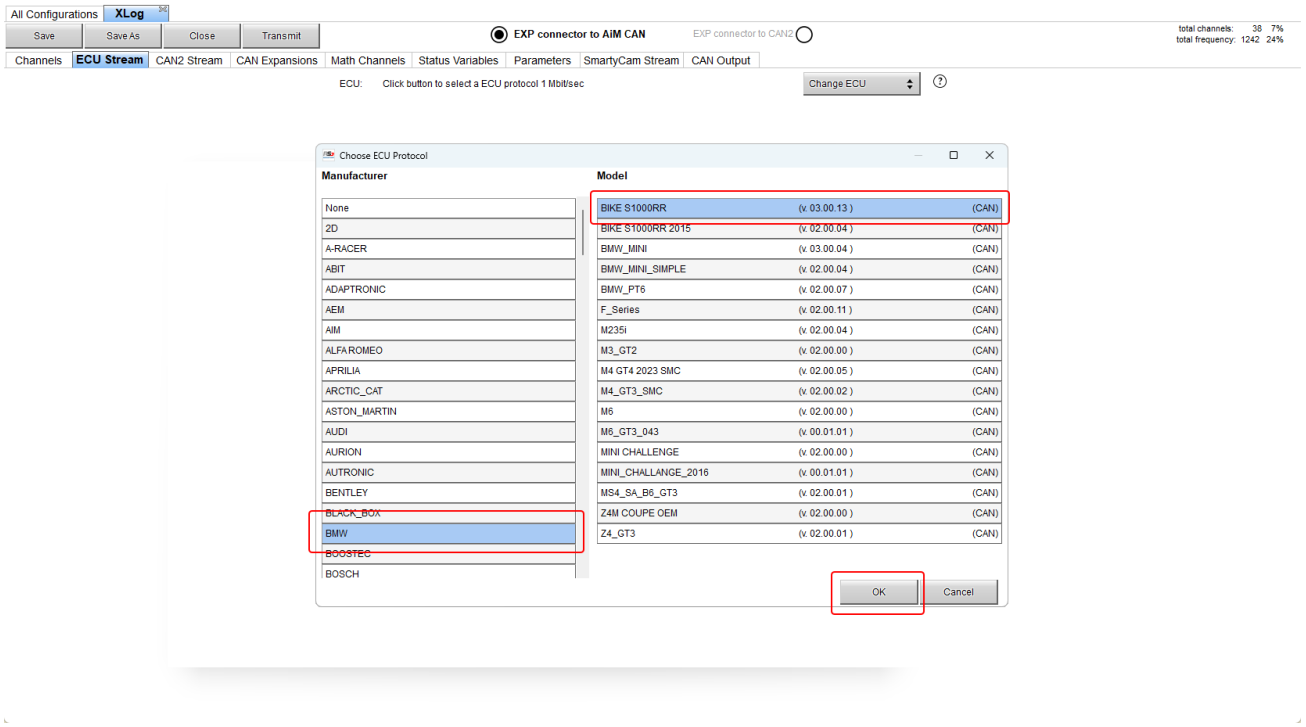
- one for AiM CAN network (EXP connector to AiM CAN)
- the other for connection with non-AiM device (EXP connector to CAN2). The image below shows the two options.



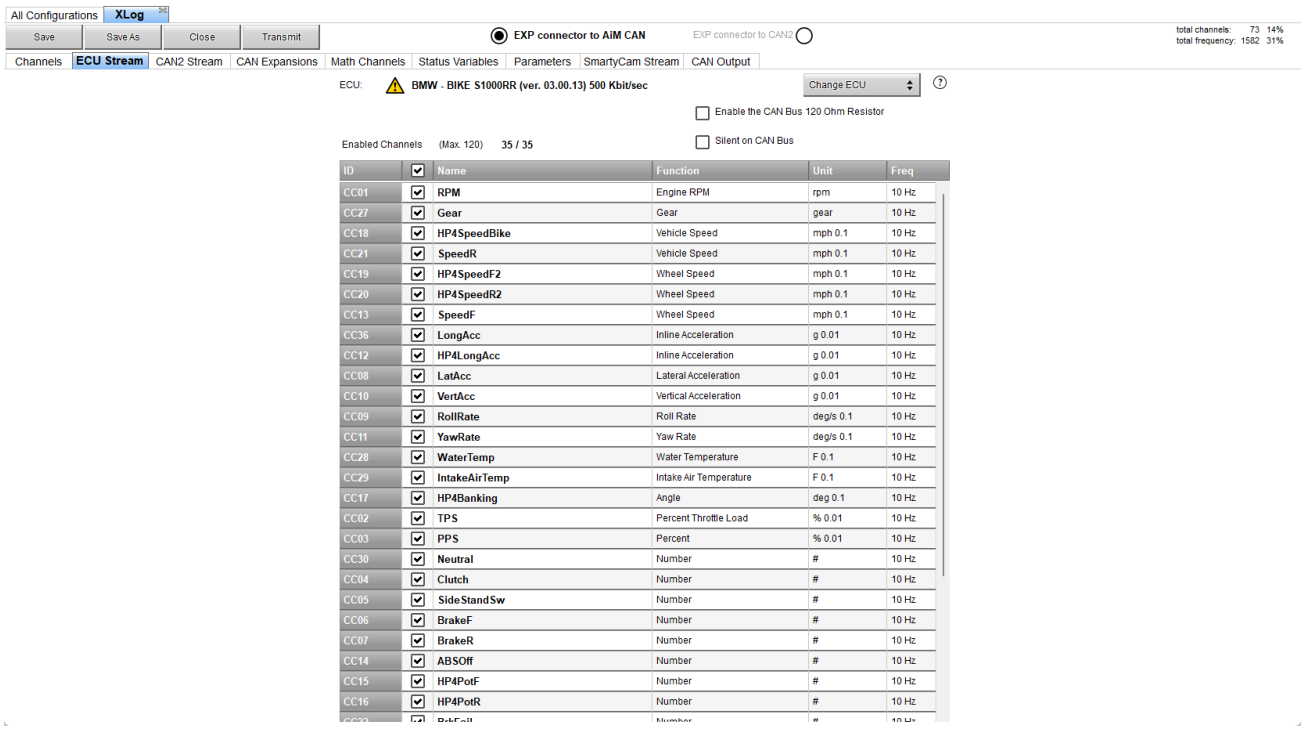
ID	Name	Function	Sensor	Unit	Freq	Parameters
RPM	RPM	Engine RPM	RPM Sensor	rpm	20 Hz	max: 16000 ; factor: /1 ;
Acc1	InlineAcc	Inline Acceleration	Internal Accelerometer	g 0.01	50 Hz	
Acc2	LateralAcc	Lateral Acceleration	Internal Accelerometer	g 0.01	50 Hz	
Acc3	VerticalAcc	Vertical Acceleration	Internal Accelerometer	g 0.01	50 Hz	
Gyr1	RollRate	Roll Rate	Internal Gyro	deg/s 0.1	50 Hz	
Gyr2	PitchRate	Pitch Rate	Internal Gyro	deg/s 0.1	50 Hz	
Gyr3	YawRate	Yaw Rate	Internal Gyro	deg/s 0.1	50 Hz	
PAccu	GPS PosAccuracy	AiM GPS Position Accuracy	GPS	ft	auto (accor...	
Spd	GPS Speed	GPS Speed	GPS	mph 0.1	auto (accor...	
Alt	Altitude	GPS Altitude	GPS	ft 0.01	auto (accor...	

4.2 – ECU Stream configuration

Entering “ECU Stream” tab a panel where to choose the connected ECU is prompted.



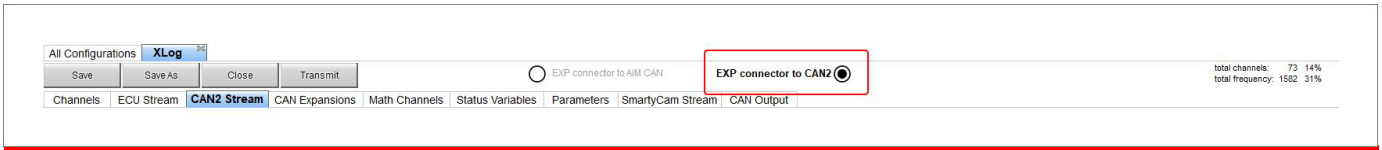
Selecting a protocol the corresponding sampled channels are shown.



ID		Name	Function	Unit	Freq
CC01	☑	RPM	Engine RPM	rpm	10 Hz
CC27	☑	Gear	Gear	gear	10 Hz
CC18	☑	HP4SpeedBike	Vehicle Speed	mph 0.1	10 Hz
CC21	☑	SpeedR	Vehicle Speed	mph 0.1	10 Hz
CC19	☑	HP4SpeedF2	Wheel Speed	mph 0.1	10 Hz
CC20	☑	HP4SpeedR2	Wheel Speed	mph 0.1	10 Hz
CC13	☑	SpeedF	Wheel Speed	mph 0.1	10 Hz
CC36	☑	LongAcc	Inline Acceleration	g 0.01	10 Hz
CC12	☑	HP4LongAcc	Inline Acceleration	g 0.01	10 Hz
CC08	☑	LatAcc	Lateral Acceleration	g 0.01	10 Hz
CC10	☑	VertAcc	Vertical Acceleration	g 0.01	10 Hz
CC09	☑	RollRate	Roll Rate	deg/s 0.1	10 Hz
CC11	☑	YawRate	Yaw Rate	deg/s 0.1	10 Hz
CC28	☑	WaterTemp	Water Temperature	F 0.1	10 Hz
CC29	☑	IntakeAirTemp	Intake Air Temperature	F 0.1	10 Hz
CC17	☑	HP4Banking	Angle	deg 0.1	10 Hz
CC02	☑	TPS	Percent Throttle Load	% 0.01	10 Hz
CC03	☑	PPS	Percent	% 0.01	10 Hz
CC30	☑	Neutral	Number	#	10 Hz
CC04	☑	Clutch	Number	#	10 Hz
CC05	☑	SideStandSw	Number	#	10 Hz
CC06	☑	BrakeF	Number	#	10 Hz
CC07	☑	BrakeR	Number	#	10 Hz
CC14	☑	ABSOff	Number	#	10 Hz
CC15	☑	HP4PotF	Number	#	10 Hz
CC16	☑	HP4PotR	Number	#	10 Hz

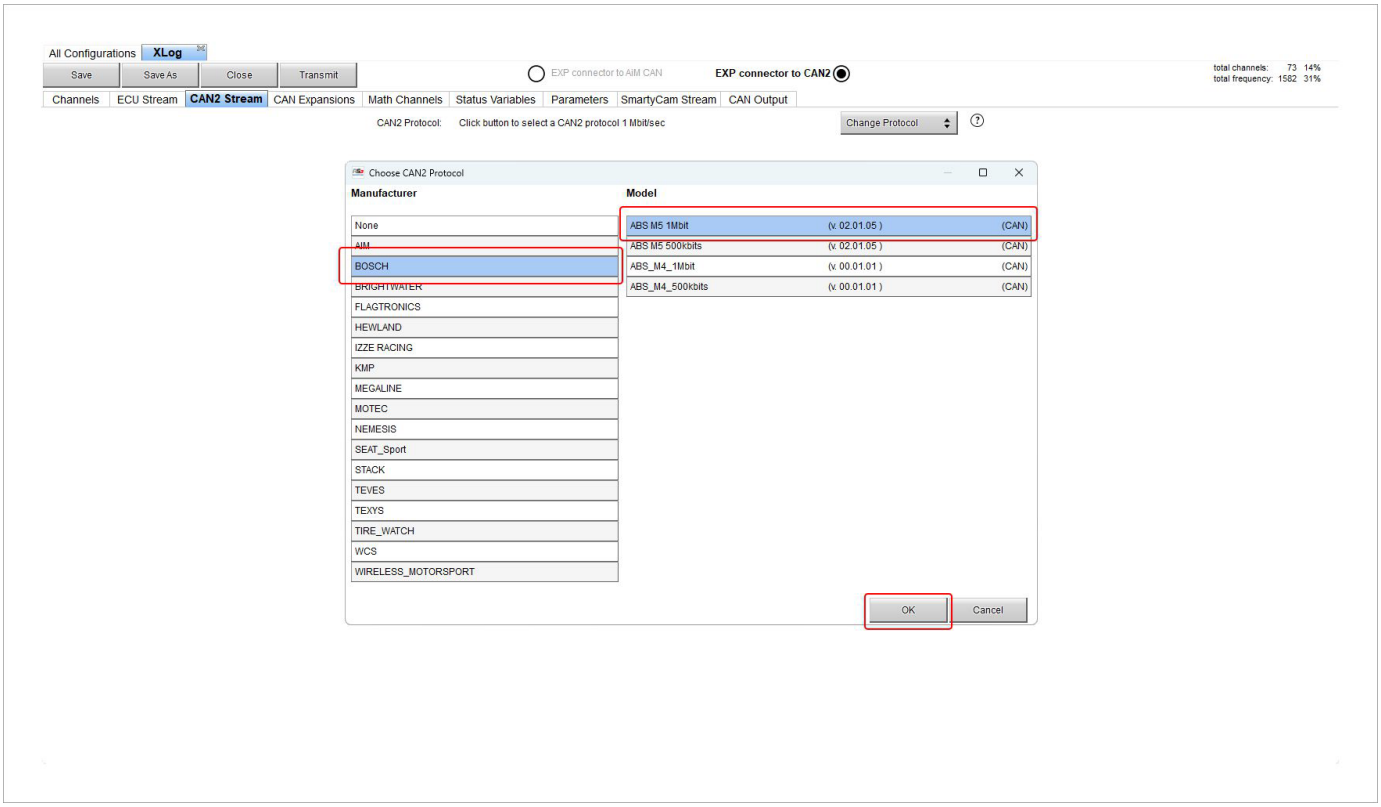
4.3 – CAN2 Stream

For this tab to work properly it is necessary to set XLog CAN network as “EXP connector to CAN2” as shown below.



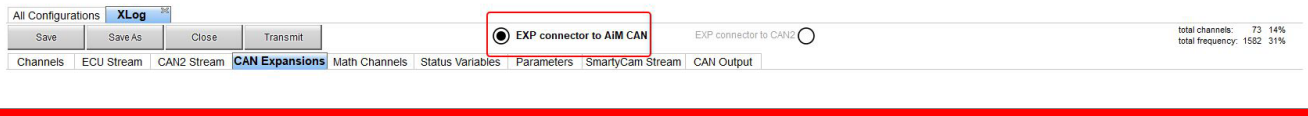
Please remember that, as said before, this setting implies that no AiM CAN expansion can be connected to the network.

Once verified the setting shown here above press “Change Protocol” button and the related panel is prompted: select the device you are connecting to your vehicle.



4.4 – CAN Expansions configuration

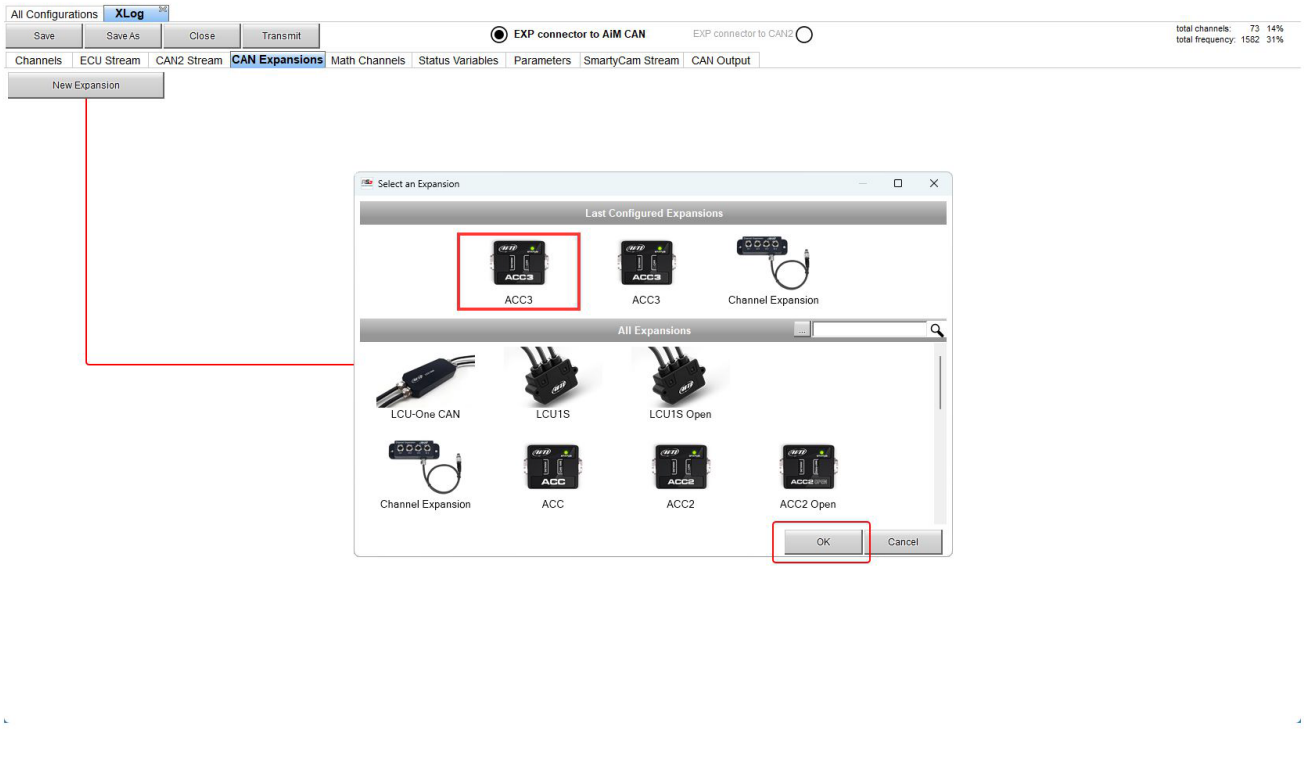
For this tab to work properly it is necessary to set XLog CAN network as “EXP connector to AiM CAN” as shown below.



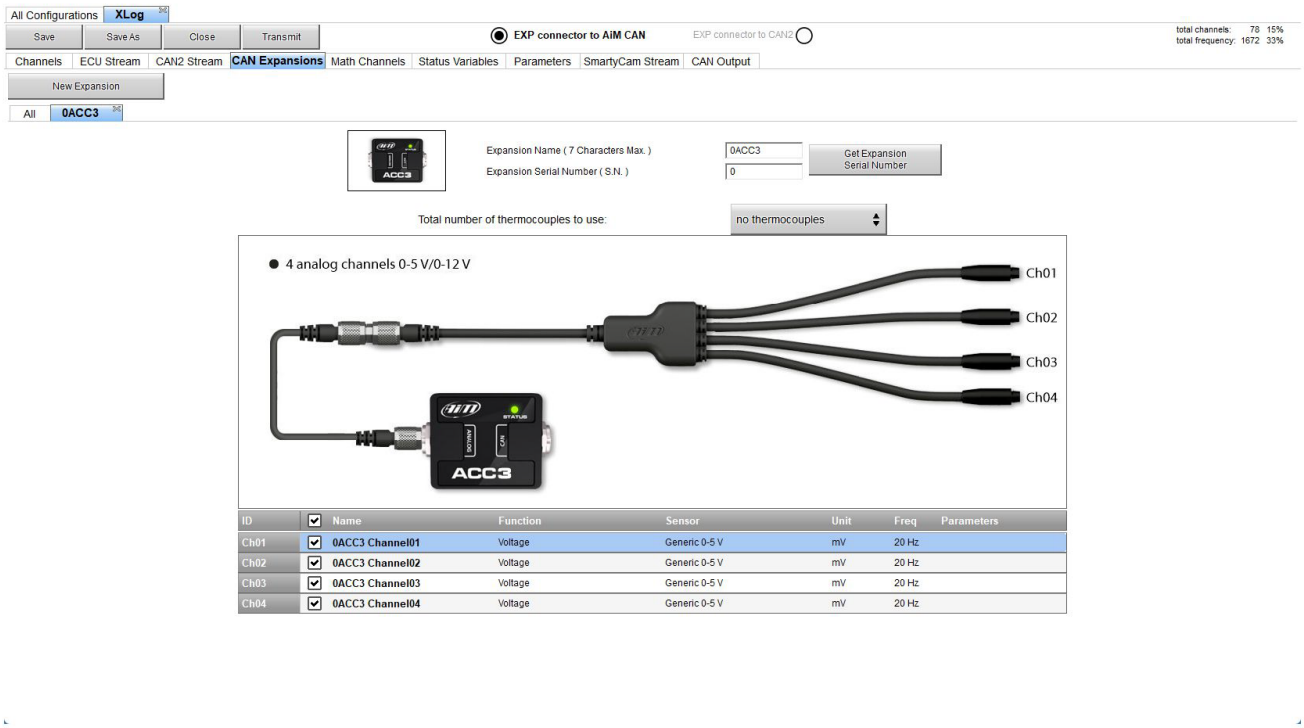
Please remember that, as said before, this setting implies that ONLY AiM CAN devices can be connected to the network.

AiM CAN Expansions allow the user to increase the number of available channels. To add an AiM CAN expansion:

- press “New Expansion” button and the related panel is prompted
- select the expansion to be connected
- press “OK”



Here below an ACC3 has been selected. Each expansion needs to be configured through the dedicated panel. Please refer to the single user manuals for further information.



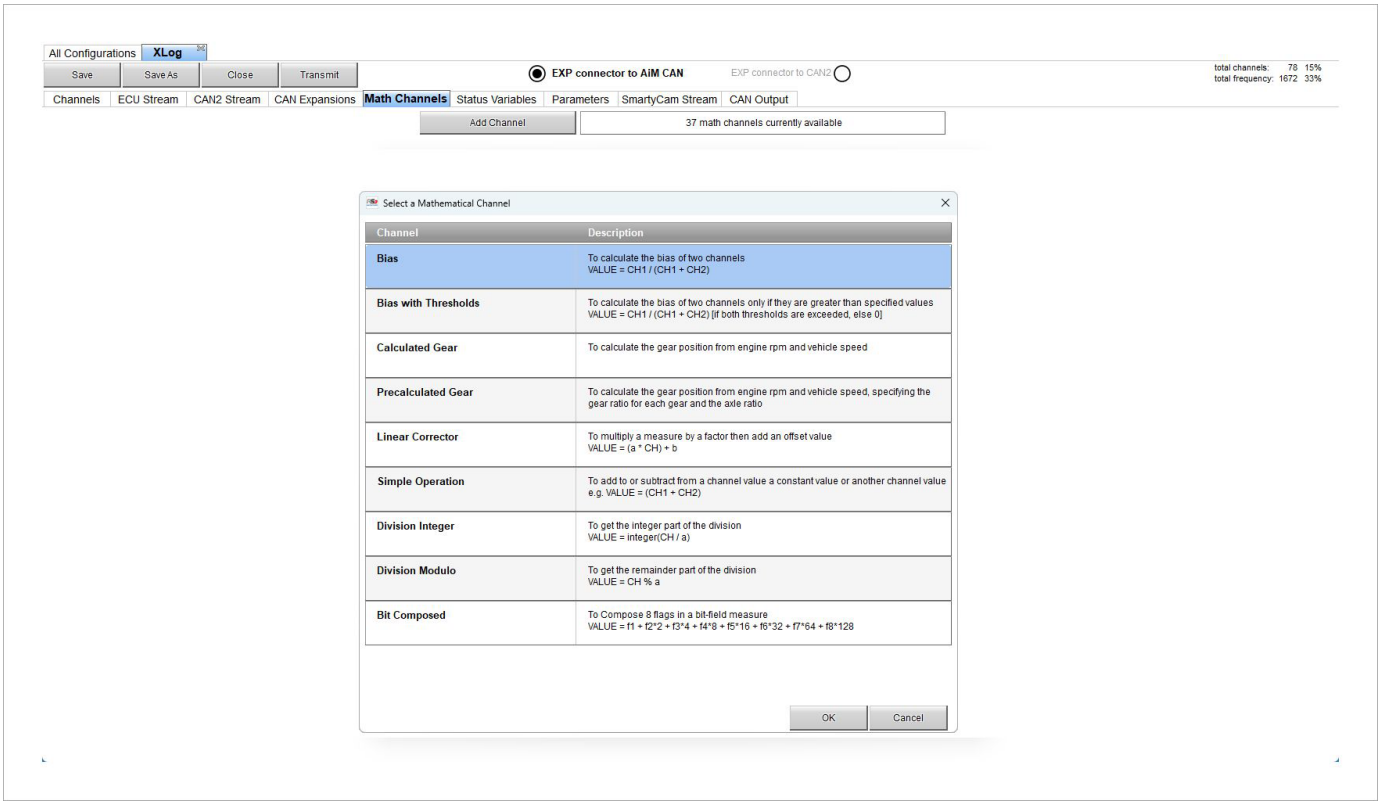
4.5 – Math channels configuration

As for any other AiM logger it is possible to add Math channels choosing them in a wide library. This can be done using the channels provided by the vehicle ECU or adding and configuring optional custom sensors.

To 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 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
- Simple operation: to add or subtract from a channel value a constant value or another channel value
- Division Integer: to get the integer part of the division
- Division Modulo: to get the remainder part of the division
- Bit composed: to compose 8 flags in a bit-field measure.

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



4.6 – Status Variables configuration

As any AiM logger XLog allows to set different Status Variables. To do so press “Add Status Variable” button and **first of all fill** in Name and display label. Status variable values can also be recorded enabling the related checkbox.
Status variables can be **activated/deactivated** using:

- the same conditions for both actions
- distinct conditions for activation and deactivation
- multiple output values each with its own condition

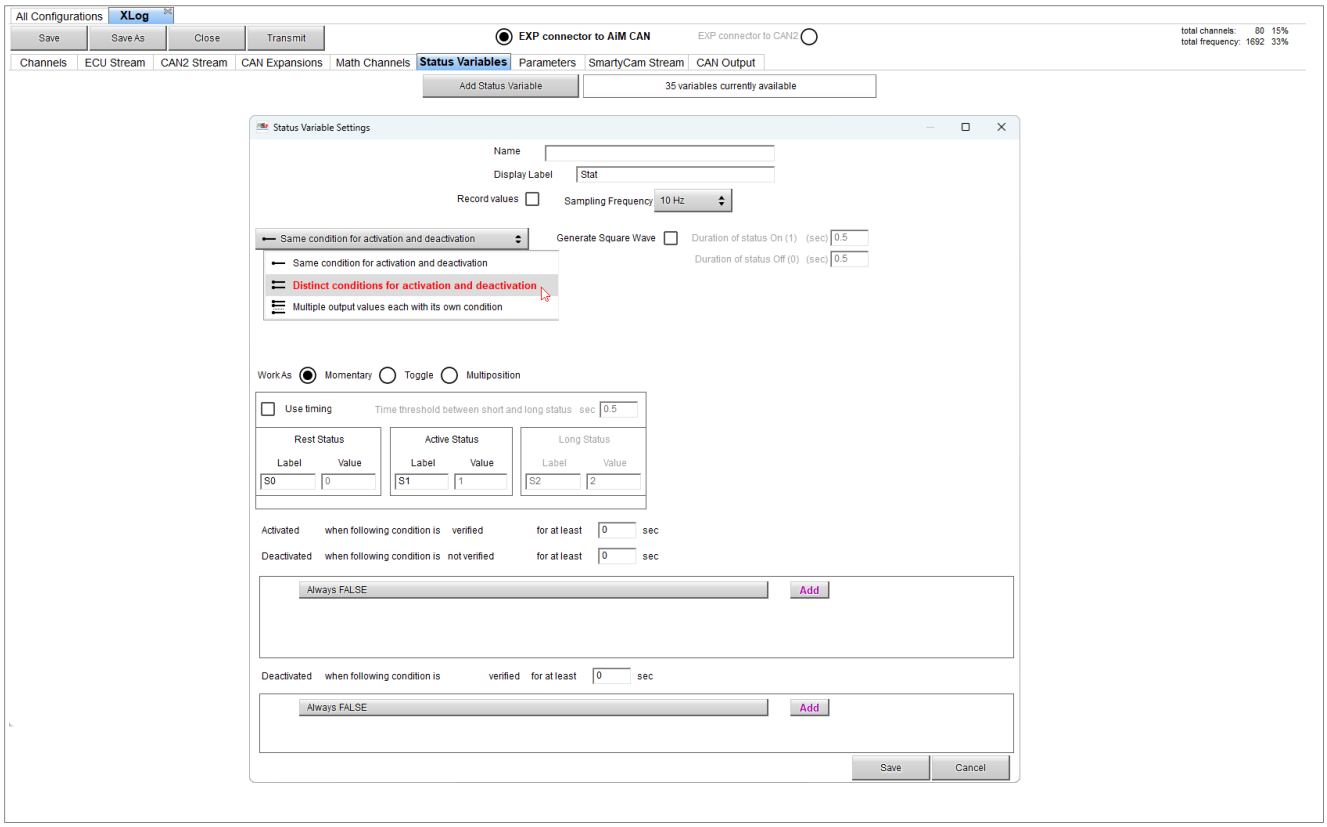
They **can work** as:

- Momentary: when operating condition occurs output sets to “Active” status; as soon as it is released output comes back to its resting “not active” status; labels can be edited
- Toggle: when operating condition occurs output sets to “Active” status even after releasing the button; when pressed again output comes back to its resting “not active” status; labels can be edited
- or Multiposition: each status corresponds to an operating condition.

When the status variable is set as Multiposition the different positions – as well the time threshold (if desired) – need to be set. On the contrary activation/deactivation conditions, possibility to record values and condition type are the same of Momentary and Toggle working mode.

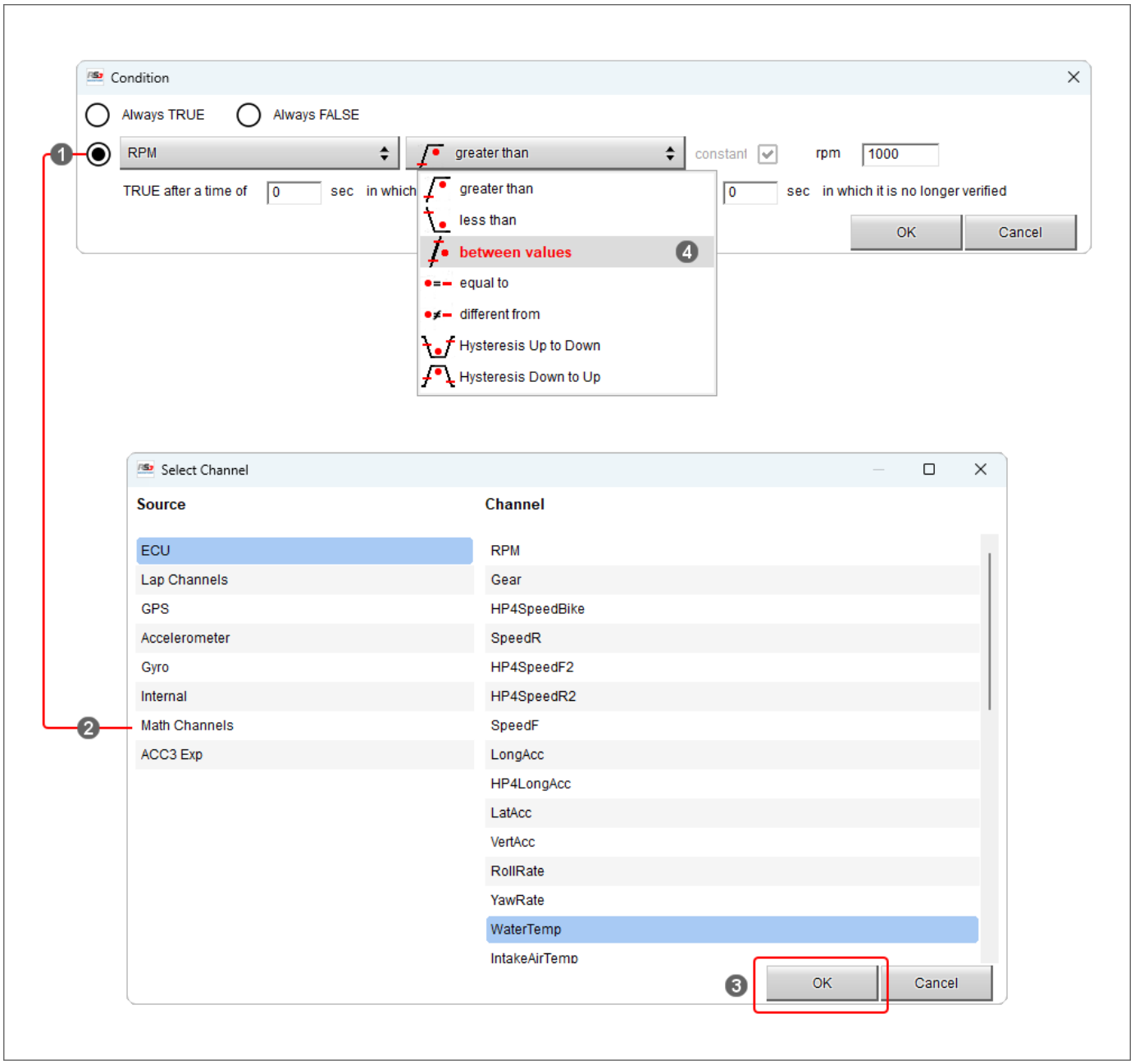
Each **condition can be**:

- always True
- always False
- custom

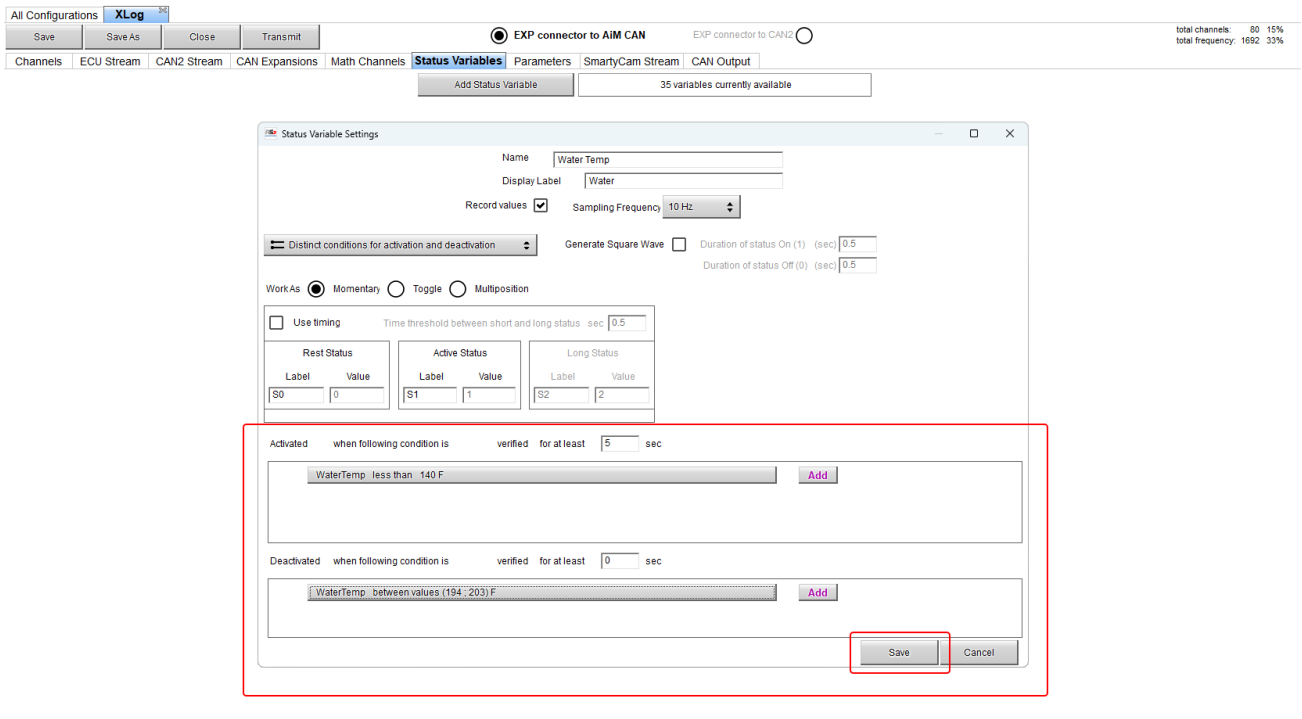


To set a custom condition:

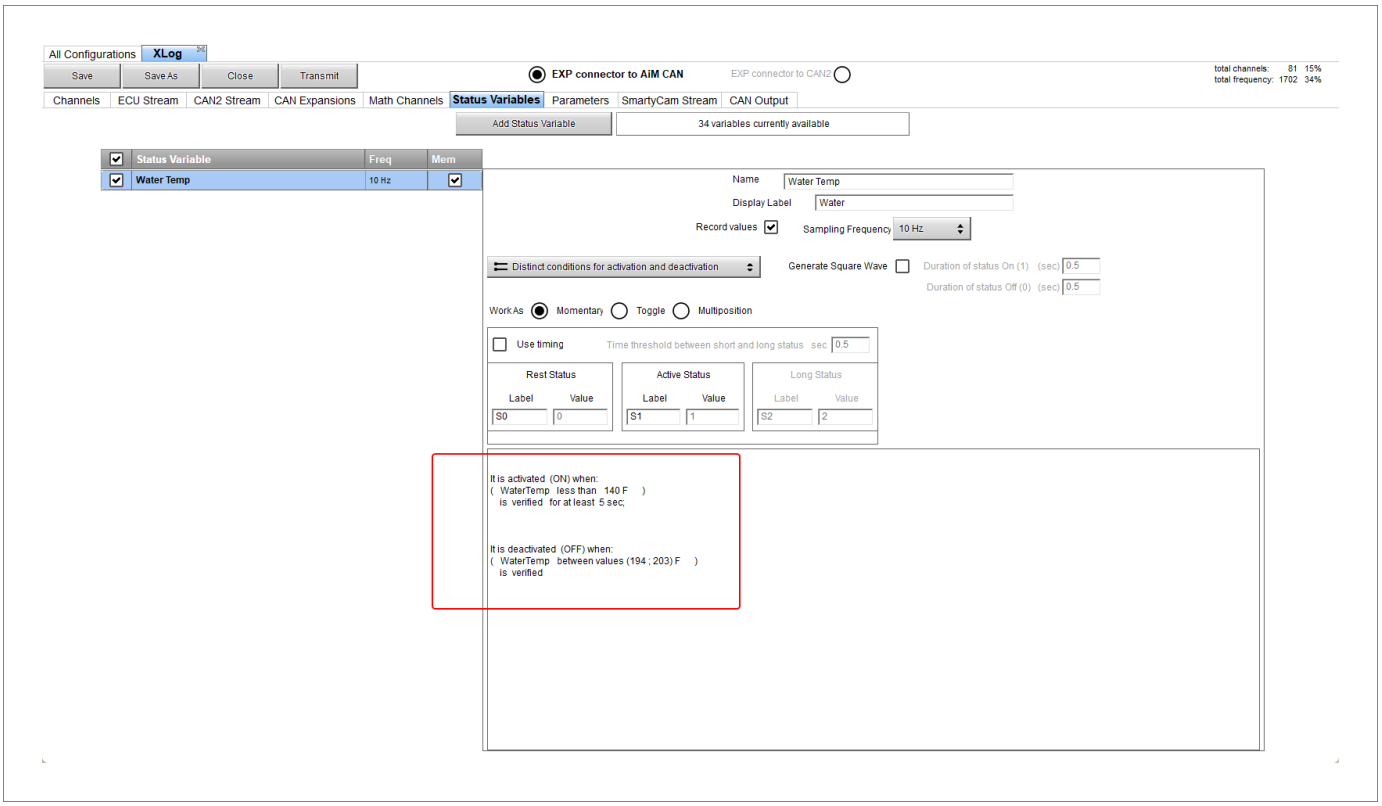
- press “Add” button in “Status Variables” tab
- select the custom option (**1**)
- a selection panel is prompted: select the channel whose status determines the condition of the status variable you are setting (**2**)
- press “OK” (**3**)
- set the condition (**4**)



Once the condition is set press “Save”.



Once the condition is set and saved, mousing over it is shown in “Status Variable” tab and can be edited clicking on it. The conditions are shown bottom of the panel as highlighted below.



4.7 – Parameters configuration

Parameters tab allows to set:
GPS Lap Detection (**1**): to set the seconds the lap time is hold on the display (at present GS Dash display is available in CAN Expansion tab); available options are:

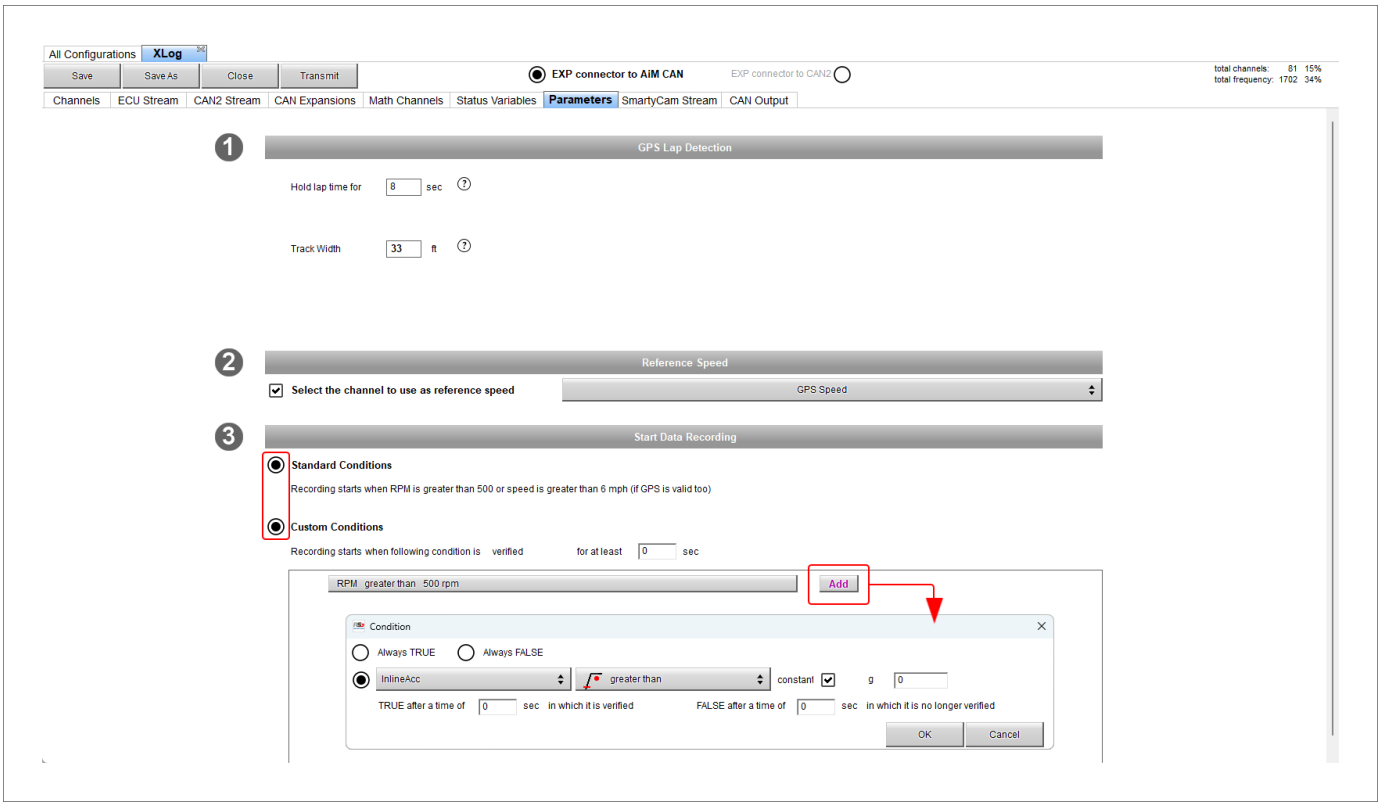
- **Hold lap time for**: this is the number of seconds the lap time is held static on the display before resuming a dynamic views such as predictive, current or running lap time
- **Track width**: this is the width that will be considered for any GPS point set (i.e. the width for start/finish line).

Reference Speed (**2**):

- sets the speed to use as reference one: default setting is "GPS Speed" but if an additional speed source is available it is possible to change it enabling the left checkbox that enables the related button.

Start data recording conditions (**3**) allows to set the conditions that start recording. Available options are:

- **standard condition**: is RPM greater than 500 or speed is greater than 6 mph
- **custom condition**: allows to set the number of seconds the condition is verified and the condition pressing "Add" button.



4.8 – SmartyCam Stream

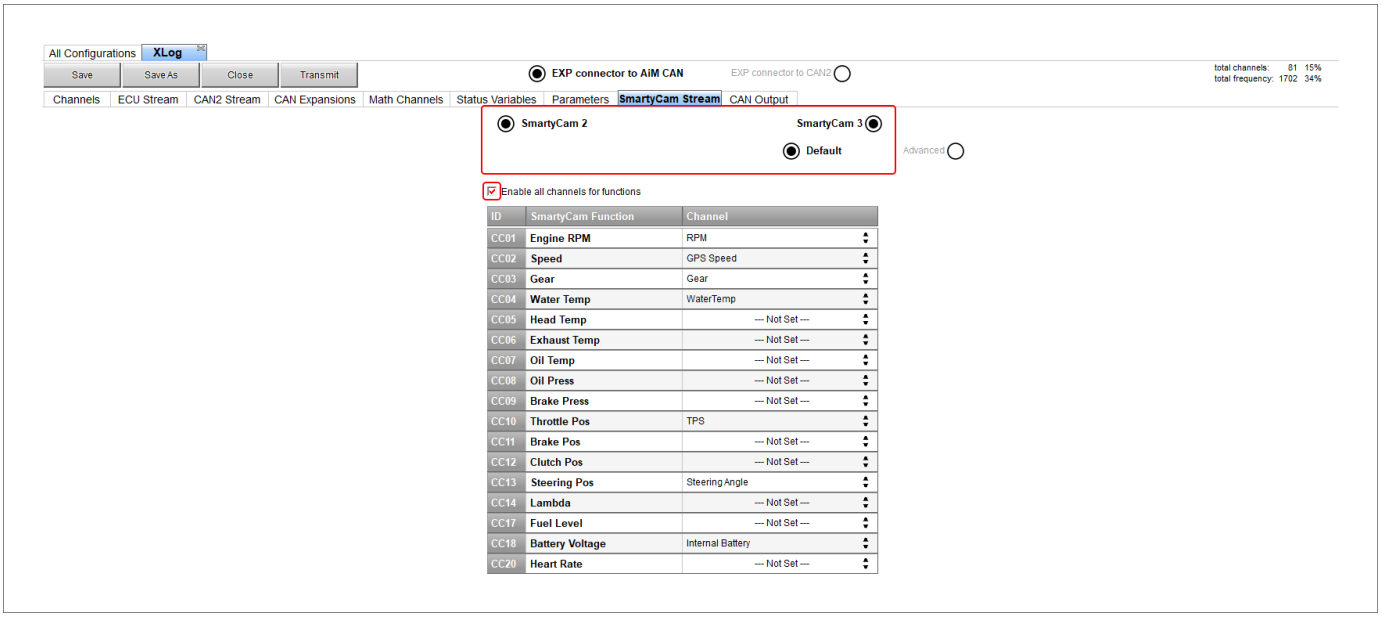
XLog can be connected to both AiM SmartyCam 2 and SmartyCam 3 through the CAN Bus to show data on SmartyCam video. The logger transmits data to the Camera in two slightly different ways according to the camera model and to the fixed setting. Available options are:

- SmartyCam 2 and SmartyCam 3 Default
- SmartyCam 3 Advanced

For XLog to transmit each channel to the connected SmartyCam 2/SmartyCam 3:

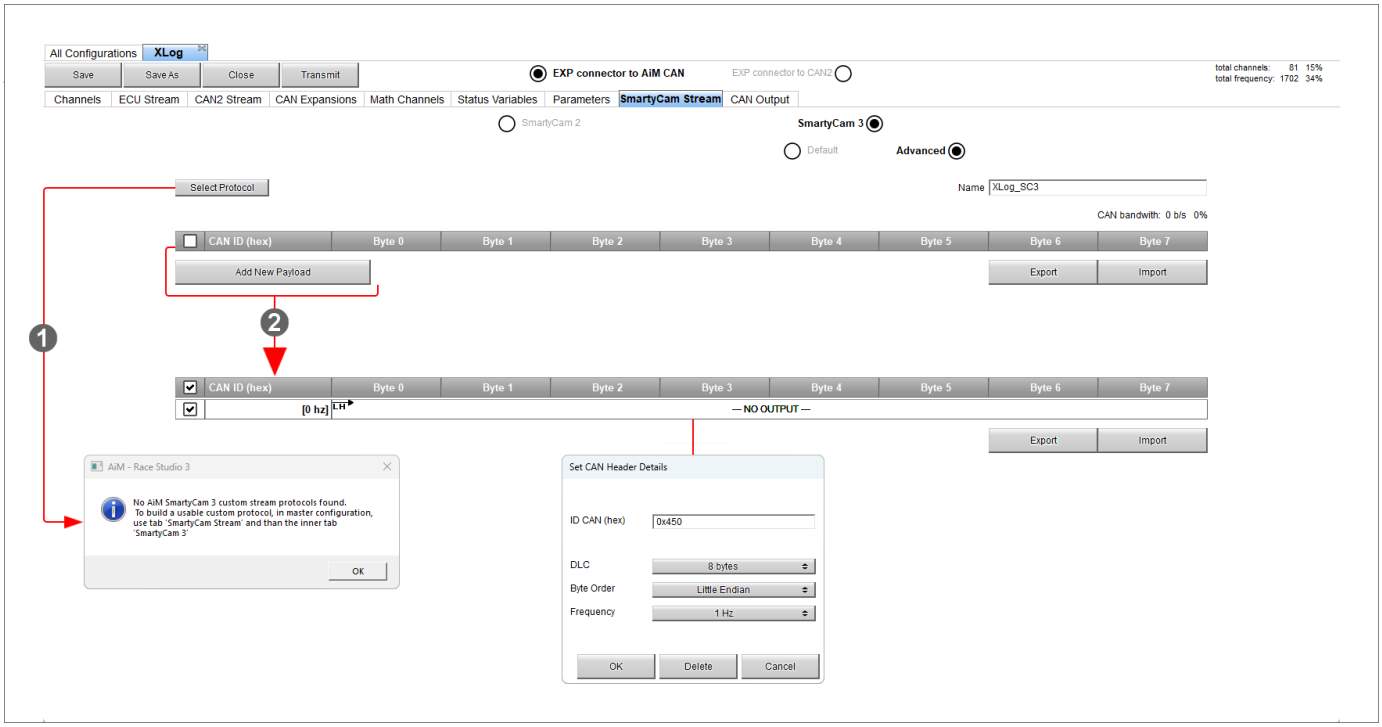
- enter “SmartyCam stream” tab
- it shows all channels and/or sensors that fits the selected function. **Please note**: if the desired channel or sensor is not in the list enable “Enable all channels for functions” checkbox and all channels/sensors will be shown.

AiM default protocol transmits a rather limited range of information, enough for a wide range of installation.



To transmit a different set of information a **SmartyCam 3 with advanced setting** is needed; **please note: this function is for expert users only**. Please follow this procedure:

- select SmartyCam stream tab in XLog configuration
- select “SmartyCam 3 –> Advanced” option in SmartyCam Stream tab
- configure XLog in order to transmit a different SmartyCam stream; in case no SmartyCam stream protocol has been created for XLog a message is prompted (**1**)
- press “Add new Payload” (**2**)
- create your desired stream defining the required IDs fields and save it pressing “OK”
- name the protocol



4.9 – CAN Output configuration

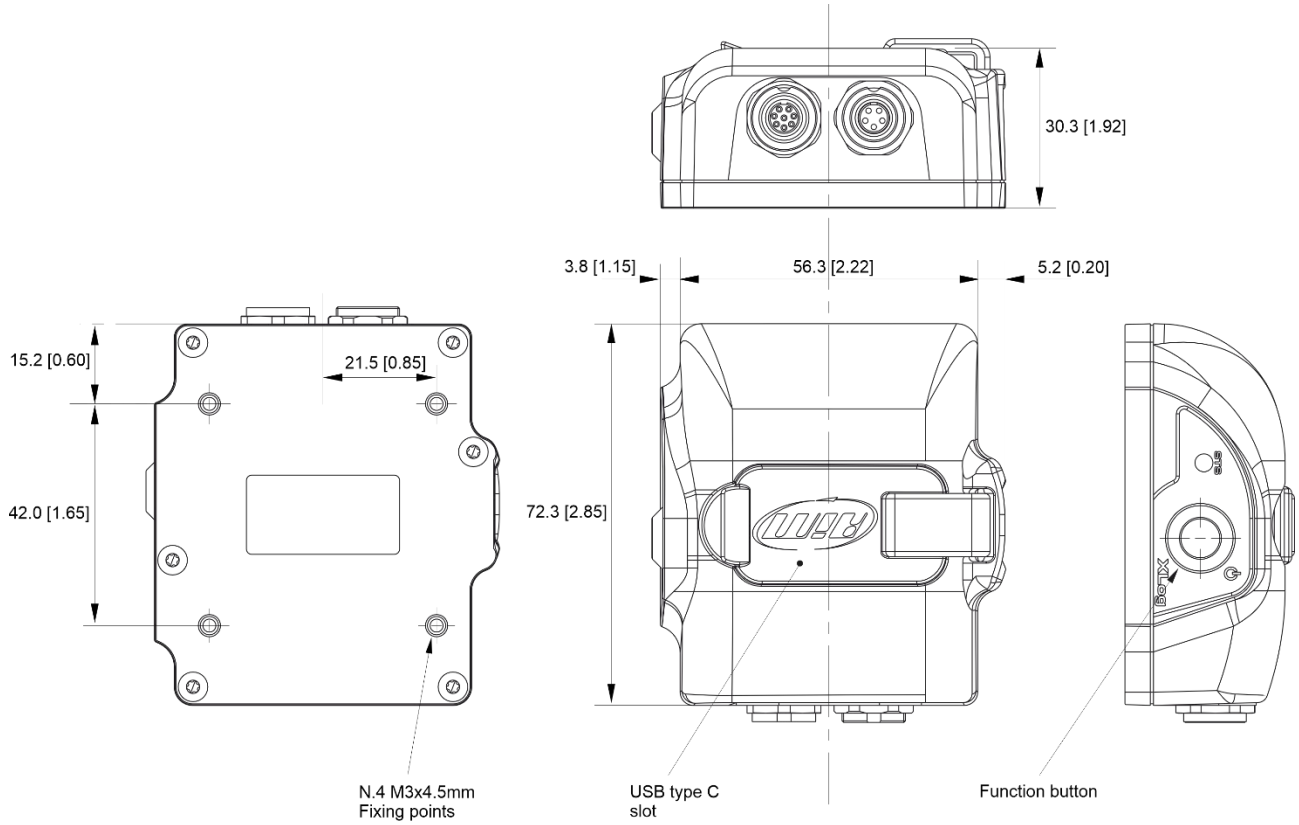
The logger can transmit a CAN data stream containing the channels required on AiM CAN bus. It works exactly as SmartyCam 3 advanced stream.

4.10 – Transmitting the configuration to XLog

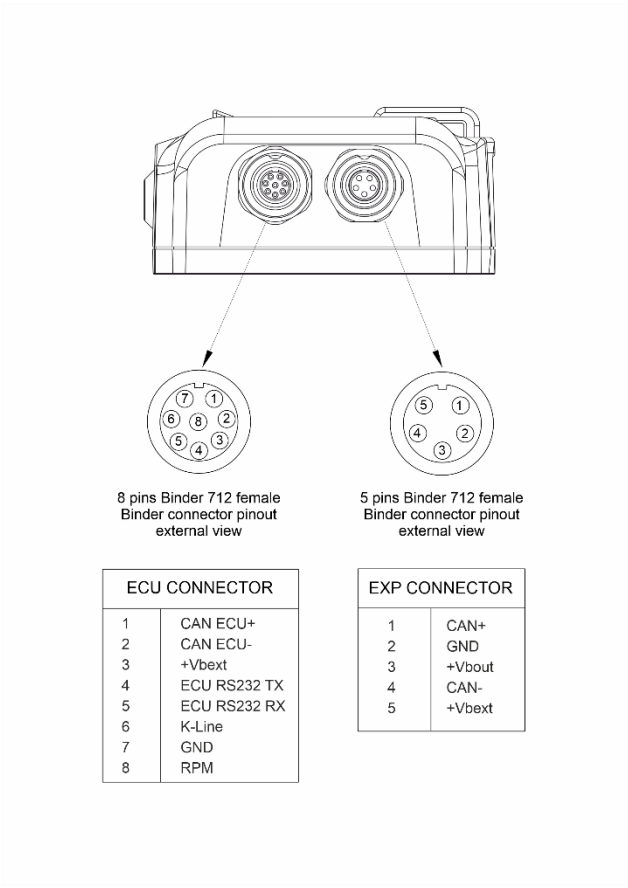
Once all the tabs set XLog configuration needs to be saved and transmitted to XLog pressing “Save” and “Transmit” buttons on the top left keyboard of configuration Tab. XLog can be connected to the PC via Wi-Fi or through the USB A – USB C cable included in the kit.

5 – Dimensions, pinout and technical characteristics

The image below shows XLog dimensions in mm [inches].



The image below shows XLog pinout.



ECU CONNECTOR	
1	CAN ECU+
2	CAN ECU-
3	+Vbext
4	ECU RS232 TX
5	ECU RS232 RX
6	K-Line
7	GND
8	RPM

EXP CONNECTOR	
1	CAN+
2	GND
3	+Vbout
4	CAN-
5	+Vbext

Technical characteristics:

- Integrated track database: Yes
- Inertial platform: Internal 3 axis ±5G accelerometer + 3 axis gyro
- USB connection: Yes
- Wi-Fi connection: Yes
- GPS: 25Hz
- ECU connection: CAN, RS232 or K-Line
- RPM input: 1
- Pushbutton: 1
- Status LED: 1
- External power: 9÷15 V
- Connectors: 1 socket (5 pins Binder 712) + 1 socket (8 pins Binder 712)
- Memory: 4GB + removable USB-C memory card
- Battery type: Rechargeable Lithium
- Dimensions: 72.3x65.3x3.03 mm
- Weight: 150g approximately
- Waterproof: IP65