

USER MANUAL

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# Simcenter SCADAS XS

Version 2.9

**SIEMENS**



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# GENERAL CONDITIONS

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Simcenter SCADAS data acquisition systems are products of:

Siemens Industry Software BV

Simulation and Test Solutions

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4800DC Breda

The Netherlands

This manual forms an integral part of the product. It gives information about the day-to-day use of the Simcenter SCADAS XS. Familiarize yourself with this information, and make sure that you understand it before using the Simcenter SCADAS XS.

## IN THIS PART:

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- ▶ Copyright
- ▶ Conditions of change
- ▶ Licenses and trademarks
- ▶ Error! Reference source not found.

## COPYRIGHT

*Copyright © 2024 Siemens.*

All rights are explicitly reserved. All information in this manual, including additional drawings and technical descriptions, remains the property of Siemens. No part of this publication may be used (otherwise than for the use of this product), photocopied, duplicated, translated and/or disclosed to third parties without explicit prior written permission by Siemens.

## CONDITIONS OF CHANGE

Siemens reserves the right to change parts at any moment without prior notice or direct notification. This manual may also be subject to change without prior notice.

Changes and/or modifications to the product (to be conducted by the owner) may only be conducted after explicit prior written instruction, permission and/or approval by Siemens. Non-conformance to this rule will void the authority to further use of the product. Furthermore, any consequential damage, loss or costs thereof is the responsibility of the proprietor and user.

## LICENSES AND TRADEMARKS

Any software, described in this manual and/or delivered with the Simcenter SCADAS XS, is provided under license and may only be used in accordance with the conditions, stated in the licenses concerned.

The firmware of the Simcenter SCADAS XS may contain components under GNU licenses. The GNU General Public License (GPL) and Lesser General Public License (LGPL) are respected. Currently these licenses are available at <http://opensource.org/licenses>.

The relevant source code under GPL and LPGL licenses are available upon request.

Company and product names in this manual are trademarks or registered trademarks of their respective owners.

## PRODUCT COMPLIANCE

Europe:

The Simcenter SCADAS XS products SC-XS06-E(C), SC-XS12-A(C) and SC-XS-12N(C) comply with the following European directives:

- 2014/35/EU – the Low Voltage Directive (LVD) on health and safety risks of electrical and electronic equipment
- 2014/30/EU – the EMC Directive on electromagnetic emissions and immunity of electrical and electronic equipment
- 2014/53/EU – the Radio Equipment Directive (RED)
- 2011/65/EU – the RoHS Directive on the use of hazardous substances.

In order to comply with these directives, the Simcenter SCADAS XS products have been successfully tested against the following product standards:

- IEC 61326-1: Electrical equipment for measurement, control and laboratory use: EMC requirements
- IEC 61010-1: Safety requirements for electrical equipment for measurement, control, and laboratory use
- EN 301-489-1 v2.2.0: EMC standard for radio equipment and services – common technical requirements
- EN 301-489-3 v2.1.1: EMC standard for radio equipment and services – specific conditions for Short Range Devices (SRD)
- EN 300 328 v2.1.1: Wideband transmission systems (clauses 4.3.2.9 and 4.3.2.10).

USA:

The device you received complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

This portable transmitter with its antenna complies with FCC/IC RF exposure limits for general population / uncontrolled exposure.

Changes or modifications to this device not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Canada:

This device complies with Industry Canada License-exempt RSS standard(s). Operation is subject to the following two conditions:

- (1) this device may not cause interference, and
- (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Brazil:

Este equipamento não tem direito à proteção contra interferência prejudicial e não pode causar interferência em sistemas devidamente autorizados.



# ABOUT THIS MANUAL

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This manual provides information for the safe and correct use of the Simcenter SCADAS XS. Make sure to read the instructions you need to use the Simcenter SCADAS XS in accordance with its purpose and intended use.

## IN THIS PART:

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- ▶ Availability
- ▶ Target audience
- ▶ Conventions

## AVAILABILITY

This manual forms an integral part of the Simcenter SCADAS XS. Upon delivery, copies are supplied in accordance with regulations and/or specific terms of delivery. If necessary, Siemens can supply additional copies upon request. Copies of the manual are normally supplied in electronic format. Keep this manual available for the users of the Simcenter SCADAS XS. In case of re-commissioning or transfer of ownership the User Manual of the Simcenter SCADAS XS must be handed over too.

## TARGET AUDIENCE

This User Manual is primarily aimed at experienced Test Engineers who have gained a level of proficiency through education, training and experience. Knowledge of other SCADAS products is an advantage. When you work with the Simcenter SCADAS XS it is assumed that you have appropriate knowledge of the hardware and software required to accomplish your task(s). These may include: computers and computer networks, Simcenter Testlab and Simcenter Testxpress, front-end and recording devices, sensors and instrumentation.

## CONVENTIONS

Standard font The majority of the content in this manual is presented in standard font.

Special Bold Table and figure titles are presented in Special Bold font.  
Also printed captions on the product are presented in Special Bold font.

*Emphasis* Where necessary, words or phrases are *emphasized* in italic print.

Special elements Elements that need extra attention by the reader, such as Notes and Warnings.  
An example is shown below.

Important: Carry out procedures in the sequence given.



# INTRODUCTION

# Chapter 1

This chapter gives generic information about the Simcenter SCADAS XS. The purpose of this chapter is to inform the user about what the Simcenter SCADAS XS is meant for, and what the product comprises of.

It is the responsibility of the user to use the Simcenter SCADAS XS in accordance with its purpose and intended use.

## IN THIS CHAPTER:

- ▶ Main functions and intended use
- ▶ Use in accordance with purpose
- ▶ What did you get

## MAIN FUNCTIONS AND INTENDED USE

The Simcenter SCADAS XS is a handheld recorder and front-end in one, and is intended to record (by template) predefined measurement data onto a removable micro SD card. The user has to work according to the Safety precautions.

The Simcenter SCADAS XS can operate in front-end mode, i.e. connected to a PC that runs Simcenter Testlab, or as a stand-alone recorder. In stand-alone mode the Simcenter SCADAS XS can operate for up to 6 hours, provided the built-in Li-Ion battery pack is fully charged.

Example of a Simcenter SCADAS XS.



These types of the Simcenter SCADAS XS are available:

- ▶ SC-XS12-A(C): Simcenter SCADAS XS 12 channel advanced V/ICP/TEDS system
- ▶ SC-XS12-N(C): Simcenter SCADAS XS 12 channel IEEE1588 synchronized network compatible V/ICP/TEDS system
- ▶ SC-XS06-E(C): Simcenter SCADAS XS 6 channel V/ICP/TEDS system

The Simcenter SCADAS XS supports:

FEATURE	SC-XS12-A/N	SC-XS06-E	SC-XS12-AC/NC	SC-XS06-EC
▶ Four tri-axial ICP®/ TEDS, or twelve single axis ICP®/TEDS accelerometers and/or voltage inputs	✓		✓	
▶ Two tri-axial ICP®/ TEDS, or six single axis ICP®/TEDS accelerometers and/or voltage inputs		✓		✓
▶ CAN bus	✓	✓	✓	✓
▶ CAN FD bus			✓	✓
▶ Dual tacho	✓	✓	✓	✓
▶ GNSS	✓	✓	✓	✓
▶ SPDIF	✓	✓	✓	✓
▶ Binaural headset interface	✓	✓	✓	✓
▶ IEEE1588 PTP support	✓		✓	
▶ LAN support*	✓	✓	✓	✓
▶ MEMS DC support**	✓	✓	✓	✓

\* From Firmware version 5.1 or higher LAN connection is enabled on all Simcenter SCADAS XS hardware. IEEE1588 synchronization is available on SC-XS12-N(C) version only!

\*\* Power budget: 10mA current supply per LEMO tri-axial connector

## USE IN ACCORDANCE WITH PURPOSE

The Simcenter SCADAS XS systems must only be used for the specific purpose described above. Any attempt to alter or modify a Simcenter SCADAS XS system or its use for any other purpose will be considered not to be in accordance with its purpose, and regarded as misuse. Misuse may result in injury to personnel or serious damage to equipment. In all cases any warranty in force will be invalidated, while Siemens will not accept any liability for misuse.

## WHAT DID YOU GET

The Simcenter SCADAS XS is delivered along with a set of standard and optional accessories; the list below gives the relevant details. Each system is inspected and tested before shipment.

The shipment that you received must contain the items that were ordered, undamaged and fully operational.

Simcenter SCADAS XS – item list

STANDARD SUPPLIED ITEMS
▶ Simcenter SCADAS XS with USB cable and charger
▶ Android tablet with USB cable and charger
▶ Micro SD card (SDHC, 32 GByte) and adapter card
▶ Dual tacho cable
▶ SPDIF cable
▶ CAN cable
▶ GPS antenna
▶ 1m 9 pin LEMO to 3 x BNC cables for single axis sensors or microphones
▶ 2m CAT6E LAN cable (SC-XS12-N(C) only)
▶ CAT6 RJ45 Ethernet extender plug (SC-XS12-N(C) only)
OPTIONAL ACCESSORIES
▶ SCx-ABH04 Simcenter SCADAS 3D binaural headset
▶ SCX-ABH04-C Simcenter SCADAS 3D binaural headset adapter cable audio
▶ SCx-CAS14 Simcenter SCADAS XS LEMO to 3xBNC breakout for 3 channels
▶ SC-XS-CAS02 Simcenter SCADAS XS SPDIF adapter CAMAC to RCA
▶ SC-XS-CAS03 Simcenter SCADAS XS Tacho adapter cable
▶ SC-XS-CK1 Simcenter SCADAS XS Tablet car kit set
▶ SCX-CAS20 Simcenter SCADAS Cable for OBD 2 connection
▶ SC-XS-LAN2M Simcenter SCADAS XS Mini I/O to CAT6e LAN cable
▶ SC-XS-SD32G Simcenter SCADAS XS micro SDHC card, 32G plus

## INSPECTION OF RECEIVED GOODS

We recommend that you inspect the shipment upon receipt for completeness and signs of damage.

In case the shipment is not complete, please contact your local Siemens representative.

In case parts are damaged and/or defective:

- ▶ Save all packing materials in case of return shipment.
- ▶ File a claim with the carrier.
- ▶ Contact your local Siemens representative for further instructions.

## TRANSPORTATION OF GOODS

The information in this part is given as a guideline; we recommend that you act accordingly.

In case you need to return parts to Siemens for repair, you are requested to contact your local Siemens representative first. You will be informed about the applicable procedures and follow-up.

In case parts need to be transported:

- ▶ Preferably use the original factory packaging.
- ▶ In case the original factory packaging is not available, use packaging of identical construction (available via your local Siemens representative).
- ▶ In case you need to provide packaging yourself:
  - ▶ Use a double-wall carton box – or similar container – of the correct dimensions.
  - ▶ Put the part in an anti-static plastic envelope.
  - ▶ Use cushion material to keep the part from moving in the box.
- ▶ Mark the container *FRAGILE* to ensure careful handling.

# SAFETY INFORMATION

## Chapter 2

This chapter gives safety information about the Simcenter SCADAS XS. The purpose of this chapter is to make the user aware of relevant safety aspects, when working with the Simcenter SCADAS XS. It is the responsibility of the user to read this information before working with the Simcenter SCADAS XS, to make sure that it is used correctly and safely.

### IN THIS CHAPTER:

- ▶ Hazards and remaining risks
- ▶ Safety provisions
- ▶ Safety precautions

### HAZARDS AND REMAINING RISKS

The Simcenter SCADAS XS has been designed in such a way that known potential hazards have been eliminated to the highest possible extent. Where elimination of risks proved not (completely) feasible, *safety provisions* have been implemented to reduce the risks to an acceptable level.

However, some risks still exist. These *remaining risks* and relevant details are listed below. During normal operation personnel who work with the Simcenter SCADAS XS must obey the *safety precautions* and follow the instructions in this manual. It is important to meet these conditions to assure personal safety and product integrity.

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#### Important:

All safety related measures described in this manual are based on the intended use of the product(s). Make sure to use the product(s) in accordance with its purpose.

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## Simcenter SCADAS XS – remaining risks

RISK	WHEN	EFFECTS	RISK MITIGATION
Component-level risks: Battery pack			
Physical damage to the battery pack.	At impact, e.g. battery pack gets cracked or even crushed.	Leakage of dangerous fumes and/or materials. Battery pack can get on fire.	See: Safety precautions.
Exposure to extreme temperatures <sup>1</sup> .	Extreme high or low temperatures. Device is covered, i.e. heat cannot dissipate.	Leakage of dangerous fumes and/or materials. Battery pack can get on fire.	See: Safety precautions
Exposure to liquids.	Immersion; splashing or spraying conditions.	Leakage of dangerous fumes and/or materials. Battery pack can get on fire.	See: Safety precautions
Direct contact with battery pack.	Replacement.	Not possible during normal operation.	See: Safety precautions.

## SAFETY PROVISIONS

By design, the Simcenter SCADAS XS has a number of safety provisions to establish the required level of personal safety. Furthermore, the owner of the Simcenter SCADAS XS has the responsibility to provide a safe environment to work in.

These safety provisions are divided in groups as listed below:

- ▶ Covering
- ▶ Electrical safety
- ▶ Components and accessories
- ▶ Safety labels

## COVERING

The Simcenter SCADAS XS is completely enclosed. During normal operation – i.e. the covering is properly installed – personnel are not exposed to any hazards.

The user is *not* allowed to remove the covering; for normal operation it is not necessary to do so. Moreover, the covering cannot be removed without the use of tools and all systems have no serviceable parts inside.

## ELECTRICAL SAFETY

The following applies:

- ▶ The Simcenter SCADAS XS complies with international safety standards and local regulations.
- ▶ All circuits are adequately protected when used within limits.
- ▶ It is not necessary to ground the Simcenter SCADAS XS, or use ESD strapping.
- ▶ The Simcenter SCADAS XS is designed to operate on internal battery power; it can also be powered and/or charged with appropriate adapters.
- ▶ Power levels of the output channels of the Simcenter SCADAS XS are within safe limits.

## COMPONENTS AND ACCESSORIES

- ▶ To assure the required level of personal safety and product integrity Siemens applies approved and certified components and accessories. For the Simcenter SCADAS XS the most prominent items are:
  - ▶ A built-in, Li-Ion battery pack; certified under UN3480 and UN3481 regulations.
  - ▶ State-of-art connectors that provide a high level of protection against intrusion.
  - ▶ Power adapters and cables that are approved by Siemens for use with the Simcenter SCADAS XS.

## SAFETY LABELS

To assure the required level of user awareness with respect to remaining hazards the Simcenter SCADAS XS has these safety labels:

LABEL	COMPONENT / LOCATION	DESCRIPTION
	On product type plate	CE marking. Indicates that the product complies with the applicable EEC directives.
	On product type plate	Attention! Read the manual before use; it gives important safety information.
	On product type plate	WEEE conformity.
Li Ion 3.7 V 4400 mAh	On product type plate	The product has a Li-Ion battery pack inside.

## SAFETY PRECAUTIONS

The presence of safety provisions alone is no guarantee against injury. This section gives instructions and guidelines to help the user to work safely. The users of the Simcenter SCADAS XS are always responsible for their actions, their own safety and that of others.

To prevent injury, obey these rules when you work with the Simcenter SCADAS XS:

- ▶ Use the instrument in accordance with its purpose and within its design specifications.
- ▶ Only use original and approved devices, components and accessories.
  - Apply them in accordance with their intended use.
- ▶ Prevent actions that can result in unsafe situations.
- ▶ Always report abnormal situations to your superior(s).
- ▶ Avoid – direct and indirect – contact with live electrical parts.
- ▶ The instrument shall not be used within 20 cm from the body in normal operation
- ▶ Dispose used equipment and components in accordance with local regulations.
- ▶ With respect to the built-in Li-Ion battery pack in the Simcenter SCADAS XS:
  - ▶ When misused or defective, Li-Ion batteries can build up heat very quickly, explode or cause fire. Make sure that you are aware of potential risks related to Li-Ion batteries.
  - ▶ In case the battery pack is damaged, or you suspect it to be damaged:
    - do not touch it with bare hands, protect eyes and skin,
    - take the instrument to a safe and open area, and put it on a non-combustible surface,
    - observe it from a safe distance,
    - report the incident.
  - ▶ Keep the instrument away from:
    - open fire,
    - flammable and/or combustible materials,
    - aggressive chemicals,
    - heat sources.
  - ▶ Do not immerse in and/or expose to liquids.
  - ▶ Do not operate the instrument at extreme temperatures. Do not cover it up and make sure it can dissipate generated heat.
  - ▶ Do not drop the instrument and avoid situations in which it can get crushed. Always place it in a stable position; if necessary, secure the instrument.
  - ▶ Do not open the instrument. Replacement of the battery pack is to be done by authorized Siemens personnel only.
  - ▶ When not using the XS for a longer period, best is to store at room temperature and with battery level between 40 to 80% charged.
  - ▶ Do not exceed 50 degrees storage temperature to avoid excessive degradation of battery capacity.
- ▶ Important: The PTP PoE network switch that is delivered with an Simcenter SCADAS XS12-N(C) has been carefully and specifically preconfigured at the SISW factory before shipping. Do NOT change the settings or configuration of this network switch.

# Chapter 3

## SYSTEM DESCRIPTION

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This chapter gives information about the features and functions of the Simcenter SCADAS XS. The purpose of this chapter is to make the user familiar with *what* these features and functions mean.

### IN THIS CHAPTER:

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- ▶ Main features
- ▶ Modes of operation
- ▶ Connectivity

## MAIN FEATURES

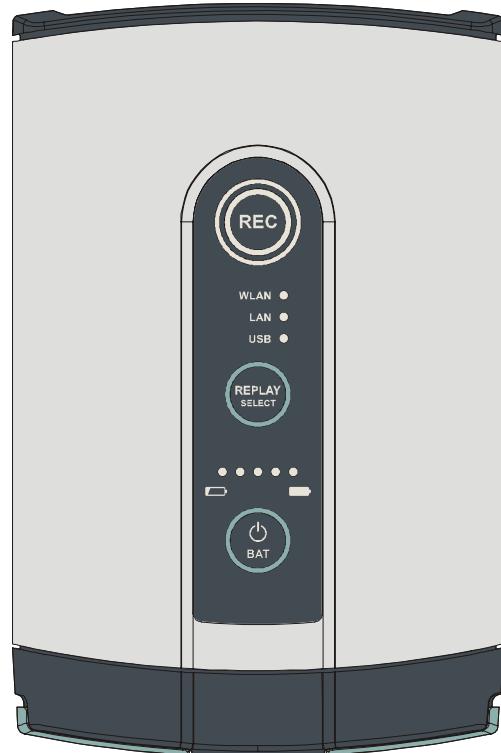
Three sides of the Simcenter SCADAS XS have features that are important to the user. These features are shown below, and described in detail in the next paragraphs.

Information about how to use these features is described elsewhere; refer to Operation.

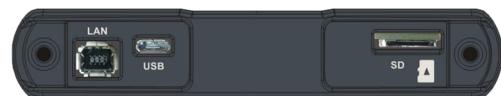
Main features of the Simcenter SCADAS XS



Front connections



Control panel (on the main body)

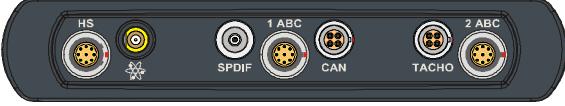


Power – communication – data

## FRONT CONNECTIONS

The figure below shows an overview of the front connections of the Simcenter SCADAS XS. Details of LEMO connectors are given in a separate paragraph.

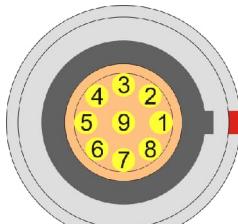
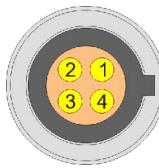
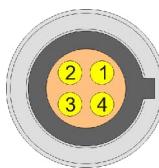
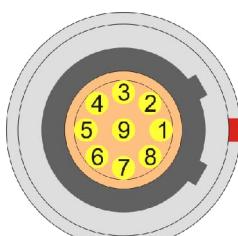
Features of the front connections

	Type: SC-XS12-A(C)/N(C)
	Type: SC-XS06-E(C)
n ABC ('n' stands for 1, 2, 3, 4) 9-pin LEMO connector.	To be used as: input for one tri-axial sensor, or 3 V/ICP®/TEDS single-ended inputs.
TACHO 4-pin LEMO connector.	For dual tacho input.
CAN 4-pin LEMO connector.	For CAN 2.0B and CAN FD compliant message recording.
SPDIF	Supports HMS functionality.
	Supports Global Navigation Satellite System (GNSS)
HS 9-pin LEMO connector.	To be used as binaural headset interface.

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## LEMO CONNECTORS – DETAILS

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CONNECTION	DETAILS	REMARKS
9-pin LEMO: n ABC	<p>Connector type: LEMO-ENG.0B.309</p> <p>Pin details:</p> <ol style="list-style-type: none"> <li>1) Reserved</li> <li>2) Ground - B</li> <li>3) Signal - B</li> <li>4) Reserved</li> <li>5) +6V Sensor Supply (10mA)</li> <li>6) Signal - C</li> <li>7) Ground - C</li> <li>8) Signal - A</li> <li>9) Ground - A</li> </ol> <p>Reserved implicates: DO NOT USE</p> 	Mating connector: LEMO-FGG.0B.309.CLADxx
4-pin LEMO: TACHO	<p>Connector type: LEMO-EGG.00.304</p> <p>Pin details:</p> <ol style="list-style-type: none"> <li>1) Tacho - 2-</li> <li>2) Tacho - 2+</li> <li>3) Tacho - 1-</li> <li>4) Tacho - 1+</li> </ol> 	Mating connector: LEMO-FGG.00.304.CLADxx
4-pin LEMO: CAN and CAN FD	<p>Connector type: LEMO-EGG.00.304</p> <p>Pin details:</p> <ol style="list-style-type: none"> <li>1) Ground</li> <li>2) NC</li> <li>3) CAN - Low</li> <li>4) CAN - High</li> </ol> 	Mating connector: LEMO-FGG.00.304.CLADxx
9-pin LEMO: HS	<p>Connector type: LEMO-ENB.0B.309</p> <p>Pin details:</p> <ol style="list-style-type: none"> <li>1) Reserved</li> <li>2) Headphone - Left</li> <li>3) Reserved</li> <li>4) Reserved</li> <li>5) Reserved</li> <li>6) Microphone - Left</li> <li>7) Headphone - Right</li> <li>8) Microphone - Right</li> <li>9) Ground</li> </ol> <p>Reserved implicates: DO NOT USE</p> 	Mating connector: LEMO-FGB.0B.309.CLADxx

## CONTROL PANEL

The figure below shows the control panel; the *meaning* of the features is described next to it.

Further details are explained in the table: Functions and system responses (see next page).

### Features of the control panel



<i>Status indication</i>	
Indicator (this is the inner ring of the REC button).	No color is shown when the device is off. For status indication during normal operation three colors are used: GREEN, BLUE and RED.
Note: The color that is shown and the type of indication (continuous, flashing, etc.) depend on several conditions. See the next table for details.	
<i>Recording</i>	
REC	Used to start and stop a recording.
<i>Connectivity</i>	
WLAN	When on, indicates connection via Wireless Network.
LAN	When on, indicates connection via Local Area Network.
USB	When on, indicates connection via Universal Serial Bus.
<i>Selections</i>	
REPLAY	To replay the most recent recording (if available) done with the headset.
SELECT	Used in combination with BAT to select connectivity.
<i>Battery charge level</i>	
BAT	Used to check the battery charge level.
<i>Power on/off</i>	
⊕	Used to switch the device on or off.

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Important: Be aware that this section does *not* specify applicable prerequisites and/or necessary preparations. That type of information is described elsewhere; refer to Operation.

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The table below describes the basic functions of the control panel and how the system responds. The method used in the table below is a 'use case' format. Here, a use case specifies an actual Condition, includes a particular User action and the resulting expected System response. For example, the first use case assumes the device is switched off. Be aware that system response to a user action strongly depends on the status of the device at that moment. Times are indicated by approximate values.

#### Functions and system responses

## Use case 1: switch on.

Condition	User action	System response
Device is switched off. No indications	Press and hold  until system responds.	After 3 seconds the Indicator turns GREEN (continuous).
	Release  .	The Indicator turns BLUE (fast flashing). The device is starting up and initializes.
	Wait.	After some time the Indicator turns BLUE (continuous). The device is ready for use.

## Use case 2: record (without triggers).

Condition	User action	System response
Device is ready for use. Indicator is BLUE.	Press and release REC.	The Indicator turns RED (continuous). The device is recording.
	Wait as necessary.	
	Press and release REC.	The Indicator turns BLUE (continuous). The device has stopped recording.

Use case 3: record (with triggers).<sup>2</sup>

Condition	User action	System response
Device is ready for use. Indicator is BLUE.	Press and release REC.	The Indicator turns RED (slow flashing). The device waits for a trigger.
	Wait.	The Indicator turns RED (continuous) when receiving a trigger. The device is recording.
	Wait.	The Indicator turns BLUE (continuous). The device has concluded and stopped recording.

## Use case 4: replay a recording.

Condition	User action	System response
A recording with the headset was made since device is switched on.	Connect headset.	
Device is ready for use. Indicator is BLUE.	Press and release REPLAY.	The Indicator turns GREEN (continuous). The device plays the most recent recording.

<sup>2</sup> Other combinations are also possible; e.g. only a start or stop trigger.

Press and release REPLAY (Indicator still GREEN).	The Indicator turns BLUE (continuous). The device has stopped playing (track not finished).
Press and release REPLAY.	The Indicator turns GREEN (continuous). The device plays the most recent recording (starting at the beginning).
Wait.	The Indicator turns BLUE (continuous). The device has stopped playing (track finished).

## Use case 5: select connectivity.

Condition	User action	System response
Device is ready for use. Indicator is BLUE.	Press and hold SELECT.  Then press and release  as many times until the desired selection shows.  Wait.	The Connectivity indicators will go on in turn or will all be off, as long as the user goes on selecting.  When the user has stopped selecting, the device will process the selection. First, the Connectivity indicators will all go off. After a few seconds the applicable selection will show. I.e. one of the indicators goes on, or all stay off.

## Use case 6: check battery charge level.

Condition	User action	System response
Device is switched on and ready for use, or it is switched off.	Press and release BAT.	The number of green dots show the charge level.

## Use case 7: shutdown.

Condition	User action	System response
Can be any state, while the device is switched on.	Press and hold  for 3 seconds.  Release  .	The Indicator starts flashing (fast flashing) in the color that it was at the time of this User action. The device is responding.  The Indicator turns RED (continuous). The device is switching off.

Wait.

The Indicator goes off (no color).  
 The device is switched off (i.e. shutdown).

Use case 8: forced shutdown.

Condition	User action	System response
Can be any state, while the device is switched on.	Press and hold  for 15 seconds.	After 15 seconds the Indicator goes off (no color). The device is switched off (i.e. forced shutdown).

## POWER – COMMUNICATION – DATA

The figure below shows the connections for power and communication and the micro SD slot.

Features of the field connections

	Type: all.
LAN Special receptacle.	Important: LAN connection requires a special cable. Use supplied parts only.
USB Micro USB receptacle.	Supports data communication and power charging via USB.  Notes: When connected to a PC via USB, ignore any dialogs like 'USB device detected'. When used in a vehicle, it is recommended to connect the Simcenter SCADAS XS to the cigarette-lighter with a USB adapter. Stable operation with the car's multimedia USB connection can vary, depending on the car manufacturer's specification.
SD Slot for a micro SD card.	Micro SDHC, Class 10, 32 GB. For storage of templates and recorded data.

## MODES OF OPERATION

The Simcenter SCADAS XS can operate in these modes of operation:

- ▶ Front-end mode
- ▶ Stand-alone mode

Important: Items mentioned in this section may be optional.

## FRONT-END MODE

In front-end mode the Simcenter SCADAS XS is connected to a PC that has Simcenter Testlab installed. Connection is established over either USB or LAN. Simcenter Testlab or Simcenter Testxpress will be in full control during data acquisition.

In this mode of operation the Simcenter SCADAS XS is powered via the USB connection by the host PC and operates similar to other Simcenter SCADAS products. In case of a LAN connection, a PoE (Power over Ethernet) injector might be needed. The standard desktop PC or laptop does not offer PoE and this way the Simcenter SCADAS XS charging is not provided.

## MULTI-FRAME NETWORK MODE (XS12-N(C) ONLY)

In multi-frame network mode several Simcenter SCADAS XS12-N(C) devices can be connected to one PC through a PTP PoE network switch. The PC has Simcenter Testlab or Simcenter Testxpress installed. Connection is established over either USB or LAN. Simcenter TestLab will be in full control during data acquisition.

In this mode of operation the Simcenter SCADAS XS12-N(C) is powered by the PoE network switch.

Important: The PTP PoE network switch that is delivered with a Simcenter SCADAS XS12-N(C) has been carefully and specifically preconfigured at the SISW factory before shipping. Do NOT change the settings or configuration of this network switch.

## STAND-ALONE MODE

In stand-alone mode the Simcenter SCADAS XS operates as hand-held recorder; it is *not* connected to a host PC. The Simcenter SCADAS XS will execute appropriately prepared recordings fully independently.

In this set-up The Simcenter SCADAS XS typically operates on battery power. Audio recordings that are made with a headset connected can be replayed. Details are described elsewhere in this chapter, see the relevant Use cases in this paragraph: Control panel.

## CONNECTIVITY

The Simcenter SCADAS XS supports these methods of data communication:

- ▶ USB – to connect the Simcenter SCADAS XS to a PC that has Simcenter Testlab installed. Use the connection cable provided in the package.
- ▶ LAN – either directly to the PC or via a PTP PoE network switch
- ▶ WLAN – to establish connection with a tablet.

# OPERATION

# Chapter 4

This chapter gives information about the operation of the Simcenter SCADAS XS. The purpose of this chapter is to guide the user to use the Simcenter SCADAS XS correctly and safely.

## IN THIS CHAPTER:

- ▶ Prerequisites and considerations
- ▶ Preparation
- ▶ Test set-up – examples

## PREREQUISITES AND CONSIDERATIONS

The user of the Simcenter SCADAS XS is expected to:

- ▶ Have the required skills, experience and knowledge.
- ▶ Be familiar with the intended use, functions and safety aspects of the Simcenter SCADAS XS.
- ▶ Take the required preparations as described in this chapter.
- ▶ Use serviceable equipment only.

The information in this chapter – about the required Preparation and Test set-up – examples – is restricted to the specific use of the Simcenter SCADAS XS itself. Information about the use of other equipment is not included but may be referred to.

## PREPARATION

This section describes what is required to prepare the Simcenter SCADAS XS for operation. Where applicable, distinction is made on topic level between:

- ▶ Prepare for first use – to be done once for new equipment.
- ▶ Prepare for operation – to be done before an operational scenario is started.

## POWER

### Important:

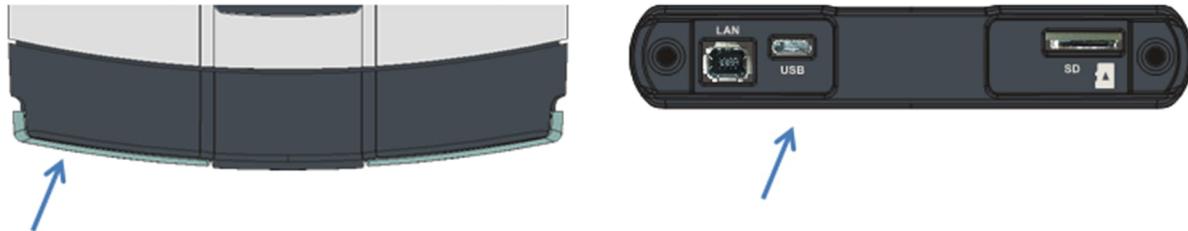
When powered from mains, make sure to use the correct mains supply and the AC adapter/charger that was delivered by Siemens. Use of this component is essential to achieve the expected system behaviour according to system design. The procedures below assume the use of this component.

When powered from a host PC, USB 3.0 gives optimal charging performance while the Simcenter SCADAS XS is switched off. The SC-XS12-N(C) can be powered for operation and charging by a PoE networks switch.

When used in a vehicle, it is recommended to connect the Simcenter SCADAS XS to the cigarette-lighter with a USB adapter.

During measurement it is recommended but not mandatory that the Simcenter SCADAS XS is connected to a power source; this to prevent the battery from being fully discharged.<sup>3</sup>

Items mentioned in this section may be optional.



## CAN FD

### Important:

With the launch of the XS12-AC, XS12NC and XS06EC models CAN FD functionality is supported. Please note that when using CAN FD at a higher data rate (5Mbps) in combination with a high bus usage (>50%) the on board processor may not be able to keep up with high sample rates of the analog channels.

<sup>3</sup> Different USB ports can provide lower charging than needed.

---

## PREPARE FOR FIRST USE

The Simcenter SCADAS XS is delivered with a built-in Li-Ion battery pack to support stand-alone operation. Charge the battery pack before use.

The recommended charging method is to use the AC adapter/charger via the USB receptacle; this is also the fastest method.

- 1) Open the cap to get access to the USB receptacle.
- 2) Use one of these methods:
  1. Use the AC adapter/charger.

The Simcenter SCADAS XS will recognize that the AC adapter/charger is connected.

The Indicator – the inner ring of the REC button – first turns BLUE (flashing), then RED (continuous) and finally goes off (no color). The charging circuit remains active.

---

Note: Make sure that you insert the Micro USB connector correctly (i.e. up-side-down) into the receptacle of the Simcenter SCADAS XS to avoid damage.

---

2. Use the micro USB cable to connect with a host PC.

The Simcenter SCADAS XS will recognize that it is connected to a PC.

It will start up and initialize the same as it does when switched on using the  button.  
Charging will take longer.

---

Note: When connected to a PC via USB, ignore any dialogs like 'USB device detected'.

---

- 3) Allow the battery pack to get fully charged.
- 4) Check the charge level.  
If OK, continue with the next step.
- 5) Disconnect the power source.
- 6) Close the cap.

## PREPARE FOR OPERATION

The Simcenter SCADAS XS can operate on either externally supplied power or battery power. Typically:

- ▶ In front-end mode the Simcenter SCADAS XS is powered by the host PC or a PTP PoE network switch (SC-XS12-N(C) only).
  1. Open the cap to get access to the USB or LAN receptacle.

---

Note: Make sure that you insert the Micro USB connector correctly (i.e. up-side-down) into the receptacle of the Simcenter SCADAS XS to avoid damage.

---

2. Use the micro USB cable to connect with a host PC, or the special LAN cable to connect to a PTP switch (SC-XS12-N(C) only) that in turn connects to a host PC.

The Simcenter SCADAS XS will recognize that it is connected to a PC.  
It will start up and initialize the same as it does when switched on.

---

Notes:

When connected to a PC via USB, ignore any dialogs like 'USB device detected'.

---

3. The Simcenter SCADAS XS is ready for front-end operation.

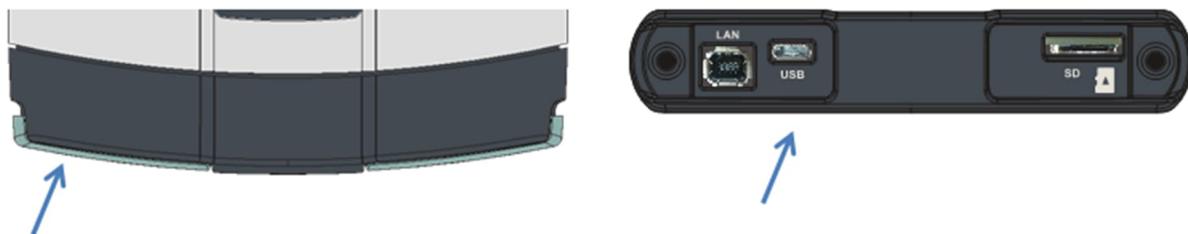
- ▶ Battery power is used for stand-alone operation.
  1. Make sure the battery pack is sufficiently charged.

## COMMUNICATION

The Simcenter SCADAS XS is delivered with cables to support communication with a PC that has the applicable Simcenter Application Software (Simcenter Testlab or Simcenter Testxpress) installed - over USB or LAN. Typically, this set-up is used for front-end operation. However, before any operational scenario can be prepared and/or started, the Simcenter Application Software needs to 'recognize' the Simcenter SCADAS XS.

### Important:

Items mentioned in this section may be optional.



## PREPARE FOR FIRST USE

Make the Simcenter Application Software detect the Simcenter SCADAS XS before use.

- 1) On the PC, make sure that the Simcenter Application Software is not yet running.
- 2) On the Simcenter SCADAS XS, open the cap to get access to the USB or LANreceptacle.
- 3) Connect the communication cable to the USB or LAN receptacle.
- 4) Connect the communication cable to the PC.
- 5) Switch on the Simcenter SCADAS XS.
- 6) Start the Simcenter Application Software.  
The program will try to start a new project and detect the connected device.
- 7) Make sure the program completes the detection and the Simcenter SCADAS XS is recognized.
- 8) The Simcenter SCADAS XS is now ready for operation.

## PREPARE FOR OPERATION

The Simcenter SCADAS XS can operate either connected to a PC or disconnected.

Typically:

- ▶ It is connected to a PC when used in front-end mode.
  1. On the PC, make sure that the Simcenter Application Software is not yet running.
  2. On the Simcenter SCADAS XS, open the cap to get access to the USB or LAN receptacle.
  3. Connect the communication cable to the USB or LAN receptacle.
  4. Connect the communication cable to the PC.
  5. Make sure the Simcenter SCADAS XS is adequately powered.
  6. Switch on the Simcenter SCADAS XS.
  7. Start the Simcenter Application Software.
  
- ▶ It is disconnected when used for stand-alone operation.

## TEMPLATES

The Simcenter SCADAS XS is delivered with a micro SD card for template and data storage. Typically, this set-up is used for stand-alone operation.

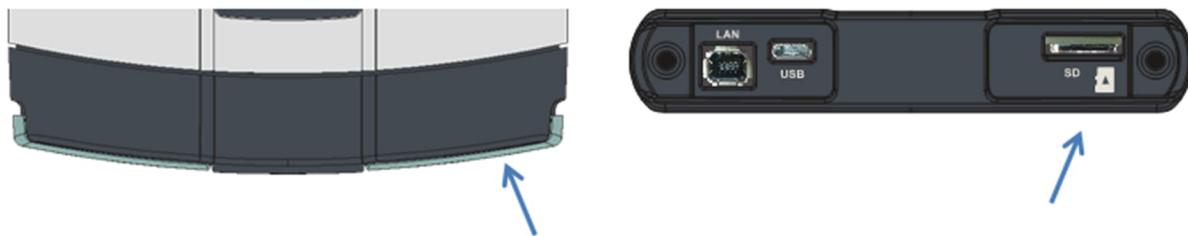
Note: In this paragraph the term Simcenter Application Software is used; it applies to the use of either Simcenter Testab or Simcenter Testxpress.

### Important:

Make sure to use the correct type of SD card (Micro SDHC, Class 10, 32 GB).

The Simcenter SCADAS XS needs to have an adequately prepared SD card inserted to support stand-alone operation.

Items mentioned in this section may be optional.



## PREPARE FOR FIRST USE

Format the SD card before use.

- 1) Unpack the SD card.
- 2) Insert the SD card in the appropriate slot of a PC.  
As an alternative you can use an external card reader (not supplied with the Simcenter SCADAS XS).
- 3) Wait for the PC to detect the new device.
- 4) Prepare to format the disk (a dialog may appear that prompts for formatting).
- 5) Make the required settings to format the disk with 4k Cluster size, using the *FAT32 file system format*.
- 6) Make sure you use the proper facilities provided by the Windows OS to do this step.  
After formatting is completed, safely remove the disk.

## PREPARE FOR OPERATION

Prepare an SD card to support stand-alone recording with the Simcenter SCADAS XS.

---

**Important:** To make a recording in stand-alone mode the Simcenter SCADAS XS must have an SD card inserted with a valid template on it. In case more than one templates are on the SD card, the Simcenter SCADAS XS will use the file that is considered 'first'. 'First' is determined by file-name, based on standard alpha-numerical ordering.

---

- 1) Make sure to use an appropriately formatted SD card.
- 2) Insert the SD card in the card reader of the PC.
- 3) Make sure the Simcenter Application Software is prepared for the Simcenter SCADAS XS.
- 4) Do the required steps in the Simcenter Application Software to configure the test project for the Simcenter SCADAS XS.
- 5) Save the project settings as a template file onto disk.  
Make sure to determine an appropriate file name! See Important notice above.
- 6) Copy the template file to the SD card.
- 7) Make sure you use the proper facilities provided by the Windows OS to do this step.  
After copying is completed, safely remove the disk.
- 8) The SD card is ready for use in the Simcenter SCADAS XS.

---

**Note:** Make sure that you insert the SD card correctly (i.e. up-side-down) into the slot of the Simcenter SCADAS XS to avoid damage.

---

## RECORDING / DATA ACQUISITION

---

**Important:** Items mentioned in this section may be optional.

---

The Simcenter SCADAS XS is delivered with a binaural headset and several accessory cables to support recording and data acquisition. Typically, the former – recording – is done in stand-alone mode while the latter – straight forward data acquisition – is done when the Simcenter SCADAS XS is used for front-end operation.

The binaural headset can be used for audio recording and replay. The accessory cables are used to connect the required field equipment, such as sensors, to the Simcenter SCADAS XS.

## TEST SET-UP – EXAMPLES

This section provides examples of possible test set-ups with accessories that are supplied with the Simcenter SCADAS XS. Each example shows *one* typical field connection for clarity; combinations are possible.

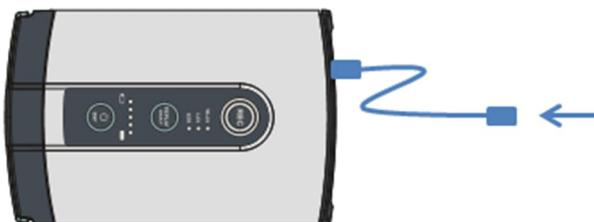
Important: Items mentioned in this section may be optional.

Binaural headset – for acoustic recording and replay



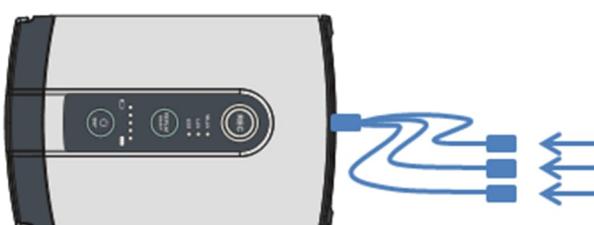
Front connection:	HS
Cable:	Part of binaural headset
Field device(s):	Binaural headset

Tri-axial input – using special cable (not supplied by Siemens)



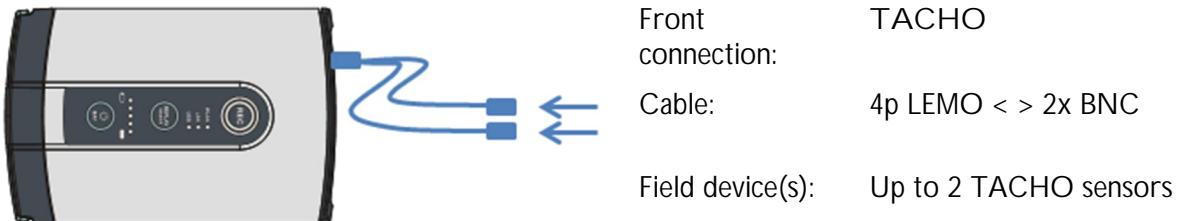
Front connection:	n ABC
Cable:	9p LEMO < > 1 tri-axial (supplier: PCB Piezotronics)
Field device(s):	Tri-axial accelerometer

Up to three ICP® or voltage inputs – using a breakout cable

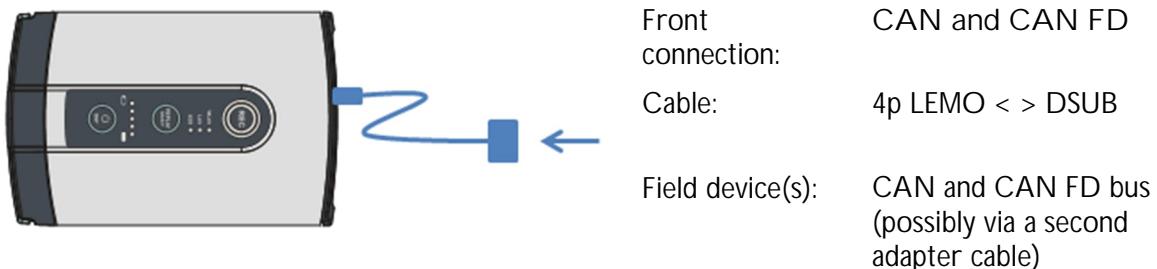


Front connection:	n ABC
Cable:	9p LEMO < > 3x BNC
Field device(s):	Up to 3 ICP® or V sensors

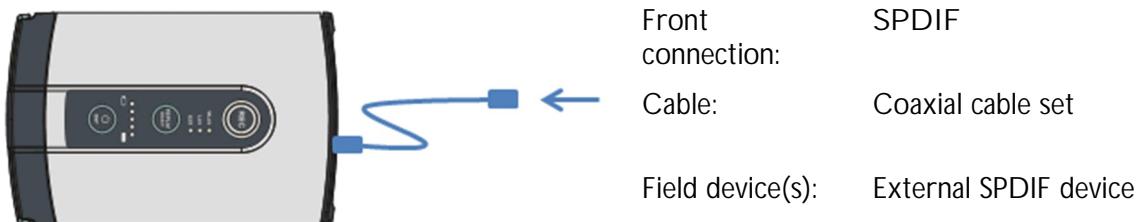
Up to two TACHO inputs – using a breakout cable



CAN input – using a dedicated cable



Input for SPDIF device



GNSS input – using an antenna



# SUPPORT AND FEEDBACK

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## SUPPORT

Thank you for consulting this User Manual. The content of this manual has been designed and written with the aim to support you, the user, in the day-to-day use of the Simcenter SCADAS XS. In case you need specific information that is not described in this manual, please do not hesitate to contact your local Siemens representative for support. We are dedicated to help you accomplish your goals and tasks.

## FEEDBACK

Although utmost care has been regarded to achieve a high level of quality for this manual, it may contain information that is not (fully) clear and/or accurate. In case you should find any unclarities or inaccuracies, please report this to Siemens. In case you have suggestions for improvement, we invite you to share your ideas with us.

mailto: [info.benelux.plm@siemens.com](mailto:info.benelux.plm@siemens.com)







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