



DEWETRON

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# TRIONet

## TECHNICAL REFERENCE MANUAL

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### WELCOME TO THE WORLD OF DEWETRON!

Congratulations on your new device! It will supply you with accurate, complete and reproducible measurement results for your decision making.

Look forward to the easy handling and the flexible and modular use of your DEWETRON product and draw upon more than 25 years of DEWETRON expertise in measurement engineering.

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ISO9001



## THE MEASURABLE DIFFERENCE.

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## Thank you!

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.

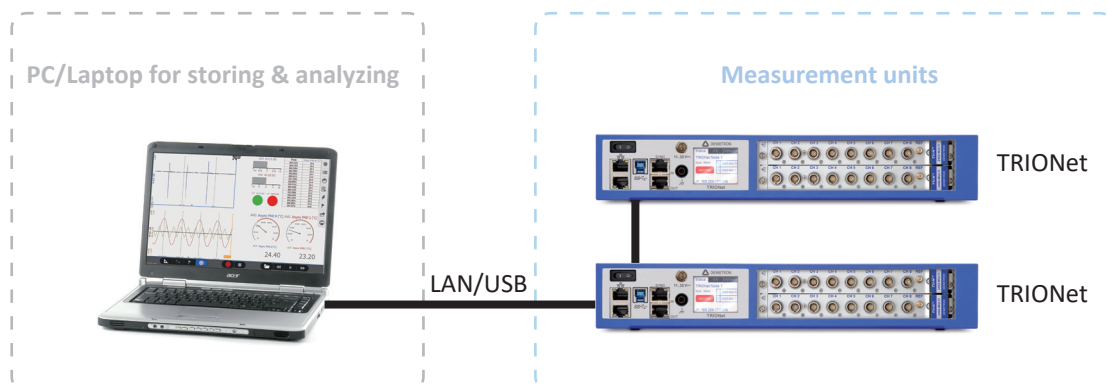
This guide includes important startup notes, as well as safety notes and information about keeping your DEWETRON system in good working condition over time.

We strongly suggest that you read this entire manual, especially the safety and care sections, as well as to avoid damaging your DEWETRON system.

## What is the TRIONet?

TRIONet is a compact test and measurement solution that enables synchronous high-speed data acquisition across great distances and distributed locations. It communicates via Ethernet or USB-bus and is operable intuitively with OXYGEN or in familiar environments such as DEWESoft 7 or any other established programming language.

The compact, distributable TRIONet accepts any two of the multi-channel TRION series plug-in modules. The TRIONet connects to any Windows computer via either USB or Ethernet – and TRIONet mainframes can be interconnected using Ethernet. Because of the Ethernet interface, TRIONet mainframes can be placed up to 100 meters apart from each other.





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# PREFACE

Notes



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## 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. For more information about training services, please visit:

<http://www.dewetron.com/services/dewetron-academy/>

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 in the US, please visit:

<http://www.dewetron.us/service-support/system-training-usa/>

## 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.

## 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 please contact your local distributor first or DEWETRON directly.

For Asia and Europe, please contact:

DEWETRON GmbH  
Parking 4  
8074 Grambach  
AUSTRIA  
Tel.: +43 316 3070  
Fax: +43 316 307090  
Email: [support@dewetron.com](mailto: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)

For the Americas, please contact:

DEWETRON, Inc. (HQ USA)  
2850 South County Trail, Unit 1  
East Greenwich, RI 02818  
U.S.A.  
Tel.: +1 401 284 3750  
Toll-free: +1 877 431 5166  
Fax: +1 401 284 3755  
Email: [us.support@dewetron.com](mailto:us.support@dewetron.com)  
Web: <http://www.dewetron.us>

The telephone hotline is available  
Monday to Friday between  
08:00 and 17:00 GST (GMT -5:00)

## Service/Repair Policy

**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.**

Please help us to help you 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](#). Please describe the error accurately and with as much detail as possible. This helps expedite the repair process.

If a repair is necessary, please 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.

**Please note:** Products arriving at our repair department without RMA require follow-up calls and investigation, which lead to 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.



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

# ▼ NOTICE

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## 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.

## Restricted Rights Legend

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Parkring 4  
A-8074 Grambach / Austria

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## Printing History

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## Safety conventions



*Observe precautions for handling electrostatic sensitive devices!*



*This icon denotes a caution, which advises you of precautions to take to avoid injury, data loss, or a system crash. When this symbol is marked on the product, refer to the technical reference manual.*



*Indicates hazardous voltages.*



*Indicates the chassis terminal*

**WARNING**     *Calls attention to a procedure, practice, or condition that could cause bodily injury or death.*

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

### WARNINGS

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

# SAFETY INSTRUCTIONS

**Your safety is our primary concern! Please be safe!**



## **General safety and hazard warnings for all DEWETRON systems**

- > 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!
- > 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.
- > Maintenance will be executed by qualified staff only.
- > During the use of the system, it might be possible to access another 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 advices 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.
- > 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, please 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).

- > Please note the characteristics and indicators on the system to avoid fire or electric shocks. Before connecting the system, please carefully read 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 separates the system from the power supply. Do not block the power cord, since it has to be accessible for the users.
- > Supply overvoltage category is II.
- > DO NOT use the system if equipment covers or shields are removed.
- > If you assume the system is damaged, get it examined by authorised personnel only.
- > 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, et cetera.
- > Any direct voltage output is protected with a fuse against short cut and reverse-polarity, but is NOT galvanically isolated (except it is explicit marked on the system).
- > The system must be connected and operated to an earthed wall socket at the AC mains power supply only (except for DC systems).
- > Any other use than described above may damage your system and is attended with dangers like shortcut, fire or electric shocks.

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# SAFETY INSTRUCTIONS

- > The whole system must not be changed, rebuilt or opened (except for changing TRION™ modules).
  - > 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.
  - > 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 cut and fire hazard!
  - > Warranty void if damages caused by disregarding this manual. For consequential damages NO liability will be assumed!
  - > Warranty 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 TRION™ modules.
  - > 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, maximum input voltage for measuring cards are  $70 V_{DC}$  and  $46.7 V_{PEAK}$
  - > The product heats during operation. Make sure there is adequate ventilation. Ventilation slots must not 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 cut 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 please refer to the specifications.
  - > Make sure that your hands, shoes, clothes, the floor, the system or measuring leads, integrated curcuits 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 refere to enclosed specifications.
- > Use measurement leads or measurement accessories aligned to the specification of the system only. Fire hazard in case of overload!
  - > Do not switch on the system after transporting it from a cold into a warm room and vice versa. The thereby created condensation may damage your system. Acclimatise the system unpowered to room temperature.
  - > Do not disassemble the system! There is a high risk of getting a perilous electric shock. Capacitors still might charged, even the system has been removed from the power supply.

# SAFETY INSTRUCTIONS

- > 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 electrical installations and equipments 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 at 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. For exact values please refer to enclosed specifications.
- > Please also consider the detailed technical reference manual as well as the security advices of the connected systems.

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 well-tried”, 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.



## Maintenance

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

### Service interval:

Clean dust from the chassis exterior/interior and exchange filter foam based on the operating environment.

### Cleaning:

Clean surface of the chassis with dry lintfree cloth.

Use a dry velocity stream of air to clean the chassis interior.



- > Disconnect all cables before servicing the unit!
- > 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.
- > Do not use harsh chemical cleaning agents!

# ▼ GENERAL INFORMATION

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## Windows updates and antivirus/security software

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

## 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.

## Environmental Considerations

Information about the environmental impact of the product.



### Product End-of-Life Handling

Observe the following guidelines when recycling a DEWETRON system:

### System and Components Recycling

Production of these components required the extraction and use of natural resources. The substances contained in the system could be harmful to your health and to the environment if the system is improperly handled at its end of life! Please recycle this product in an appropriate way to avoid 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 electrical and electronic equipment (WEEE). Please find further information about recycling on the DEWETRON website [www.dewetron.com](http://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.

## TRIONet - data acquisition front-end

- > Small, distributable data acquisition front-end
- > 2 slots for user exchangeable TRION™ series modules
- > USB 3.0 or Gigabit ethernet connection to notebook or desktop
- > Touchscreen on front panel



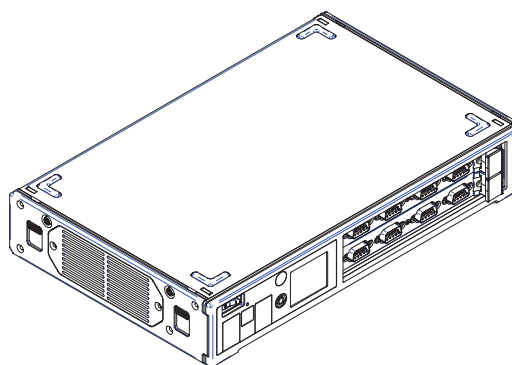
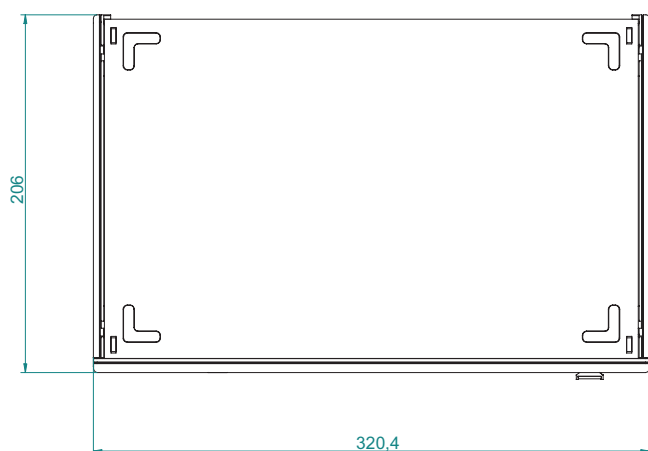
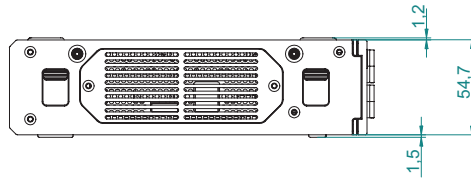
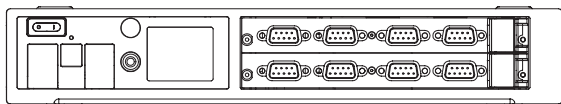
## System specifications

TRIONet	
Data acquisition	2 slots for TRION™ acquisition modules <sup>1)</sup>
Quasi static channel expansion	CPAD via TRION-CAN or TRION-MULTI (no EPAD)
LAN	2 x 10/100/1000BASE-TX Gigabit Ethernet
LAN configuration	DHCP or Static IP
USB	USB 2.0; USB 3.0
Synchronization	TRION-SYNC-Bus up to 100 m between nodes
System bandwidth	90 MB/s with one connected TRIONet (up to 50 MB/s with more than one)
Display	Status display with touch-screen
Cooling	2 temperature controlled ultra silent fans
Isolated power supply	
Rated input voltage	10 to 32 V <sub>DC</sub> (9 to 36 V <sub>DC</sub> )
Power consumption	15 W without modules, totally equipped max. 55 W
External power supply (included)	100 to 240 V <sub>AC</sub> ~50 to 60 Hz / 65 W
Operating temperature	-20 °C to +50 °C (with pre-warmed unit)
Storage temperature	-20 °C to +70 °C
Humidity (operating)	10 % to 90 %, non condensing 5 % to 95 % rel. humidity
Altitude (max.)	3000 m (9840 ft)
Vibration test EN 60068-2-6	Shape Sine Frequency range 10 - 150 Hz Acceleration 2 g Sweep rate 1 oct./min. Duration 20 Cycles Test in 3 directions
Vibration test EN 60721-3-2 Class 2M3	Shape Random Frequency range 10 - 200 Hz Power spectral density 1 m/s <sup>2</sup> / Hz from 10 – 200 Hz Duration 30 Minutes per axis
Shocktests EN 60068-2-27	Shape Half-sine Acceleration amplitude 30 g Duration 11 ms Test in 3 axis, 3 shocks in each axis and direction
Dimensions (W x D x H)	approx. 320 x 205 x 55 mm (12.6 x 8 x 2.2 in.)
Weight	typ. 1.9 kg (4.2 lbs) without modules

1) TRION3™ modules are not supported.

# MAIN SYSTEM

## Dimensions



Dimensions in mm  
(1 inch = 25.4 mm)

## What's in the box? (standard accessory)



1 x TRIONet



1 x external AC power supply



1 x USB 3.0 cable (2 m, 6 ft)



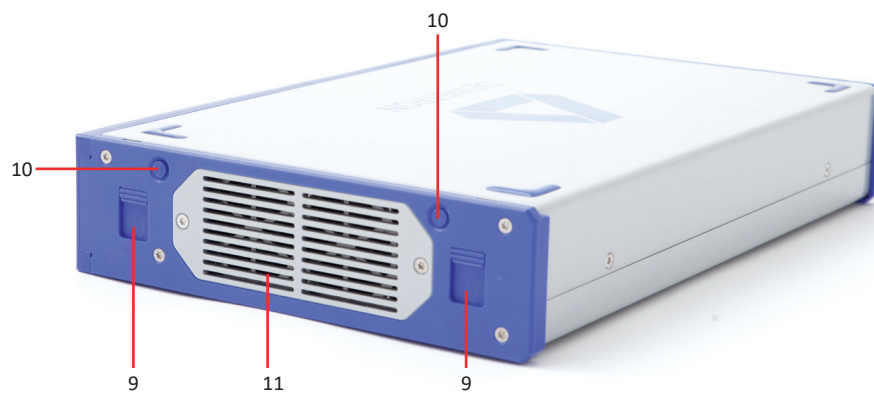
1 x LAN cable (2 m, 6 ft)

## TRIONet at a glance

*TRIONet front view*



*TRIONet right side view*



- 1 Power-on switch
- 2 Power supply input connector (LEMO EGG.1B.302)
- 3 TRION™ series module slots
- 4 Touch screen display
- 5 Chassis terminal
- 6 TRION™-SYNC-BUS interface
- 7 USB 3.0 interface connector (type B)
- 8 Gigabit Ethernet interface
- 9 Locking mechanism for stacking units
- 10 Release button for locking mechanism
- 11 Fans

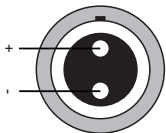
# MAIN SYSTEM

## 1 Power-on switch

The power-on switch is used to switch on the system.

## 2 Power supply input connector

Input range: 10 .. 32 V<sub>DC</sub> (external AC/DC power supply with mating connector included)  
More details see chapter 'Power supply'.



Lemo EGG.1B.302

## 3 TRION™ series module slots

Slots for 2x TRION™ series modules.



**WARNING:** *TRION3™ series modules are not supported!*

### Supported modules:

Name
TRION-2402-MULTI
TRION-1802-dLV-32
TRION-1600-dLV-32
TRION-1620-ACC
TRION-1620-LV
TRION-2402-V
TRION-1603-LV
TRION-2402-dSTG
TRION-2402-dACC
TRION-CNT
TRION-DI-48
TRION-BASE
TRION-TIMING
TRION-CAN
TRION-VGPS

### Not supported modules:

Name
TRION-FLEXRAY
TRION-A429
TRION-M1553
TRION-MA4
TRION-1628-AO-2
TRION3-1810M-POWER-4
TRION3-18xx-MULTI

More details of TRION™ series modules please find in the *TRION™ series modules technical reference manual*.

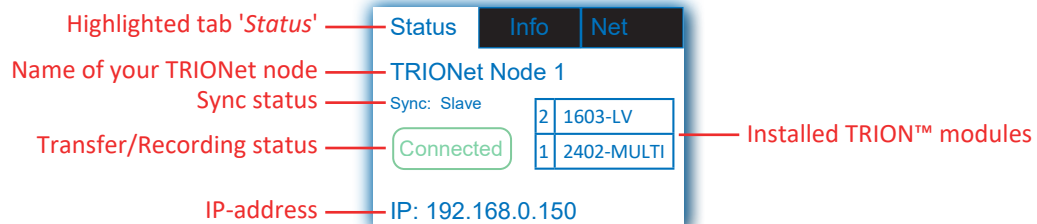
## 4 Touch screen display

The integrated touch screen display of the TRIONet shows all relevant information straight on the device. To switch between the tabs, simply touch the display.

Following displays are shown:

### STATUS TAB:

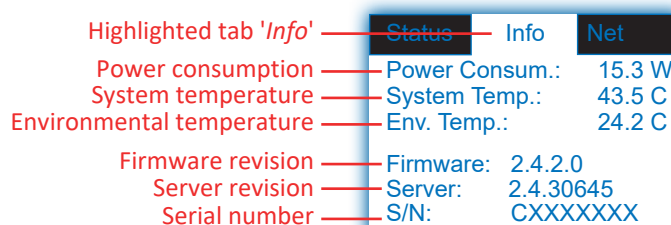
The status tab follows the boot screen animation and shows information about TRION hardware, sync status, IP-address and transfer/recording status. To switch between tabs just tab anywhere on the screen.



- > Highlighted tab 'Status': *The 'status' tab is the main screen after the device booted correctly.*
- > Name of your TRIONet node: *The name of the TRIONet node is shown here and can be changed with the DEWETRON Explorer (formerly DEWE2Explorer). More information see chapter 'Configuring your TRIONet'.*
- > Sync status: *The actual sync status of the TRIONet. Following statuses are available:*
  - none: *Standalone device*
  - Sync: Master: *The device is set as master*
  - Sync: Slave: *The device is set as 'slave-end' or 'slave-mid'**More information in chapter 'Cascading and synchronizing TRIONet'*
- > Transfer/recording status: *Shows the actual transfer/recording status. Following statuses are available:*
  - none: *The device is not connected*
  - Connected: *The device is connected to the software (Oxygen, DS7,...)*
  - Active: *Measurement active*
  - Record: *Measurement active and recording*
- > IP-adress: *Shows the current IP-address. The IP-address can be set to static or DHCP. More information see chapter 'Configuring your TRIONet'.*

### INFO TAB:

The 'Info' display tab shows some internal health parameters. This is a live display with an update rate of approx. 1 sec. In case of support please have your firmware/server revision number ready for further instructions. To switch between tabs just tab anywhere on the screen.



# MAIN SYSTEM

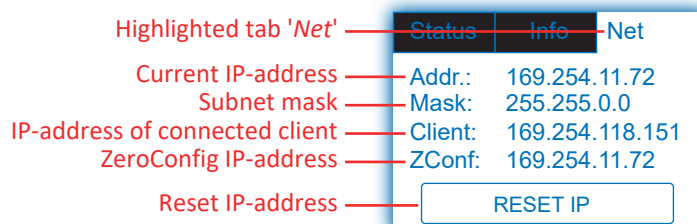
## NET TAB:

The 'Net' display tab shows the network settings of the TRIONet device itself and the client if connected.

In this tab there is also the possibility of resetting the IP-address of the TRIONet.

Information on how to change IP-address and subnet mask please see chapter '*Configuring your TRIONet with DEWETRON Explorer (formerly DEWE2Explorer)*'.

Information regarding ZeroConf IP-address please see chapter '*ZeroConf (Zero Configuration Networking) & Link-local addresses*'.

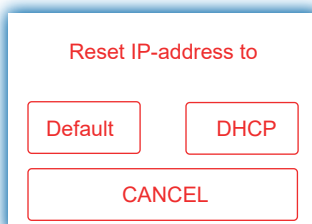


The screenshot shows the 'Net' tab selected. Labels on the left point to specific fields in the table:

	Status	Info	Net
Current IP-address	Addr.:	169.254.11.72	
Subnet mask	Mask:	255.255.0.0	
IP-address of connected client	Client:	169.254.118.151	
ZeroConfig IP-address	ZConf:	169.254.11.72	
Reset IP-address	<input type="button" value="RESET IP"/>		

## RESET IP:

If 'RESET IP' is pressed, the following screen will display:



The dialog box titled 'Reset IP-address to' contains three buttons: 'Default', 'DHCP', and 'CANCEL'.

- > Default: This will reset the IP-address of the TRIONet to default **192.168.0.150**.
- > DHCP: Choose 'DHCP' if the TRIONet should be implemented in a proprietary, already existing LAN with a DHCP server up and running. The DHCP lookup may take a few minutes. If the DHCP lookup failed, the TRIONet will switch automatically to a fallback address called '*Link-Local IP-address*'. Please refer to chapter '*ZeroConf (Zero Configuration Networking) & Link-local addresses*' for more information.



## 5 Chassis terminal

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

## 6 TRION™-SYNC-BUS interface

The TRIONet is equipped with two additional TRION™-SYNC-BUS interface connectors for daisy-chaining multiple TRIONet units. SYNC cables are not included and have to be ordered separately.

LED indication:

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

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.

Optional cables:

> **TN-DCHAIN-SET-0.2**

A set of two cables (data and sync) for daisy-chaining two TRIONet units in stacked configuration, cable length approx. 0.2 m.



Other cables on request.



**WARNING:** The total length of the SYNC cable between TRIONet units **must not** exceed 100 m (328 ft), otherwise the data won't synchronize!

# MAIN SYSTEM

## 7 USB 3.0 interface connector (Universal Serial Bus)

The TRIONet is equipped with a USB 3.0 interface (type B) to connect to a Laptop or PC. 2 m (6 ft) USB 3.0 cable included. The USB 3.0 interface meets standard USB pin assignment.

### LED indication

The USB interface connector on the TRIONet has one LED displaying following statuses:

GREEN (stable)	Link active
YELLOW (stable)	USB3.0 is in use

### Optional cables:

#### > USB 3.1 Type-C to type-A adapter

This USB adapter enables the connection between the TRIONet and a PC or laptop equipped with a USB Type-C™ port. The coaxial conductors allow an interference-free data transfer with up to 10 Gbps. Adapter length approx. 0.1 m.



**WARNING:** *DEWETRON recommends using USB 3.0 cables with a maximum cable length of 1.8 m (6 ft) otherwise the TRIONet won't connect to the Laptop/PC!*

## 8 Gigabit Ethernet LAN connectors

The TRIONet supports Gigabit Ethernet interface ports for connecting the TRIONet with a Laptop/PC or daisy-chaining multiple units with standard RJ45 connector. 2 m (6 ft) Cat6 Ethernet cable included.

### LED indication

The Gigabit Ethernet interface connectors on the TRIONet have two LEDs displaying following statuses:

GREEN (stable)	Link active
YELLOW (stable)	1Gb speed is in use

### Optional cables:

#### > TN-DCHAIN-SET-0.2

A set of two cables (data and sync) for daisy-chaining two TRIONet units in stacked configuration, cable length approx. 0.2 m.



Other cables on request.



**WARNING:** *The total length of the Ethernet cable **must not** exceed 100 m (328 ft) between two units!*

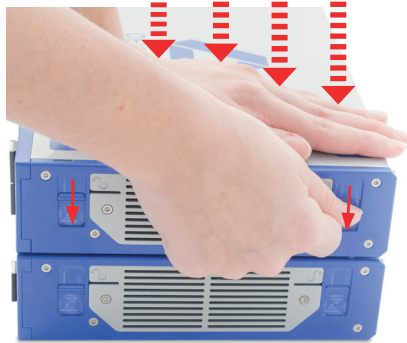
## 9 Locking mechanism for stacking units

The TRIONet comes with a nifty locking mechanism if you want to stack your units.

1) Stack your units



2) Press down slightly the stacked instruments and push down the levers on both sides of the upper unit to lock them (4 levers in total).



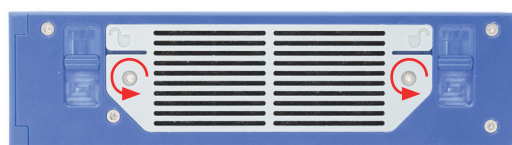
## 10 Release button for locking mechanism

3) Press the release button of the lower unit to unlock them.



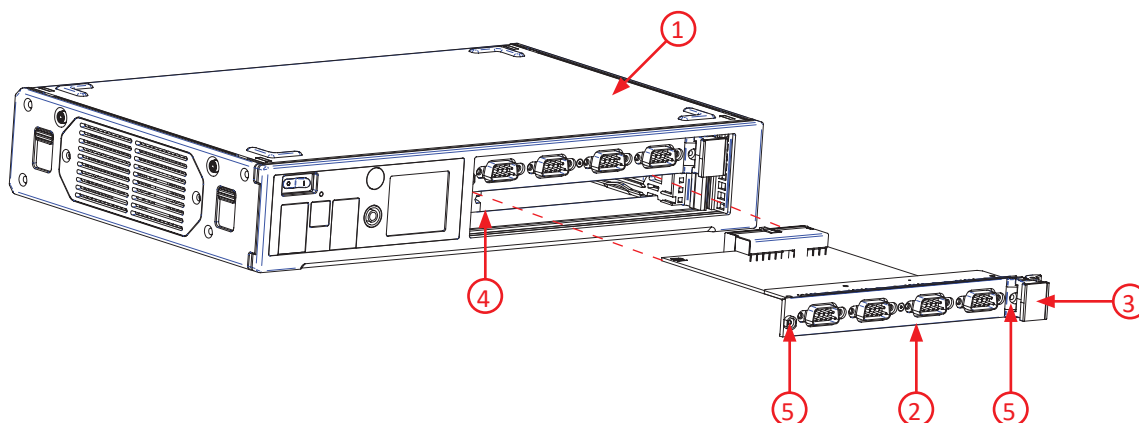
## 11 Fans

On the right side of the TRIONet two temperature-controlled ultra silent fans are installed. Check the fans frequently for pollution depending on environmental conditions. To gain access to the fans unscrew the two star screws and remove the protective grille of the fans. Use a dry velocity stream of air to clean the fans and the filter-drawer.




# MAIN SYSTEM

## Installing a TRION™ module into the TRIONet



- 1 TRIONet unit
- 2 TRION™ series module
- 3 Injector/ejector handle
- 4 Module guides
- 5 Mounting screws

- Step 1:  Proper ESD precautions must be taken to avoid any damage to the unit.
- Step 2: Power off and unplug all connected cables including sensors from the TRIONet unit and TRION™ series modules.
- Step 3: Identify a supported TRION™ peripheral slot.  
Some modules require a TRION™ STAR-slot. For more information please refer to TRION™ series modules technical reference manual
- Step 4: Remove the filler panel of an unused TRION™ peripheral.
- Step 5: Place the module edges of the TRION™ modules into the module guides.
- Step 6: Insert the TRION™ module to the rear of the TRIONet until a resistance appears.
- Step 7: Pull up on the injector/ejector handle to latch the device
- Step 8: Secure the installed TRION™ front panel to the unit using the mounting screws.

**WARNING:** *Unused TRION slots must not remain uncovered! Make sure to reinstall the filler panels of unused TRION™ slots to guarantee proper cooling of the installed modules. WARRANTY VOID if the modules overheat due to missing filler panels!*

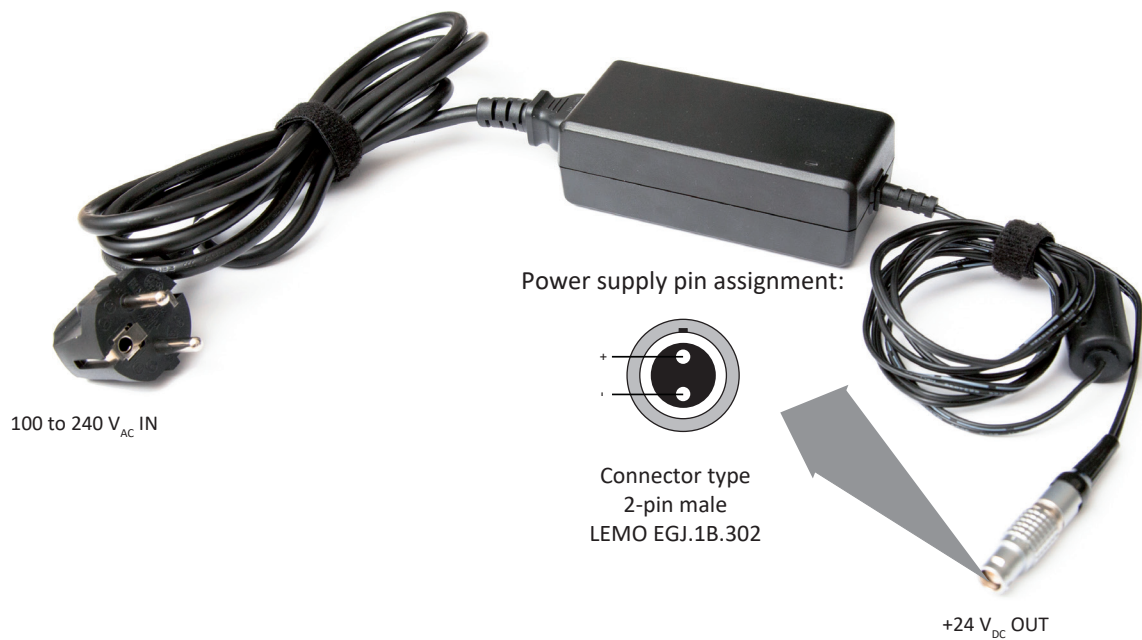


## Power supply

The TRIONet is powered by an external AC/DC power supply which is included as standard accessory.

### External AC/DC power supply (included as standard accessory)

65 W AC/DC power supply	
Input:	
Rated input voltage:	100 .. 240 V <sub>AC</sub> (max. 90 .. 264 V <sub>AC</sub> )
Input frequency:	50 .. 60 Hz
Output:	
Output power:	65 W total
Output voltage:	+24 V (max. 8.3 A)
Protection	
Overvoltage protection:	yes
Short circuit:	yes
Overcurrent protection:	yes
Environment:	
Temperature:	Operating: 0 to 40 °C / Storage: -20 to 80 °C
Humidity:	Operating: 20 % RH to 80 % RH / Storage: 10 % RH to 90 % RH



# MAIN SYSTEM

32-bit 64-bit WINDOWS 7  
32-bit 64-bit WINDOWS 10

## Connecting your TRIONet to your Laptop/PC

To connect your TRIONet to a Laptop or PC, you can either use USB 3.0 or Gigabit Ethernet. To do so, you have to install measurement software of your choice as well as all drivers for the TRIONet before connecting it to the Laptop/PC. This reference manual describes on how to install and operate your device with OXYGEN.



**WARNING:** *DO NOT CONNECT YOUR TRIONET WITH YOUR LAPTOP/PC BEFORE INSTALLING ANY MEASUREMENT SOFTWARE OR DRIVERS ON YOUR LAPTOP/PC!*

### 1. Install TRION package

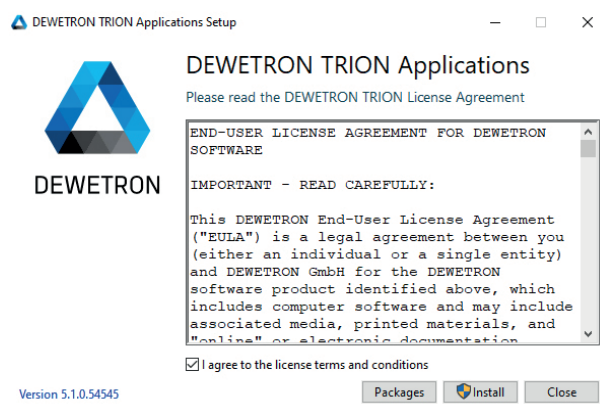
The TRION package contains all necessary drivers, APIs as well as the DEWETRON Explorer (formerly DEWE2Explorer) which is needed for configuring your TRIONet. To install this package execute the '**DEWETRON-TRION-Applications-x.x.exe**' on your DEWETRON Installation media USB drive or download the .zip file at <https://ccc.dewetron.com/pl/dewe2-series> -> '**DEWETRON TRION Rx.x**'. Unzip, then execute the file and follow the instructions of the installer.



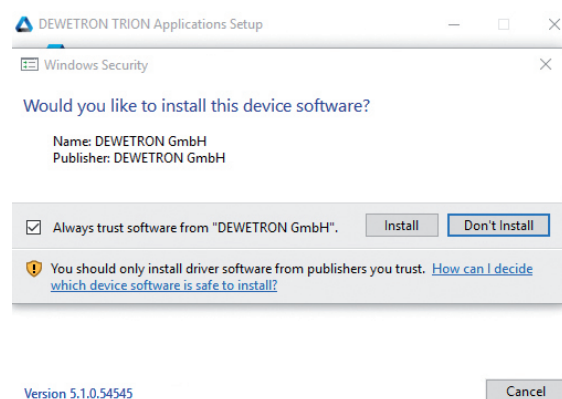
**WARNING:** *DO NOT CONNECT YOUR TRIONET WITH YOUR LAPTOP/PC BEFORE THIS PACKAGE HAS BEEN INSTALLED ON YOUR LAPTOP/PC!*



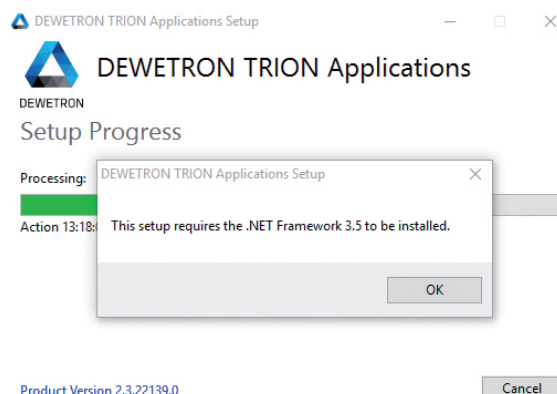
**NOTE:** *Product Version 2.3.x and older: Microsoft .NET Framework 3.5 is required for this setup!  
Product Version 2.4.x and newer: Microsoft .NET Framework 3.5 is not required anymore!*



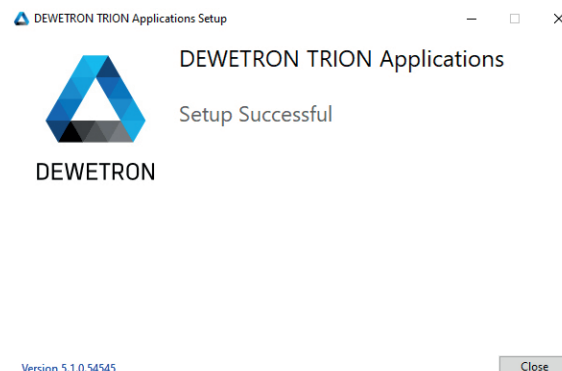
*Agree to the license terms and conditions and proceed with 'Install'.*



*Hit 'Install'. Optionally check 'always trust software from DEWETRON GmbH'.*



*If .NET Framework 3.5 is not installed on your computer the warning shown above will be displayed. When hitting 'OK' the installation will abort and perform a rollback and a restart. .NET Framework 3.5 has to be installed manually. Since Product Version 2.4.x: .NET Framework is not required anymore.*



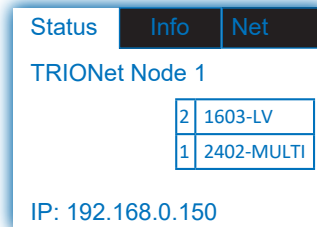
*Setup successful. A restart is mandatory.*

## 2. Connect the TRIONet to your Laptop/PC via USB3.0 or Gigabit Ethernet

First of all connect the TRIONet to the included external AC/DC power supply. Switch ON the device with the 'Power-on switch' located on the top left at the front panel. After a short bootscreen animation, the status display will indicate the TRIONet is ready to go.



*TRIONet bootscreen animation after switching on the device*



*TRIONet status display*

Now connect the TRIONet via desired interface to your Laptop/PC.

### 2.1 ZeroConf (Zero Configuration Networking) & Link-local addresses

Since Product version **2.4.x** the network ease-of-use has been improved drastically. Any TRIONet is able to communicate automatically with a Laptop/PC by connecting them with a crossover Ethernet or USB 3.0 cable.

*ZeroConf* or rather *Link-local addresses* allow devices to automatically have an IP address on a network if they haven't been manually configured or automatically configured by a special server on the network (DHCP).

*Link-local addresses* for IPv4 are defined in the address block 169.254.0.0/16 (169.254.1.0 to 169.254.254.255)

Before an address is chosen from that range, the TRIONet sends out a special message (using ARP) to the connected Laptop/PC on the network (assuming that it also haven't been assigned an address manually or automatically) to find out if 169.254.1.1 is free. If it is, then the TRIONet assigns that address to its network card. If that address is already in use by another device on the same network, then it tries the next IP 169.254.1.2 and so on, until it finds a free address.

#### Requirements:

- > TRIONet with Firmware 2.4.1 or higher
- > Laptop/PC with Windows 7 (32- or 64-bit) or Windows 10 (64-bit)
- > Cat6 Ethernet or USB3.0 cable
- > Installed DEWETRON TRION Applications 2.4.1 or higher

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*NOTE: ZeroConf & Link-local addresses are normally only used to assign IP addresses to network interfaces when no external, stateful mechanism of address configuration exists, such as the Dynamic Host Configuration Protocol (DHCP), or when another primary configuration method has failed. It is always recommended to assign a static IP-address or use a DHCP. The following chapters will demonstrate on how to assign a static IP-address or using DHCP.*

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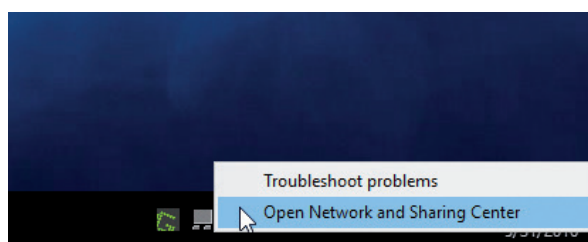


# MAIN SYSTEM

## ZeroConf via USB3.0

If the TRIONet is connected via USB 3.0 cable (included in the kit) to the Laptop/PC, WINDOWS will automatically detect a new hardware and install the corresponding USB 3.0 to Ethernet adapter driver (ASIX AX88179). To check if the drivers have been installed correctly, right click on the network icon at the bottom right of your taskbar and select 'Open Network and Sharing Center'.

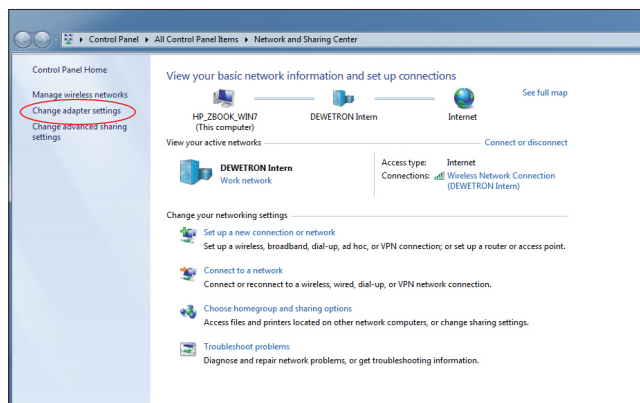
WINDOWS 7 + WINDOWS 10



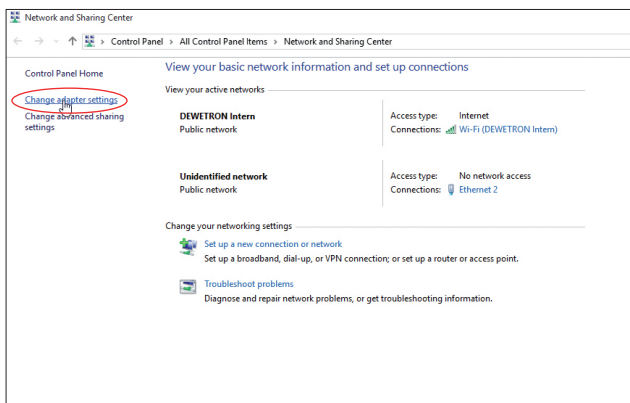
Right-click on network icon and select 'Open Network and Sharing Center'

Click on 'Change adapter settings' on the left.

WINDOWS 7



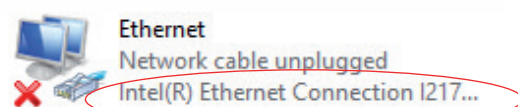
WINDOWS 10



If installed correctly the adapter has to be listed as 'ASIX AX88179 USB 3.0 to Gigabit E...'.  
WINDOWS 7 + WINDOWS 10



WINDOWS 7 + WINDOWS 10





**WARNING:**



*Make sure to use the USB 3.0 cable provided with your system! If the original cable gets lost, replace it with a cable of the same length or less than 2 meters (< 6 ft.)! The total length of the cable **must not** exceed 2 m (6 ft.), otherwise the TRIONet won't connect to the Laptop/PC! DEWETRON offers USB 3.0 cables for your TRIONet in perfect length.*

If WINDOWS fails to install the ASIX AX88179 driver automatically, please refer to chapter '2.4 Manually USB 3.0 to Gigabit Ethernet driver installation of host PC (static IP)'.

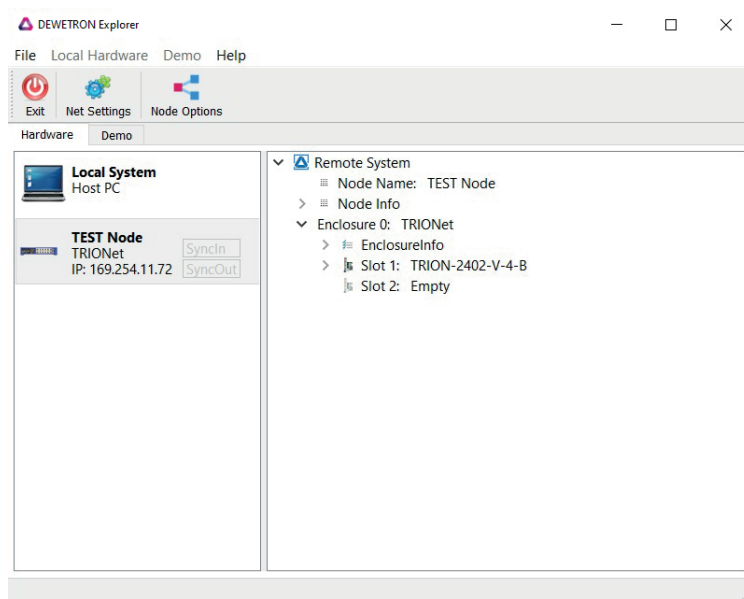
## ZeroConf via Cat6 Ethernet cable

*If the TRIONet is connected via Cat6 Ethernet cable (included in the kit) to the Laptop/PC, ZeroConf will automatically assign the TRIONet as well as the Laptop/PC with an IP-address of the address block 169.254.0.0/16 (169.254.1.0 to 169.254.254.255). **No driver installation required. The two devices are ready to communicate.***

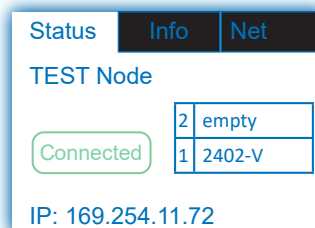
## Check ZeroConf status

To check if the devices are communicating correctly, simply start the DEWE2Explorer which has been installed with the TRION package, usually via 'Start' > 'All programs' > 'DEWETRON' > 'DEWETRON Explorer (formerly DEWE2Explorer)' or just type 'DEWETRON Explorer (formerly DEWE2Explorer)' in the search bar.

The DEWETRON Explorer (formerly DEWE2Explorer) will list a 'Local System' (which is your Laptop/PC) and the connected TRIONet.



By selecting the TRIONet in the DEWETRON Explorer (formerly DEWE2Explorer), it will now show a 'connected' symbol on the status display of the device. When deselecting the TRIONet in the DEWETRON Explorer (formerly DEWE2Explorer), the 'connected' symbol will disappear from the status display of the unit.



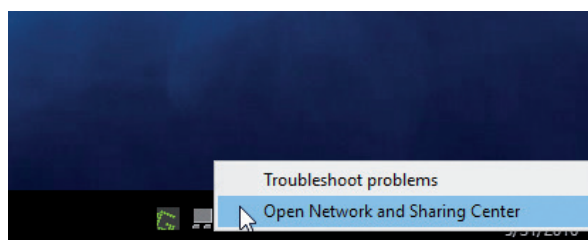
*Green 'Connected' symbol on the status display.*

# MAIN SYSTEM

## 2.2 Manually setting up Gigabit Ethernet connection of host PC (static IP)

After the TRIONet has been connected via Gigabit Ethernet cable (included in the kit) to the Laptop/PC, right click on the network icon at the bottom right of your taskbar and select 'Open Network and Sharing Center'.

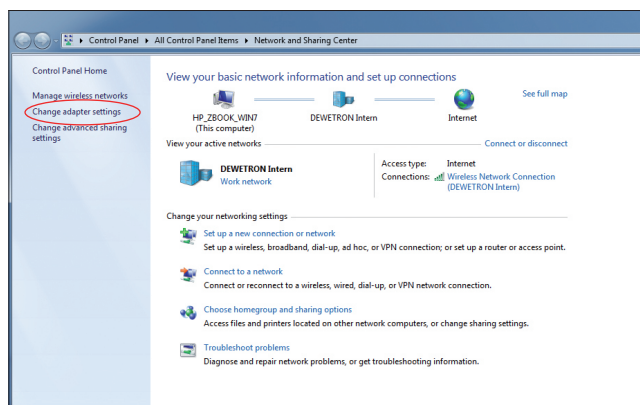
WINDOWS 7 + WINDOWS 10



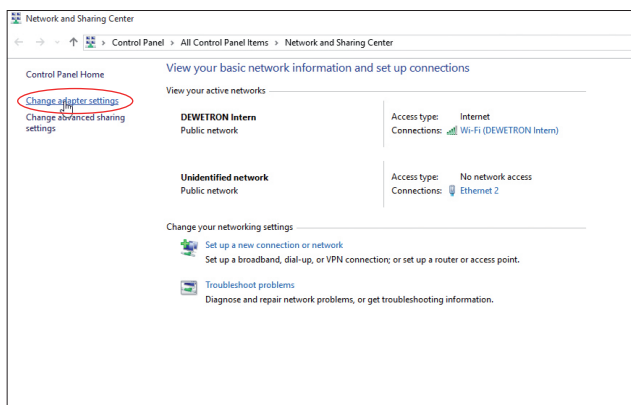
Right-click on network icon and select 'Open Network and Sharing Center'

Click on 'Change adapter settings' on the left.

WINDOWS 7

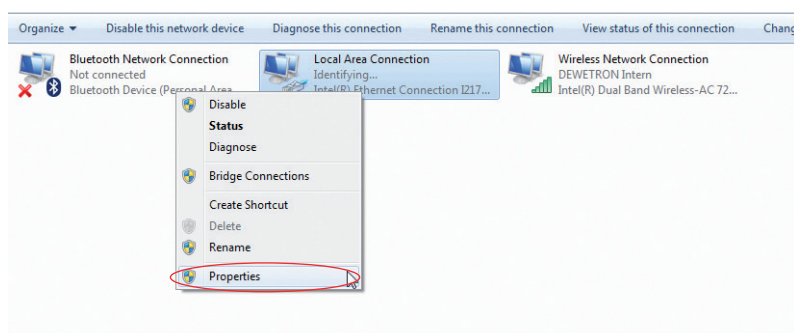


WINDOWS 10



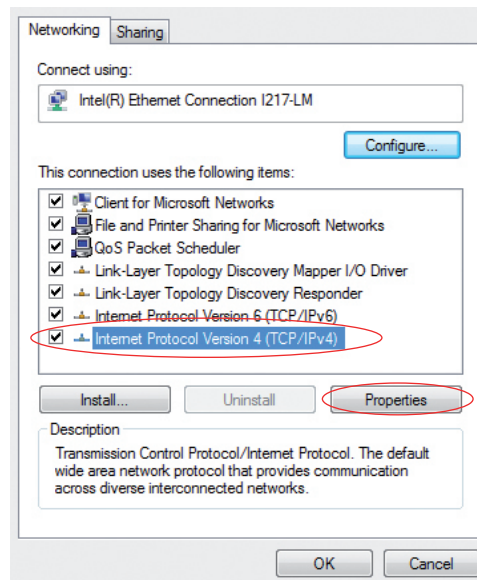
Right click the adapter where the TRIONet is connected and select 'Properties' from the menu.

WINDOWS 7 + WINDOWS 10



Select '*Internet Protocol Version 4 (TCP/IPv4)*' and click on '*Properties*' afterwards.

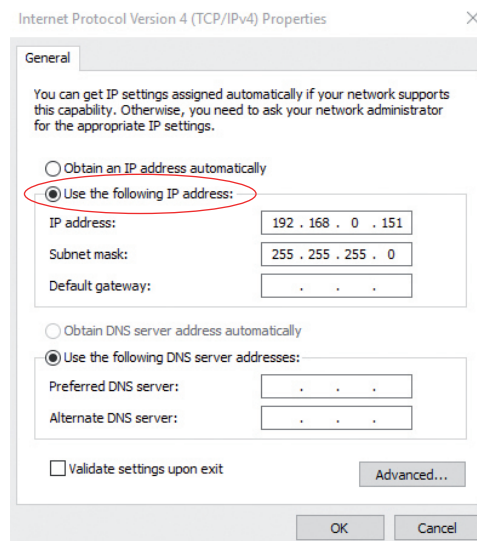
WINDOWS 7 + WINDOWS 10



Check 'Use the following IP address:' and use an IP address within the same range as the TRIONet (e.g. **192.168.0.151**). The current IP address of the TRIONet is shown on the status display. Use the following subnet mask: **255.255.255.0**.

The **default IP** address of the TRIONet is: **192.168.0.150**. DNS servers are not required.

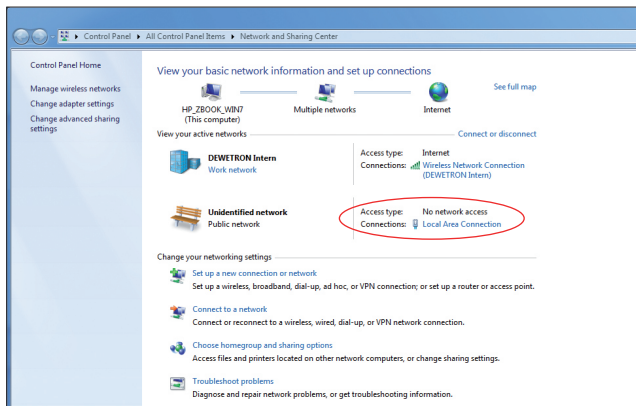
WINDOWS 7 + WINDOWS 10



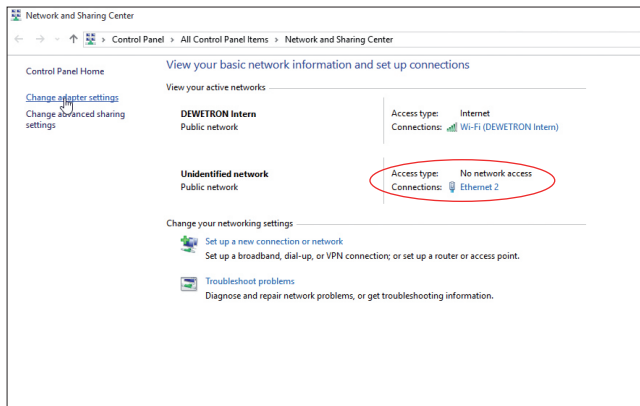
Close all tabs by hitting 'OK'. Now we have set a static IP address to our adapter. In the '*Network and Sharing Center*' you should now see a local area network.

# MAIN SYSTEM

## WINDOWS 7



## WINDOWS 10



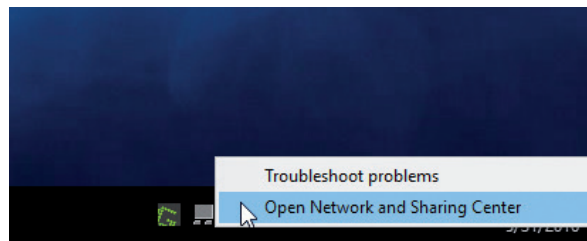
Reboot your Laptop/PC.

## 2.3 Manually setting up USB 3.0 connection of host PC

After the TRIONet has been connected via USB 3.0 cable (included in the kit) to the Laptop/PC, WINDOWS will automatically detect a new hardware and install the corresponding USB 3.0 to Ethernet adapter driver (ASIX AX88179) **when connected to the internet.**

To check if the drivers have been installed correctly, right click on the network icon at the bottom right of your taskbar and select 'Open Network and Sharing Center'.

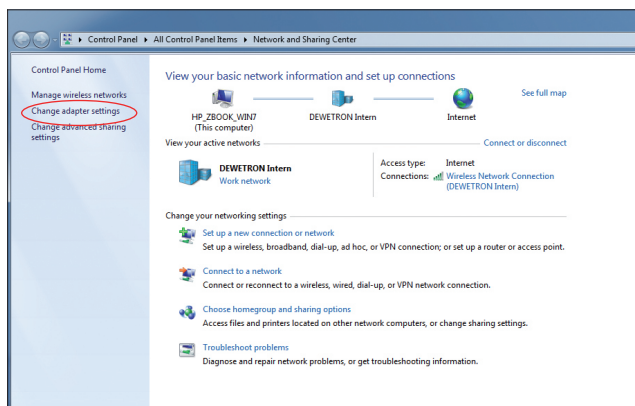
WINDOWS 7 + WINDOWS 10



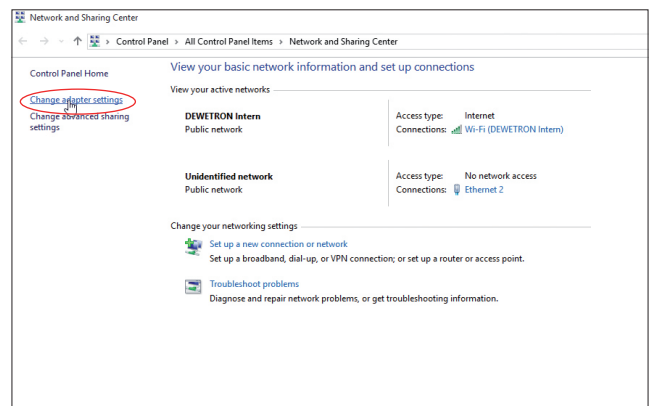
Right-click on network icon and select 'Open Network and Sharing Center'

Click on 'Change adapter settings' on the left.

WINDOWS 7

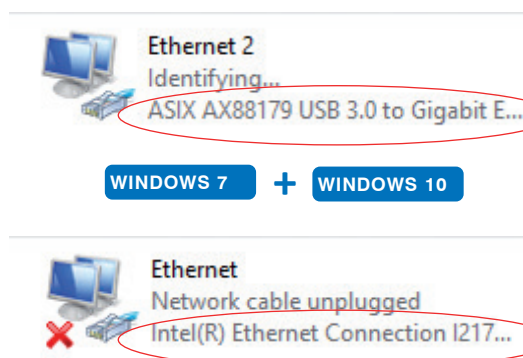


WINDOWS 10



If installed correctly the adapter has to be listed as 'ASIX AX88179 USB 3.0 to Gigabit E...'.  


WINDOWS 7 + WINDOWS 10



WINDOWS 7 + WINDOWS 10

# MAIN SYSTEM

**WARNING:**



*Make sure to use the USB 3.0 cable provided with your system! If the original cable gets lost, replace it with a cable of the same length or less than 2 meters (< 6 ft.)! The total length of the cable **must not** exceed 2 m (6 ft.), otherwise the TRIONet won't connect to the Laptop/PC! DEWETRON offers USB 3.0 cables for your TRIONet in perfect length.*

## • 2.4 Manually USB 3.0 to Gigabit Ethernet driver installation of host PC (static IP)

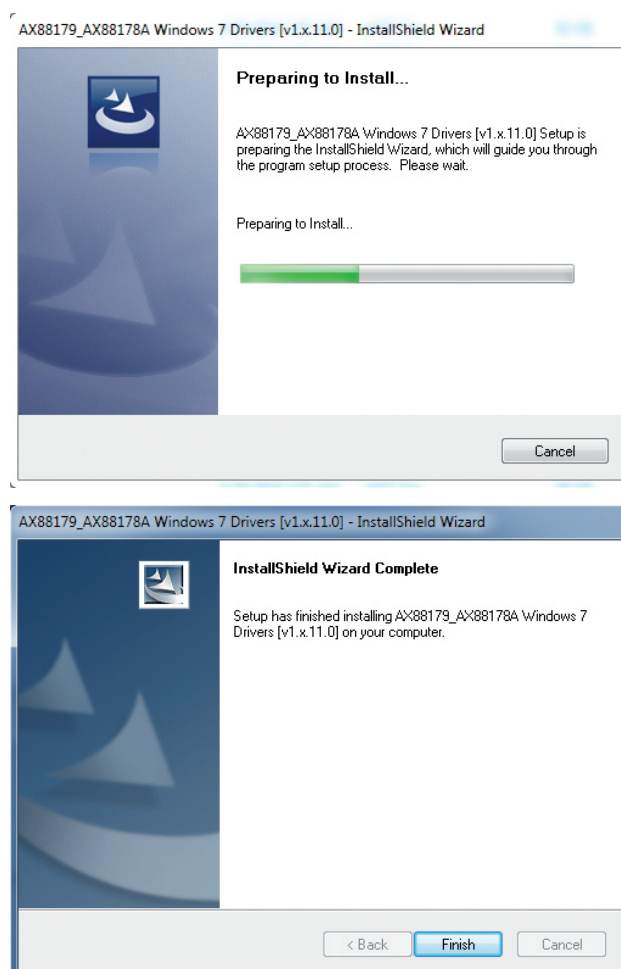
If WINDOWS fails to install the ASIX AX88179 driver automatically, you can do it manually by starting the '**setup.exe**' in the '**AX88179\_178A\_Winx\_v1.x.10.0\_Drivers\_Setup\_v3.0.2.0**' folder on your DEWETRON Install media USB drive and follow the instructions of the installer. The driver can be also found via:

<http://www.asix.com.tw/products.php?op=pltemdetail&PltemID=131;71;112>

WINDOWS 7



WINDOWS 10



To check if the drivers have been installed correctly, right click on the network icon in the bottom right of your taskbar and select '**Open Network and Sharing Center**' > '**Change adapter settings**'.

If installed correctly the adapter has to be listed as '**ASIX AX88179 USB 3.0 to Gigabit E...**'.

WINDOWS 7



WINDOWS 10



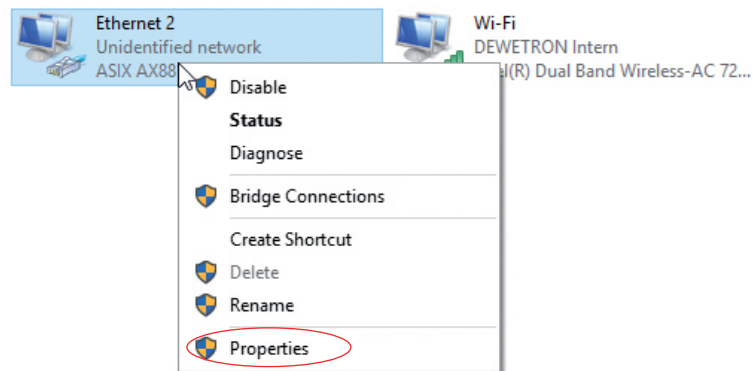
Ethernet 2  
Identifying...

ASIX AX88179 USB 3.0 to Gigabit E...



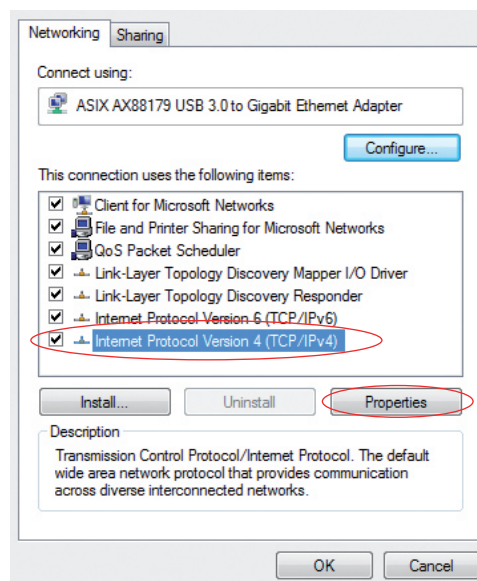
Right click the corresponding adapter (ASIX AX88179..) and select '*Properties*' from the menu.

WINDOWS 7 + WINDOWS 10



Select '*Internet Protocol Version 4 (TCP/IPv4)*' and click on '*Properties*' afterwards.

WINDOWS 7 + WINDOWS 10



# MAIN SYSTEM

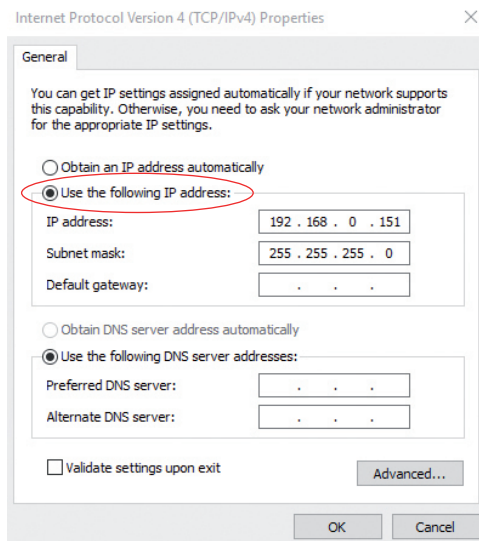
Check 'Use the following IP address:' and use an IP address within the same range as the TRIONet (e.g. **192.168.0.151**). The actual IP address of the TRIONet is shown on the status display. Use the following subnet mask: **255.255.255.0**.

The **default IP** address of the TRIONet is: **192.168.0.150**. DNS server are not required.

WINDOWS 7

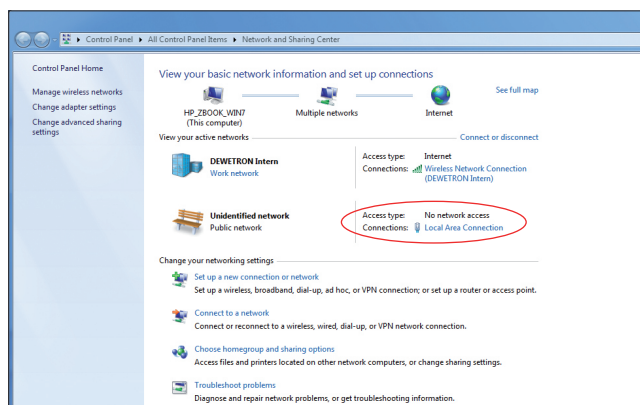


WINDOWS 10

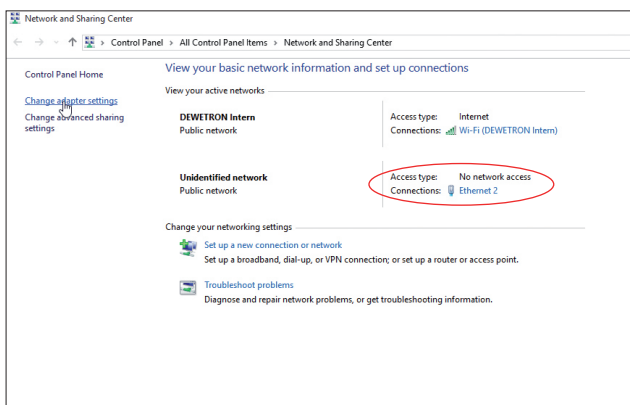


Close all tabs by hitting 'OK'. Now we have set a static IP address to our adapter. In the 'Network and Sharing Center' you should now see a local area network.

WINDOWS 7



WINDOWS 10



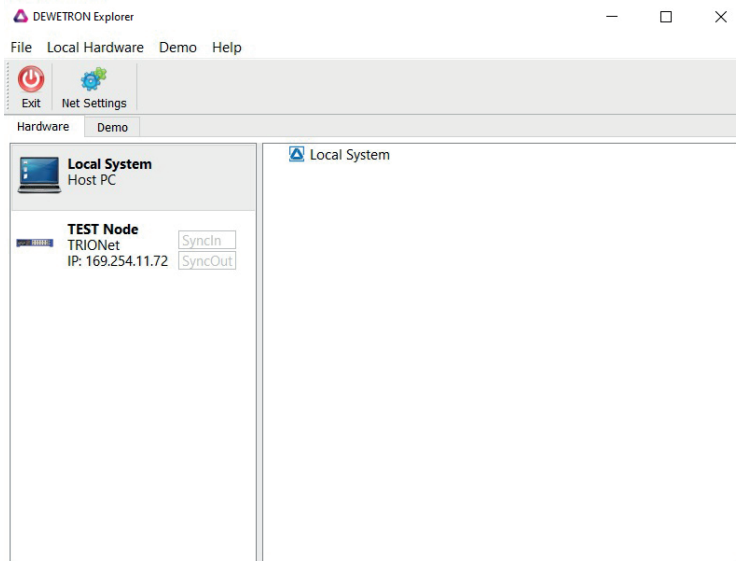
Reboot your Laptop/PC.



### 3. Setting up your TRIONet with DEWETRON Explorer (formerly DEWE2Explorer) (static IP, DHCP, Node name, ...)

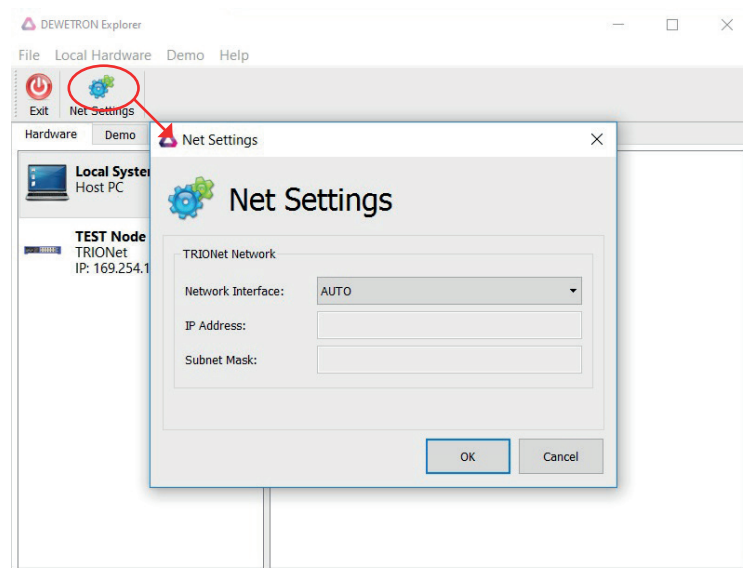
After connecting the TRIONet with your Laptop/PC via desired interface, start the DEWETRON Explorer (formerly DEWE2Explorer) which has been installed with the TRION package, usually via 'Start' > 'All programs' > 'DEWETRON' > 'DEWETRON Explorer (formerly DEWE2Explorer)' or just type 'DEWETRON Explorer (formerly DEWE2Explorer)' in the search bar.

The DEWETRON Explorer (formerly DEWE2Explorer) will list a 'Local System' (which is your Laptop/PC) and the connected TRIONet.



*DEWETRON Explorer (formerly DEWE2Explorer) with 'LocalSystem' and TRIONet*

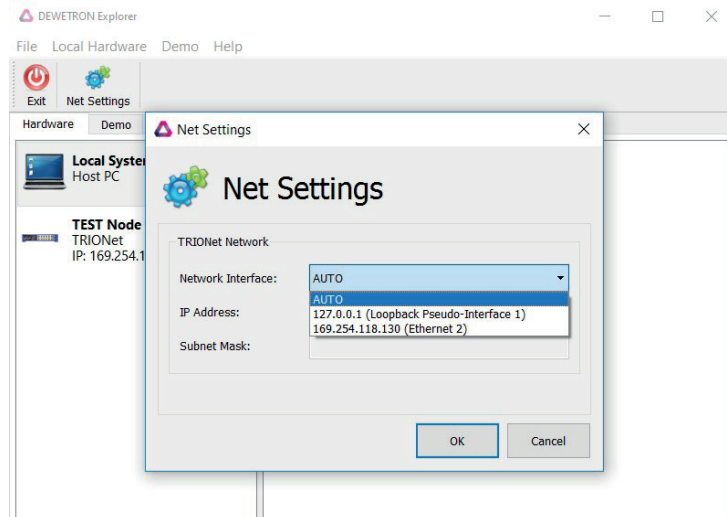
If the systems are not in the same IP-address range, select the 'LocalSystem' and click on 'Net Settings' from the menu bar. The following screen will pop up:



*Select the 'LocalSystem' and click on 'Net Settings' from the menu bar.*

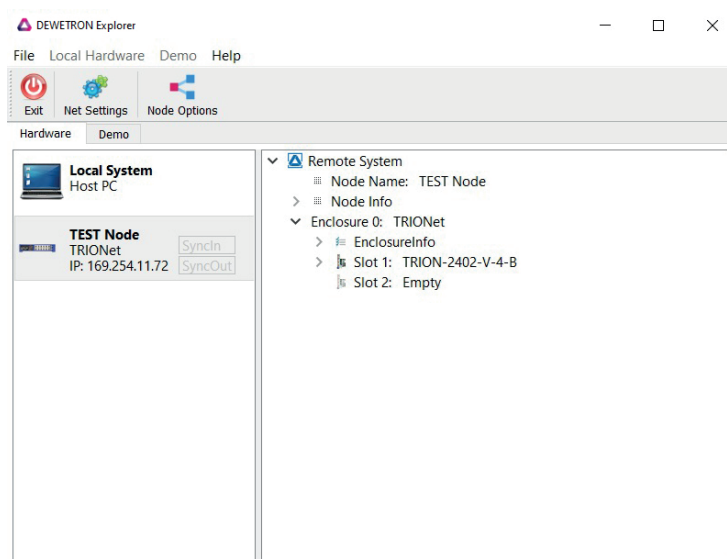
# MAIN SYSTEM

Choose 'AUTO' from the dropdown menu and hit 'OK' afterwards. The DEWETRON Explorer (formerly DEWE2Explorer) will scan all Ethernet adapters and choose the corresponding adapter automatically. It is also possible but not recommended to manually select the adapter.



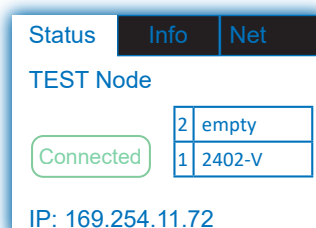
*Choose 'AUTO' from the dropdown menu.*

Now the TRIONet becomes active and by selecting the unit (may take a few seconds), the DEWETRON Explorer (formerly DEWE2Explorer) will show some information (name of chassis, installed TRION™ modules...)

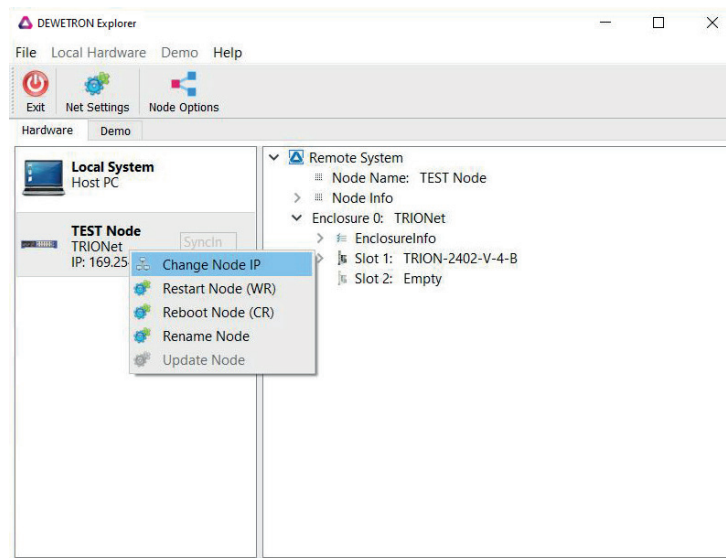


*Select TRIONet to show information*

Also, the status display of the TRIONet will now show a 'connected' symbol. When deselecting the TRIONet in the DEWETRON Explorer (formerly DEWE2Explorer), the 'connected' symbol will disappear from the status display of the unit.



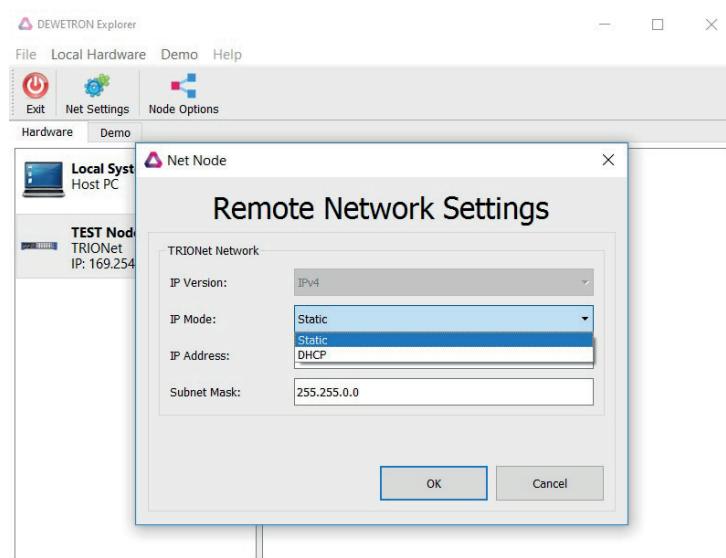
To change the IP-address or the name of the TRIONet node just select and right click the unit in the DEWETRON Explorer (formerly DEWE2Explorer).



TRIONet Node menu

Select 'Change Node IP' from the menu.

Choose 'static' and type in a new IP-address and subnet mask and hit 'OK'.



Select 'Static' as 'IP Mode' and type in your new IP-address.

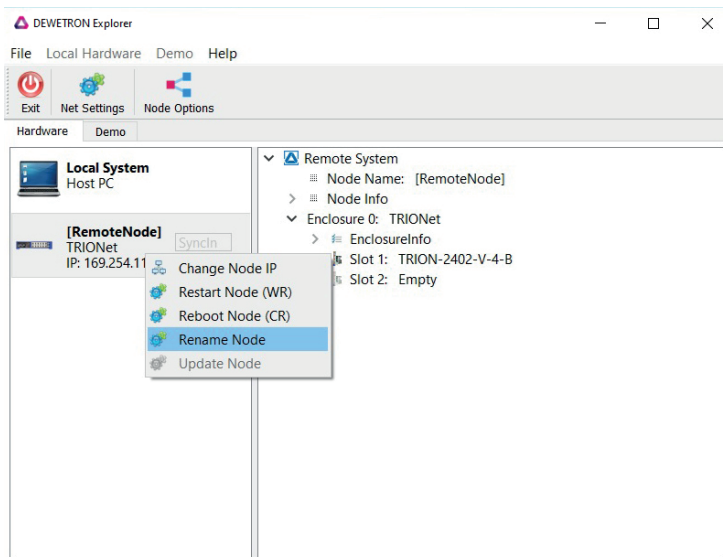
**NOTE:** Choose 'DHCP' if the TRIONet should be implemented in a proprietary, already existing LAN with a DHCP server up and running.

**NOTE:** By changing the IP-address make sure to stay in the same IP-address range as your Laptop/PC otherwise the connection will get lost and you have to modify your adapter settings again. The current IP-address is always shown on the status display of the TRIONet.

**WARNING:** DO NOT change the IP-address while measuring!

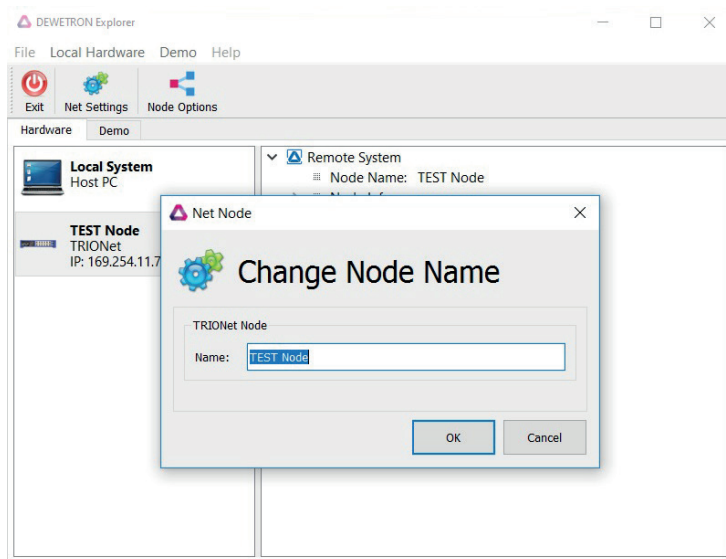
# MAIN SYSTEM

To change the name of the Node select and right click the TRIONet and choose '*Rename Node*' from the menu.



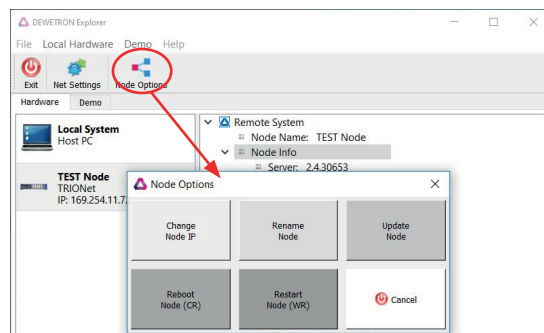
*Select 'Rename Node' from the menu*

Type in a new name for your TRIONet Node and hit 'OK'. The name will also automatically update on the status display of the unit.



*Type in your node name*

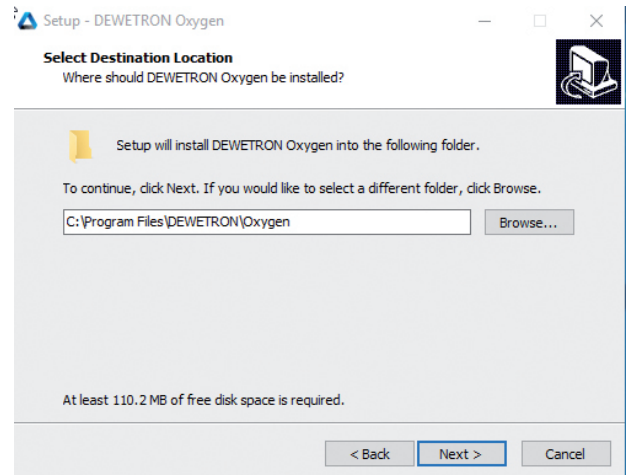
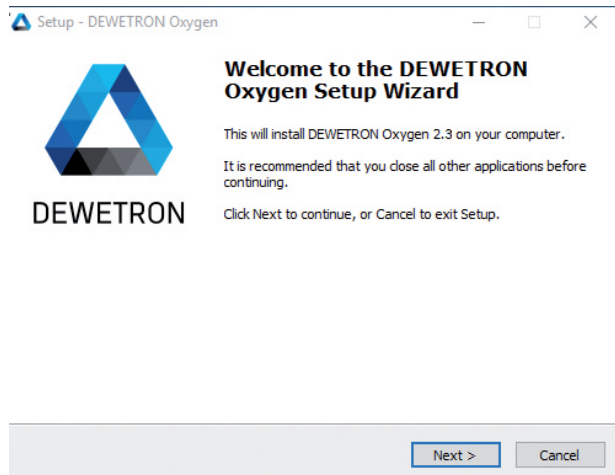
These options are available also by selecting the TRIONet node and clicking on '*Node Options*' from the menu bar.



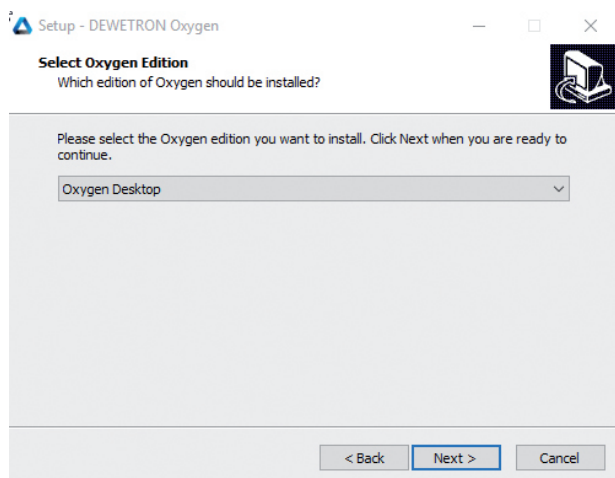
## 4. Installation of the measurement software

### 4.1 OXYGEN installation

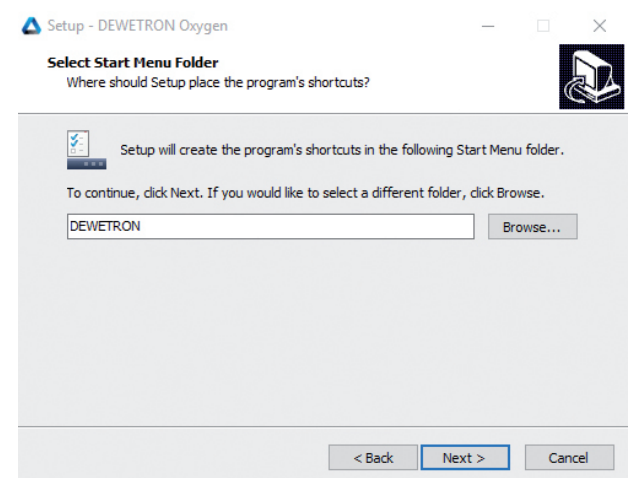
Start the OXYGEN installation by plugging in the DEWETRON Installation media USB stick shipped with your TRIONet into your computer, and execute the “*oxygen\_x86\_setup.exe*” or “*oxygen\_x64\_setup.exe*” file on the USB drive, depending on your platform. Follow the instructions of the installer.



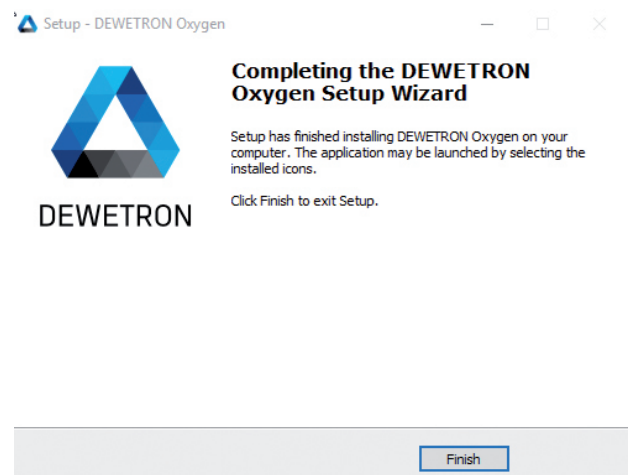
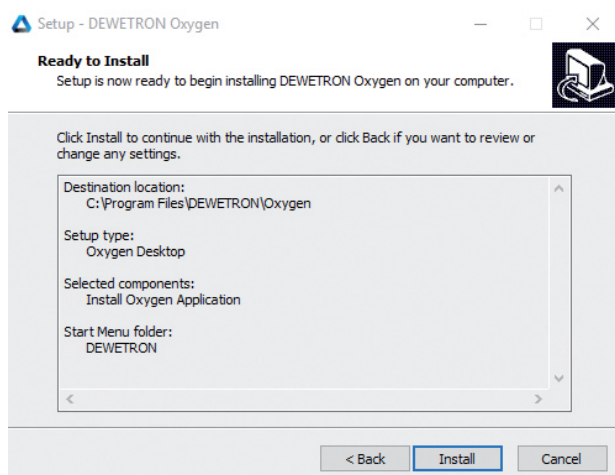
Select the destination location



Select 'Oxygen Desktop' as Oxygen Edition



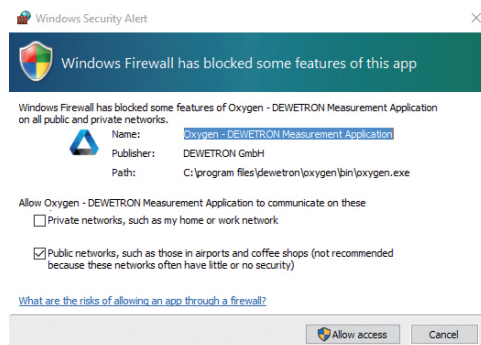
Select the start menu folder



# MAIN SYSTEM

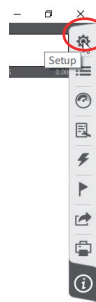
## Setup TRIONet in OXYGEN

After successfully connecting your TRIONet with the Laptop/PC, run OXYGEN usually via 'Start' > 'All Programs' > 'DEWETRON' > 'OXYGEN' or just type 'OXYGEN' in the search bar and hit enter. When you first start OXYGEN in some cases a Windows Firewall prompt will pop up blocking the software. Make sure to allow access through the firewall by clicking on 'Allow access'.



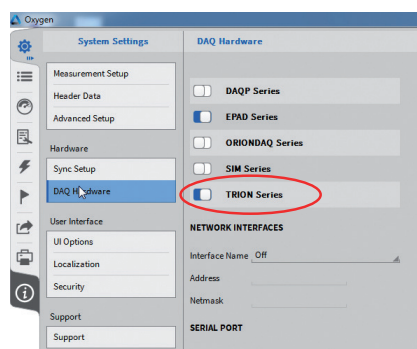
*Allow access through the firewall*

In OXYGEN double click the setup icon or drag it to the left side to expand to full view.



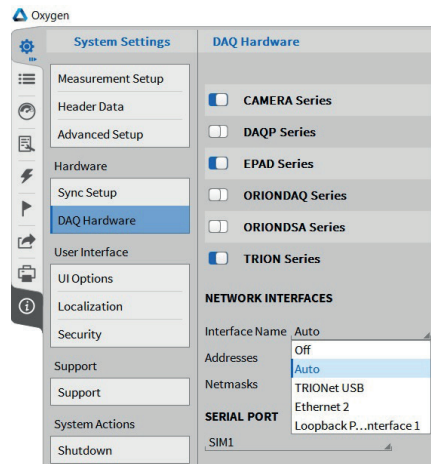
*Double click 'Setup' in OXYGEN*

Select 'DAQ hardware' from System Settings and enable 'TRION series'.



*'DAQ hardware' in System Settings*

Choose 'Auto' from the 'Network Interfaces' drop-down menu. This will scan all ethernet ports and automatically detect the TRIONet device.

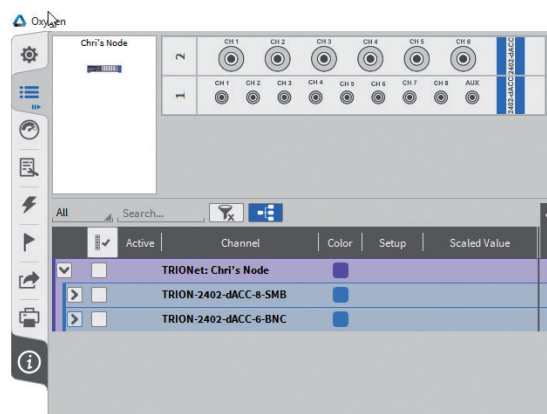


Select 'Auto'

The IP-address of the adapter is shown in the field below.

Now switching to 'Channel list' will display the TRIONet and installed modules.

If there is no TRIONet shown in 'Channel list', the unit is not setup correctly or there is any other issue with the connection. Make sure you have precisely followed the instructions described in chapter 'Connecting your TRIONet to your Laptop/PC' otherwise move to chapter 'Troubleshooting'.



Channel list in OXYGEN

You now have successfully setup your TRIONet in OXYGEN.

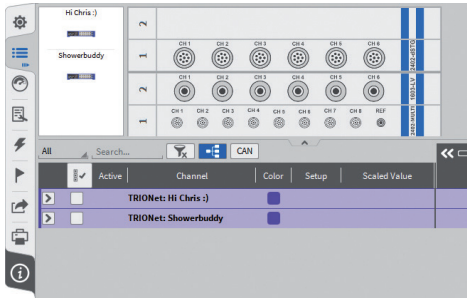


# MAIN SYSTEM

## Synchronization (daisy-chaining multiple TRIONet units)

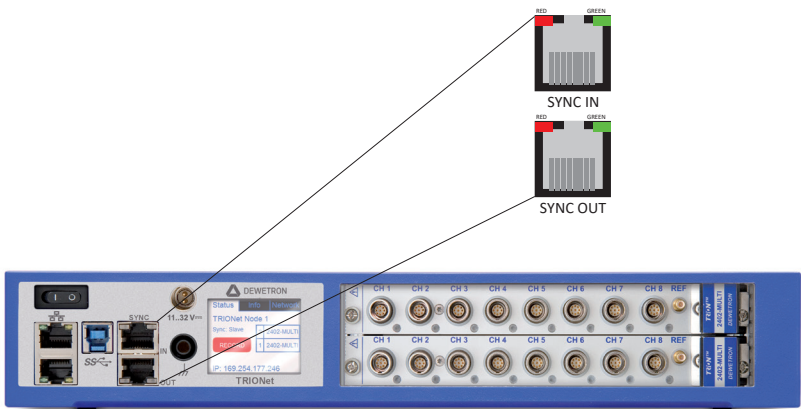
### Synchronization setup in OXYGEN software

*OXYGEN automatically detects and setup all connected TRIONet units for synchronization. No further actions are required.*



### TRION-SNYC-BUS

The TRION-SNYC-BUS (SYNC IN, SYNC OUT) is used to synchronize two or more TRIONet units with up to 100 m distance between each node. The 10 Mhz clock signal, along with acquisition control signals, is transmitted via the RJ-45 connection. The TRION-SNYC-BUS consists of two RJ-45 sockets. One socket being a synchronization IN, whilst the other one can be used as synchronization OUT.



LED indication:

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

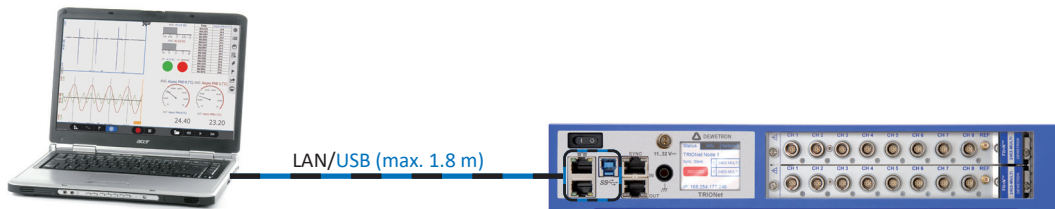
Depending on the usage of the SYNC I/O (input or output) the LED indicates if the system clock is available or received correctly from another system. The green LED indicates that the acquisition is running. If the acquisition stops the LED will be off.



## Synchronization examples

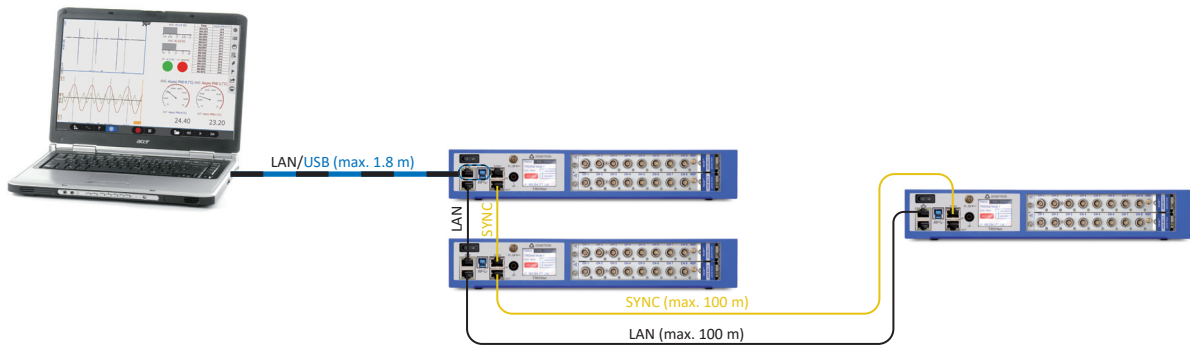
### Single TRIONet configuration

PC/Laptop



### Multiple TRIONet configuration

PC/Laptop



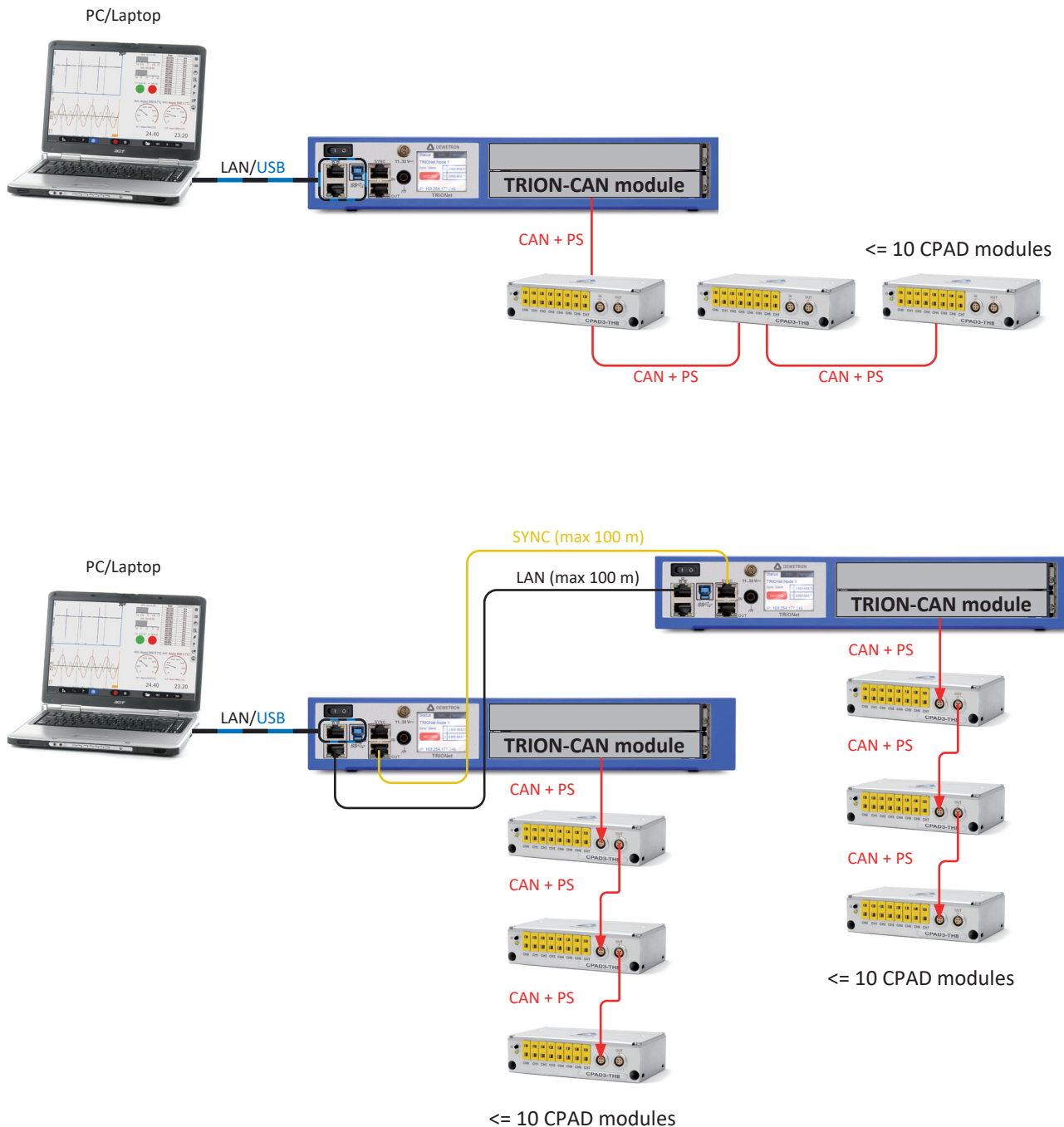
*Max. cable length between each TRIONet node:*      100 m SYNC (328 ft)  
   100 m LAN (328 ft)

*Max. cable length to Laptop/PC:*                              100 m LAN (328 ft)  
   1.8 m USB (6 ft)

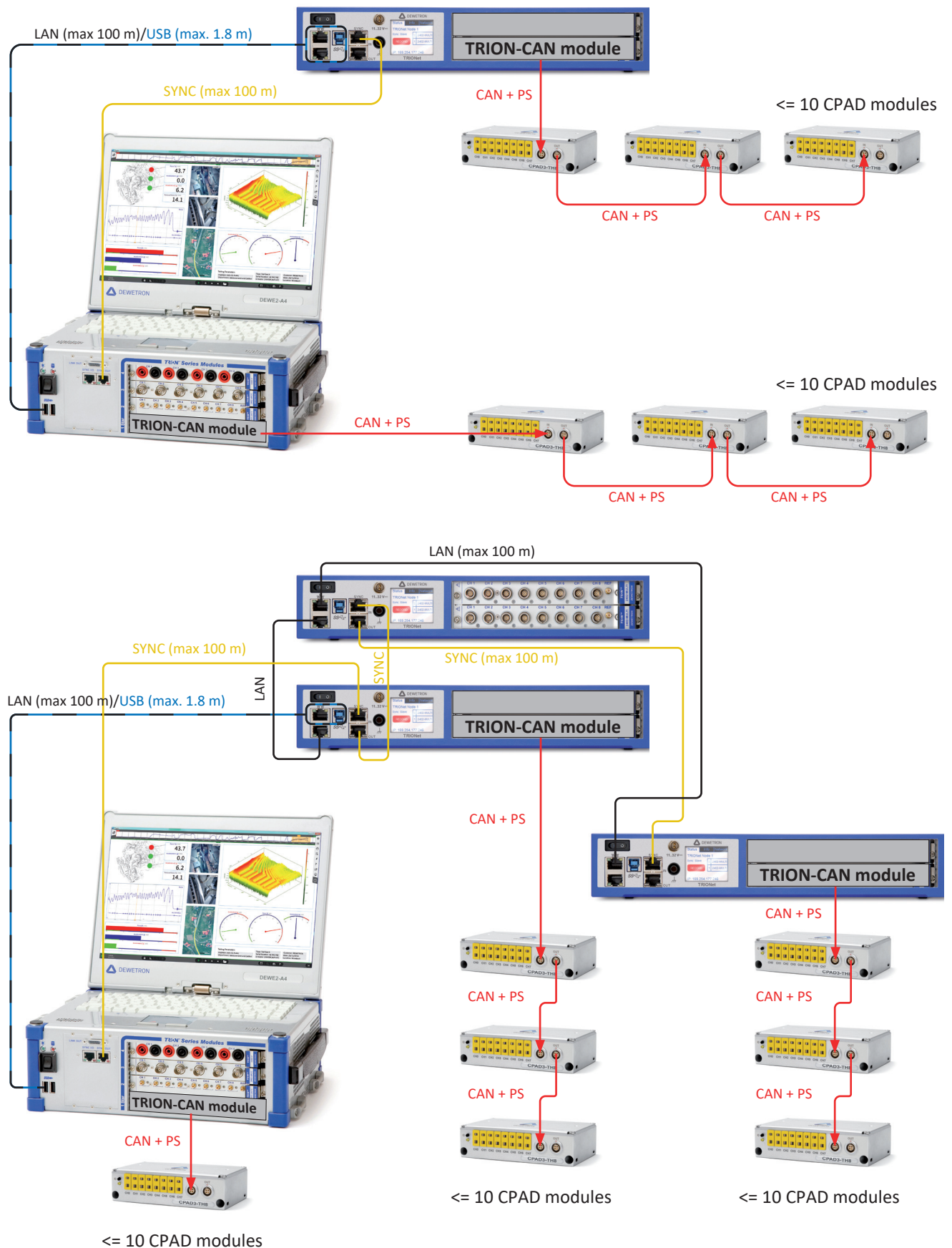
# MAIN SYSTEM

## Connect CPAD2/3 modules to your TRIONet

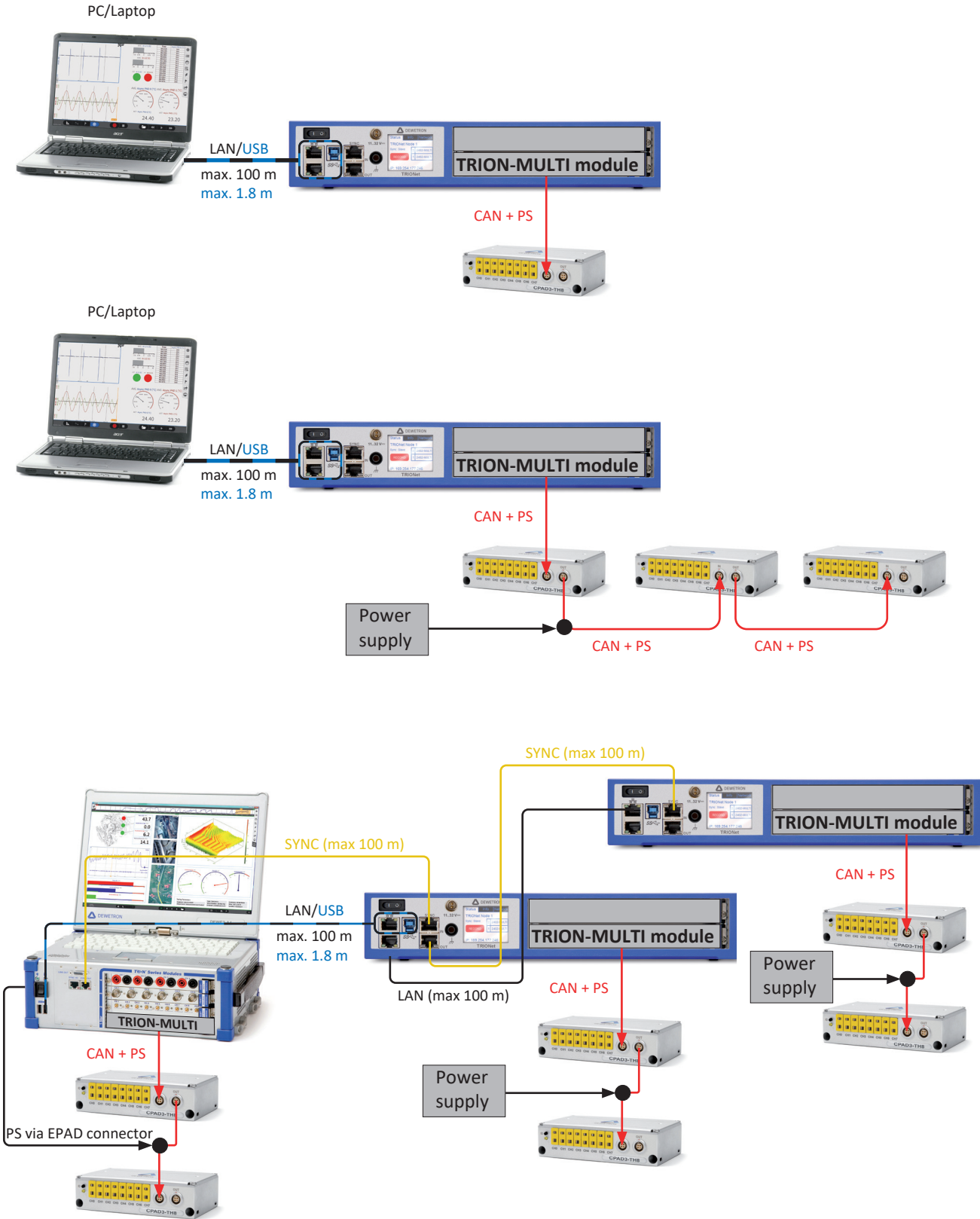
With the flexibility of TRION series modules, it is possible to connect any CPAD2/CPAD3 modules directly to your TRIONet. For the following examples a **TRION-CAN** module is required. A TRION-CAN module can support up to **10 CPAD2/CPAD3 modules**. No additional power supply is required.



# MAIN SYSTEM



For the following examples a **TRION-MULTI** module is required. A TRION-MULTI module can drive up to **1x CPAD2/CPAD3 module directly**. If **more than one CPAD2/CPAD3 modules** are used an **additional power supply** via a split cable **is required**.



## Maintenance

### Firmware upgrade

In this chapter we will describe on how to perform a firmware upgrade of your TRIONet.

#### Requirements:

- > TRIONet
- > Torx T10 screwdriver
- > USB drive (received from DEWETRON or self-created USB drive)
- > 10 minutes of time

# 1

Switch-off the instrument.



# 2

Unscrew the left sidepanel by removing both screws with a TORX T10 screwdriver.



Remove the sidepanel to uncover the USB ports.





# MAIN SYSTEM

## 3

Plug in the USB drive in the lower, blue, USB3.0 port.

The update won't start when plugged-in in the standard USB port.



## 4

Switch-on the instrument. The TRIONet will automatically detect the new firmware and install it from the USB drive.

During the update process, the display will show following messages:



**"Update started.  
Do not power off"**



**"SW-UPDATE:  
Do not power off !!!"**



The update process may take up to 5 minutes.



**"Upd ok - Power off  
Remove USB drive"**

Power off the device first and unplug the USB drive from the device. Reassemble the sidepanel in reverse order of disassembly. Switch-on the TRIONet. The current firmware revision is displayed on the 'Info' tab.



Firmware revision

Status	Info	Net
Power Consum.:	15.3 W	
System Temp.:	43.5 C	
Env. Temp.:	24.2 C	
Firmware:	2.4.2.0	
Server:	2.4.30645	
S/N:	CXXXXXXX	

## Create USB drive for firmware upgrade

If you haven't received an USB drive from DEWETRON with the latest firmware, please follow the next steps on how to create a USB drive to upgrade the firmware of your TRIONet.

### Requirements:

- > USB drive (min. size **8 GB**, **existing files on the USB drive will be deleted**)
- > Firmware package for TRIONet (download at: <https://ccc.dewetron.com/pr/trionet>, login required)
- > 5 to 10 minutes of time

# 1

Go to <https://ccc.dewetron.com/pr/trionet> and download the 'Create new USB update stick' archive. You have to be logged in to download the firmware. Sign up a new account by clicking the 'Register' button on the top right.

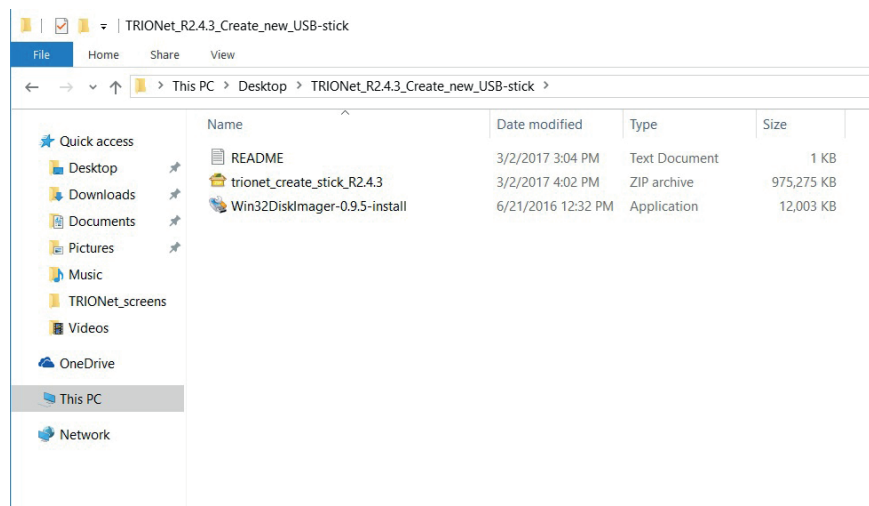


# 2

Extract the downloaded archive using [7zip](#) or similar file extractor software. It is recommended to extract the archive at the desktop.

After extracting following files should be available within the folder:

- > **trionet\_create\_stick\_R2.x.x.img**
- > **win32DiskImager-x.x.x-install.exe**
- > **README.txt**



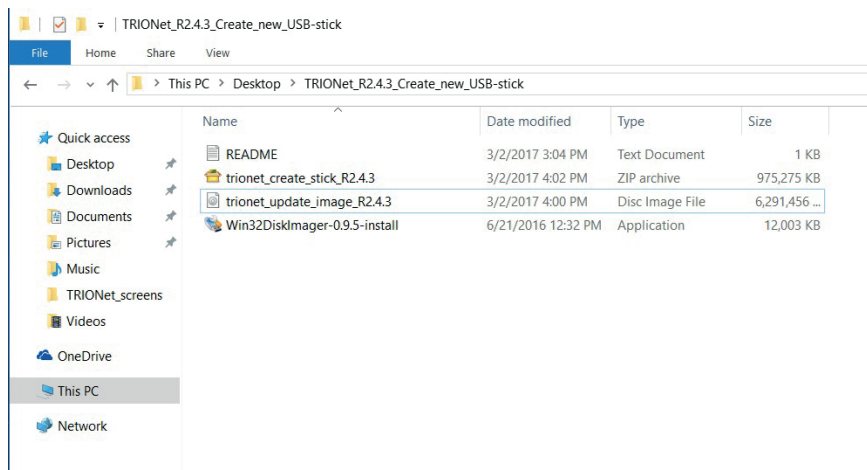
# MAIN SYSTEM

# 3

Extract the 'trionet\_create\_stick\_R2.x.x.zip' in the same folder

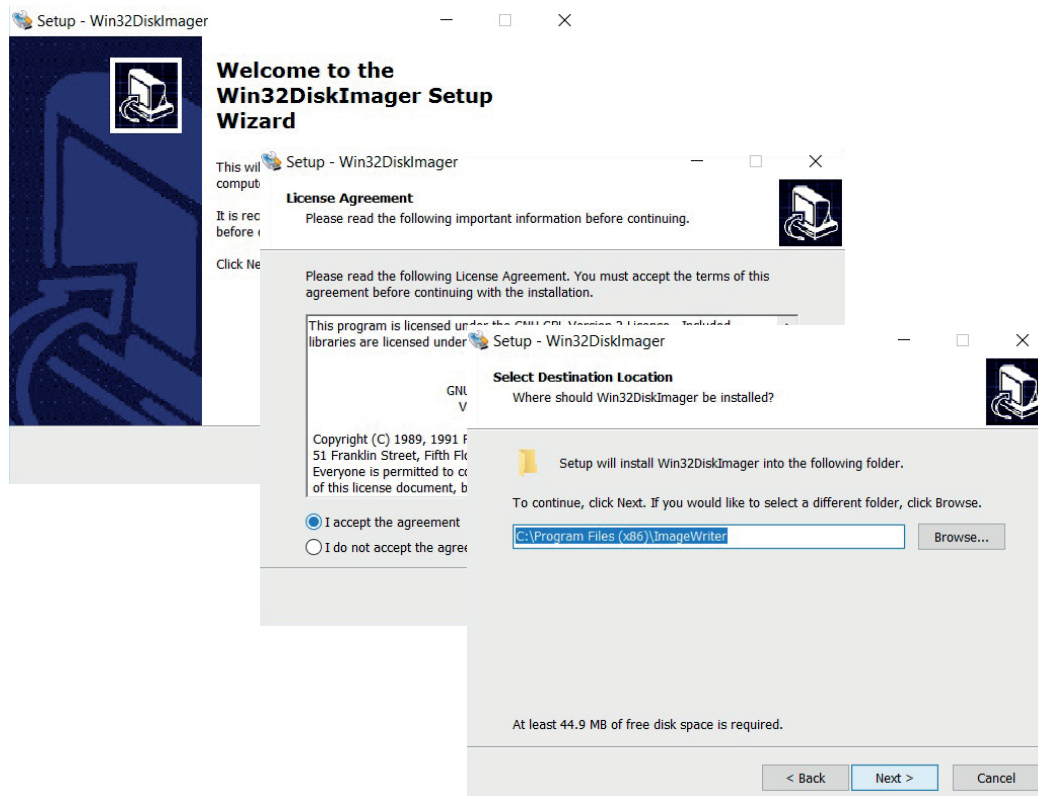
After extracting following files should be available:

- > **trionet\_create\_stick\_R2.x.x.zip**
- > **trionet\_update\_image\_R2.x.x.img**
- > **win32DiskImager-x.x.x-install.exe**
- > **README.txt**



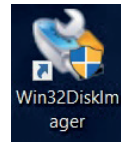
# 4

Run Win32DiskImager-x.x.x-install.exe (if not already installed). The install wizard will guide you through the installation process.

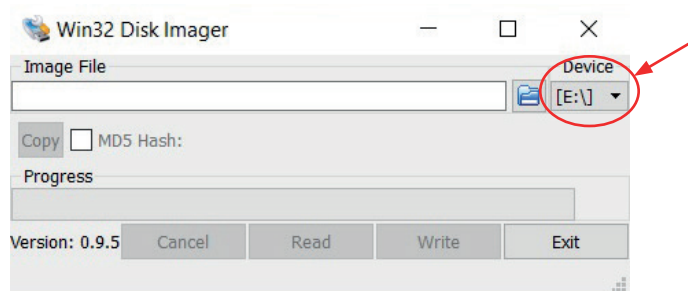




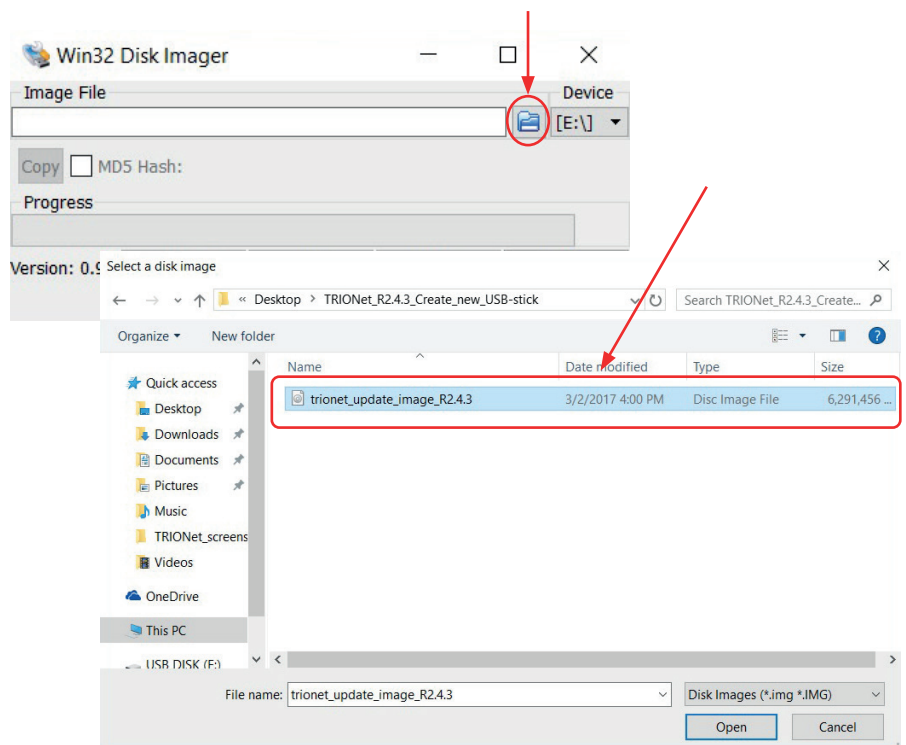
- 5** Plugin an empty USB drive and remember the drive letter which is automatically assigned by Windows (e.g. 'E:\'). Run Win32DiskImager.exe as administrator by right clicking the icon on the desktop and select 'Run as administrator'.



- 6** Choose the USB drive by selecting the associated drive letter from the 'Device' dropdown menu (e.g. 'E:\'). Usually Win32DiskImager automatically detects plugged-in USB drives but please double check if the associated drive letter is selected correctly. Win32DiskImager will not list any harddrives.



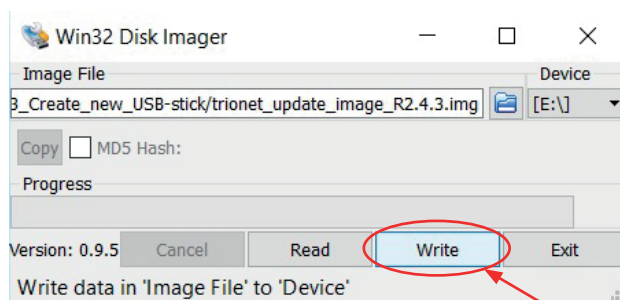
- 7** Browse and select the image file which has been extracted in step 3 (**trionet\_update\_image\_R2.x.x.img**) by clicking the folder icon.



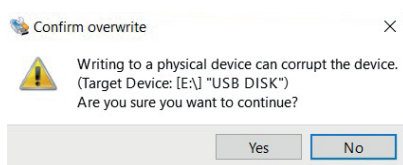
# MAIN SYSTEM

# 8

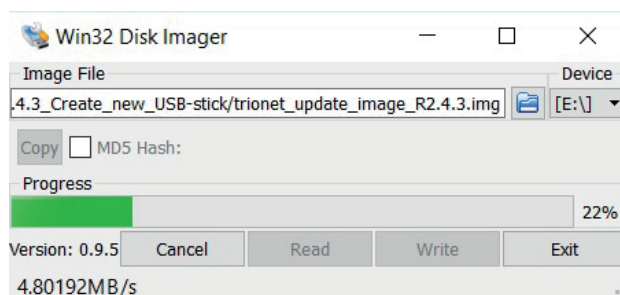
Hit 'Write' to start the progress and write the image file on the USB drive.



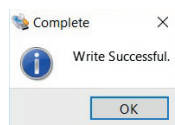
Check the target device and confirm overwrite by clicking 'Yes'.



Writing progress starts...



Write successful!



Following files are on your USB drive:



**NOTES:** With firmware version 5.0 or newer, only the image file is written on your USB drive. All .eep and .hex files are included in the image file. In general, with firmware version 5.0 or higher it is recommended anyway to perform a remote update of the TRIONet.

Name	Date modified	Type	Size
EEPROM.eep	3/2/2017 2:09 PM	EEP File	3 KB
InitialEEPROM.eep	3/2/2017 2:09 PM	EEP File	5 KB
TRION_Boot.hex	3/2/2017 2:10 PM	HEX File	9 KB
TRION_NET.hex	3/2/2017 2:10 PM	HEX File	361 KB
image.img	3/2/2017 11:03 AM	GZip compressed ...	286,462 KB

Congratulations! You now have successfully created a USB drive for firmware update of your TRIONet.

## Updating firmware files on existing USB drive

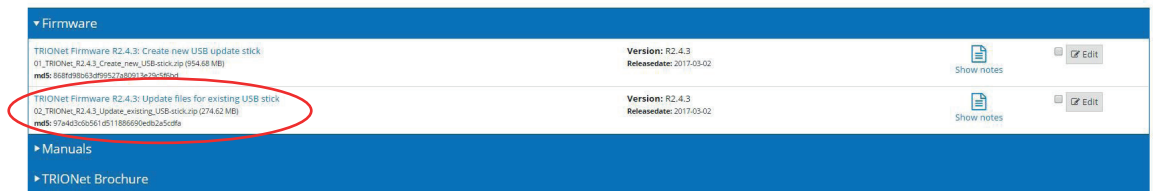
The next steps will describe on how to update the firmware files on your DEWETRON or self created USB drive.

### Requirements:

- > USB drive (DEWETRON factory default or created USB drive as described in chapter 'Create USB drive for firmware upgrade')
- > Firmware files for TRIONet (download at: <https://ccc.dewetron.com/pr/trionet>, login required)
- > 5 minutes of time

# 1

Go to <https://ccc.dewetron.com/pr/trionet> and download the 'Update files for existing USB stick' archive. You have to be logged in to download the files. Sign up a new account by clicking the 'Register' button on the top right.

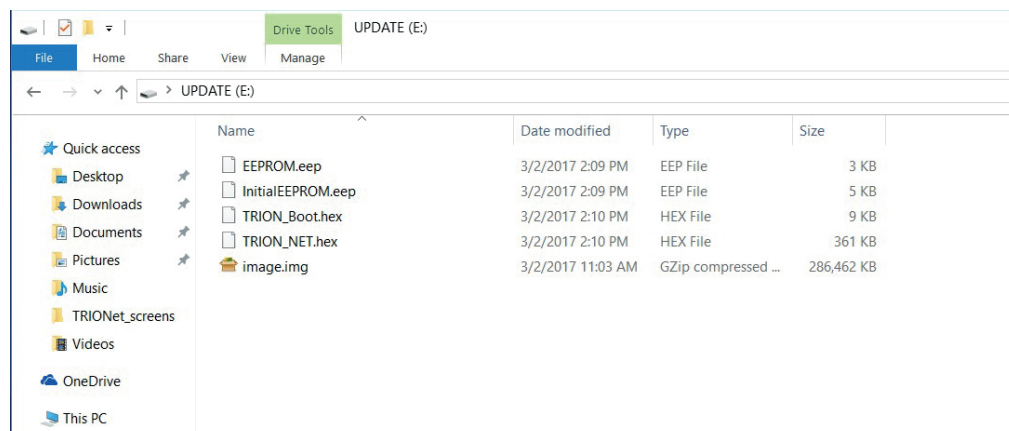


# 2

Extract the downloaded archive using [7zip](#) or similar file extractor software. It is recommended to extract the archive at the desktop.

After extracting following files should be available within the folder:

- > **EEPROM.eep**
- > **InitialEEPROM.eep**
- > **TRION\_Boot.hex**
- > **TRION\_NET.hex**
- > **image.img**



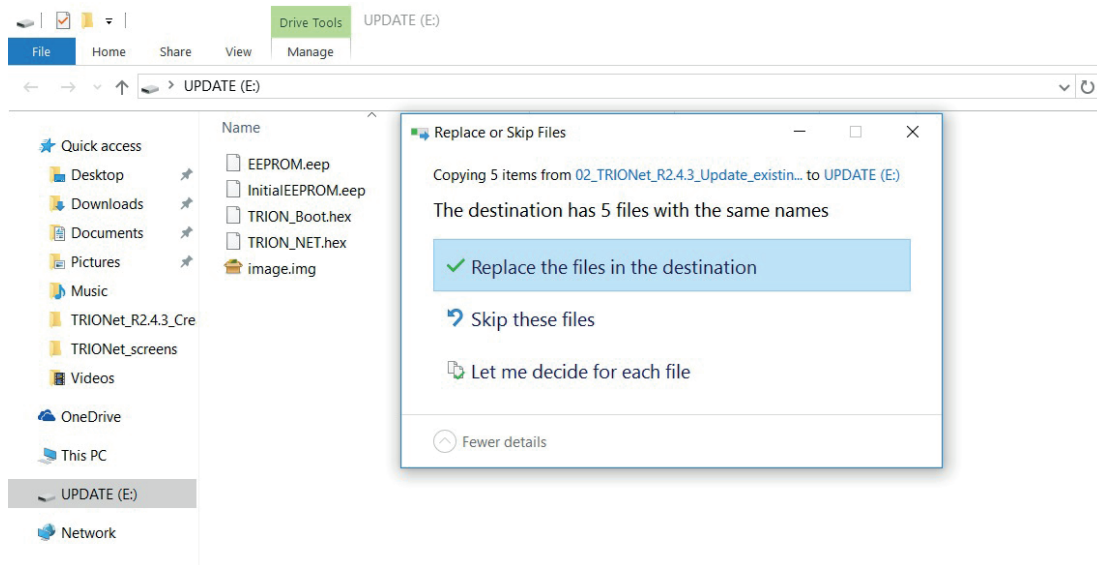
**NOTES:** With firmware version 5.0 or newer, only the image file needs to be replaced. All .eep and .hex files are included in the image file. In general, with firmware version 5.0 or higher it is recommended anyway to perform a remote update of the TRIONet.

# MAIN SYSTEM

# 3

Copy & Replace the existing files on your USB drive with the files currently downloaded and extracted. Your USB drive has been successfully updated.

**WARNING:** *The firmware update won't work if the firmware files are copied on an empty USB drive only. Please refer to 'Create an USB drive for firmware update' first.*



## Perform a remote update of your TRIONet w/o a USB drive (requires Firmware 5.0 or newer)

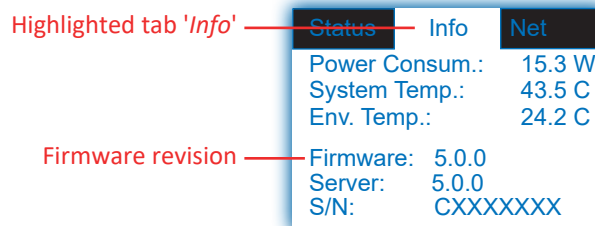
The next steps will describe on how to update the firmware files on your TRIONet without the needs of a USB drive.

### Requirements:

- > TRIONet connected to your Laptop/PC
- > Firmware 5.0 or higher installed on your TRIONet
- > Firmware files for TRIONet (download at: <https://ccc.dewetron.com/pr/trionet>, login required)
- > 5 minutes of time

# 1

On your TRIONet, check the firmware by tapping the Info-Tab on your screen.



**NOTE:** To perform a remote firmware update of your TRIONet, firmware 5.0 or later must already be installed. If your device has an older firmware installed, you have to manually perform a firmware update with a USB drive -> see previous chapters.

# 2

Go to <https://ccc.dewetron.com/pr/trionet> and download the 'R5.x.x Remote Update' archive. You have to be logged in to download the files. Sign up a new account by clicking the 'Register' button on the top right.

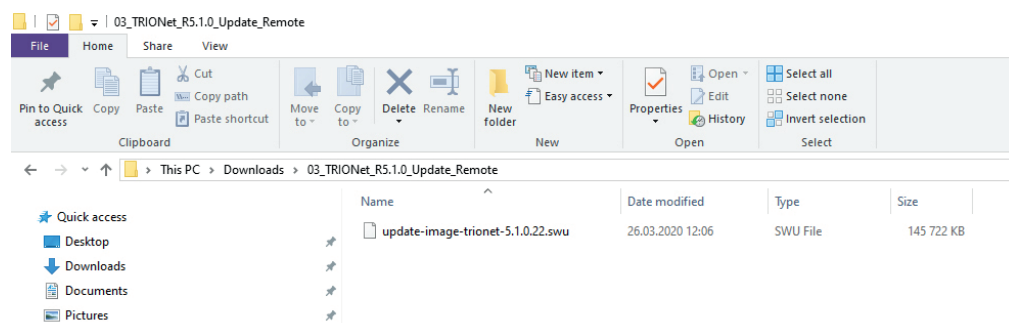


# 3

Extract the downloaded archive using [7zip](#) or similar file extractor software. It is recommended to extract the archive to the desktop.

After extracting the following file should be available within the folder:

> **update-image-trionet-5.x.x.xx.swu**



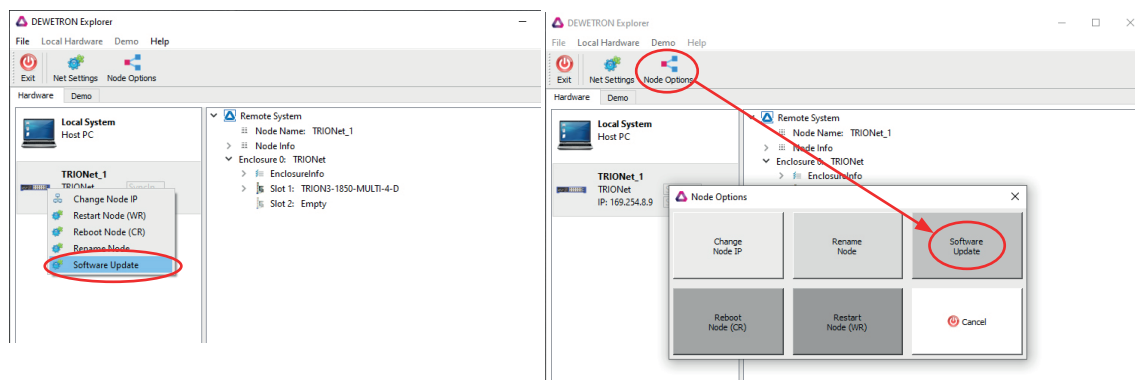
# MAIN SYSTEM

# 4

At this point at the latest, connect your TRIONet to the Laptop/PC and start the DEWETRON Explorer (formerly DEWE2Explorer) which has been installed with the TRION package, usually via 'Start' > 'All programs' > 'DEWETRON' > 'DEWETRON Explorer (formerly DEWE2Explorer)' or just type 'DEWETRON Explorer (formerly DEWE2Explorer)' in the search bar.

The DEWETRON Explorer (formerly DEWE2Explorer) will list a 'Local System' (which is your Laptop/PC) and the connected TRIONet.

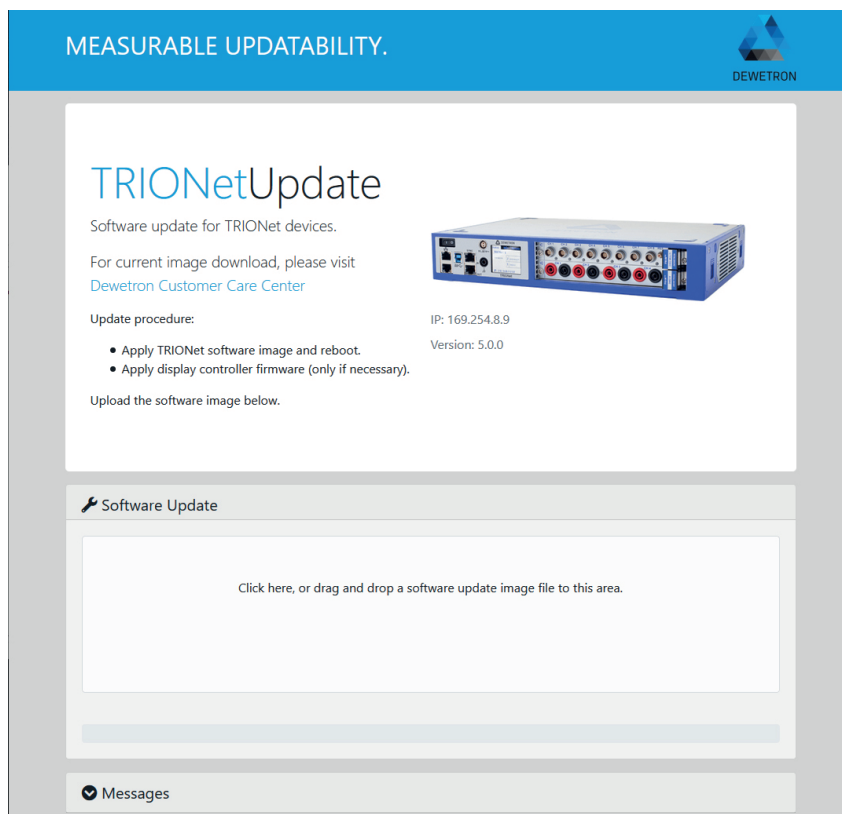
To initiate a firmware update either right-click on your TRIONet and hit 'Software update' or click on 'Node Options' and select 'Software Update'.



# 5

After clicking on 'Software Update' a browser window pops open (depending on installed browser on your Laptop/PC). This window shows you the set IP-address as well as the installed firmware on your TRIONet. Furthermore, there is also a link to the latest update image file if it hasn't been downloaded yet.

To start the update procedure, simply drag and drop the **update-image-trionet-5.x.x.xx.swu** file to the designated area. You can also simply click that area and browse your .swu file.



During the update process, the display will show the following message:



**"Update started.  
Do not power off"**



After the update process the TRIONet will restart automatically. The current firmware revision is displayed on the 'Info' tab.

Highlighted tab 'Info'

Firmware revision

Status	Info	Net
Power Consum.:	15.3 W	
System Temp.:	43.5 C	
Env. Temp.:	24.2 C	
Firmware:	5.1.0	
Server:	5.1.0	
S/N:	CXXXXXXX	

Congratulations! You now have successfully updated the firmware of your TRIONet.



**NOTE:** *There will be no warning or message when updating the same firmware again.*



# MAIN SYSTEM

## Troubleshooting

**TRIONet can't be detected if connected to Laptop/PC with USB 3.0 at all.**

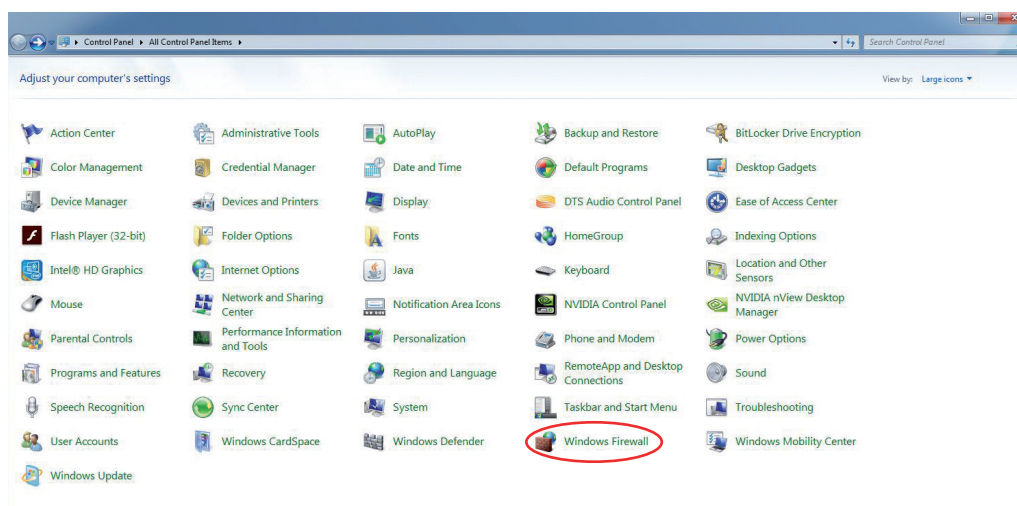
- > Check your USB cable for damages.
- > Check if plugged-in properly into TRIONet as well as Laptop/PC.
- > Check overall cable length. The cable length must not exceed 1.8 m (6 ft)! If you are using a USB 3.0 Type-C adaptor, do not exceed overall cable length of 1.8 meters (6 ft) and check if the adaptor works properly.

**Two TRIONet units are daisy-chained and implemented into an existing company network. Only one TRIONet is found. What can I do?**

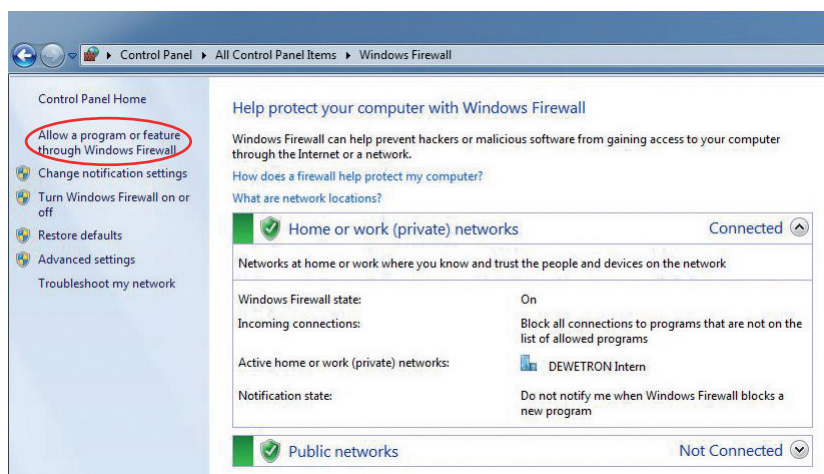
- > Contact the IT-administration. Some IT infrastructures do not allow to connect more than one device to an ethernet plug so daisy-chaining TRIONet units or using a network switch is not possible.

**TRIONet can't be found in OXYGEN/DEWETRON Explorer (formerly DEWE2Explorer) although the IP-address is setup correctly.**

- > Check your firewall settings. Allow access for OXYGEN and DEWETRON Explorer (formerly DEWE2Explorer) through Windows Firewall.  
Click 'Start' and type 'Control Panel' in the search bar. Click on 'Windows Firewall'.



Select 'Allow a program or feature through Windows Firewall' from the left menu.





Allow access to following programs:

- Dewetron DEWETRON Explorer (formerly DEWE2Explorer)
- Oxygen - DEWETRON Measurement Application

## Allow programs to communicate through Windows Firewall

To add, change, or remove allowed programs and ports, click Change settings.

What are the risks of allowing a program to communicate?

Change settings

Allowed programs and features:

Name	Home/Work (Private)	Public
<input type="checkbox"/> BITS Peercaching	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> BranchCache - Content Retrieval (Uses HTTP)	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> BranchCache - Hosted Cache Client (Uses HTTPS)	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> BranchCache - Hosted Cache Server (Uses HTTPS)	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> BranchCache - Peer Discovery (Uses WSD)	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Client for NFS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/> Connect to a Network Projector	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Core Networking	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Dewetron Dewe2Explorer	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Dewetron TRIONet DEWESoft	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Distributed scan client components	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/> Distributed Transaction Coordinator	<input type="checkbox"/>	<input type="checkbox"/>

Details... Remove

Allow another program...

## Allow programs to communicate through Windows Firewall

To add, change, or remove allowed programs and ports, click Change settings.

What are the risks of allowing a program to communicate?

Change settings

Allowed programs and features:

Name	Home/Work (Private)	Public
<input checked="" type="checkbox"/> Google Chrome	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/> HomeGroup	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> iSCSI Service	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> LPD Service	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/> Media Center Extenders	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Netlogon Service	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Network Discovery	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Oxygen - DEWETRON Measurement Application	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/> Performance Logs and Alerts	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Remote Assistance	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Remote Desktop	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Remote Desktop - RemoteFX	<input type="checkbox"/>	<input type="checkbox"/>

Details... Remove

Allow another program...

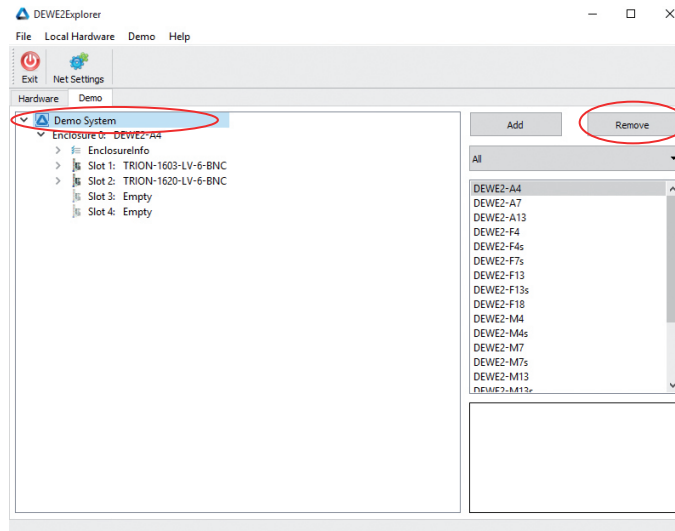
If you are using third-party firewall software please contact your IT-administration or refer to the corresponding technical reference manual.

# MAIN SYSTEM

**Two or more TRIONet units are connected to a Laptop/PC and found in DEWETRON Explorer (formerly DEWE2Explorer) but unfortunately measuring in Oxygen fails.**

- > Check if there has been a demo system created in your DEWETRON Explorer (formerly DEWE2Explorer) and remove it. Oxygen can't make any differences between virtually created demo systems and physically connected instruments. The connected TRIONet units are awaiting a clock signal from the virtually created demo system (which will not happen) and won't run in OXYGEN.

To remove a demo system start the DEWETRON Explorer (formerly DEWE2Explorer) and navigate to the 'Demo' tab. Remove any created demo system by selecting it and hit the 'Remove' button.



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# CE-Certificate of Conformity



Manufacturer:

**DEWETRON GmbH**

Address:

**Parkring 4  
8074 Grambach, Austria**

Tel.: +43 316 3070 0

Fax: +43 316 3070 90

e-mail: [sales@dewetron.com](mailto:sales@dewetron.com)

<http://www.dewetron.com>

Name of product:

**TRIONet**

Kind of product:

*Data acquisition front-end*

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 harmonisation 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:

<b>L V E M C</b>	<b>Safety</b>	IEC 61010-1:2011	
	<b>Emissions</b>	EN 61000-6-4	EN 55011 Class B
	<b>Immunity</b>	EN 61000-6-2	Group standard

**Graz, June 01, 2016**

Place / Date of the CE-marking

Ing. Thomas Propst / Manager Total Quality

# ▼ NOTES

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