
TECHNICAL REFERENCE MANUAL

DEWE-43A V23-1



1. Table of contents

1. Table of contents	2
2. About this document	4
2.1. Legend	4
2.2. Online versions	5
2.2.1. DEWE-43A technical reference manual	5
2.2.2. DewesoftX® tutorials	5
3. Specifications	6
3.1. Hardware revisions	8
3.1.1. Power distribution diagram	8
3.1.2. Analog input configuration	9
3.1.3. ADC	9
3.1.4. CMRR	18
3.1.5. Counter and digital inputs	19
4. Device operation	20
4.1. Connectors	21
4.1.1. Analog input	21
4.1.2. CAN connector	21
4.1.3. Counter input	22
4.1.4. Power supply	22
4.1.5. Sync connector	22
4.2. Typical sensor connection	23
4.2.1. Bridge sensor connection	25
5. Software installation	28
6. Using DEWE-43A in DewesoftX®	29
6.1. Connecting DEWE-43A	29
6.2. DewesoftX® Settings DEWE-43A	29
6.2.1. Start up of the device	30
6.3. Simple measurement	31
6.3.1. Help - manual	31
6.3.2. Analog channel setup	32
6.3.3. Sample rate	33
6.3.4. Measurement Mode	34
6.3.5. Analyse Mode	34
7. Firmware upgrade	36
8. DewesoftX® license information	37
9. Warranty information	38
9.1. Calibration	38
9.2. Support	38

9.3. Service/repair	38
9.4. Restricted Rights	38
9.5. Printing History	39
9.6. Copyright	39
9.7. Trademarks	39
10. Safety instructions	40
10.1. Safety symbols in the manual	40
10.2. General Safety Instructions	40
10.2.1. Environmental Considerations	40
10.2.2. Product End-of-Life Handling	40
10.2.3. System and Components Recycling	40
10.2.4. General safety and hazard warnings for all Dewesoft systems	41
11. Documentation version history	43

2. About this document

This is the Technical Reference Manual for DEWE-43A.

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

- A description of the system and the main combination and expansion options
- The description of the connection variants and the pin assignments on the inputs and outputs
- A comprehensive introduction to the configuration of the slices using DewesoftX® software.
- Technical data

2.1. Legend

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



Important

Gives you important information about a subject.
Please read carefully!



Hint

Gives you a hint or provides additional information about a subject.



Example

Gives you an example to a specific subject.

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.

2.2. Online versions

2.2.1. DEWE-43A technical reference manual

The most recent version of this manual can be downloaded from our homepage:

<https://download.dewesoft.com/list/manuals-brochures/hardware-manuals>

In the *Hardware Manuals* section click the download link for the *DEWE-43A technical reference manual*.

2.2.2. DewesoftX® tutorials

The DewesoftX® Tutorials document provides basics and additional information and examples for working with DewesoftX® and certain parts of the program.

The latest version of the DewesoftX® manuals can be found here:

<https://download.dewesoft.com/list/manuals-brochures/software-manuals>

In the *Software Manuals* section click the download link of the *DeweSoftX User Manual*.

You can find the Software tutorials and tips on our Dewesoft Pro Training Webpage.

<https://training.dewesoft.com/online/topic/learn-how-to-use-dewesoft-software-and-hardware>

One of useful tutorials is *How To Setup Dewesoft X DAQ Software*



Important

Read safety instructions first in chapter [8. Safety instructions](#).

3. Specifications

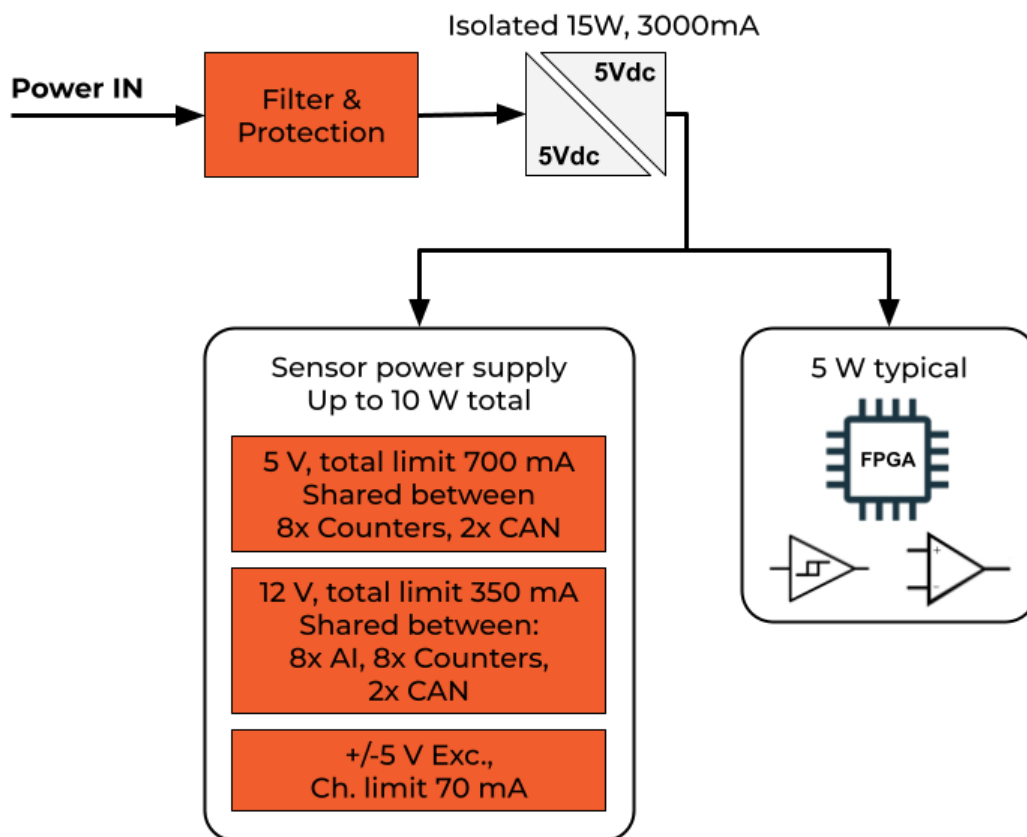
Analog inputs				
Number of channels	8			
Inputs	Voltage, full bridge			
ADC type	24-bit sigma-delta with anti-aliasing filter			
Sampling rate	Simultaneous 200 kS/sec			
Input type	Differential			
Voltage ranges	±10 V	±1 V	±100 mV	±10 mV
DC accuracy	0.05 % of value + 1 mV	0.05 % of value + 0.2 mV	0.05 % of value + 0.1 mV	0.05 % of value + 0.1 mV
CMRR@ 50Hz/400Hz/1kHz	85 dB / 92 dB / 89 dB	97 dB / 97 dB / 88 dB	100 dB / 97 dB / 89 dB	101 dB / 97 dB / 89 dB
Noise floor	107 dB @ ±10 V range			
Signal to noise: 0.1 kS/s to 51.2 kS/s 51.2 kS/s to 102.4 kS/s 102.4 kS/s to 200 kS/s	105 dB 100 dB 75 dB			
Gain Drift	Typical 10 ppm/K, max. 40 ppm/K			
Offset Drift	Typical 2 µV/K + 5 ppm of range/K, max 5 µV/K + 10 ppm of range/K			
Channel-to-Channel Phase Mismatch	<0.1° @ 5 kHz			
Phase-to-Phase Mismatch	0.6° @ 1 kHz			
Input impedance	20 MΩ 47 pF (differential) 10 MΩ 33 pF (common mode)			
Maximum common mode voltage	±13 V			
Overvoltage protection	±70 V input protection			
Excitation Voltage				
Excitation voltage	±5 V ±0.1 % bridge sensor supply, 70 mA limit			
Excitation Drift	±50 ppm/K ±100 µV/K			
Sensor supply	12 V, 350 mA (Shared between: 8xAI, 8xCounters, 2xCAN)			
Counter/Digital inputs				
Number of channels	8 counters/24 digital input, fully synchronized with analog			
Modes	Counting, waveform timing, encoder, tacho, geartooth sensor			
Counter timebase	102.4 MHz			
Time base accuracy	Typical: 5 ppm, Max: 20 ppm			
Max. Bandwidth	10 MHz			
Input Filter	500 ns, 1 µs, 2 µs, 4 µs, 5 µs and 7.5 µs			
Counter resolution	32-bit			
Input Compatibility, Level	TTL/CMOS (Low: <0.8 V, High >2 V)			
Input termination, impedance	100 kΩ pull-up to +3.3 V			
Input Protection	±30 V continuous			
Alarm output	Not available			
Sensor supply	+5 V, +12 V (See bellow: Power, Sensor power supply)			
CAN bus				
Number of ports	2			
Interface type	CAN 2.0B, up to 1 MBit/sec			
Special applications	CCP, OBDII, J1939, CAN output			
Galvanic isolation	Isolated			
Bus pin fault protection	±36 V			
ESD protection	8 kV			

Interfaces and options	
USB	USB-B mini, USB 2.0 interface
Synchronisation	2x SIRIUS® SYNC
Max. Sync-cable length	100 m (Master/Slave), 200 m (IRIG)
Power	
Power supply	9 - 36 V DC
Galvanic isolation	ISO-POWER Isolated
Sensor power supply	Up to 10W total: 12 V, total limit 350 mA (Shared between: 8xAI, 8xCounters, 2xCAN) 5 V, total limit 700 mA (Shared between: 8xCounters, 2xCAN) +/-5 V Exc., Ch. limit 70 mA
Power consumption	Typ. 6 W, Max. 18 W
Environmental	
Operating Temperature	Max. 60 °C down to -20 °C
Storage Temperature	-40 °C to 85 °C
Humidity	5 to 95 % RH non-condensing at 50 °C
IP rating	IP50
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	225 x 80 x 45 mm
Weight	0.72 kg
Rev: 1628236800	

3.1. Hardware revisions

DEWE-43V	Initial version
DEWE-43A	Added isolated CAN ports
DEWE-43A ISO-POWER	Added isolated power supply

3.1.1. Power distribution diagram

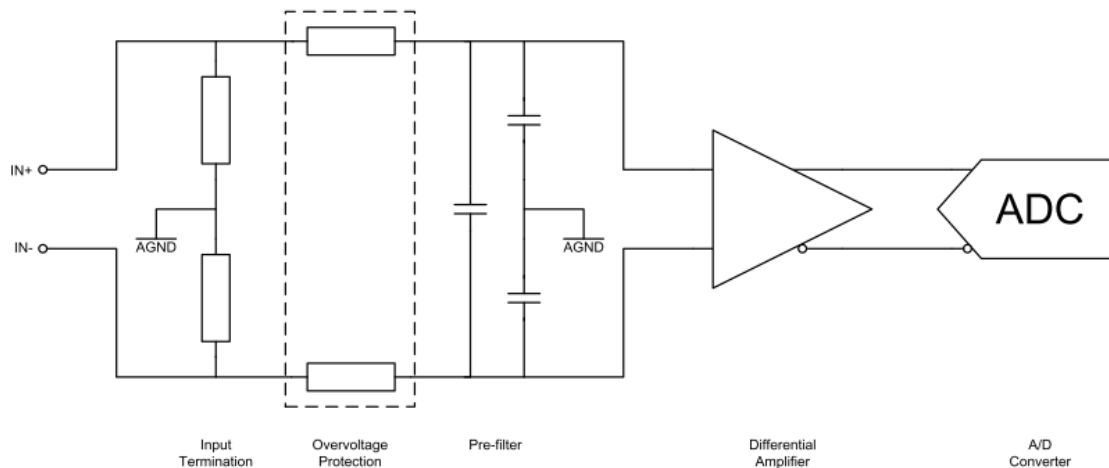


Hint

12 V & Counters & CAN: DC load startup current at 200 mA, after the device is powered current limit is 350 mA typical.

3.1.2. Analog input configuration

Block diagram of analog input (all analog inputs are identical):



Block diagram of analog input

The high input impedance (10MΩ ground referenced) has no distortion influence on the measured signal.

3.1.3. ADC

The DEWE-43A uses 8 delta-sigma A/D converters. If you sample with a data rate of 102.4 kS/s, the ADC actually samples the input signal with 13.1072 MS/s (multiply the data rate with 128) and produces 1-bit samples which are applied to the digital filter. The filter expands the data to 24-bits and rejects signal parts greater than 51.2 kHz (Nyquist frequency). It also re-samples the data to the more conventional rate of 102.4 kS/s. A 1-bit quantizer introduces many quantization errors to the signal. The 1-bit, 13.1072 MS/s from the ADC carry all information to produce 24-bit samples at 102.4 kS/s. The delta-sigma ADC converts from high speed to high resolution by adding much random noise to the signal. In this way the resulting quantization noise is restricted to frequencies above 100 kHz. This noise is not correlated with the useful signal and is rejected by the digital filter.

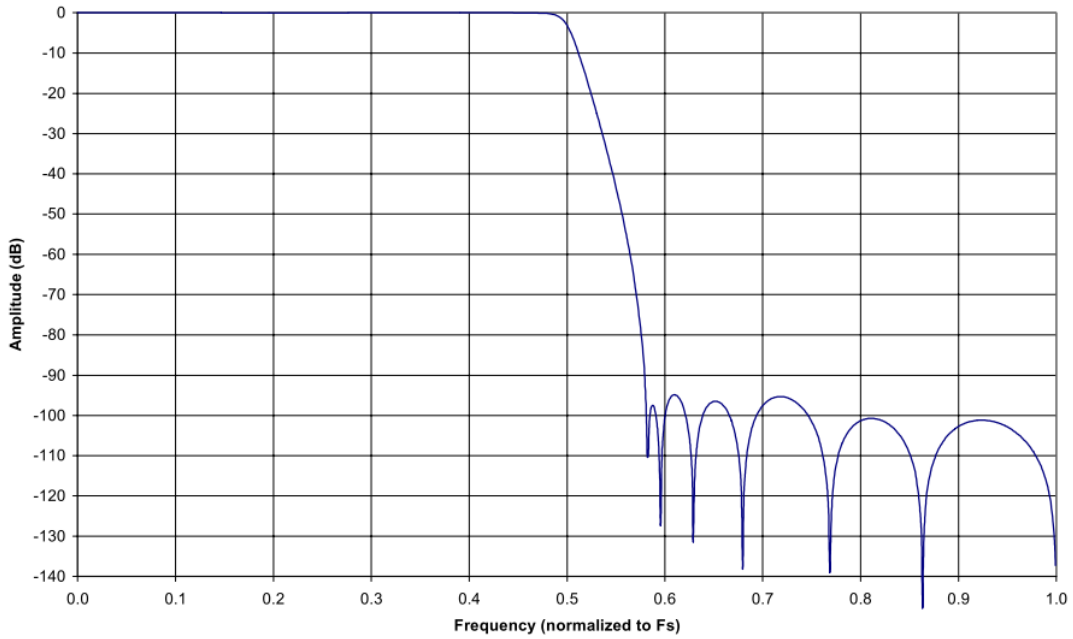
ADCs can only represent signals of a limited bandwidth. The maximum frequency you can represent is half of the sampling rate. This maximum frequency is also called Nyquist frequency. The bandwidth between 0 Hz and the Nyquist frequency is called Nyquist bandwidth. Signals exceeding this frequency range can not be converted correctly by the sampler. For example, the sample rate is 1000 S/s, the Nyquist frequency is 500 Hz. If the input signal is a 375 Hz sine wave, the resulting samples represent a 375 Hz sine wave. If a 625 Hz sine wave is sampled, the resulting samples represent a 375 Hz sine wave too. This happens because signals exceed the Nyquist frequency (500 Hz). The represented frequency of the sine wave is the absolute value of the difference between the input frequency and the closest integer multiple of the sampling rate (in this case 1000 Hz).

When the sampler modulates frequencies out of the Nyquist bandwidth back to the 0 to 500 Hz baseband it is called aliasing. Signals which are not pure sine waves can have many components

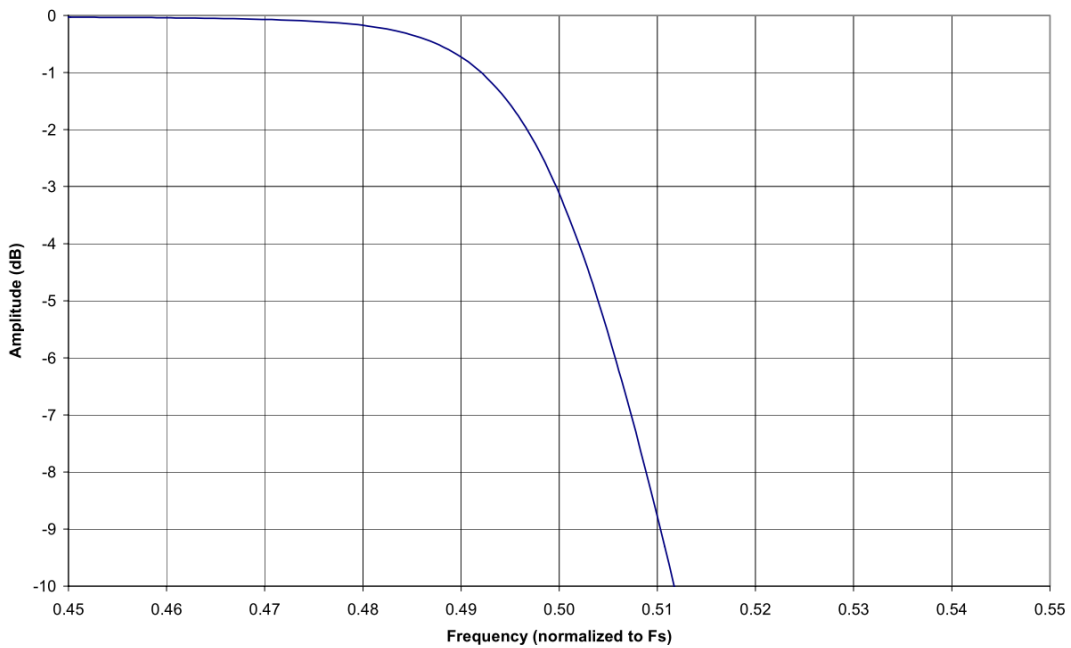
(harmonics) above the Nyquist frequency. These harmonics are erroneously aliased back to the baseband, added to parts of the accurately sampled signal and produces a distorted data set. To block frequencies out of the Nyquist bandwidth, a lowpass filter is applied to the signal before it reaches the sampler. Each input channel has its two pole anti-alias lowpass filter with a cutoff frequency of about 250 kHz. The very high cutoff frequency allows an extremely flat frequency response in the bandwidth of interest and a small phase error. The analog filter precedes the analog sampler. The analog sampler operates at 256 times the selected sample rate for rates below 51.2 kS/s, 128 times for rates between 51.2 kS/s and 102.4 kS/s. For rates over 102.4 kS/s the oversampling is 64 times. That means, the ADC operates at 13.1072 MS/s if you select a sample rate of 102.4 kS/s ($128 * 102.4 \text{ kS/s}$).

The 1-bit oversampled data is passed to a digital anti-aliasing filter. This filter has no phase error and an extremely flat frequency response. It also has an extremely sharp roll-off near the cutoff frequency (0.38 to 0.494 times the sample rate) and the rejection above 0.5465 times the sample rate is greater than 92 dB. The output stage of the digital filter resamples higher frequencies to 24-bit samples. The digital filter passes only signal components within the Nyquist bandwidth or within multiples of the Nyquist bandwidth of 64, 128 or 256 times (depending on sampling rate). The analog filter rejects most noise near these multiples. The following diagrams show the frequency response of the input circuitry.

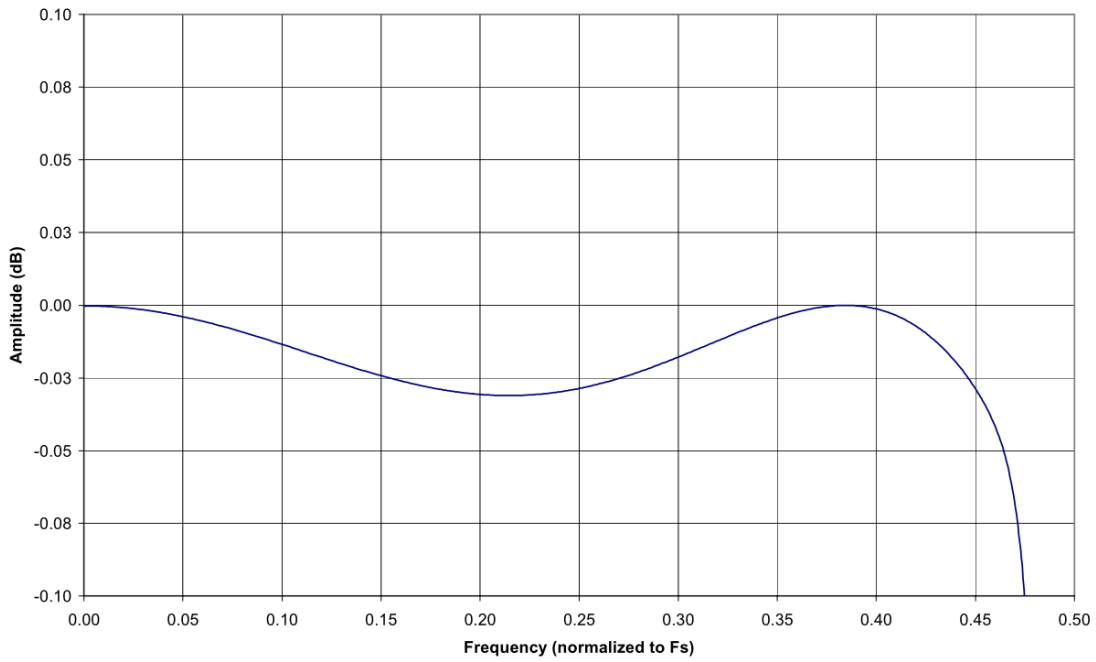
Digital Filter (vs. Sample Rate)	0.1 ... 51.2 kS/s	51.2 ... 102.4 kS/s	102.4 ... 204.8 kS/s
Bandwidth (-3 dB)	DC to 0.494 fs	DC to 0.49 fs	DC to 0.38 fs
Passband (-0.1 dB)	DC to 0.47 fs	DC to 0.45 fs	DC to 0.24 fs
Passband Ripple	-0.035 to +0.01 dB	-0.035 to +0.01 dB	-0.035 to +0.01 dB
Alias-free Bandwidth	DC to 0.42 fs	DC to 0.32 fs	DC to 0.22 fs
Alias Rejection	-95 dB	-92 dB	-97 dB
Delay through ADC	12 / fs	9 / fs	5 / fs
Oversampling	256	128	64



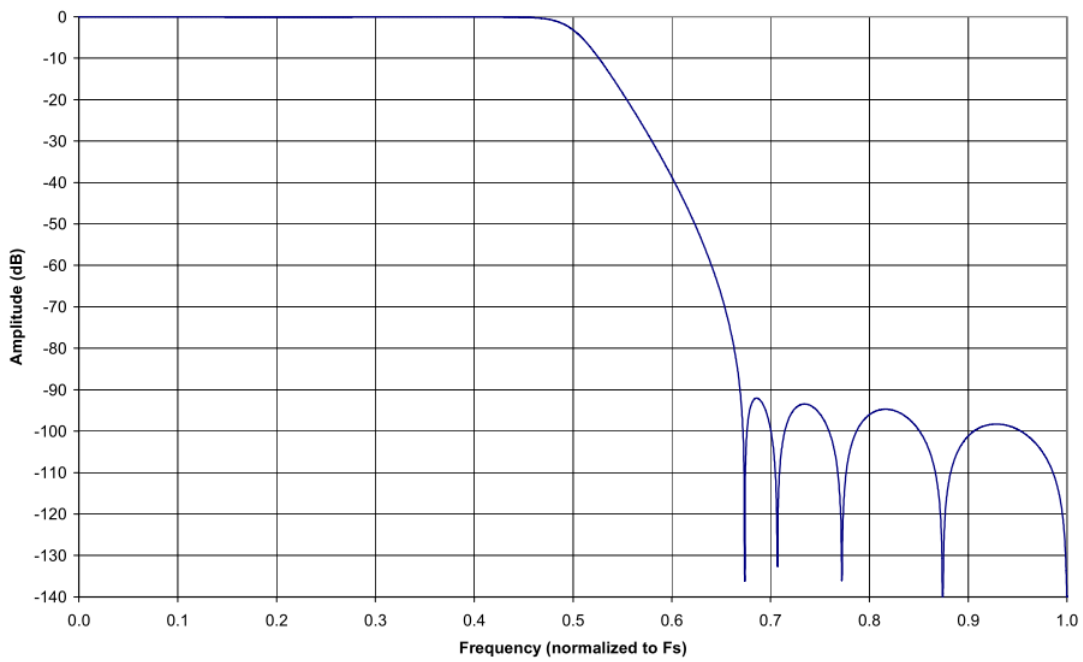
Sample rate 100 Hz to 51.2 kHz stopband rejection



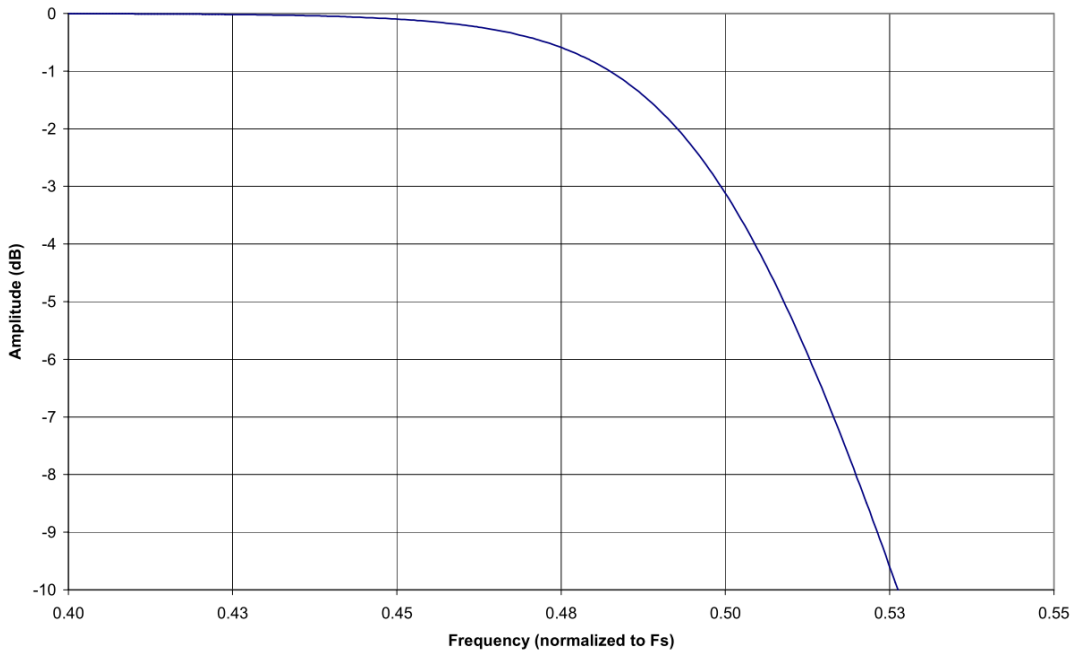
Sample rate 100 Hz to 51.2 kHz transition band detail



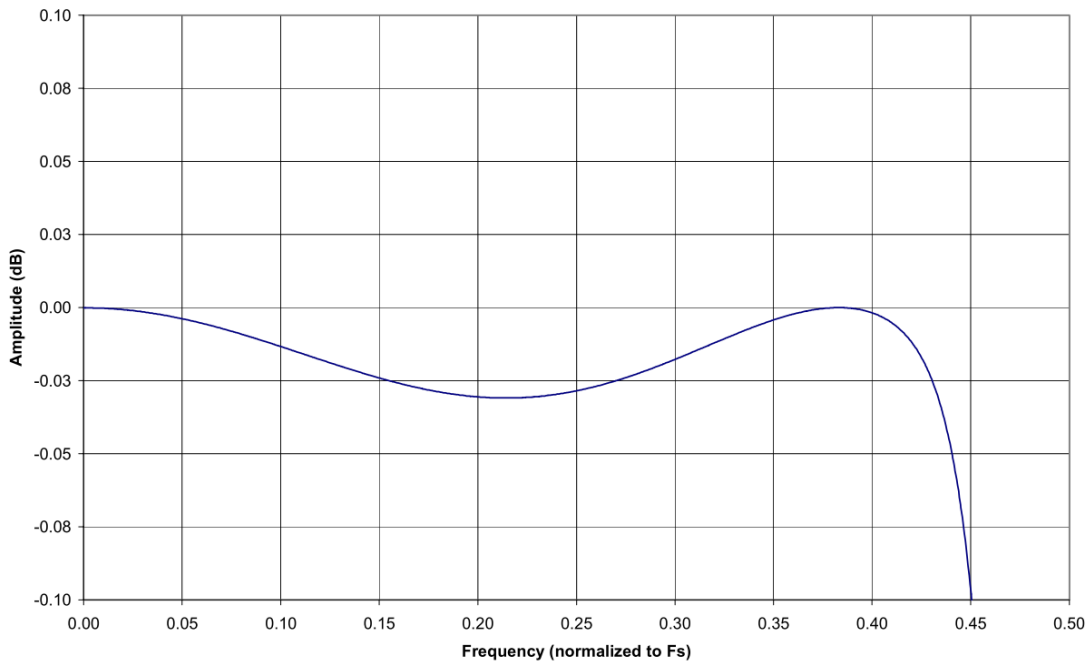
Sample rate 100 Hz to 51.2 kHz Passband ripple



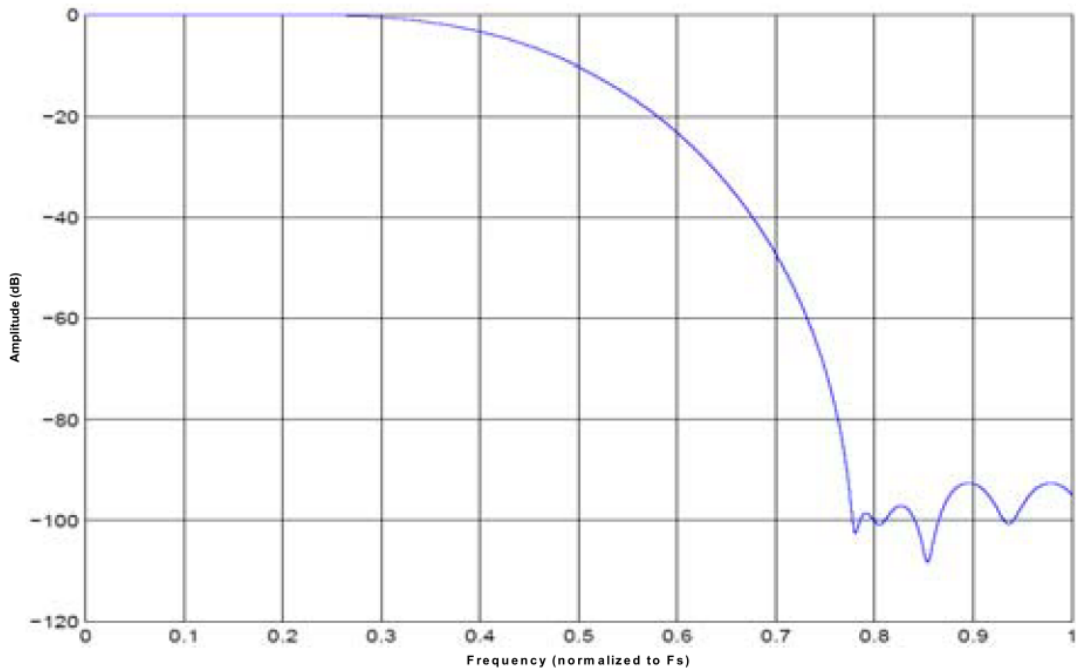
Sample rate 51.2 kHz to 102.4 kHz stopband rejection



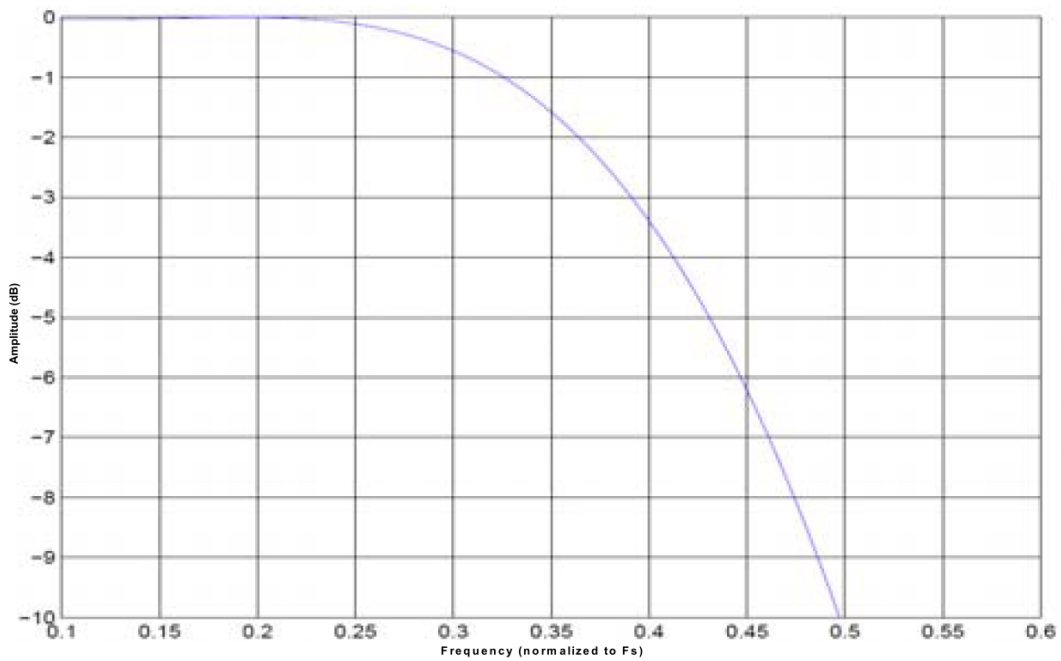
Sample rate 51.2 kHz to 102.4 kHz transition band detail



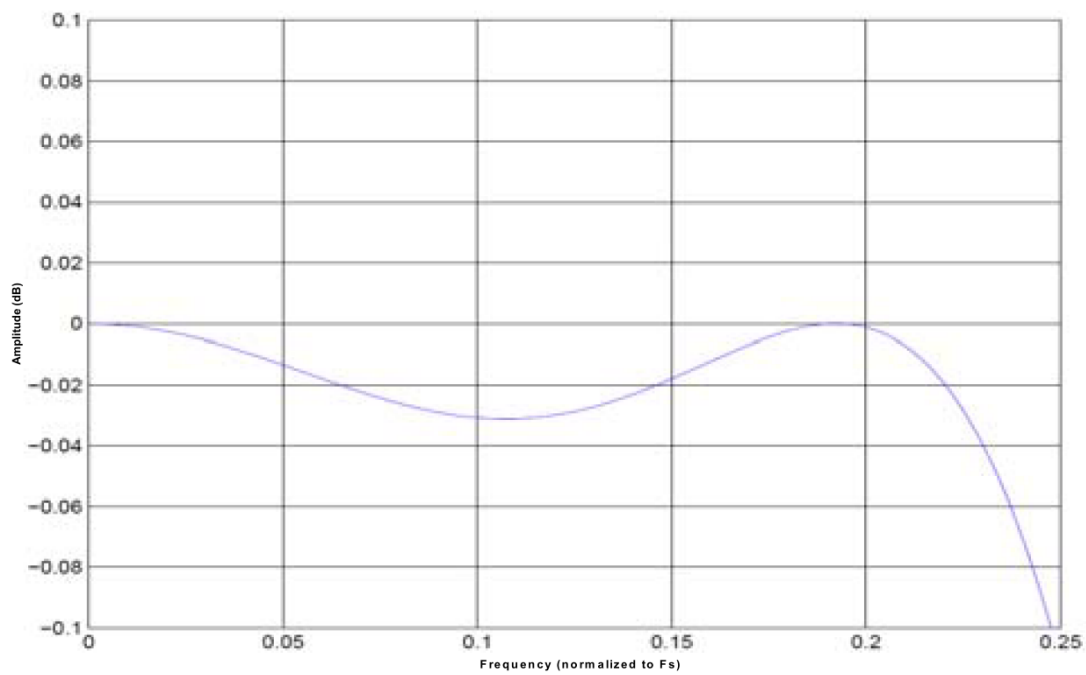
Sample rate 51.2 kHz to 102.4 kHz Passband ripple



Sample rate 102.4 kHz to 204.8 kHz stopband rejection



Sample rate 102.4 kHz to 204.8 kHz transition band detail

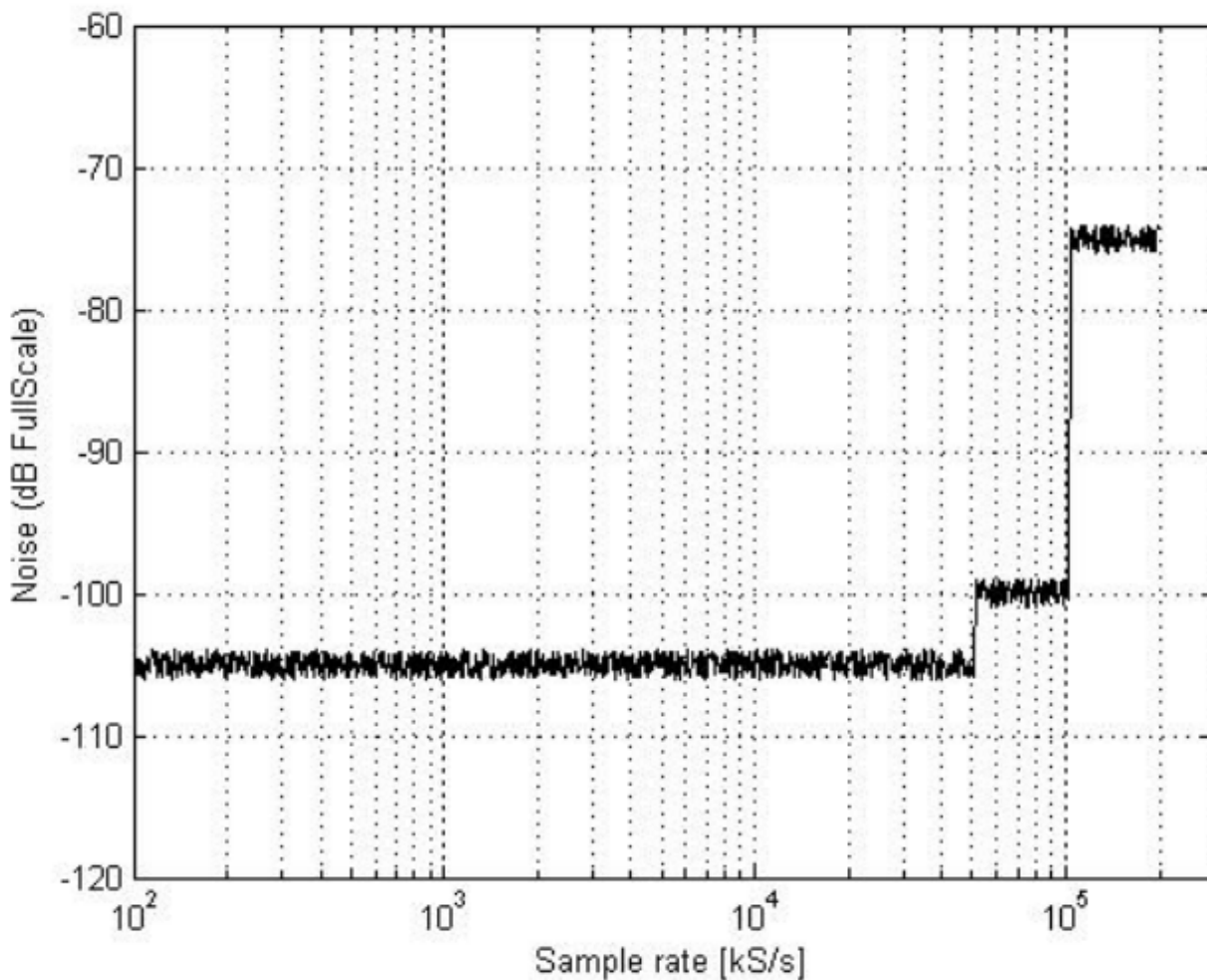


Sample rate 102.4 kHz to 204.8 kHz Passband ripple

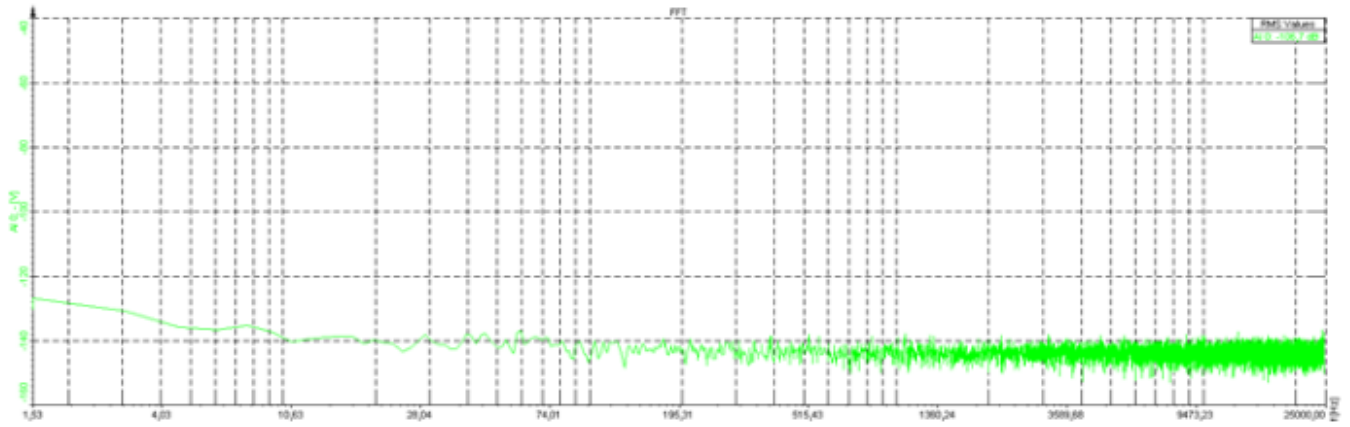
The ADC samples at 64, 128 or 256 times the data rate (depending on the adjusted sample rate).

Frequency components above one half of the oversampling rate (> 32, 64 or 128) can alias. Most of this frequency range is rejected by the digital filter. The filter can not reject components that lie close to integer multiples of the oversampling rate because it can not differentiate these components from components between 0 Hz and the Nyquist frequency. That means, if the sample rate is 100 kS/s and a signal component is between 50 kHz and 12.8 MHz (128 x 100 kHz), this signal will be aliased into the passband region of the digital filter and is not rejected. The analog filter removes these components before they get to the digital filter and the sampler.

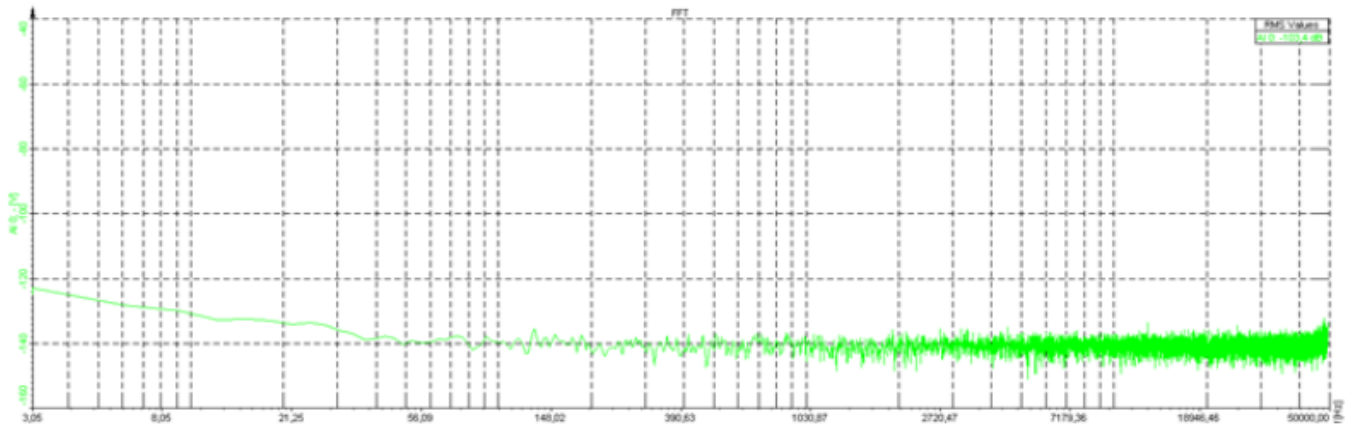
If aliasing is caused by a clipped or overranged waveform, (exceeding the voltage range of the ADC) it can't be rejected with any filter. The ADC assumes the closest value to the actual value of the signal in its digital range when the signal is clipping. The result of clipping is also a sudden change in the signal slope and results in corrupt digital data with high-frequency energy. This energy is spread over the complete frequency spectrum and is aliased back into the baseband. Do not allow the signal to exceed the input range to avoid this.



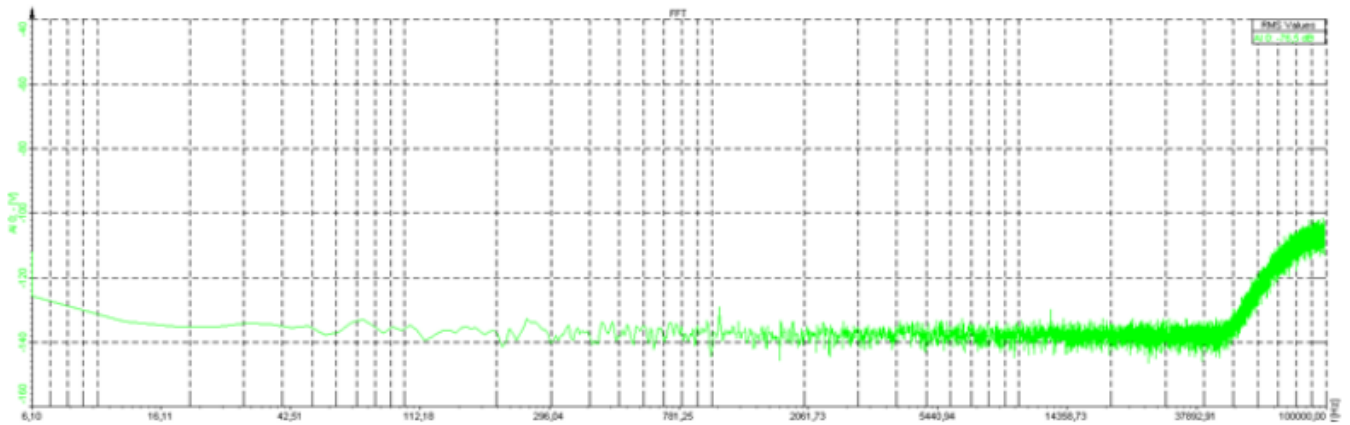
Idle channel noise (input terminated with 50Ω)



Spectral noise - 50 Ω termination - 8 averages - 16k lines@50ks/s



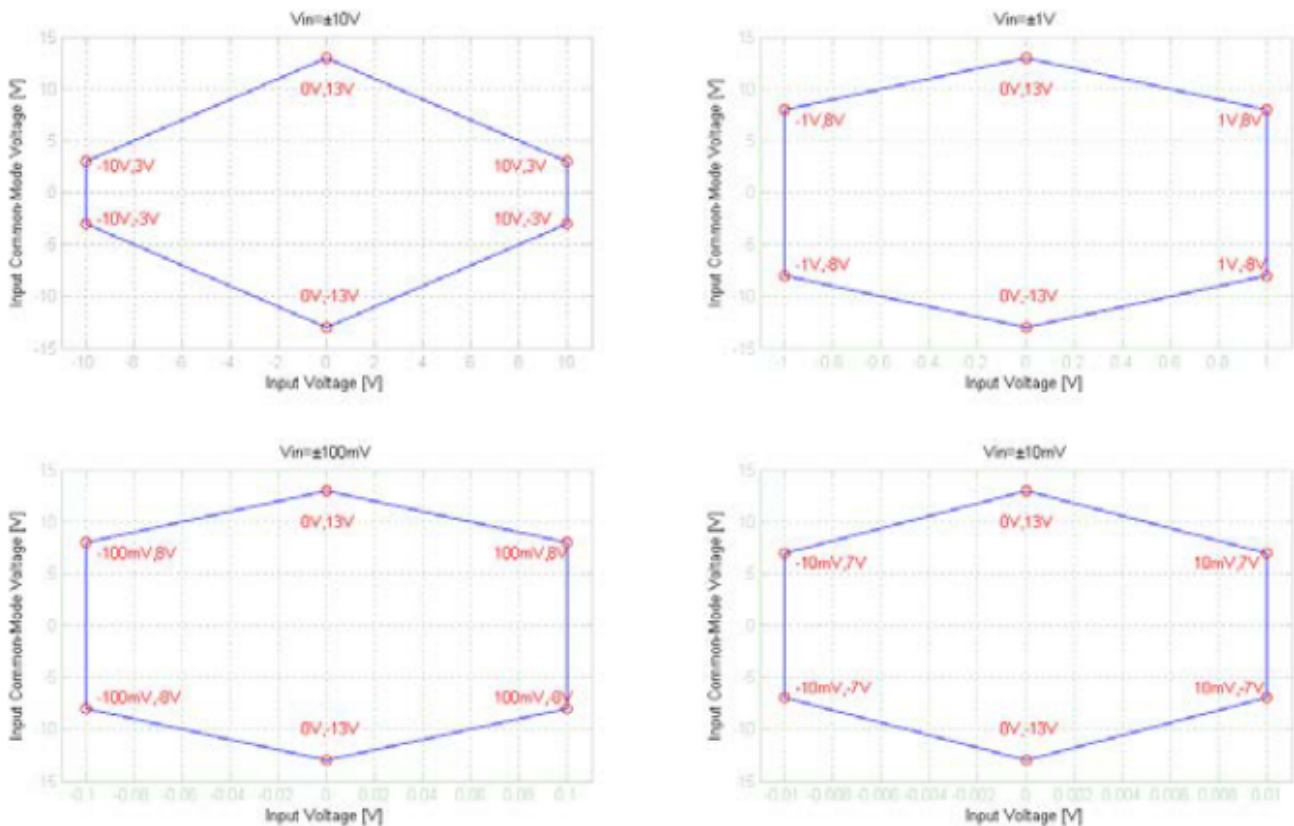
Spectral noise - 50 Ω termination - 10 averages - 16k lines@100ks/s



Spectral noise - 50 Ω termination - 10 averages - 16k lines@200ks/s

3.1.4. CMRR

All 8 analog channels of the DEWE-43A are fully differential inputs with resistance of $10M\Omega || 10pF$. The input voltage range is $\pm 10V$, $\pm 1V$, $\pm 100mV$ and $\pm 10mV$. Because of the differential input structure, the difference of the input (Ch x(+) – Ch x(-)) will be shown as the result of the measurement. Although the input is protected for input voltages to $\pm 70V$, the common voltage range of each input is limited to about $\pm 13V$. If the input voltage exceeds this range, the result is not valid even when the difference input voltage is lower than current input range. These voltage ranges will be clipped and introduced as large errors that can be easily identified in the frequency spectrum. The image below shows the allowable common-mode input voltages for various input voltages and measurement ranges.



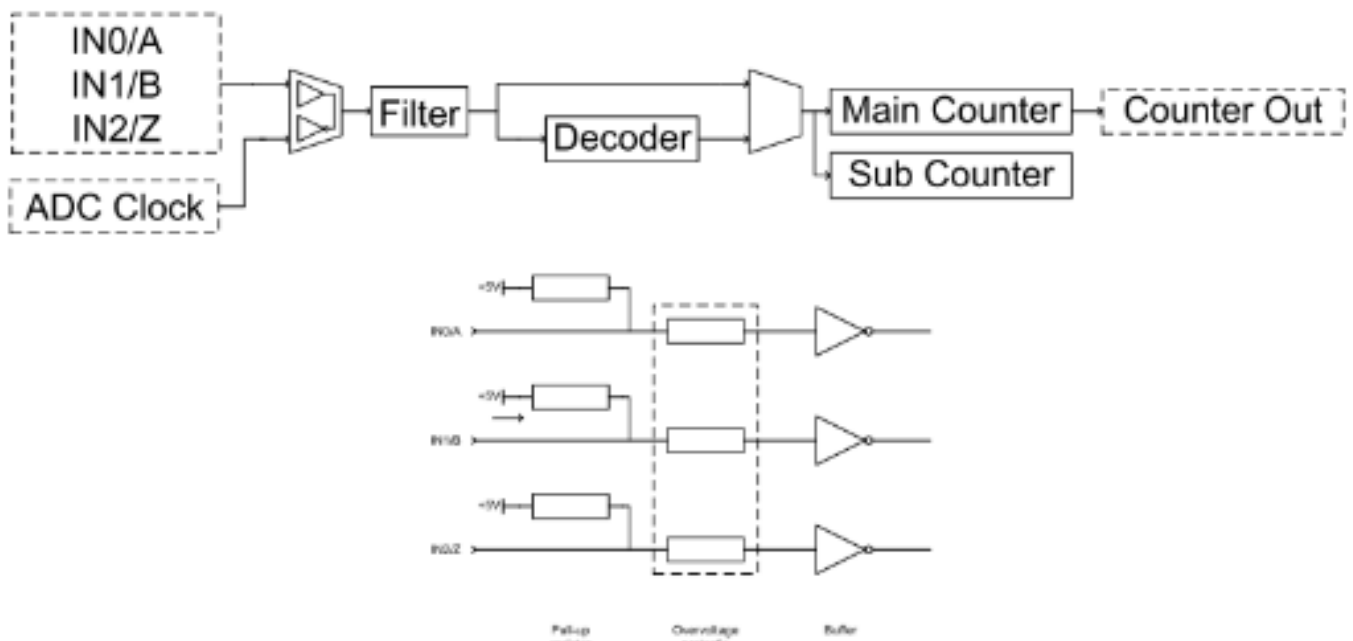
Common-mode input voltages

Example: Many signal sources (function generators) and power supplies are floating sources. That means that they are isolated from each other and from AC power line. If we connect a sensor with differential output and floating power supply to measurement device, then GND of sensor and measurement device can have different voltage potential. This is what the measurement device sees as common mode voltage. This common-mode voltage can range from few volts to few hundred volts, but in almost all cases this renders the measurement. To prevent this effect, GND signals of the sensor and measurement device need to be directly connected. That way we eliminate common-mode voltage. On DEWE-43A this connection is possible over connector GND wire or over “Common GND” receptacle on the housing.

3.1.5. Counter and digital inputs

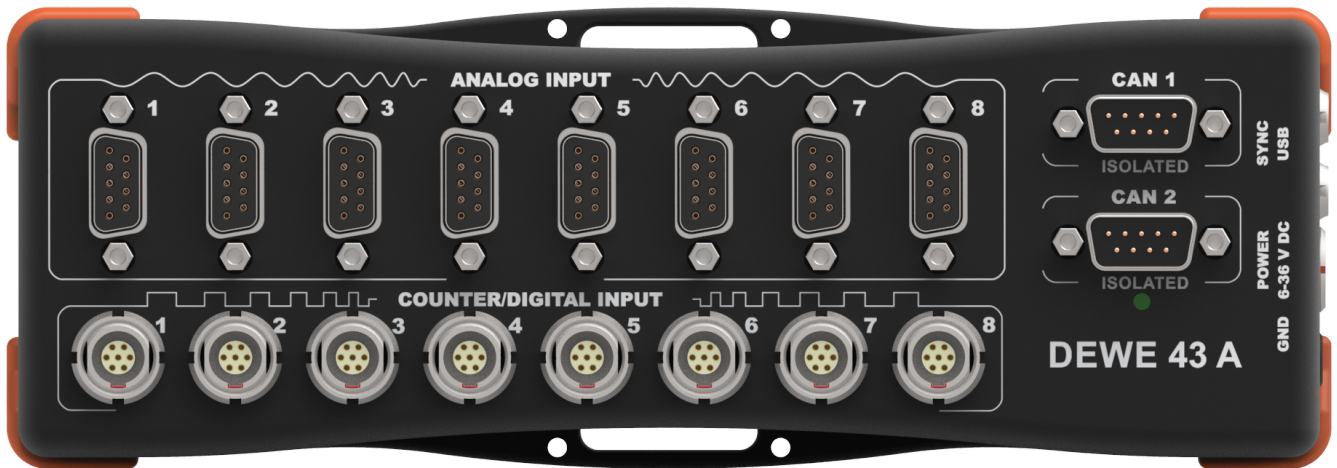
The DEWE-43A is suited with synchronous 32-bit advanced counters and digital inputs.

In addition to the basic counter function like simple event counting, up/down counting and gated event counting also period time, pulse width, two edge separation, frequency and all encoder measurements are supported. All counter inputs can also be used as digital inputs. In addition to the basic counter input selections, ADC Clock can also be used as a counter source. The image below shows the block diagram of the counter and input overvoltage protection.

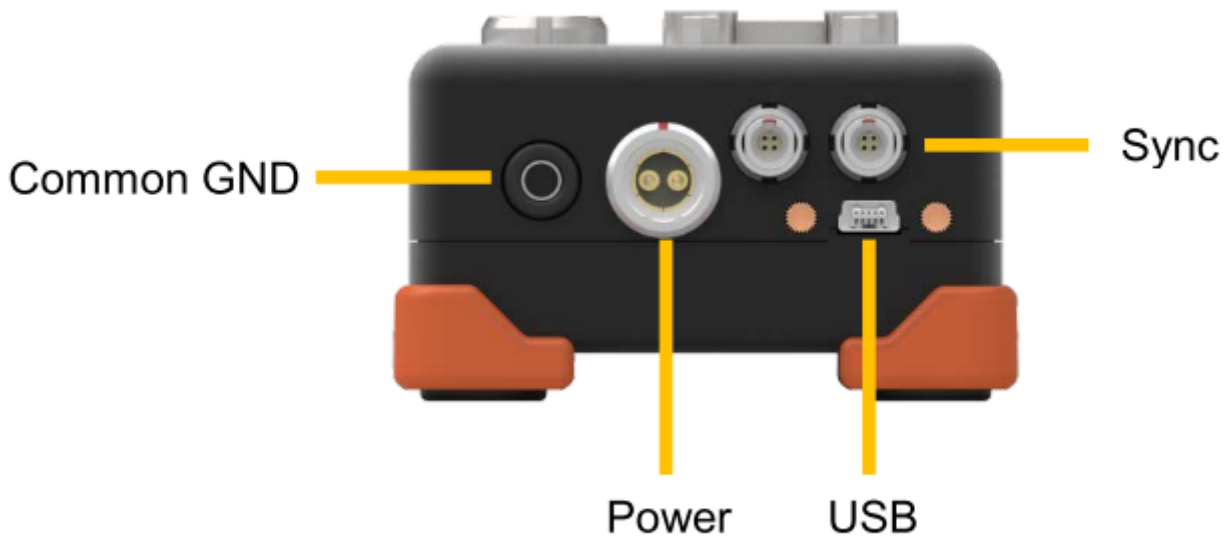


Counter and input overvoltage protection block diagram

4. Device operation



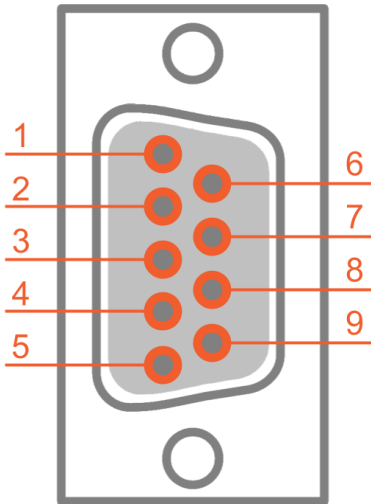
Top side connectors



Side connectors

4.1. Connectors

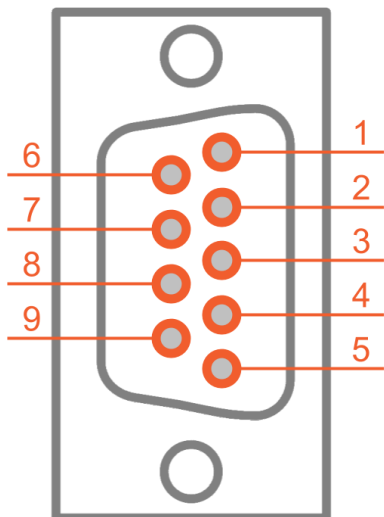
4.1.1. Analog input



Analog input connector (9-pin D-SUB female)

Pin	Name	Description
1	EXC+	Excitation +
2	IN+	Input +
3	SNS-	Sense-
4	AGND	Analog Ground
5	+12V	+12V
6	SNS+	Sense+
7	IN-	Input-
8	EXC-	Excitation-
9	TEDS	TEDS

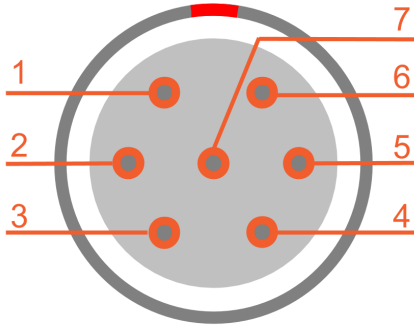
4.1.2. CAN connector



CAN connector (9-pin D-SUB male)

Pin	Name	Description
1	+5V	5 V supply max. current: 500 mA
2	CAN_LOW	CAN low
3	DGND	Digital Ground
4	RES	Reserved
5	RES	Reserved
6	DGND	Digital Ground
7	CAN_HIGH	CAN high
8	RES	Reserved
9	+12V	12 V

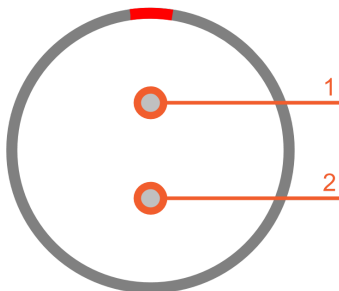
4.1.3. Counter input



Mating cable connector: FGG.1B.307CLAD52

Pin	Name	Description
1	IN0/A	Input A
2	IN1/B	Input B
3	IN2/Z	Input Z
4	GND	Ground
5	+5V	5V supply
6	+12V	12V supply
7	GND	Ground

4.1.4. Power supply

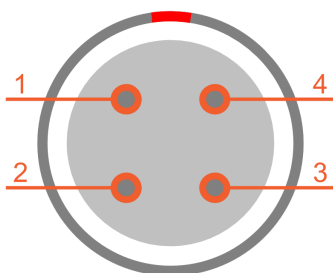


Power in connector: pin-out (2-pin LEMO male)

Pin	Name	Description
1	V +	Supply
2	V -	Ground

Mating connector (for the cable): FGJ.1B.302.CLLD42Z

4.1.5. Sync connector



Mating cable connector: FGG.00.304CLAD27Z

Pin	Name	Description
1	CLK	Clock
2	TRIG	Trigger
3	GPS-PPS	GPS - PPS
4	GND	Ground

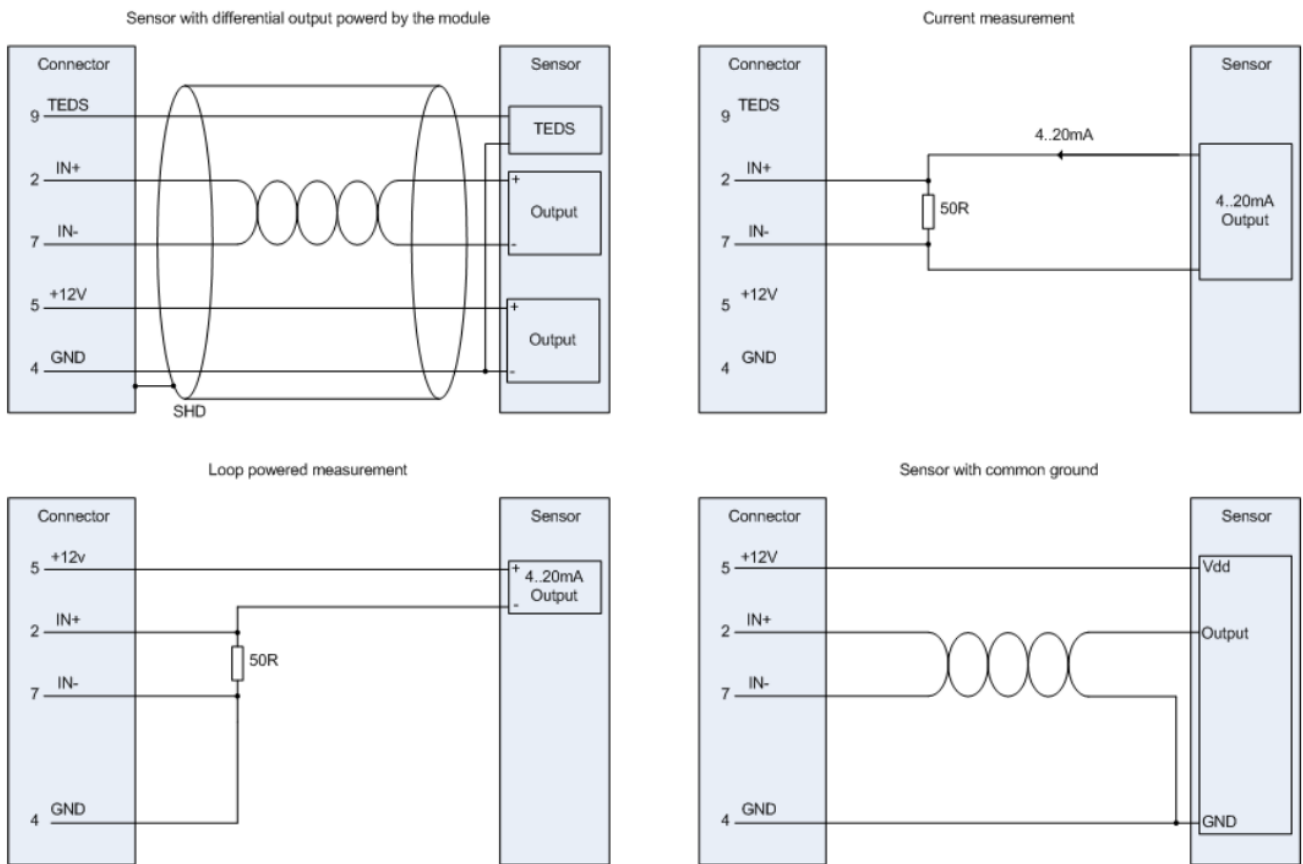


Important

When IRIG-synchronisation is used, the IRIG signal is on pins 1,2
 When PPS synchronization is used, the PPS signal is on pin 3
 When Clock-Trigger synchronization is used, the signal is on pin 1,2

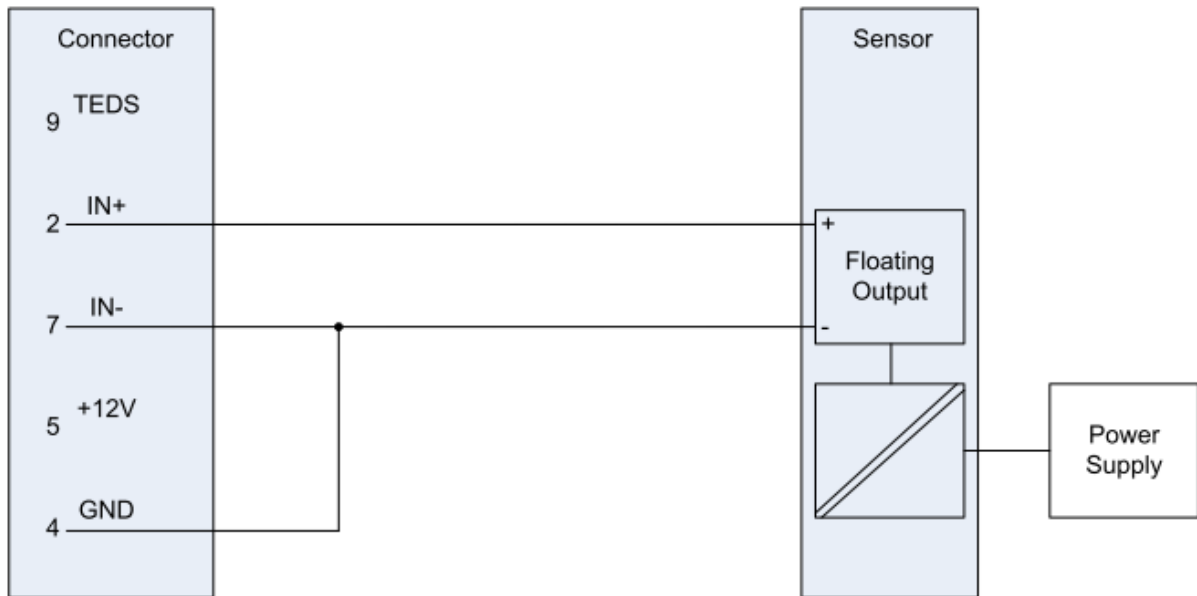
4.2. Typical sensor connection

For correct measurements, it is highly recommended to ground the DEWE-43A with GND banana plug on the side.

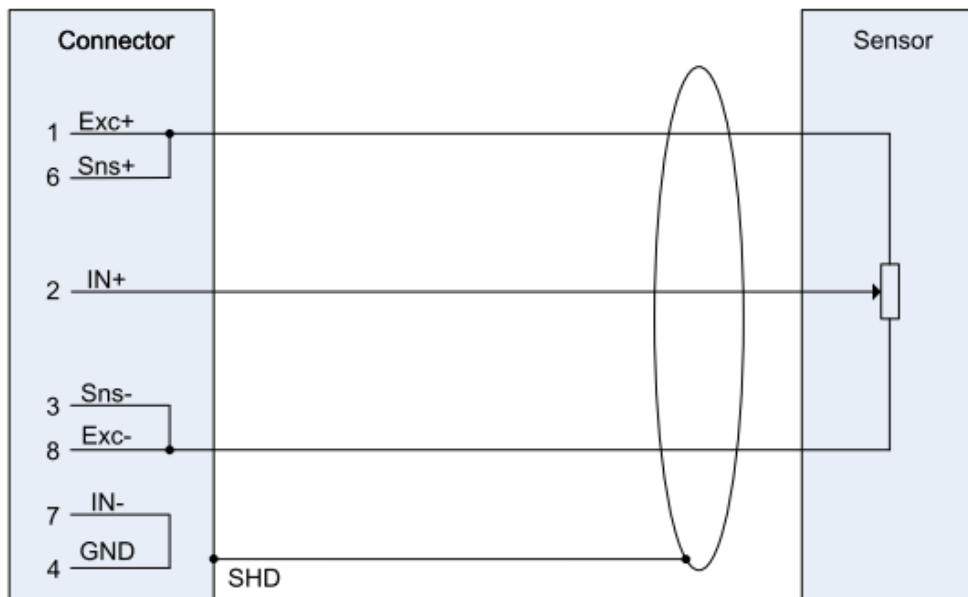


Typical sensor connection

Single ended connection



Potentiometer sensor connection



Single ended and potentiometer sensor connection

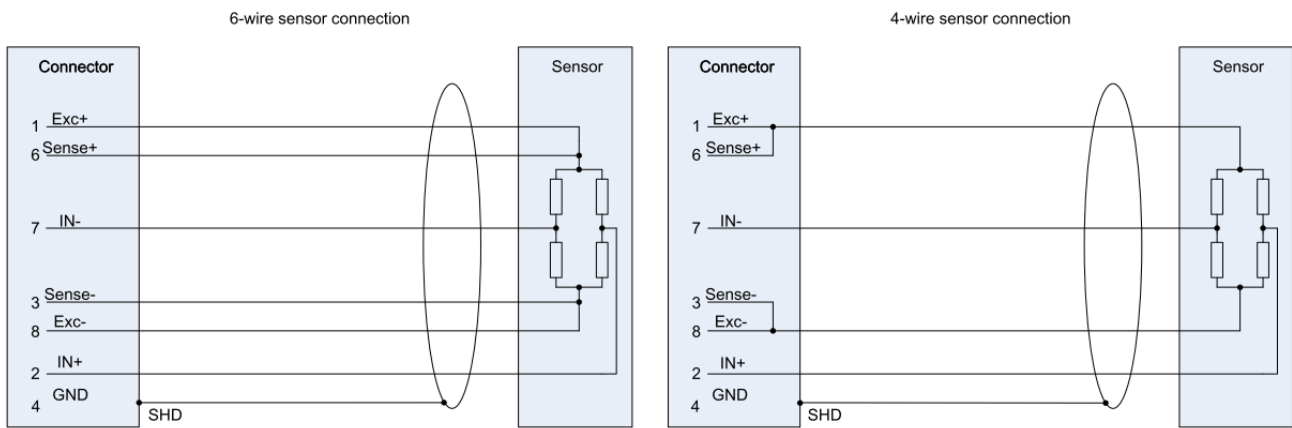


Important

If sensors or other signal sources with isolated external power supply are used, ground signals of DEWE-43A and external power supply should be connected over connector GND wire or over “common GND” input on housing to prevent common-mode voltage problems.

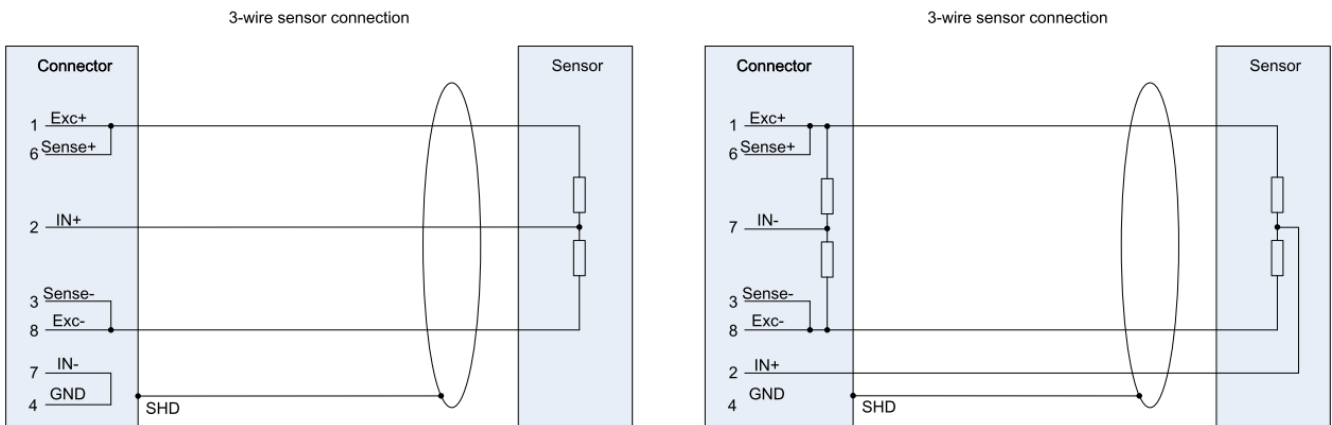
4.2.1. Bridge sensor connection

- Full bridge 10V excitation:



Full bridge mode

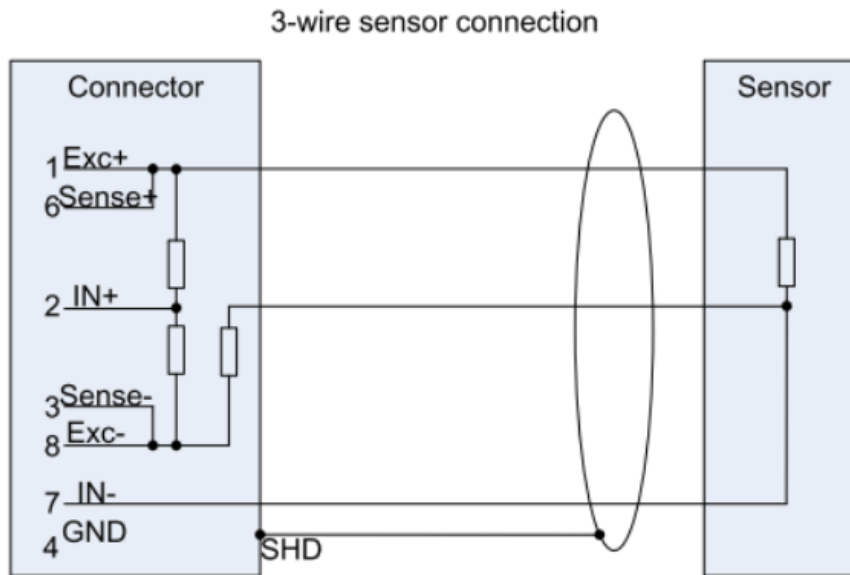
- Half bridge 10V excitation:



Note: Bridge completion needs to be done in the connector.

Half bridge mode

- Quarter bridge 10V excitation:

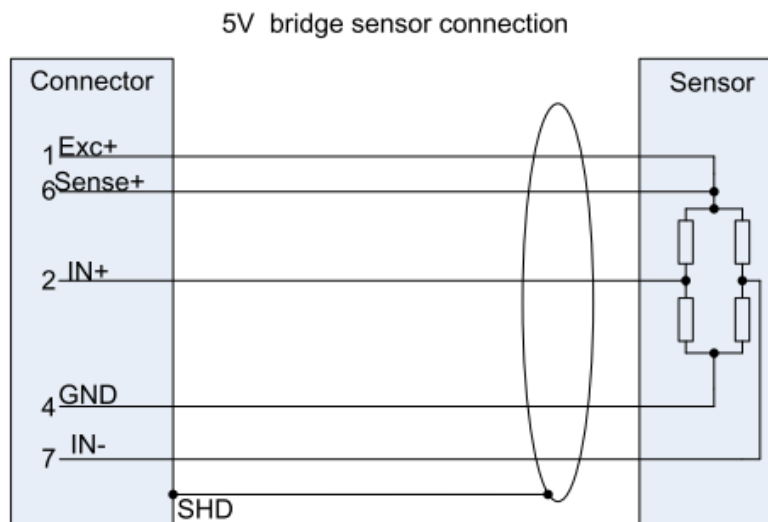


Note: Bridge completion needs to be done in the connector.

Quarter bridge mode

- Full bridge 5V excitation:

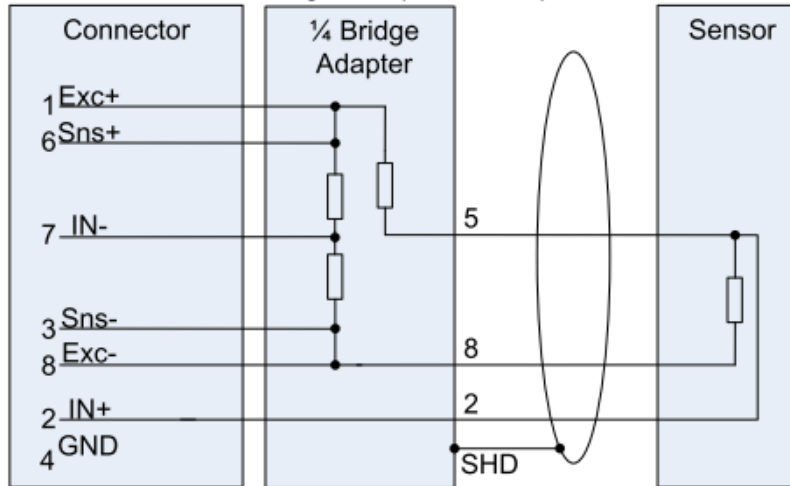
The excitation level between EXC+ and EXC- is 10 V. If lower excitation (5 V) is needed, please connect the GND pin instead of EXC- to negative sensor supply.



Full bridge 5V excitation option

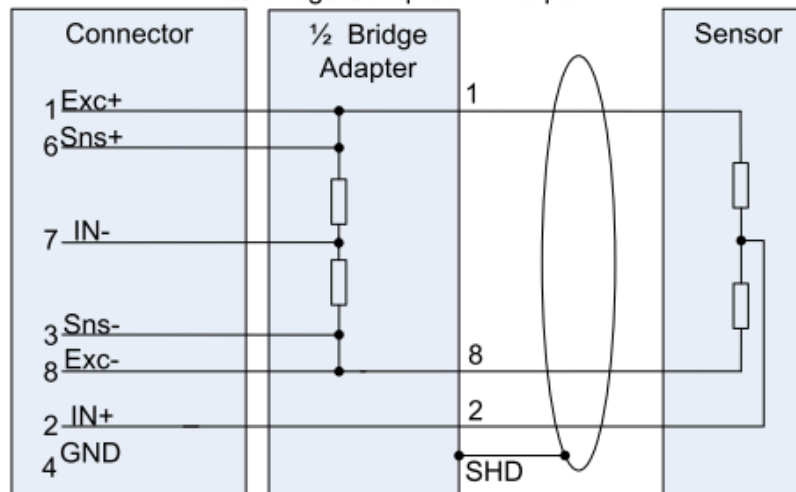
- Dewesoft bridge completion adapters:

3-wire sensor connection with DeweSoft
 $\frac{1}{4}$ Bridge Completion Adapter



$\frac{1}{4}$ Bridge completion Adapter

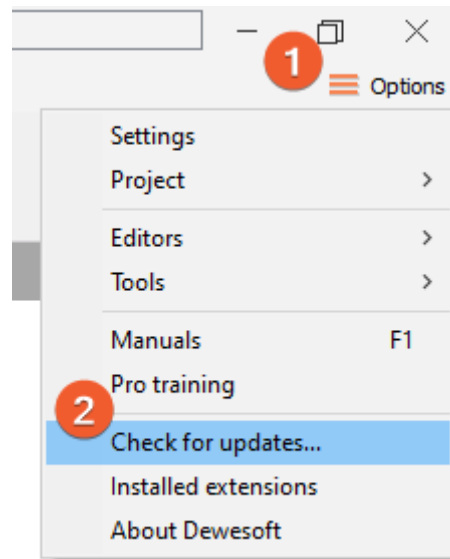
3-wire sensor connection with DeweSoft
 $\frac{1}{2}$ Bridge Completion Adapter



$\frac{1}{2}$ Bridge completion Adapter

5. 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 a newer version

6. Using DEWE-43A in DewesoftX®

6.1. Connecting DEWE-43A

First connect the power supply to the connector named POWER IN of your DEWE-43A system/s.



USB cable

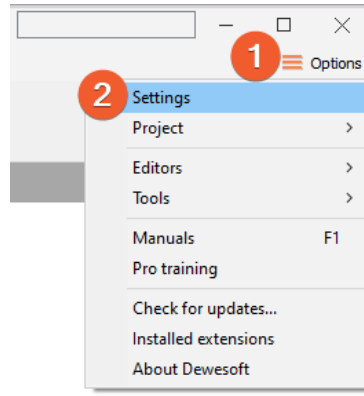
Then connect the USB cable to the rear-side of the DEWE-43A system (see connector named USB at the side connectors). Finally connect the other side of the USB cable to the USB port of your computer.



Simple PC connection

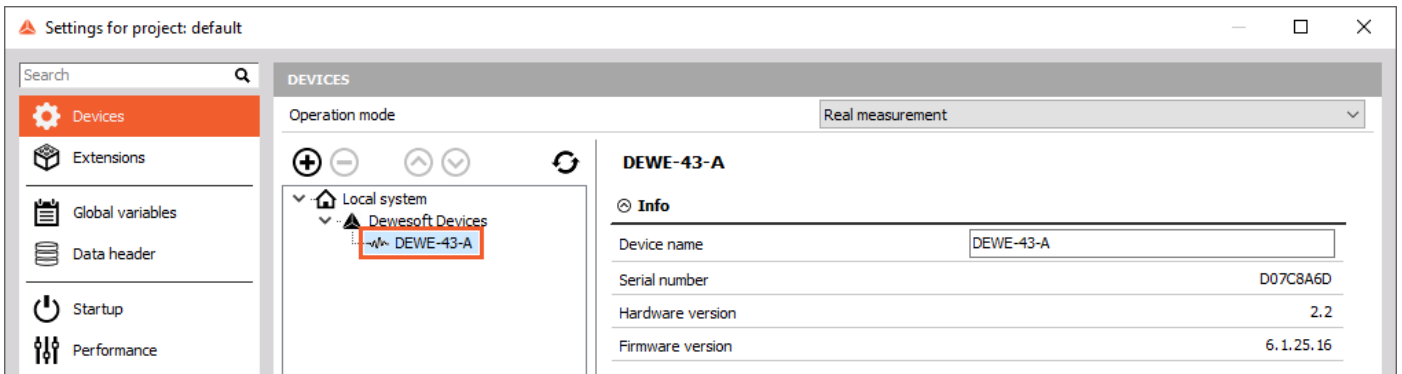
6.2. DewesoftX® Settings DEWE-43A

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.



DewesoftX® settings

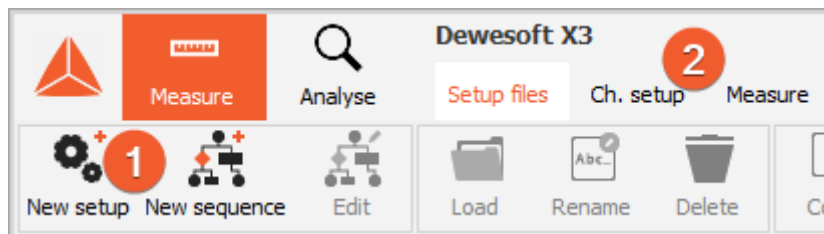
In the Devices section, you can see the connected DEWE-43A device. When you select one of them, the properties pane at the right will show the related data e.g. Serial number, Firmware version, etc.



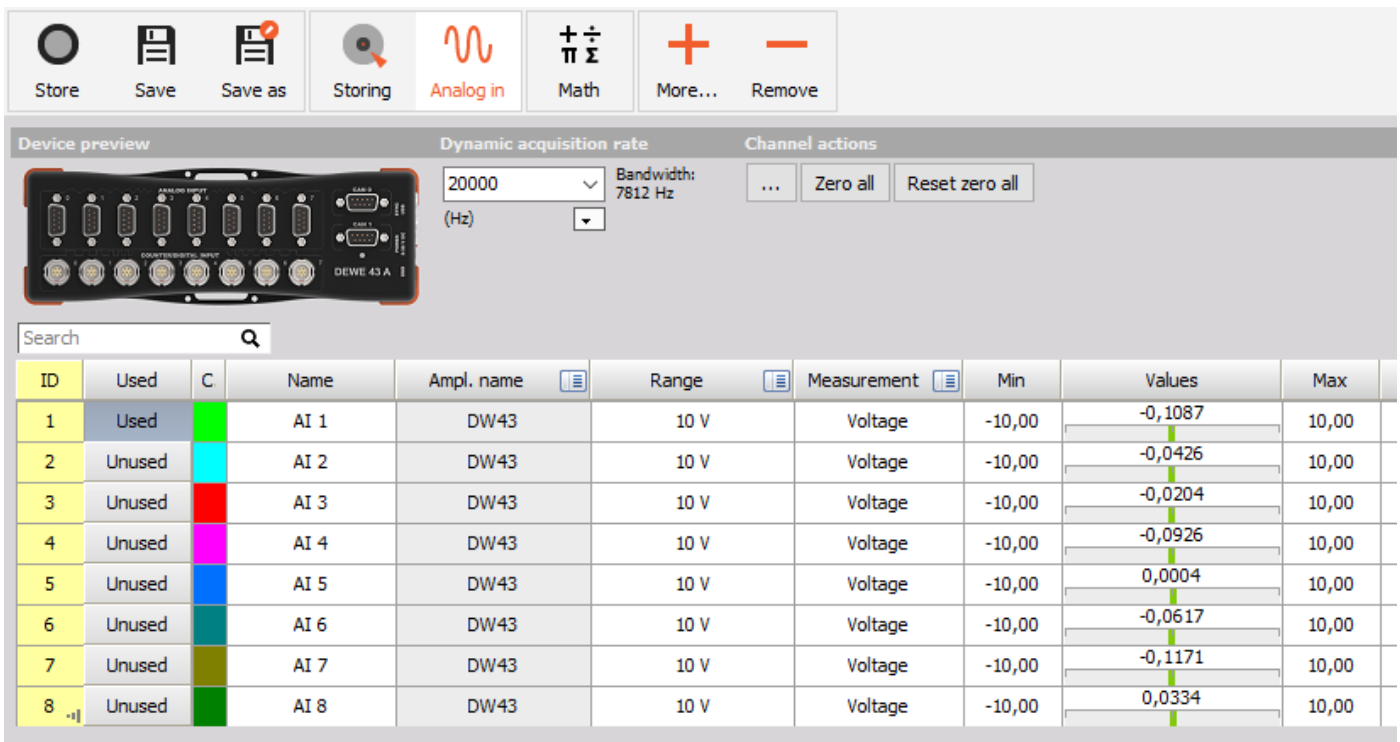
DewesoftX® settings: Device

6.2.1. Start up of the device

When DewesoftX® has started up, you will be in Measure mode and see the Setup files list or you can create a New setup (1). Click on Ch. setup (on the right of Setup files) to switch to the Channel setup mode (2). In the channel setup you can see a preview of the connected devices on the upper left side.



Setup files



ID	Used	C	Name	Ampl. name	Range	Measurement	Min	Values	Max
1	Used		AI 1	DW43	10 V	Voltage	-10,00	-0,1087	10,00
2	Unused		AI 2	DW43	10 V	Voltage	-10,00	-0,0426	10,00
3	Unused		AI 3	DW43	10 V	Voltage	-10,00	-0,0204	10,00
4	Unused		AI 4	DW43	10 V	Voltage	-10,00	-0,0926	10,00
5	Unused		AI 5	DW43	10 V	Voltage	-10,00	0,0004	10,00
6	Unused		AI 6	DW43	10 V	Voltage	-10,00	-0,0617	10,00
7	Unused		AI 7	DW43	10 V	Voltage	-10,00	-0,1171	10,00
8	Unused		AI 8	DW43	10 V	Voltage	-10,00	0,0334	10,00

Channel setup DEWE-43A



Hint

When you click on a connector in the image the corresponding channel in the Channel setup grid will automatically be selected. This also works the other way around: when you select a channel (or multiple channels) in the setup grid, the corresponding connectors in the image will be highlighted.

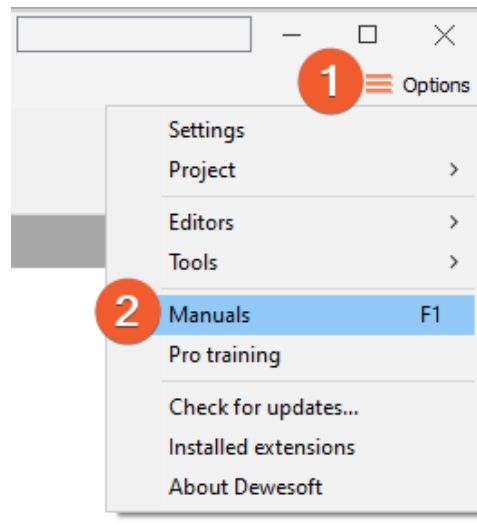
The sampling rate will be set for all connected DEWE-43A devices: of course only up to the max. sampling rate of the individual slices.

6.3. Simple measurement

This chapter describes measurement basics, how to configure DEWE-43A and gives some details on the measurement setup.

6.3.1. 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 (1) and then select Manual from the pop-up menu (2).

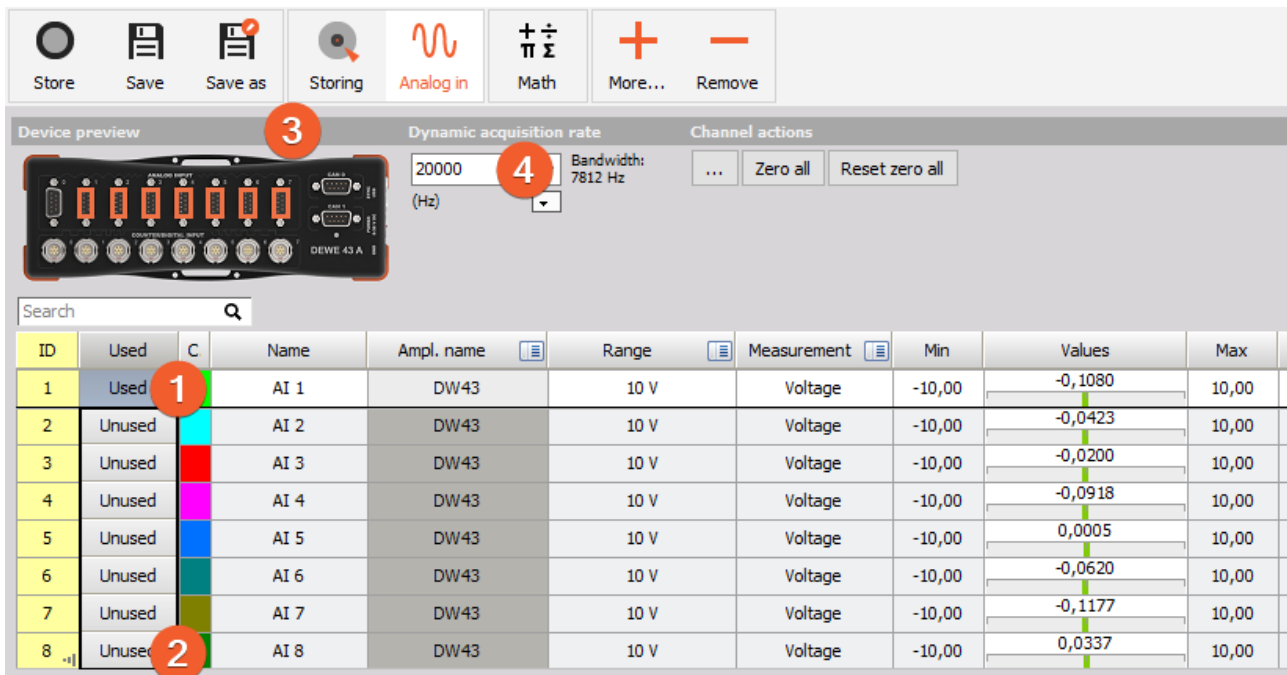


Help - Manual

6.3.2. Analog channel setup

In the analogue channel setup screen you can see all channels of your connected DEWE-43A systems. 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 (1), hold the mouse button and move the mouse down to channel 6 (2): 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. The selected channels will also be highlighted in the small preview image of the device (3).

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 device (4).

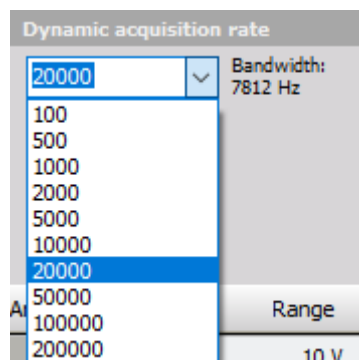


Channel setup screen

6.3.3. Sample rate

One of the most important settings is the sample rate. The sample rate defines how many data points DEWE-43A will transfer to the DewesoftX®. Higher sample rate also means that more data needs to be transferred via USB 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.



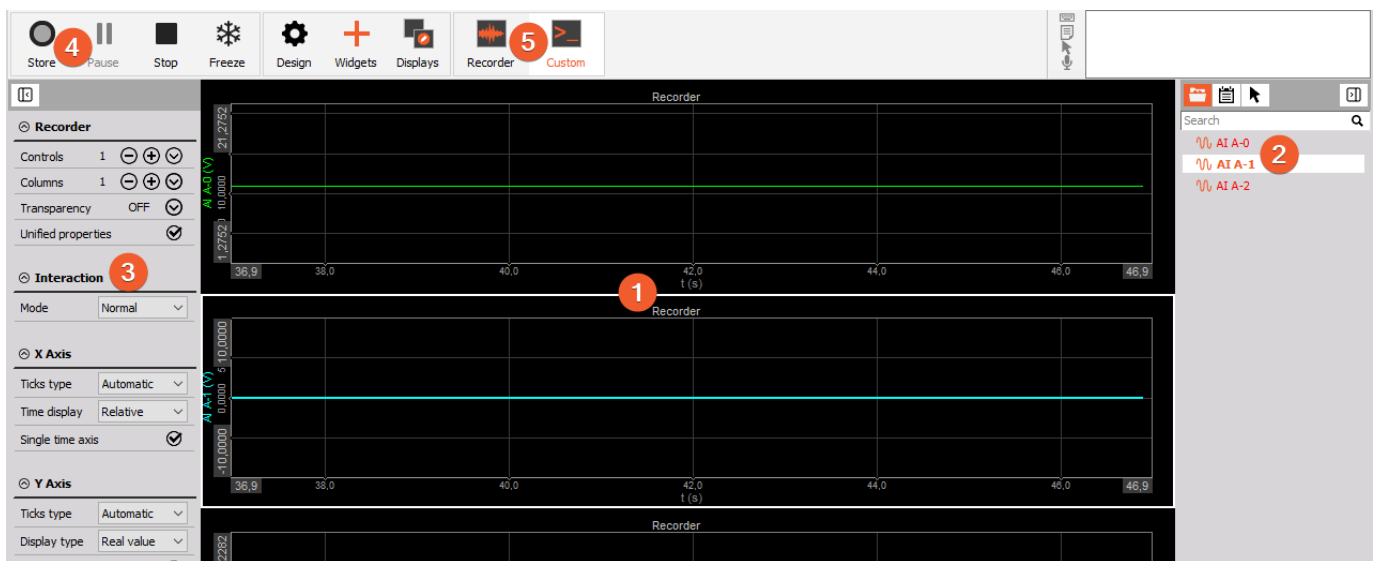
Sample rate

6.3.4. 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

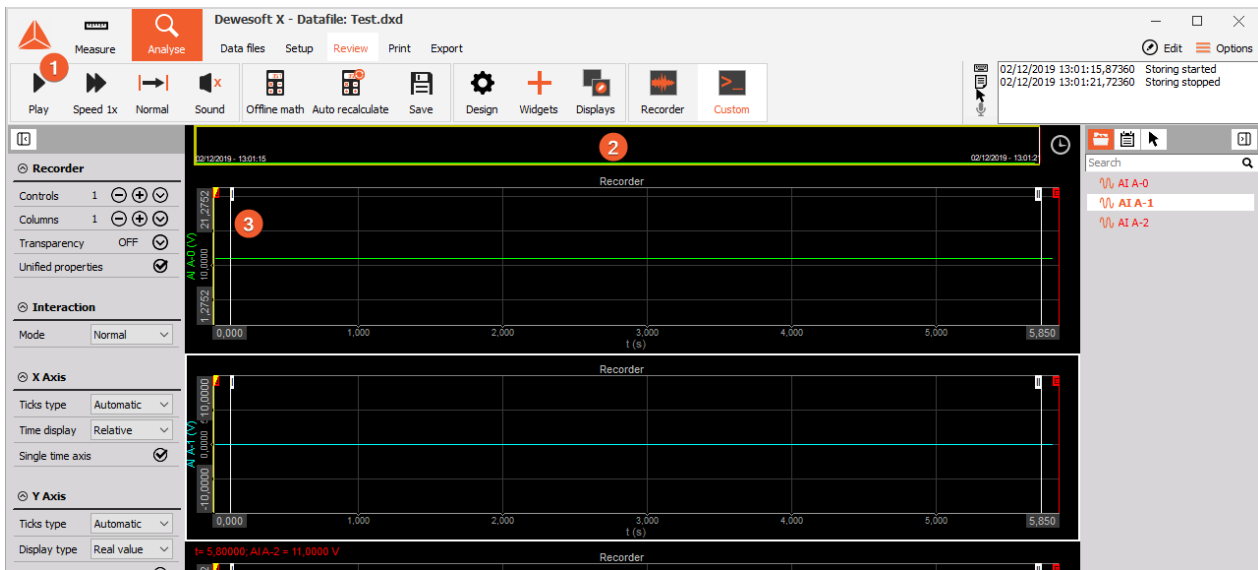
In measure mode you can have several measurement screens (5). DewesoftX® will create 2 default displays: Recorder and Custom but you can also create new displays or change the widgets on existing displays as you like.

The most important sections of the Measure mode are highlighted in screen-shot (Image above): (1) 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 time domain. You can use the channel-selector list (2) to assign measurement channels to the widgets. Each widget has different settings, (3) shows the settings of the currently selected recorder widget. To start storing the data, press the Store button (4). When you are done with recording, press the Stop button.

Now DewesoftX® has created a datafile 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 Analyse mode.

6.3.5. Analyse 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.



Analyse mode

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

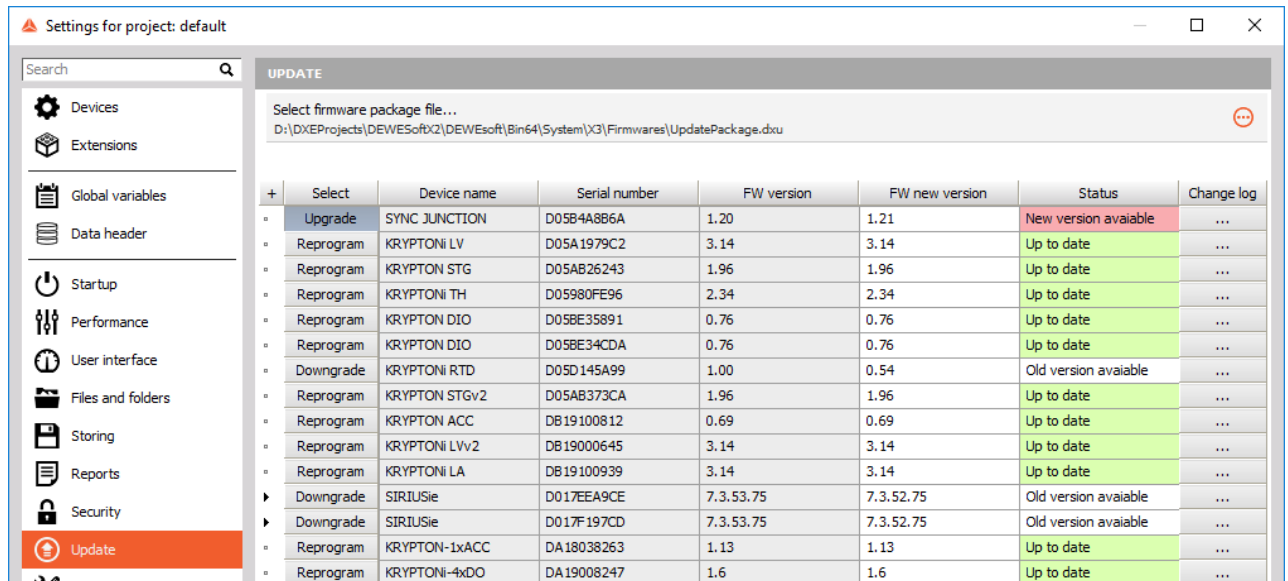
Differences are:

- (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
- (3) there are additional cursors (Yellow and two white cursors)

Now you can use the cursors to analyse 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 displays, print reports based on your data and export the data to other file formats for further analysis.

7. Firmware upgrade

- Download the [Dewesoft upgrade package](#) (.dxu file) from the Dewesoft downloads page under the section Drivers.
- Copy the file into the Firmwares folder of your DewesoftX® installation (e.g. D:\DewesoftX\System\X3\Firmwares).
- Connect the Dewesoft instrument to the PC and run DewesoftX®.
- Go to settings under the Update tab:

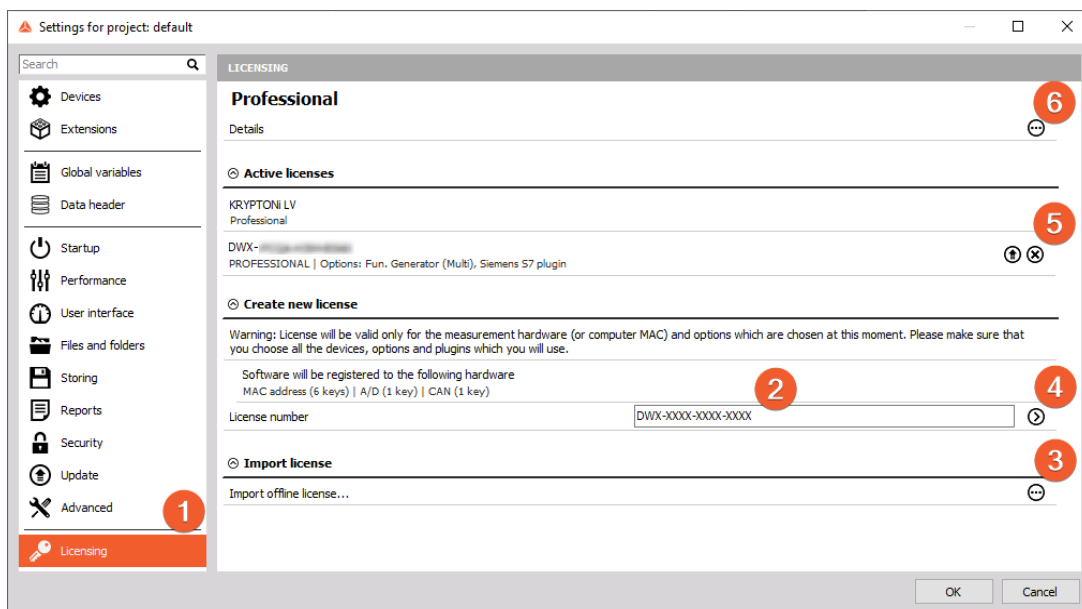


Firmware upgrade screen

- 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.

8. DewesoftX® license information

DEWE-43A or any other Dewesoft device already comes with an embedded DewesoftX® license. However if the user decides to upgrade the license with additional extension, DewesoftX® will require an additional license registration. Under the Licensing tab (1) you can embed such a license on the device itself so that it can later be moved from one computer to another without a need to copy the licenses. First, you need to register the license, as described in DewesoftX's user manual. Under the Create new license section, you will find an open field (2) in which you can enter your license number. Please make sure that all devices, to which the license is valid, are connected before you continue. If everything is in place, you can click the right arrow button (4) to start the registration. You can also import an XML licence file from your computer (3). Active and embedded licenses are seen under Active licenses tab (5). You can check available plugins of the license in the Details tab (6).



Licensing



Hint

All licenses regarding DEWE-43A will only work when the DEWE-43A system is connected to your PC and the device has been activated in the hardware setup.

9. Warranty information

Notice

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

Note:

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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>.

9.1. 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.

9.2. 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.

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)

9.3. 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>.

9.4. Restricted Rights

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

9.5. Printing History

Version 2.0.0, Revision 217 Released 2015 Last changed: 23. July 2018 at 16:54.

9.6. Copyright

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10. Safety instructions

Your safety is our primary concern! Please be safe!

10.1. 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.

10.2. 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.

10.2.1. Environmental Considerations

Information about the environmental impact of the product.

10.2.2. Product End-of-Life Handling

Observe the following guidelines when recycling a Dewesoft system:

10.2.3. System and Components Recycling

Production of these components required the extraction and use of natural resources. The substances contained in the system could be harmful to your health and to the environment if the system is improperly handled at its end of life! Please recycle this product in an appropriate way to avoid unnecessary pollution of the environment and to keep natural resources.

This symbol indicates that this system complies with the European Union's requirements according to Directive 2002/96/EC on waste electrical and electronic equipment (WEEE). Please find further information about recycling on the Dewesoft web site www.dewesoft.com

Restriction of Hazardous Substances

This product has been classified as Monitoring and Control equipment and is outside the scope of the 2002/95/EC RoHS Directive. However, we take care of our environment and the product is lead-free.

10.2.4. 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!
- 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.

11. Documentation version history

Version	Date	Notes
V20-1	August, 2020	<ul style="list-style-type: none"> • New Template
V20-2	November, 2020	<ul style="list-style-type: none"> • Added the Sync length information
V20-3	December, 2020	<ul style="list-style-type: none"> • Updated notes
V21-1	January, 2021	<ul style="list-style-type: none"> • Updated Counter input specs
V21-2	August, 2021	<ul style="list-style-type: none"> • Updated ADC diagrams • Added a visual explanation of power distribution • Updated links to Manuals • Updated counter power supply (4.1.3) • New first page graphics • Added gain and offset drift
V23-1	March, 2023	<ul style="list-style-type: none"> • Corrected a render of the front • Corrected Counter and input overvoltage protection block diagram • Updated pinout tables and connection pictures