Firmware update for GEMAC sensors

Application Note

Content

1	Preconditions	. 2
2	Preparation	. 2
3	Establishing a sensor connection	. 2
4	Firmware-Update	. 5

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	Application Note	Version	1.0
OLMAC		Date of printing	8/9/2023
		Page	2 of 6

1 Preconditions

For the firmware update of the sensors, the ISDControl software and the ISPA2 sensor programming adapter are required.

The current version of the ISDControl software is available on the following website:

https://gemac-sensors.com/en/all-downloads/

The sensor programming adapter ISPA2 (PR-23999-10) is available as an accessory:

https://gemac-sensors.com/en/sensors/accessories/starter-kit/

Firmware update files will be provided upon request.

2 Preparation

- Install ISDControl To install, the setup file must be started with administrator rights. During the installation, required drivers can optionally be installed. After installation, a restart of the PC is necessary.
- Connect the sensor programming adapter to the PC using a USB cable.
- Connect the digital sensor (CAN, CANopen and SAE J1939 interfaces) to the sensor programming adapter using the M12 to Sub-D (purple) digital cable. The digital cable contains a 120-ohms terminating resistor between the lines CAN_H and CAN_L.
- Sensors with analog output (current and voltage interfaces) are connected to the sensor programming adapter using an analog cable M12 to Sub-D (black).

3 Establishing a sensor connection

The CAN interface to be used is selected via the menu [Communication] => [Choose a CAN interface...]. If only one sensor programming adapter is connected to the PC, it is automatically selected.

In the toolbar, the interface of the sensor - digital (CAN/CANopen/SAE J1939) or analog (current/voltage) - can be selected. For sensors with a digital interface, the communication parameters baud rate and CAN identifier can also be set in the toolbar (Figure 1).

Sensors with analog output as well as digital sensors CAN/CANopen with standard configuration are automatically displayed in the program after selecting the interface.

<u>F</u> ile	<u>V</u> iew	<u>Communication</u>	Sensor	Extras	<u>H</u> elp						
) 📄		lopen/J193	9 -	1000	kBit/s	Ŧ	300h 301h / 10 / 128	🏷 🌾 🌾	?	Ŧ

Figure 1: ISDControl Toolbar

	Application Note	Version	1.0
OLMAC	Application Note	Date of printing	8/9/2023
		Page	3 of 6

For sensors with customer-specific configuration, the communication parameters baud rate and CAN identifier must be set in the program. For sensors with a SAE J1939 interface, the default setting for the baud rate is 250 kbit/s. Pressing the button [300h 301h / 10 / 128] in the toolbar (Figure 2) opens a dialog that allows the configuration of the CAN identifier, node ID and SAE J1939 address (Figure 3).

File View Communication Sens	or Extras <u>H</u> elp 01939 - 1000 kBit/s - 300h 301h / 10)/ 128 📚 🕸 🧼 ? 💡	
Sensor Selection ×	Sensor Configuration		×
	Baud Rate / Node-ID (LSS) Comm. Parameter Doc Node-ID *: Baud Rate *:	eters Manu. Parameters Appl. Parameters cument Sensor 10 AutoBaud	

Figure 2: ISDControl Main Window

Set CAN identifiers	×
CAN	
Set-Parameter-ID:	0x 3 00 Ext
Reply-Parameter-ID:	0x 301 Ext
CANopen	
Node ID:	10
SAEJ1939	
Address:	128
Ok C	Cancel Default

Figure 3: Setting Communication Parameters

After confirming the dialog with [Ok], the sensor should be detected in the program (Figure 4).

G	EMAC	Applicat	ion Note	Version Date of printing Page	1.0 8/9/2023 4 of 6
Unbenannt - ISDControl Eile View Communication Sens	ior Extras <u>H</u> elp 1/J1939 = 1000 kBit/s = 300h.301h /	10 / 128 🛛 💓 🎲 🥐			- 0 X
Consort Selection X Image: State	Sensor Configuration Automatic Bus Off Recovery: Baud Rate / Hode-10 (155) Configuration Automatic Bus Off Recovery: Enable Digital Filter: Cut off Precency (in mild): Individuo Change (in /100): Off Recovery: Control Threaden Change: Individuo Change (in /100): Individuo Change (in /100): Control Threaden Change: Individuo Change (in /100): Control Threaden Change (in /100): Change measuring axis: Activate sensor fusion: Expert settings Sensor 3D-View	Normality Appl Parameters Document Excession Excession Excession	Sensor Oxcilloscope Parameter Sensor Excise logis Pitter: Cut-off Free, (n mHz): 500 Activate sensor fusion: Cut-off Free, (n mHz): 500 Coclloscope Cut-off Free, (n mHz): Cut-off Fr	ors 1 s/dv Reset View X-Axis 0,0° Kuto 0,0° Kut	Debug
Ready				XC6MP360-O - Serial I	No.: 00000007 📼 NUM .:

Figure 4: Exemplary sensor detected

4 Firmware-Update

If a sensor is displayed by the program, the sensor firmware can be updated in the [Sensor] => [Firmware Update...] menu (see Figure 5).

🏏 Unbenannt - ISDControl					
<u>File View Communication</u>	Ser	nsor Extras <u>H</u> elp			
	•	Read Sensor Configuration	300h 301h / 10 / 128 💿 🐑 🏠 구		
	*	Write Sensor Configuration			
Sensor Selection	۵	Restore Default Values			
- 2-axial		Sensor Scan	Comm. Parameters Manu. Parameters Appl. Parameters		
		Firmware Update			
🗣 IS2SP090-O-BL			Document Sensor		
 IS2SP090-O-BL-10 IS2SP090-O-BL-10 		Node-ID *:	10 10		
••••• IS2BP090-O-BL		Baud Rate *:	AutoBaud 👻 AutoBaud		

Figure 5: Firmware Update

Connected Sensor -		New Firmware	
Serial No:	0000007		
Firmware-ID:	IS2D iP	Firmware-ID:	-
Firmware Version:	v1.10	Firmware Version:	v1.12
Device status:	0x03		
	Start App		
		/	

Figure 6: Firmware Update Dialog

Under "Firmware file:" you can click on [...] to select the update to use. In order to perform an update, the firmware update and the connected sensor must be compatible. If this is not the case, an error message will be displayed in the program and an update will not be possible.

Under Firmware Version, the current version number of the sensor firmware is displayed, as well as the version of the selected update.

If a sensor is connected and a suitable firmware file is selected (see Figure 6), the update can be started by clicking the [Start] button.

During the update, the status is displayed in the dialog (see Figure 7). The sensor must not be disconnected from the programming adapter during the entire update.

GEMAC	Application Note	Version Date of printing Page	1.0 8/9/2023 6 of 6					
Firmware Update Firmware File: C:\Firmware\XC6Mx360_classicLINE_FW_v1.12_enc.bin								
Connected Sensor	New Firmware							

Serial No:	-		
Firmware-ID:	-	Firmware-ID:	-
Firmware Version:	-	Firmware Version:	v1.12
Device status:	-	()
	Start App		
Write Flash			
	Cancel	Close	

Figure 7: Firmware Update Status

After the update, the status is displayed in the dialog. After a successful firmware update, the firmware versions of the connected sensor and firmware file (left and right of the window, respectively) match (see Figure 8). If this is not the case, or if the update ended with an error, the update can be restarted by pressing [Start].

Connected Sensor – Serial No:	0000007	New Firmware	
Firmware-ID:	IS2D iP	Firmware-ID:	-
Firmware Version:	v1.12	Firmware Version:	v1.12
Device status:	0x03 Start App		
mware update is co	mpleted successfully.		

Figure 8: Update Completed