



DEWETRON

# TRIONet

MEASUREMENT SYSTEM  
FOR USB 3.0 & ETHERNET



**THE MEASURABLE DIFFERENCE.**

# TRIONet

## THE UNIVERSAL MEASUREMENT SOLUTION

TRIONet – the flexible measurement system for USB 3.0 and Ethernet measurements. Decentralized measurement tasks are easily managed with intelligent, simple cross-linking and the capability to increase the number of input channels as needed.



### EASY-TO-USE: TOUCH-DISPLAY AND AUTO- CONFIGURATION

Zero configuration effort is needed. Simply hook-up your TRIONet to any PC or laptop. It's that simple.



#### LOCAL OR DISTRIBUTED MEASUREMENTS WITH ONE SOLUTION

Whether in the field or in the office there can be several hundred feet between the TRIONet and your PC or laptop, impacting data integrity. TRIONet's integrated synchronization between devices and remote PCs makes the TRIONet the ideal solution for distributed measurement tasks.

#### FLEXIBLE CONNECTION TO THE COMPUTER WORLD

USB or Ethernet? There is nothing to choose. With the versatility of both USB 3.0 and Gigabit Ethernet connector ports the right highspeed interface is always available.

#### FLEXIBILITY FOR AN UNBEATABLE PRICE-PERFORMANCE RATIO

TRIONet is easily customized to numerous measurement requirements by exchanging one or both of the TRIONet modules. Expand the channel count by synchronizing other systems with the TRIONet for more versatility.

# OXYGEN



## DATA ACQUISITION & ANALYSIS SOFTWARE

Measure, store, view and analyze your measurement data with maximum efficiency. The measurement software OXYGEN – also a DEWETRON product – enables gapless data acquisition.

As OXYGEN is the most intuitive measurement software, it can simply be installed on any PC. Customize the software according to your measurement tasks by defining different screens and views!



### THE MOST COMPREHENSIVE DATA ACQUISITION SOFTWARE

- > Multiple measurement screens
- > Ensures efficiency & performance
- > OXYGEN-NET for networked measurements
- > Analyze while recording
- > Logging & recording
- > Viewing & analyzing
- > Multi-touch operation

### STANDARD SOFTWARE FEATURES IN OXYGEN

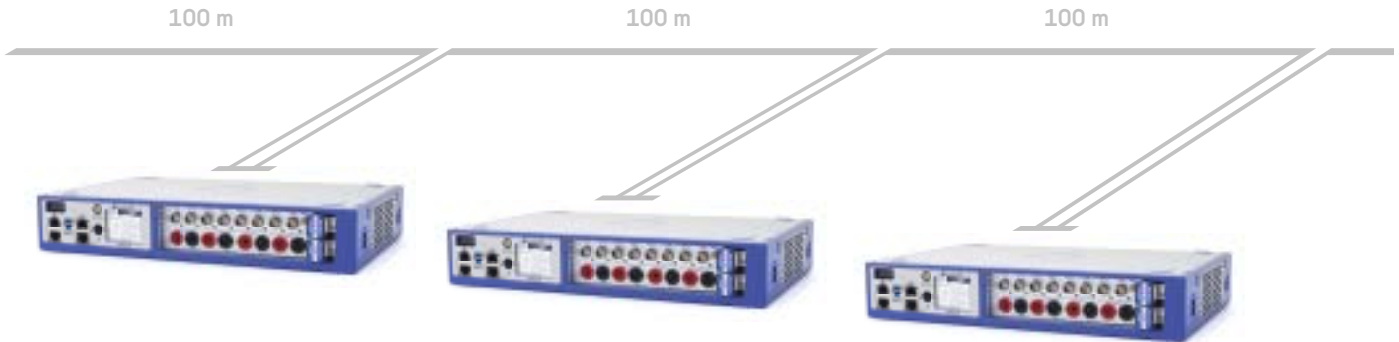
- > FFT analysis
- > Visualization
- > Analysis & post-processing
- > Trigger & events
- > Math & calculation
- > Export features
- > Reporting



# CONFIGURATIONS

## FLEXIBLE APPLICATION

- > USB 3.0 or Gigabit Ethernet
- > Central or decentral measurement
- > Low channel count measurements or expand with additional daisy-chained and synchronized systems



## STACKABLE INSTRUMENTS

TRIONet chassis can be safely stacked using the easy locking function.



## BATTERY PACK

This external, stackable battery pack offers DC power supply with 3 hot swappable batteries.



## EXCHANGEABLE TRION MODULES

TRIONet offers capacity for two TRION modules for data acquisition of up to 16 channels. Modules can be exchanged in seconds to customize the unit for additional measurement applications. Almost any type of sensor is supported by TRION modules.



# TRION MODULES

Voltage (1000 V)	Potentiometer	Current (shunt required)	Current (with shunt inside)	RTD	CAN	GPS
IEPE® (vibration)	Absolute time (PTP, IRIG, GPS)	Modular Smart Interfaces (e.g. for thermocouple)	Bridge (strain gauge)	Counter inputs	Digital I/O	

ANALOG MODULES		CHANNELS	SAMPLE RATE PER CHANNEL	RESOLUTION	ISOLATION	CONNECTOR TYPES
TRION-1820-MULTI		4 or 8	2 MS/s	24-bit	yes	4 D-SUB or 8 LEMO 0B
TRION-2402-MULTI		4 or 8	200 kS/s	24-bit	yes	4 D-SUB or 8 LEMO 0B
TRION-1620-ACC		6	2 MS/s	24-bit >1 MS/s: 16-bit	yes	6 BNC or LEMO 1B
TRION-1620-LV		6	2 MS/s	24-bit >1 MS/s: 16-bit	yes	6 BNC or LEMO 1B
TRION-2402-V <sup>3)</sup>		4 or 8	200 kS/s	24-bit	yes	Safety banana
TRION-1810-HV <sup>3)</sup>		4 to 8	1 MS/s	18-bit	yes	Safety banana, CAT III 1000 V <sup>2)</sup>
TRION-1603-LV		6	250 kS/s	16-bit	yes	6 BNC or LEMO 1B
TRION-2402-dSTG <sup>3)</sup>		6 or 8	200 kS/s	24-bit	-	LEMO 1B, 8 LEMO 0B, 8 RJ45, 8 D-SUB
TRION-2402-dACC		6 or 8	200 kS/s	24-bit	-	6 BNC or 8 SMB
TRION-1802-dLV		16 or 32	200 kS/s 100 kS/s	18-bit 24-bit	-	D-SUB
TRION-1600-dLV		16 or 32	20 kS/s	16-bit	-	D-SUB

DIGITAL MODULES		CHANNELS	SAMPLE RATE PER CHANNEL	RESOLUTION	ISOLATION	FEATURES
TRION-CNT		6	2 MS/s	80 MHz	yes	6 channel advanced counter
TRION-DI-48		48	2 MS/s	500 nsec	yes	48 highspeed digital IN
TRION-BASE		-	2 MS/s	80 MHz	-	Basic IO card with simple IRIG sync and 2 counter
TRION-VGPS-V3		-	2 MS/s	0.01 km/h <10 cm	-	100 Hz GNSS receiver for automotive applications
TRION-TIMING-V3		-	2 MS/s	12.5 nsec	-	Applies precision absolute time to measured data
TRION-CAN		2 or 4	1 MBit	-	yes	D-SUB
TRION-EtherCAT-1-SLAVE		100	500 S/s	-	-	Measurement data output

POWER MODULES		CHANNELS	SAMPLE RATE PER CHANNEL	RESOLUTION	ISOLATION	CONNECTOR TYPES
TRION-1820-POWER <sup>3)</sup>		8 (4 U / 4 I)	2 MS/s	18-bit	yes	Safety banana, D-SUB

<sup>3)</sup> Some versions of this module occupy 2 TRION slots  
<sup>2)</sup> CAT III 1000 V only applicable for 1000 V inputs; SUB-600V has CAT II 600 V / CAT III 300 V



# APPLICATIONS WITH TRIONet

## REAL-TIME DRIVE TESTING ON TRAINS & OTHER ELECTRIC VEHICLES



### PROPERTIES

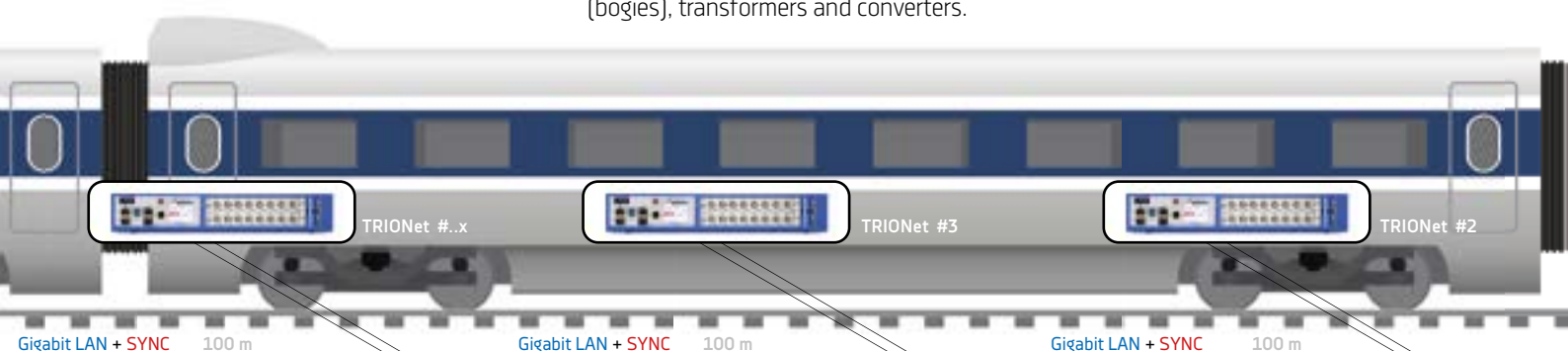
Distributed measurement systems for long distance, distributed power analysis, and mixed signal analysis on trains during real-time drive testing and test bench applications.

### ADVANTAGES

High channel count with stackable and modular product concept. Long distance synchronized measurement of power parameters (P, Q, S, PF, efficiency), mechanical parameters (torque, rotation speed) and environmental parameters (temperature inside or outside, winding and bearing temperature of motors and transformers) simultaneously. Intelligent and easy to use interconnection for reliable data recording. High performance and multiple online power and efficiency calculations of several traction systems (bogies), transformers and converters.

### BENEFITS

Simultaneous and synchronized measurement and analysis of electrical, mechanical, structural and environmental parameters. High performance, high accuracy and synchronized power calculations of several bogies. Measurement and analysis of high voltage AC and DC train grids. Position tracking, speed measurement as well as ride and comfort testing.



# SOLAR & WINDMILL TESTING

- > Air pressure and temperature
- > Solar irradiation
- > Wind & rotation speed
- > Mechanical & structural parameters
- > Generated power
- > Energy consumption
- > Power quality parameters
- > Efficiency of converters
- > Harmonic loads
- > Generated power

## PROPERTIES

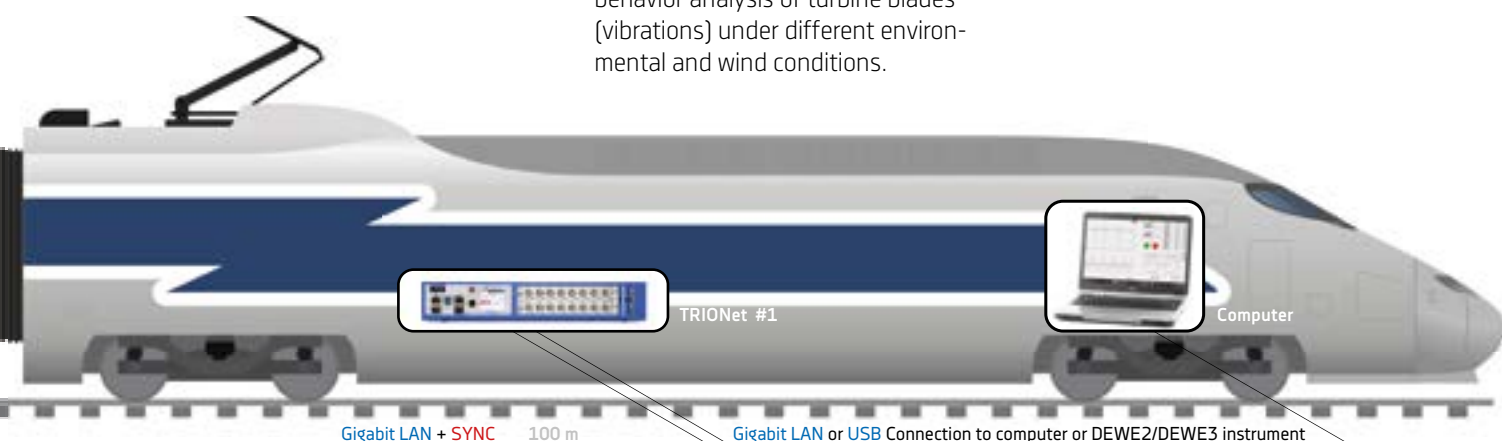
Wide area recording and analysis of power quality as well as the environmental and mechanical parameters of solar and wind farms according to national and international standards and regulations for renewables.

## ADVANTAGES

Determination of efficiency and losses of multiple solar farm converters and wind turbine generators at the same time. Distributed, synchronized power quality analysis of different grid connection points in solar and wind farms. Simultaneous recording of environmental parameters (wind speed, wind direction, solar irradiation, temperature, humidity). Structural behavior analysis of turbine blades (vibrations) under different environmental and wind conditions.

## BENEFITS

Long distance and wide area determination of solar farms and wind farms overall efficiency. Synchronized, distributed measurement and analysis of power quality parameters at different grid connection points. High channel count with modular and stackable systems. Simultaneous, synchronized acquisition of electrical, mechanical and environmental parameters.



# SPECIFICATIONS



	TRIONet
Slots for TRION™ modules	2
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
<b>HOST SYSTEM REQUIREMENTS</b>	
Supported operating systems	Windows 7; Windows 10
Supported interfaces	USB 3.0; USB 2.0; 10/100/1000BASE-TX Gigabit Ethernet
<b>POWER REQUIREMENTS</b>	
Isolated power supply (max)	10 to 32 V <sub>DC</sub> (9 to 36 V <sub>DC</sub> )
Power consumption	Without modules 15 W, totally equipped max. 55 W
External power supply (included)	100 to 240 V ~50 to 60 Hz / 65 W
<b>DIMENSIONS</b>	
Dimensions (W x D x H)	320 x 205 x 55 mm (12.6 x 8 x 2.2 in.)
Weight	Typ. 1.9 kg (4.2 lb.) without modules
<b>ENVIRONMENTAL SPECIFICATIONS</b>	
Operating temperature	-20 °C to +60 °C (with pre-warmed unit)
Storage temperature	-20 to +70 °C
Humidity	10 to 90 % non cond., 5 to 95 % rel. humidity
Max. altitude	3000 m (9840 ft)
Sine vibration (EN 60068-2-6)	20 m/s <sup>2</sup>
Shock (EN 60028-2-27)	30 g
Random vibration (EN 60721-3-2)	Class 2M3



**DEWETRON**

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## ABOUT DEWETRON

DEWETRON is an Austrian manufacturer of precision Test & Measurement systems designed to help our customers make the world more predictable, efficient and safe. Our strengths lie in customized solutions that are immediately ready for use while also being quickly adaptable to the changing needs of the test environment and sophisticated technology of the Energy, Automotive, Transportation and Aerospace industries.

More than 30 years of experience and innovation have awarded DEWETRON the trust and respect of the global market.

There are more than 25,000 DEWETRON measurement systems and over 400,000 measurement channels in use in well-known companies worldwide. Choosing DEWETRON means, having a partner by your side who accompanies you every step of the way.

DEWETRON employs over 120 people in 25 countries and is part of the TKH Group, a global corporation, that specializes in the development and supply of innovative solutions worldwide. DEWETRON's quality is certified in compliance with ISO9001, ISO14001 and ISO17025.

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[www.DEWETRON.com](http://www.DEWETRON.com)