

SAFETY REFERENCE MANUAL

SIRIUS® V23-1



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1. About this document

This is the safety reference manual for the SIRIUSi Data Acquisition Devices.

1.1. Legend

The following symbols and formats will be used throughout the document and/or are used on the module.



Caution

Indicate that the current situation needs operator awareness or operator action in order to avoid undesirable consequences. Consult manuals and follow all instructions.



Caution, hot surface

Indicate that the item can be hot and should not be touched without taking care.



Caution, risk of electric shock

Follow all instructions to avoid electrical shock.

1.2. Online versions

1.2.1. Device Safety 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 *DEVICE® safety reference manual*.



Hint

Device Technical Reference 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 *DEVICE® technical reference manual*.

1.2.2. DEWESoft® Software 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://download.dewesoft.com/list/manuals-brochures/software-manuals>

In the Software Manuals section click the download link of the DEWESoft X User Manual entry.

2. Safety instructions







Your safety is our primary concern! Please be safe! Read carefully following instructions and use common sense when operating the equipment.





Warning

The following general safety precautions must be observed during all phases of operation, service, and maintenance of this product. Failure to comply with these precautions or with specific warnings elsewhere in the product manuals 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.

If accessories for the product are available they are not covered with following instructions. Please read the safety manual for the accessory.

	Only trained persons can operate, make maintenance or service actions.
	Product safety isolation relies on reliable safety ground connection. Before any other cable attachment please connect product safety ground first to the system safety ground. When removing the product, safety ground connection shall be removed last. Not grounding the product reduces safety isolation of the product and can lead to electrical shock in case of product malfunction.
	When operating high voltage in excess of 1000V and high currents can be present inside of the product. Newer do any servicing or maintenance actions if power cables are live to prevent electrical shock or arc as a result of current flow or its interruption.
	Before any work on the product check that surface temperature is safe for handling. During operation at high currents product internal and surface temperature can increase a lot. This combined with potential high ambient temperature can lead to product surface temperature exceeding safe touch temperature.
	Before any work on a product check that all power sources are off. If power sources are not under visual control of the servicing person use safety locks to prevent unintended power source turn on. Install safety warnings at power switch location that maintenance is going on and try to inform all persons with access to the power source about intended operation.
	Newer open any cover on the products. There are no serviceable parts inside. All repairs or calibration must be done at the Dewesoft approved service centres. Please follow this link: https://dewesoft.com/support/rma-service

	Do not use higher voltage than specified on the product power supply pins. Power supply input is protected for some short term transients, however longer exposure to higher voltage levels will damage input circuits.
	DO NOT use the system in rooms with flammable gases, fumes or dust or in adverse environmental conditions.

Please follow also general safety instructions:

- DO NOT operate damaged equipment: Whenever it is assumed 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.
- 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.
- Please contact a Dewesoft support team if you have doubts about the method of operation, safety or the connection of the system.
- Please be careful with the product. Shocks, hits or dropping it even from low height may damage your system.
- Please read 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.

2.1. Safety grounding

DEWESoft DAQ device accessible conductive parts are connected (bonded) to the PROTECTIVE CONDUCTOR TERMINAL if they become HAZARDOUS LIVE in case of a single fault of the primary means of protection (namely: digital isolators, isolated power supply, protective impedance).






Caution, risk of electric shock

- Product safety isolation relies on reliable safety ground connection.
- Before any other cable attachment please connect product safety ground first to the system safety ground.
- When removing the product, safety ground connection shall be removed last.
- Not grounding the product reduces safety isolation of the product and can lead to electrical shock in case of product malfunction.

2.1.1. PROTECTIVE CONDUCTOR TERMINAL

Protective conductor terminal is designed to comply with IEC 61010-1 (Safety - General Requirements).

	Terminal is marked according to requirements of IEC 60417-5019
	Tightening torque for binding screw assemblies: Thread size : 4.0 mm Tightening torque: 1.2 Nm At least three full turns of the screw engaged.
	Use an appropriate washer or clamping plate and/or conductor anti-spread device.

2.1.2. GND Ø4mm Socket

Commonly used on DEWESoft devices for general system grounding. Accepting spring-loaded Ø4 mm plugs without rigid insulating sleeve.








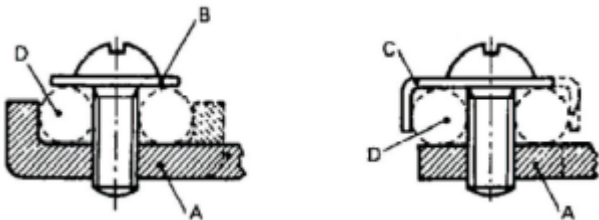
Warning

This connection is not considered to be used as a safety ground connection as per IEC 61010-1. Connection to this may be temporary, may lose contact and can be removed without tools. As described above make sure that this connection makes first and breaks last with respect to the other connections.

Connection to GND functional earth terminal (for example, measuring earth TERMINALS) allows a connection which is independent from the connection of the protective conductor.

2.1.3. Protective Conductors

For final installation of the equipment make sure to follow general safety instructions specified in standard IEC 61010-1:

	<p>Protective conductors may be bare or insulated. Insulation shall be green-and-yellow, except in the following cases:</p> <ol style="list-style-type: none"> 1. for earthing braids, either green-and-yellow or colourless-transparent; 2. for internal protective conductors, and other conductors connected to the PROTECTIVE CONDUCTOR TERMINAL in assemblies such as ribbon cables, busbars, flexible printed wiring, etc., any colour may be used provided that no HAZARD is likely to arise from non-identification of the protective conductor.
	<p>The PROTECTIVE BONDING shall not be interrupted by any switching or interrupting device.</p>
	<p>The exterior metal braid of cables shall not be regarded as PROTECTIVE BONDING, even if connected to the PROTECTIVE CONDUCTOR TERMINAL.</p>
	<p>For reliable safety ground connection use grounding cable with a cross-section larger or equal than 2.5 mm² (AWG 13)</p>
	<p>Use a cable lug for M4 (0.16") size screws. Cable lug is also a conductor anti-spread device.</p> <div data-bbox="300 1178 900 1397">  </div> <p>Key A = fixed part B = washer or clamping plate C = anti-spread device D = conductor space</p>

2.1.4. Details and supplied parts



M4 Cable lug to 4 mm spring loaded banana plug and toothed test clip, 2m cable



4 mm spring loaded banana plug on both ends and toothed test clip, 2m cable



Important

Cable lug variant supplied with instruments with M4 insert.

Banana-to-banana variant supplied with instruments without M4 insert, only 4mm GND socket.

2.1.5. SIRIUS System



Bottom left side: GND \varnothing 4mm Socket, Bottom right side: PROTECTIVE CONDUCTOR TERMINAL



M4 M4x8 TX20 head screw and M4 spring washer



SIRIUS Single, Safety grounding detail with protective conductor and cable lug



Warning

This connection is not considered to be used as a safety ground connection as per IEC 61010-1.



SIRIUS Single, Connection to GND functional earth terminal with 4 mm banana plug



SIRIUS R8, Safety grounding detail with protective conductor and cable lug



Warning

This connection is not considered to be used as a safety ground connection as per IEC 61010-1.



SIRIUS R8, Connection to GND functional earth terminal with 4 mm banana plug

2.1.6. IOLITE System



IOLITE R8, Safety grounding detail with protective conductor and cable lug



IOLITE R8, Safety grounding detail with protective conductor and cable lug



IOLITE R12, Safety grounding detail with protective conductor and cable lug



Warning

This connection is not considered to be used as a safety ground connection as per IEC 61010-1.

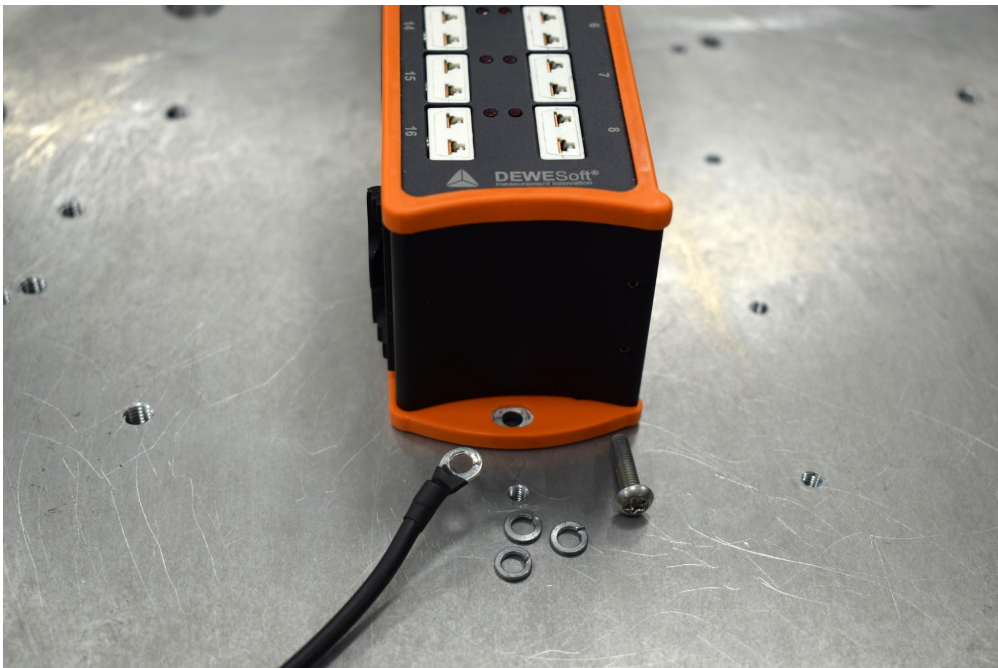


IOLITE R12, Connection to GND functional earth terminal with 4 mm banana plug

2.1.7. KRYPTON System



KRYPTON, Safety grounding detail with protective conductor and cable lug



M4 M4x15 TX20 head screw and M4 spring washers



Warning

Contact area on Krypton should be conductive and free from isolating black galvanic protection.

2.1.8. Other devices

- Please follow safety instructions as described above.
- Use PROTECTIVE CONDUCTOR TERMINAL if available.
- Use GND ø4mm Socket if available. WARNING: This connection is not considered to be used as a safety ground connection as per IEC 61010-1.
- Make additional GND connection as described for eg.: KRYPTON System.

2.2. 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 I 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.

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.

3. Notice

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

Note:

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3.1. Warranty information

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>.

3.2. 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.

3.3. 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

The telephone hotline is available Monday to Friday from 07:00 to 16:00 CET (GMT +1:00)

3.4. 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>.

3.5. Restricted Rights

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

3.6. Printing History

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3.9. Documentation version history

Version	Date	Notes
V23-1	27.02.2023	Initial document version.