XCP-Gateway Series

User Guide

Innovative Measurement and Data Technology

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Product disposal/recycling

If this symbol (crossed-out wheeled bin) appears on the device, this means that the European Directive 2012/19/EU applies to this device.

The correct disposal of old equipment will protect the environment and people from possible negative consequences.

Become familiar with local regulations for separate collection of electrical and electronic equipment.

Follow local regulations and do not dispose of old equipment with household waste.

Contact information

CSM offers support for its products over the entire product life cycle. Updates for the individual components (e.g. documentation, configuration software and firmware) are made available on the CSM website. To keep up to date, it is therefore recommended that you check the download area of the CSM website for updates at least once a month.

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1 Introduction

1.1 About this user guide

This user guide contains important information for handling the product. Please read the entire document carefully before installation and initial operation.

1.2 Symbols and writing conventions

Symbol/note	Meaning	Example of application
☞	User instruction	☞ Click on **OK** to confirm the entry.
⇨	Result of an action	⇨ The following dialog opens:
→	Cross reference to external information source(s)	→ *CSMconfig Online Help, section "Menu commands"*
→	Text highlighted in blue (with or without arrow) refers to a link link/cross reference within the document.	→ Chapter 4.3.2.4 "Ground connection" ☞ Continue with chapter 5.4.3.4 "Creating a new configuration.
i	This pictogram refers to important notes or additional information on a specific topic.	i CSM offers a mounting kit for devices in standard housings. For further information please contact our sales department.
Options | Interface	**Menu selection** Menu items, options and buttons are highlighted in bold. The vertical bar "|" separates the menu from the menu command. The example on the right means: Click on the **Options** menu and select **Interface.**	☞ Select **Options | Interface**.
(→ **Options | Interface**)	A menu option integrated into the text.	The CAN interface is selected via the **Interface** dialog (→ **Options | Interface**).

Tab. 1-1: Symbols and writing conventions

1.3 List of abbreviations

Abbreviation	Meaning
ASAM	**A**ssociation for **S**tandardization of **A**utomation and **M**easuring Systems: registered association coordinating the development of technical standards → *asam.net*
CAN	**C**ontroller **A**rea **N**etwork: serial bus system developed by Bosch for networking ECUs in vehicles
CoE	**C**ANopen **o**ver EtherCAT®: protocol for use of the CANopen family of profiles over EtherCAT®
DAQ	**D**ata **A**c**Q**uisition, e.g. DAQ software
ECAT	**E**ther**CAT**®: an Ethernet-based field bus system developed by Beckhoff company and the EtherCAT® Technology Group → *ethercat.org*
EMV	**E**lectro**M**agnetic **C**ompatibility
ESD	**E**lectro**S**tatic **D**ischarge
HV	**H**igh **V**oltage
MC Tool	**M**easurement & **C**alibration Tool
OBC	**O**n-**B**oard **C**harger: charging unit in an electric vehicle used for charging the vehicle battery
STG	**ST**rain **G**auge
TEDS	**T**ransducer **E**lectronic **D**ata**S**heet: sensor with integrated memory for electronic data sheet
XCP	Universal Measurement and Calibration Protocol → *asam.net*

Tab. 1-2: List of abbreviations

1.4 Warning

A warning indicates specifically or potentially dangerous situations. Failure to follow a warning could result in injury or death to persons and/or damage to property.

This guide contains warnings that the user must observe to ensure safe operation and to prevent injury to persons and damage to property.

Warning design

A warning sign consists of the following components:

- Warning symbol
- Signal word
- Source/type of hazard
- Possible consequences of non-compliance
- Measures to avert the hazard

Warning symbols

Symbol	Meaning
	General risk This symbol indicates a general hazard.
	High voltage! This symbol indicates a risk due to hazardous electrical voltage.
	Hot surface! This symbol indicates a possible risk of burns from hot surfaces.

Tab. 1-3: Warning signs

Signal words

Signal word	Meaning
WARNING	... indicates a potential hazard. Failure to follow this warning may result in serious injury, or possibly death.
CAUTION	... indicates a potential hazard. Failure to follow this warning may result in minor injuries.

Tab. 1-4: Signal words

If several potential hazards originate from one source of danger, then the warning (signal word/symbol) that indicates the greatest potential hazard is used. For example, a warning indicating danger to life or serious injury may also indicate the potential risk of property damage.

1.5 Directive

A directive contains important information about the product described in the guide. Failure to observe a directive may result in malfunction and/or damage to property and material. A directive is indicated by the blue symbol ⓘ and the signal word **NOTE**.

Example

	NOTE!
	This symbol indicates important information. Failure to observe this information can impair the function or result in damage to the measurement module. ☞ Read the information carefully.

Symbols

Symbol	Meaning
	This symbol indicates important information. Failure to observe this information can impair the function or result in damage to the measurement module.
	Wear suitable safety gloves.
	Disconnect the device before starting to work.

Tab. 1-5: Symbols used in mandatory signs

1.6 Legal disclaimer

This guide and other documents are part of the product and contain important information for its safe and efficient use. To maintain the high quality level the product is continuously being developed, which may result in the product's technical details changing at short notice. As a result, the contents of this documentation may differ from the technical specifications of the product. No claims against the manufacturer can therefore be derived from the contents of the product documentation.

CSM Computer-Systeme-Messtechnik GmbH (hereafter referred to as "CSM") is not liable for technical or editorial errors or missing information.

CSM assumes no liability for damage resulting from improper use of the product and/or non-observance of the product documentation, in particular the safety instructions.

→ Chapter 2 "Safety Instructions"

1.7 Warranty and exclusion of warranty

The warranty covers the safety and functionality of the product within the warranty period. Excluded from the warranty are claims based on possible consequential damages caused by malfunction or non-function of the product.

The warranty shall become invalid if

- the product is handled improperly
- prescribed maintenance intervals are not observed
- the product is modified by the end-user
- the user does not observe the safety instructions and the product documentation
- the product is operated with accessories or parts which are not explicitly approved for operation by the manufacturer of the product

→ Chapter 2 "Safety Instructions"

1.8 ESD Information

The manufacturer of the product declares that XCP-Gateway modules comply with the requirements of EU Directive 2014/30/EU.

NOTE!	
	Electronic components can be damaged or destroyed by electrostatic discharge (ESD). ☞ Make sure that no electrostatic discharge occurs through the contacts of the inputs. ☞ Avoid electrostatic discharge when handling or mounting modules.

2 Safety Instructions

This chapter contains important safety information. Please read the following sections carefully.

2.1 General safety instructions

The manufacturer complies with all applicable safety standards during the development and production of the XCP-Gateway Series modules. Nevertheless the risk to the life of users and of property damage cannot be excluded.

	NOTE!
	Trouble-free operation and electrical safety can only be ensured if the module is correctly installed. ☞ Make sure that the measurement module is correctly installed. ☞ Operate the device only within the specified operation environment. → *XCP-Gateway datasheets*

2.2 Obligations of the operator

- The operator must ensure that only qualified and authorized personnel are entrusted with handling the product. This applies to assembly, installation and operation.
- In addition to the product's technical documentation, the operator may also have to provide operating instructions in accordance with the Occupational Safety and Health Act and the Ordinance on the Use of Working Materials.

2.3 Intended use

- XCP-Gateway Series modules have been designed for the acquisition of measurement data using XCP-on-Ethernet-based software.
- These modules may only be used for the above-mentioned purpose and under the operating conditions stated in the technical specifications.

  → *XCP-Gateway datasheets*
- Operational safety can only be ensured if the module is used in accordance with its intended use.
- Compliance with the intended use also includes that this user guide must be carefully read and the instructions contained must be observed.
- Inspection and repair work must only be carried out by CSM.
- The operator is solely responsible if the measurement module is used in a way that does not comply with its intended use.

3 Product Description

The XCP-Gateway protocol converter was specially designed to be used in combination with CSM EtherCAT® measurement modules and for measurement tasks with many measurement channels and high measurement data rates. XCP-Gateway enables the connection of EtherCAT® measurement modules to the measurement data protocol XCP-on-Ethernet, thus combining the advantages of measurement data acquisition via EtherCAT® with the flexibility of the widely used XCP-on-Ethernet standard.

XCP-Gateway is available in version Basic, pro[1] and 4S pro.

The pro version has extended features such as the acquisition of specific info messages via EtherCAT® (e.g. temperature data from CSM HV Breakout modules) and two CAN interfaces over which CAN-based CSM measurement modules can be connected to the XCP-Gateway and integrated into the XCP-on-Ethernet measurement data protocol. The configuration of all connected measurement modules is done using the configuration software CSMconfig.

Module version 4S pro provides four ECAT inputs and, like the pro version, two CAN interfaces. Synchronization in accordance with IEEE 1588 PTP is used as a mechanism to other measurement chains, optionally with global time synchronization via GPS.

Important technical data

Designation	ECAT inputs	Data rate (Ethernet)	CAN interfaces	Info messages
XCP-Gateway Basic	1	100 Mbit/s	✗	✗
XCP-Gateway pro	1	100 Mbit/s	✓	✓
XCP-Gateway 4S pro	4	1 Gbit/s	✓	✓

Tab. 3-1: Important technical data of the XCP-Gateway Series

Further information

→ *Datasheet "XCP-Gateway Basic"*

→ *Datasheet "XCP-Gateway pro"*

→ *Datasheet "XCP-Gateway 4S pro"*

→ *Technical information "MiniModules – Types of Housings"*

1 XCP-Gateway pro replaces module version XCP-Gateway +CAN.

3.1 Connections and components

3.1.1 XCP-Gateway pro, front view [2]

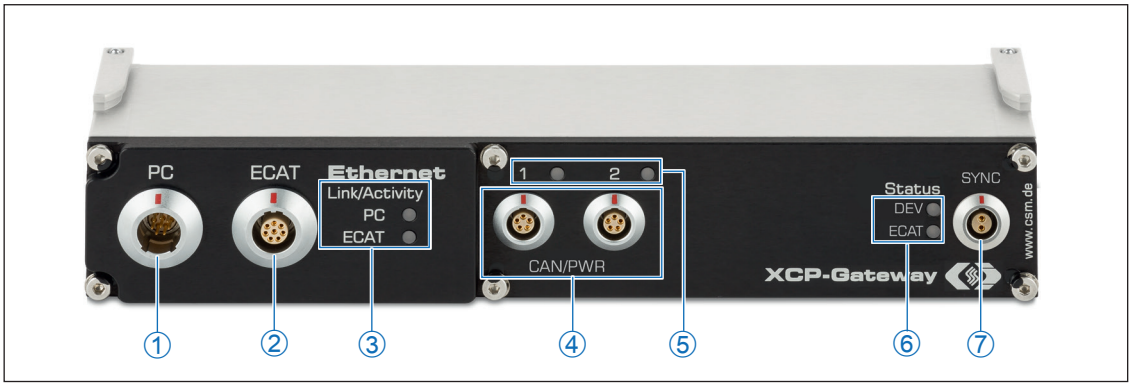


Fig. 3-1: XCP-Gateway pro, front view

1. **PC** socket (→ chapter 4.3.2.1 "PC socket")
2. **ECAT** socket (→ chapter 4.3.2.2 "ECAT socket")
3. **Link/Activity** LED indicators for the sockets **PC** and **ECAT** (→ chapter 3.2.1 "Link/Activity PC and ECAT LED indicators")
4. **CAN/PWR1** and **CAN/PWR2** sockets (→ chapter 4.3.2.3 "CAN sockets")
5. LED indicators for **CAN/PWR1** and **CAN/PWR2** (→ chapter 3.2.2 "CAN/PWR LED indicators")
6. LED indicators for **DEV** and **ECAT** (→ chapter 3.2.3 "DEV and ECAT LED indicators")
7. **SYNC** socket (→ chapter 4.3.2.5 "SYNC socket")

2 For the **PC** and **ECAT** connections in Fig. 3-1, 8-pin LEMO 1B sockets are used by default. The CAN inputs are equipped with 5-pin LEMO 0B sockets. Customized solutions regarding the sockets are possible. Other technical specifications remain unaffected.

3.1.2 XCP-Gateway 4S pro, front view

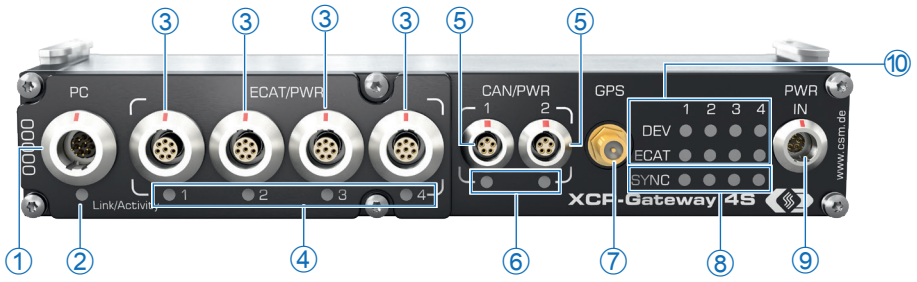


Fig. 3-2: XCP-Gateway 4S pro, front view

1. **PC** socket (→ chapter 4.3.2.1 "PC socket")
2. **Link/Activity** LED indicators for **PC** socket (→ chapter 3.2.1 "Link/Activity PC and ECAT LED indicators")
3. **ECAT/PWR 1 - 4** sockets (→ chapter 4.3.2.2 "ECAT socket")
4. **Link/Activity** LED indicators for the **ECAT/PWR 1 - 4** sockets (→ chapter 3.2.1 "Link/Activity PC and ECAT LED indicators")
5. **CAN/PWR 1** and **CAN/PWR 2** sockets (→ chapter 4.3.2.3 "CAN sockets")
6. **CAN/PWR 1** and **CAN/PWR 2** LED indicators (→ chapter 3.2.2 "CAN/PWR LED indicators")
7. **GPS** antenna socket (→ chapter 4.3.2.6 "GPS socket")
8. **SYNC 1 - 4** LED indicators (→ chapter 3.2.4 "SYNC LED indicators")
9. **PWR IN** socket (→ chapter 4.3.2.4 "PWR IN socket")
10. **DEV** and **ECAT 1 - 4** LED indicators (→ chapter 3.2.3 "DEV and ECAT LED indicators")

3.1.3 XCP-Gateway, rear side of the housing (all versions)

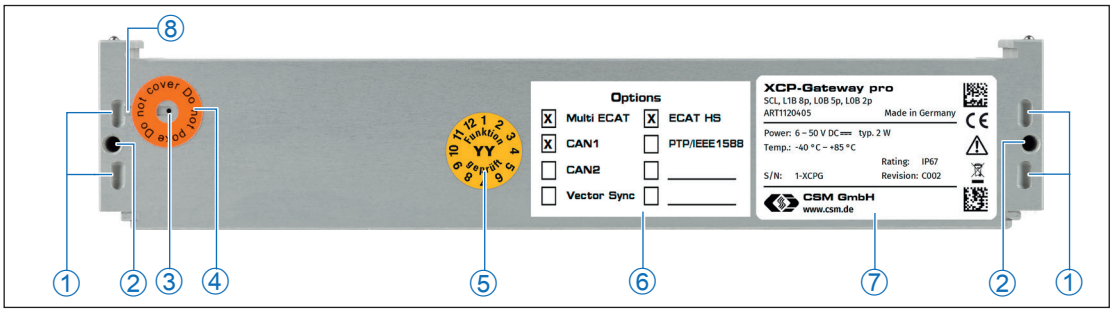


Fig. 3-3: XCP-Gateway, rear side of the housing (here: module version pro)

1. Cable tie eyelets (for cable ties with a width of max. 4 mm)
2. Threaded holes for mounting screws
3. GORE™ membrane ventilation opening
4. "Do not poke – Do not cover" sticker
5. Inspection sticker
6. Licence options label (→ chapter 6.2 "Licence options")
7. Type label (→ chapter 6.1 "Type label")
8. Venting groove (→ chapter 4.1 "Before mounting")

3.2 Functional description of LED indicators

3.2.1 Link/Activity PC and ECAT LED indicators

The LED indicators for the sockets **PC** and **ECAT** (or **ECAT/PWR 1 - 4**) (Fig. 3-1 and Fig. 3-2) light up or flash when an ECAT measurement module is electrically connected to an XCP-Gateway and when data is being transferred.

LED status		Meaning
PC	ECAT	
100 % green	100 % green	Ethernet connection to PC and measuring device(s) established, no data transfer
50 % green 50 % off	50 % green 50 % off	Ethernet connection is active, i.e. data transfer is in progress
off	off	No measurement module connected.

Tab. 3-2: **PC** and **ECAT** LED indicators

3.2.2 CAN/PWR LED indicators[3]

The two CAN LEDs (Fig. 3-1 and Fig. 3-2) provide information on the status of the **CAN/PWR1** and **CAN/PWR2** CAN interfaces.

LED		Meaning
Color	**Status**	
–	off	Interface deactivated
green	continuously lit	Interface activated (**CAN/PWR1** interface by default, **CAN/PWR2** interface through license expansion)

Tab. 3-3: **CAN/PWR** LED indicators

3.2.3 DEV and ECAT LED indicators[4]

The LED indicators (Fig. 3-1 and Fig. 3-2) show the operating status of the XCP-Gateway.

LED				Meaning
DEV or DEV 1 - 4		**ECAT or ECAT 1 - 4**		
green		off		Device started up, waiting for connection, status "OK"
green		50 % orange	50 % red	Initialization of the connected EtherCAT® measurement modules has failed, check firmware version if necessary.
90 % green	10 % off	off		Measurement module initialized, connected to XCP Master (measurement or configuration software), status "OK".
50 % green	50 % off	off		XCP-Gateway selected via configuration software, status "OK". The LED of the ECAT input that is currently selected in the **Interface** dialog flashes.
10 % green	90 % off	100 % green		Measurement was started successfully, error-free operation, status "OK".
10 % green	90 % off	50 % orange	50 % red	At least one measurement module is no longer able to measure (e.g. following a reset).
off		100 % green		All connected measurement modules have been successfully initialized, status "OK".
off		50 % green	50 % off	Measurement module on EtherCAT® bus selected via configuration software, status "OK".
off		10 % red	90 % green	At least one EtherCAT® datagram has been lost or was not (only) responded to by the desired module.
off		100 % red		Fatal EtherCAT® bus error

3 The labeling for the sockets and LEDs of older XCP-Gateways is **CAN**, the functionality is identical.
4 As for older XCP-Gateways, the labeling of the **DEV** socket is **Gateway** and the labeling of the **ECAT** socket is **Bus**, the functionality of the inputs is, however, identical.

<table>
<tr><th colspan="4">LED</th><th rowspan="2">Meaning</th></tr>
<tr><th colspan="3">DEV or DEV 1 - 4</th><th>ECAT or ECAT 1 - 4</th></tr>
<tr><td colspan="2">50 % green</td><td>50 % orange</td><td>off</td><td>XCP-Gateway is carrying out firmware update, status "OK".</td></tr>
<tr><td colspan="2">50 % orange</td><td>50 % red</td><td>off</td><td>Firmware update failed (e.g. due to transfer error). Begin a new attempt (deenergize XCP-Gateway beforehand if necessary).</td></tr>
<tr><td>10 % orange</td><td>80 % green</td><td>10 % off</td><td>off</td><td>XCP-Gateway is accepting new firmware and will carry out a reset, status "OK".</td></tr>
<tr><td colspan="3">100 % red</td><td>off</td><td>Internal device error or initialization problem, attempt restart.</td></tr>
<tr><td colspan="3">100 % green</td><td>100 % red</td><td>Connection between XCP-Gateway and PC is OK, but the connection between XCP-Gateway and measurement modules is faulty. Check cable connections.</td></tr>
<tr><td colspan="3" rowspan="3">100 % red</td><td>100 % red</td><td rowspan="3">Initialization of additional internal structures failed, attempt to reconnect.</td></tr>
<tr><td colspan="2">100 % green</td></tr>
<tr><td>50 % orange</td><td>50 % red</td></tr>
<tr><td colspan="3">LED flashes SOS code</td><td>off</td><td>If the DEV LED displays the SOS code (LED flashes red: 3× long, 3× short, 3× long), startup has failed and the XCP-Gateway is probably defective.</td></tr>
</table>

Tab. 3-4: **Gateway/DEV** and **Bus/ECAT** LED indicators

3.2.4 SYNC LED indicators

The LED indicators **SYNC 1 - 4** (Fig. 3-2) provide information on the time synchronization status.

LED status	Meaning
off	No sync source available.
10 % green 90 % off	Synchronization is being established (e.g. PTP packages received but no time information yet).
50 % green 50 % off	Synchronization process is running.
100 % green	Data transmission is synchronous to the time source.
50 % green 50 % orange	Sync timeout, i.e. connection to time source interrupted.

Tab. 3-5: LED indicators **SYNC 1 - 4**

4 Mounting and Installation

For trouble-free operation and a long product life, certain requirements for mounting and installation have to be observed.

4.1 Before mounting

XCP-Gateways are equipped with a GORE™ membrane and a venting groove. These are needed to regulate pressure and humidity. To ensure proper operation of the device, never block, clog, or insert anything into the ventilation opening and vent groove in the back of the housing (Fig. 3-3). If this happens, condensate will accumulate inside the housing and damage the device.

	NOTE!
	The GORE™ membrane is required to regulate pressure and humidity. ☞ Do not block the ventilation opening for the GORE™ membrane during installation or use.

	NOTE!
	Trouble-free operation and electrical safety can only be ensured if the device is correctly installed. ☞ Ensure correct installation. ☞ Operate the module only within the specified operation environment. → *"XCP-Gateway" datasheets*

4.2 Mounting XCP-Gateway devices

	NOTE!
	Strong magnetic fields, such as those induced by permanent magnets, may impair the trouble-free operation of the module. ☞ Never attach the module to a permanent magnet.

i	CSM offers a mounting kit for devices in standard housings. For further information please contact our sales department.

Requirements

- The mounting position has to be chosen in such a way that the ventilation opening of the GORE™ membrane is not blocked or covered by any liquids.
- The mounting position must provide sufficient space to connect and disconnect the cables without kinking or pinching them.
- Avoid mounting positions in which the modules are subjected to continuous strong vibrations and/or shocks.

Required parts/materials

- M4 screws[5] and a suitable screwdriver or wrench
- further mounting material, e.g. mounting angles

or

- four suitable cable ties

Mounting the module

☞ Fasten the module to the mounting position.

NOTE!	
	Making mechanical modifications to the housing, such as by drilling additional holes, can impair the function of the measurement module or destroy it. Doing so would also invalidate the warranty. ☞ Never drill any holes into the housing. ☞ Observe the mounting instructions.

Mounting of modules using the Slide Case mechanism

If several modules are used in an application, Slide Case housings offer the advantage that not every device has to be mounted individually. After mounting the first module, further modules can be connected to each other via the guide rails on the upper side of the housing and the mounts on the underside of the housing. This forms compact module packages without the need for tools or mounting materials. Adapter plates are available for connecting Slide Case housings of different sizes. The first and the last module of a module package are fixed with one mounting angle each.

→ *"XCP/ECAT accessories for CSM measurement modules" and "CAN accessories for CSM measurement modules"*

4.3 Installing XCP-Gateway devices

4.3.1 Before installation

NOTE!	
	XCP-Gateway protocol converters have been specifically designed for applications in combination with CSM measurement modules. **An XCP-Gateway cannot be operated in combination with third-party devices.** ☞ Make sure that only CSM measurement modules are applied. ☞ Ensure that the work is only carried out by qualified and trained personnel.

i	CSM offers various cables for the connection of modules. → *"XCP/ECAT accessories for CSM measurement modules " and "CAN accessories for CSM measurement modules"* Please contact our sales department for further details.

i	CSM offers maintenance and repair packages for XCP-Gateway devices. → Chapter 6.3 "Maintenance services"

5 The thread depth in the module is 8 mm. The screw length must be chosen according to the thickness of the mounting material. Either two (slide case housing) or four (standard housing) screws are required depending on the module version.

4.3.2 Connectors

Tab. 4-1 provides an overview of the connections of the different module versions.

	Module version		
Socket	**Basic**	**pro**	**4S pro**
PC	✓	✓	✓
ECAT or **ECAT/PWR**	✓	✓	✓
CAN/PWR	✗	✓	✓
PWR IN	✗	✗	✓
SYNC	✓	✓	✗
GPS	✗	✗	✓

Tab. 4-1: Overview XCP-Gateway connectors

XCP-Gateway Basic/pro (Fig. 3-1)

The two sockets on the far left of the module are used for connection to the data acquisition system (**PC**) and for the connection of the EtherCAT® measurement modules (**ECAT**). The cable connecting the XCP-Gateway to the data acquisition system also connects the power supply using two banana plugs. Any connected EtherCAT® measurement modules receive their supply voltage from the XCP-Gateway, which means the supply voltage is looped through from the PC socket to the **ECAT** socket. For the module versions XCP-Gateway pro and 4S pro, the supply voltage is also looped through to the CAN sockets.

In conjunction with Vector interfaces equipped with a hardware sync connector, the XCP-Gateway versions “Basic” and “pro” can be used for time synchronization and drift compensation. To this end, the XCP-Gateway is connected to the Vector interface via the **SYNC** socket (Fig. 3-1). The Vector interface functions as the Sync Master and the XCP-Gateway is the Sync Slave.

i	The Vector Knowledge Base provides further information on time and hardware synchronization.

i	Licence option "Vector Sync" is required to use the synchronization functionality. → Chapter 6.2 "Licence options"

→ Chapter 4.3.2.5 "SYNC socket"

XCP-Gateway 4S pro (Fig. 3-2)

The XCP-Gateway is connected to the data acquisition system (PC) via the **PC** socket. The EtherCAT® measurement modules are connected to the XCP-Gateways by using the sockets **ECAT 1 - 4**. The XCP-Gateway 4S pro receives its power supply via the **PWR IN** socket. EtherCAT® and CAN measurement modules receive their power supply from the XCP-Gateway, which means the supply voltage is looped through from the **PWR IN** socket to the sockets **ECAT/PWR 1 - 4**, **CAN/PWR1** and **CAN/PWR2.**

The sockets **CAN/PWR1** and **CAN/PWR2** of the module versions pro and 4S pro can be used to connect CAN-based CSM measurement modules to the XCP-Gateway.

i	The sockets **CAN/PWR** and **PWR IN** (LEMO 0B) as well as **PC** and **ECAT** (**ECAT/PWR**) (LEMO 1B) are standard versions. If the module is to be equipped with non-standard sockets, please contact our sales department.

4.3.2.1 PC socket

The module versions Basic and pro are connected to the data acquisition system and the power supply via the **PC** socket. For module version 4S pro, this socket is used exclusively for establishing a connection with the data acquisition system (see Fig. 5-1, Fig. 5-2 and Fig. 5-3). In both cases a LEMO 1B socket is used by default.

Module versions Basic and pro

To connect a cable to this socket, the following plug with socket insert is required:

- **FGL.1B.308.CLLxxxxx** [6]

	Pin	Signal	Description
	1	U_{supply} +	Power supply, plus
	2	U_{supply} -	Ground
	3	RX -	Ethernet: Receive data, minus
	4	TX -	Ethernet: Transmit data, minus
	5	RX +	Ethernet: Receive data, plus
	6	U_{supply} -	Ground
	7	U_{supply} +	Power supply, plus
	8	DD-	Ethernet: Transmit data, plus
	Housing	Shield	Cable shield

Tab. 4-2: Plug (front view) for **PC** socket (Basic/pro): pin assignment

A K420 interface cable can be obtained through CSM.

Module version 4S pro

To connect a cable to this socket, the following plug with socket insert is required:

- **FGJ.1B.308.CLDxxxxx** [6]

	Pin	Signal	Description
	1	TP1+	Bi-directional pair 1, plus
	2	TP1-	Bi-directional pair 1, minus
	3	TP2+	Bi-directional pair 2, plus
	4	TP2-	Bi-directional pair 2, minus
	5	TP3+	Bi-directional pair 3, plus
	6	TP3-	Bi-directional pair 3, minus
	7	TP4+	Bi-directional pair 4, plus
	8	TP4-	Bi-directional pair 4, minus
	Housing	Shield	Cable shield

Tab. 4-3: Plug (front view) for **PC** socket (4S pro): pin assignment

A K425 interface cable can be obtained through CSM.

6 "xxxxx" is a placeholder here. The actual designation depends on the diameter of the cable actually being used.

4.3.2.2 ECAT socket

The sockets **ECAT** and **ECAT/PWR 1 - 4** are used for daisy-chaining the EtherCAT® measurement modules.[7] CSM uses LEMO 1B sockets as standard for the ECAT connection. To connect a cable to this socket, the following plug with plug insert is required:

- **FGA.1B.308.CLAxxxxx**[8]

	Pin	Signal	Description
	1	U_{supply} +	Power supply, plus
	2	U_{supply} +	Power supply, plus
	3	U_{supply} -	Ground
	4	RX +	Ethernet: Receive data, plus
	5	TX -	Ethernet: Transmit data, minus
	6	RX -	Ethernet: Receive data, minus
	7	U_{supply} -	Ground
	8	TX +	Ethernet: Transmit data, plus
	Housing	Shield	Cable shield

Tab. 4-4: Plug (front view) for **ECAT** socket: pin assignment

A K400 connection cable can be obtained through CSM.

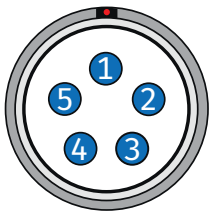
4.3.2.3 CAN sockets

CAN-based CSM measurement modules can be integrated into a measurement setup by using the sockets **CAN/PWR1** and **CAN/PWR2**.

CSM uses LEMO 0B sockets as standard for the CAN sockets. To connect a cable to this socket, the following plug with plug insert is required:

- **FGG.0B.305.CLA xxxxx**[8]

	NOTE!
	Risk of module damage if supply voltage is being fed back! The XCP-Gateway pro (and 4S pro) can be damaged or destroyed if voltage is fed in using the sockets **CAN/PWR1** and **CAN/PWR2**. ☞ Never use the sockets **CAN/PWR1** and **CAN/PWR2** to feed in voltage. ☞ Only use qualified and trained personnel.

	Pin	Signal	Description
	1	U_{supply} +	Power supply, plus
	2	U_{supply} -	Power supply, ground
	3	CAN_H	CAN high
	4	CAN_L	CAN low
	5	CAN_GND	CAN ground
	Housing	Shield	Cable shield

Tab. 4-5: Plug (front view) for **CAN/PWR** socket: pin assignment

A K70 connection cable can be obtained through CSM.

7 The sockets **ECAT** (Basic/pro) and **ECAT/PWR 1 - 4** (4S pro) are identical in design and function.
8 "xxxxx" is a placeholder here. The actual designation depends on the diameter of the cable actually being used.

4.3.2.4 PWR IN socket

Module version 4S pro receives its power supply via a separate connection, the **PWR IN** socket. The measurement modules (ECAT and CAN) connected to the XCP-Gateway also receive their supply voltage via this socket.

CSM uses LEMO 0B sockets as standard for the **PWR IN** connection. To connect a cable to this socket, the following plug with socket insert is required:

- **HGJ.0B.305.CLDxxxxx** [9]

	Pin	Signal	Description
	1	Power +	Power supply, plus
	2	Power +	Power supply, plus
	3	not used	
	4	Power -	Power supply, minus
	5	Power -	Power supply, minus
	Housing	Shield	Cable shield

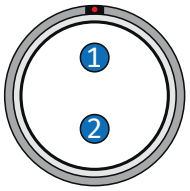
Tab. 4-6: Plug (front view) for **PWR IN** socket: pin assignment

A K480 connection cable can be obtained through CSM.

NOTE!	
	The supply voltage is looped through from the **PWR IN** socket to the **ECAT 1 - 4** sockets and the sockets **CAN/PWR1** und **CAN/PWR2**, respectively. This is why a signal available at one pin of the **PWR IN** socket is also always available at the corresponding pin of the ECAT and CAN sockets. ☞ Ensure that the work is only carried out by qualified and trained personnel.

4.3.2.5 SYNC socket

The **SYNC** socket is designed to connect a synchronizable Vector interface to the XCP-Gateway for time synchronization and drift compensation. An appropriate synchronization cable is required to connect the XCP-Gateway to the Vector interface.

SYNC socket [10] (HW Rev. ≥ C002)	Pin	Signal	Description
	1	Sync	Sync signal: 0 - 5 V Logical one at approx. ≥ 2 V Logical zero at approx. ≤ 0.8 V
	2	GND	Ground

Tab. 4-7: Plug (front view) for **SYNC** socket LEMO 0B: pin assignment

A suitable K665-0200 synchronization cable can be obtained through CSM.

9 "xxxxx" is a placeholder here. The actual designation depends on the diameter of the cable actually being used.
10 XCP-Gateway modules with hardware revisions < C002 use different SYNC sockets. If there are any questions regarding this matter, please contact CSM Support.

4.3.2.6 GPS socket

If required, a GPS antenna can be connected to the XCP-Gateway 4S pro via the **GPS** socket.

A suitable antenna can be obtained through CSM.

4.3.2.7 Connecting the cables

Cables of various lengths are available for connection to the data acquisition system and the power supply, as well as for daisy-chaining the measurement modules:

- Cable for connecting EtherCAT® modules: K400-xxxx
- Cable for connecting CAN measurement modules: K70-xxxx
- Cable for connection to the PC: K420-xxxx (Basic and pro) or K425-xxxx (4S pro)
- Cable for connection to the power supply: K480-xxxx (only 4S pro)

i	To prevent the risk of short circuits which can be caused by small pieces of metal (e.g. small sections of wire), a plug with a socket insert (female) is used for connection of the energized cable (interface or power cable) to the **PC** socket (Basic/pro) and the **PWR IN** socket (4S pro). Similarly, a socket with a plug insert (male) is used for the connection of a connecting cable to the sockets **ECAT** or **ECAT/PWR 1 - 4** and **CAN/PWR1** or **CAN/PWR2**, respectively.

4.3.2.8 Connecting the power supply

As for the module versions Basic and pro, the power supply is realized via the interface cable which connects the XCP-Gateway not only to the power supply but also to the PC/data acquisition system. Module version 4S pro is equipped with an extra socket for power supply.

The modules are designed for low power consumption. In combination with the connection cables from CSM and due to their compact design, these modules can in most cases be easily installed. However, in order to ensure trouble-free operation, consider the following when selecting the appropriate power supply.

Minimum supply voltage

The minimum power supply voltage is the minimum voltage delivered by a power supply. In an automotive application, this is usually the vehicle's on-board supply system (e.g. "12 V" for passenger cars). Note that this minimum value is required for proper operation of the module. For example, with a 12 V vehicle electrical system this value may drop below the minimum value specified for a measurement module for a short time (a few milliseconds) when starting the engine. During operation, it must be ensured that each measurement module in a measurement chain will be supplied at least with the required minimum supply voltage.[11]

Cable lengths

The resistance of a connection cable causes a voltage drop in the cable. The extent of the voltage drop depends on the length of the cable and the current flowing through it. In a measurement chain, each module must be provided with the required minimum voltage.[11]

	NOTE!
	Depending on the number of measurement modules and the cable lengths in the measurement setup, an intermediate power supply may be required. If the power consumption of the measurement modules connected to the XCP-Gateway requires more power than the existing power supply can provide, this also requires an intermediate power supply.

11 The minimum value specified on the type label of a measurement module is decisive (chapter 6.1 "Type label").

i	The following special cables are available for intermediate power supply: ▸ Cable for intermediate power supply K72 (CAN) ▸ Cable for intermediate power supply K410.1 (ECAT)

Maximum current load of the plug connections.

	NOTE!
	When daisy-chaining modules, you must also ensure that the maximum permissible current load of the connections (plug/socket) is not exceeded. ☞ Ensure that the maximum current load is not exceeded.

Socket	Max. current load
PC/ECAT	2.0 A
CAN/PWR1 and **CAN/PWR2**	2.0 A
PWR IN	6.5 A

Tab. 4-8: Max. current load for plug connections

i	For further technical information on the subject of daisy-chaining measurement modules, please contact our sales department.

Information on the available cables can be found in the corresponding documents.

→ *"ECAT accessories for CAN measurement modules " and "CAN accessories for CSM measurement modules"*

5 Using XCP-Gateway Devices

5.1 Application examples

Fig. 5-1 and Fig. 5-2 show typical examples of measurement setups in which, for one, only ECAT measurement modules are connected to a PC via an XCP-Gateway Basic and, for another, ECAT and CAN measurement modules are connected via an XCP-Gateway pro. Fig. 5-3 shows a measurement setup with an XCP-Gateway 4S pro and four ECAT measurement modules.

5.1.1 Setup with XCP-Gateway Basic and ECAT measurement modules

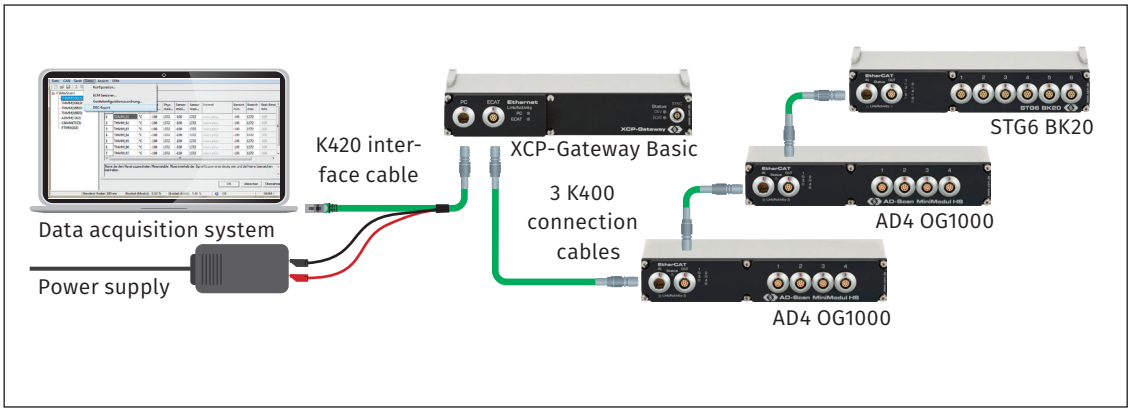


Fig. 5-1: Measurement setup with XCP-Gateway Basic and three ECAT measurement modules

The installation consists of the following components:

- 1 XCP-Gateway Basic protocol converter
- 3 ECAT measurement modules: 2× AD4 OG1000, 1× STG6 BK20
- 1 K420 interface cable with connectors for power supply
- 3 K400 connection cables
- 1 data acquisition system (PC) with CSMconfig configuration software
- 1 power supply

5.1.2 Setup with XCP-Gateway pro, ECAT and CAN measurement modules

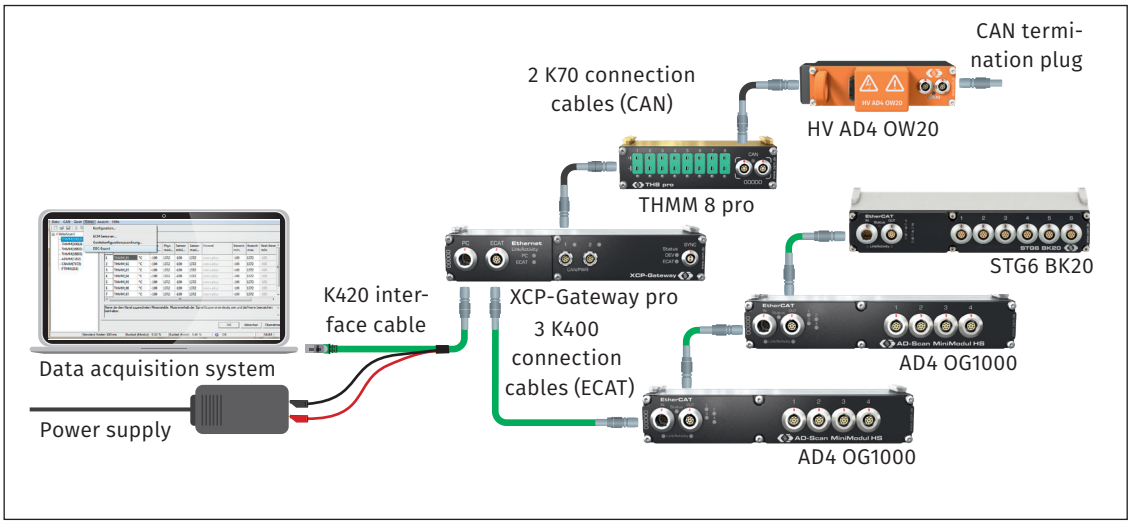


Fig. 5-2: Measurement setup with XCP-Gateway pro and three ECAT and two CAN measurement modules

The installation consists of the following components:

- 1 XCP-Gateway pro protocol converter
- 3 ECAT measurement modules: 2× AD4 OG1000, 1× STG6 BK20
- 2 CAN measurement modules: 1× THMM 8 pro, 1× HV AD4 OW20
- 1 CAN termination plug
- 1 K420 interface cable with connectors for power supply
- 3 K400 connection cables (ECAT)
- 2 K70 connection cables (CAN)
- 1 data acquisition system (PC) with CSMconfig configuration software
- 1 power supply

5.1.3 Setup with XCP-Gateway 4S pro and ECAT measurement modules

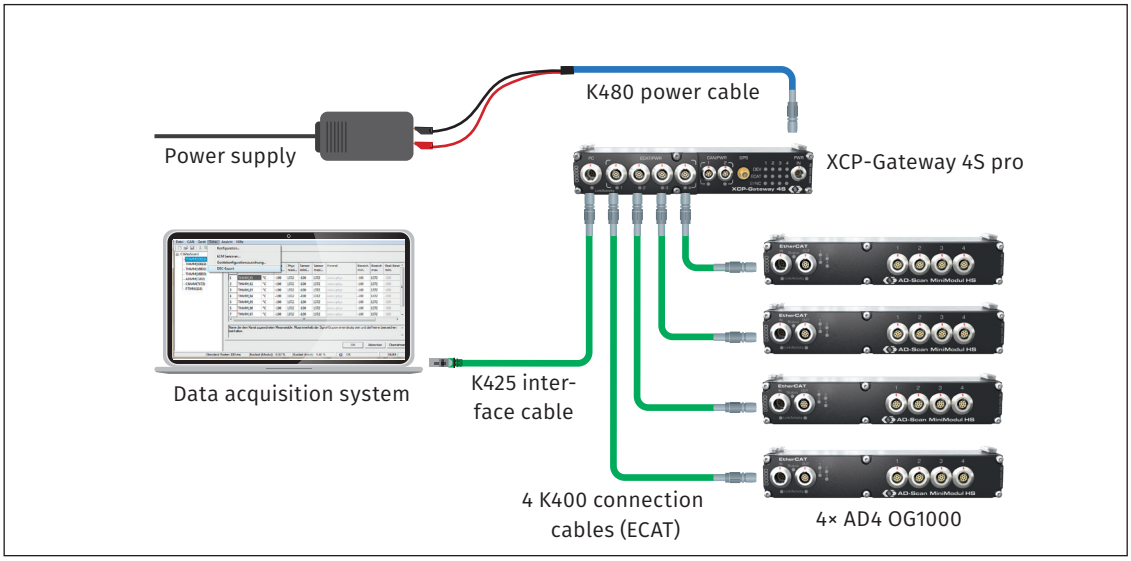


Fig. 5-3: Measurement setup with XCP-Gateway 4S pro and four ECAT measurement modules

The installation consists of the following components:

- 1 XCP-Gateway 4S pro protocol converter
- 4 AD4 OG1000 measurement modules
- 1 K425 interface cable
- 1 K480 power cable
- 4 K400 connection cables (ECAT)
- 1 data acquisition system (PC) with CSMconfig configuration software
- 1 power supply

5.1.4 Connecting the components

XCP-Gateway Basic and pro	XCP-Gateway 4S pro
1. Connect interface cable with the XCP-Gateway.	1. Connect interface cable with the XCP-Gateway.
	2. Connect the power cable with the XCP-Gateway.
2. Daisy-chain the measurement modules and the XCP-Gateway with the connecting cables.	3. Daisy-chain the measurement modules and the XCP-Gateway with the connecting cables.
3. If CAN modules are used: Plug the CAN termination plug into the free CAN socket of the last measurement module.	4. If CAN modules are used: Plug the CAN termination plug into the free CAN socket of the last measurement module.
4. Connect the other end of the interface cable with the PC.	5. Connect the other end of the interface cable with the PC.
5. Connect the banana plugs of the interface cable to the power supply.	6. Connect the power cable to the power supply.

Tab. 5-1: Connecting the components

5.2 CSMconfig user interface

The CSMconfig user interface consists of the following sections:

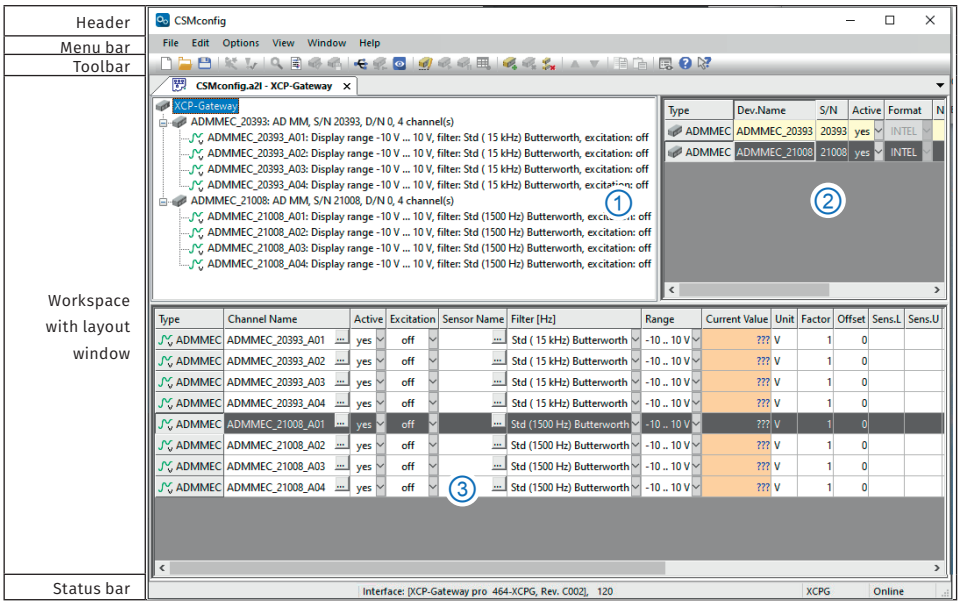


Fig. 5-4: CSMconfig user interface

5.2.1 Header

Clicking the program icon on the left opens the program menu.

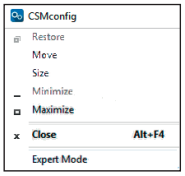


Fig. 5-5: Program menu

In addition to the functions for modifying the position and resizing of the program window, it also contains the option **Expert Mode**.

→ *CSMconfig online help, section "Expert Mode"*

5.2.2 Menu bar

The commands are arranged in the following menus:

Fig. 5-6: Menu bar

→ *CSMconfig online help, section "Menu commands"*

5.2.3 Toolbar

The toolbar contains the most frequently used menu commands. A command is executed by clicking on the corresponding icon.

Fig. 5-7: Toolbar

→ *CSMconfig online help, section "Toolbar"*

5.2.4 Working space

The configuration data is stored in a configuration document. Depending on the bus system, the configuration document is either saved as a DBC file (CAN) or an A2L file (XCP-Gateway/ECAT).

→ *CSMconfig online help, section "Configuration document"*

CSMconfig provides various configuration views to create or process a configuration document:

- **Tree view** (Fig. 5-4, ①)
- **Device list** (Fig. 5-4, ②)
- **Channel list** (Fig. 5-4, ③)

These views are integrated in a higher-level window, the layout window. The **Select view layout** dialog offers a number of layouts with different combinations of configuration views.

☞ Select **Window | Select view layout**.

⇨ The **Select view layout** dialog opens.

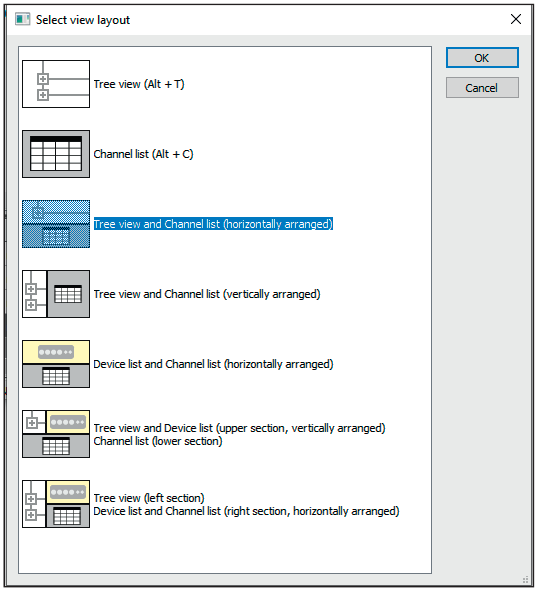


Fig. 5-8: **Select view layout** dialog

☞ Select the matching layout and confirm your choice by clicking on **OK**.

→ *CSMconfig online help, section "Configuration views and layout window"*

5.2.5 Status bar

Fig. 5-9: Status bar

The status bar provides the following information:

- The interface currently connected to the PC or the message "No valid interface selected"
- The bus system of the active configuration.
- The configuration status: "Online" or "Offline"

5.3 Keyboard shortcuts used in CSMconfig

Key combination	Menu command/meaning
Alt + A	Auto Configuration
Alt + Ins	Insert Module
Alt + Del	Delete Module
Alt + F4	Exit
Alt + M	CSMview
Alt + R	Report...
Return	Edit
F1	Help
F11	Resize grid columns
Ctrl + 0 (zero)	Deactivate
Ctrl + 1	Activate
Ctrl + B	Scan Bus
Ctrl + C	Copy
Ctrl + F4	Close
Ctrl + D	Move Down
Ctrl + F6	Next Window (configuration document)
Ctrl + G	Reconfigure all
Ctrl + I	Interface...
Ctrl + K	Check Document
Ctrl + N	New
Ctrl + O	Open
Ctrl + P	Print
Ctrl + R	Read Settings from Device
Ctrl + S	Save
Ctrl + T	Toggle On/Offline
Ctrl + U	Move Up
Ctrl + V	Paste
Ctrl + W	Write Settings to Device
Shift + Ctrl + F6	Previous Window (configuration document)

Tab. 5-2: Shortcuts used in CSMconfig

5.4 XCP-Gateway settings

The XCP-Gateway can be configured for data transfer with customer-specific parameters. The CSMconfig configuration software is used for this purpose.

	NOTE!
	It is recommended always to use the latest version of CSMconfig. Previous versions may not support all module variants and functions. The most current version of CSMconfig can be found in the download area of the CSM website. → See: https://s.csm.de/en-cfg Starting with version 8.8.0, CSMconfig also checks whether there is a new program version during each start-up. If a later version is available, the corresponding download link will be displayed in the dialog.

CANopen over EtherCAT® (CoE) is used as application protocol.

Defining the IP address range and activating ports

	NOTE!
	As CSMconfig accesses the network, the firewall settings may need to be changed. ☞ Ensure that ports 5555 and 5556 are activated for use by CSMconfig.

	NOTE!
	The XCP-Gateway uses a fixed IP address (factory setting: 192.168.100.3). To be able to communicate with the measurement module from the data acquisition software, the IP addresses of the XCP module's network adapter and the PC's (data acquisition system) network adapter need to be within the same address range. A typical IP address (IPv4) for the network adapter of the PC matching the module's factory setting is 192.168.100.1. ☞ Ensure that the IP addresses are in the same address range.

→ Chapter 5.5.3.5 "Communication parameter settings"

Setting the IP address of the network card

	NOTE!
	Extended user rights or administrator rights may be required in order to change the IP address.[12]

Windows 10

☞ Select **Start | Control Panel | Network and Sharing Center**.

⇨ The **Network and Sharing Center** dialog opens.

☞ Select **View your active networks**, then click on the **Wireless Network Connection** entry.

⇨ The **Wireless Network Connection Status** dialog opens.

☞ Click **Properties**.

⇨ The **Wireless Network Connection Properties** dialog opens.

☞ Select the **Internet Protocol Version 4 (TCP/IPv4)** option and click **Properties.**

⇨ The **Internet Protocol Version 4 (TCP/IPv4) Properties** dialog opens.

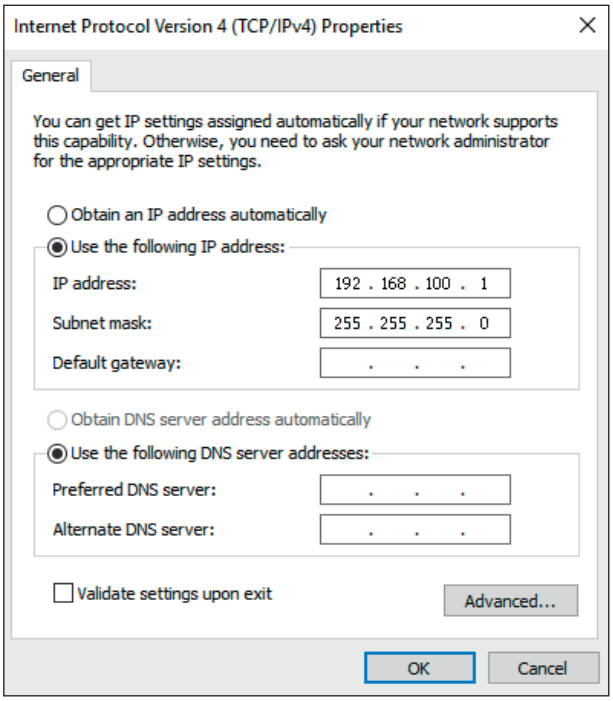


Fig. 5-10: **Internet Protocol Version 4 (TCP/IPv4) Properties** dialog

☞ Enter the required address under **IP address** (in this case: 192.168.100.1).

⇨ The entry in the **Subnet mask** field is filled in automatically.

☞ Click **OK** to finish the process.

12 For information on setting the IP addresses for Vector interfaces, please refer to the CSMconfig online help, section "Connecting and configuring Vector interfaces with CSMconfig".

Windows 11

Select **Start | Settings | Network & Internet**.

⇨ The **Network & Internet** window opens.

☞ Select **Ethernet** from the **Network adapter** list and choose the required Ethernet network.

⇨ The **Ethernet properties** dialog opens.

☞ Select **Internet Protocol, Version 4 (TCP/IPv4)**.

⇨ The **Internet Protocol, Version 4 (TCP/IPv4) Properties** opens (Fig. 5-10).

☞ Specify the required IP-address in the **IP address** field (192.168.100.1).

⇨ The entry in the **Subnet mask** field is filled in automatically.

☞ Click **OK** to finish the process.

5.5 Configuration of XCP-Gateway devices

The following sections contain information on the following topics:

- XCP-Gateway settings
- Creation of a simple configuration with ECAT and CAN measurement modules in CSMconfig

The configuration software CSMconfig is used for the configuration ofXCP-Gateway protocol converters and CSM measurement modules (CAN and ECAT).

In CSMconfig, configurations can be created both *online* and *offline*.

Online configuration

- The measurement modules are linked to the configuration software.
- A configuration can be transferred to a single or to all measurement modules of a measurement chain in CSMconfig immediately after completion.

Offline configuration

- There is no connection between configuration software and measurement chain. The configuration document is created "offline", which means without connection to the measurement chain.
- The configuration is transferred to the measurement chain at a later time:
  - via CSMconfig, after an online connection to the measurement chain has been established
  - by transferring the configuration document to the measurement application on-site

Configuration views

The user can choose from three different views (windows) for configuration: **Tree view**, **Device list** or **Channel list**. As of program version 8.12 these configuration views are integrated in a higher-level window to form configuration layouts.

→ Chapter 5.2.4 "Working space"

The following sections contain the basic steps for a configuration using the **Tree view** window.

5.5.1 Dialogs and windows

i	Which of the views will be displayed during configuration depends on the configuration layout that is specified in the **Select view layout** dialog.

Example

The **Select document type** dialog is displayed by default when a new configuration file is created. Select the file type required for the configuration.

☞ Select the **XCP-On-Ethernet (A2L)** document type for measurement applications using ECAT/XCP measurement modules.

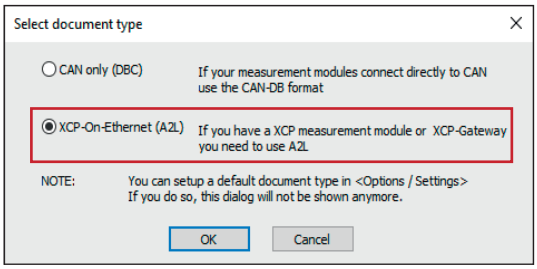


Fig. 5-11: **Select document type** dialog, **XCP-Gateway (A2L)** selected

The settings used to create a new configuration file can also be changed in the **Program Settings** dialog. The **Default document type** option offers the following options for creating configuration files:

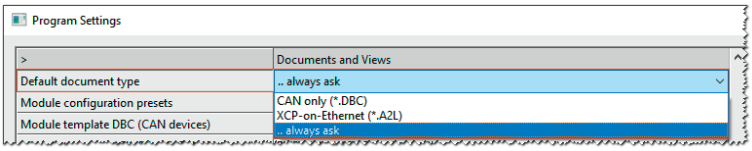


Fig. 5-12: **Program Settings** dialog, options for **Default document type**

- **... always ask** (default): The **Select document type** dialog is used.
- **CAN only (*.DBC)**: When a new configuration file is created, the *.DBC file type is automatically used.
- **XCP-on Ethernet (*.A2L)**: When a new configuration file is created, the *.A2L file type is automatically used.

→ *CSMconfig online help, section "Program settings"*

5.5.2 Offline configuration

The following sections describe the steps for configuration in **offline mode**. The configuration data is stored in a DBC file when configuring CAN measurement modules offline. This configuration file can be transferred to a measurement module at a later time or made available for further use in other tools such as vMeasure CSM, CANape® or INCA.

☞ Start CSMconfig.

⇨ The CSMconfig program window opens.

☞ Select **File | New**.

⇨ The **Select document type** dialog (Fig. 5-22) opens.

☞ For configurations with XCP-Gateway and ECAT measurement modules, select **XCP-Gateway (*.A2L)** and confirm selection with **OK**.

⇨ The Tree view window opens (here **CSMconfig.a2l**).

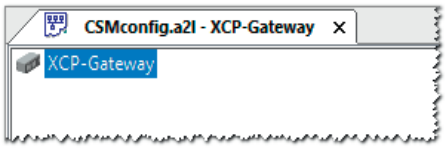


Fig. 5-13: **CSMconfig.a2l** window, **Tree view**

→ Chapter 5.5.3.5 "Communication parameter settings"

☞ Move the mouse pointer to the window and right-click.

⇨ The context menu opens.

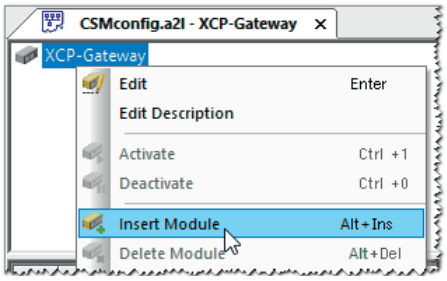


Fig. 5-14: **CSMconfig.a2l** window, **Tree view**, context menu

☞ Select **Insert Module**.

⇨ The **Select device type** dialog opens.

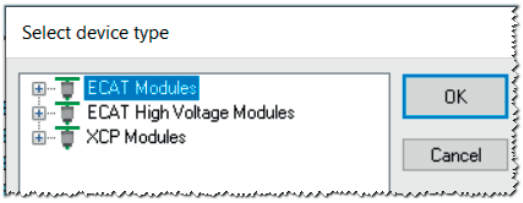


Fig. 5-15: **Select device type** dialog

	NOTE!
	The Select device type dialog is used to select module series, e.g. "AD MM series" (CAN) or "HV AD MM series" (ECAT). However, no specific module variants can be specified, such as "AD4 MC10" or "HV AD4 XW1000". The options displayed in the dialogs for device and channel configuration comply with the highest configuration level of the corresponding module series. When transferring the configuration file to the measurement module, if some of the settings are not compatible, an error message appears indicating the incorrect setting (e.g. measurement data rate too high).

☞ If the desired measurement module is not displayed in the selection window, click the **+** sign in front of the appropriate category.

⇨ The submenu opens.

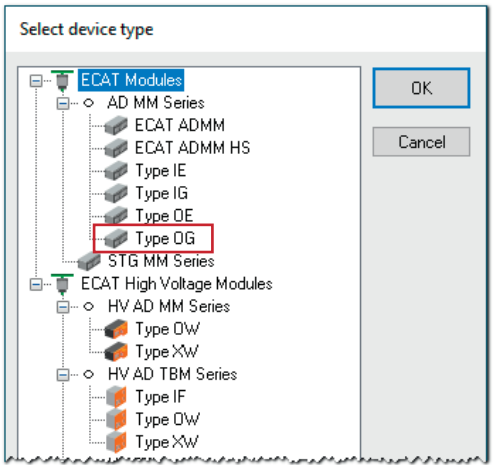


Fig. 5-16: **Select device type** dialog, subentries faded in

☞ Select the module series (e.g. **ECAT modules | AD MM Series | Type OG**) and confirm selection with **OK**.

⇨ The **Device configuration dialog** is displayed.

⇨ The layout window **CSMconfig.a2l** appears in the background.

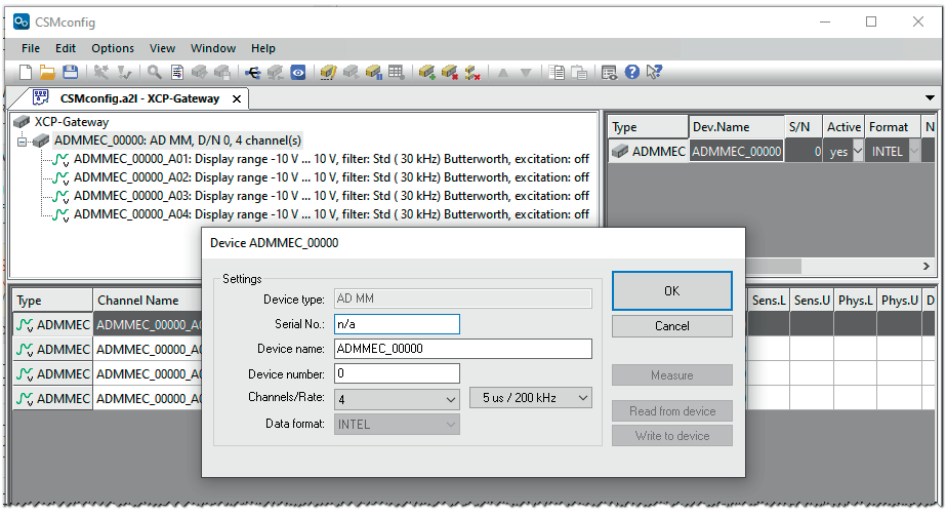


Fig. 5-17: **Device configuration dialog**, **CSMconfig.a2l** window in the background

Notes on the configuration of measurement channels and the measurement module can be found in the online configuration section.

→ Chapter 5.5.3.7 "Measurement channel settings" or chapter 5.5.3.8 "Device settings"

When a connection to the measurement setup has been established, the configuration must still be transferred to the corresponding measurement module.

→ "Transferring configuration data to the measurement module"

5.5.3 Online configuration

5.5.3.1 Preparing configuration

☞ Before starting an online configuration, make sure that:

- ECAT and, if applicable, CAN measurement modules are correctly connected to the XCP-Gateway
- XCP-Gateway and PC are properly connected via a suitable interface
- CSMconfig is installed on the PC

5.5.3.2 Starting CSMconfig

☞ Start CSMconfig.

⇨ The program window opens (the last loaded configuration may be displayed).

☞ If an interface is displayed in the status bar (Fig. 5-18), continue with chapter 5.5.3.4 "Creating a new configuration file".

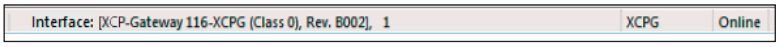


Fig. 5-18: Status bar: "XCP-Gateway" interface

☞ If no interface is displayed in the status bar (Fig. 5-19), continue with chapter 5.5.3.3 "Selecting a communication interface".

Fig. 5-19: Status bar: "No valid interface selected"

5.5.3.3 Selecting a communication interface

The XCP-Gateway was designed as a bus interface, which is why it is listed in the **Interface** dialog. If an XCP-Gateway is not displayed in the status bar after the program has started, the message **No valid interface selected** will be shown instead (Fig. 5-19). This means that a suitable communication interface still has to be selected.

Specific properties of XCP-Gateway 4S pro

As for model version 4S pro, the four ECAT inputs are displayed separately in the **Interface** dialog, with ascending suffix (1-4) after the serial number (Fig. 5-20) The two CAN interfaces are logically assigned to the first ECAT input.

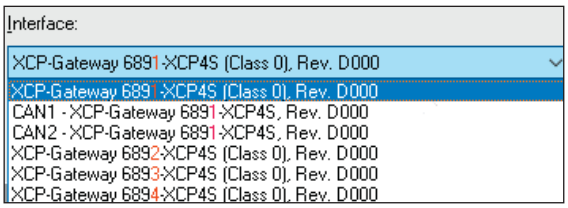


Fig. 5-20: **Interface** selection menu for XCP-Gateway 4S pro

CSMconfig checks the communication interfaces for existing connections after program start. These interfaces are listed in the **Interface** dialog.

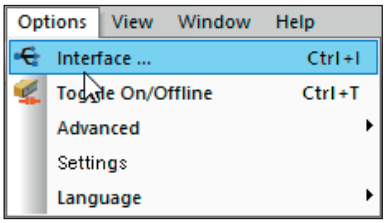


Fig. 5-21: **Options | Interface**

☞ Select **Options | Interface**.

⇨ The **Interface** dialog opens.

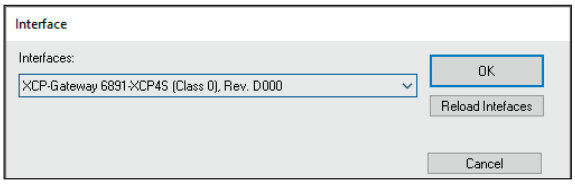


Fig. 5-22: **Interface** dialog

☞ If the required interface is not displayed, click on the arrow ▼ to the right.

⇨ The pull-down menu opens.

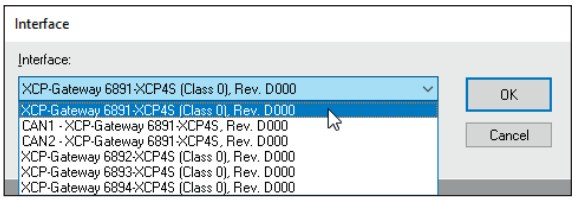


Fig. 5-23: **Interface** dialog, pull-down menu expanded

☞ Select the required interface (XCP-Gateway).

☞ Click on **OK** to confirm the selection.

5.5.3.4 Creating a new configuration file

i	The procedure described in the following section is not required if the configuration is performed using the option **Auto-Configuration**.

→ Chapter 5.5.3.6 "Scan Bus and Auto-Configuration"

☞ Select **File | New.**

⇨ The **Select document type** dialog (Fig. 5-11) opens.

☞ For configurations via an XCP-Gateway, select the **XCP-Gateway (A2L)** option and confirm the selection with **OK.**

⇨ The **CSMconfig.a2l** window opens.

Fig. 5-24: **CSMconfig.a2l** window, **Tree view**

5.5.3.5 Communication parameter settings

The communication parameters used by the data acquisition software to establish the connection to one or more measurement modules via the XCP-Gateway are specified in the **XCP-Gateway Configuration** dialog. Changing these settings is only necessary, if the default settings do not match the settings of the PC used for data acquisition.

The communication between CSMconfig and XCP-Gateway - and thus also the configuration of the measurement modules connected to the XCP-Gateway - can be carried out without any adjustment of these parameters.

☞ Go to the **Tree view** window and double-click on the **XCP-Gateway** entry.

⇨ The **XCP-Gateway Configuration** dialog opens.

In the following example, the XCP-Gateway is connected with a network interface with the following IP settings:

- Class C network, subnet mask 255.255.255.0
- Fixed host IP address: 192.168.100.1

This corresponds to the Windows default settings for network configurations.

- Upon delivery, the IP address 192.168.100.3 (host + 2) is set in the XCP-Gateway.
- The port for XCP communication is 5555 (+ 5556 for broadcast commands).

This IP configuration is used by the XCP-Gateway for measurements.

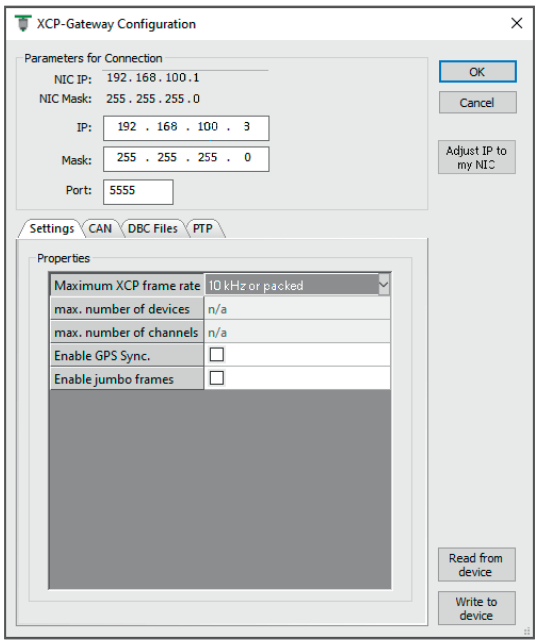


Fig. 5-25: **XCP-Gateway Configuration** dialog, **Settings** tab

Section Parameters for Connection

- **NIC IP**: IP address of the network card to which the XCP-Gateway is connected.
- **NIC mask**: By default, the NIC mask is set to 255.255.255.0 (class C).
- **IP**: Input field for the IP address of the XCP-Gateway. The address 192.168.100.3 (host + 2) is assigned by default. If several XCP-Gateways are connected to one port via switch, it has to be made sure that the default address is only used once, i.e. only by one XCP-Gateway.
- **Mask**: By default, the subnet mask is set to 255.255.255.0 (class C).
- **Port**: The default setting for communication via XCP is port 5555.

Adapting the IP address to a network card (Network Interface Card, NIC)

- If measurement are performed with a different PC/NIC, the XCP-Gateway connection parameters has to match the network settings on the other machine.
- If PC and network adapter card are used for both configuration and measurements, the IP addresses of the network adapter and the XCP-Gateway must be in the same address range (green markers), but they must not be identical (blue markers). If necessary, the IP address can be adjusted clicking the button **Adjust IP to my NIC**. The IP address is automatically adjusted to the IP address of the network adapter. A manual modification of the **IP address** entry is not required.

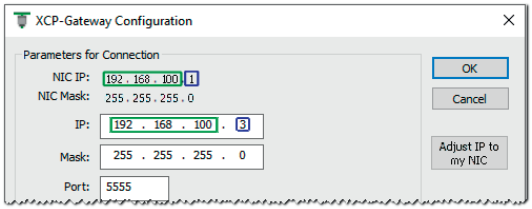


Fig. 5-26: **Adjust IP to my NIC** command

☞ Click **Adjust IP to my NIC** to adjust the IP address to the network adapter.

⇨ The IP address is adjusted and displayed in the **IP** field.

☞ Click on **Write to device** to transfer the settings to the XCP-Gateway.

The parameters of the network card to which the XCP-Gateway is connected are read. This is the data displayed in the **Properties** section of the **Settings** tab. If no XCP-Gateway is connected, the settings of the previous configuration or the default settings are used.

Tabs

The **XCP-Gateway Configuration** dialog contains additional setting options which are grouped in up to five tabs. Their functions and options are described in the following sections.

Settings tab

- **Maximum XCP frame rate**: This selection menu includes two data acquisition options via XCP:
  - **2 kHz**: for low sampling rates (≥ 500 µs) and a larger number of measurement channels. The lower frame rate of 2 kHz allows a larger number of measurement channels (up to 600 channels and 100 measurement modules per XCP-Gateway). If this option is selected, the sampling rate of the connected measurement module may not exceed 2 kHz.
    → Rate ≥ 500 µs, max. 100 devices, 600 channels
  - **10 kHz or packed**: for high sampling rates (< 500 µs to 1 µs) and a low(er) number of measurement channels. The higher frame rate of 10 kHz allows up to 150 channels and 25 measurement modules per XCP-Gateway. With sampling rates over 10 kHz (i.e. when the sampling rate is higher than the frame rate), the XCP-Gateway automatically switches to "packed" mode. The higher the sampling rate – up to 4 MHz is possible, depending on the measurement module – the lower the number of channels and measurement modules which can be operated on the gateway.
    → Max. 25 devices, 150 channels, "packed" mode for rates under 100 µs
- **max. number of devices**: max. number of ECAT devices that can be connected to this device
- **max. number of channels**: maximum number of measurement channels which can be assigned to this device
- **Enable GPS Sync.**: Synchronization via GPS enabled/disabled
  → "Licensing tab"
- **Enable jumbo frames**: By using jumbo frames, transmission capacities can be optimized and the data transmission rate in the network can be increased.

Licensing tab

This tab is used to load/write license data from/to an XCP-Gateway. The license options available for the currently connected XCP-Gateway are listed in the **Licensing Information** section. An overview of the options available depending on the module version, can be found in chapter 6.

→ Chapter 6.2 "Licence options"

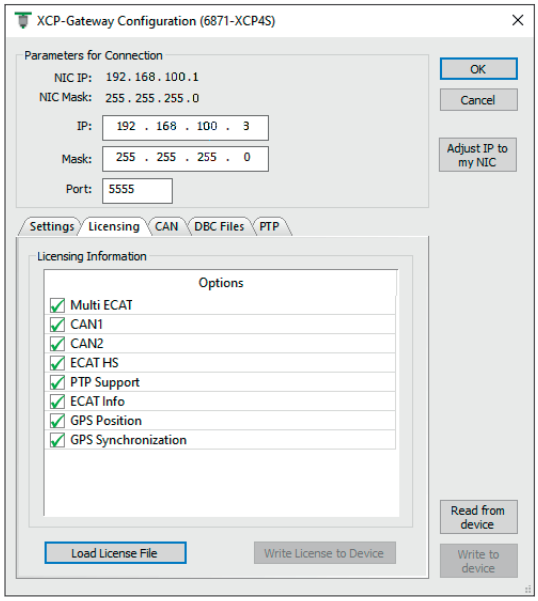


Fig. 5-27: **XCP-Gateway Configuration** dialog, **Licensing** tab

The "Options" pane displays the license optionsn of the currently loaded license.[13]

- **Vector Sync**:[14] The Sync output is enabled/disabled.
- **Multi ECAT**: If this option is enabled, the ECAT interface can handle more than one device.
- **CAN1**: CAN1 interface is enabled/disabled.
- **CAN2**: CAN2 interface is enabled/disabled.
- **ECAT HS**: If this option is enabled, high-speed ECAT modules can be used with measurement data rates > 10 kHz.
- **PTP support**: If this option is enabled, the XCP-Gateway can synchronize its clock time with a PTP master (IEEE 1588). This function is configured using the "PTP tab".
- **ECAT Info:** If this option is enabled, the XCP-Gateway pro (and 4S pro) transmit the shunt temperature and the internal temperature of HV Breakout Modules (on the ECAT side) and CSMconfig writes these temperature signals to the A2L file.
- **CSM PAK AddOn**: If this option is enabled, the XCP-Gateway can be used in combination with CSM PAK AddOn.
- **GPS Position:**[15] If this option is enabled, the XCP-Gateway 4S pro transmits the location data to the DAQ tool. CSMconfig writes the location data signals to the A2L file.
- **GPS Synchronization:**[15] If this option is enabled, the time can be synchronized by the UTC time signal received via GPS.

13 Fig. 5-27 shows the licence options for module version 4S pro.
14 Only available for the module versions Basic and pro.
15 Only available for module version 4S pro.

Buttons

- **Load license file** calls up the **Open** dialog, with which a license file (*.lic) can be selected and loaded.
- **Write license to device** saves the license information to the XCP-Gateway.

CAN tab

This tab contains setting options for the CAN interfaces **CAN1** and **CAN2**.

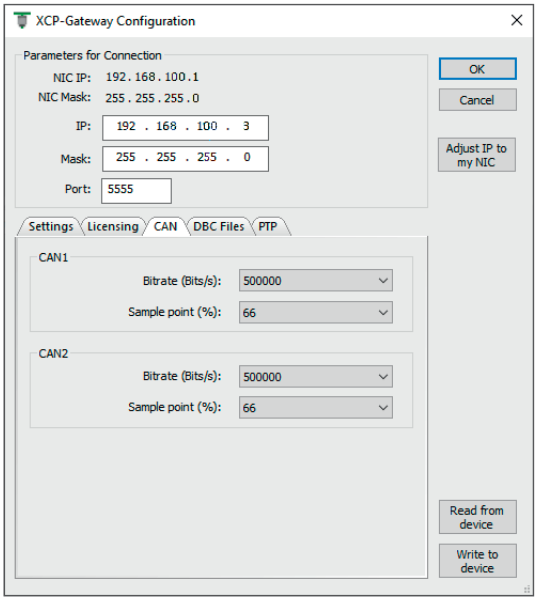


Fig. 5-28: **XCP-Gateway Configuration** dialog, **CAN** tab

- **Bitrate (Bit/s)**: The bitrate specifies how many bits per second (bit/s) are transferred on the CAN bus (from 83,333 bit/s to 1,000,000 bit/s).
- **Sample point (%)**: This option provides the means to specify the time at which a bit is read (sampled) in order to determine the logical state.

Changing the CAN settings in the **XCP-Gateway Configuration** dialog first only affects the gateway itself, but not the measurement modules connected via the CAN interfaces.

DBC Files tab

	NOTE!
	Using CAN measurement modules connected to the interfaces **CAN1** and **CAN2** ▸ CAN measurement modules connected via **CAN1** and **CAN2** receive their supply voltage via the XCP-Gateway. ▸ The following cable is available for intermediate supply via CAN interfaces: ▸ K72 intermediate supply cable (CAN) ▸ Never use other cables or do-it-yourself solutions for an intermediate supply – risk of short circuits! ▸ The CAN interface of an XCP-Gateway is connected via a 120 Ω resistor. An additional terminating resistor is thus only necessary at the end of a measurement chain. Using additional terminating resistors may cause problems. ▸ CAN measurement modules can only be operated at a maximum sampling rate of 1 kHz per channel. ▸ CAN bit rates from 125 Kbit/s to max. 1 Mbit/s can be used. ▸ ECM modules (LambdaCANc; NOxCAN), supported in CSMconfig can only be configured via the CAN interface of the XCP-Gateway. Measurement operation is not possible, as these modules send 32-bit signals. The only exception is the LambdaCANc when operated in 16-bit mode. ▸ External DBC files cannot be used on the CAN interfaces of the XCP-Gateway. Only those measurement modules which can also be found and configured in CSMconfig are supported.

The **DBC Files** tab provides the following options for CAN measurement modules connected via the **CAN1** or **CAN2** interface of the XCP-Gateway:

- Creating and editing DBC files (CAN-specific configuration document)
- Integration of a DBC file into an A2L file (ECAT-specific configuration document)

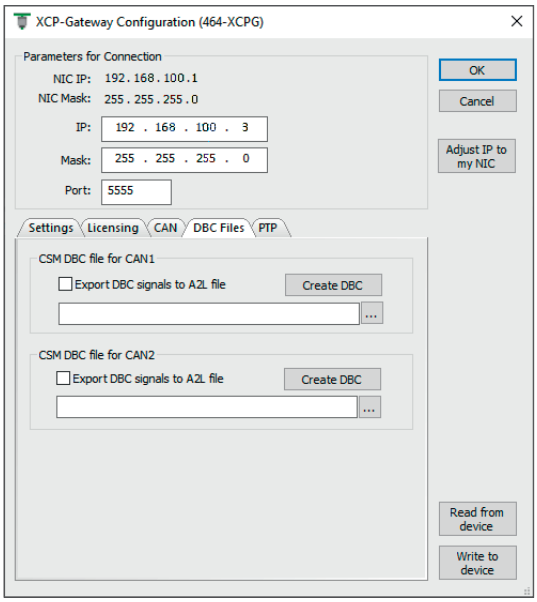


Fig. 5-29: **XCP-Gateway Configuration** dialog, **DBC Files** tab

a) Creating a new DBC file

Option 1: An XCP-Gateway is connected.

☞ Click **Create DBC file**.

⇨ The **XCP-Gateway: Create DBC document** dialog opens.

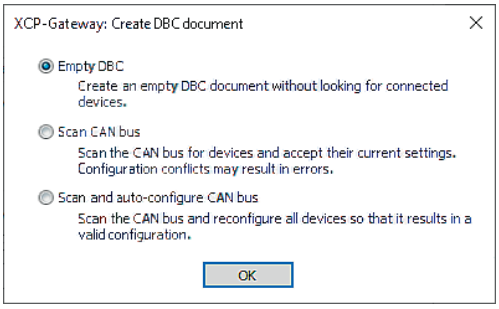


Fig. 5-30: **XCP-Gateway Create DBC document** dialog

- **Empty DBC:** An empty DBC file is created. Whether or not measurement modules are connected to the bus is not determined. The file can be called up and filled at a later time using the **Scan bus** command. Alternatively, measurement modules can also be inserted into the configuration document manually by using the **Insert** command.
- **Scan CAN Bus:** The CAN bus is searched for connected hardware. The configuration settings of the detected measurement modules are adopted unmodified. Should conflicts arise between the measurement modules (e.g. ID conflicts), faulty configurations may be the result.
- **Scan and auto-configure CAN bus:** The CAN bus is scanned for connected measurement modules. If required, the settings of detected measurement modules will be adjusted in order to create a valid configuration. This function corresponds to the **Auto-Configuration** command.

Option 2: No XCP-Gateway connected.

If **Create DBC** is executed and no XCP-Gateway is available, an empty DBC file will be automatically generated.

☞ Click on **Create DBC**.

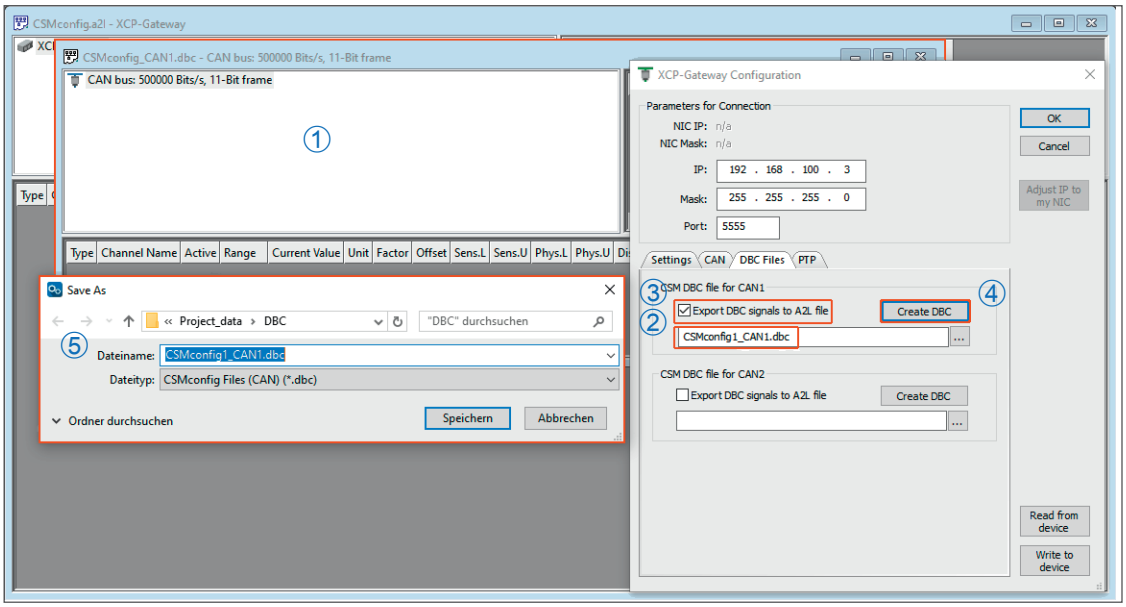


Fig. 5-31: Configuration window with XCP-Gateway (offline): Creating a DBC file

- ⇨ An empty DBC configuration window opens ①.
- ⇨ The name of the new DBC file is shown in the field below the **Create DBC** button ②.
- ⇨ The **Import DBC signals to A2L file** check box is enabled ③. This causes the newly generated DBC file to be integrated into the A2L file when it is saved.
- ⇨ The button text changes into **Open DBC** ④. If necessary, the DBC file of an open/active configuration can be opened and edited by using this button.
- ⇨ The **Save As** dialog opens ⑤.

☞ Save the new DBC file.

	NOTE!
	A newly created DBC file is indicated as an **additional configuration document** in the configuration. This DBC file is integrated into the A2L file when the latter file is saved. Changes to the DBC or A2L file must **always be saved**. Both configuration documents can be edited as usual. Always select the corresponding file (A2L or DBC file) in a configuration for this.

b) Measurement configuration (A2L with integrated DBC file)

☞ Open the A2L file of the configuration.

- ⇨ The following window opens:

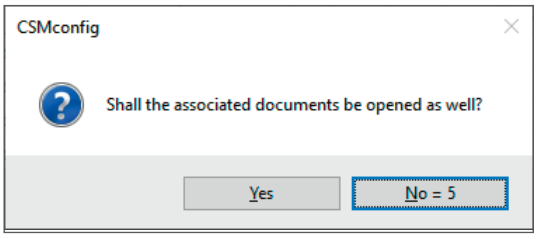


Fig. 5-32: Prompt: Open associated documents?

☞ Click **Yes** to open the linked DBC file.

- ⇨ The DBC file opens.

Information on how to edit of measurement channels and measurement modules can be found in the corresponding chapters.

→ Chapter 5.5.3.7 "Measurement channel settings" and chapter 5.5.3.8 "Device settings"

PTP tab

An XCP-Gateway can function as the PTP slave device as per IEEE 1588. The corresponding configuration is made using CSMconfig.

The tab is only available in the dialog if the following conditions are met:

- XCP-Gateway rev. C or later
- The **PTP support** option is available in the XCP-Gateway ("Licensing tab").
- The "XCP 1.3" or higher option is set under **XCP Compatibility** in the **Program Settings** dialog of CSMconfig.

The PTP master (master clock) is always a separate device in the measurement setup. It can have its own configuration parameters and its own configuration interface.

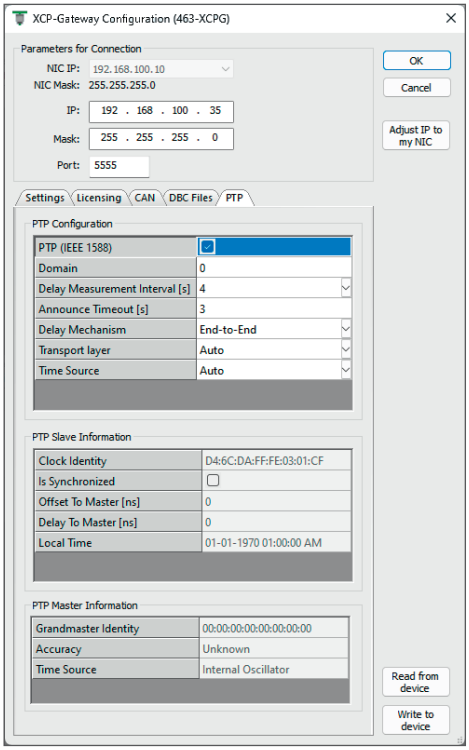


Fig. 5-33: **XCP-Gateway Configuration** dialog, **PTP** tab

PTP Configuration

- **PTP (IEEE 1588)**: enables or disables the PTP function (**P**recision **T**ime **P**rotocol).
- **Domain:** The domain of the PTP master must match that of the slave (XCP-Gateway), as otherwise time synchronization will not work.
- **Delay Measurement Interval [s]:** Specifies the intervals at which the XCP-Gateway recalculates the (average) network runtime for the master. The runtime measurement interval should be matched to the synchronization interval of the master (≥ the synchronization interval).
- **Announce Timeout [s]:** Specifies the time within which the XCP-Gateway expects an announce message from the PTP master. Following this, synchronization with the master is considered to be lost. Instead of this, the XCP-Gateway uses its own internal clock until a new master is found. According to the standard, the announce timeout message should be set to ≥ 3× the announce message interval of the master.
- **Delay Mechanism:**
  - **End-to-End**
  - **Peer-to-Peer**

- **Transport Layer**: Three options are available for synchronizing the XCP-Gateway with a PTP master. Depending on the setting, the communication level between the XCP-Gateway and the PTP master will be established.
  - **Auto** (default)
  - **Ethernet** (Layer 2)
  - **IPv4** (Layer 3)
- **Time Source:**
  - **Auto** (default): The time specifications of the PTP master are accepted and passed on.
  - **TAI/UTC**: The time specifications of the PTP master are interpreted as "TAI/UTC" time standard.

PTP Slave Information

- **Clock Identity**: The identification number (UUID) of the XCP-Gateway
- **Is Synchronized:** This option is activated if synchronization with a PTP master is currently in effect.
- **Offset To Master [ns]:** The current time offset to the master
- **Runtime To Master [ns]:** The current network runtime to the master
- **Local Time:** The gateway's time, i.e. the time assigned to the measured values in the form of time stamps.

PTP master information

- **Grandmaster Identity:** The identification number (UUID) of the reference time source device
- **Accuracy:** Estimated precision of the reference time source (grandmaster). Parameter for the best master clock algorithm as per IEEE 1588.
- **Time Source:** Time source from which the local clock obtains its time information, e.g. GPS, NTP etc.

	NOTE!
	If settings were changed on one or more tabs, they have to be saved to the XCP-Gateway. ☞ Click **Save to device** to write the changed settings to the XCP-Gateway.

5.5.3.6 Scan Bus and Auto-Configuration

Check which measurement modules are connected to the bus. You can do this by using the commands **Scan Bus** and **Auto-Configuration**.

Measurement modules connected to the bus can be identified and the stored configurations can be read out using both functions. In addition to pure module recognition, **Auto-Configuration** can also resolve any existing conflicts (e.g. CAN-ID conflicts or conflicts during name assignment). However, an automatic channel configuration in its actual sense (e.g. setting the measurement range) is not performed.

i	To create an initial configuration with multiple new **CAN measurement modules**, CSM recommends using **Auto-Configuration** because all new measurement modules are set to the same CAN ID.

Scan Bus

Scan Bus searches the bus for connected measurement modules. The configuration data is summarized in order to be finally saved in a configuration document.

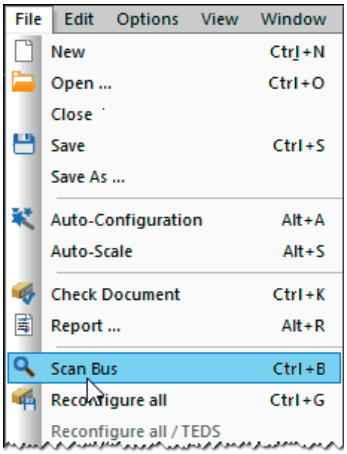


Fig. 5-34: **File | Scan Bus**

☞ Select **File | Scan Bus**.

⇨ The bus is checked for connected measurement modules.

⇨ Detected measurement modules are listed below the bus level.

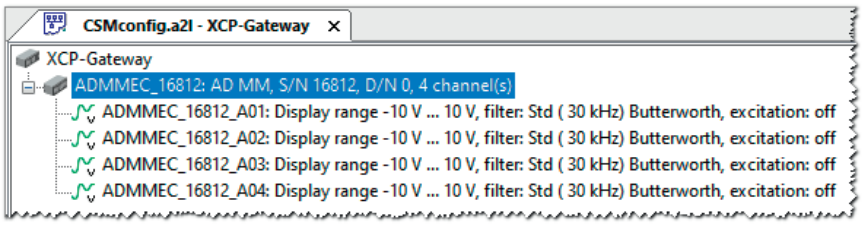


Fig. 5-35: **CSMconfig.a2l** window, **Tree view**, detected measurement modules

Auto-Configuration

Like **Scan Bus**, the **Auto-Configuration** function checks the bus for connected measurement modules. With **Auto-Configuration**, possible conflicts (e.g. CAN-ID conflicts or conflicts during naming) are also detected and resolved.

If **Auto-Configuration** is used, a configuration file will be automatically created, so there is no need to create a new configuration file manually beforehand. Upon process completion, the new configuration file needs to be named accordingly and stored in the required folder.

→ Chapter 5.5.3.9 "Saving a configuration"

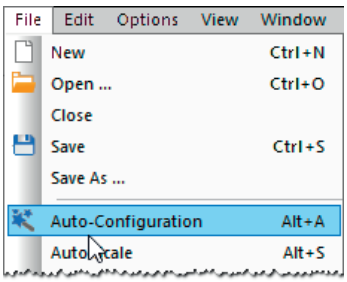


Fig. 5-36: **File | Auto-Configuration**

☞ Select **File | Auto-Configuration.**

⇨ The bus will be scanned for measurement modules and possibly existing conflicts.

⇨ The **Autoconfig** window opens.

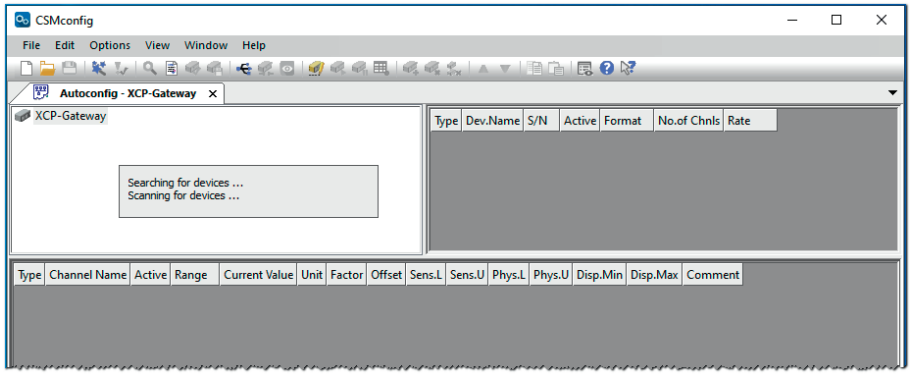


Fig. 5-37: **Autoconfig** window, "Searching for devices .../Scanning for devices .../"

⇨ **Auto-Configuration** is executed, the message "Searching for devices .../ Scanning for devices ..." is displayed.

⇨ When the process is complete, the following windows are displayed:

- **Autoconfig**: the connected measurement modules are displayed.

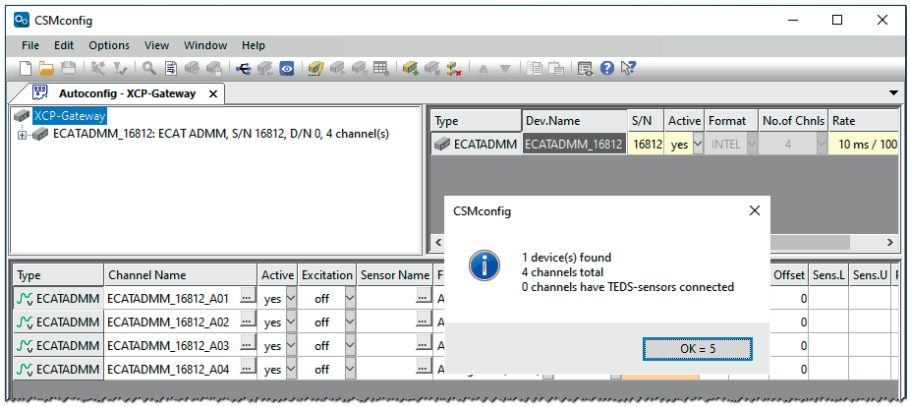


Fig. 5-38: **Auto-Configuration** is executed

- In another window, a message appears indicating how many measurement modules and channels have been detected. It is also indicated whether and, if so, how many TEDS sensors are connected.[16]

16 The TEDS information is only available if the TEDS mode option in the Program Settings dialog is set to "Automatic".

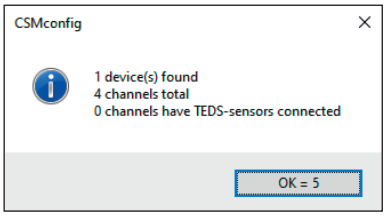


Fig. 5-39: Message window after **Auto-Configuration** has been completed

The **OK** button features an automatic counter counting from "5" to "0". The window closes automatically as soon as the counter has reached "0". The window can be closed immediately by clicking on **OK**.

→ Chapter 5.5.3.9 "Saving a configuration"

5.5.3.7 Measurement channel settings

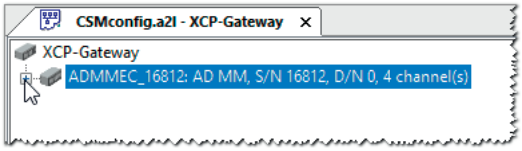


Fig. 5-40: **CSMconfig.a2l** window, **Tree view**, channel list faded out

☞ If the list of measurement channels is not displayed, click on the **+** symbol to the left to open the directory tree.

⇨ The list of measurement channels opens.

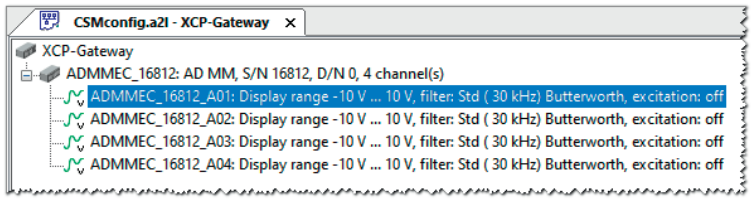


Fig. 5-41: **CSMconfig.a2l** window, **Tree view**, channel list faded in

☞ Double-click on the selected channel entry.

⇨ The **Channel configuration dialog** opens.

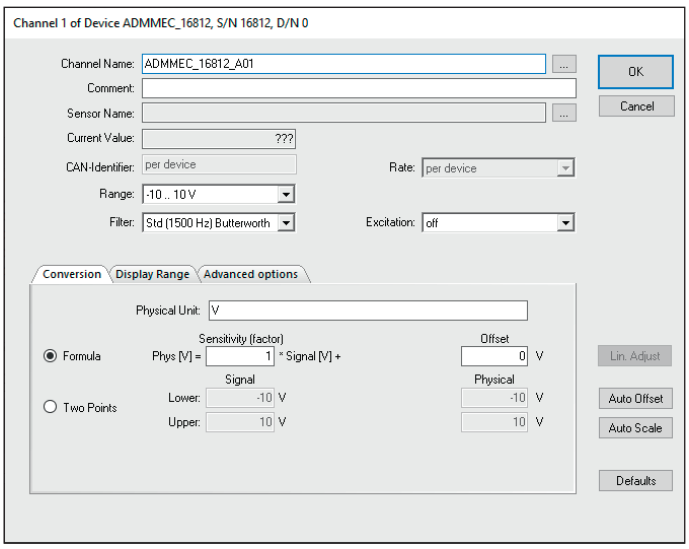


Fig. 5-42: **Channel configuration dialog** (AD4 ECAT MM series)

Which setting options are available in this dialog depends on the particular type of module. Detailed information on this can be found in the user guide of the corresponding ECAT or CAN measurement module (chapter 5, "Channel configuration options" table).

i	Further information can be found in the CSMconfig online help.

☞ Make the required setting.

☞ Click on **OK** to close the dialog.

☞ To configure the other measurement channels, proceed as described above.

5.5.3.8 Device settings

The device-specific options in the **Settings** section of the **Device configuration dialog** are largely identical for ECAT and CAN measurement modules. For CAN measurement modules, the dialog also provides a **CAN** section, whose options are the same for almost all CAN measurement modules. For the following measurement modules, the dialog differs from the standard version:

CAN

- TH and PT measurement modules
- HV Breakout Modules
- CSMpressure
- Measurement modules from third-party manufacturers which can be operated on CSMconfig

ECAT

- HV Breakout Modules

→ *CSMconfig online help and the documentation of the corresponding measurement module for further information.*

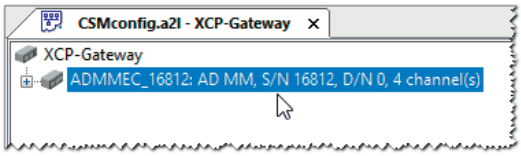


Fig. 5-43: **CSMconfig.a2l** window, **Tree view**, module selected

☞ Double-click on the device entry.

⇨ The **Device configuration dialog** is displayed.

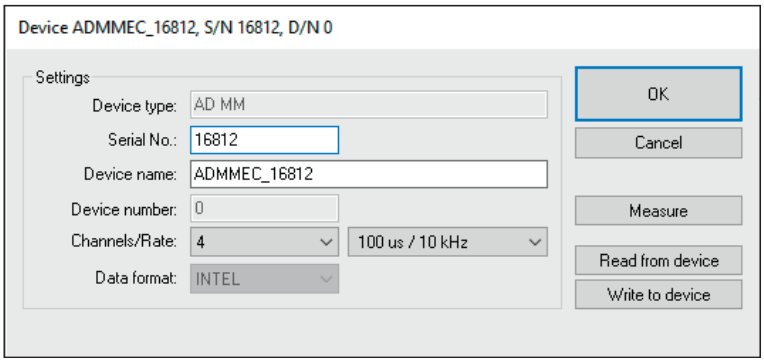


Fig. 5-44: **Device configuration dialog** (AD4 ECAT MM series)

Settings section

With an online configuration, after executing **Scan Bus** or **Auto-Configuration** the device type is displayed in the **Device type** field and the serial number is displayed in the **Serial No.** field.

In an offline configuration, the **Device type** is displayed as selected in the **Select device type** dialog (Fig. 5-15). The serial number of the measurement device for which the configuration is created must be entered manually in the **Serial No.** field.

A default name is displayed under **Device name** consisting of the name of the device type and the serial number. Alternatively, an individual, user-defined name can be entered.

The following conditions/limitations must be observed when assigning names:

- The maximum length of the name is 24 characters.
- Allowed characters: [a...z], [A...Z], [0...9] and [_].
- The name must start with a letter or [_].
- The name must be unique. It may only be used once per configuration file.

If the default name remains unchanged, it will be automatically modified as soon as the serial number is changed. The name entered in this field is also used as a component for the channel designation (see Fig. 5-42).

The **Device number** field is provided for entering a device number. The use of this number is not mandatory. This option is not available with ECAT measurement modules. The input field is thus greyed out.

The number of available measurement channels is specified in the **Channels** selection menu.

The selection menu **Rate** is used to set the measurement data rate valid for all measurement channels.

The selection menu **Data format** (right) provides two formats for the transmission of CAN messages (no function and greyed out for ECAT measurement modules):

- INTEL (LSB first, Little Endian)
- MOTOROLA (MSB first, Big Endian)

CAN section

This dialog section is only available for CAN measurement modules.

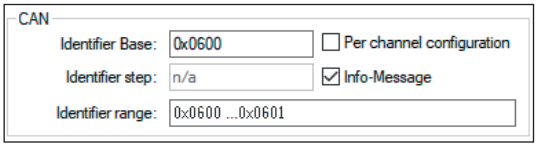


Fig. 5-45: **Device configuration dialog**, **CAN** section

The start identifier is displayed in the **Identifier Base** field. The initial value displayed here depends on the settings made in the **Program Settings** dialog in section **CAN: Identifier base**. If required (e.g. in case of a CAN-ID conflict), this value can be modified accordingly.

For measurement modules of the MiniModule series, the **Identifier step** field has no function. The field is greyed out and the value "n/a" is displayed.

The range of the CAN identifiers used is displayed in the **Identifier range** field.

By default, CAN identifiers and transmission rate are specified per device. The option **Per channel configuration** enables CAN identifier and transmission rate to be set individually for each channel. If enabled, the pull-down menu **Rate** and the **Identifier base** field will be disabled. Both options can then be set for each channel in the **Channel configuration dialog**. A list of the measurement modules supporting this functionality can be found in the online help.

→ *CSMconfig online help, section "Set CAN ID and Send Rate per Channel"*

Info Message provides the means to send signals with additional data in a separate message. These signals contain information on the device type, device status, software version, serial number and the internal temperature of the measurement module. If Info message is enabled, another CAN identifier is required.

Example: If "4" has been set in the **Channels** pull-down menu (e.g. for an ADMM module), the **Identifier range** consists of one CAN identifier (e. g. "`0x0600`"). If **Info-Message** is enabled in addition, another CAN identifier will be added to the Identifier range ("`0x0600` ... `0x0601`") (Fig. 5-45).

i	With an XCP-Gateway pro, certain status information of the connected measurement modules not only can be recorded over CAN, but over ECAT as well, e.g. the temperature measurement values of HV Breakout Modules.

i	Normally, **info messages** cannot be sent if **Per channel configuration** is enabled. However, some modules provide the option to use **Info-Message** and **Per channel configuration** simultaneously if the required firmware is installed. A list of the measurement modules supporting this functionality can be found in the online help. → *CSMconfig online help, section "Set CAN ID and Send Rate per Channel"*

Buttons

- **Read from device** reads the configuration from a measurement module. The firmware version and the hardware revision number are also taken into account.
- **Write to device** writes a configuration to a measurement module.

→ *CSMconfig online help, section "Device Configuration Dialog"*

Transferring configuration data to the measurement module

Once the channels and measurement modules are configured, the data has to be transferred to the measurement module.

	NOTE!
	This step is required for both offline and online configurations.

☞ Click on the **Write to device** button.

⇨ The following safety prompt is displayed:

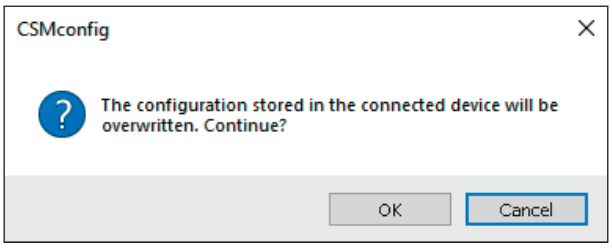


Fig. 5-46: Safety prompt before overwriting the old configuration

☞ Click **OK** to write the configuration to the device.

⇨ A message indicates the successful reconfiguration of the measurement module.

or

☞ Click **Cancel** to keep the old configuration.

Check measured values

Finally, the **Measure** function in the **Device configuration dialog** provides the means to check the plausibility of measurements.

☞ Click on the **Measure** button (Fig. 5-44).

⇨ The **Measurement Values** window opens.

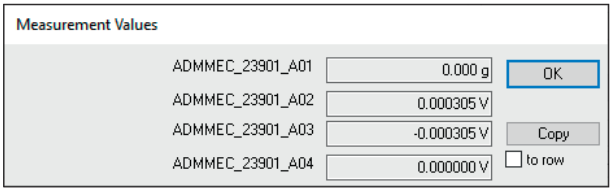


Fig. 5-47: **Measurement Values** window

☞ Click **OK** to close the **Measurement Values** window.

☞ Click **OK** to close the **Device configuration dialog**.

5.5.3.9 Saving a configuration

The configuration must then be saved in an A2L file. The default path for storing configuration files refers to the CSMconfig installation directory. If user rights are restricted, the program prompts the user to save the file in the corresponding user directory.

Changing the path for file storage

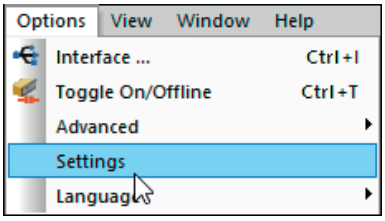


Fig. 5-48: **Options | Settings**

☞ Select **Options | Settings.**

⇨ The **Program Settings** dialog opens.

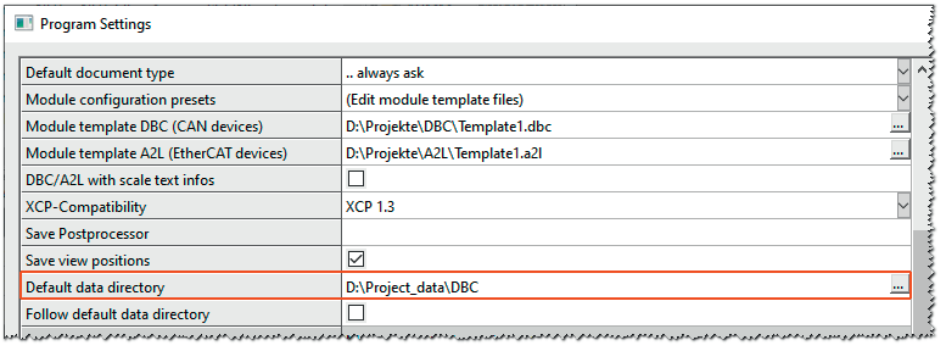


Fig. 5-49: **Program Settings** dialog, option **Default data directory**

☞ Enter the new path in the **Default data directory** field.

☞ Click on **OK** to close the **Program Settings** dialog.

i	If the option **Follow default data directory** is enabled, CSMconfig always sets the path that the user last used for storing a DBC or A2L file in the **Default data directory** path.

Saving a configuration document

A2L file

☞ Select **File | Save**.

⇨ The **Save As** dialog opens.

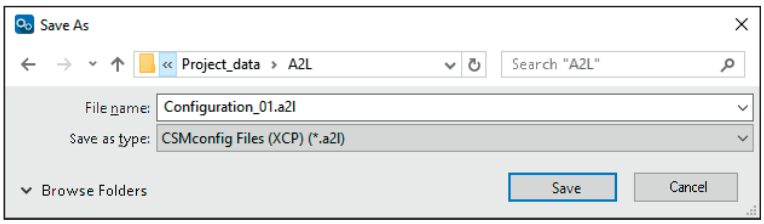


Fig. 5-50: **Save As** dialog

NOTE!	
	The **Save as** dialog opens only when a configuration file is saved for the first time with the **Save** menu command. For all further saving operations using **Save**, the existing configuration file is overwritten. If a configuration file is to be saved under a different name or in a different folder, the **Save as...** menu command must be used.

☞ Select a directory, enter the desired name in the **File name** field and confirm with **Save**.

⇨ The configuration file with the file extension `*.a2l` is saved in the current folder.

⇨ The name of the newly created configuration file appears in the header of the **Tree view** window (here: `Configuration_01.a2l`).

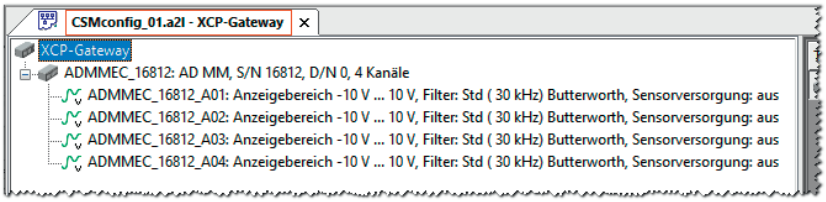


Fig. 5-51: New file name in header: **Configuration_01.a2l**

DBC file(s)

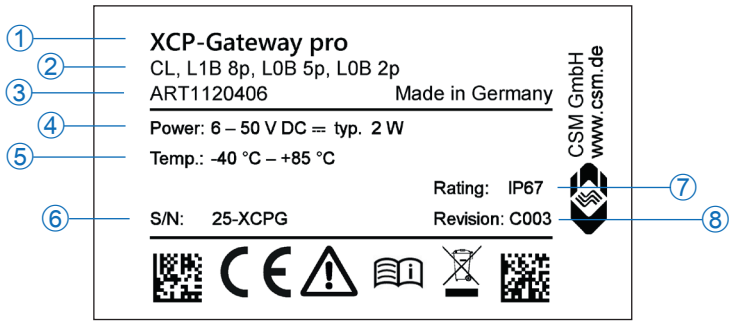
CAN measurement modules which are integrated into the measurement setup by using the interfaces **CAN1** and **CAN2** are handled in the "DBC Files tab" in the **XCP-Gateway Configuration** dialog.

→ DBC Files tab, section "a) Creating a new DBC file"

6 Maintenance and Cleaning

6.1 Type label

The type label contains the following technical data:



①	XCP-Gateway pro	Device type
②	CL, L1B 8p, L0B 5p, L0B 2p	Device details: ▸ CL - type of housing: Case Large ▸ L1B 8p – **PC/ECAT** sockets: LEMO 1 B, 8-pole ▸ L0B 5p – **CAN/PWR** sockets: LEMO 0B, 5-pole ▸ L0B 2p – **Sync** socket: LEMO 0B, 2-pole
③	ART1120406	Part number of the measurement module
④	Power: 6 - 50 V DC, typ. 2 W	Power supply range, typical power consumption
⑤	Temp.: -40 °C – +85 °C	Operating temperature range
⑥	S/N: 25-XCPG	Measurement module serial number
⑦	Rating: IP67	Protection class
⑧	Revision: C003	Hardware revision number

Tab. 6-1: Type label

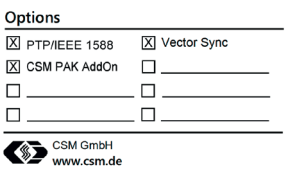
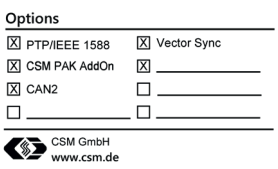
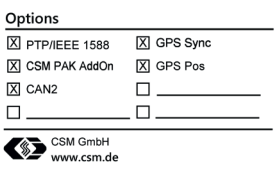
6.2 Licence options

Various license options are available for the device versions Basic, pro and 4S pro. Tab. 6-2 provides an overview on which license option is available for which module version.

Licence options	Basic	pro	4S pro
CAN1	–	default	default
CAN2	–	optional	optional
CSM PAK AddOn	optional	optional	optional
ECAT HS	default	default	default
ECAT Info	–	default	default
GPS Position	–	–	optional
GPS Sync	–	–	optional
Multi-ECAT	default	default	default
PTP/IEEE 1588	optional	default	default
Vector Sync	optional	optional	–

Tab. 6-2: Licence options

The licence label on the rear side of the housing also shows which licence options are available and which ones can be added with a licence extension (Fig. 3-3).

Basic	pro	4S pro
		
The options **PTP/IEEE1588** and **CSM PAK AddOn** and **Vector Sync** can be added via license extension.	The options **CSM PAK AddOn**, **CAN2** and **Vector Sync** can be added via license extension.	The options **CSM PAK AddOn**, **CAN2**, **GPS Sync** and **GPS Pos** can be added via license extension.

Tab. 6-3: Licence label

→ Chapter 5.5.3.4 "Creating a new configuration file", section "Licensing tab"

6.3 Maintenance services

Upon delivery, a test certificate s issued for each XCP-Gateway module. This is documented by a corresponding sticker, which is attached to the rear side of the module housing.

Fig. 6-1: Inspection sticker

CSM offers maintenance packages and a repair service for all XCP-Gateway versions.

6.4 Cleaning instructions

NOTE!	
	☞ Disconnect the module before starting to work.

NOTE!	
	The surface of the housing is sensitive to aggressive cleaning agents, solvents and abrasive media. ☞ Do not use aggressive cleaning agents or solvents to clean the module. ☞ Use only a slightly moist cloth.

Requirements

- All cable connections have been removed.

Required parts/materials

- Soft cloth
- Mild detergent, if necessary.

Cleaning the module

☞ Clean the module with a moist cloth. Use mild detergent if necessary.

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CSM GmbH Headquarters (Germany)

Raiffeisenstr. 36 • 70794 Filderstadt
+49 711 77 96 40 sales@csm.de

CSM Office Southern Europe (France, Italy)

ArchParc • Immeuble ABC 1 • Entrée A
60, rue Douglas Engelbart • 74160 Archamps, France
+33 4 50 95 86 44 info@csm-produits.fr

CSM Products, Inc. USA (USA, Canada, Mexico)

1920 Opdyke Court, Suite 200 • Auburn Hills, MI 48326
+1 248 836 4995 sales@csmproductsinc.com

CSM (RoW)

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