

## SOFTWARE USER MANUAL

Digital Out configuration V21-1



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## 2. About this document

This is the users manual for Digital Output (DO) module.

### 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.

## 3. Digital Out on Dewesoft devices

This document briefly instructs how to enable digital outputs on Dewesoft devices.

Following hardware has digital output:

- Sync-Port (on every Dewesoft device; only possible if no other device is synched to it)
- Digital port on amplifier connector (on multiple devices SIRIUS®, KRYPTON®, IOLITE®, etc. ) check manuals for specific amplifiers.

There are two ways to access the digital outputs in DewesoftX® software:

- Alarms (port changes on condition)
- Control out (changing port manually, also during acquisition)

### 3.1. Using Sync Port



#### Important

To use the Sync Port for digital output is only possible, if it is not used for synchronization to other devices at the same time (e.g. syncing multiple DEWE-43A or SIRIUS® with the sync cable).

If the sync port is not used and the clock provider is set to standalone, the Digital Outputs are visible on the Analog/Digital Outputs tab. In the opposite case the Digital Outs S1, S2, S3 are not shown at all. If we use more than one device, a standalone option is not available so Digital outs from sync port aren't available.











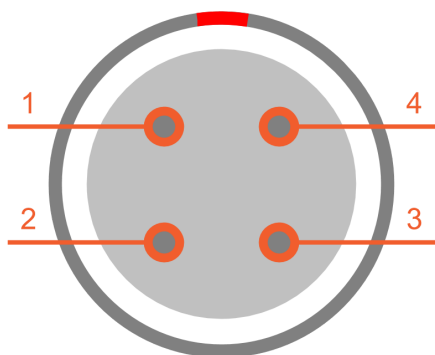
									
Store	Save	Save as	Storing	Analog in	Func. gen.	A/D out	Math	More...	Remove
A/D out									
Search <input type="text"/>									
ID	Used	C	Name	Description	Unit	Value type	Channel	Period	Setup
7	Unused		Ctrl DO 7	Ctrl DO 7	-	Manual			Setup
8	Unused		Ctrl DO 8	Ctrl DO 8	-	Manual			Setup
1	Unused		Ctrl AO 1	Ctrl AO 1	-	Manual			Setup
2	Unused		Ctrl AO 2	Ctrl AO 2	-	Manual			Setup
3	Unused		Ctrl AO 3	Ctrl AO 3	-	Manual			Setup
4	Unused		Ctrl AO 4	Ctrl AO 4	-	Manual			Setup
5	Unused		Ctrl AO 5	Ctrl AO 5	-	Manual			Setup
6	Unused		Ctrl AO 6	Ctrl AO 6	-	Manual			Setup
7	Unused		Ctrl AO 7	Ctrl AO 7	-	Manual			Setup
8	Unused		Ctrl AO 8	Ctrl AO 8	-	Manual			Setup
S1	Unused		Ctrl DO Clk	Ctrl DO Clk	-	Manual			Setup
S2	Unused		Ctrl DO Trig	Ctrl DO Trig	-	Manual			Setup
S3	Unused		Ctrl DO Res	Ctrl DO Res	-	Manual			Setup

Image 1: Digital out on sync port.

### 3.1.1. Connect

According to the manual, the Sync Port consists of 3 digital outputs (CLK, Trig, PPS).



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

Image 2: Sync connector 4-pin LEMO female.

Here we are using a small box on the 4 pin Lemo 00 connector to split up to 3 x BNC ports for easy connection.



Image 3: Box with BNC connectors and plugged into sync port.



### 3.1.2. Use Control out

Under Ch. Setup → Analog/digital out enable the channels you want to control.

S1	Used	Ctrl DO Clk	Ctrl DO Clk	-	Manual
S2	Used	Ctrl DO Trig	Ctrl DO Trig	-	Manual
S3	Used	Ctrl DO Res	Ctrl DO Res	-	Manual

Image 4: Enabling the out ports for use.

Now you can add visual Control instruments in Measure → Design → Widgets → Input control. Select e.g. type “Push button” from the properties on the left side.

So you can manually change the status of the 3 pins of digital out. .

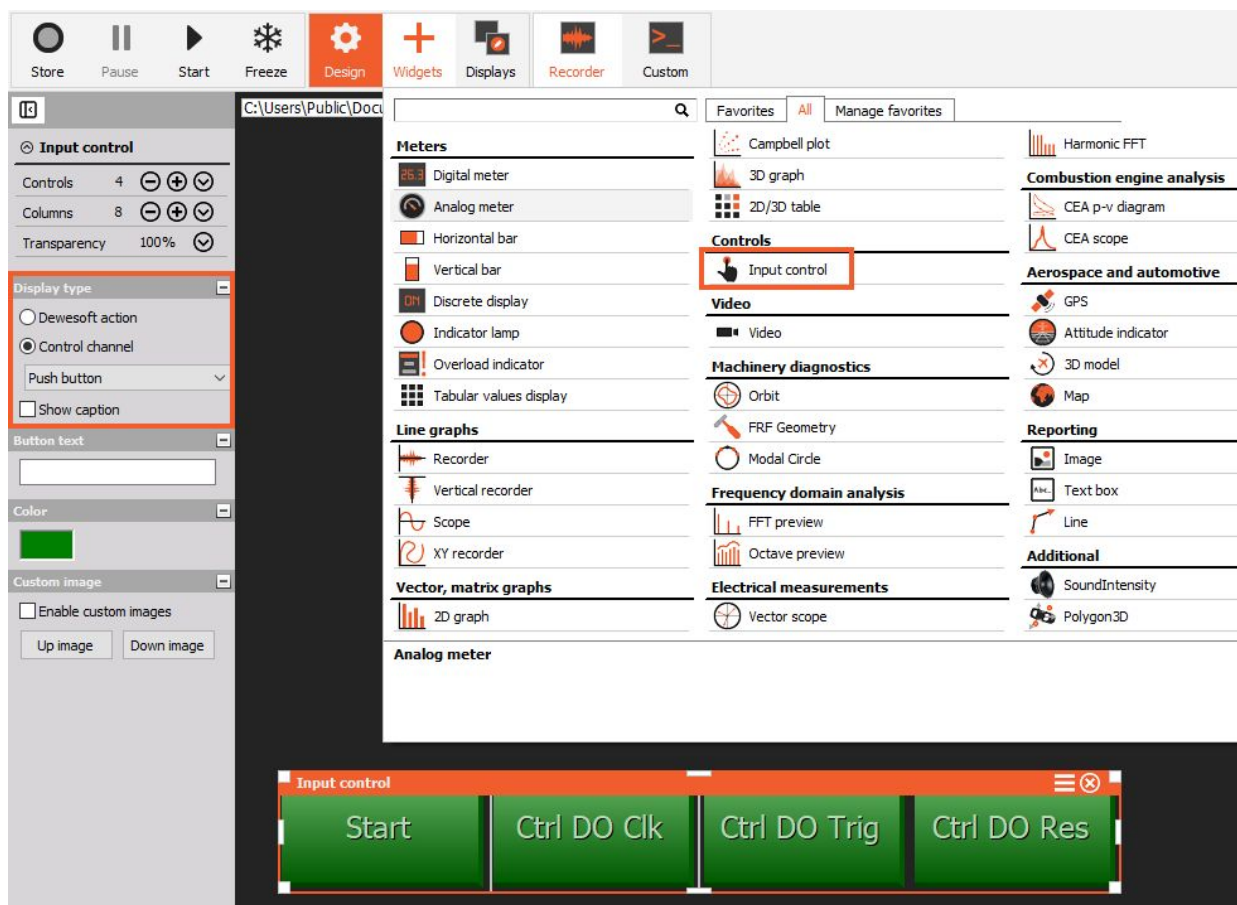


Image 5: User inputs control.

### 3.1.3. Use Alarms & Events

Let's see how we can change the digital output on a certain condition. Click More → Alarms to add a module.

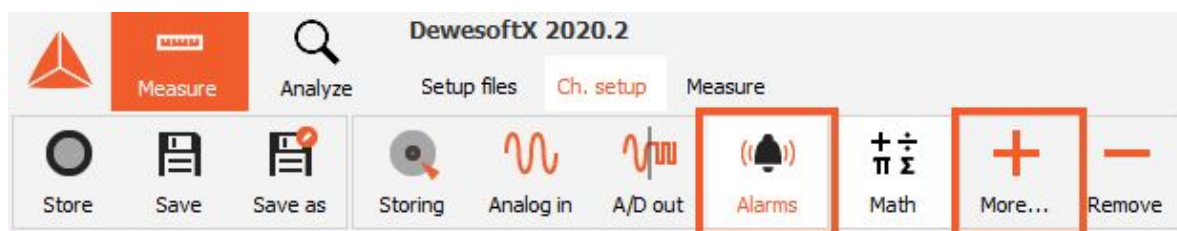


Image 5: Alarms in ch. Setup tab.

Open the module and enable which pin(s) should be used in the “Alarm output selection”.

In the example we check if the input signal of our sensor on the Analog Input “AI 1” exceeds a level of 0,1 V. On another condition, in our case 0,18V the alarm will be reset.

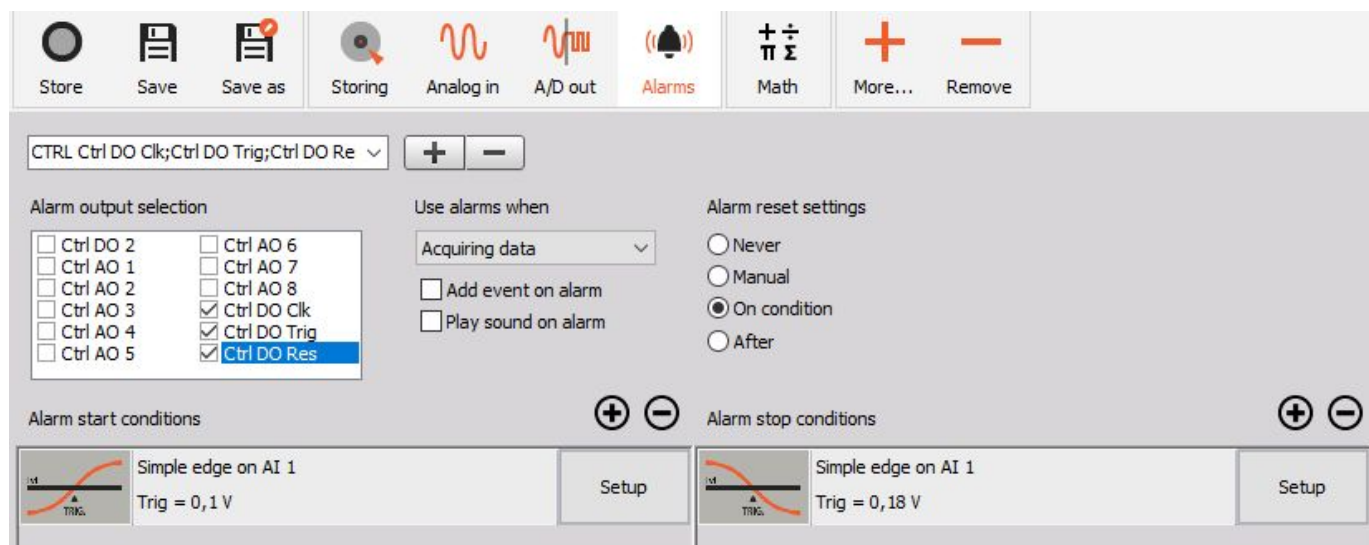


Image 6: Alarm and trigger condition settings.

## 3.2. Using digital port on SIRIUS® amplifier

Digital port is available on the following SIRIUS® amplifiers:

- SIRIUS-ACC+
- SIRIUS-CNT
- SIRIUS-CHG+
- SIRIUS-LV+
- SIRIUS-STG+
- SIRIUS-STGM+
- SIRIUS-STG-LE2B10
- SIRIUS-STGM-DB



### Important

Depending on the amplifier a PULL-UP-RESISTOR has to be connected externally to get it working (please check the manual).



### Example

Example for the SIRIUS-ACC+ amplifier.

In the manual the specifications for “Alarm output” are listed with “open collector, max 100mA/30V”.

Counter	
Timebase	102.4 MHz
Time base accuracy Typical	5 ppm, Max: 20 ppm
Max. Bandwidth	10 MHz
Input Filter	500 ns, 1 $\mu$ s, 2 $\mu$ s, 4 $\mu$ s, 5 $\mu$ s and 7.5 $\mu$ s
Input Level Compatibility	TTL (Low: <0.8 V, High >2 V)
Input Impedance	100 k $\Omega$ pull-up to +3.3 V
Input Protection	$\pm$ 25 Volt continuous
Alarm output	Open collector, max. 100 mA / 30 Volt
Sensor supply	5 V / 100 mA; 12 V / 50 mA

Image 7: SIRIUS® counter alarm output data from manual.



In the “A/D Out” channel setup section a small circuitry shows how to connect the resistor. You can choose between two wire types that are “Use as a digital output” or “Use as Switch”.

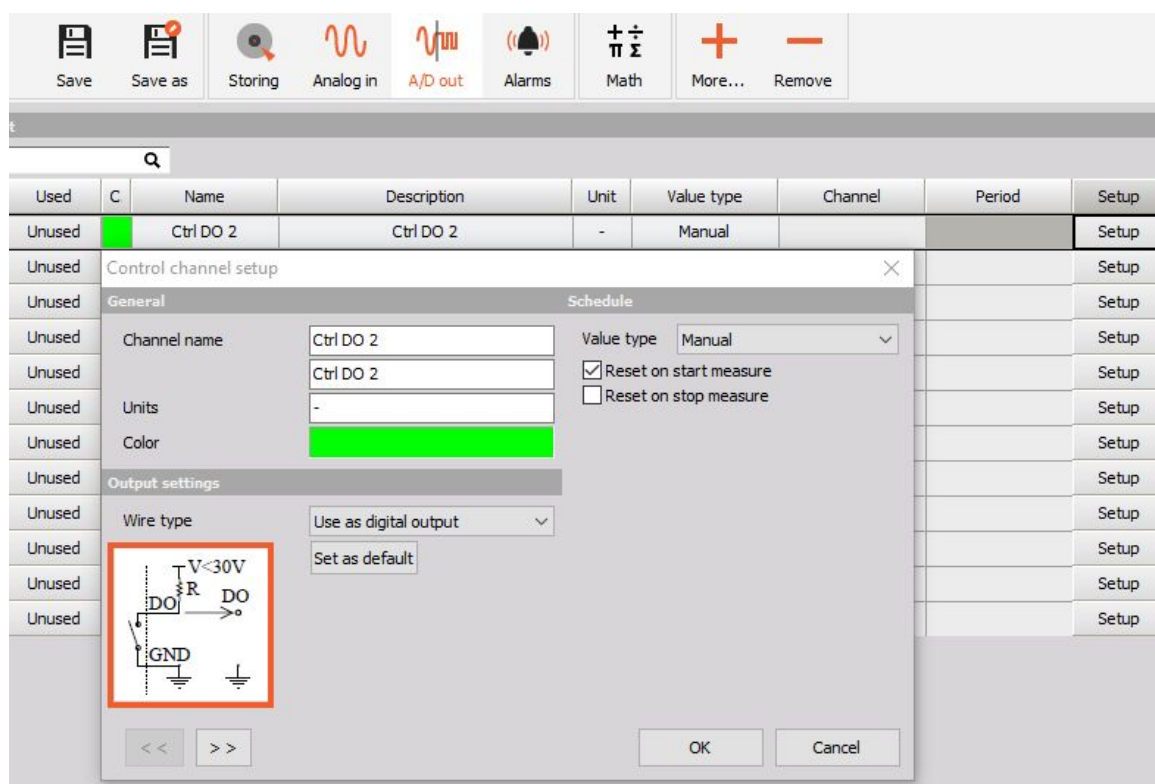


Image 8: Wiring diagram for Digital Out.

On the left side of the dotted line shows the switch inside of the Dewesoft device, and the right side shows the outside wiring that needs to be set up by the user. You can choose between Digital output and switch. With digital out the logic inside Dewesoft is reversed compared to when used as a switch, so when the DO in Dewesoft has a state of logical 1, the switch inside the device is in an OPEN position and vice versa. More information about this you will find in the article on our [Customer support portal](#).

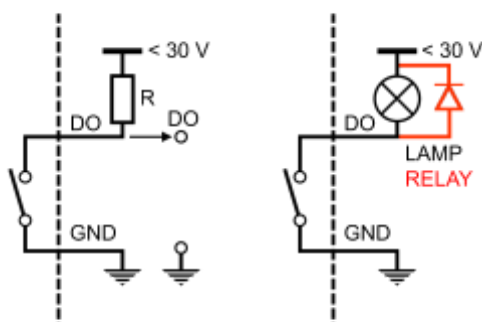


Image 9: Wiring diagram digital out (left) and switch (right).

On the ACC+ amplifier, Lemo 1B 7 pin, you can connect a resistor between pin 6 and pin 4 and calculate the resistor value as follows (10 mA is just a suggested current, don't draw more than 100 mA).

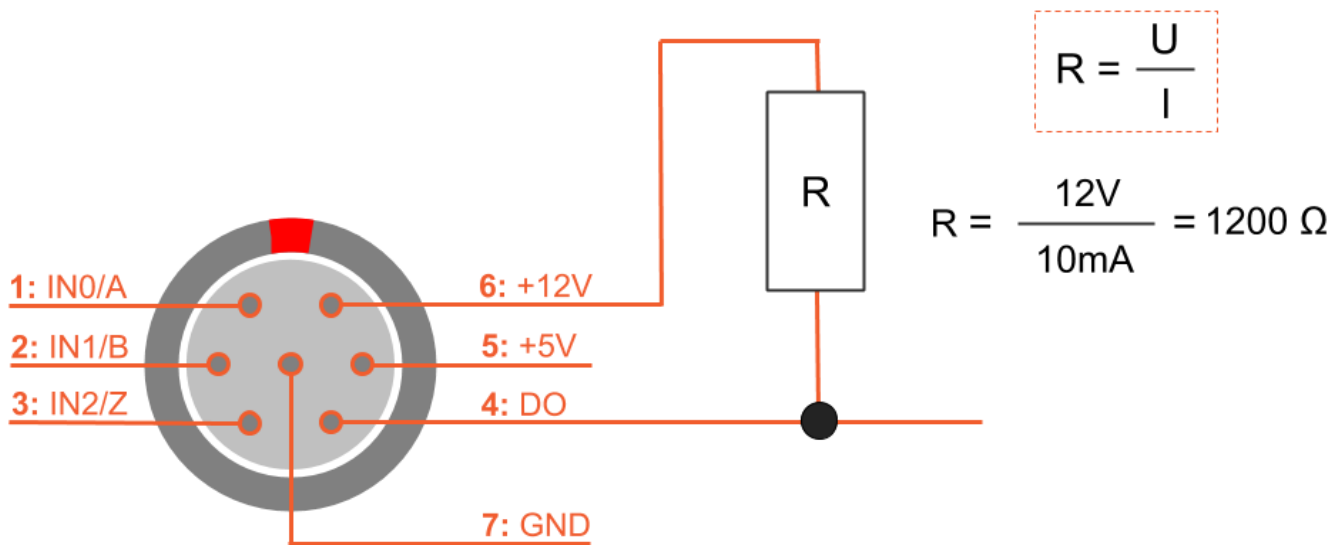


Image 10: Calculation for the size of resistor for desired 10mA.



**Hint**

For ACC+, CHG+ channels GND of the counter input is connected via a 50  $\Omega$  resistor to In- of the analog channel.

Again, you can also access this type of digital out using “User input control” or “Alarms” as shown in the Sync Port example before.

## 4. 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>.

### 4.1. 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.

### 4.2. 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>  
Email: [Support@dewesoft.com](mailto:Support@dewesoft.com)  
The telephone hotline is available Monday to Friday from 07:00 to 16:00 CET (GMT +1:00)

### 4.3. 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>.

### 4.4. Restricted Rights

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

## 4.5. Printing History

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

## 4.6. Copyright

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# 5. Safety instructions

Your safety is our primary concern! Please be safe!

## 5.1. 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.

## 5.2. 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 GmbH 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.

### 5.2.1. Environmental Considerations

Information about the environmental impact of the product.

### 5.2.2. Product End-of-Life Handling

Observe the following guidelines when recycling a Dewesoft system:

### 5.2.3. 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](http://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.

### 5.2.4. 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.

### 5.3. Documentation version history

Version	Date	Notes
V21-1	5. 1. 2021	New template, updated features and photos from Release 2020.2