Anritsu GROUP COMPANY

DEWETRON

CERTIFIED CMMC 2.0 LEVEL 2

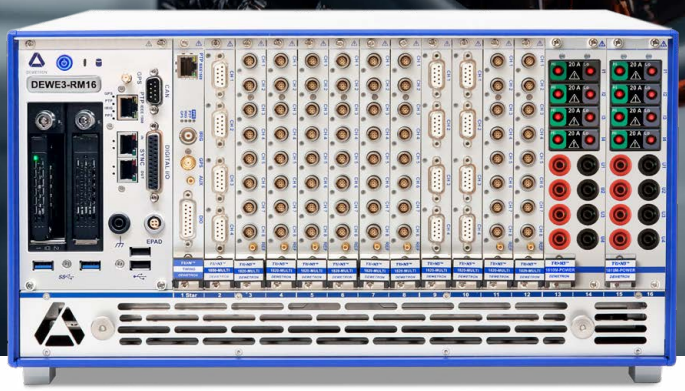
SOLUTION GUIDE

AVIATION & AEROSPACE

DATA ACQUISITION SOLUTIONS

FOR AEROSPACE, AVIATION & DEFENSE

DEWETRON is your expert for versatile and robust data acquisition systems. Our modular hardware and intuitive software make measuring easier than riding a bike. Whether voltage, current, temperature, or vibration – one system captures it all. Built for any environment and application, DEWETRON helps engineers worldwide save time, work smarter, and future-proof their measurements.



TOTAL MEASUREMENT SOLUTION

DEWETRON's data acquisition hardware and software build a comprehensive all-in-one measurement solution.

VERSATILE & EASY TO USE

DEWETRON offers the measurement solution for your needs: from small and compact to high-channel systems.

MODULAR & EXPANDABLE

Most DEWETRON DAQ systems are modular and customizable: Choose the measurement board which fits best to your needs.

EASY TO USE

Not only our measurement hardware, but also our software is easy to use and customizable.

PLUG AND PLAY

All our systems are easy to use. Plug in and start your measurement.

HIGH ACCURACY

Measure your data with unmatched high accuracy across the whole bandwidth.

FULLY SYNCHRONIZED

You only need one DEWETRON system to measure all your signals like temperature, vibration, power, speed, video or GPS data fully synchronized.

SERVICE & SUPPORT

Our team is there for you whenever you need us. We guarantee highest quality in every step you take with us.

CERTIFIED QUALITY

We meet the high requirements of various standards such as ISO 9001, ISO 14001, and ISO 17025.

ONE TYPICAL APPLICATION

COMPONENT TESTING

WITH DATA ANALYSIS DURING RECORDING

Servo-drives and actuators, power supplies, landing-gear mechanics and power generators are only a few examples of the scope of aerospace components DEWETRON systems can measure. Our data acquisition and test system records various types of analog and digital channels, locally or decentralized as required.

Longtime recording with the possibility to detect faults immediately and a possibility to review and analyze data during recording are essential features provided by a DEWETRON data acquisition system.

ONE TYPICAL APPLICATION

TURBINE & ENGINE TESTING

As an R&D engineer you face growing challenges, from downsizing internal combustion engines to increasing their performance. This makes precise testing crucial. Our innovative input channel and signal conditioning design allows you to connect analog signal types to the same input.
No matter if you want to measure pressure, vibration, strain or others – one input fits for all and samples your data from 100 S/s to 5 MS/s.

CONFIGURE YOUR INDIVIDUAL **AEROSPACE TEST SOLUTION**

DEWETRON's data acquisition systems are built to master any test and measurement challenge – no matter the industry. Our modular, plug-and-play DAQ systems are ready to use out of the box, yet fully customizable to meet your unique application needs.

Choose the ideal chassis size for your setup and equip it with the measurement modules that fit your signals. Whether you are measuring voltage, current, temperature, or more – you will always get perfectly synchronized, high-precision data. Paired with our intuitive measurement software OXYGEN, data analysis becomes effortless, efficient, and even enjoyable. One platform, endless possibilities: streamline your workflow, reduce costs, and experience a faster learning curve.

With DEWETRON, you don't just measure – you accelerate your innovation.

CHASSIS + MODULES + SOFTWARE

DEWE3

FROM COMPACT TO HIGH-CHANNEL

DEWETRON offers rugged, portable systems, data acquisition systems with built-in displays, and also high-channel systems. Choose what fits your application best.

TRION(3)

MAXIMUM FLEXIBILITY WITH TRION(3) MODULES

Simply choose your TRION(3) modules, plug them into your DEWE3 DAQ system, and start measuring. The system auto-detects and configures everything for you in OXYGEN.

OXYGEN

ALL-IN-ONE SOFTWARE OXYGEN

Our measurement software OXYGEN is intuitive, powerful, and flexible. Record, analyze, and export your measurement data from any source – all in real-time, all in one place.

YOUR INDIVIDUAL **AEROSPACE SYSTEM**

=

YOUR CUSTOMIZED SYSTEM

Combine a DEWE3 chassis, TRION3 measurement modules and OXYGEN to get your customized measurement system that perfectly suits your individual data acquisition task, especially in the field of aerospace testing.

CHASSIS

CHOOSE FROM DIFFERENT SYSTEM CATEGORIES

ALL-IN-ONE

> Built-in display
> Compact and flexible configuration
> Powerful PC inside for fast online displays and analysis
> Battery power option

Consisting of these parts:

MAINFRAME

> Powerful PC inside for fast online displays and analysis
> Can be used with an external monitor
> The ideal solution for installations in a 19" rack

Consisting of these parts:

FRONT-END

> Used with an external computer
> Ideal for small channel count applications
> Fully synchronized expansion for all-in-one or mainframes
> Multiple units can be daisy-chained
> Connected via USB3.0 or GBit-Ethernet

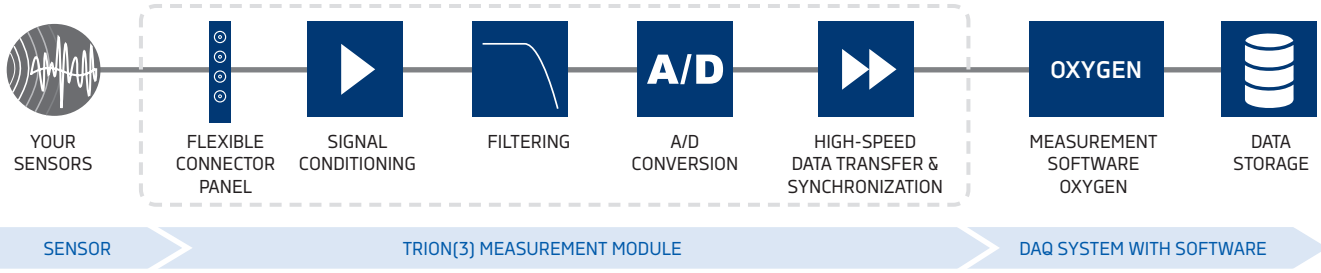
Consisting of these parts:

LEGEND: Signal conditioning amplifiers | A/D conversion | Built-in computer | Display

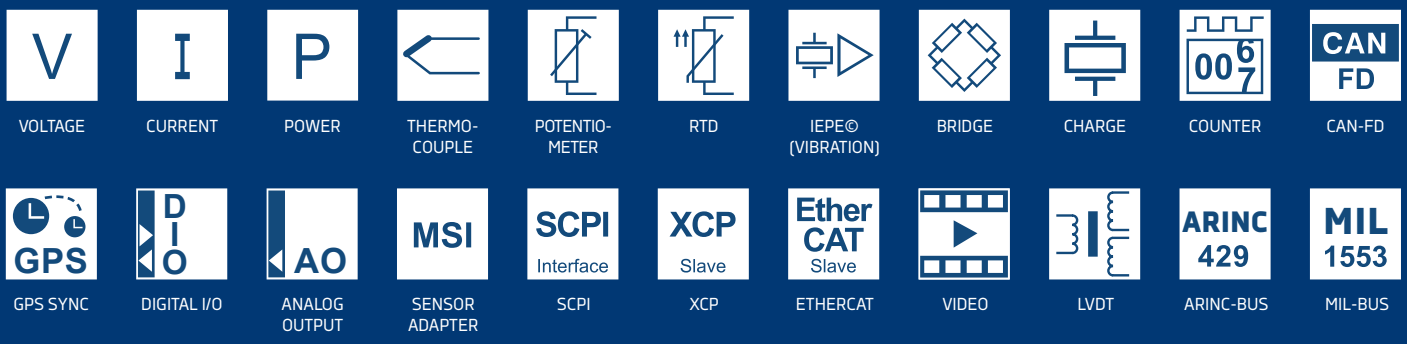
MODULES

FOR UNIVERSAL SIGNAL CONDITIONING & PROCESSING

TRION(3) modules are the heart of every DEWETRON measurement system. The sensing of physical parameters such as vibrations, strains, noise, pressure, force, current etc. is usually carried out with sensors that output analog signals. TRION(3) modules take over the precise signal conditioning, digitization and filtering of these signals and make the data available for further processing and storage.
TRION(3) modules provide strong and stable sensor excitation and various types of industrial connectors, making it easy to connect EVERY SENSOR!



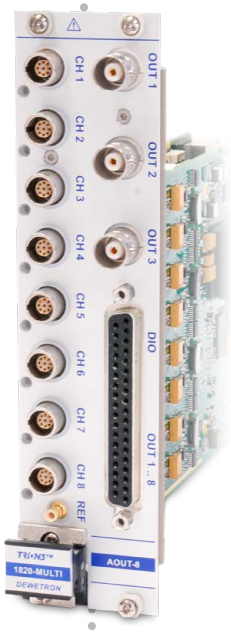
PROCESSED SIGNALS IN 100 % SYNCHRONIZATION



EXAMPLE: OUR FLAGSHIP MODULE
TRION3-18XX-MULTI-AOUT-8

ANALOG INPUT SIGNALS

- VOLTAGE
- CURRENT
- IEPE© (VIBRATION)
- BRIDGE
- RTD
- POTENTIOMETER
- COUNTER INPUTS
- CAN-BUS



OUTPUT SIGNALS

±5 V (e.g. 2 mV/V ≙ ±5 V)
±10 V
0–5 V
0–10 V
±30 mA
0–30 mA

REAL-TIME SIGNAL PROCESSING

- > Actual value
- > Average
- > RMS
- > MATH (A+B, A-B, AxB)

SIGNAL GENERATION

- > Constant output
  - > Voltage up to ±10 V
  - > Current up to ±30 mA
- > Stream output
- > Function generator (sine, square, triangle, custom)

ISOLATED CONDITIONED OUTPUT SIGNALS

ADVANCED POWER ANALYSIS

Build the power analyzer you need with our dedicated power modules.
The perfect advanced power analyzer for every field of application.

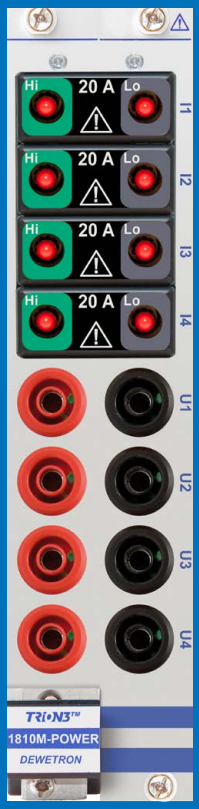
- > Modular high-precision tailormade power analyzer
- > Acquisition of additional inputs such as thermo-couple, IEPE, counter, CAN, GPS, video, SCPI, etc.
- > Up to 16 power phases (16 x U + 16 x I), expandable
- > Redundant, integrated current transducer supply
- > Various test bed integration possiblities
- > Remote configuration and control

EVERY DEWETRON SYSTEM CAN BE A POWER ANALYZER

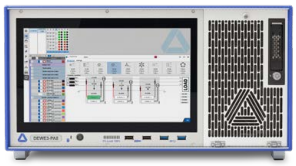
0.03 % Measurement error

10 MS per second/ per channel

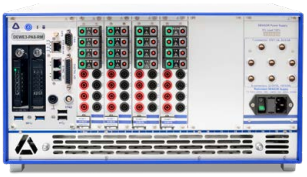
>16 Power phases *expandable*



SMALLEST POWER ANALYZER



ALL-IN-ONE POWER ANALYZER



STATIONARY POWER ANALYZER

PORTABLE POWER ANALYZER

ONE TYPICAL APPLICATION

ELECTRIC FLYING

The shift from combustion to electric engines is transforming not only the automotive industry but also the aerospace and aviation market. DEWETRON's power analyzers are ideal for testing electrical aircraft engines with more than 3 phases that are designed in a multiple redundant way. With the ability to measure up to 16 phases on a single power analyzer or to combine multiple systems for nearly unlimited phases, DEWETRON offers unmatched flexibility. Our mixed signal approach enables simultaneous measurement of temperature, vibration, mass flow, ECU data, and more, all within the same system, making it the perfect solution for testing the entire electric power-train with poly motor.

SOFTWARE
OXYGEN

Compatible with Linux

YOUR WHOLE MEASUREMENT WORKFLOW WITH ONE SOFTWARE

With the OXYGEN all-in-one software, the data acquisition, recording, calculation, visualization and analysis has never been easier. Use only one software for all applications. Also for 3rd party components.

General data acquisition, recording, analysis, post-processing, reporting, etc. – use OXYGEN for your whole measurement workflow, from acquiring data to post-processing and finally reporting the data.

Acquire synchronous and continuous data from several sources: analog, digital, encoder, counter, CAN, SCPI, Ethernet, video, GPS and many more.

Store all your acquired data in one data file with a simple touch on the record button. You can achieve data rates of up to 1 GB/s and you never have to worry about losing any data. Furthermore, review your data even during recording.

POWER ANALYSIS

Turn your DEWETRON measurement device into a fully-featured power analyzer:

> Analysis of 1–9 phase power systems (1P2W, 2V2A, 3P3W, 3P4W, 2x 3P3W, ...)
> Several power systems are logically summarized into power groups
> Gapless cycle-by-cycle calc. no blind spots
> Unique fundamental frequency detection with delay compensation for highest accuracy and reliability
> BASIC: vol., curr., RMS, AVG, fundamental & symmetrical components, active/reactive/apparent power total & fundamental, energy
> ADVANCED: harmonics (IEC 61000-4-7), flicker (IEC 61000-4-15), flicker emission (IEC 61400-21) and mechanical power/efficiency
> EXPERT: rolling calculation meets FGW-TG3

SOUND LEVEL

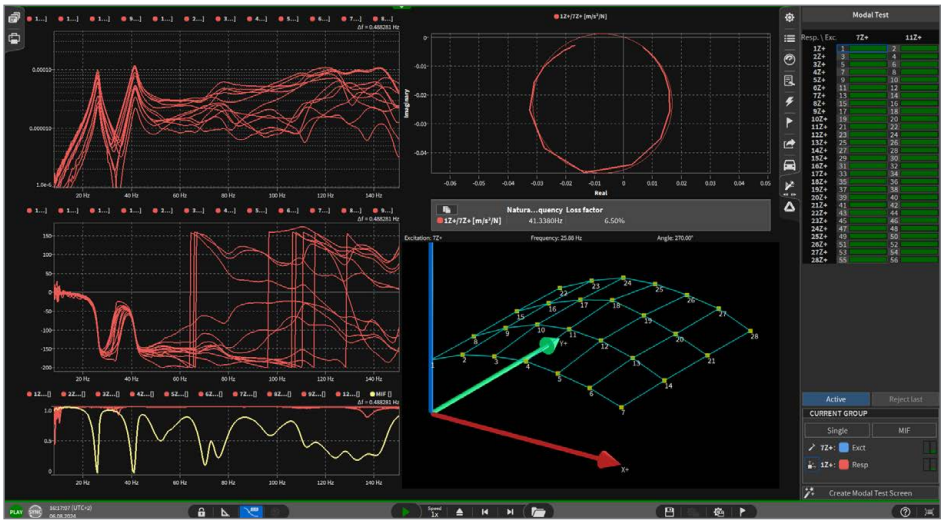
The sound level plugin provides online determination of the time-dependent sound pressure level, the energy equivalent sound pressure level, freely definable statistical sound pressure levels and many more. This plugin turns your DEWETRON device into the ideal solution for analyzing the acoustical emission of machines, for determining the spatial and statistical sound pressure level distribution in buildings and for long-term noise monitoring.

> A-, B-, C-, D- and Z-frequency weighting (according to DIN EN 61672-1)
> Fast, slow and impulse time weighting (according to IEC 651)
> Reference level for air (20 µPa) and water (1 µPa)
> Overall and interval logging
> Audio replay feature

MODAL TEST

With OXYGEN's Modal Test option you can analyze the frequency characteristics of a mechanical structure to determine resonances, damping characteristics and more.

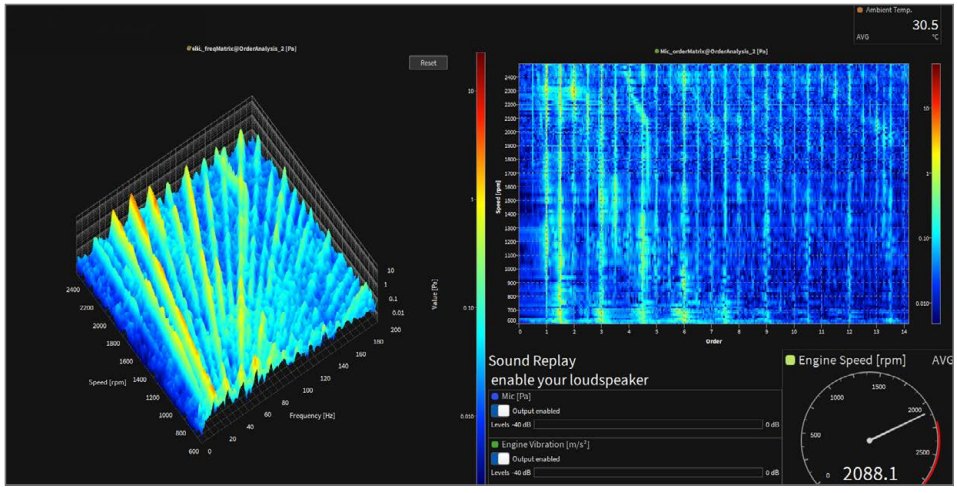
> DUT excitement via modal hammer
> SISO & SIMO tests with moving hammer and moving sensor
> Calculation of
  > Complex transfer function
  > Coherence of several hits
  > Mode indicator function
> Various interactive visualization options
> Data export into *.uff and other formats for post processing
> Modal shape animation
> SDOF circle fit



ORDER ANALYSIS

The noise and vibration analysis module for rotating machines turns your OXYGEN into a full order analysis instrument for calculation and visualization of frequency and order spectra vs. speed.

> Simultaneous frequency and order domain analysis
> Smart resampling algorithm for accurate and fast results
> Selectable speed ranges from 60 RPM to 100 000 RPM
> Order resolution from 0.01 to 1, with up to 90 % overlapping
> Order extraction for selected orders for use in recorder or XY-instrument
> Visualization of the resulting matrix in intensity diagrams
> Visualization of extracted orders in Orbit Plot and Polar Plot

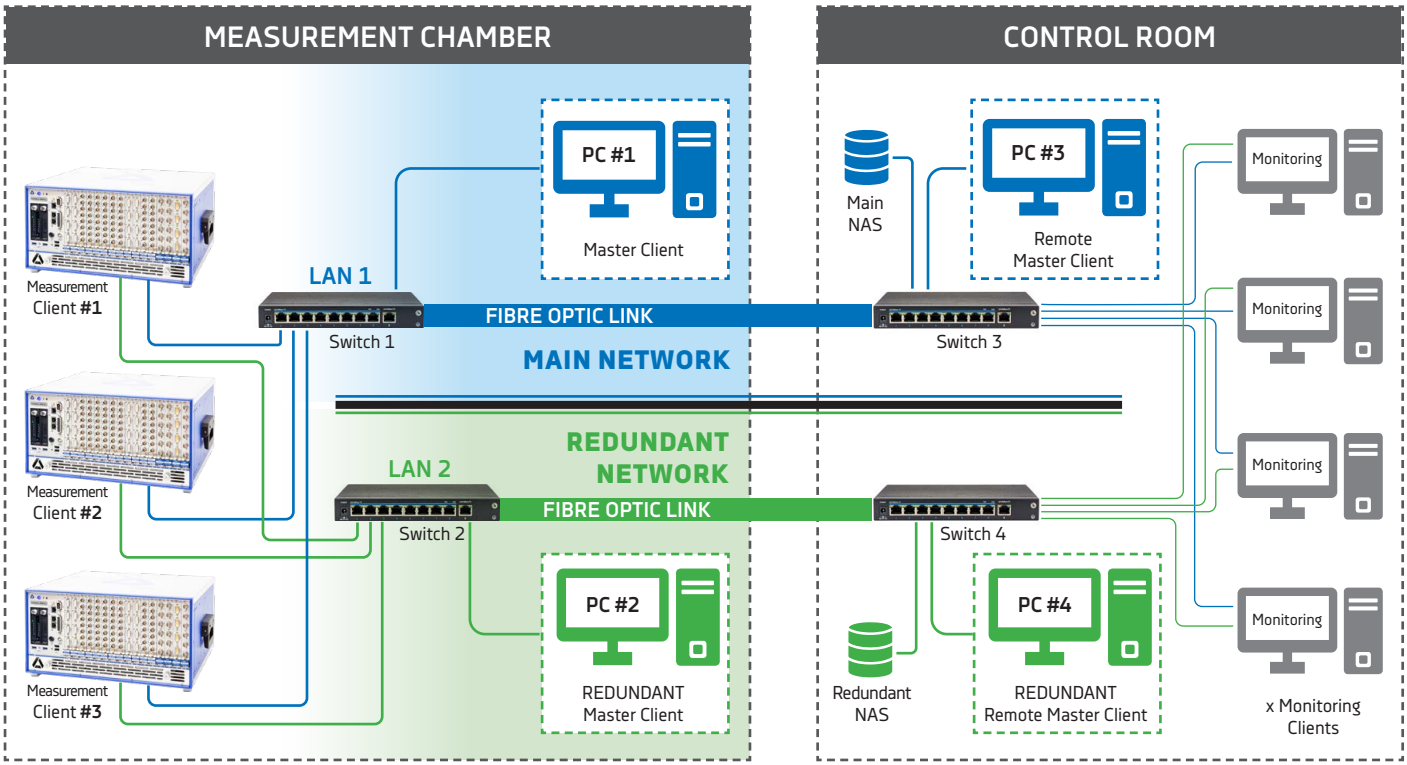


HIGH-CHANNEL COUNT

To easily implement measurements requiring hundreds or even thousands of channels, DEWETRON offers a particularly simple and effective way to network multiple devices. Data transfer is carried out via Ethernet, and numerous options are available for perfect data synchronization, such as the integrated TRION-SYNC bus or external sources like PTP, IRIG, or GPS.

REDUNDANCY FOR MISSION CRITICAL APPLICATIONS

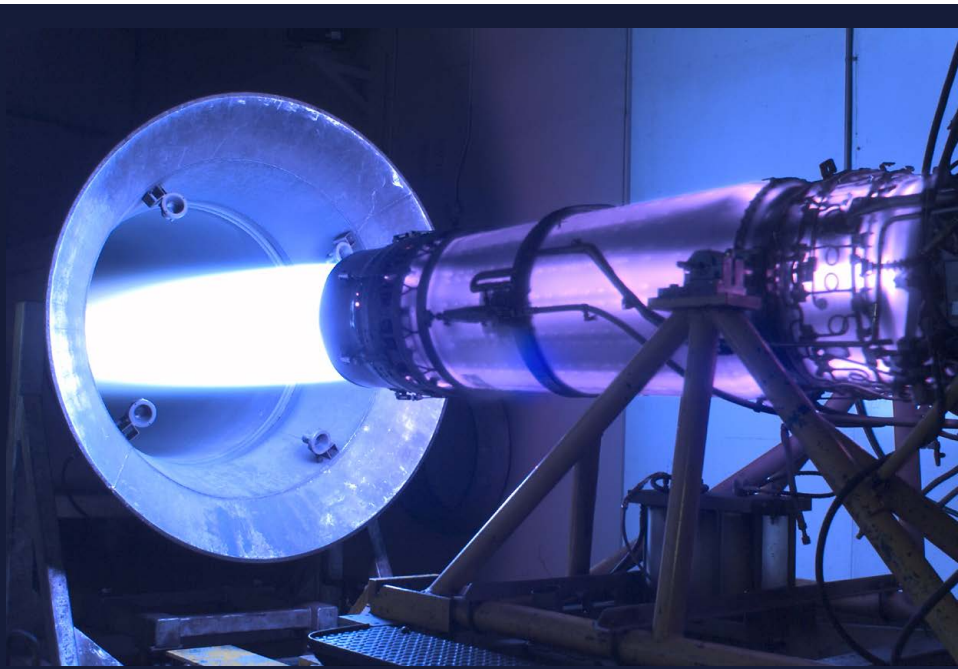
DEWETRON high-channel count systems are ideally suited for mission-critical measurements, where failure is not an option. Multiple levels of redundancy can be configured, up to our "super-ultra redundancy". Furthermore, multiple computers can be supplied with data to display and analyze selected signals live which is often very important in such applications.



ONE TYPICAL APPLICATION

ROCKET ENGINE TESTING

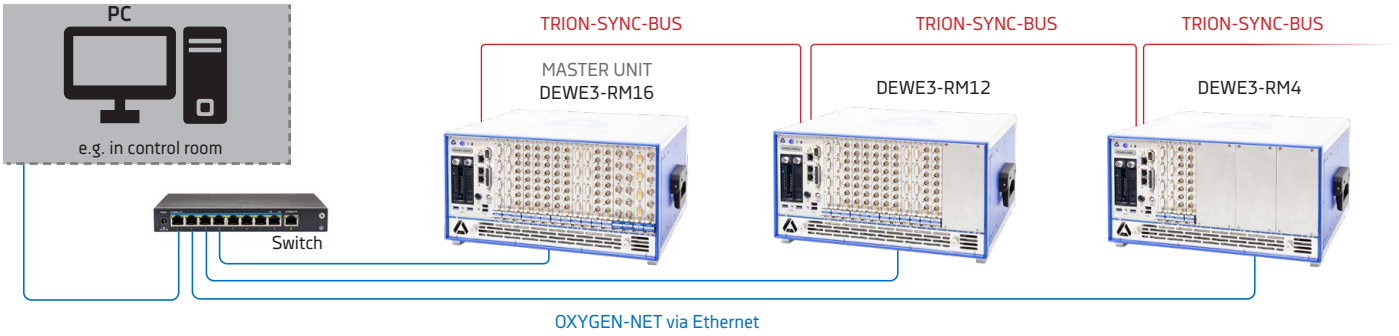
Modern rocket engine development demands precise, synchronized measurement across hundreds of data channels. DEWETRON's high-channel-count DAQ systems are engineered to capture dynamic parameters such as thrust, pressure, temperature, vibration, and flow – all at high sampling rates and with absolute time synchronization. Robust signal conditioning and modular scalability ensure accurate acquisition from diverse sensor types, even under extreme environmental conditions. The result: reliable, high-resolution insight into engine performance, efficiency, and safety throughout every stage of testing.



OXYGEN-NET

SYNC for 100s of channels

The OXYGEN-NET makes it possible to combine multiple devices to one virtual measurement device.
> Easy-to-use synchronized measurement for thousands of input channels from 10 S/s to 10 MS/s per channel
> Works with absolute time synchronization (PTP, IRIG, GPS) as well as with the built-in TRION-SYNC-BUS
> Remote and local data storage possible for redundancy
> Setup and control of all nodes from the main device

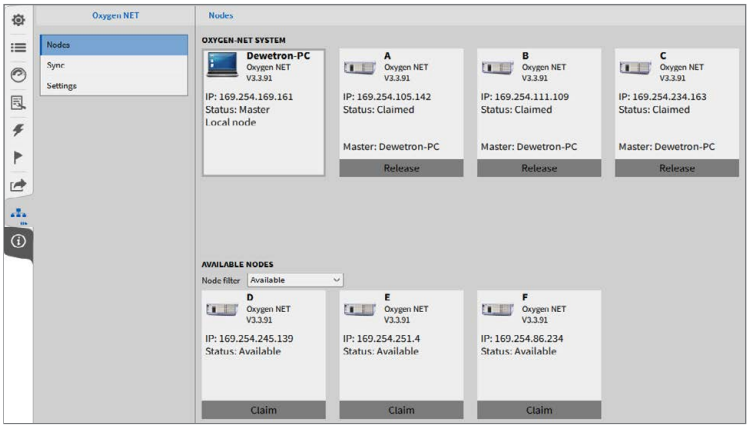


SOFTWARE OPTION OXYGEN-NET

OXYGEN-NET is an optional feature of our OXYGEN measurement software. It enables seamless integration of multiple DEWETRON DAQ systems into a unified measurement network. By connecting multiple DEWE2/3 devices via Ethernet, you can create a synchronized data acquisition system with over 1000 high-speed channels. This software option offers our most comprehensive channel expansion.

OXYGEN-NET makes it possible, to sum up all devices to one virtual measurement device. You only need a reliable network connection, and you can simply claim all available nodes and operate it from the main device.

> Create one big virtual device with several remote nodes (measurement cloud).
> No complicated settings needed, simply claim and remove nodes with one click.
> Works with absolute time synchronization as well as with TRION-SYNC-BUS.
> Remote and local data storage is possible for redundancy.
> Multiple Master clients and redundant Master clients are supported.



ONE TYPICAL APPLICATION

WIND TUNNEL TESTING

Prototypes of aircrafts, space vehicles and other DUTs require precise aerodynamic testing, which demands perfect synchronization between signals. This is challenging due to different sensor types involved and physical signals to be measured. DEWETRON's system architecture ensures minimum phase mismatch, delay-compensated filters and much more. Our modularity also allows scalable systems from 16 up to several 1000 channels while any signal is acquired synchronously and stored into one data file.

ONE TYPICAL APPLICATION

AIRCRAFT POWER SUPPLY TEST AND ANALYSIS

The onboard power supply system is crucial for the performance, reliability, and safety of an aircraft. A professional test system must be adapted to the complex environment of test flights and interact with many signals from different systems.

Our **DEWE3-RM12-AIRCRAFT** is designed for such environments and applications and features a special power supply and vibration-resistant connectors. By configuring the system with suitable TRION modules, relevant signals such as current, voltage, vibration, temperature, speed, video and ARINC data are recorded reliably and synchronously.

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ABOUT DEWETRON

DEWETRON is a manufacturer of precision test and measurement systems and part of the globally operating Anritsu Group. Our reliable measurement data help customers worldwide make processes more predictable, efficient, and safer.

Our strength lies in customized measurement solutions: ready to use right away while remaining flexible to adapt to dynamic testing requirements in the energy, automotive, transportation, and aerospace industries.

More than 35 years of experience and innovation have made DEWETRON a trusted partner in the global test and measurement market.

More than 25,000 DEWETRON measurement systems and over 400,000 measurement channels are in continuous use at leading companies worldwide.

DEWETRON's quality is certified according to ISO 9001 and ISO 14001.
The high integrity of the measurement data is guaranteed by our own accredited calibration lab according to ISO 17025.

THE MEASURABLE DIFFERENCE.

Get to know our GLOBAL OFFICES

DEWETRON

DEWETRON Inc.
2850 South County Trail
East Greenwich, RI 02818
USA

+1-401-284-3750
us.sales@dewetron.com
www.dewetron.com