DEWETRON

DEWE3-PA8

TECHNICAL REFERENCE

EN ISO 14001

ISO 9001

Preface

Welcome to the world of DEWETRON!

Thank you very much for your investment in DEWETRON‘s unique data acquisition systems. These are top-quality instruments which are designed to provide you years of reliable service. This guide has been prepared to help you get the most from your investment, starting from the day you take it out of the box, and extending for years into the future.

This guide includes important startup notes, as well as safety notes and information about keeping your DEWETRON system in good working condition over time. However, this manual cannot and is not intended to replace adequate training.

This documentation contains operating as well as safety and care instructions that must be observed by the user. Faultless operation can only be guaranteed by observing these instructions.

Intended use

A DEWETRON DEWE3-PA8 Power Analyzer is the high-speed solution for the simultaneous analysis of several motors, converters or complete drive trains. The instruments offers 8 slots for user exchangeable TRION/TRION3 series modules.

Furthermore, based on highspeed PXI Express technology, the dedicated TRION3-1810M-POWER-4 high-speed module and the capability for calculation of power parameters even for polyphase motors (up to 9 phases) turn the DEWE3-PA8 into a multi power analyzer.

Contents

Safety

Safety instructions

The following section contains warning and safety instructions that must be observed by the user. Faultless operation can only be guaranteed if these instructions are observed.

General safety instructions

- Use this system under the terms of the specifications only to avoid any possible danger. If the unit is used in a manner not specified by the manufacturer the protection can be impaired.
- Maintenance is to be executed by qualified staff only.
- DO NOT use the system if equipment covers or shields are removed.
- If you assume the system is damaged, have it examined by authorized personnel only.
- Any other use than described above may damage your system and is attended with dangers such as short-circuits, fire or electric shocks.
- The whole system must not be changed, rebuilt or opened (except for changing TRION modules).
- Reinstall filler panels of unused TRION slots to guarantee proper cooling of the installed modules. The warranty is void if the modules overheat due to missing filler panels.
- 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 environmental.
  - the system has been exposed to heavy shipment strain.
- The warranty is void if damages caused by disregarding this manual. For consequential damages NO liability will be assumed.
- The warranty is void if damages 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). Exception: changing DAQP/PAD/HSI/TRION/TRION3 modules.
- Prevent using metal bare wires as there is a 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 overvoltage). An advanced range of application under certain conditions is allowed with therefore designed products only. For details refer to the specifications.
- Make sure that your hands, shoes, clothes and as well as the floor, the system or measuring leads, integrated circuits etc. are dry.
- Use measurement leads or measurement accessories aligned to the specification of the system only. Fire hazard in case of overload.
- Do not disassemble the system. There is a high risk of getting a perilous electric shock. Capacitors still might charged, even the system has been removed from the power supply.
- The measuring systems are not designed for use at humans and animals.
- Contact a professional if you have doubts about the method of operation, safety or the connection of the system.
- Handle the product with care. Shocks, hits and dropping it even from an already lower level may damage your system.
- Also consider the detailed technical reference manual as well as the security advices of the connected systems.

Electrical safety instructions

- 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.
- The system is grounded via a protective conductor in the power supply cord. To avoid electric shocks, the protective conductor has to be connected with the ground of the power network. Before connecting the input or output connectors of the system, make sure that there is a proper grounding to guarantee potential free usage. For countries, in which there is no proper grounding, refer to your local legally safety regulations for safety use.
- DC systems: Every DC system has a grounding connected to the chassis (yellow/green safety banana plug).
- Note the characteristics and indicators on the system to avoid fire or electric shocks. Before connecting the system, carefully read and understand the corresponding specifications in the product manual.
- The inputs are not, unless otherwise noted (CATx identification), for connecting to the main circuits of category II, III and IV. The measurement category can be adjusted depending on module configuration.
- The power cord or the main power switch separates the system from the power supply. Do not block the power cord or main switch, since it has to be accessible for the users.
- Any direct voltage output is protected with a fuse against short-circuits and reverse-polarity, but is NOT galvanically isolated (except it is explicit marked on the system).
- Supply overvoltage category is II.
- The system must be connected and operated to an earthed wall socket at the AC mains power supply only (except for DC systems).
- DO NOT touch any exposed connectors or components if they are live wired. The use of metal bare wires is not allowed. There is a risk of short-circuits and fire hazard.
- The assembly of the system is equivalent to protection class I. For power supply, only the correct power socket of the public power supply must be used, except the system is DC powered.
- Be careful with voltages >25 V_{AC} or >35 V_{DC}. These voltages are already high enough in order to get a perilous electric shock by touching the wiring.
- Unless otherwise stated, the maximum input voltage for measuring cards is 70 V_{DC} and 46.7 V_{PEAK}
- The electrical installations and equipments in industrial facilities must be observed by the security regulations and insurance institutions.
- Only fuses of the specified type and nominal current may be used. The use of patched fuses is prohibited.

Ambient safety notices

- This product is intended for use in industrial locations. As a result, this product may cause interference if used in residential areas. Such use must be avoided unless the user takes special measures to reduce electromagnetic emissions to prevent interferences to the reception of radio and television broadcasts.
- Avoid operation in the immediate vicinity of:
  - high magnetic or electromagnetic fields
  - transmitting antennas or high-frequency generators
- 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.
- Any use in wet rooms, outdoors or in adverse environmental condition is not allowed. Adverse environmental conditions are:
  - Moisture or high humidity
  - Dust, flammable gases, fumes or dissolver
  - Thunderstorm or thunderstorm conditions (except assembly PNA)
  - Electrostatic fields etc.
- DO NOT use the system in rooms with flammable gases, fumes or dust or in adverse environmental conditions.
- Direct exposure of any DEWETRON product to strong sunlight or other heat radiation shall be prevented, as this could excessively heat up the product and lead to permanent damage of the product.
- The use of the measuring system in schools and other training facilities must be observed by skilled personnel.

Safety notices during operation

- During the use of the system, it might be possible to access another parts of a more comprehensive system. Read and follow the safety instructions provided in the manuals of all other components regarding warning and security advices for using the system.
- The product heats during operation. Make sure there is adequate ventilation. Ventilation slots must not covered.

Standards and norms

This product has left the factory in safety-related flawless and proper condition.

In order to maintain this condition and guarantee safety use, the user has to consider the security advices 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 welltried”, are excluded from the scope of IEC 61326-3-1.

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

Typographic conventions

Safety and warning notices

WARNING

Indicates a hazardous situation that, if not avoided, could result in death or serious injury.

CAUTION

Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

Notices

NOTICE

This text indicates situations or operation errors which could result in property damage or data loss.

INFORMATION

This text indicates important information or operating instructions. Not observing these instructions could inhibit or impede you from successfully completing the tasks described in this documentation.

Symbols

Denotes a warning that alerts you to take precautions to avoid injury. When this symbol is shown on the product, refer to the technical reference manual (ISO 7000-4034; 2004-01).

Indicates hazardous voltages.

Observe precautions for handling electrostatic sensitive devices.

Indicates the chassis terminal (IEC 60417-5020; 2002-10).

Direct current (IEC 60417-5031; 2002-10)

Alternate current (IEC 60417-5032; 2002-10)

Both direct and alternating current (IEC 60417-5033; 2002-10)

Three-phase alternating current (IEC 60417-5032-1; 2002-10)

Protective conductor terminal (IEC 60417-5019; 2006-08)

Equipment protected throughout by double insulation or reinforced insulation (IEC 60417-5172; 2003-02)

On (power) (IEC 60417-5007; 2002-10)

Off (power) (IEC 60417-5008; 2002-10)

General information

Environmental considerations

The following information refers to the environmental impact of the product and the product end-of-life handling. Observe the following guidelines when recycling a DEWETRON system:

- System and components recycling

The production of these components has 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. Recycle this product in an appropriate way to avoid an 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 of Electrical and Electronic Equipment (WEEE). Further information about recycling can be found on the DEWETRON website (www.dewetron.com).

- Restriction of hazardous substances

  This product has been classified as Monitoring and Control equipment, and is outside the scope of the 2011/65/EU RoHS Directive. This product is known to contain lead.

Problematic network stacks

Often intrusive IT software or network processes can interfere with the primary function of the DEWETRON system: to record data. Therefore we recommend strongly against the installation of IT/MIS software and running their processes on any DEWETRON data acquisition system, and cannot guarantee the performance of our systems if they are so configured.

Warranty information

A copy of the specific warranty terms applicable to your DEWETRON product and replacement parts can be obtained from your local sales and service office.

Legal information

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Austria

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Printing history

Refer to the page bottom for printing version.

Main system

Key facts

- Modular, high-speed mixed signal power analyzer
- 8 slots for TRION/TRION3 acquisition modules
- Up to 16 power channels (U, I @ channel); expandable
- Integrated 11.6” multi-touch Full HD wide screen (1920 x 1080 px)
- Sensor power supply (±15 V / +9 V) with separate power supply

System specifications

DEWE3-PA8	
Open slots for TRION(3) modules	8
Features[1)] (optional)	– 1 programmable frequency output (10 to 1,000,000 Hz) – 2 advanced counter input, 2 basic counter – 8 digital inputs, 4 digital outputs
Input specification	Supports all TRION/TRION3 (high-speed) series interface boards except 3rd-party modules[2)]. Optimized to operate with high-speed TRION3 boards.
Input channels	Up to 16 voltage, 16 current and auxiliary inputs
High-speed channel expansion	Add TRIONet at any time via SYNC interfaces or other instruments via OXYGEN-NET
Low-speed channel expansion (100 Hz)	XR series modules via EPAD connector (RS-485 interface) or via TRION-CAN interface.
Quasi-static channel expansion	EPAD2 interface connector, XR via TRION-CAN
Sensor power supply	8 power supply connectors for connecting current clamps and transducers (±15 V / +9 V); Redundant, dedicated power supply for sensor power supply installed into the chassis
Main system	
System bandwidth	max. 1000 MB/s (depending on system configuration)[3)]
Data storage – Drive bay at the front – Drive bay at the rear	 1 TB SSD-PCIe dedicated for data storage (upgrade to 2 TB SSD-PCIe available) 120 GB SSD for operating system and application software
Display	Full-HD 11.6“ multi-touch wide screen (1920 x 1080 px)
Power consumption incl. modules[4)]	Typ. 220 W without sensor supply
Main power supply	Rated input voltage: 100 to 240 V_{AC} (max. 90 to 264 V_{AC}), 600 W AC power supply
Redundant power supply	Rated input voltage: 100 to 240 V_{AC} (max. 90 to 264 V_{AC}), 200 W AC power supply for sensor
Noise emissions[5)] – System idle – CPU max. heat – Max. fan	 38 dBA 42 dBA 52 dBA
Cooling capacity	25 W per module slot

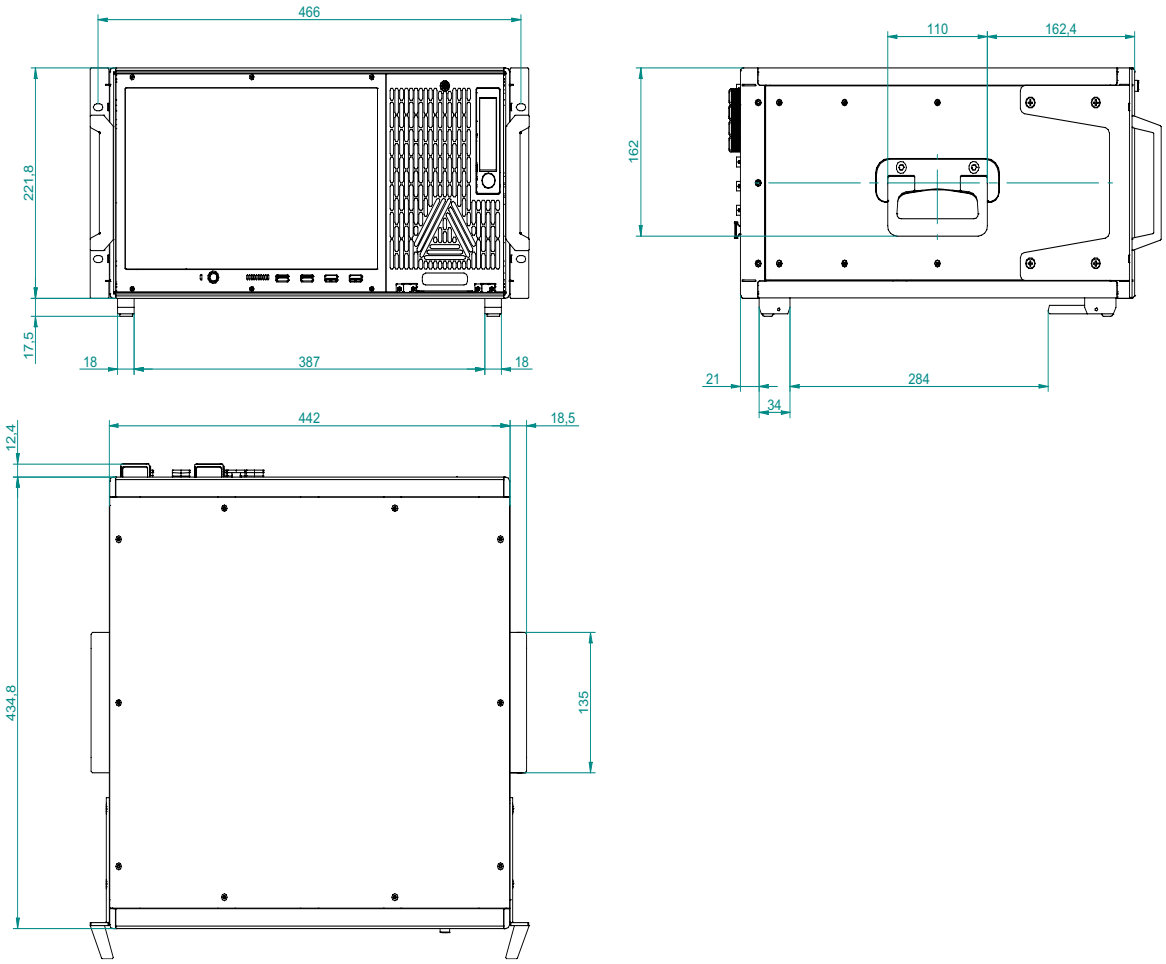
Tab. 1: System specifications DEWE3-PA8

DEWE3-PA8		
MTBF	with chassis controller	19,495 h (with fans)
		22,933 (without fans)
	without chassis controller	20,859 h (with fans)
		24,064 h (without fans)
Dimensions (W x D x H)		Without feet: 442 x 435 x 222 mm (17.4 x 17.1 x 8.7 in.)
Weight w/o TRION modules		Typ. 14 kg (30.9 lbs)
Environmental specifications		
Operating temperature		0 to +50 °C, down to -20 °C with pre-warmed unit
Storage temperature		-20 to +70 °C
Humidity		10 to 80 % non cond., 5 to 95 % rel. humidity
Max. altitude		2000 m (10,000 ft)
Sine vibration test[6]; EN 60068-2-6		
Shape Frequency range Acceleration Sweep rate Duration test in 3 directions		Sine 10–150 Hz 20 m/s^2 1 oct./min. 20 cycles
Random vibration test[6]; EN 60721-3-2; Class 2M3		
Frequency range Spectral acceleration density Duration		10–200 Hz 1 m^2/s^3 30 minutes/direction
Shocktests[6]; EN 60068-2-27		
Pulse form Acceleration amplitude Duration Direction		Half-sine 30 g 11 ms 3 bumps each direction, 6 directions in total

Tab. 1: System specifications DEWE3-PA8

1) The interfaces are only present on the device if at least one of the optional features has been purchased.
2) TRION3-1820-MULTI-AOUT and TRION3-AOUT depending on operating mode.
3) For further information refer to chapter *Block diagram on page 15*.
4) Depending on installed TRION series modules. Refer to the *TRION technical reference manual*.
5) Tested with DEWE3-PA with chassis controller installed, 2x TRION3-1820-MULTI-4D and 3x TRION3-1810M-POWER-4 measurement boards; 1 m distance to system (front); remaining slots covered with cover panels.
6) Tested with SSD.

Dimensions



Dimensions in mm (1 inch = 25.4 mm)

Fig. 1: Dimensions DEWE3-PA8

Block diagram

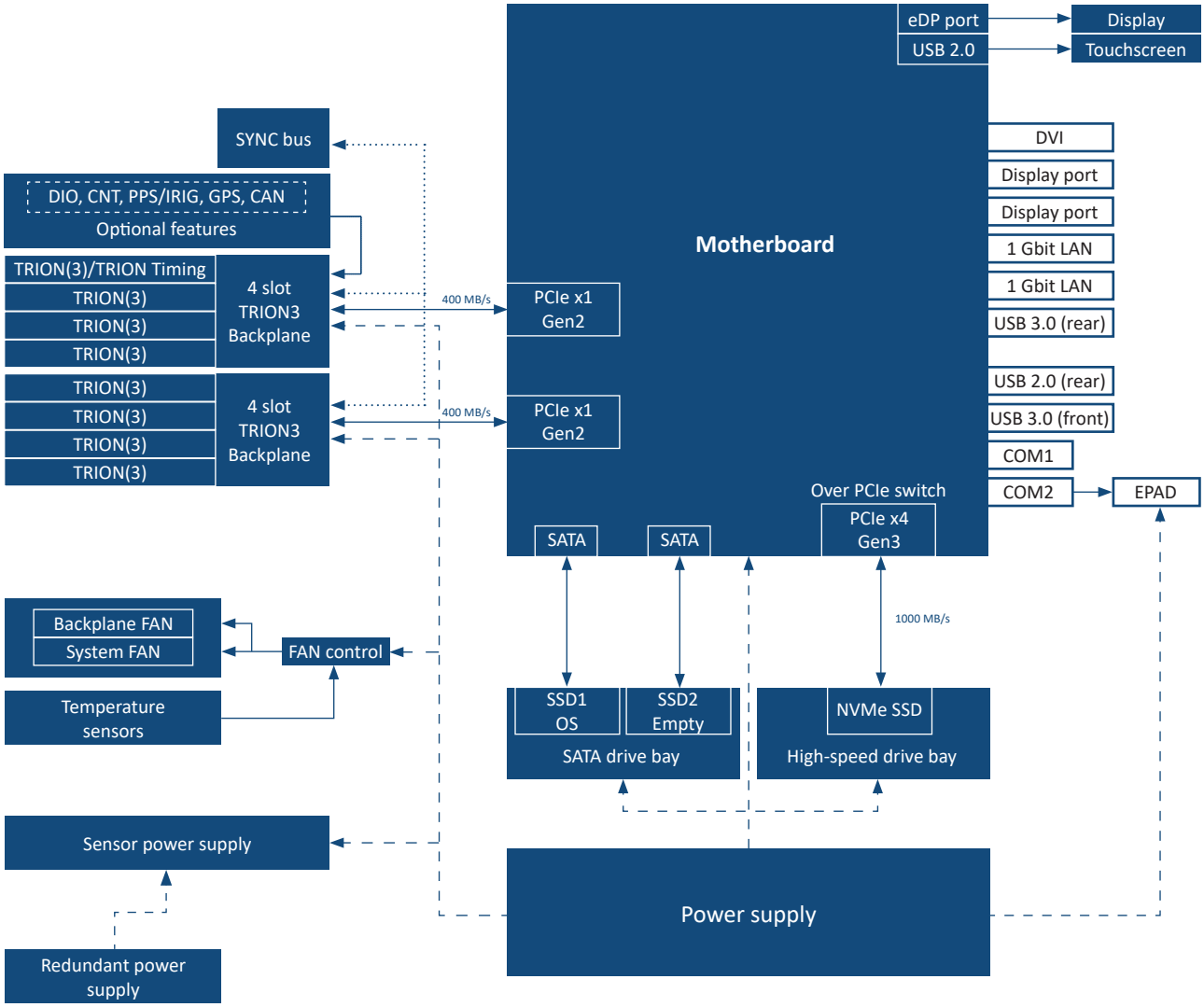


Fig. 2: Block diagram

INFORMATION

Depending on the selected device variant, some components may or may not be present in the above block diagram.

Connections and ports

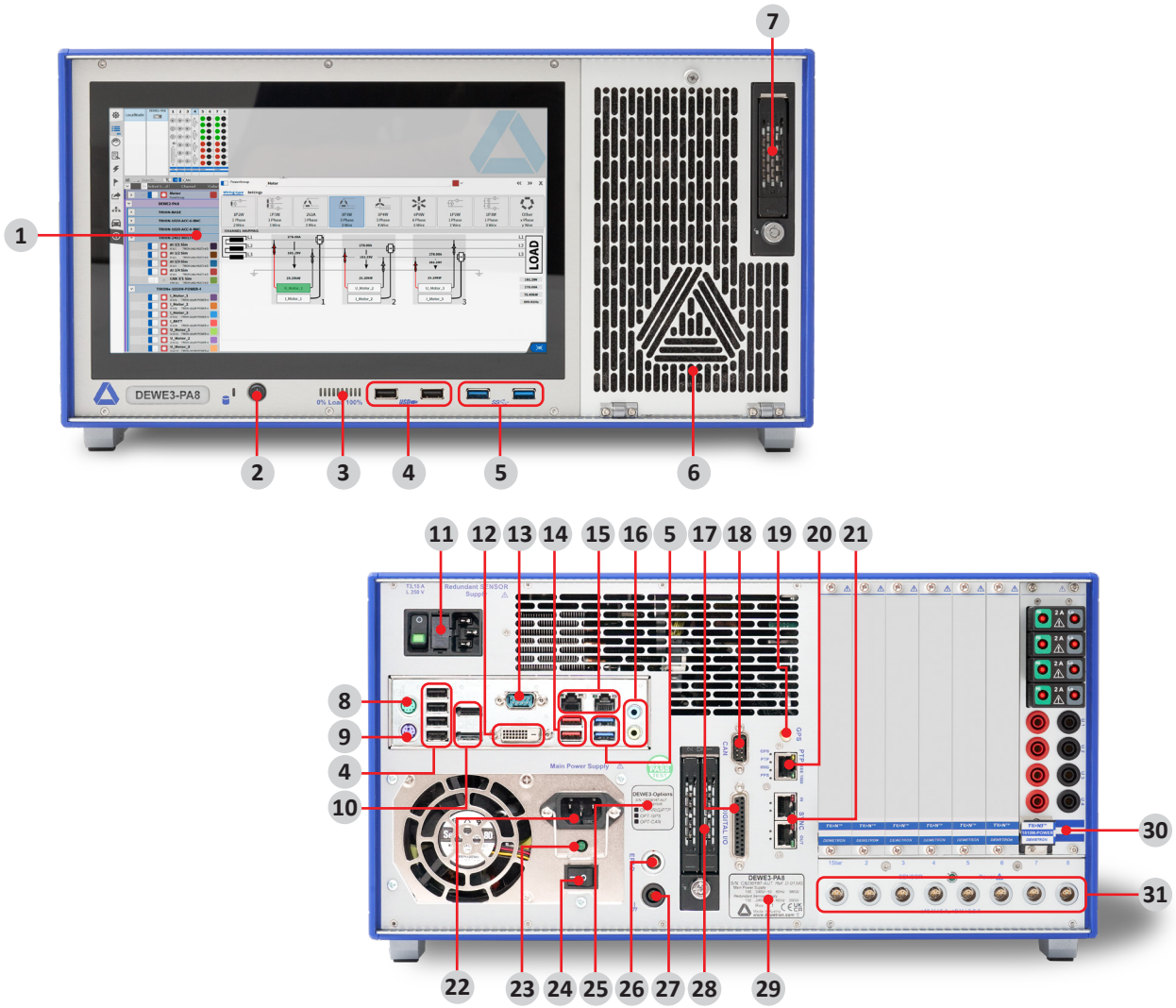


Fig. 3: DEWE3-PA8 overview

1. *Multi-touch display*
2. *Power on/off push button*
3. *Sensor supply load indicator*
4. *USB interface connectors* (2.0)
5. *USB interface connectors* (3.1 GEN1)
6. *Intake vent and filter pad*
7. *SSD drive bays* for data storage
8. *PS/2 interface connector* (mouse)
9. *PS/2 interface connector* (keyboard)
10. *Display port connectors*
11. *Redundant power supply for sensor supply*
12. *DVI interface connector*
13. *RS-232 interface connector (COM 1)*
14. *USB interface connectors* (3.1 GEN2)
15. *Dual LAN GBit connector*
16. *Audio I/O interface*
17. *Digital I/O connector (D-SUB-25) (optional)*[1)]
18. *CAN interface (D-SUB-9) (optional)*[1)]
19. *GPS antenna (optional)*[1)]
20. *PTP/IEEE 1588 (optional)*[1)]
21. *SYNC I/O interface (TRION SYNC-BUS)*
22. *Main power supply input connector*
23. *LED for main power supply*
24. *Main power switch*
25. *Options label*
26. *EPAD connector (LEMO)*
27. *Chassis terminal (ground connection)*
28. *SSD drive bays* for operating system and application software
29. *Nameplate*
30. *TRION/TRION3 series module slots*
31. *Power supply connectors for current clamps*

1) The interfaces are only present on the device if at least one of the optional features has been purchased.

INFORMATION

The amount and location of the connectors might vary from system to system and depend on the system configuration.

Power supply

Main power switch

The main power switch separates the system from the grid. The power on/off push button **(3)** only works if the main power switch is switched to position 'I'.

Main power supply input connector

- Voltage: 100 to 240 V_{AC} (max. 90 to 264 V_{AC})
- Frequency: 47 to 63 Hz
- Power: 600 W

LED for main power supply

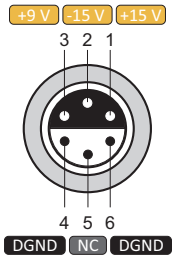
The green LED indicates if the main power supply is switched on or off.

Power on/off push button

The power on/off push button at the front of the system is used to switch on the system. It only works if the main power switch **(25)** on the rear of the instrument is switched to position 'I'.

Sensor supply

Power supply connectors for current clamps



LEMO ERA.1S.306

The DEWE3-PA8 is equipped with 8 interfaces for sensor power supply featuring the following characteristics:

- Output power (SUM) 150 W
- Output current +15 V line (single/sum) 1.5 A / 5 A
- Output current -15 V line (single/sum) 1.5 A / 5 A
- Output current +9 V line (single/sum) 0.6 A / 0.6 A
- Output current (single plug) 1.5 A

Mating connector: LEMO FFA.1S.306.CLADxx (xx = depending on cable ø).

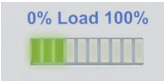
For details see *Compatible sensors/transducers (selection) on page 29*.

Redundant power supply for sensor supply

The DEWE3-PA8 comes with two integrated power supplies. The reason for this is that some current sensors react extremely sensitive to power losses. Normally, the sensor supply switches off together with the measuring device. To avoid that, an additional redundant power supply was added to power the sensors, even when the mains power supply of the measurement device has a failure. It is possible to connect the additional supply to a second source (e.g. UPS) to ensure the permanent supply of sensors, within a very unstable power grid.

- Voltage: 100 to 240 V_{AC} (max. 90 to 264 V_{AC})
- Frequency: 47 to 63 Hz
- Power: 200 W

Sensor supply load indicator



The 10 segment LED display indicates the load attached to the power supply connectors for current clamps at the rear of the instrument. One LED segment equals 10 %. When exceeding 80 % during active power measurement, consider using an additional DW2-CLAMP-DC-POWER-8 box to split the power (e.g. when using 8x PA-IT-1000).

Sync and digital interfaces

Overview

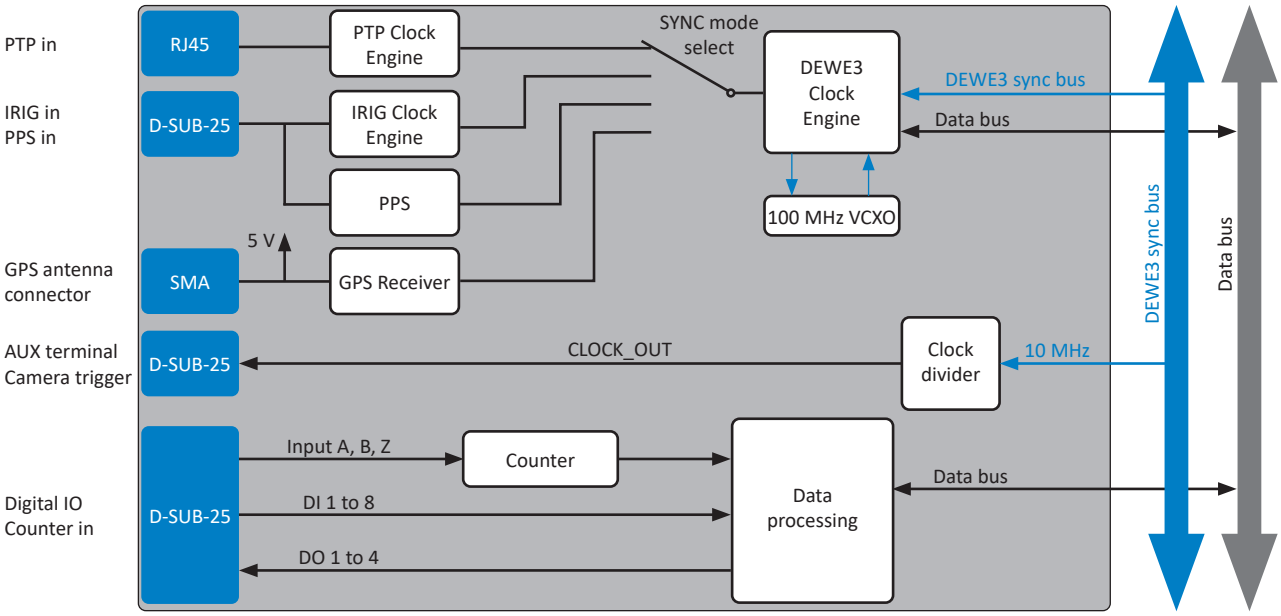


Fig. 4: Signal routing

Active sync LEDs

Active mode LEDs	
	The 4 LEDs indicate the active synchronization source and the current synchronization status by flashing the respective LED.

Tab. 2: Active sync LEDs

SYNC I/O interface (TRION SYNC-BUS)

The TRION SYNC-BUS allows an easy high-speed channel expansion with TRIONet(3) front-ends or distributed high channel-count systems featuring OXYGEN with the OXY-OPT-NET software option. SYNC cables are not included and have to be ordered separately.

	SYNC OUT	SYNC IN
RED (stable)	Clock detected	Clock detected / Receiving clock
GREEN (stable)	Acquisition running	Acquisition running

Tab. 3: LED indication

Depending on the usage of the SYNC I/O (input or output) the LED indicates if the system clock is available or received correctly from another system. The green LED indicates that the acquisition is running. If the acquisition stops the LED will be off.

GPS antenna (optional)

INFORMATION

The DEWE3-OPT-GPS function is an optional feature and is not included in the default scope of supply.

GPS specifications		
	Synchronization input modes	GPS
	Supported GNSS signals	GPS/Glonass/BeiDou/QZSS
	PPS accuracy	100 ns
	Refresh rate	1 Hz, 5 Hz, 10 Hz
	Position accuracy (horizontal CEP) – Autonomous – Differential	**INFORMATION** CEP 50 %, 24 h static, roof antenna <2.5 m <2.5 m
	Input connector GPS	SMA for GPS antenna
	PTP output	Optional OXYGEN feature, requires software license OXY-OPT-PTP-OUT

Tab. 4: GPS specifications

PTP/IEEE 1588 (optional)

INFORMATION

The DEWE3-OPT-IRIG/PTP function is an optional feature and is not included in the default scope of supply.

The DEWE3-OPT-IRIG/PTP function provides the following synchronization input modes:

- PTP/IEEE 1588
- IRIG

PTP/IEEE 1588 specifications		
	IP mode	Multicast
	Protocol	UDP / IPv4
	Delay mechanism	End-to-end
	IP address method	DHCP
	Connector	RJ-45 Ethernet plug for 10 / 100 Mbit Ethernet connection; only for synchronization, no data transfer possible
	Programmable correction limit	10 ns to 500 ms

Tab. 5: PTP/IEEE 1588 specifications

IRIG input specifications		
Supported codes	IRIG code A or B; DC (A007, B007)	
Compatibility (DC code)	DC level shift (edge detection); TTL / CMOS compatible	
	Low: <0.8 V	High: >2 V

Tab. 6: IRIG input specifications

Digital I/O connector (D-SUB-25) (optional)

INFORMATION

The DEWE3-OPT-DIO function is an optional feature and is not included in the default scope of supply.

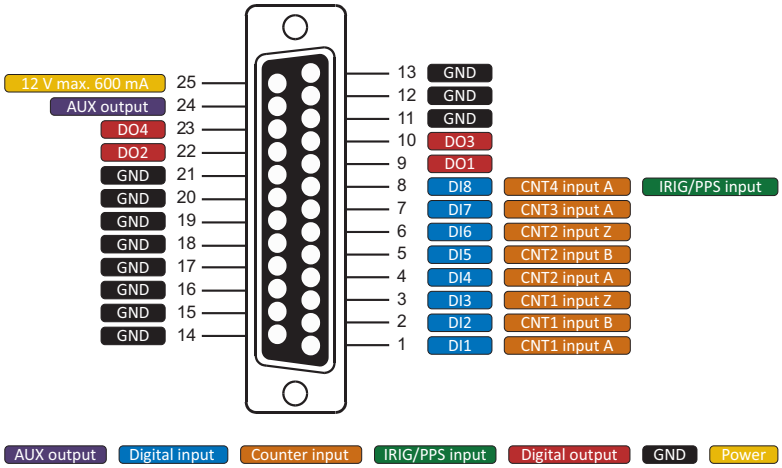


Fig. 5: Pin assignment D-SUB-25 connector

NOTICE

Combined load at D-SUB-9 socket CAN and D-SUB-25 socket digital I/O max. 600 mA at 12 V.

Digital I/O connector specifications		
Digital IN	Digital input	8 CMOS/TTL compatible digital inputs; weak pull-up via 100 kΩ
	Overvoltage protection	±30 V_{DC}, 50 V_{PEAK} (100 ms)
	Counter	4 counter channels; TTL input; shared with digital inputs
	Counter modes	
	– Waveform timing	Period, frequency, pulse width duty cycle and edge separation
	– Sensor modes	Encoder (angle and linear)
	– Event counting	Basic event count. gated count., up/down count. and encoder mode (X1, X2 and X4)
	Counter resolution	32-bit
	Counter time base	100 MHz
	Time base accuracy	Typ. 2 ppm; max. 10 ppm
	Max. input frequency	10 MHz
	Sensor power supply	12 V (600 mA)
Digital OUT	Digital output	4 DO; TTL
	Output indication	LED (green = high; off = low)
	Maximum current	25 mA continuously
	Power-on default	Low
Connector		D-SUB-25 socket

Tab. 7: Digital I/O connector specifications

AUX terminal

AUX specifications		
	Functionality	– Frequency output (camera trigger) – PPS output – IRIG Code B DC (B007) output
	Compatibility (output)	LVTTL, 10 mA
	Overvoltage protection	±20 V_{DC}
	Power-on default	Low
	Connection	Pin 24 on digital I/O connector

Tab. 8: AUX specifications

The auxiliary terminal could be used as programmable frequency output for synchronizing external hardware.

The output can be set in the Sync Out AUX settings via *System Settings → Sync Setup → Sync Out Aux*:

Fig. 6: Output settings

PPS terminal

PPS specifications			
	Supported codes	PPS	
	Compatibility (DC code)	DC level shift (edge detection); TTL/CMOS compatible	
		Low: <0.8 V	High: >2 V
	Connection	Pin 8 on digital I/O connector	

Tab. 9: PPS specifications

Counter and digital I/O

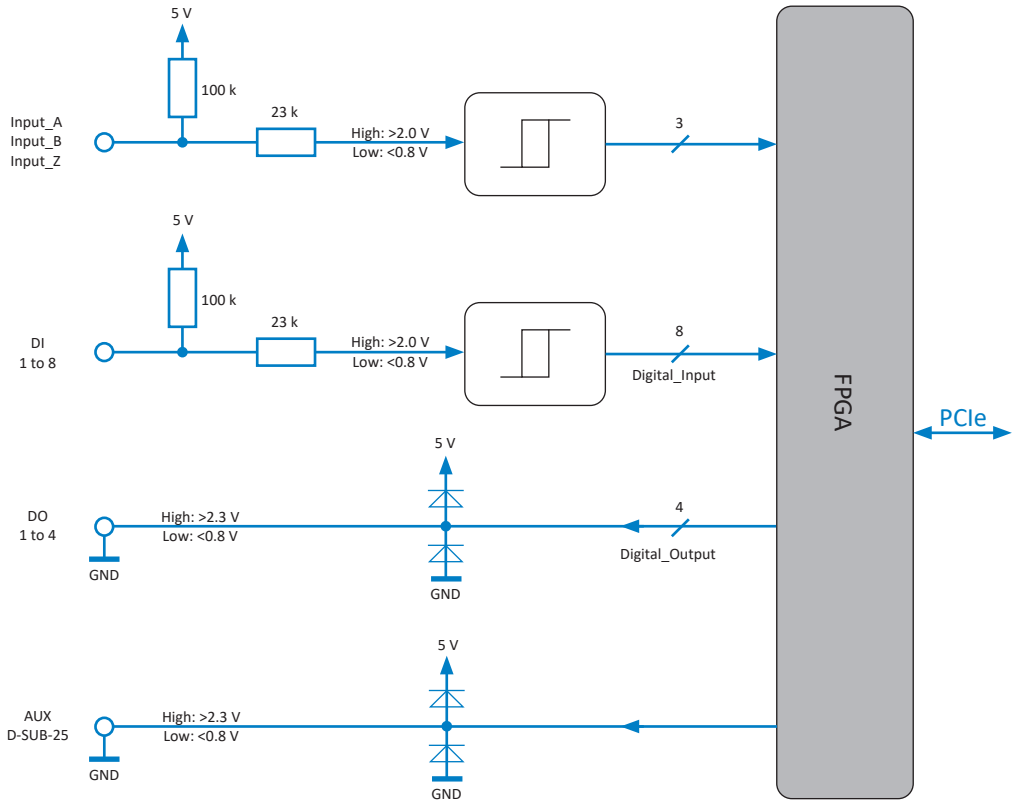


Fig. 7: Counter and digital I/O

Advanced counter

The supports an advanced counter via the pins 1–8 of the digital I/O connector shown in *Fig. 5*. For information regarding advanced counters refer to *Functional description of advanced counter on page 189* of the TRION(3) series modules manual.

CAN interface (D-SUB-9) (optional)

INFORMATION

The DEWE3-OPT-CAN function is an optional feature and is not included in the default scope of supply.

CAN specifications		
	Input channels	1 D-SUB-9 connector, not isolated
	Specification	CAN 2.0B
	Physical layer	High-speed
	Listen-only mode	Supported
	Termination	Programmable: high impedance or 120
	Common mode range	-2 V to +7 V
	Bus pin fault protection	±36 V_{DC}
	ESD protection	IEC 61000-4-2: ±8 kV air discharge, ±4 kV contact discharge
	CAN transceiver	SN65HVD266D
	Sensor power supply (per module)	5 V (100 mA) and 12 V (600 mA)
	CAN output	Optional OXYGEN feature; Requires software license OXY-OPT-CAN-OUT

Tab. 10: GPS specifications

NOTICE

Combined load at D-SUB-9 socket CAN and D-SUB-25 socket digital I/O max. 600 mA at 12 V.

Connection

The measurement is carried out via D-SUB cord. The CAN bus is not isolated.

Fig. 8: D-SUB-9 CAN connector pin assignment

High-speed CAN

The high-speed CAN is a differential bus where complementary signals are sent over two wires. The voltage difference between the two wires defines the logical state of the bus. The differential CAN receiver monitors this voltage difference and outputs the bus state with a single-ended output signal.

The high-speed CAN bus topology as well as the possible cable lengths and the recommended termination resistors are specified in the standards ISO-11898 and CiA 102.

The high-speed CAN bus supports bit rates of up to 1 Mbit/s (or >125 kbit/s).

The schematic below will give you an overview of the high-speed CAN bus topology and the termination resistor placement.

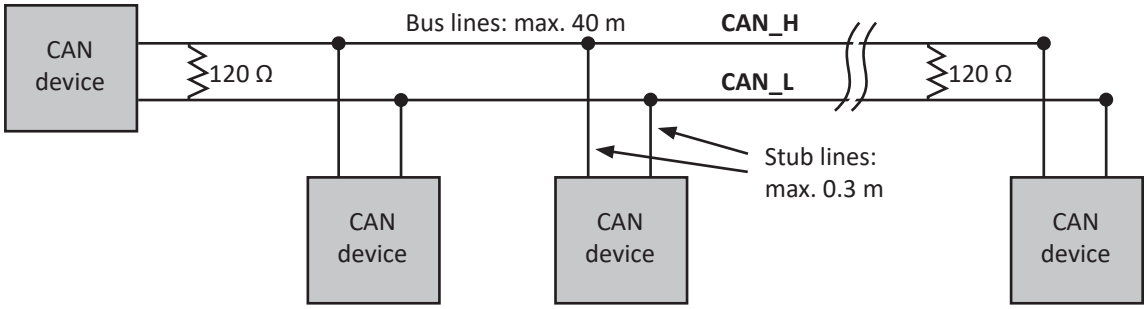


Fig. 9: High-speed CAN

Cable lengths for high-speed CAN bus

The cabling characteristics and the desired bit transmission rate affect the allowable cable length.
ISO-11898 standard specifies a maximum bus length of 40 m and a maximum stub length of 0.3 m with a maximum of 30 nodes for a bitrate of 1 Mbit/s. However, with careful design, users can have longer cables, longer stub lengths, and many more nodes to a bus. A large number of nodes requires a transceiver with high input impedance and each node should be analyzed for signal integrity problems.

Characteristics of two-wire differential bus:

- Impedance: 108 Ω min., 120 Ω nominal, 132 Ω max.
- Length-related resistance: 70 mΩ/m nominal
- Nominal specific propagation delay: 5 ns/m nominal

For further information see ISO-11898 and CiA 102 specifications.

Termination

CAN_H and CAN_L are transmission lines. If the transmission line is not terminated, each signal line causes reflections which can cause communication failures therefore both ends of the cable have to be terminated. If multiple devices

are connected only the devices at the ends of the cable need to be terminated. Recommended termination resistors in a high-speed CAN bus topology (according to ISO-11898): 120 Ω.

The TRION-CAN module offers a programmable termination resistance, either high impedance or 120 Ω.

Optional accessory

TRION-CBL-D9-OE-05-00

High quality cable from D-SUB-9 socket to open end, 5 m.

TRION-CBL-D9-CPAD-01-00

High-quality cable from D-SUB-9 socket to CPAD, 1 m.

Multi-touch display

The DEWE3-PA8 is equipped with a bright 11.6“ wide screen multi-touch panel (1920 x 1080, full HD) to control the instrument. Familiar gestures such as pinch and zoom are fully implemented within the operating system. You can use your fingers on the touchscreen, like you would on a smartphone. For example, drag the sidebar from the right side across the screen to open the channel setup.

Tap

- Tap once on something.
- Open, selects, or activates whatever you tap.
- Similar to clicking with a mouse.

Pinch or stretch

- Touch the screen with two fingers, and then move the fingers
  - toward each other (pinch) **or**
  - away from each other (stretch)
- Zooms in or out of a graph or data.

Tap and hold

- Press your finger down and hold for about a second.
- Rearranges objects on your main screen.

Swipe and drag

- Drag your finger on the screen.
- Scrolls through recorded data (like scrolling with a mouse).
- Drags the sidebar from the right side across the screen to open the channel setup.

TRION/TRION3 series module slots

The DEWE3-PA8 supports 8 slots for TRION/TRION3 series modules. For details refer to *TRION series modules overview on page 30* and *DEWE3/TRION(3) hardware compatibility on page 28*.

Dual LAN GBit connector

The DEWE3-PA8 supports 10/100/1000 Dual LAN with standard RJ45 connector.

EPAD connector (LEMO)

To connect DEWETRON EPAD2 modules to the system, a LEMO EGG.1B.304 socket is provided. Shield is connected on the housing.

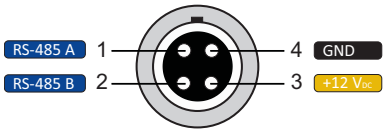


Fig. 10: Pin assignment EPAD2 connector

Mating connector

- LEMO FGG.1B.304.CLAD52Z (for cable diameter 4.1 to 5.0 mm)
- LEMO FGG.1B.304.CLAD62Z (for cable diameter 5.1 to 6.0 mm)

Chassis terminal (ground connection)

For some kind of measurements, it is necessary to provide the system with an additional ground connection.

SSD drive bays

The DEWE3-PA8 comes with a preinstalled 1 TB SSD dedicated for data storage (drive bay at the front). Additionally to the high-speed drive at the front, the DEWE3-PA8 is equipped with a 512 GB SSD for operating system and application software (drive bay at the rear).

NOTICE

Information for systems with SSD drives: Wait for 40 seconds after big files were deleted. The HDD activity LED is lit to indicate that the SSD is deleting the file and TRIM/garbage collection is in progress. Wait until the process is finished before you start to write the next file.

Intake vent and filter pad

For optimal cooling and when installed in a control cabinet, the DEWE3-PA8 is equipped with an easy accessible intake vent and filter pad cartridge at the front of the instrument.

For further information on how to remove filter pad refer to chapter *Filter pad cleaning on page 48*.

RS-232 interface connector (COM 1)

The RS-232 interface connector (male) is configured as standard RS-232 interface COM1 and can be used for peripheral units.

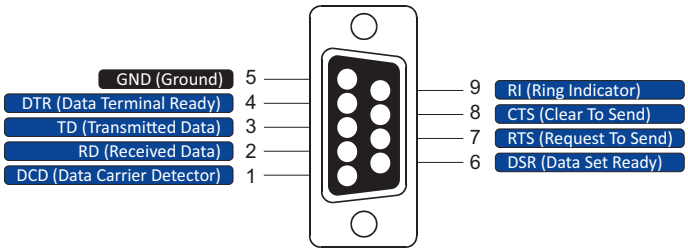


Fig. 11: Pin assignment RS-232 interface connector (COM1)

Audio I/O interface

The audio I/O interface provides the following connections:

- Line in
- Line out
- Microphone

USB interface connectors

The USB 3.1 and USB 2.0 interface connectors meet the standard USB pin assignment.

PS/2 interface connector

It is possible to connect an external PS/2 mouse and/or keyboard to the system. The connector meets standard pin assignment.

DVI interface connector

The DVI connector meets the standard DVI pin assignment.

Display port connectors

Additional to the DVI connector interface the DEWE3-PA8 offers 2 display port connectors with standard pin assignment.

Optional upgrades

DEWE3-OPT-DIO

Optional digital I/O: 8x DI shared with 4x counter (2x encoder, 2x up/down), 4x DO for DEWE3-A4L and DEWE3-RMx.

DEWE3-OPT-CAN

Optional CAN port on front plate of DEWE3-A4/A4L DEWE3-M8s, DEWE3-RMx and DEWE3-M4.

DEWE3-OPT-IRIG/PTP

Optional IRIG/PTP sync available on front plate of DEWE3-A4/A4L, DEWE3-M8s, DEWE3-RMx and DEWE3-M4.

DEWE3-OPT-GPS

Optional GPS sync available on front plate of DEWE3-A4/A4L, DEWE3-M8s, DEWE3-RMx and DEWE3-M4. GPS antenna included.

Linux Ubuntu option (OPT-LINUX)

LINUX Ubuntu option for DEWE3 systems.

Windows Secure Boot Option (OPT-SECURE-BOOT)

(DoD-ready) for a new DEWETRON system.

SSD upgrade (SSD-PCIe-1T-2T)

Upgrade from 1 TB to 2 TB industrial grade, PCIe attached solid state disk

Labels

Nameplate

The nameplate is located on the backside of the device. It indicates the product name and serial number as well as information about the power properties and manufacturer.

Fig. 12: Nameplate

Options label

This label is located on the backside of the device and indicates the available optional functions. It is only present, when at least one optional feature (e.g. OPT-DIO, OPT-GPS, OPT-CAN etc.) has been purchased.

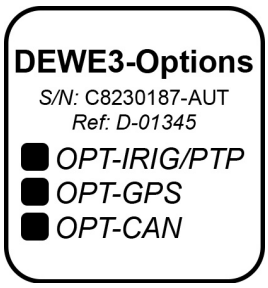


Fig. 13: Options label

NOTICE

Information for systems with SSD drives: Wait for 40 seconds after big files were deleted. The HDD activity LED is lit to indicate that the SSD is deleting the file and TRIM/garbage collection is in progress. Wait until the process is finished before you start to write the next file.

Working with the System

Hardware

Installing the 19” mounting kit (option)

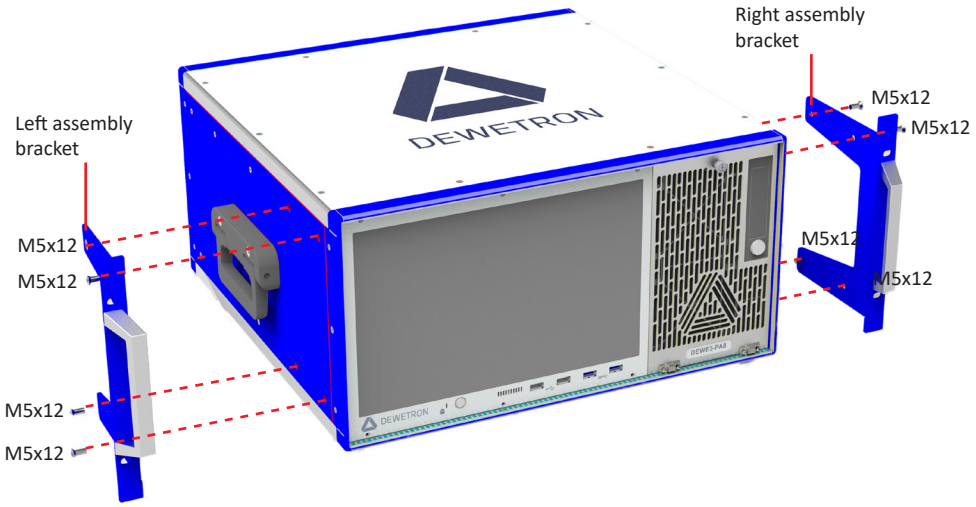


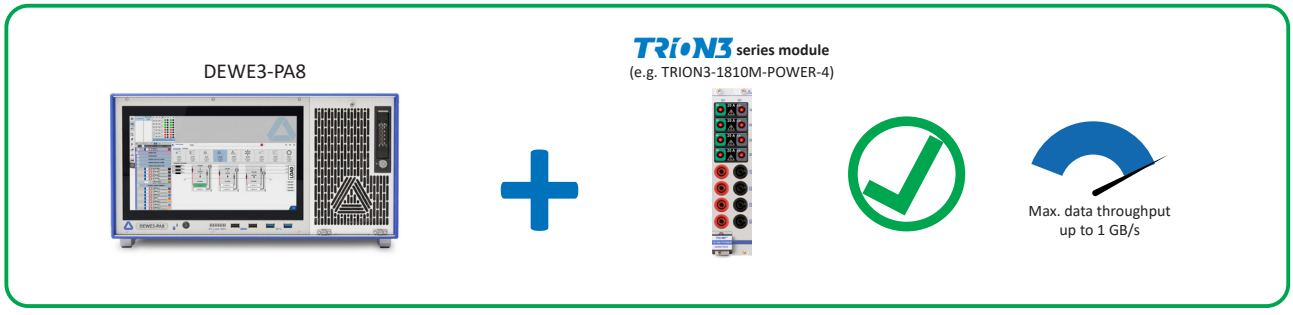
Fig. 14: Installing 19” mounting kit (optional)

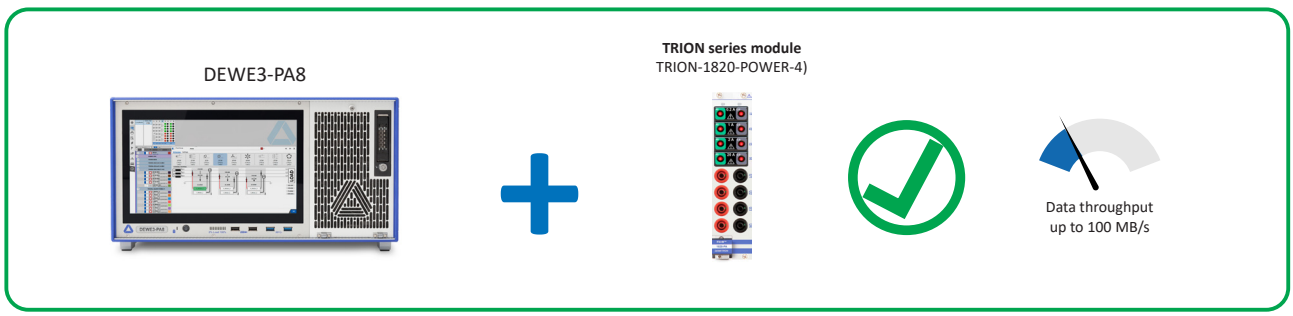
NOTICE

When installing the 19" mounting brackets, the maximum length for screws is 12 mm. If a screw gets lost, replace it with M5x12 countersunk head screw only. Otherwise the display or the power supply could get damaged!

DEWE3/TRION(3) hardware compatibility

In 2019, DEWETRON introduced a new family of data acquisition systems, the DEWE3 and TRION3 express series. The DEWE3-PA8 chassis feature a PXIe hybrid backplane and supports any TRION3 series modules. It is also backward compatible and supports all TRION series modules from previous generation.
The illustrations below will give you an overview of the hardware compatibility and it's limitations:





Compatible sensors/transducers (selection)

NOTICE

Do not use the zero-flux transducer system without power supply. Induction of currents can damage the built-in electronics.

NOTICE

The maximum cable length from the transducer to the device is 5 m. Longer cable lengths may cause a too high voltage drop.

Sensor/transducer	Voltage	Product picture
CT-100	±15 V	
CT-200	±15 V	
CT-400	±15 V	
CT-500	±15 V	
CT-1000	±15 V	
CT-2000	±15 V	

Sensor/transducer	Voltage	Product picture
CT6841A	±15 V	
CT6843A	±15 V	
CT6845A	±15 V	
CT6846A	±15 V	

Tab. 11: Compatible sensors/transducers

INFORMATION

For more details of our available sensors and transducers refer to our website at *https://www.dewetron.com/products/daq-components-daq-sensors/current-transducers/*.

Known limitations for CT-1000 and CT-2000 transducers

Due to the maximum aggregated output current of 5 A, not more than 4x CT-1000 or CT-2000-S can be supplied in the absolute worst case due to the concurrency factor of the applied power system. The following applications can be met (selection) with nominal current due to a concurrency factor less than one:

- 4x 1-phase DC systems (4x CT-1000 or CT-2000-S transducers)
- 4x 2-phase DC systems (8x CT-1000 or CT-2000-S transducers)
- 2x 3-phase AC systems + 1x 1-phase DC system (7x CT-1000 or CT-2000-S transducers)
- 1x 6-phase AC system + 1x 1-phase DC system (7x CT-1000 or CT-2000-S transducers)

TRION series modules overview

[1] Some versions of this module occupy 2 TRION slots
[2] CAT III 1000 V only applicable for 1000 V inputs; SUB-600V has CAT II 600 V / CAT III 300 V

Analog modules

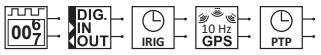
ANALOG modules	Channels	Sample rate per channel	Resolution	Isolation	Connector type
TRION3-1820-MULTI TRION3-1850-MULTI TRION-1820-MULTI	4 or 8	1850: 5 MS/s 1820: 2 MS/s	24 bit >2 MS/s: 18 bit	yes	D-SUB or LEMO 0B
TRION-2402-MULTI	4 or 8	200 kS/s	24 bit	yes	D-SUB, LEMO 0B
TRION-1620-ACC	6	2 MS/s	24 bit >1 MS/s: 16 bit	yes	LEMO 1B, BNC
TRION-1620-LV	6	2 MS/s	24 bit >1 MS/s: 16 bit	yes	LEMO 1B, BNC
TRION-2402-V[1]	4 or 8	200 kS/s	24 bit	yes	Safety banana
TRION3-1810-HV[1] TRION-1810-HV[1]	4 or 8	1 MS/s	18 bit	yes	Safety banana, CAT III 1000 V[2]
TRION3-1810-SUB-8	8	1 MS/s	16 bit	yes	BNC, LEMO 1B
TRION-1603-LV	6	250 kS/s	18 bit	yes	Safety banana[3]
TRION-2402-dSTG[1]	6–8	200 kS/s	24 bit	no	LEMO 1B, LEMO 0B, D-SUB, RJ-45
TRION-2402-dACC	6–8	200 kS/s	24 bit	no	SMB, BNC
TRION3-1802-dLV	16 or 32	200 kS/s 100 kS/s	18 bit 24 bit	no	D-SUB
TRION3-1600-dLV	16 or 32	20 kS/s	16 bit	no	D-SUB

Tab. 12: TRION/TRION3 analog modules

Digital modules

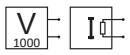
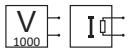
DIGITAL modules	Channels	Sample rate per channel	Resolution	Isolation	Features
TRION-CNT	6	800 kS/s	80 MHz	yes	6 channel advanced counter
TRION-BASE	-	2 MS/s	80 MHz	no	Basic IO card with simple IRIG sync and 2 counter
TRION-VGPS-V3	-	2 MS/s	0.01 km/h <10 cm	no	100 Hz GNSS receiver for automotive applications

Tab. 13: TRION digital modules

DIGITAL modules		Channels	Sample rate per channel	Resolution	Isolation	Features
TRION-TIMING-V3		-	2 MS/s	12.5 nsec	no	Applies precision absolute time to measured data
TRION-CAN		4	1 MBit	-	yes	D-SUB
TRION-ARINC	-	4 or 16	-	-	no	Decoding of ARINC 429 signals, export of decoded signals
TRION-MIL1533	-	1 or 4	-	-	no	Decoding of MIL-STD 1553 signals, export of decoded signals
TRION-EtherCAT-1-SLAVE		100	500 S/s	-	no	Measurement data output

Tab. 13: TRION digital modules

Power modules

POWER modules		Channels	Sample rate per channel	Resolution	Isolation	Connector type
TRION3-1810M-POWER[1)]		8 (4 U / 4 I)	10 MS/s	24-bit	yes	Safety banana, D-SUB
TRION3-1820-POWER[1)] TRION-1820-POWER[1)]		8 (4 U / 4 I)	2 MS/s	24-bit	yes	Safety banana, D-SUB

Tab. 14: TRION/TRION3 power modules

Analog output modules

ANALOG OUTPUT modules	Channels	Sample rate per channel	Resolution	Isolation	Connector type
TRION3-1820-MULTI-AOUT	IN 8 OUT 8	IN 2 MS/s OUT 2.5 MS/s	IN 24-bit OUT 32-bit	IN yes OUT yes	IN LEMO 0B OUT DSUB, BNC

Tab. 15: TRION3 analog output modules

INFORMATION

The TRION-TIMING module has to be installed in the STAR-slot for TRION modules. For further information regarding the STAR-slot refer to the TRION series modules technical reference manual.

INFORMATION

Some digital modules (e.g. TRION-M1553) require additional -12 V_{DC} voltage which is not supported with DC powered DEWE3 instruments by default. Ask your local dealer or factory for more information.

Configuration examples with TRION3-1810M-POWER-4 module

In order to tap the full potential of the DEWE3-PA8, DEWETRON developed the highspeed TRION3-1810M-POWER-4 module which can be easily installed into the instrument. The modular design of the TRION3-1810-POWER-4 module allows for flexible measurement of current, voltage or power with input ranges of up to 1000 V_{RMS} / 20 A_{RMS} respectively. The following page will give you an overview of typical configuration examples with the TRION3-1810M-POWER-4 module.

Standard 4-phase power analyzer with direct input

This is the standard configuration of a DEWE3-PA8 for 4-phase (1x 3-phase AC and 1x 1-phase DC) applications.

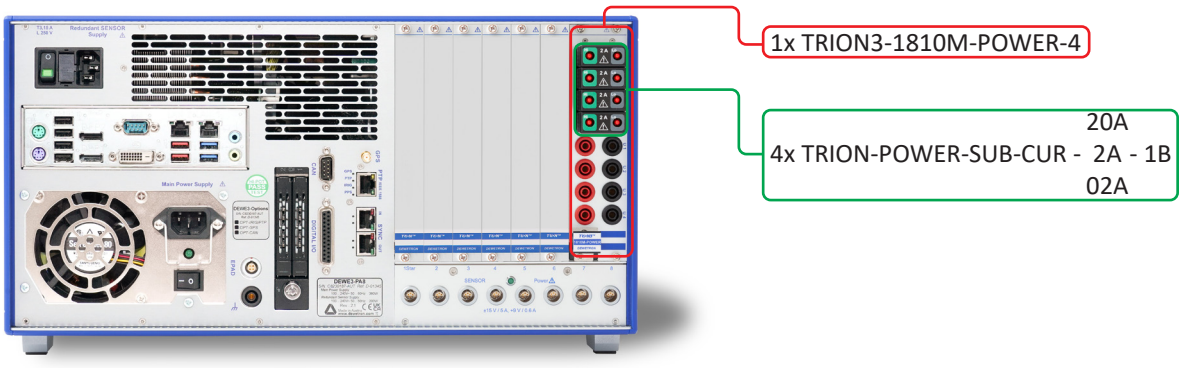


Fig. 15: Standard 4-phase power analyzer with direct input

Standard 4-phase power analyzer with clamp input

Configuration for use with current clamps with voltage output for 4-phase applications.

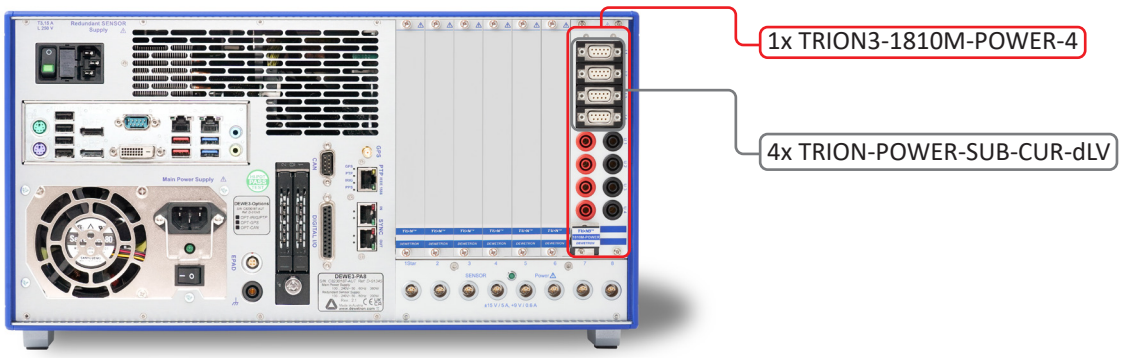


Fig. 16: Standard 4-phase power analyzer with clamp input

Standard 4-phase power analyzer with mixed input

Configuration for a mixed use of direct inputs and clamp inputs for 4-phase applications.

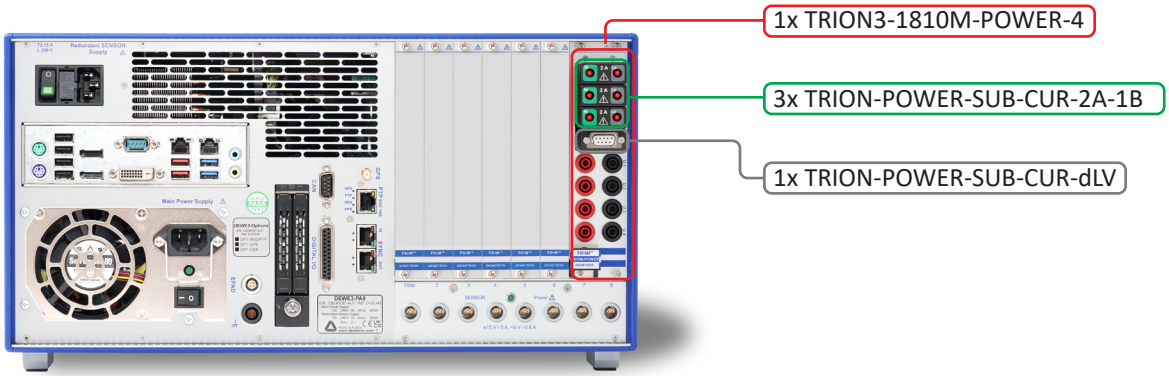


Fig. 17: Standard 4-phase power analyzer with mixed input

Standard 4-phase power analyzer with mixed input (advanced)

Advanced configuration for motor analysis with torque and speed inputs as well as auxiliary high-speed analog inputs for voltage and acceleration analysis.

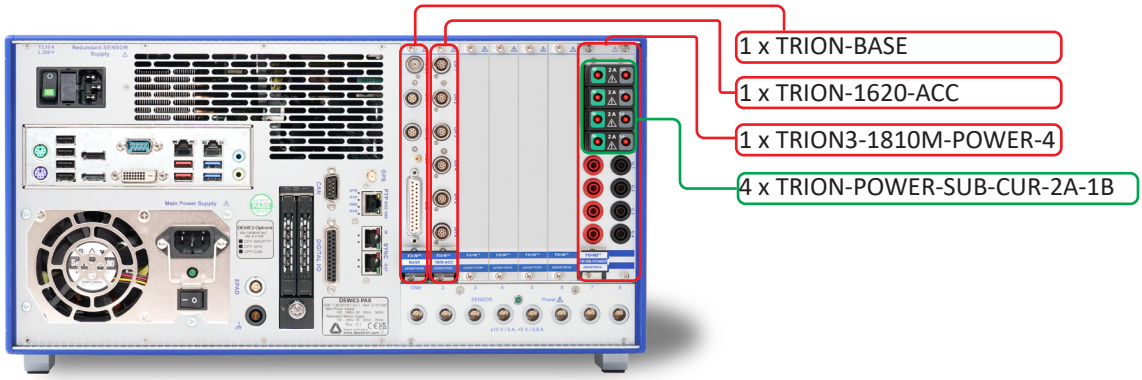


Fig. 18: Standard 4-phase power analyzer with mixed input (advanced)

Installing a TRION(3) module

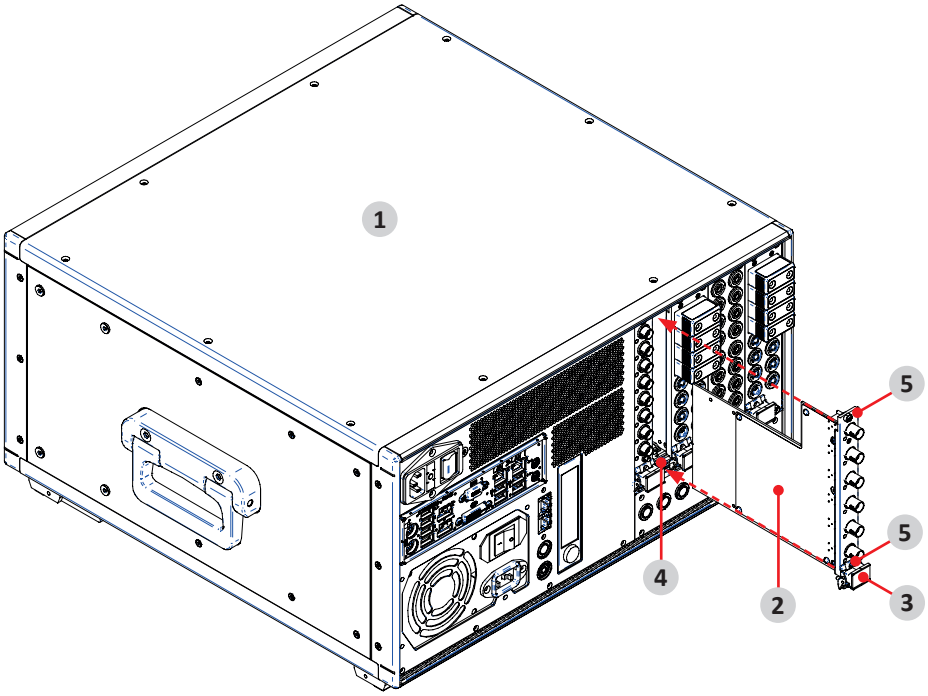


Fig. 19: Installing a TRION module

1. DEWE3 chassis
2. TRION series module
3. Injector/ejector module
4. Module guides
5. Mounting screws

In order to install a TRION(3) module into a chassis proceed as follows:

1. Take proper ESD precautions to avoid any damage to the unit.
2. Power off and unplug all connected cables including sensors from the DEWE3 chassis and TRION/TRION3 series modules.
3. Identify a supported TRION/TRION3 peripheral slot.

   Some modules require a TRION STAR-slot.
4. Remove the filler panel of an unused TRION/TRION3 peripheral or STAR-slot.
5. Place the module edges of the TRION/TRION3 module into the module guide at the top and bottom of the chassis.
6. Insert the TRION/TRION3 module to the rear of the chassis until a resistance appears.
7. Pull up on the injector/ejector handle to latch the device.

8. Secure the installed TRION front panel to the chassis by using the mounting screws.

The TRION/TRION3 module is now installed into a DEWE3 chassis.

NOTICE

Unused TRION slots must always be covered. Make sure to reinstall the filler panels to unused TRION slots to guarantee proper cooling of the installed modules.

The warranty is void if the modules overheat due to missing filler panels.

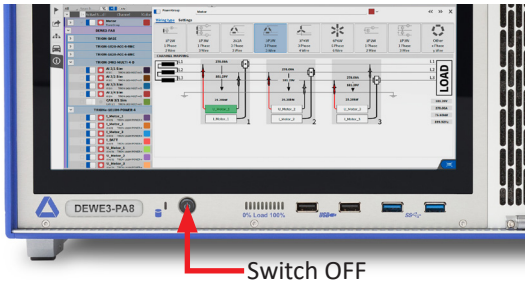
Exchanging TRION sub-modules

NOTICE

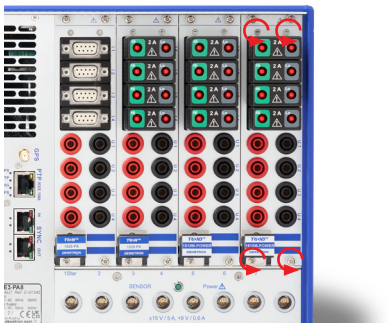
Proper ESD precautions must be taken to avoid any damage to the unit.

Proceed as follows to exchange a TRION sub-module:

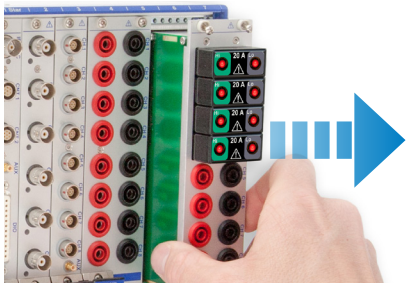
1. Switch off the instrument and unplug all connected cables including sensors from the TRION series modules.



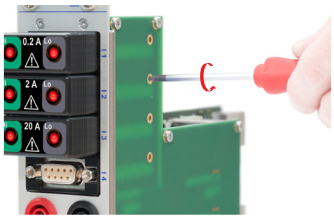
2. Loosen the screws at the top and bottom of the TRION(3) module front panel (4x) and pull down the injector/ejector handle to release the module.



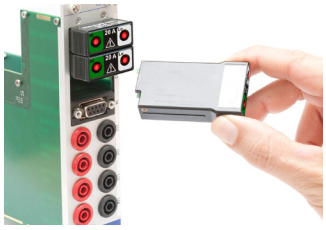
3. Remove the TRION(3) module from the housing.



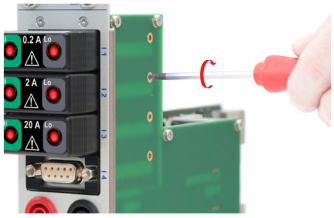
4. Loosen the torx screw (M2x4, TX6) which secures the sub-module of the channel you want to replace.



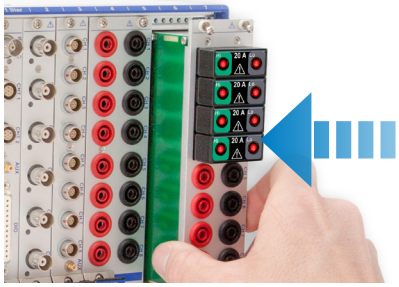
5. Insert the new sub-module.



6. Secure the replaced sub-module with the torx screw (M2x4, TX6). Max. torque: 0.2 Nm.



7. Insert the TRION(3) module into the housing until a resistance appears.



8. Pull up the injector/ejector handle to latch the module. Tighten the screws at the top and bottom of the TRION(3) module front panel (4x) to secure the module.

The TRION sub-module is now exchanged.

Bessel/Butterworth filter characteristics for power analysis

The TRION family is equipped with DSP lowpass filters from 2nd to 8th order in Bessel or Butterworth configuration. The difference between these two filter types can be seen in the following figures.

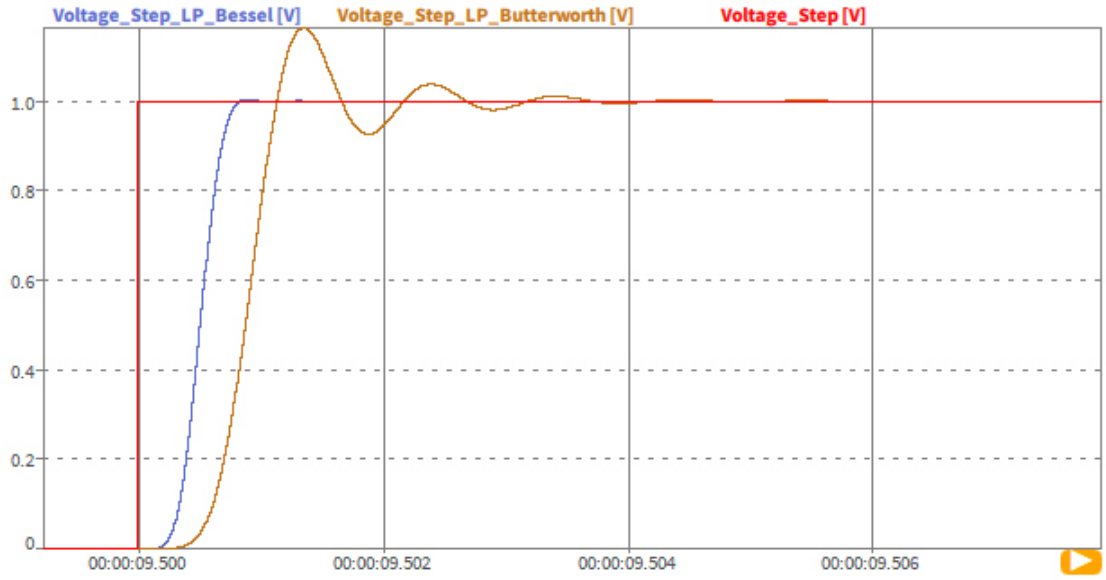


Fig. 20: Step response of filter with 1000 Hz cutoff frequency and 8th order.

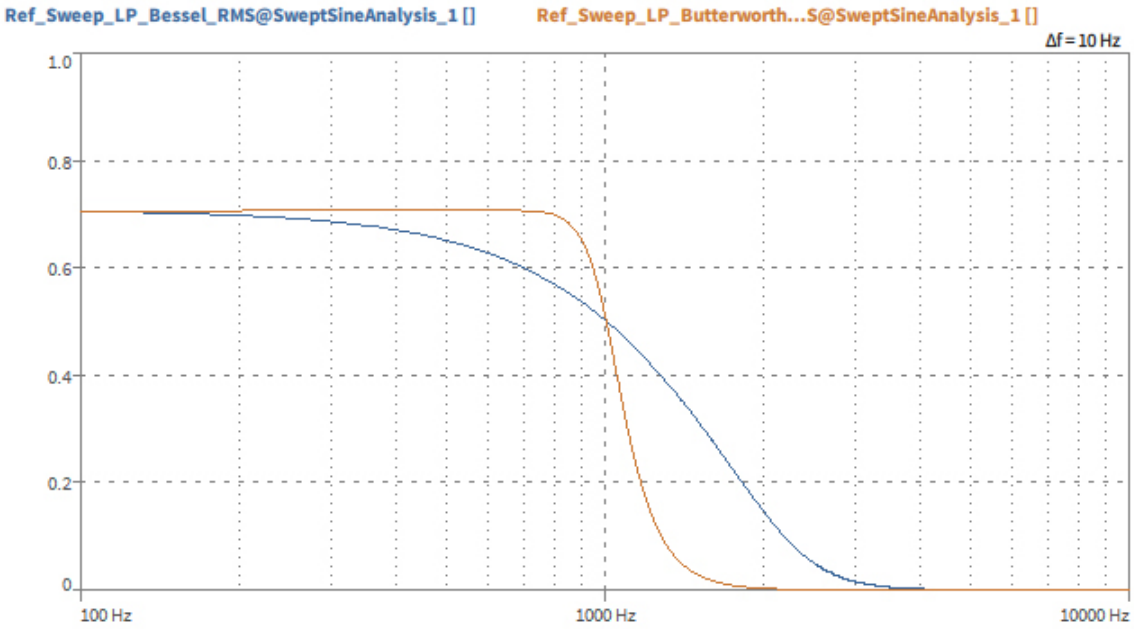
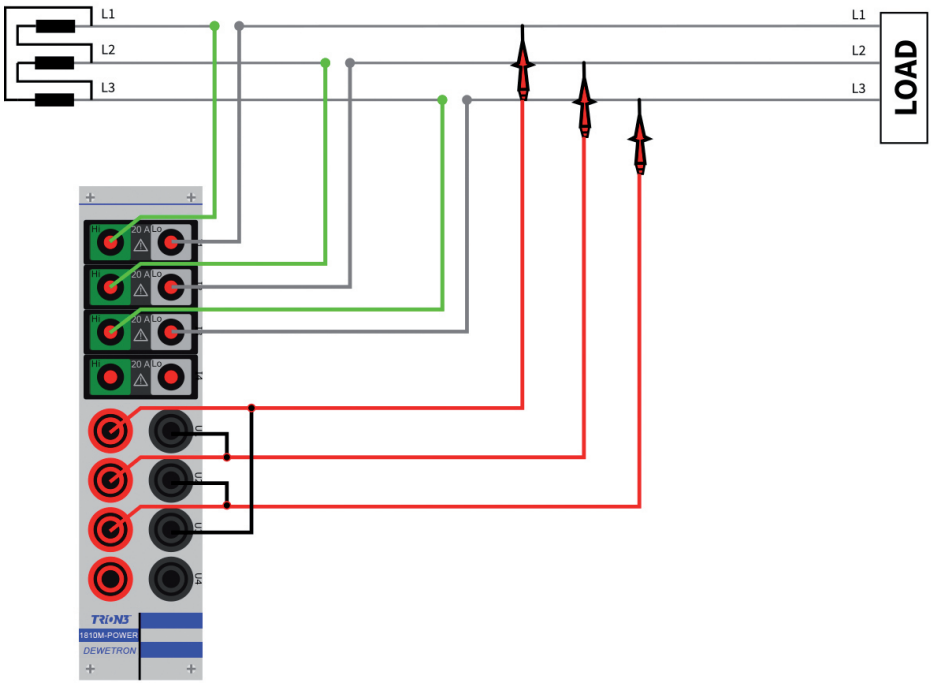


Fig. 21: Frequency response of filter with 1000 Hz cutoff frequency and 8th order

For magnitude accuracy (e.g. RMS accuracy), the Butterworth filter is more suitable than the Bessel filter. For step response (e.g. PWM signal monitoring), the Bessel filter is more suitable than the Butterworth filter.

Connection examples

Three phase (3P3W) without neutral line



Group selection in OXYGEN Power:

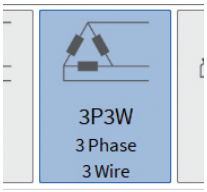
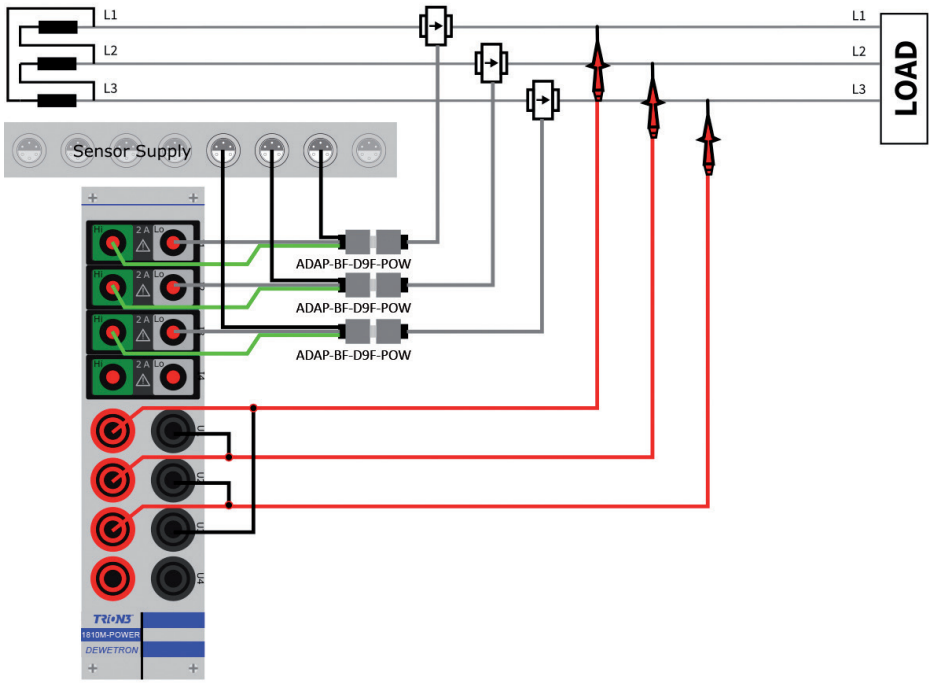


Fig. 22: Three phase (3P3W) without neutral line

Three phase (3P3W) without neutral line, using current output transducers



Group selection in OXYGEN Power:

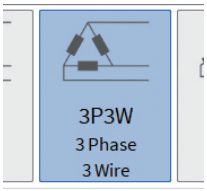
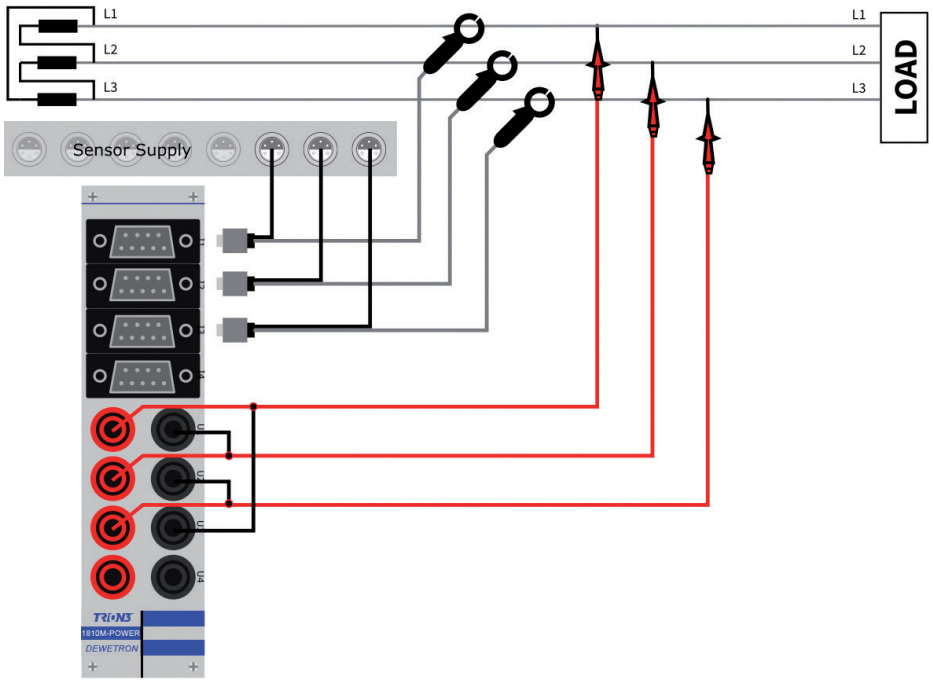


Fig. 23: Three phase (3P3W) without neutral line, using current output transducer

Three phase (3P3W) without neutral line, using voltage output transducers



Group selection in OXYGEN Power:

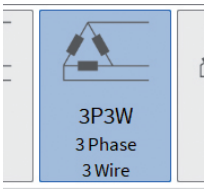
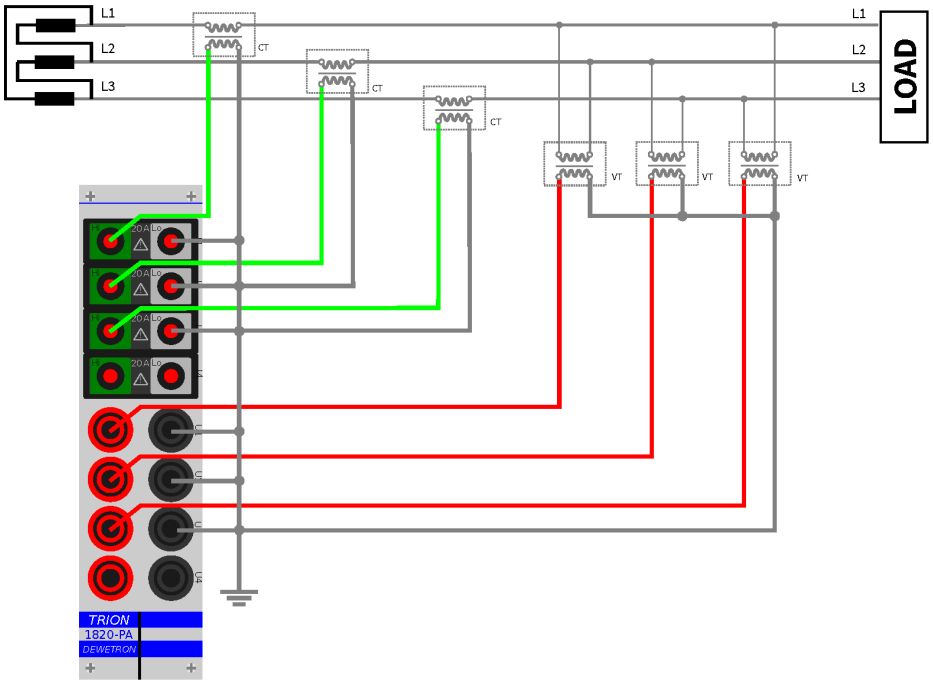


Fig. 24: Three phase (3P3W) without neutral line, using voltage output transducers

Three phase (3P3W) with CT and VT



Group selection in OXYGEN Power:

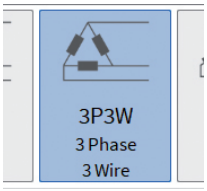
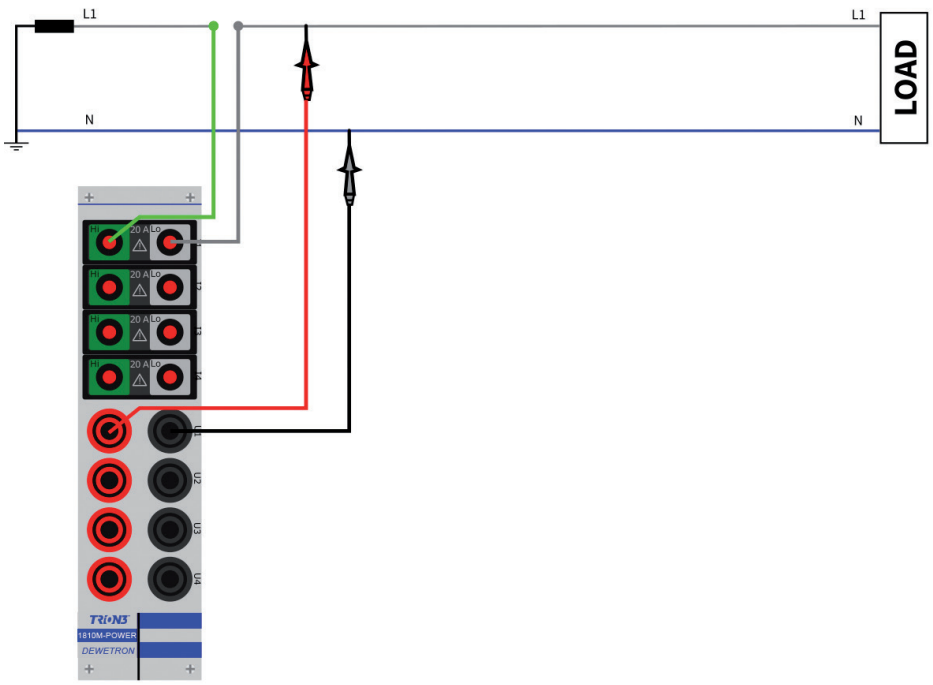


Fig. 25: Three phase (3P3W) with CT and VT

One phase (1P2W)



Group selection in OXYGEN Power:

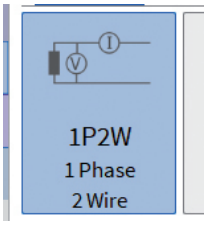
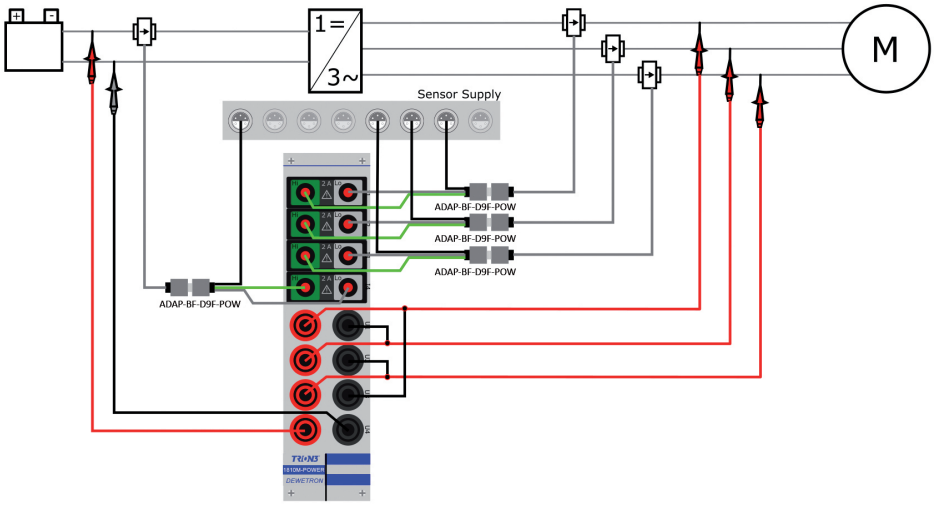


Fig. 26: One phase (1P2W)

Three phase and one phase (3P3W and 1P2W)



Group selection in OXYGEN Power:

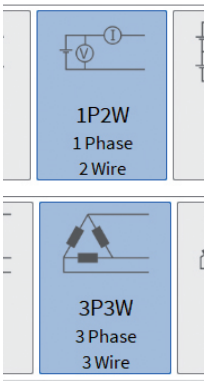


Fig. 27: Three phase and one phase (3P3W and 1P2W)

Cooling considerations

The intake vent of the DEWE3-PA8 is at the front of the chassis, where the cooling exhaust vent for the DEWE3-PA8 is on the rear of the chassis.

NOTICE

Adequate clearance between the chassis and surrounding equipment or blockages must be maintained to ensure proper cooling of the chassis power supply as well as the modules plugged into the chassis.

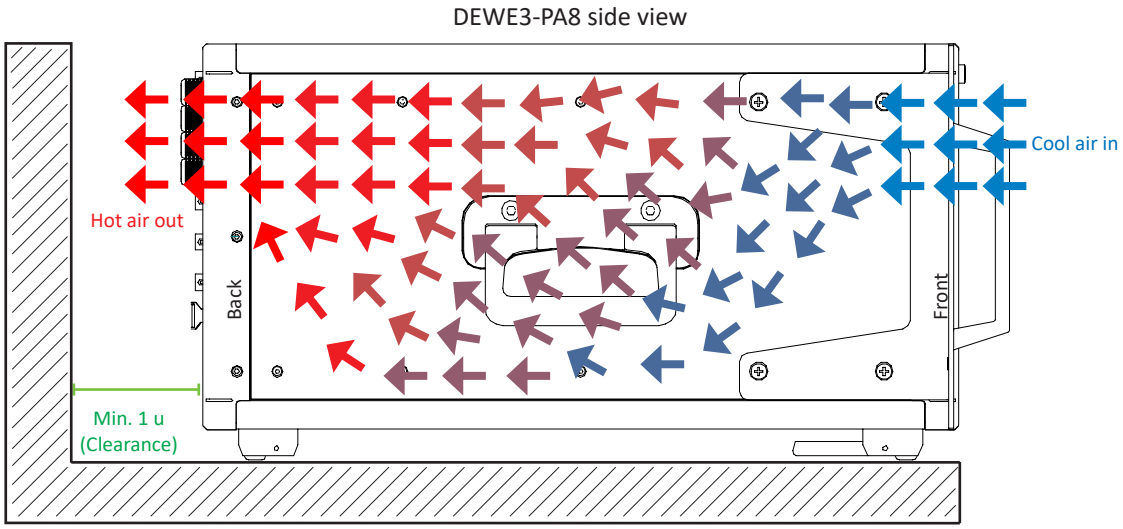


Fig. 28: Cooling stream

System recovery

For more information regarding a total recovery refer to the corresponding total recovery technical reference manual shipped with your DEWE3 system.

Software

Further information on how to operate with OXYGEN find in the corresponding user manual available at: *https://ccc.dewetron.com/pl/oxygen*

For a more detailed explanation of the OXYGEN software refer to the OXYGEN Technical Reference Manual, which is available at *https://ccc.dewetron.com/pl/oxygen*.

Starting OXYGEN

When starting OXYGEN, the measurement screen is displayed. OXYGEN will instantly start to acquire data but will not store it yet. *Fig. 29* shows an overview of the measurement screen and some important buttons and menu tabs.

Fig. 29: Measurement screen

1. Software mode indicator
2. Design mode
3. Record
4. Stop
5. Open data file
6. Data channel list menu
7. Instruments menu
8. Export menu

Connect and set up signals and sensors

It is possible to directly measure ±10 V or to use MSIs to expand the input signal possibilities:

Open the Data Channel List by double clicking/tapping on the menu tab on the right side or by swiping it over the whole measurement screen, seen in *Fig. 30*.

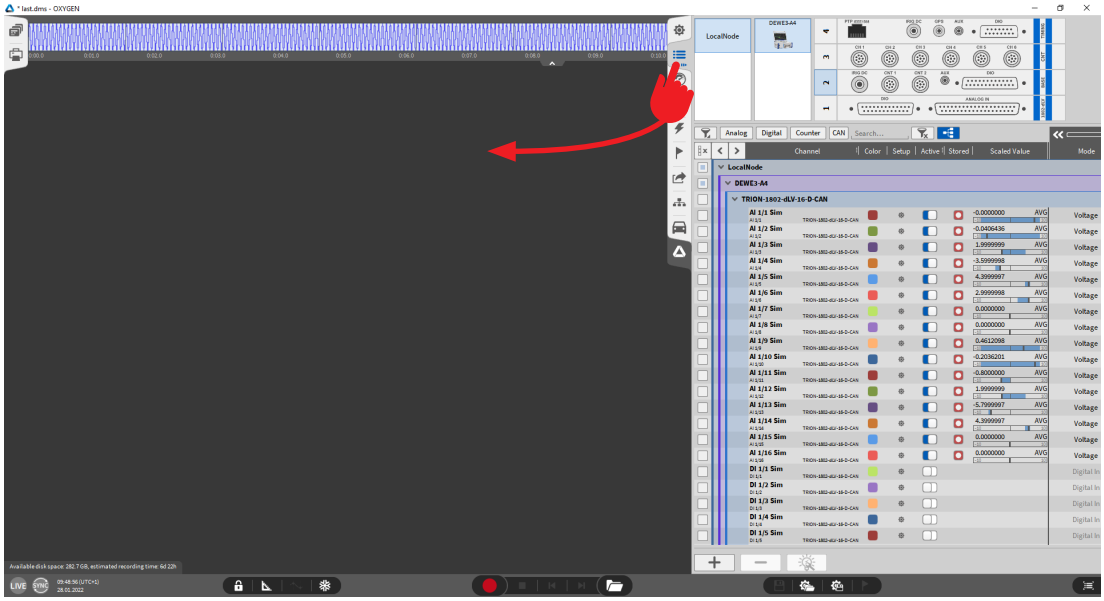


Fig. 30: Expanding data channel list

Changing channel settings

The next step is to change the channel settings:

1. Click on the channel name in the list to enter a new name.
2. Alternatively, the channel settings will also open by clicking on the gear button (see *Fig. 31*).

There different settings are available

- Sensor scaling (unit and scaling or sensitivity factor)
- Table scaling for a non-linear scaling

All settings are automatically saved when entered and do not have to be saved separately.

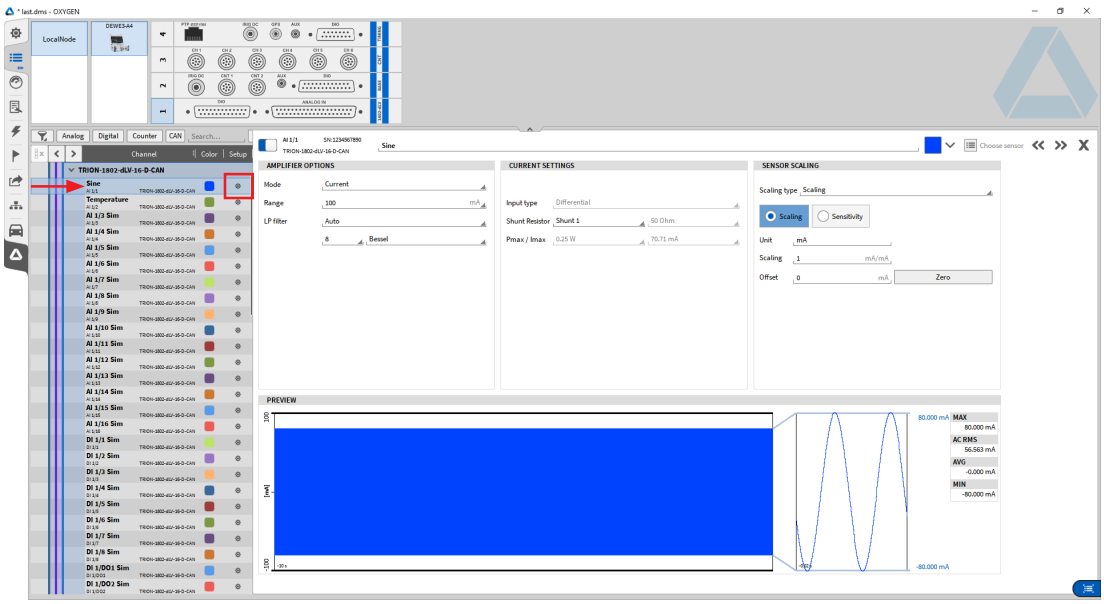


Fig. 31: Changing channel settings

Design the measurement screen

After the channel settings are done, design the measurement screen to your needs:

1. Double-click/tap on the menu tab or swipe the menu to the right.
2. Click or tap on the *Instrument* menu tab and drag and drop a recorder on the measurement screen.

   More instruments can be added and adjusted like this, when being in *Design Mode* (see 2 in *Fig. 29*).
3. Click on the *Data Channel* menu tab and add the signal by selecting the instrument and the signal to be shown or by drag and dropping the signal into the instrument.
4. Disable the *Design Mode*.

The design of the measurement screen is now finished.

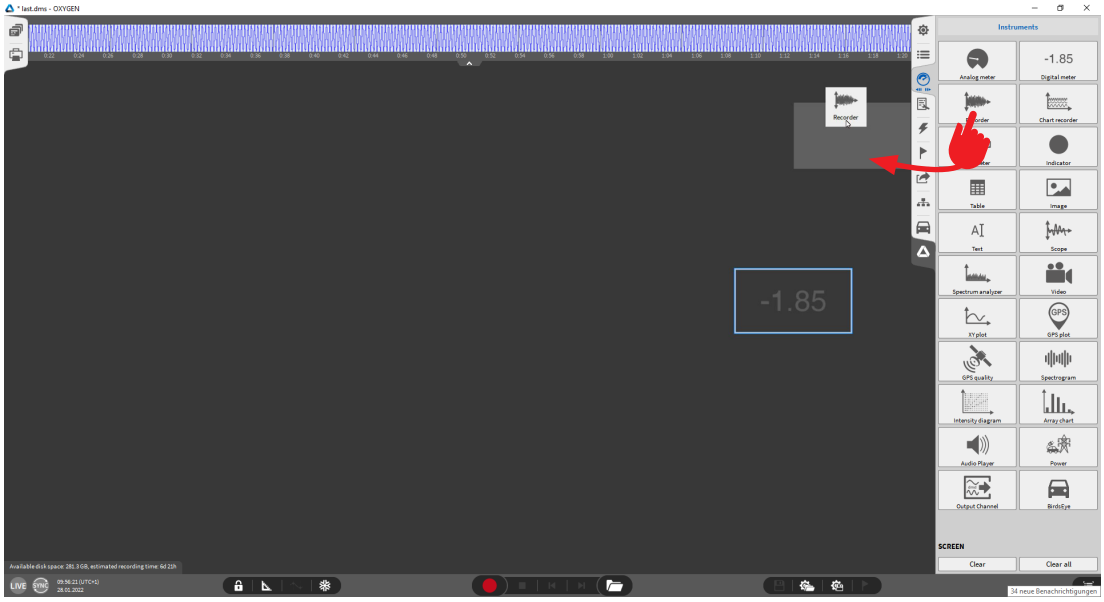


Fig. 32: Designing the measurement screen

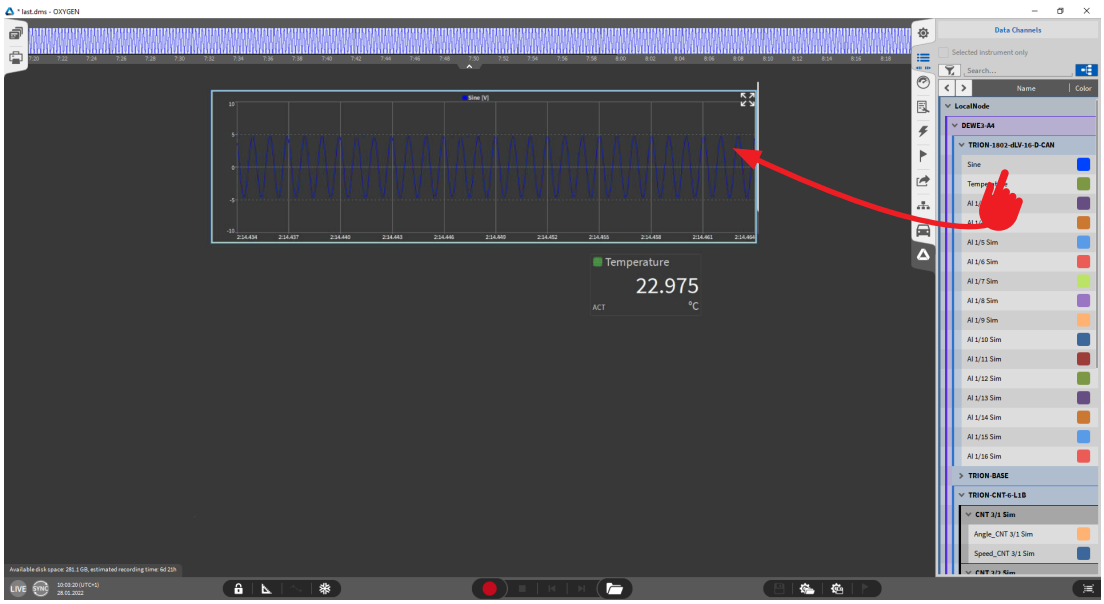


Fig. 33: Selecting instrument and signal

Record

To start the recording proceed as follows.

1. Click on the record button.

   The red border and the REC indicator seen *Fig. 34* in the lower left corner displays, that the recording is going on.

2. Click on the Stop button to stop the recording.

The recording process is now finished.

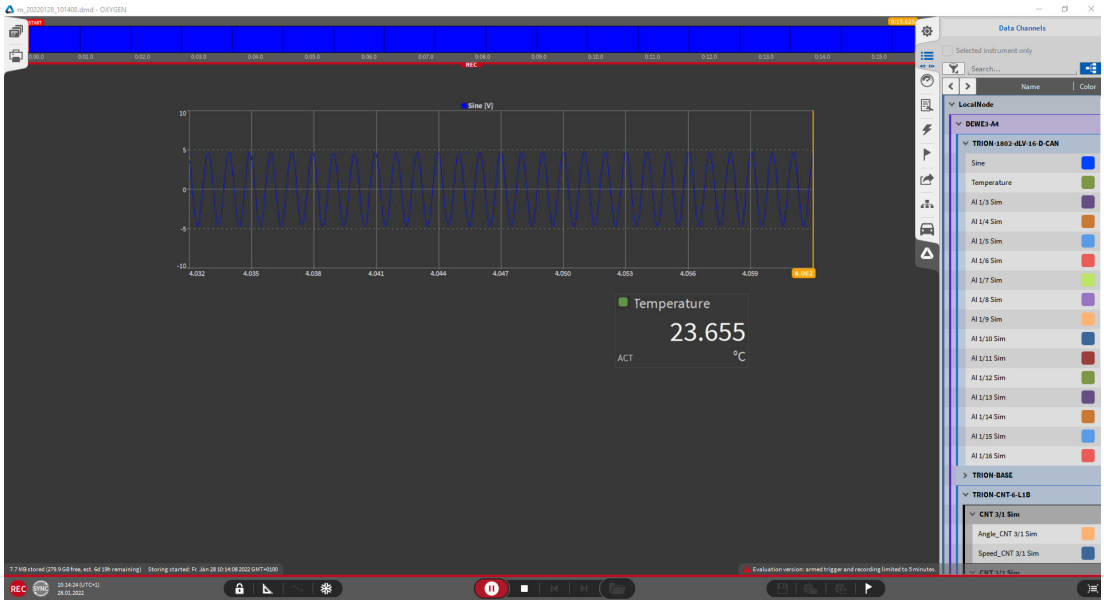


Fig. 34: Recording

Open datafile and export

To open a datafile, proceed as follows:

1. Click on the file button, and select the corresponding file (see *Fig. 35*).

   The green border and PLAY indicator in the lower left corner indicate that a file is loaded for post-processing (see *Fig. 36*).

2. To export the data, click or tap on the *Export Settings* menu tab.

3. Select the desired format and the channels to be exported.
4. Click on the export button seen in *Fig. 36*.

The exporting process is now finished.

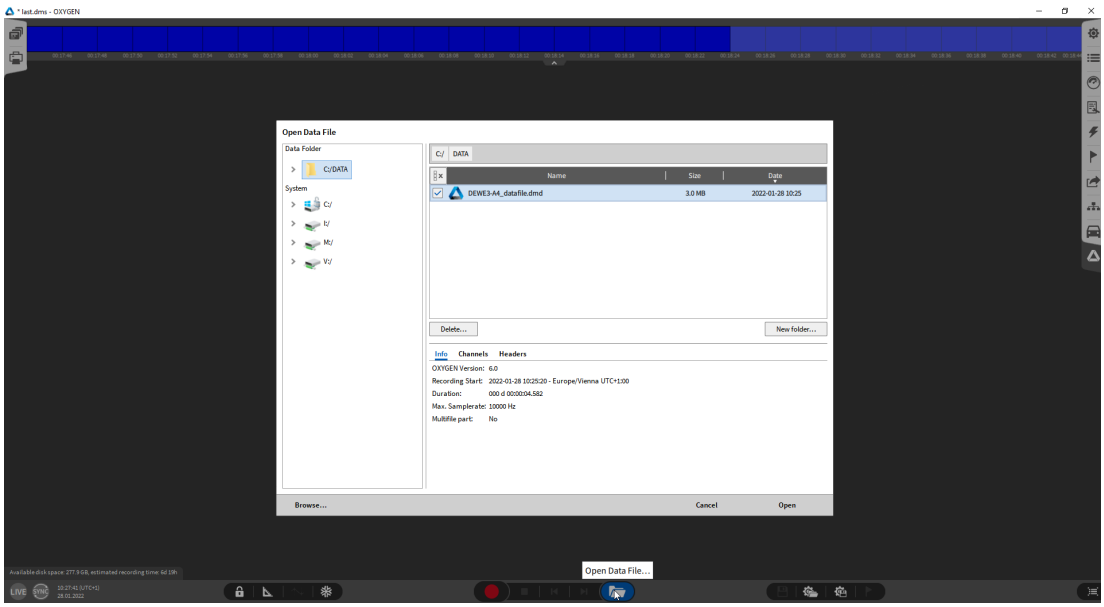


Fig. 35: Opening data file

Fig. 36: Exporting data file for post-processing

Synchronization

The TRION-SYNC-BUS (SYNC I/O, SYNC OUT) is used to synchronize two or more DEWE3 systems with up to 100 m distance between each node. The TRION-SYNC-BUS consists of two RJ-45 sockets. One socket being a synchronization OUT, whilst the other one could either be used as synchronization IN or OUT.

Depending on the usage of the SYNC I/O (input or output) the LED indicates if the system clock is available or received correctly from another system. The green LED indicates that the acquisition is running. If the acquisition stops the LED will be off.

LED indication	SYNC OUT	SYNC I/O
RED (stable)	Clock detected	Clock detected / receiving clock
Green (stable)	Acquisition running	Acquisition running

Tab. 16: LED indication

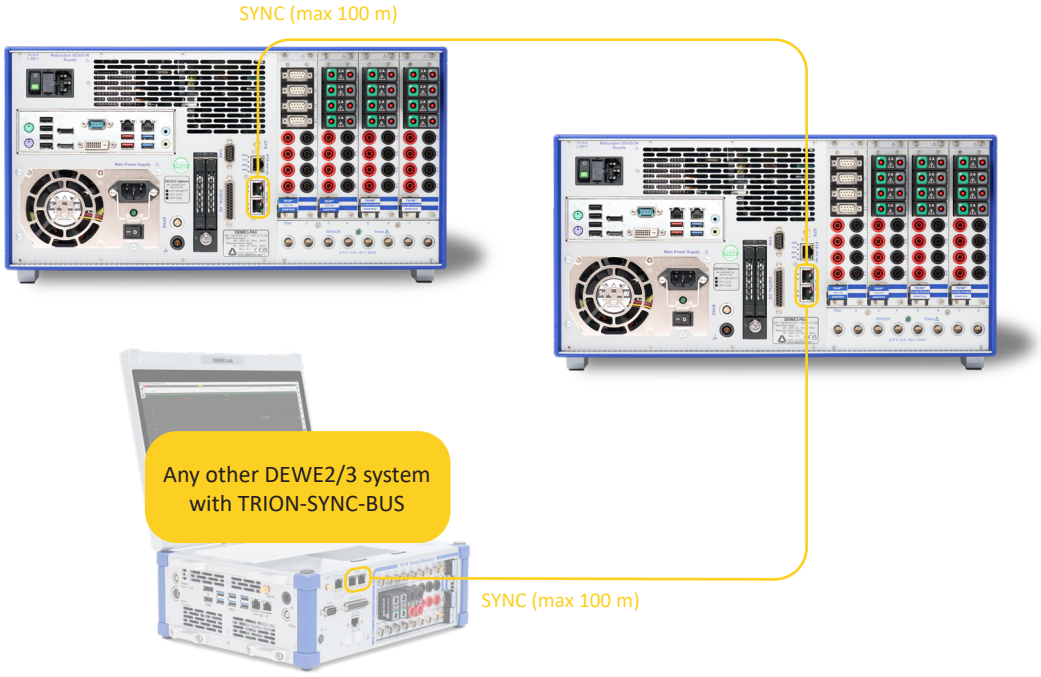


Fig. 37: Synchronization via TRION-SYNC-BUS

GPS sync

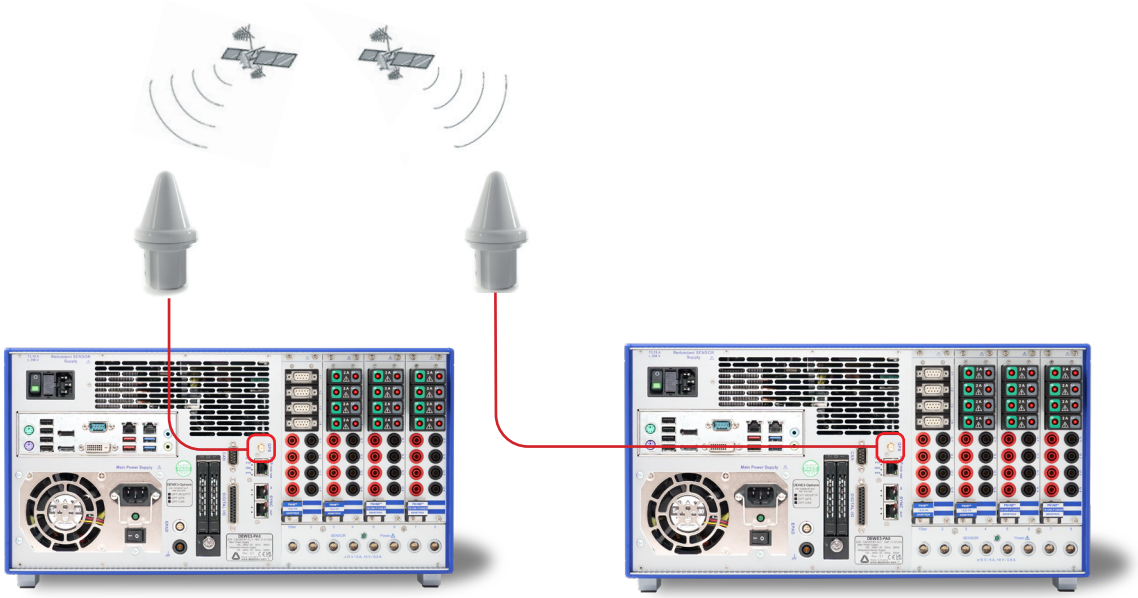


Fig. 38: GPS sync

Channel expansion with TRIONet

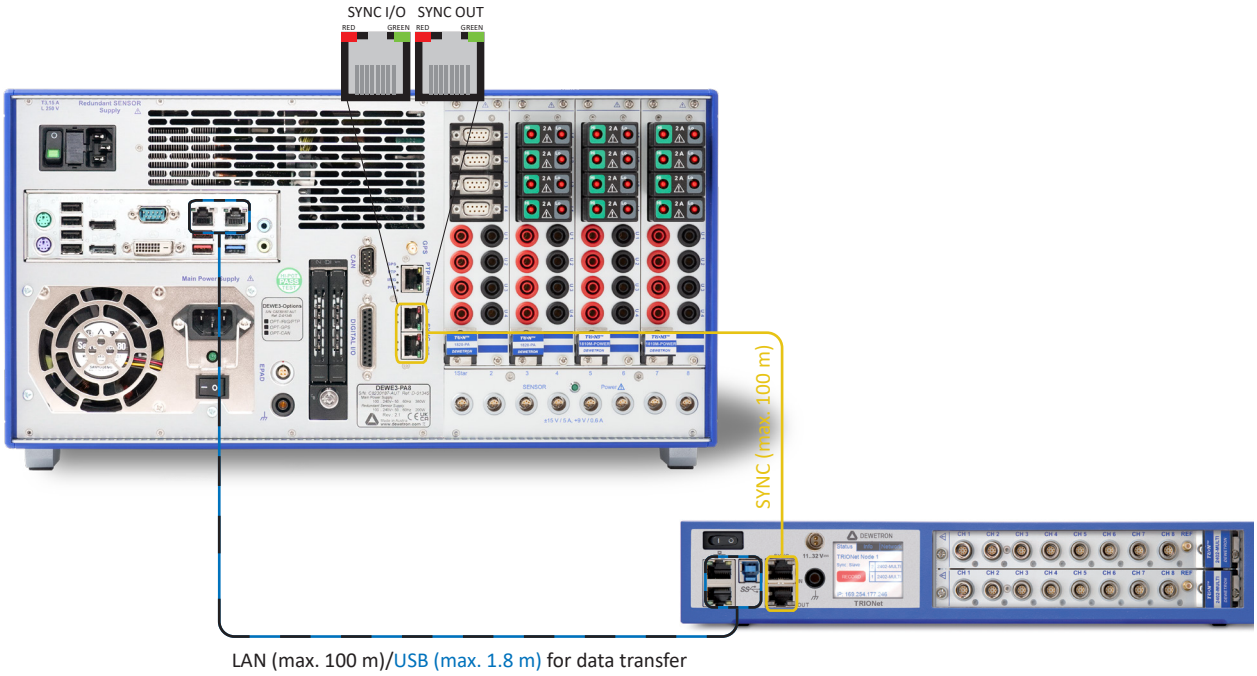


Fig. 39: Channel expansion with TRIONet

Network with multiple systems

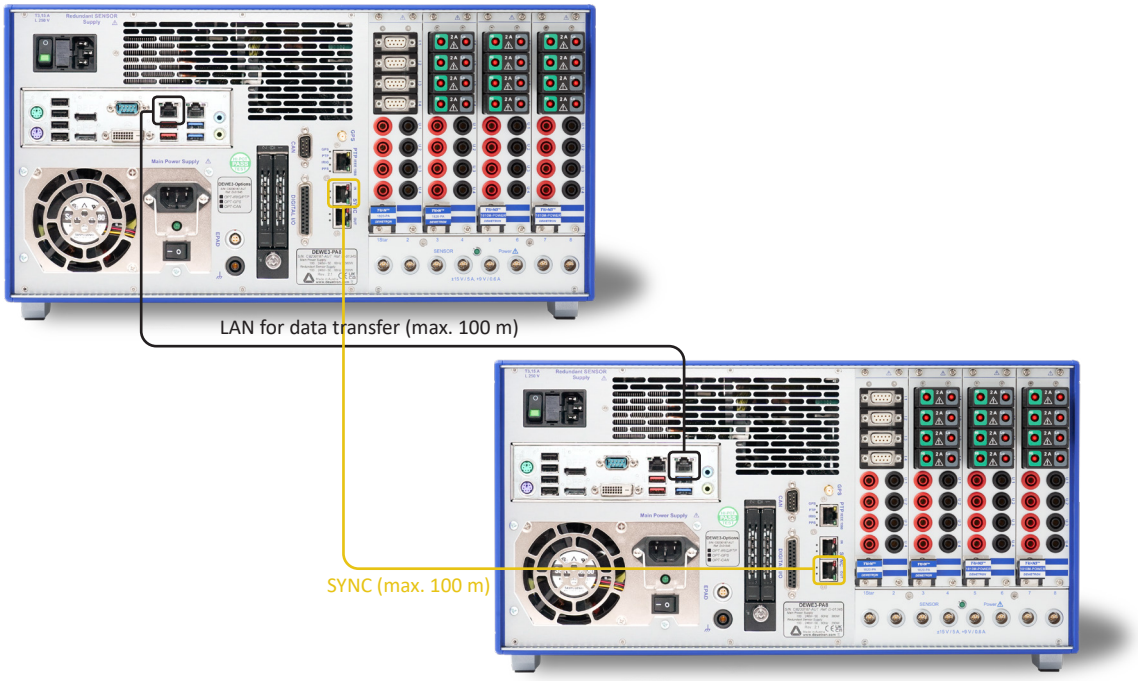
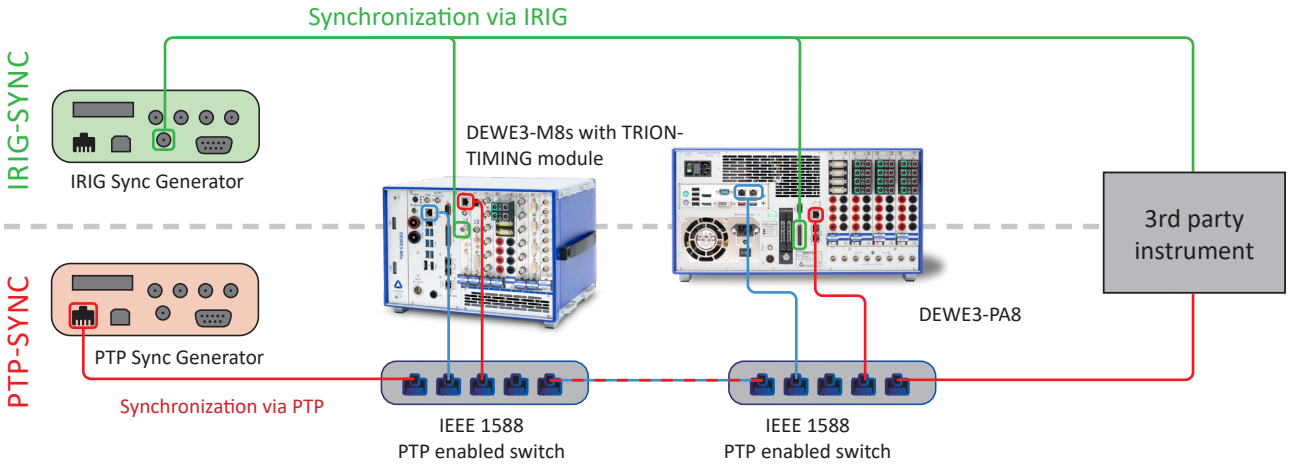


Fig. 40: Network with multiple systems

PTP sync / IRIG sync



Data transfer (independent from synchronization)

The network topology is the responsibility of the customer. Any topology supported by the operating system can be used. In theory, the normal company network can also be used. However, DEWETRON recommends the use of a separate network which is only used for data transmission. For data rates beyond 100 MB/s a 10 Gbit option is available which can transfer up to 1 GB/s of data.

INFORMATION

Networked data acquisition (claiming multiple, distributed DEWETRON measurement systems) requires software option OXYGEN-Net (OXY-OPT-NET). This option works with absolute time synchronization as well as with TRION-SYNC-BUS.

Maintenance and service

The information in this section is designed for use by qualified service personal.

Service interval

Intervals may vary. Depending on environmental conditions, runtime, etc.

Actions	On demand	At least once a year	Every 5 years
Clean dust from chassis exterior/ interior	Depending on environmental conditions	x	-
Clean filters	Depending on environmental conditions	x	-
Calibrate TRION modules	-	x	-
Change CPU fan	-	-	x
Change chassis fan	-	-	x
Change CMOS battery	-	-	x
Change SSD	Depending on SSD health status	-	x

Fig. 41: Service intervals

DEWETRON offers various service and upgrade plans including cleaning/exchanging fans/power supply/CPU cooler (if required), BIOS, firmware and driver updates as well as reliabilty upgrades and full functionality check. Ask DEWETRON or your local distributor for further information and pricing.

Surface cleaning

- Clean surface of the chassis with dry lint-free cloth.
- Use a dry velocity stream of air to clean the chassis interior.

  Do not use harsh chemical cleaning agents.

WARNING

Risk of injury

Disconnect all cables before servicing the unit.

NOTICE

Many components within the chassis are sensitive to static discharge damage. Always wear a ground wrist strap and service the unit only in static-free environment.

Filter pad cleaning

WARNING

Do not attempt to remove filter covering plate when in operation.

Warranty void if the modules overheat by removing the fan cartridge when in operation.

Power off the instrument and disconnect the device from the power supply first. Any voltage over 50 V connected to the modules must also be terminated. The fan cartridge is not swappable.

NOTICE

The DEWE3-PA8 must not be opened or disassembled except for cleaning the filter pad. The filter pad has to be checked regularly depending on environmental condition.

To access the filter pad simply losen the knurled thumb screw and hinge down the intake vent on the front of the DEWE3-PA8.

Fig. 42: Filter pad cleaning

To clean the filter pad use a dry velocity stream of air. Afterwards, make sure to reinstall the filter pad and tighten the knurled thumb screw.

Updates

Windows and antivirus/security software

Before installing Windows software updates consult with DEWETRON for compatibility guidance. Also keep in mind that the use of any antivirus or other security software may slow down your system and may cause data loss.

Software updates

NOTICE

The system BIOS is protected by password. Any change in the BIOS may cause a system crash. When the system is booting, do not press ESC-button on keyboard. This may clear the BIOS settings and cause system faults.

Any change in the file structure as deleting or adding files or directories might cause a system crash.

Before installing software updates contact DEWETRON or your local distributor. Use only software packages which are released by DEWETRON. Further information is also available in the Internet (http://www.dewetron.com).

After power off the system wait at least 10 seconds before switching the system on again. Otherwise the system may not boot correct. This prolongs also the life of all system components.

Support

DEWETRON has a team of people ready to assist you if you have any questions or any technical difficulties regarding the system. For any support contact your local distributor first or DEWETRON directly.

For Asia and Europe contact:

DEWETRON GmbH
Parkring 4
8074 Grambach
AUSTRIA

For the Americas contact:

DEWETRON Inc. (HQ USA)
2850 South County Trail, Unit 1
East Greenwich, RI 02818
USA

Tel.: +43 316 3070
Fax: +43 316 3070-90
E-Mail: support@dewetron.com
Web: http://www.dewetron.com

The telephone hotline is available
Monday to Friday between
08:00 and 17:00 CET (GMT +1:00).

Tel.: +1 401 284 3750
Toll-free: +1 866 598 3393
Fax: +1 401 284 3750
Email: support@dewetron.com
Web: http://www.dewetron.com

The telephone hotline is available
Monday to Friday between
08:00 and 16:30 EST

Service and repairs

We are very sorry that your DEWETRON system is not operating properly. Our team is here to ensure that your DEWETRON product is returned to peak performance as quickly as possible.

Help us to provide you with the best support by following the RMA policy.

Some problems can be solved remotely by our support team. To facilitate a quicker resolution to the problem and save unnecessary shipping costs, we ask you to first have your problem investigated by our technical support before sending your product. Contact details for our support can be found on our website. Describe the error accurately and with as much detail as possible. This helps expedite the repair process.

If a repair is necessary, complete our online RMA form. You will then receive an RMA (Return Material Authorization) number and detailed instructions that identify where to ship the damaged product.

Products arriving at our repair department without RMA require follow-up calls and investigation, which lead to a longer turnaround. Only the team of DEWETRON is allowed to perform any kinds of repairs to your system to assure a safe and proper operation in future.

INFORMATION

Only the team of DEWETRON is allowed to perform any kinds of repairs to your system to assure a safe and proper operation in future. For information regarding service and repairs contact your local distributor first or DEWETRON directly.

INFORMATION

Any spare parts (screws, backplanes, cables etc.) must be obtained from DEWETRON only.

Training

DEWETRON offers training at various offices around the world several times each year. DEWETRON headquarters in Austria have a very large and professional conference and seminar center, where training classes are conducted on a regular basis starting with sensors and signal conditioning, A/D technology and software operation.

Dewetron Inc. in the USA also has a dedicated training facility connected to its headquarters, located in Rhode Island.

For more information about training services visit https://www.dewetron.com/academy.

Calibration

Every instrument needs to be calibrated at regular intervals. The standard norm across nearly every industry is annual calibration. Before your DEWETRON data acquisition system is delivered, it is calibrated at our DEWETRON headquarter. Each of this system is delivered with a certificate of compliance with our published specifications. Detailed calibration reports from our calibration system are available for purchase with each order. We retain them for at least one year, so calibration reports can be purchased for up to one year after your system was delivered.

Letter of volatility

The data storage capacity of the DEWE3-PA8 can be extended by the SSD-256V-1T-EL option to 1 TB or by the SSD-PCIe-1T-2T option to 2 TB (industrial grade, PCIe attached solid state disk). The following chart corresponds to the memory types that are used within the DEWE3-PA8 systems.

Volatile memory

Type	Size	User modifiable	Function	Process to delete
Innodisk M4SS, DDR4 SODIMM	16 GB module (2x 8 GB chips)	Yes	RAM	Power off
Intel i7-8700	12 MB	No	Cache	Power off

Tab. 17: Volatile memory

Non-volatile memory

Type	Size	User modifiable	Function	Process to delete
Innodisk 3MG2-P, Solid State Drive	256 GB + cache	Yes	Main drive for operating system, programs and drivers	Remove drive or DoD 5220.22-M wiping
Samsung NVMe PCIe Solid State Drive	1 TB + cache	Yes	Data drive	Remove drive or DoD 5220.22-M wiping
BIOS Chip EEPROM	32 MB	Yes	BIOS Settings, firmware	Factory reset
Flash	16 MB	Read only, yes under certain circumstances	Chassis controller firmware	DEWETRON Explorer firmware update

Tab. 18: Non-volatile memory

Radio communication

This measuring instrument does not include any integrated radio communication technology, such as Wi-Fi or Bluetooth.

Certificates

Certificate of conformity

CE

Manufacturer	DEWETRON GmbH
Address	Parkring 4 8074 Grambach, Austria Tel.: +43 316 3070-0 Fax: +43 316 3070-90 Email: sales@dewetron.com http://www.dewetron.com
Name of product	**DEWE3-PA8**
Kind of product	*Mixed signal power analyzer*

The product meets the regulations of the following EC-directives:

2014/35/EU

Directive of the European Parliament and of the Council of 26 February 2014 on the harmonization of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits

2014/30/EU

Directive of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility (recast)

The accordance is proved by the observance of the following standards:

LVEMC	**Safety**	IEC 61010-1:2010, Pol. deg. 2	
	Emissions	EN 61000-6-4	EN 55011 Class B
	Immunity	EN 61000-6-2	Group standard

Graz, June 27, 2019

Place / Date of the CE-marking

Ing. Thomas Propst / Manager Total Quality

Conformity to IEC 61000-4-30

Manufacturer	DEWETRON GmbH
Address	Parkring 4 8074 Grambach, Austria Tel.: +43 316 3070-0 Fax: +43 316 3070-90 Email: sales@dewetron.com http://www.dewetron.com

This certificate has been issued as a result of an assessment of the performance of the models listed below as to their conformity with the requirements of IEC 61000-4-30:2008 Class A, Electromagnetic compatibility (EMC) Part 4-30: Testing and measurement techniques – Power quality measurement methods.

Instruments	**DEWE2 series (all devices)**	**TRIONet**
	DEWE3 series (all devices)	**TRIONet3**
	LITE[PA]	
	in combination with	
Amplifiers	**TRION(3)-1820-POWER-4**	**TRION(3)-1810-HV-8**
	TRION3-1810M-POWER-4	**TRION3-SUB-8 with SUB-600V**
	LITE[PA] module	
	and	
Software	**OXYGEN with OPT-POWER-BASIC and OPT-POWER-ADV since version 2.3**	

Standard	Parameter	IEC section	Referring to	Class	Comment
IEC 61000-4-30	Power frequency	5.1	-	A	a)
	Magnitude of supply voltage	5.2	-	A	a)
	Flicker	5.3	61000-4-15	A	b)
	Supply voltage unbalance	5.7	-	A	a)
	Voltage harmonics	5.8	61000-4-7	A	c), d)
	Voltage interharmonics	5.9	61000-4-7	A	d)

General notice: no synchronisation to UTC 10 minute tick

a) 10/12 period values only with setting “Max. update rate” = 190 ms

b) For U_din in range of 60 V to 690 V

c) Only with grouping setting = “Type 1”; no smoothing with LP filter

d) For nominal value of 5 A, use SUB-CUR-20A; for currents above use external current sensor

On the basis of the evidence presented, the above products conform to the requirements of IEC 61000-4-30:2008 (Edition 2) Class A, Electromagnetic compatibility (EMC) Part 4-30: Testing and measurement techniques – Power quality measurement methods:

Graz, August 10, 2023

Place / date of issue

Ing. Thomas Propst / Manager Total Quality