SIRIUS-XR System

DEWESoft®

TECHNICAL REFERENCE MANUAL

SIRIUS-XR System V26-1

1. Table of contents

2. About this document

This is the user manual for XR systems.

The SIRIUS-XR System is a high-performance system featuring a gateway with a link speed of up to 10 Gbps. It can include SIRIUS-XHS rack slices and future SIRIUS-X rack slices.

The manual is divided into several chapters. You will find:

- A detailed description of the SIRIUS-XR hardware and the main combination and expansion options
- A description of the connection variants and the pin assignments on the inputs and outputs
- Detailed technical data: Specifications, etc.

2.1. Legend

The following symbols and formats will be used throughout the document.

Important
It gives you important information about the subject.
Please read carefully!

Hint
It gives you a hint or provides additional information about a subject.

Example
Gives you an example of a specific subject.

2.2. Online versions

2.2.1. Device Technical Reference Manual

The most recent version of this manual can be downloaded from our homepage:
https://dewesoft.com/download/manuals
In the *Hardware Manuals* section click the download link for the *Device® technical reference manual*.

2.2.2. DEWESoft® User Manual

The DEWESoft® User Manual document provides basics and additional information and examples for working with DEWESoft® and certain parts of the program.
The latest version of the DEWESoft® tutorials can be found here:
https://dewesoft.com/download/manuals
In the Software Manuals section click the download link of the DEWESoft X User Manual entry.

3. Getting started

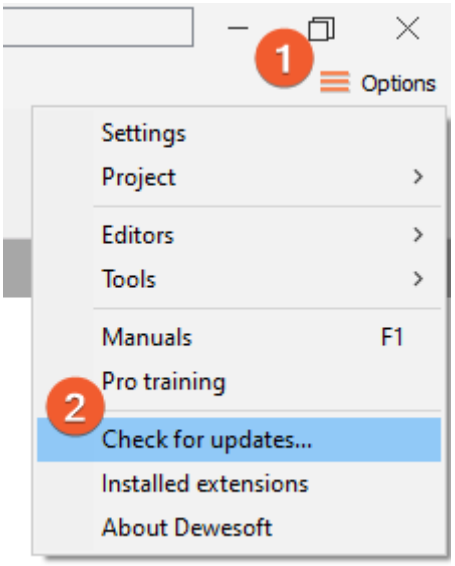
This chapter will help you to install the software, connect your SIRIUS-XR® system to the PC and will show you how to configure DewesoftX®.

To follow these steps, you need the following items:

- your brand new XR system (included in the shipment)
- your PC with Windows 11

3.1. Software installation

For optimal working, we recommend that you install the latest version of DewesoftX®. If you already have DewesoftX® installed, please check if a newer version is already available. You can either check on the website under Support/Downloads/DewesoftX section or directly in software under the Options/Check for updates. In both cases the changelog is included



Check for updates

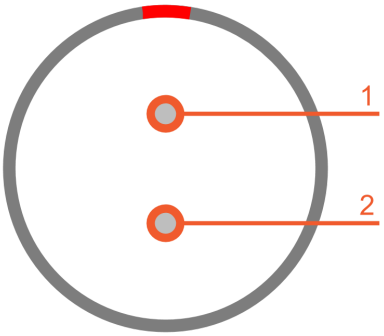
3.2. Connecting SIRIUS-XR

In this chapter, you can see the basic instructions for connecting SIRIUS X devices over RJ-45 Ethernet connection.

Advanced connections are described in the following chapters.

3.2.1. Power supply

The XR Gateway uses a LEMO L2B2m connector, operates from 12 to 48 V DC, and can draw up to 31 A of current.



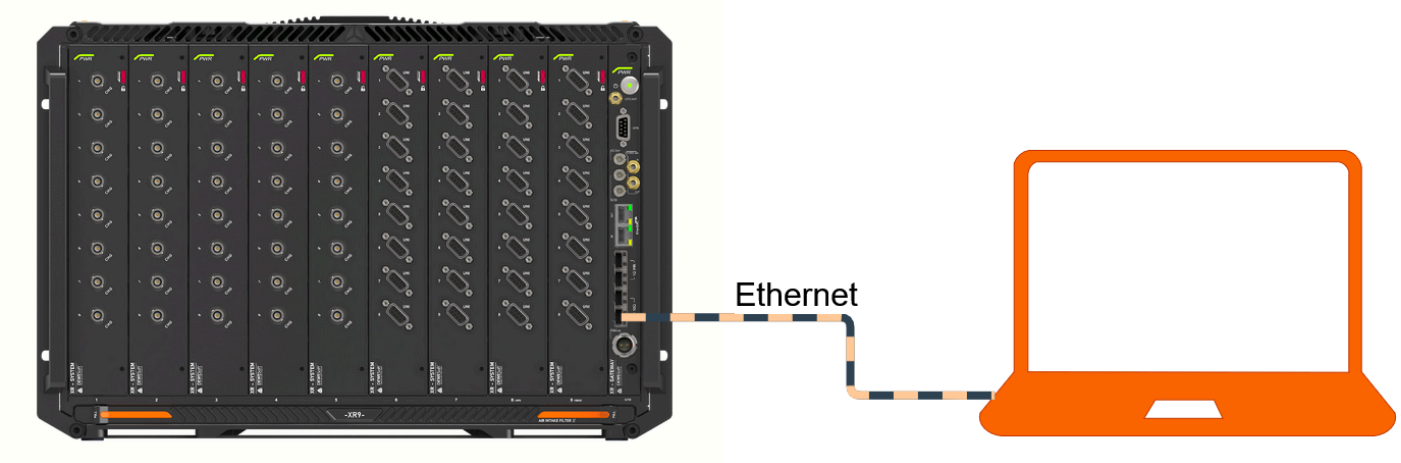
Power in connector: pin-out (2-pin LEMO male)

Pin	Name	Description
1	V +	Supply
2	V -	Ground

3.2.2. Connection over Ethernet

First, connect the power supply cable to the PWR IN 2-pin LEMO 2B male connector. Then connect the Ethernet Cable with the RJ-45 connector to the appropriate GLAN connector on the right side of the device. Finally, connect the other side of the Ethernet cable to the LAN port of the PC.

When the connection is established over Ethernet the device is automatically added only if connected directly to PC, if any switch is in between you will need to add the device manually. When the device is added also all the RT features and modules in DewesoftX will be available, when supported.



Connection over Ethernet

3.2.2.1. Ethernet configuration on the PC

A SIRIUS X can work in two different operation modes.

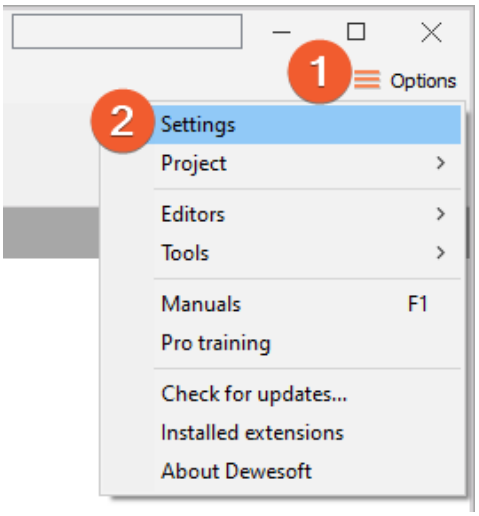
SIRIUS X will be properly connected to DewesoftX software when the IP address of the device and the IP address of the network card, where the device is connected, are in the same subnet.

Warning

As a network device with DHCP enabled it can use dynamic IP assignment. The DHCP server has to be running to locate the device with DewesoftX software. When a DHCP-enabled device is connected to a network without a DHCP server, the device has no IP address configuration and it is unreachable over the network.

3.2.2.2. DewesoftX settings for X module

The connected device will show up in the DewesoftX settings. Click on the Options button at the top right, and then on the Settings item in the pop-up to open the DewesoftX settings dialogue.



Settings in DewesoftX

In case the device is connected via Ethernet, the device is treated as an RT connection. To add it to the DewesoftX you can use multiple procedures which are described in the following chapter.

3.2.2.3. Autodetect

The device is automatically detected and added in HW settings when connected directly to the network port on your SBOX, data logger, or PC.

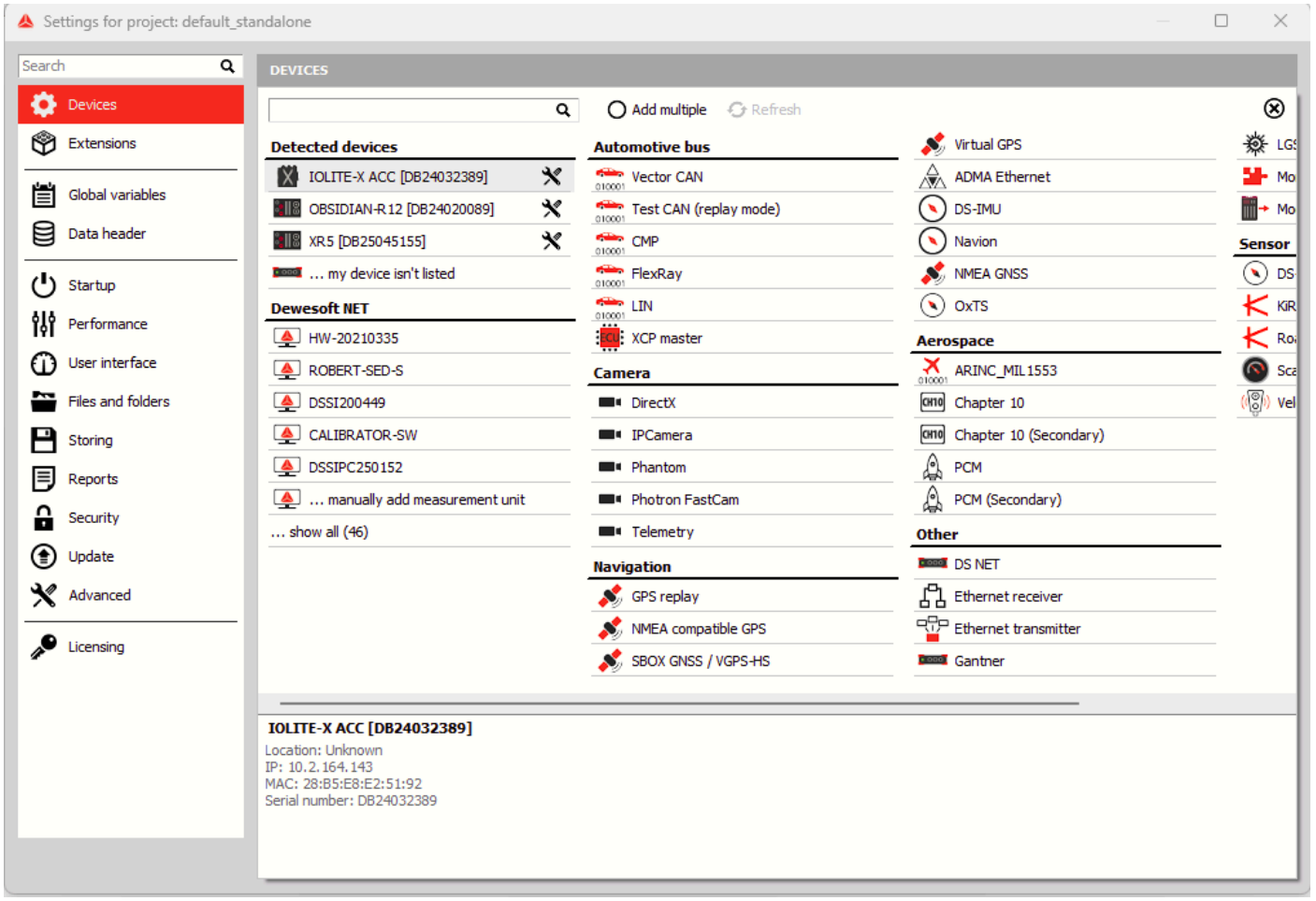
When multiple devices are connected over a network switch then the devices will be automatically detected but will not be automatically added to the HW settings list. All the found devices will be listed in the Network devices settings. The devices can be easily added by pressing the plus button.

NOTE
The support of IPv6 is in development, so using a version DewesoftX 2026.1 or higher makes it possible to detect and add a device without setting the static IP of the network card on the computer. This is currently unstable for adding multiple devices or firmware upgrades.

3.2.2.4. Configuring the IPv4 address inside the discovery module

If the system is not automatically detected, the user has to add the SIRIUS-XR system manually with an IP address (default IPv4: 192.168.10.1)
The user can modify the IP of the SIRIUS-XR system device to match it to the IP of the network card. When the IP addresses will match, the user will be able to add the device in the settings.

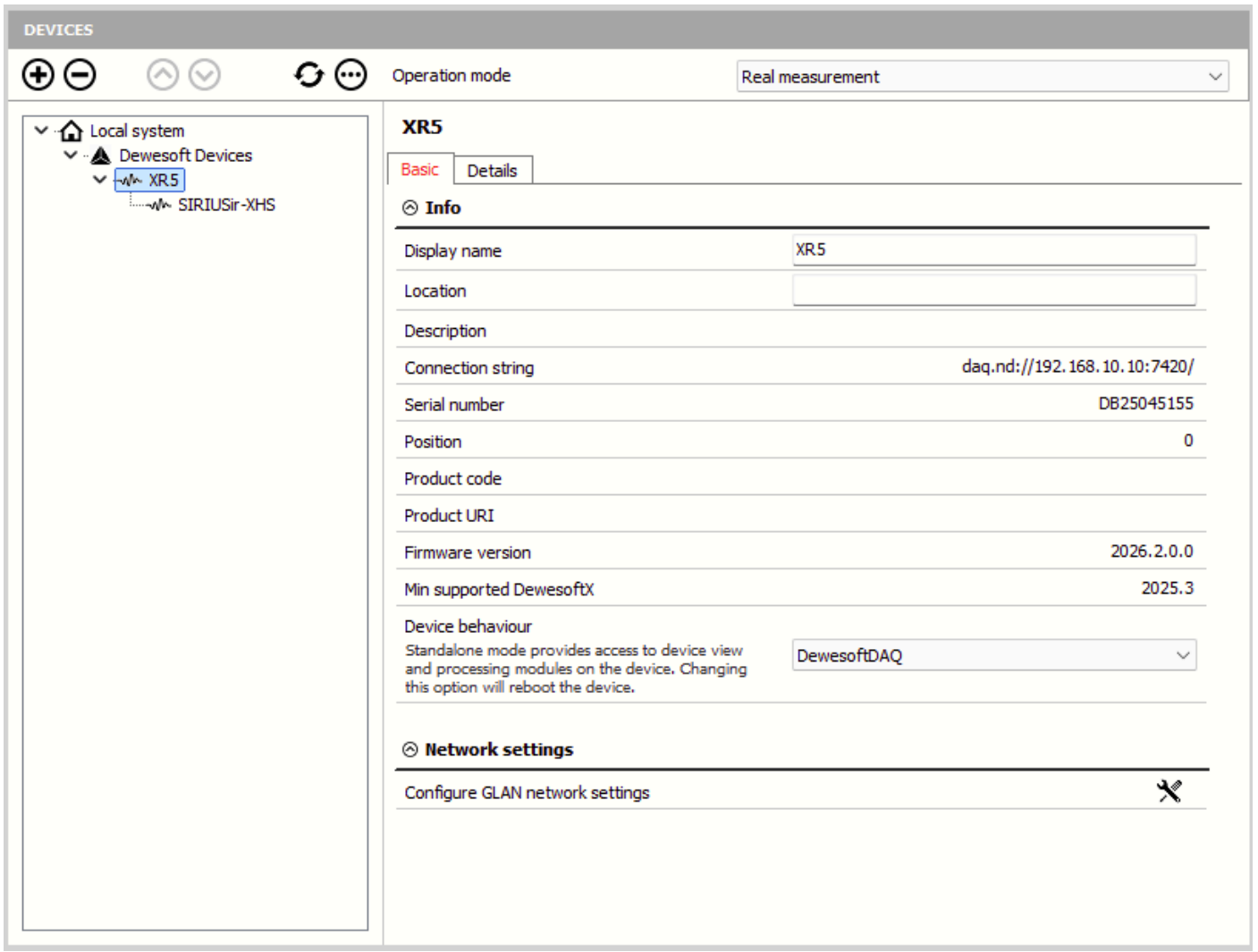
NOTE
If you have two devices with the same IPv4 address, only one will be detected. Configure the devices' IPv4 addresses one device at a time so that each device has a unique IPv4 address.



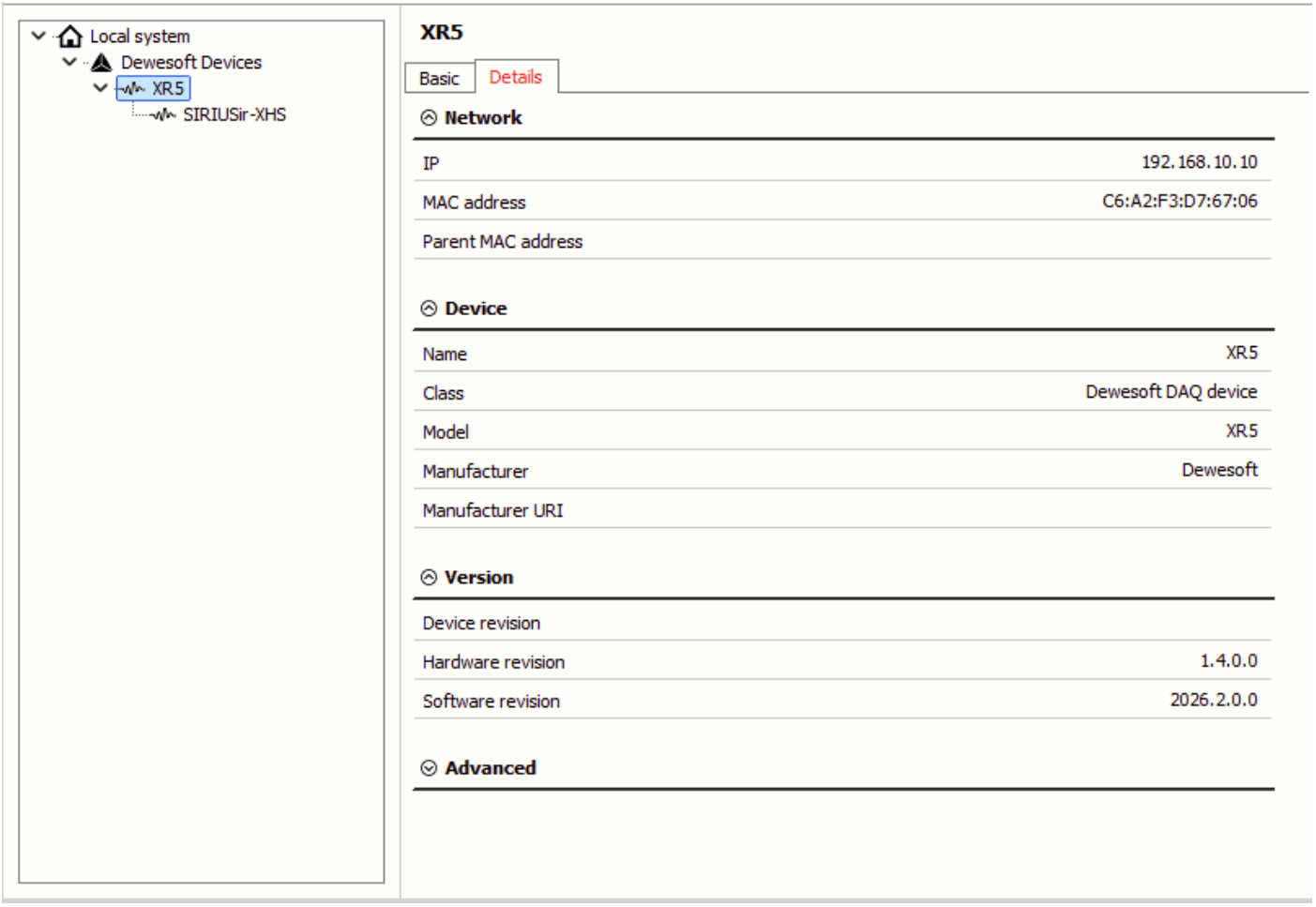
Autodetect

3.2.3. Device overview

After the device is properly added it will be listed in the HW tree view list. When you select the device the properties pane at the right will show the related data e.g. Serial number, Firmware version, IPv4 address etc.



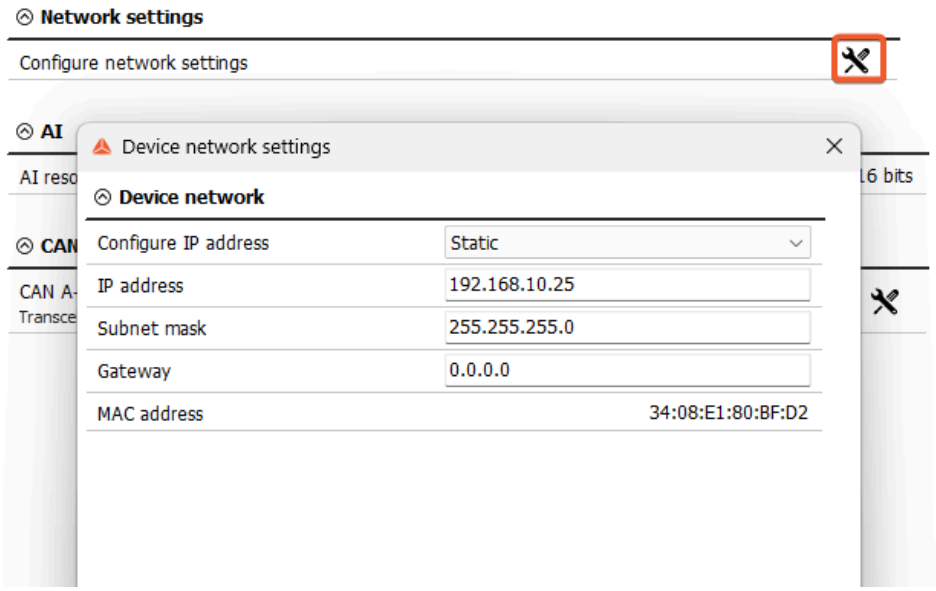
SIRIUS-XR system overview (Basic)



SIRIUS-XR device overview (Details)

3.2.3.1. Network settings

Under Network settings you will find the connection parameters and device MAC address. In the field “Configure network settings” you can set the device IP address to static or dynamic (DHCP). If set to static you can configure it in the bottom three fields. In the last row, you can save the configuration.



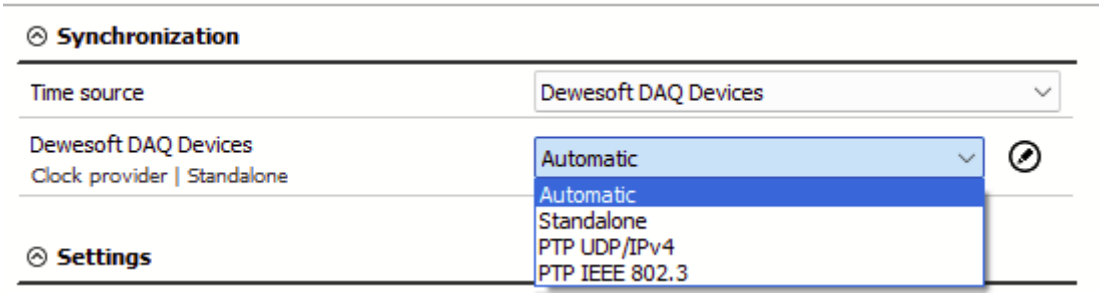
Network configuration

Important
If you set the system to dynamic IP and connect the device to a network without the DHCP server, you can not locate the device with DewesoftX.

3.3. Synchronization

Before measurement you need to set the synchronization for the used system. The synchronization is set in HW settings under the Local system. When only one SIRIUS X device is connected, the synchronization can be set as “Standalone”.

When you have more than one device connected in system configuration, you can either choose between External time synchronization or you can choose SIRIUS X device to be a master synchronization source.



Synchronization options

As an external source the SIRIUS X device accepts the following synchronization signals:

- PPS
- PTPv2 (IEEE 802.3)
- PTP UDP/IPv4

The SIRIUS X device can generate (can be a master source for other devices) the following signals (For both options to be enabled please use the latest FW on the web-page):

- PTPv2 (IEEE 802.3)*
- PTP UDP/IPv4

3.3.1. System configuration with multiple devices synchronized with PTPv2

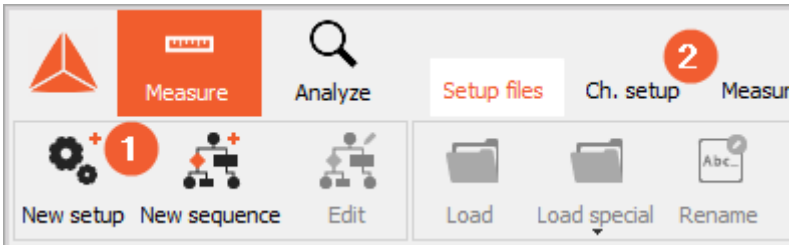
The system can work in two different configurations; as a PTP master or PTP slave. It does not support the free mode option of the PTPv2 synchronization, where the devices / systems decide which device is the master clock and which are then set in slave mode.

When the system is a PTP master, its synchronization settings must be set to “PTP out”. When there is another PTP master in the measurement chain, the device can become a PTP slave, with synchronization settings set to “PTP in”.

Important
It is necessary to configure the switch so that the PTPv2 IEEE 802.3 is set. Please see the Network switches manual for the correct configuration.

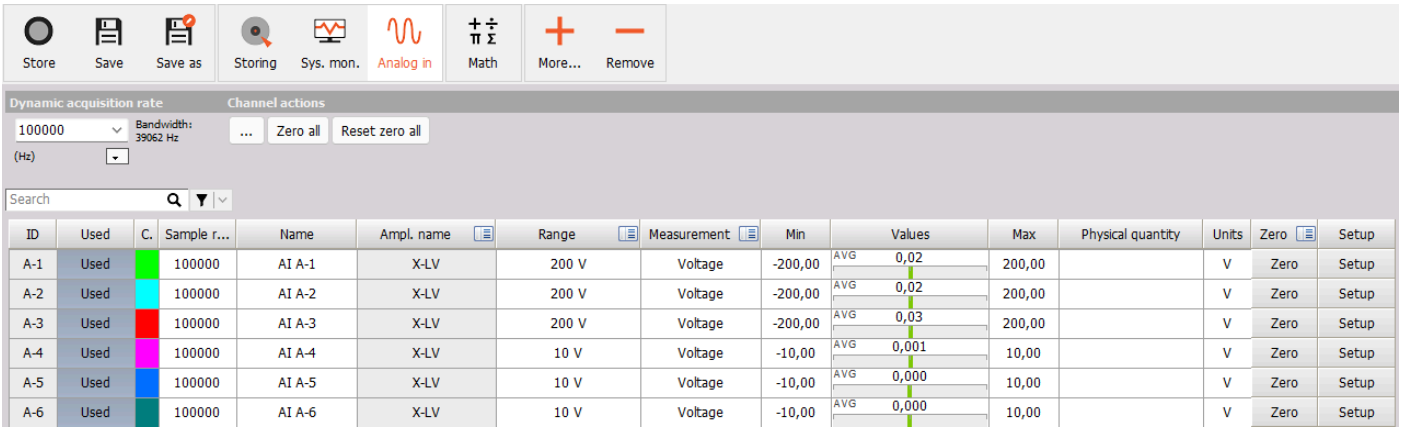
3.4. Channel Setup

When you configure all the HW settings you can then continue into the Measure mode and choose between already saved Setup files or create a New setup ❶. Click on Ch. setup (on the right of Setup files) to switch to the Channel setup mode ❷. In the channel setup inside the Analog In the module, you will see the Dynamic acquisition rate and list all the AI channels of the currently connected devices.



DewesoftX New setup

In channel setup mode you can adjust the properties of the channels. You can set the wanted channel name, wanted sample rate per channel, range etc. and select channels you want to use/store for data acquisition.



ID	Used	C.	Sample r...	Name	Ampl. name	Range	Measurement	Min	Values	Max	Physical quantity	Units	Zero	Setup
A-1	Used		100000	AI A-1	X-LV	200 V	Voltage	-200,00	AVG 0,02	200,00		V	Zero	Setup
A-2	Used		100000	AI A-2	X-LV	200 V	Voltage	-200,00	AVG 0,02	200,00		V	Zero	Setup
A-3	Used		100000	AI A-3	X-LV	200 V	Voltage	-200,00	AVG 0,03	200,00		V	Zero	Setup
A-4	Used		100000	AI A-4	X-LV	10 V	Voltage	-10,00	AVG 0,001	10,00		V	Zero	Setup
A-5	Used		100000	AI A-5	X-LV	10 V	Voltage	-10,00	AVG 0,000	10,00		V	Zero	Setup
A-6	Used		100000	AI A-6	X-LV	10 V	Voltage	-10,00	AVG 0,000	10,00		V	Zero	Setup

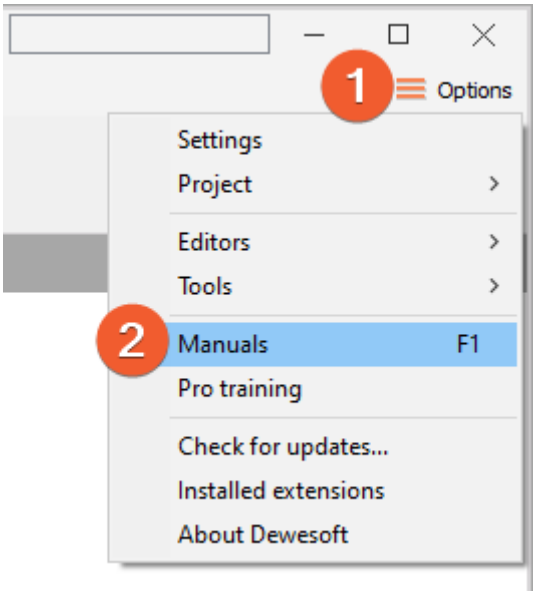
Channels inside DewesoftX

3.5. Simple Measurement

This chapter describes measurement basics, how to configure SIRIUS X and gives some details on the measurement setup.

3.5.1. Help - Manual

Note that this document is just a quick start guide. For detailed information about Dewesoft consult the Manual. To open the manual press the F1 button or click on the Options button ❶ and then select Manual from the pop-up menu ❷.



Help - Manual

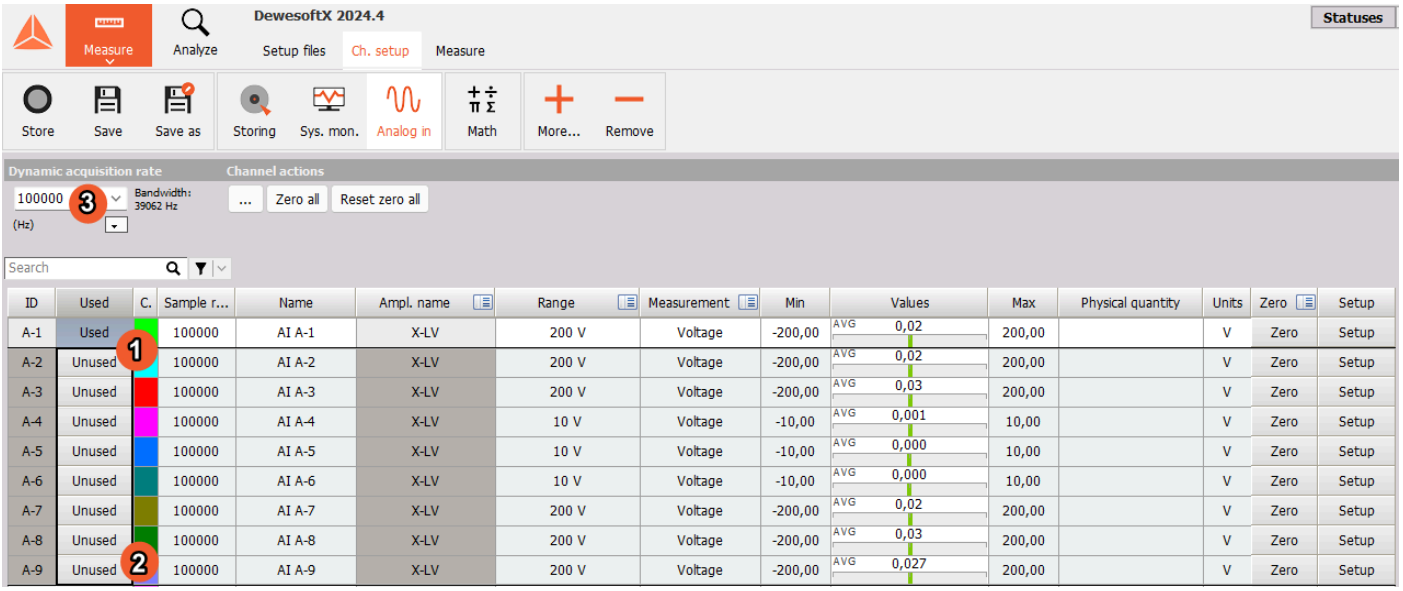
When DewesoftX has started up, you will be in Measure mode and see the Setup files list. Click on Ch. setup (on the right of Setup files) to switch to the Channel setup mode.

3.5.2. Analog channel setup

In the analog channel setup screen you can see all channels of your connected SIRIUS X devices.

Per default, only the first channel will be set to Used. Unused channels will not show up in measure mode and can thus not be used for display, calculations or storing: thus, we will also set the other channels to the used. You can left-click on the Used column of channel 2 ❶, hold the mouse button and move the mouse down to channel 9 ❷: then release the mouse button and all channels will be selected – this is shown by the black rectangle around the buttons. Then you can click into the selected region to toggle Used/Unused for all channels at once.

When you press the Setup button of a channel (the column at the right edge of the channel table – not shown in this screen-shot), you can change all the settings of the channel amplifier. You can also change the sample rate of the whole SIRIUS-XR system ❸.

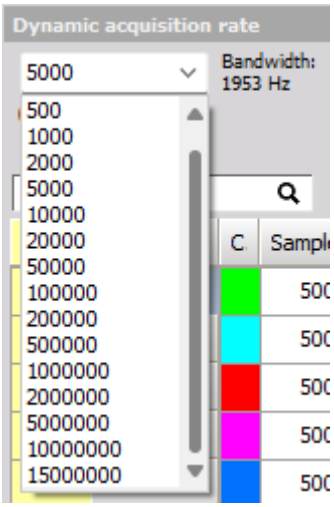


Channel setup screen

3.5.3. Sample rate

One of the most important settings is the sample rate. The sample rate defines how many data points the system will transfer to the Dewesoft. A higher sample rate also means that more data needs to be transferred via USB or network to your computer.

The sampling speed mainly depends on your application. To display your signal in a time domain with a good time resolution, you should sample 10 to 20 times faster than the frequency of the signal that you want to measure, e.g. 1 kS/s for a 50 Hz sine-wave. If you have a lot of high-frequency components, it may be necessary to sample 100 times faster, e.g. 5 kS/s for the 50 Hz sine-wave, or even more. If you display only the frequency domain (FFT analysis), a 2.5 times faster sampling would be sufficient (125 S/s for the 50 Hz sine-wave). The higher the sampling rate, the better the time resolution. But also the file size will increase.

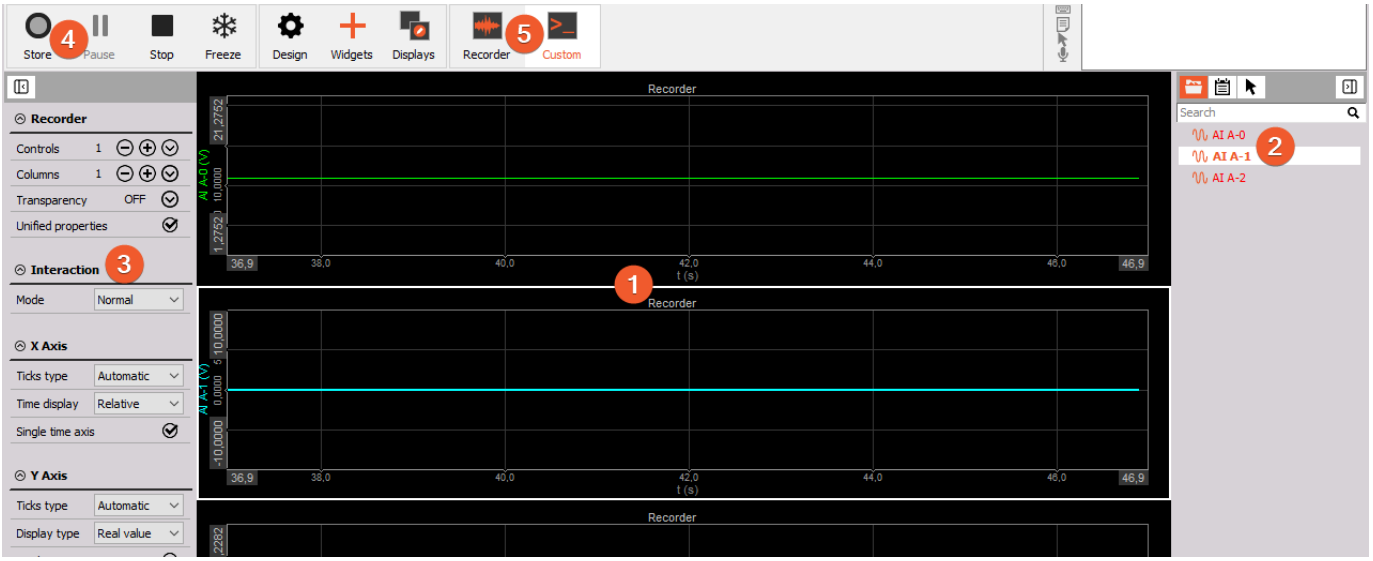


Sample rate

3.5.4. Measurement Mode

A click on Measure (at the right side of Ch. setup) will take you to the Recorder screen measure mode where you can already see live data.

Hint
When switching to Measure mode the data will not be stored automatically.



Measure mode

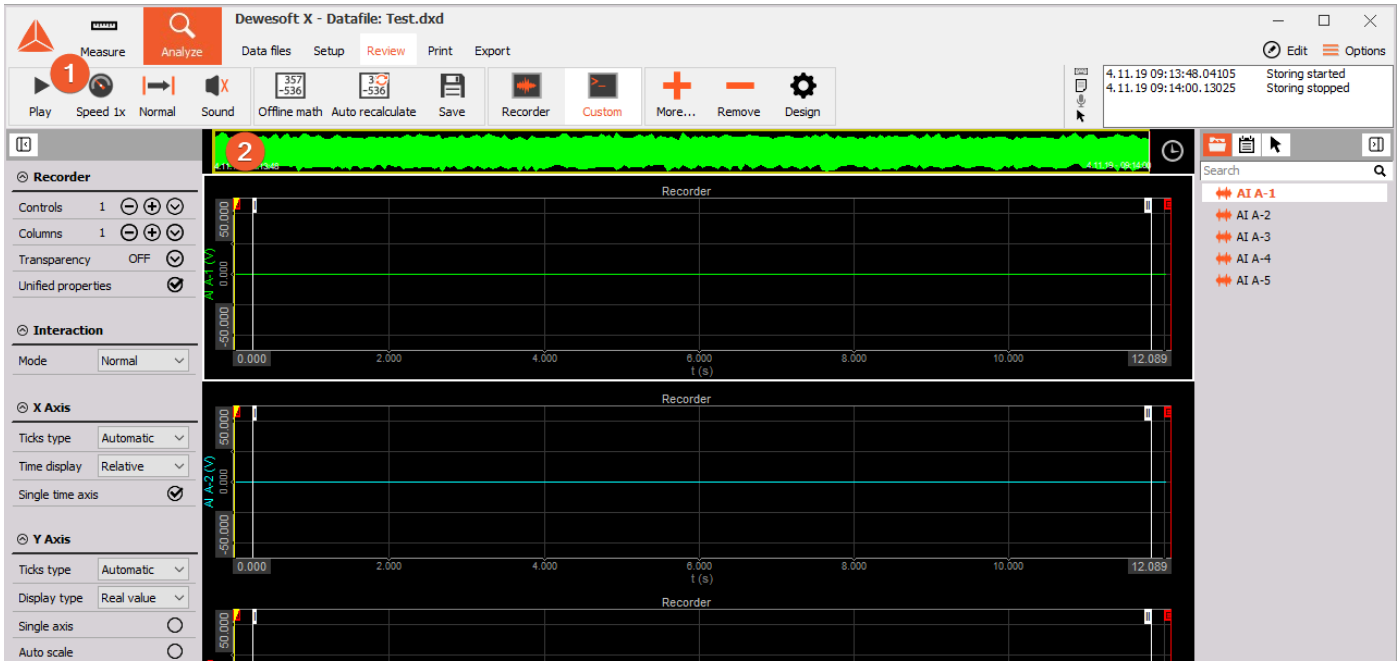
In measure mode you can have several measurement screens ❺. Dewesoft will create 2 default displays: Recorder and Custom but you can also create new displays or change the widgets on existing displays as you like.
The most important sections of the Measure mode are highlighted in the screen-shot Illustration "Measure mode":
❶ shows the live measurement data in different widgets which are depending on the selected measurement screen. In this case, we see a simple recorder widget where data is presented in the time domain. You can use the channel-selector list ❷ to assign measurement channels to the widgets. Each widget has different settings, ❸ shows the settings of the currently selected recorder widget.
To start storing the data, press the Store button ❹. When you are done with recording, press the Stop button.

Important
Usage of online math with high sample rates is not suggested. In that case, offline math in analyze mode is recommended.

Now Dewesoft has created a data file with all the data that you have seen during the recording session. You can now click the Analyse button (on the left-top of the screen to the right of the Measure button) to go to Analyze mode.

3.5.5. Analyze Mode

When you have just stopped a measurement, DewesoftX will automatically open the last recorded data file in Review mode, so that you can start the analysis right away.



Analyze mode

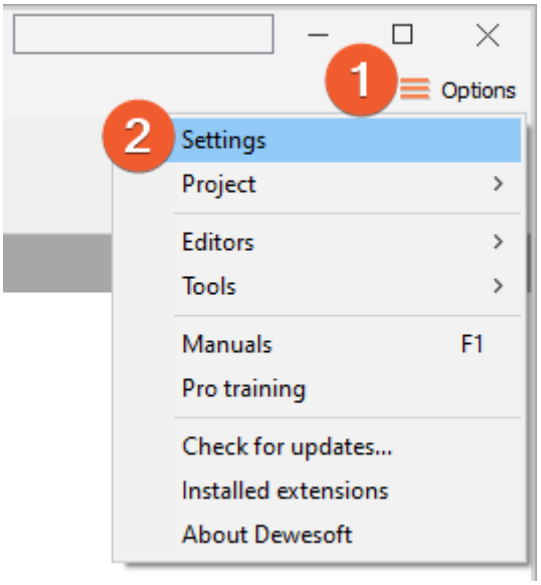
The Review mode is much like the measurement mode. You will see the same measurement screens, the channel-selector list and the properties of the currently selected instrument.

Differences are:
(1) you have additional tool-buttons
(2) there is a Signal overview window which will show you the whole data of one selected channel of the data file

Now you can use the cursors to analyze your data, zoom in and out of the data, click Offline math to add computations based on your data, etc. You can also change the design of your measurement screens, print reports based on your data and export the data to other file formats for further analysis.

3.6. Advanced configuration

Note, that the Dewesoft launcher has already done the hardware setup for you – you can check this in the Settings dialogue. Click the Options button ❶ – and then click the Settings menu item ❷.

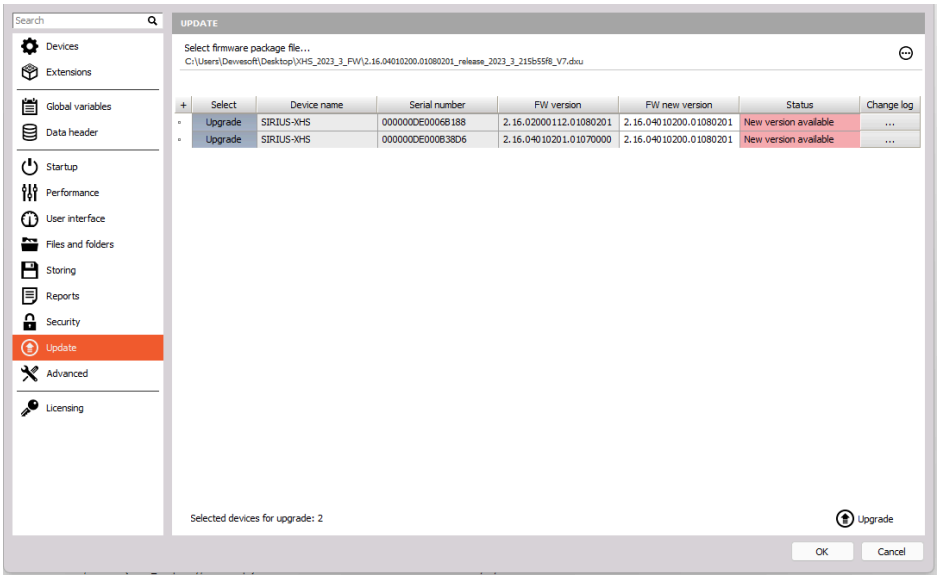


Open settings dialog

3.7. Firmware upgrade

Currently, the firmware support is still in development, so all firmware updates should be communicated and clarified with the Dewesoft team first. Any files should be received from the Dewesoft team.

- Copy the file into the Firmwares folder of your Dewesoft installation (e.g. DewesoftX\System\Firmwares).
- Connect the Dewesoft instrument to the PC and run DewesoftX.
- Go to settings under the Update tab:



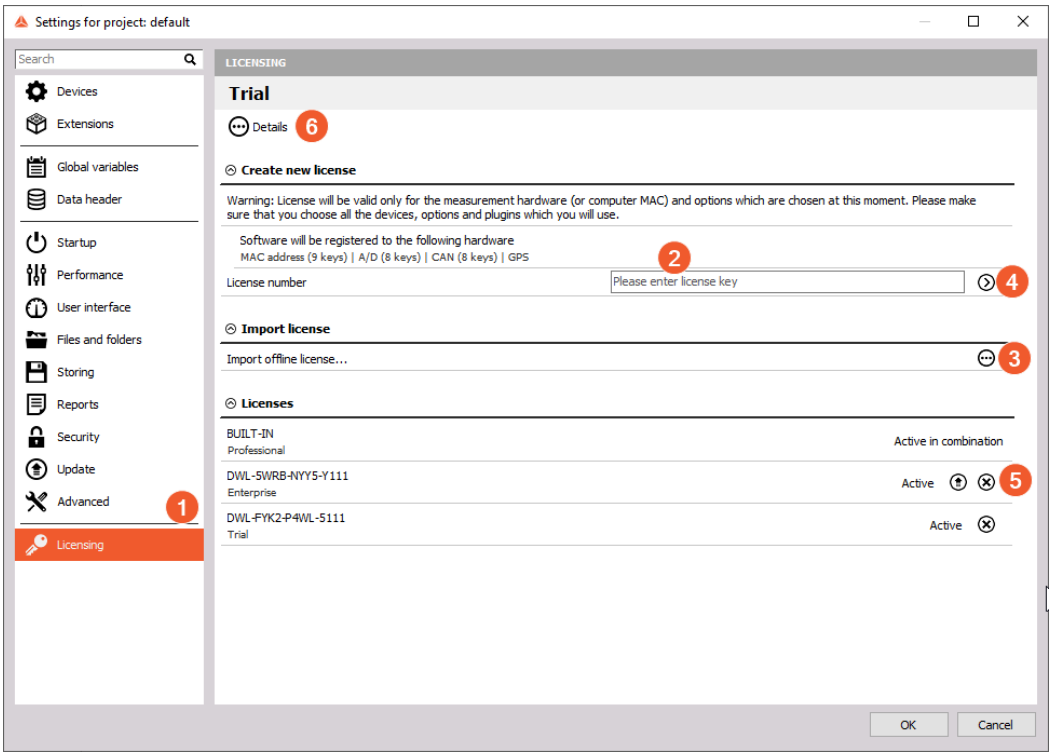
Firmware upgrade

- If the firmware package isn't selected, select it by pressing the button and find the folder with the firmware file in it.
- Select the device you want to upgrade and start the firmware upgrade by pressing the "Upgrade" button.

3.8. Licensing

SIRIUS-XR or any other Dewesoft device already comes with an embedded Dewesoft license. You can check the license details with all the available options in the Licensing tab ❶ by pressing the three-dotted button ❻. However, if the user decides to upgrade the license with an additional extension, Dewesoft will require a new license registration. The registration can be made online ❷ or offline by importing an offline license ❺ in case the system doesn't have an internet connection. The offline license can be registered on a different PC with an internet connection. If needed, the license can also be written on the actual device ❺.

Active and embedded licenses are seen under the Active licenses tab ❺. If the license is recognized as none active, it usually means that the wrong license was entered.



Licensing

Hint
All licenses regarding SIRIUS-XR system will only work when the system is connected to your PC and the device has been activated in the hardware setup.

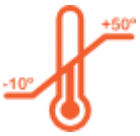
4. System Overview

SIRIUS-XR System

openDAQ SDK compliant.

15
MS/s/ch

High sampling rates



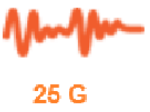
-10°C to +50°C

IP20

Ethernet

PTP

PTP
synchronization



Shock rating
25 G

4.1. Main features

- **HIGH-END SIGNAL CONDITIONING:** SIRIUS® X and SIRIUS® XHS deliver versatile, high-quality data acquisition across signals such as voltage, current, strain, vibration, charge, resistance, digital I/O, encoders, temperature and more. SIRIUS XHS enables high-speed, high-bandwidth measurements for transient and dynamic events, while SIRIUS X ensures alias-free acquisition with superior dynamic range and accuracy. Together, they provide advanced signal conditioning and precise, reliable data capture for the most demanding applications.
- **HIGH BANDWIDTH, HIGH DYNAMIC RANGE:** SIRIUS® combines two complementary technologies for optimal performance: HybridADC in SIRIUS XHS enables high-bandwidth acquisition up to 5 MHz and 15 MS/s, along with alias-free measurements up to 2 MS/s, while SIRIUS X delta-sigma amplifiers provide 24-bit resolution with superior dynamic range and signal quality at sampling rates up to 500 kS/s.
- **SIMPLE AND EFFECTIVE CONNECTIVITY AND INTERFACES:** SIRIUS® XR is built for seamless connectivity and effortless integration into any test environment. With dual 10 GbE interfaces via flexible SFP connections (copper or fiber) and CAN-FD support directly on measurement slices, the system ensures fast and reliable data exchange across all levels. Advanced synchronization options—including PTPv2, IRIG, GPS, and PPS, with future-ready White Rabbit support—deliver precise timing down to the sub-nanosecond level. Combined with high-speed internal PCIe lanes for real-time processing and high-throughput data logging, SIRIUS® XR provides a powerful, streamlined connectivity backbone for modern measurement applications.
- **FLEXIBLE CONFIGURATION:** SIRIUS® XR offers a flexible, scalable architecture with a standard GATEWAY slice and optional built-in SBOX computer for advanced processing and high-speed data logging. An integrated network switch enables easy daisy-chaining with PTPv2 synchronization and up to 10 Gbps data throughput. Available from compact XR5 to high-channel XR9 systems, it adapts seamlessly to any measurement setup.
- **INTEGRATED GNSS WITH RTK:** SIRIUS XR systems can be equipped with an optional 10 Hz or 100 Hz GNSS receiver, allowing for precise GPS positioning in navigational testing applications. These GNSS receivers also offer optional RTK support, which can enhance positioning accuracy to 1 cm.
- **openDAQ SUPPORT:** SIRIUS XR devices are compliant with the openDAQ, open data acquisition platform. Discover, configure and receive data from any openDAQ compatible sensors, devices and instruments in your favorite programming environment.
- **SOFTWARE INCLUDED:** Every Dewesoft data acquisition system is bundled with award-winning DewesoftX data acquisition software. The software is easy to use but very rich and deep in functionality. All software updates are free forever with no hidden licensing or yearly maintenance fees.
- **DEWESOFT QUALITY AND 7-YEAR WARRANTY:** Enjoy our industry-leading 7-year warranty. Our data acquisition systems are made in Europe, utilizing only the highest build quality standards. We offer free and customer-focused technical support. Your investment into the Dewesoft solutions is protected for years ahead.

4.2. SIRIUS-XR System specifications

4.2.1. SIRIUS-XR9 System specifications

XR9 platform	
No. of slots	9 (all purpose) and XR-GATEWAY
Dedicated slots	8 / GPU 9 / XR-SBOX
Analog inputs	up to 288 channels (8, 16 or 32 per slot)
Counter inputs	up to 72 inputs (8 per slot)
CAN	CAN 2.0, CAN-FD (DSUB9) up to 9 or more, depends on DAQ slice type
Computer	XR-SBOX optional
Ventilation	4x DC axial fans
Air filter	Removable filter mesh
Mounting	Removable handles M6 screw inserts for mounting (4x on top, 4x on bottom)
Power consumption incl. fans	24 W min, 42 W max
XR-GATEWAY, Interfaces and options	
ON pushbutton	illuminated pushbutton, system power On/Off
Ethernet	2x 10G SFP (copper or fiber)
EtherCAT®	2x RJ45, 100 Mbps Full Duplex In/Out
Synchronisation	PTP IEEE 1588v2 synchronization 2x SIRIUS® SYNC (IRIG-B-DC) 2x SMA female 10 MHz clock reference In/Out 2x SFP for White Rabbit precision synchronisation
Analog reference input	LEMO L00B2f (for SIRIUS XHS CAL-REF option)
GPS connector	DSUB9f with GPS PPS out, Remote on, GPS display and com. UART, Supply: +5 V 500 mA, +12V 250 mA
Remote on	On > 4 to 48 V Off < 0.5 V
GPS (option)	10 Hz or 100 Hz with RTK, SMA female
GPS display (option)	External on DSUB9f connector
Power supply input	12 - 48 V DC 31 A max. LEMO L2B2m
Power consumption	12 W, XR-GATEWAY

Dimensions	267 x 155 x 25 mm
Weight	560g
System power consumption	
Typical power consumption	300 - 350 W Full configuration, 9x slots occupied
Peak power consumption	550 - 600 W Full configuration, 8x slots occupied and XR-SBOX
Environmental	
Operating Temperature	-10 to 50 °C
Storage Temperature	-30 to 85 °C
Operating Humidity	10 to 90 % RH non-condensing
Storage Humidity	5 to 95 % RH non-condensing
IP rating	IP20
Shock & Vibration	Vibration sweep sinus (EN 60068-2-6:2008) Vibration random (EN 60721-3-2: 1997 - Class 2M2) Shock (EN 60068-2-27:2009) MIL-STD-810D
Physical	
Dimensions	447 x 319 x 155 mm w.o. handles 483 x 319 x 200 mm with handles
Weight	7670 g (excl. XR-GATEWAY, XR-SBOX, slices)
Weight	560 g, XR-GATEWAY 1120 g, XR-SBOX 1300 g, SIRIUS-XHS 8xCHG w. CAL-REF 1370 g, SIRIUS-XHS 8xUNI w. CAL-REF
Rev: 1775120400	

4.2.2. SIRIUS-XR9: Front side

Amplifier side

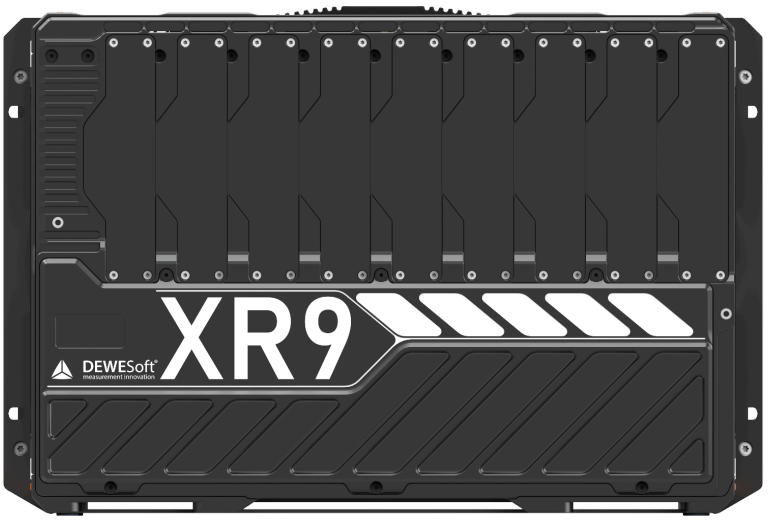
Hint

Connectors on the amplifier side are the connectors from SIRIUS-XR-GATEWAY and rack slices (SIRIUSr-XHS and SIRIUSr-X slices).

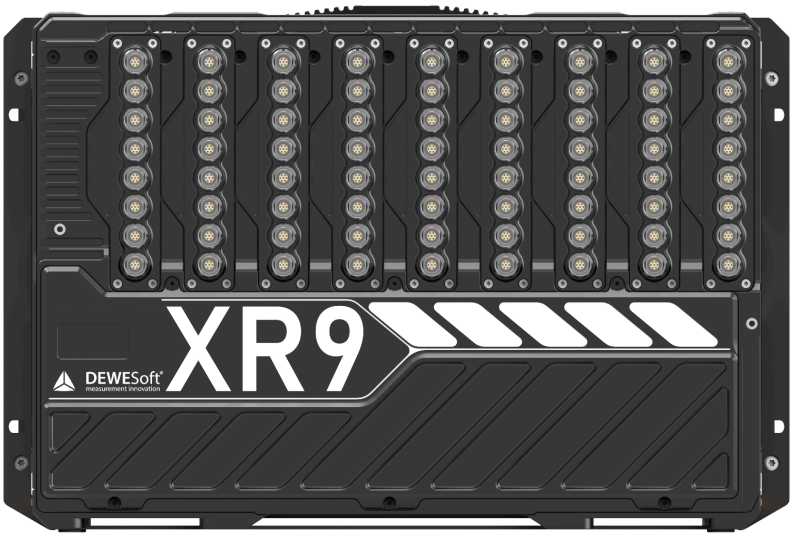
Hint

To remove (unmount) slices, it is necessary to unscrew the screws on the front side and press the red switch in the top right corner of the slice.

4.2.3. SIRIUS-XR9: Rear side



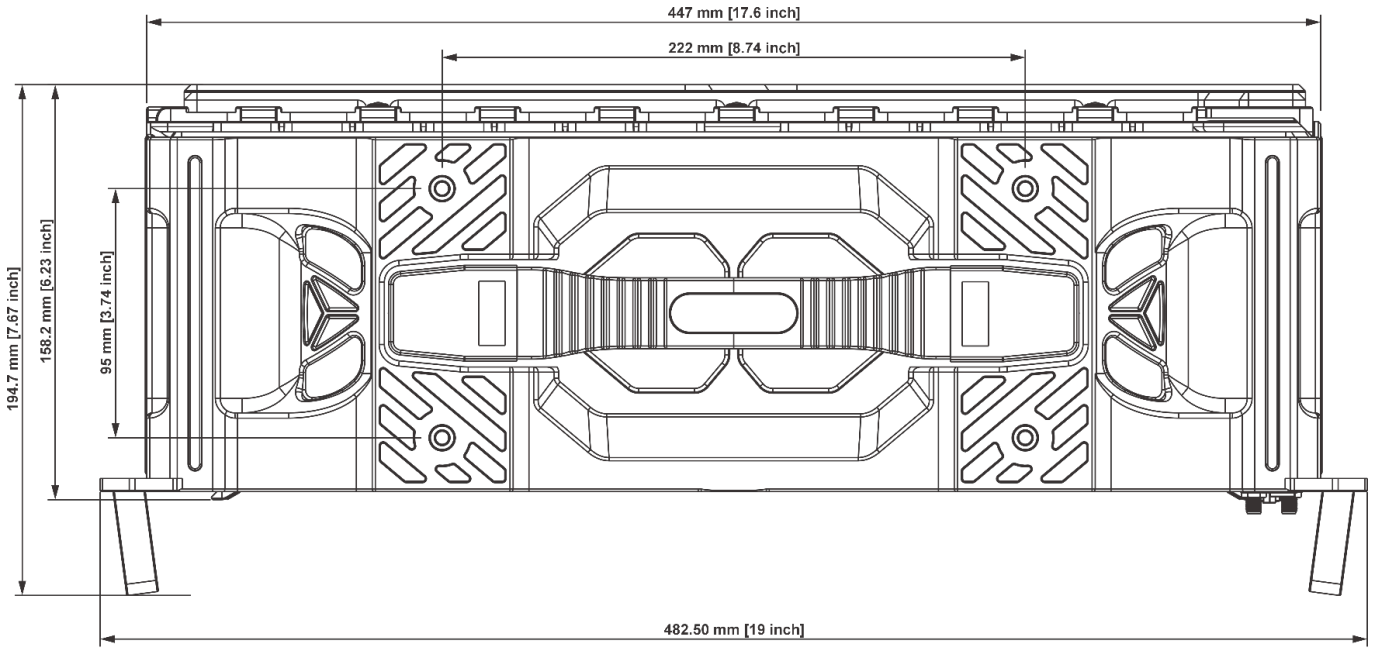
XR9 system with blanks

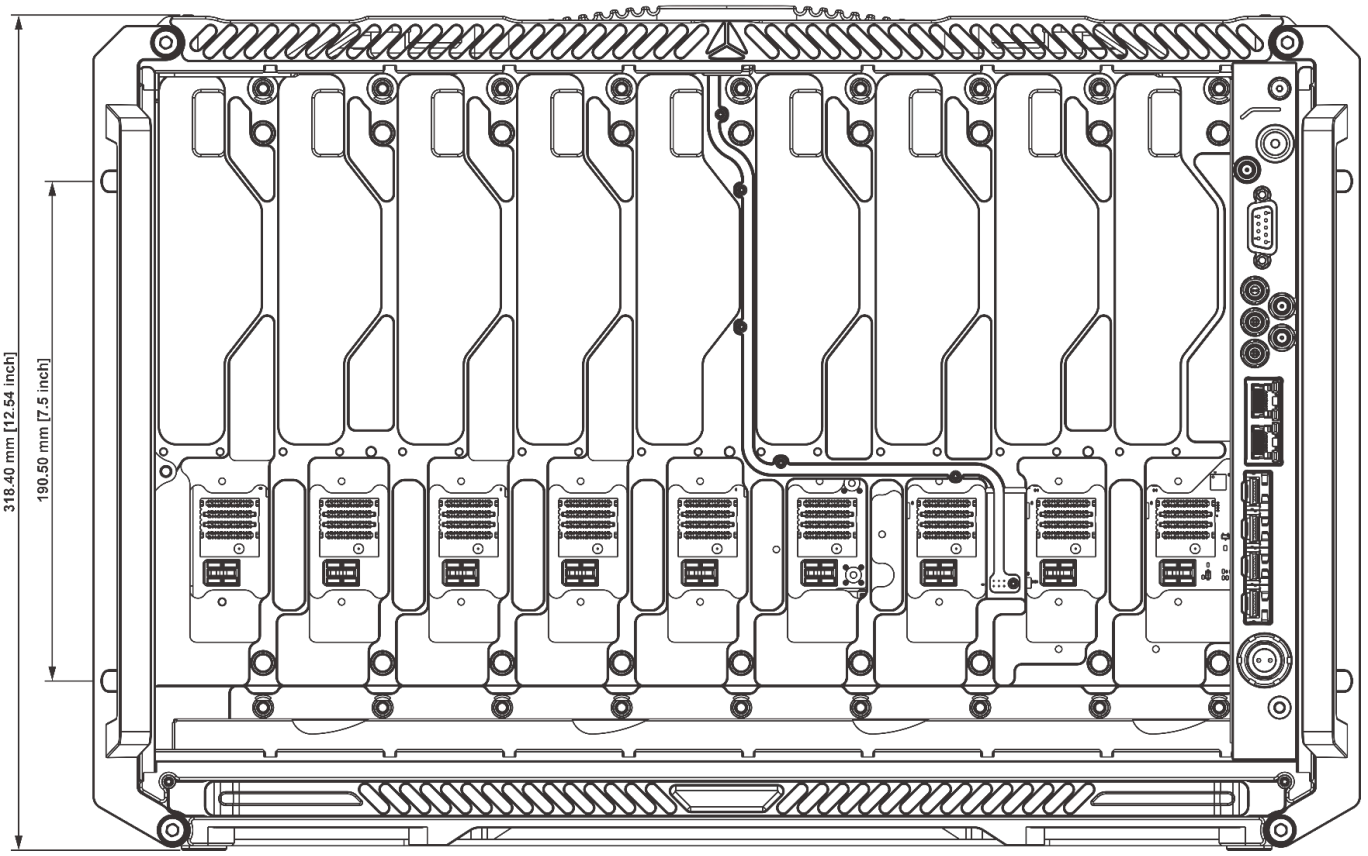


XR9 system with CNT interface connectors

Important
Connectors for counters are affixed to the rear of the device. If moving a slice from one slot to another without the counters, the counter connectors need to be unscrewed and moved.

4.2.4. SIRIUS-XR9: Mechanical drawing





XR9 system mechanical drawing

4.2.5. SIRIUS-XR5 System specifications

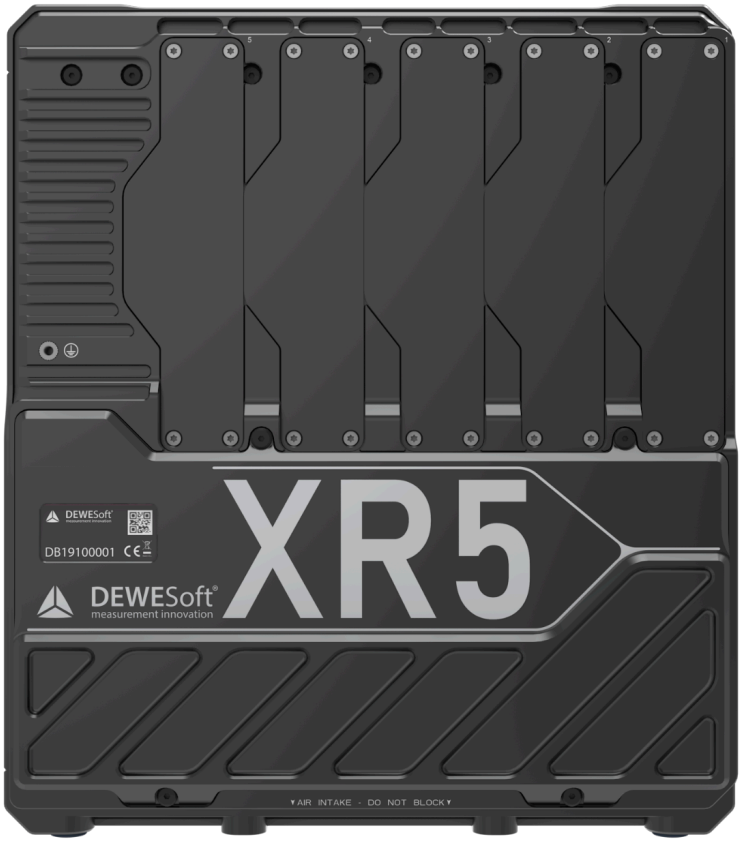
General	
No. of slots	5 (all purpose) and XR-GATEWAY
Dedicated slots	4 / GPU 5 / XR-SBOX
Analog inputs	up to 160 channels (8, 16 or 32 per slot)
Counter inputs	up to 40 inputs (8 per slot)
CAN	CAN 2.0, CAN-FD (DSUB9) up to 5 or more, depends on DAQ slice type
Computer	XR-SBOX optional
Ventilation	2x DC axial fans
Air filter	Removable filter mesh
Mounting	Removable handles M6 screw inserts for mounting (4x on top, 4x on bottom)
Power consumption incl. fans	24 W min, 33 W max
XR-GATEWAY, Interfaces and options	
ON pushbutton	illuminated pushbutton, system power On/Off
Ethernet	2x 10G SFP (copper or fiber)
EtherCAT®	2x RJ45, 100 Mbps Full Duplex In/Out
Synchronisation	PTP IEEE 1588v2 synchronization 2x SIRIUS® SYNC (IRIG-B-DC) 2x SMA female 10 MHz clock reference In/Out 2x SFP for White Rabbit precision synchronisation
Analog reference input	LEMO L00B2f (for SIRIUS XHS CAL-REF option)
GPS connector	DSUB9f with GPS PPS out, Remote on, GPS display and com. UART, Supply: +5 V 500 mA, +12V 250 mA
Remote on	On > 4 to 48 V Off < 0.5 V
GPS (option)	10 Hz or 100 Hz with RTK, SMA female
GPS display (option)	External on DSUB9f connector
Power supply input	12 - 48 V DC 31 A max. LEMO L2B2m
Power consumption	12 W, XR-GATEWAY
Dimensions	267 x 155 x 25 mm

Weight	560g
System power consumption	
Typical power consumption	190 - 220 W Full configuration, 5x slots occupied
Peak power consumption	250 - 400 W Full configuration, 8x slots occupied and XR-SBOX
Environmental	
Operating Temperature	-10 to 50 °C
Storage Temperature	-30 to 85 °C
Operating Humidity	10 to 90 % RH non-condensing
Storage Humidity	5 to 95 % RH non-condensing
IP rating	IP20
Shock & Vibration	Vibration sweep sinus (EN 60068-2-6:2008) Vibration random (EN 60721-3-2: 1997 - Class 2M2) Shock (EN 60068-2-27:2009) MIL-STD-810D
Physical	
Dimensions	278 x 319 x 155 mm w.o. handles 312 x 319 x 205 mm with handles
Weight	5060 g (excl. XR-GATEWAY, XR-SBOX, slices)
Weight	560 g, XR-GATEWAY 1120 g, XR-SBOX 1300 g, SIRIUS-XHS 8xCHG w. CAL-REF 1370 g, SIRIUS-XHS 8xUNI w. CAL-REF
Rev: 1775120400	

4.2.6. SIRIUS-XR5: Front side

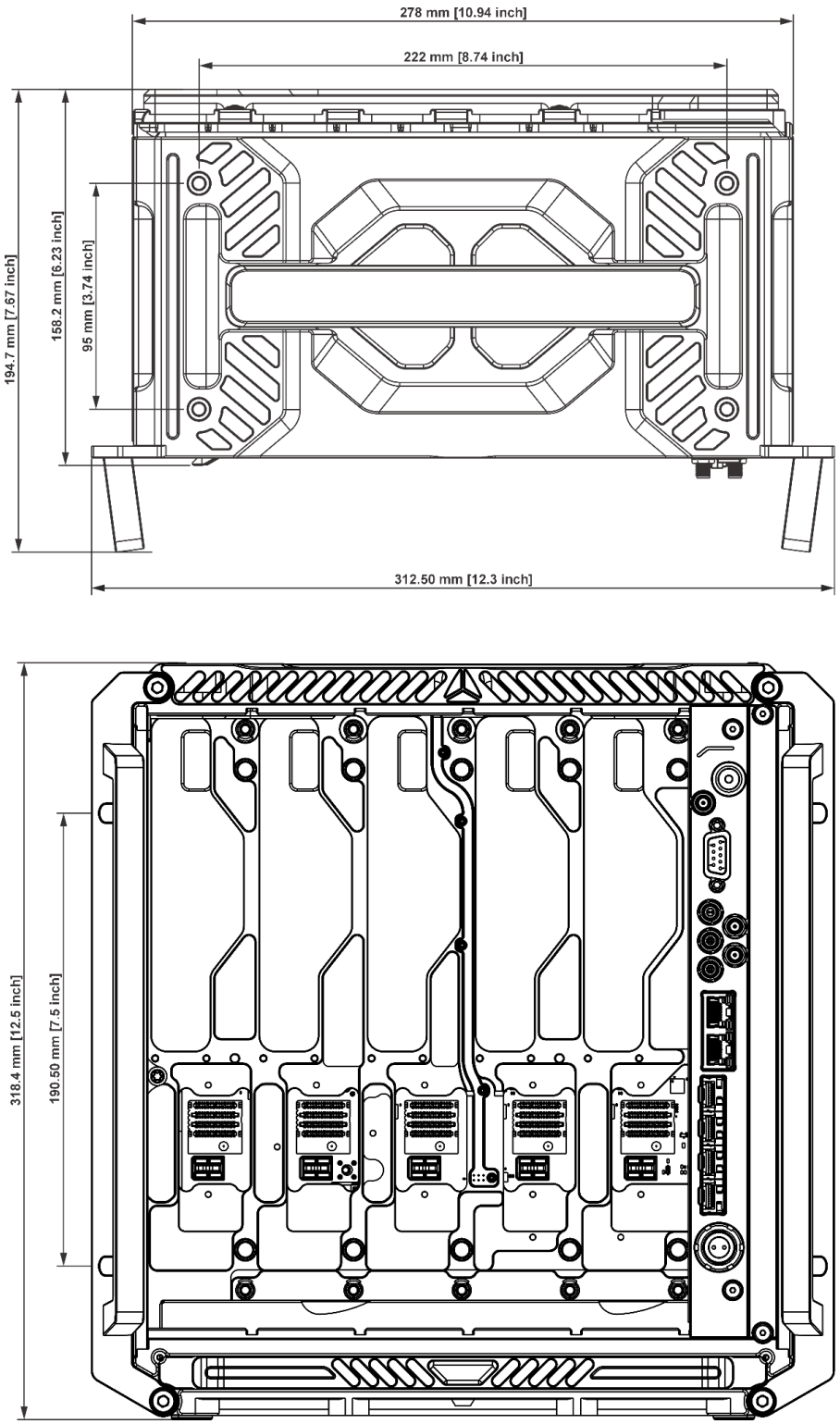
XR5 Front side

4.2.7. SIRIUS-XR5: Rear side



XR5 Rear side

4.2.8. SIRIUS-XR5: Mechanical drawing

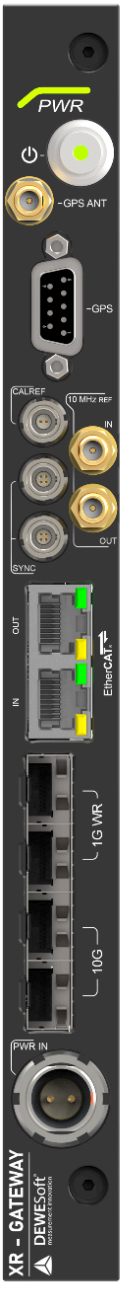


XR5 mechanical drawing

4.3. XR System Components

4.3.1. SIRIUS-XR-GATEWAY

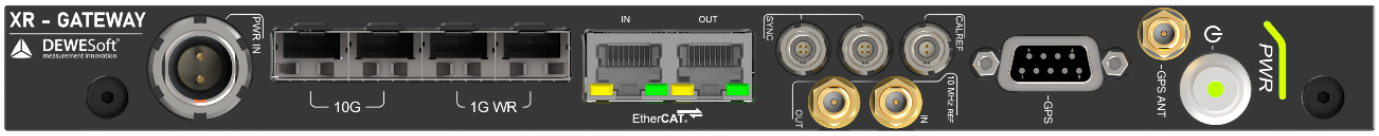
SIRIUS-XR-GATEWAY render



SIRIUS-XR-GATEWAY front

XR-GATEWAY, Interfaces and options	
ON pushbutton	illuminated pushbutton, system power On/Off
Ethernet	2x 10G SFP (copper or fiber)
EtherCAT®	2x RJ45, 100 Mbps Full Duplex In/Out
Synchronisation	PTP IEEE 1588v2 synchronization 2x SIRIUS® SYNC (IRIG-B-DC) 2x SMA female 10 MHz clock reference In/Out 2x SFP for White Rabbit precision synchronisation
Analog reference input	LEMO L00B2f (for SIRIUS XHS CAL-REF option)
GPS connector	DSUB9f with GPS PPS out, Remote on, GPS display and com. UART, Supply: +5 V 500 mA, +12V 250 mA
Remote power on	On > 4 to 48 V Off < 0.5 V
GPS (option)	10 Hz or 100 Hz with RTK, SMA female
GPS display (option)	External on DSUB9f connector
Power supply input	12 - 48 V DC 31 A max. LEMO L2B2m
Power consumption	12 W, XR-GATEWAY
Environmental	
Operating Temperature	-10 to 50 °C
Storage Temperature	-30 to 85 °C
Operating Humidity	10 to 90 % RH non-condensing
Storage Humidity	5 to 95 % RH non-condensing
IP rating	IP20
Shock & Vibration	Vibration sweep sinus (EN 60068-2-6:2008) Vibration random (EN 60721-3-2: 1997 - Class 2M2) Shock (EN 60068-2-27:2009) MIL-STD-810D
Physical	
Dimensions	267 x 155 x 25 mm
Weight	560g
Rev: 1775120400	

4.3.1.1. SIRIUS-XR-GATEWAY: Front overview



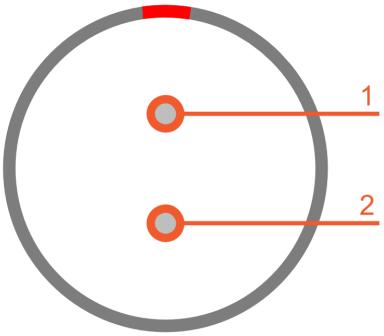
SIRIUS-XR-GATEWAY front
This image is rotated 90° clockwise for better visualization.

Name	Description
PWR IN	Power in 2-pin LEMO 2B series male connector
LAN	2x 10 GbE (2xSFP)
WR*	2x SFP for White Rabbit precision synchronisation
ECAT IN* / ECAT OUT*	2x RJ45 connector
SYNC	2x 4-pin LEMO female sync connector
CAL REF	2-pin LEMO female connector
CLOCK IN/OUT*	2x SMA antenna 10 MHz clock for synchronization, input / output
GPS*	DSUB-9 female GPS connector
GPS ANT*	SMA Female GPS antenna
PWR	Button to switch the system on or off.

* Not supported yet.

4.3.1.2. SIRIUS-XR-GATEWAY: Pinouts for front connectors

4.3.1.2.1. SIRIUS-XR-GATEWAY: PWR IN pinout

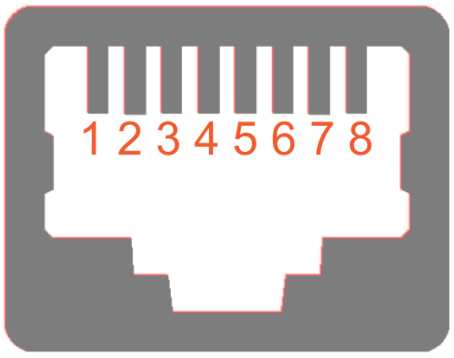


Power in connector: pin-out (2-pin LEMO male)

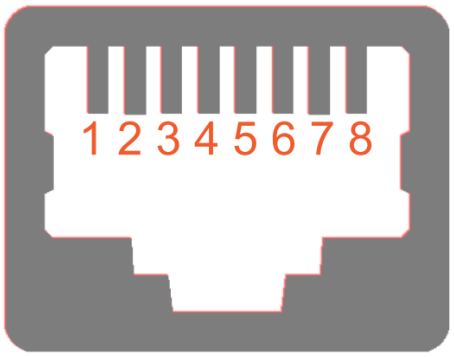
Pin	Name	Description
1	V +	Supply
2	V -	Ground

4.3.1.2.2. SIRIUS-XR-GATEWAY: ECAT IN/ OUT pinout

Currently, EtherCAT is not supported yet.



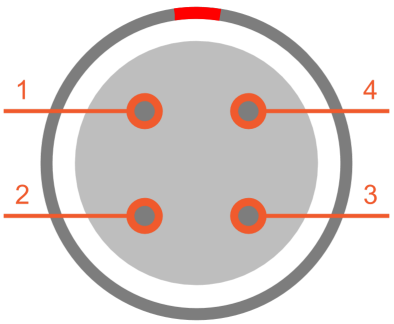
EtherCAT IN connector: pin-out (RJ45)



EtherCAT OUT connector: pin-out (RJ45)

Pin	Name	Description
1	TX_P	Transmission +
2	TX_N	Transmission -
3	RX_P	Reception +
4	NC	Not connected
5	NC	Not connected
6	RX_N	Reception -
7	NC	Not connected
8	NC	Not connected

4.3.1.2.3. SIRIUS-XR-GATEWAY: SYNC pinout

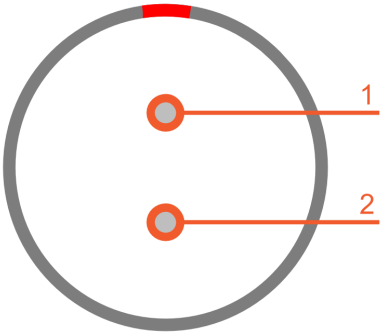


Sync connector: pin-out (4-pin LEMO female)

Pin	Name	Description
1	CLK	Clock
2	Trigg	Trigger
3	PPS	PPS
4	DGND	Digital Ground

Interface connector: EEG.00.304.CLL
Mating connector: FGG.00.304.CLAD27Z

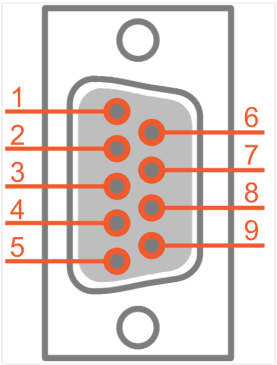
4.3.1.2.4. SIRIUS-XR-GATEWAY: CAL REF pinout



CAL REF connector: LEMO 2-pin

Pin	Name	Description
1	GND	Ground
2	SIG	Signal

4.3.1.2.5. SIRIUS-XR-GATEWAY: GPS DSUB pinout



GPS connector: DSUB9

Pin	Name	Description
1	+5V	+5V (max. 0.5 A)
2	TXD port A	
3	RXD port A	
4	PPS	GPS PPS Out
5	GND	Ground
6	Remote-On	Remote
7	NC	Not connected
8	NC	Not connected
9	+12V	+12V (max. 0.25 A)

4.3.4. Modules

4.3.4.1 XR - SBOX

Computer	
Processor	Intel® Xeon® W-11555MRE Processor (12M Cache- up to 4.50 GHz)
Memory	64 GB DDR4-3200 SO-DIMM
Storage	Non-removable 1 TB M.2 NVMe
Interfaces and options	
USB Front	4x USB 3.1 SuperSpeed+ 10 Gbps
Ethernet	1x 2.5 GLAN (RJ45)
Video	1x HDMI 1x DVI-I, VGA analog on DVI-I connector (supports DVI only or VGA only)
Cartridge 1	2x PCIe x1 (for M.2 WiFi, secondary storage)
Cartridge 2	1x PCIe x4 (for M.2 removable storage)
Rack connectivity	
Ethernet	1x 10 GLAN for DAQ data (SIRIUS XHS or SIRIUS X)
EtherCAT®	1x EtherCAT® 100 Mbps Full Duplex (SIRIUS XHS or SIRIUS X)
PCI Express	x4 PCIe for DAQ data (SIRIUS XHS) x8 PCIe to GPU
Power	
Power supply	12 - 48 V DC
Power consumption	30 W minimum, CPU idle 90 W sustained max CPU load 130 W peak power
Environmental	
Operating Temperature	0 to 50 °C
Storage Temperature	-30 to 85 °C
Operating Humidity	10 to 90 % RH non-condensing
Storage Humidity	5 to 95 % RH non-condensing
IP rating	IP20
Shock & Vibration	Vibration sweep sinus (EN 60068-2-6:2008) Vibration random (EN 60721-3-2: 1997 - Class 2M2) Shock (EN 60068-2-27:2009) MIL-STD-810D

Physical	
Dimensions	267 x 155 x 45 mm, rack slice version
Weight	1120 g
Rev: 1775120400	

XR SBOX

4.3.4.2 XHS Slices - overview

	XHS-HV	XHS-LV	XHS-ACC	XHS-UNI	XHS-CHG
Connectors	BANANA	DB9, BNC, BANANA	BNC	DB9	BNC
Channels per slice	8	8	8	8	8
Data rate / channel	15 MS/s	15 MS/s	15 MS/s	15 MS/s	15 MS/s
Resolution	16-bit (24-bit @ 2 MS/s)	16-bit (24-bit @ 2 MS/s)	16-bit (24-bit @ 2 MS/s)	16-bit (24-bit @ 2 MS/s)	16-bit (24-bit @ 2 MS/s)
Bandwidth	5 MHz	5 MHz	5 MHz	5 MHz	5 MHz
Voltage ranges	±2000 V ... ±200 V	±100 V ... ±50 mV	±10 V ... ±200 mV	±100 V ... ±50 mV	±10 V ... ±100 mV
Input coupling	DC	DC, AC 1 Hz	DC, AC 0.1 Hz, AC 1 Hz	DC, AC 0.1 Hz, AC 1 Hz	
Sensor excitation	✗	2.5..30 V bipolar, 2..24 V unipolar, max. 0.2 A / 2 W	IEPE 2 mA, 4 mA, 8 mA, 12 mA, 16 mA, 20 mA	Voltage; Unipolar and Bipolar 0.15 V .. 24 V Current: 100 µA - 100 mA, IEPE	IEPE 2 mA, 4 mA, 8 mA, 12 mA, 16 mA, 20 mA
Bridge connection	✗	✗	✗	✓	✗
Programmable shunt	✗	✗	✗	✗	✗
IEPE input	✗	DSI-ACC	✓	✓	✓
Resistance	✗	✗	✗	✓	✗
Temperature (PTx)	✗	DSI-RTD	✗	✓	✗
Thermocouple	✗	DSI-TH	✗	DSI-TH	✗
Potentiometer	✗	✗	✗	✗	✗
LVDT	✗	DSI-LVDT	✗	DSI-LVDT	✗
Charge	✗	DSI-CHG	✗	DSI-CHG	✓
Current	✗	ext. shunt DSI20mA, DSI5A	ext. shunt	ext. shunt DSI20mA, DSI5A	ext. shunt
TEDS	✗	✓	✓	✓	✓
Isolation voltage	CATII 1000 V	420 Vdc (300 Vacrms)	140 Vdc (100 Vacrms)	420 Vdc (300 Vacrms)	100 Vdc (100 Vacrms)
Advanced functions	High voltage, high bandwidth, high isolation	High sensor excitation and multi range	Sensor error detection, high speed	Sensor error detection, high speed	High-bandwidth and DC charge
Optional counters	✓	✓	✓	✓	✓
Rev: 1775217600					

XHS 4xHV 4xLV slice

XHS 8xACC slice

XHS 8xCHG slice

XHS 8xUNI slice

Hint
Additional information on XHS slices is available in SIRIUS XHS Technical Reference Manual

4.3.4.3 X Slices - overview

	8xUNI	16xUNI	16xLVe	32xLV	16xACC	16xSTGS	8xCAN-FD
Connectors	DSUB-9	DSUB-9	D-SUB9	Terminal block	BNC	D-SUB9	DSUB-9
Max. Channels per slice	8x	16x	16x	32x	16x	16x	4x
Data rate per channel	500 kS/s	200 kS/s	200 kS/s	100 kS/s	200 kS/s	50 kS/s	up to XY Mbit/s
Resolution	24-bit	24-bit	24-bit	24-bit	24-bit	24-bit	Digital
Bandwidth	0.437*fs	0.433*fs	0.433*fs	0.433*fs	0.433*fs	0.433*fs	✗
Voltage mode ranges	±100 V, ±10 V, ±1 V, ±100 mV	±100 V, ±10 V, ±1 V, ±100 mV	±100 V, ±5 V	±200 V, ±10 V	±10 V, ±5 V, ±1 V, ±200 mV	✗	✗
Input coupling	DC, AC 0.15 Hz	DC, AC 0.15 Hz	DC	DC	DC, AC 1 Hz, AC 0.1 Hz	DC	✗
Sensor excitation	0..24 V (unipolar) 0..12 V (bipolar) 0..100 mA (current) Max. 0.8 W/ch 2 mA, 4 mA, 6 mA (IEPE)	0..24 V (unipolar) 0..12 V (bipolar) 0..100 mA (current) Max. 0.8 W/ch 2 mA ... 20 mA (IEPE)	0...24V (unipolar) And *D-SUB9: Fixed 10V DC bipolar excitation	✗	2 mA, 4 mA, 6 mA	1 V, 2 V, 5 V	5 V (max. 240 mA), 12 V (max. 100 mA)
Bridge connection	Full, ½, ¼ 350 Ω or ¼ 120 Ω (3-wire or 4-wire), ¼ CC (2-wire or 4-wire)	Full, ½, ¼ 350 Ω or ¼ 120 Ω (3-wire or 4-wire), ¼ CC (2-wire or 4-wire)	✗	✗	✗	Full, ½, ¼ 350 Ω, ¼ 120 Ω 3-wire, 4-wire (optional)	✗
Programmable shunt	100 kΩ	100 kΩ	✗	✗	✗	100 kΩ	✗
IEPE input	✓, DSI-ACC	✓, DSI-ACC	DSI-ACC	✗	✓	✗	✗
Resistance	✓	✓	✗	✗	✗	✗	✗
Temperature (PTx)	✓	✓	DSI-RTD	✗	✗	✗	✗
Thermocouple	DSI-TH	DSI-TH	DSI-TH	✗	✗	✗	✗

Current	100 mA (int. shunt), ext. shunt, DSI-5A, DSIi-10A, DSIi-20A	100 mA (int. shunt), ext. shunt, DSI-5A, DSIi-10A, DSIi-20A	✓ (Ext. shunt)	✗	✗	✗	✗
Potentiometer	✓	✓	✓	✗	✗	✓	✗
LVDT	DSI-LVDT	DSI-LVDT	DSI-LVDT	✗	✗	✗	✗
Charge	DSI-CHG	DSI-CHG	DSI-CHG	✗	✗	✗	✗
TEDS	✓	✓	✓	✗	✓	✓	✗
Isolation voltage	CATII 250V	250V	250 V	250 V	250V	Differential	CATII 150 V
Isolation arrangement	Ch-Ch & Ch-GND	Ch-GND	Ch-GND	Ch-GND	Ch-GND	Ch-GND	Ch-Ch & Ch-GND
Advanced functions	Fully isolated, high input range, connect almost any sensor, supports TEDS	High input range, connect almost any sensor, supports TEDS, high channel density	High input range, powerful sensor supply	High input range, high-channel density	IEPE, supports TEDS, high channel density	Supports all strain types, low power consumption	CAN-FD, CAN 2.0, fully isolated, sensor supply
Rev: 1775217600							

Hint

Additional information on X slices is available in SIRIUS X Technical Reference Manual

SIRIUS X 8xUNI slice

SIRIUS X 16xUNI slice

SIRIUS X 16xLVe slice

SIRIUS X 16xSTGS slice

SIRIUS X LV slice

SIRIUS X 16xACC slice

4.3.5. Typical configurations

Typical configuration: 32xUNI, 16xCAN, XR-SBOX

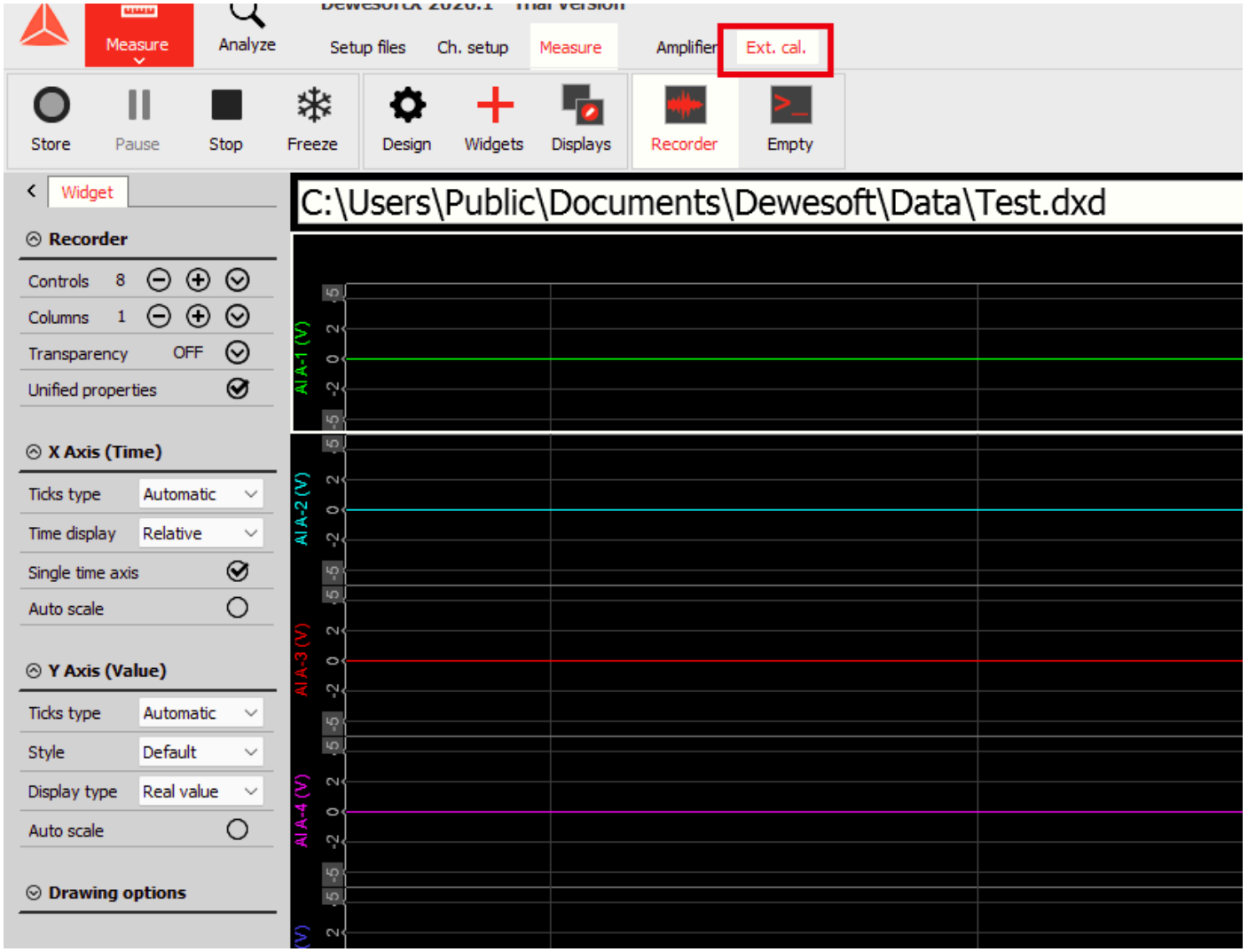
Typical configuration: SIRIUS X 32xUNI, 16xCAN, SIRIUS XHS 16xUNI, 8xACC, 8xCHG, XR-SBOX

Typical configuration: 32xCAN, XR-SBOX

Typical configuration: 64xUNI, XR-SBOX

4.3.6. External Calibration Reference

SIRIUS® XR systems feature calibration reference input. External calibration reference can be connected via a LEMO 00 B Series 2-pin connector on the GATEWAY slice. It can be switched in the software to all input channels at once to check the amplifier performance and accuracy.



External calibration reference

Important

External calibration is currently supported on the following slices:

- SIRIUS XHS-8xLV (DSUB9)
- SIRIUS XHS-8xUNI
- SIRIUS XHS-8xCHG

4.4. Connectivity (Sync and Bandwidth limitations)

4.4.1 Bandwidth

Be sure to keep in mind the bandwidth available when using CNT channels and AI channels at maximum sampling rate.

Communication protocol	Theoretical bandwidth	Available bandwidth
10GbE	10 Gbit/s	approx. 9.0 Gbit/s

To calculate the bandwidth keep in mind:

	Filter off / Basic	Additional functionalities
AI	2 Bytes	4 Bytes (Digital filter on) Note: only available up to 2 MS/s
CNT	4 Bytes 4 Bytes (Event counting mode)	8 Bytes (Sensor mode) 8 Bytes (Event counting Advanced mode)

Important
Be mindful of bandwidth limitations when daisy-chaining devices together!

4.4.2. Sync accuracy

The slices in Dewesoft XR9 systems support PTP v2, the latest version of the Precision Time Protocol (PTP) protocol, in which a clock master is used to synchronize all of the clocks on a computer network. PTP v2 provides ~1 µs clock accuracy across a LAN. The same protocol can also be used to achieve highly accurate synchronization between external XHS and XR systems.

Important
PTP v2, standardized under IEEE 1588-2008 and updated under IEEE 1588-2019, is not backwardly compatible with the older PTP version (IEEE 1588-2002).

4.5.4. Storing redundancy

When using XHS modules and XR - SBOX, triple redundancy in storing data can be achieved. Data can be simultaneously stored on:

1. The XHS slice
2. The XR - SBOX
3. An external PC

Hint

Sirius X slices do not have built-in storage capability.

5. Warranty information

Notice
The information contained in this document is subject to change without notice.

Note:
Dewesoft d.o.o. shall not be liable for any errors contained in this document. Dewesoft MAKES NO WARRANTIES OF ANY KIND WITH REGARD TO THIS DOCUMENT, WHETHER EXPRESS OR IMPLIED. DEWESOFT SPECIFICALLY DISCLAIMS THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Dewesoft shall not be liable for any direct, indirect, special, incidental, or consequential damages, whether based on contract, tort, or any other legal theory, in connection with the furnishing of this document or the use of the information in this document.

The copy of the specific warranty terms applicable to your Dewesoft product and replacement parts can be obtained from your local sales and service office. To find a local dealer for your country, please visit https://dewesoft.com/support/distributors.

5.1. Calibration

Every instrument needs to be calibrated at regular intervals. The standard norm across nearly every industry is annual calibration. Before your Dewesoft data acquisition system is delivered, it is calibrated. Detailed calibration reports for your Dewesoft system can be requested. We retain them for at least one year, after system delivery.

5.2. Support

Dewesoft has a team of people ready to assist you if you have any questions or any technical difficulties regarding the system. For any support please contact your local distributor first or Dewesoft directly via email: support@dewesoft.com.

Dewesoft d.o.o.
Gabrsko 11a
1420 Trbovlje Slovenia

Europe Tel.: +386 356 25 300
Web: http://www.dewesoft.com
The telephone hotline is available Monday to Friday from 07:00 to 16:00 CET (GMT +1:00)

5.3. Service/repair

The team of Dewesoft also performs any kinds of repairs to your system to assure a safe and proper operation in the future. For information regarding service and repairs please contact your local distributor first or Dewesoft directly on https://dewesoft.com/support/rma-service.

5.4. Restricted Rights

Use Slovenian law for duplication or disclosure. Dewesoft d.o.o. Gabrsko 11a, 1420 Trbovlje, Slovenia / Europe.

5.5. Copyright

5.6. Trademarks

We take pride in our products and we take care that all key products and technologies are registered as trademarks all over the world. The Dewesoft name is a registered trademark. Product families (KRYPTON, SIRIUS, DSI, DS-NET) and technologies (DualCoreADC, SuperCounter, GrandView) are registered trademarks as well. When used as the logo or as part of any graphic material, the registered trademark sign is used as a part of the logo. When used in text representing the company, product or technology name, the ® sign is not used. The Dewesoft triangle logo is a registered trademark but the ® sign is not used in the visual representation of the triangle logo.

6. Safety instructions

Your safety is our primary concern! Please be safe!

6.1. DEWESoft DAQ System, Safety Technical Reference Manual

Safety reference manual for the SIRIUSi Data Acquisition Devices can be found in https://dewesoft.com/download section. Search for keyword: **Safety technical reference manual**

6.2. Safety symbols in the manual

Warning
Calls attention to a procedure, practice, or condition that could cause the body injury or death

Caution
Calls attention to a procedure, practice, or condition that could possibly cause damage to equipment or permanent loss of data.

6.3. General Safety Instructions

Warning

The following general safety precautions must be observed during all phases of operation, service, and repair of this product. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the product. Dewesoft d.o.o. assumes no liability for the customer's failure to comply with these requirements.

All accessories shown in this document are available as an option and will not be shipped as standard parts.

6.3.1. Environmental considerations

The product is an electronic instrument designed with consideration for environmental impact during its design and use phase. The materials and components used comply with the requirements of the RoHS Directive (2011/65/EU) and the REACH Regulation (EC No. 1907/2006), with no intentional use of restricted or prohibited hazardous substances. During normal operation, the product does not generate direct environmental emissions and features low power consumption. The device is designed for long-term use and serviceability, supporting an extended product lifetime. The product enclosure is made of aluminum, and selected components of the product are suitable for material recycling.

6.3.2. Product End-of-Life handling

At the end of its service life, the product shall not be disposed of as unsorted municipal waste and shall be collected separately in accordance with the WEEE Directive (2012/19/EU).

The crossed-out wheeled bin symbol on the product, packaging, or accompanying documentation indicates that the equipment must be returned to an authorized collection point for waste electrical and electronic equipment. Recycling, recovery, and disposal activities shall be carried out by authorized operators in compliance with applicable local, national, and EU environmental regulations.

For proper treatment, recovery and recycling of old products and batteries, please take them to applicable collection points in accordance with your national legislation. Penalties may be applicable for incorrect disposal of this waste, in accordance with national legislation.

6.3.3. General safety and hazard warnings for all Dewesoft systems

Safety of the operator and the unit depend on following these rules.

- Use this system under the terms of the specifications only to avoid any possible danger.
- Read your manual before operating the system.
- Observe local laws when using the instrument.
- DO NOT touch internal wiring!
- DO NOT use higher supply voltage than specified!
- Use only original plugs and cables for harnessing.
- You may not connect higher voltages than rated to any connectors.
- The power cable and connector serve as Power-Breaker. The cable must not exceed 3 meters, the disconnect function must be possible without tools.
- Maintenance must be executed by qualified staff only.
- During the use of the system, it might be possible to access other parts of a more comprehensive system. Please read and follow the safety instructions provided in the manuals of all other components regarding warning and security advice for using the system.
- With this product, only use the power cable delivered or defined for the host country.
- DO NOT connect or disconnect sensors, probes or test leads, as these parts are connected to a voltage supply unit.

- Ground the equipment: For Safety Class 1 equipment (equipment having a protective earth terminal), a non-interruptible safety earth ground must be provided from the mains power source to the product input wiring terminals.
- Please note the characteristics and indicators on the system to avoid fire or electric shocks. Before connecting the system, please read the corresponding specifications in the product manual carefully.
- The inputs must not, unless otherwise noted (CATx identification), be connected to the main circuit of category II, III and IV.
- The power cord separates the system from the power supply. Do not block the power cord, since it has to be accessible for the users.
- DO NOT use the system if equipment covers or shields are removed.
- If you assume the system is damaged, get it examined by authorized personnel only.
- Adverse environmental conditions are Moisture or high humidity Dust, flammable gases, fumes or dissolver Thunderstorm or thunderstorm conditions (except assembly PNA) Electrostatic fields, etc.
- The measurement category can be adjusted depending on module configuration.
- Any other use than described above may damage your system and is attended with dangers like short-circuiting, fire or electric shocks.
- The whole system must not be changed, rebuilt or opened.
- DO NOT operate damaged equipment: Whenever it is possible that the safety protection features built into this product have been impaired, either through physical damage, excessive moisture, or any other reason, REMOVE POWER and do not use the product until the safe operation can be verified by service-trained personnel. If necessary, return the product to Dewesoft sales and service office for service and repair to ensure that safety features are maintained.
- If you assume a more riskless use is not provided anymore, the system has to be rendered inoperative and should be protected against inadvertent operation. It is assumed that a more riskless operation is not possible anymore if the system is damaged obviously or causes strange noises. The system does not work anymore. The system has been exposed to long storage in adverse environments. The system has been exposed to heavy shipment strain.
- Warranty void if damages caused by disregarding this manual. For consequential damages, NO liability will be assumed!
- Warranty void if damage to property or persons caused by improper use or disregarding the safety instructions.
- Unauthorized changing or rebuilding the system is prohibited due to safety and permission reasons (CE).
- Be careful with voltages >25 VAC or >35 VDC! These voltages are already high enough in order to get a perilous electric shock by touching the wiring.
- The product heats during operation. Make sure there is adequate ventilation. Ventilation slots must not be covered!
- Only fuses of the specified type and nominal current may be used. The use of patched fuses is prohibited.
- Prevent using metal bare wires! Risk of short circuit and fire hazard!
- DO NOT use the system before, during or shortly after a thunderstorm (risk of lightning and high energy over-voltage). An advanced range of application under certain conditions is allowed with therefore designed products only. For details please refer to the specifications.
- Make sure that your hands, shoes, clothes, the floor, the system or measuring leads, integrated circuits and so on, are dry.
- DO NOT use the system in rooms with flammable gases, fumes or dust or in adverse environmental conditions.

- Avoid operation in the immediate vicinity of high magnetic or electromagnetic fields, transmitting antennas or high-frequency generators, for exact values please refer to enclosed specifications.
- Use measurement leads or measurement accessories aligned with the specification of the system only. Fire hazard in case of overload!
- Lithium ion batteries are classified as not hazardous when used according to the recommendations of the manufacturer described in Battery Safety Data Sheet, which is available for download from this link.
- Do not switch on the system after transporting it from a cold into a warm room and vice versa. The thereby created condensation may damage your system. Acclimatise the system unpowered to room temperature.
- Do not disassemble the system! There is a high risk of getting a perilous electric shock. Capacitors still might be charged, even if the system has been removed from the power supply.
- The electrical installations and equipment in industrial facilities must be observed by the security regulations and insurance institutions.
- The use of the measuring system in schools and other training facilities must be observed by skilled personnel.
- The measuring systems are not designed for use in humans and animals.
- Please contact a professional if you have doubts about the method of operation, safety or the connection of the system.
- Please be careful with the product. Shocks, hits and dropping it from already- lower level may damage your system.
- Please also consider the detailed technical reference manual as well as the security advice of the connected systems.
- This product has left the factory in safety-related flawlessness and in proper condition. In order to maintain this condition and guarantee safety use, the user has to consider the security advice and warnings in this manual.

EN 61326-3-1:2008
IEC 61326-1 applies to this part of IEC 61326 but is limited to systems and equipment for industrial applications intended to perform safety functions as defined in IEC 61508 with SIL 1-3.

The electromagnetic environments encompassed by this product family standard are industrial, both indoor and outdoor, as described for industrial locations in IEC 61000-6-2 or defined in 3.7 of IEC 61326-1.

Equipment and systems intended for use in other electromagnetic environments, for example, in the process industry or in environments with potentially explosive atmospheres, are excluded from the scope of this product family standard, IEC 61326-3-1.

Devices and systems according to IEC 61508 or IEC 61511 which are considered as “operationally well-tried”, are excluded from the scope of IEC 61326-3-1.

Fire-alarm and safety-alarm systems, intended for the protection of buildings, are excluded from the scope of IEC 61326-3-1.

6.4. Documentation version history

Version	Date	Notes
V01-01	20.04.2026	First version of document