



Test & Measurement Solutions for Data Centers

Application Overview

How can the latest measurement technology improve performance, safety, and cost efficiency?

This application overview presents the key features and benefits of Yokogawa Test & Measurement solutions specifically for data center infrastructure and suppliers.

Discover how these solutions can help you increase energy efficiency levels.

Power Analyzer

tmi.yokogawa.com/eu/WT5000



Benefits

- **SPECpower Benchmarks:** SPECpower is used to evaluate the energy efficiency of servers under defined workloads. The WT5000 Precision Power Analyzer measures the power consumption, while PTDaemon® controls load profiles and measurement data acquisition and documents them in a standardized way – ideal for audits and certification, as well as for comparing the efficiency of deployed hardware.
- **Power Supplies (PSUs):** Highly accurate efficiency and power loss analyses across defined operating points (e.g., according to the Server Efficiency Rating Tool) – ideal for optimization, certification, and demonstrating compliance with ENERGY STAR® and other regulatory requirements.
- **Transformers (conventional):** Accurate no-load and short-circuit measurements on transformers at power factors down to 0.001. Corrected power calculation P_c according to IEC 76-1, IEEE C57.12.90, and IEC 60076.
- **Validation of Solid-State Transformers (DER-related Standards; IEEE 1547):** Efficiency and power loss analyses – including measurement of THD, ripple, and harmonics under both steady-state and transient load conditions.
- **Fans, Compressors & Pumps:** Highly accurate determination of power consumption, efficiency, harmonic content, and power losses across real operating points – e.g., for testing chillers according to AHRI 550/590.

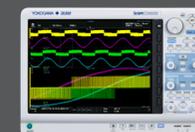
- **Smart PDUs:** Testing of energy consumption (Wh, Ah) for capacity planning and monitoring of energy efficiency (PUE) and load distribution.
- **Generators:** Performance testing according to ISO 8528-5 to validate voltage and frequency regulation, THD, load acceptance, and load rejection behavior. Measurement of generator efficiency, e.g., for verification and certification purposes.

Features

- World's Highest Measurement Accuracy
- Dual harmonic analysis up to the 500th order for multiple electrical parameters simultaneously
- Direct voltage measurements up to 1500 VDC and 1130 VAC
- Current measurement from 50 μ A to 5000 A
- Sampling rate: 10 MS/s (18-bit)

Isolated Oscilloscope | ScopeCorder

tmi.yokogawa.com/eu/scopecorder

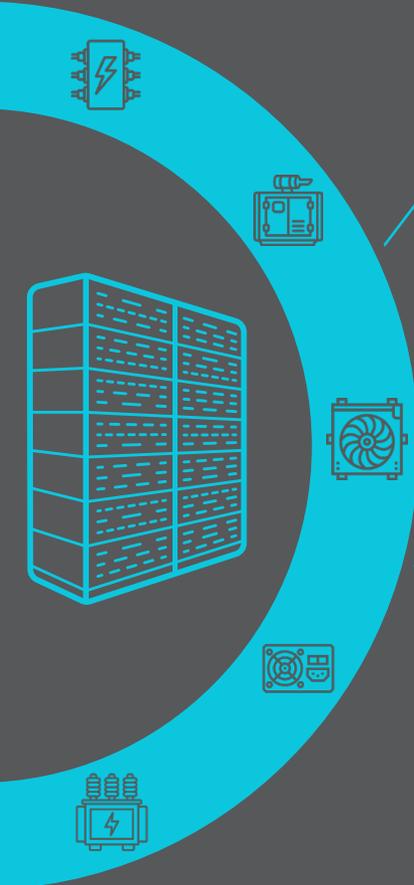


Benefits

- **Multi-channel measurements** on systems such as generators, HV systems, UPS installations, and cooling systems to analyze motor startup, speed control, frequency and voltage stability, current distribution, power quality, dynamic load behavior, and temperature distribution.
- **Combined acquisition and analysis** of operating and load conditions, e.g., during load peaks, protective shutdowns, voltage dips, transfer times, ramp-up and switching phases, overload situations, or signal stabilization.
- **Analysis of transient load changes and disturbance events** with rapid identification of faulty components – without time-consuming manual detailed analysis.

Features

- Over 20 different input modules for isolated inputs and various signal types – versatile across applications and designed for future scalability.
- Sampling rate up to 200 MS/s with input modules offering 2, 4, and 16 channels.
- **Transient Recorder:** Combined acquisition of long-term trends and transient events with the unique DualCapture function.
- Up to 32 isolated channels with 10 MS/s sampling rate and 16-bit resolution.



Benefits

- **Standards-compliant validation & certification:** Support for testing, e.g., for UPS (IEC 62040-3), CRAC (ANSI/ASHRAE 127-2020), chillers (AHRI 550/590), BMS, and fuel cells – ideal for audits.
- **Time-synchronized transparency across all energy systems:** Correlation of electrical, thermal, and environmental measurement values across all subsystems.
- **Early detection & performance optimization:** Trend analysis and continuous monitoring to identify efficiency losses, overload conditions, or critical operating states.
- **Audit-proof long-term documentation:** Audit trails, load profiles, battery cycles, and environmental data for maximum traceability and operational reliability.

Benefits

- **R&D analysis and evaluation** of the dynamic operating behavior of transformers, generators, UPS systems, power supplies, and PDUs.
- **High Resolution visualization** of even the smallest signal variations – ideal for the detailed analysis of complex power supply and distribution structures in data centers.
- **Targeted fault diagnosis and system optimization** through the History function, enabling the detection of deviations in power supply, protection schemes, and load distribution.
- **Development and validation** of modern infrastructure technologies through precise trigger functions for switching, transfer, and operating states – for example during generator starts, transfer times, grid switching, or load peaks.

Flexible Data Logger

tmi.yokogawa.com/eu/NetSol

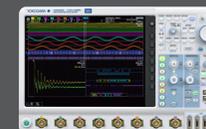


Features

- **Multi-channel, time-synchronized data acquisition:** Synchronized recording of relevant electrical and non-electrical parameters, optionally with external sensors or integrable power analyzers.
- **Scalable long-term recording:** Data logging from hours to months with up to 420 channels stored in a single central file.
- **Alarm & event management:** Automatic detection and logging of limit violations, load changes, and system events.
- **Open system integration:** Connection to SCADA, BMS, and test systems via Ethernet, Modbus/TCP, OPC UA, or Profibus.

Oscilloscope

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Features

- 2 to 8 analog channels with bandwidth up to 500 MHz, plus additional digital inputs for mixed-signal analysis.
- Up to 12-bit vertical resolution (16-bit in High-Resolution mode) for capturing the smallest signal variations.
- Automatically stores up to 200,000 trigger events (History memory) with comprehensive search and statistical analysis functions.
- 15 low-pass filters for optimal noise suppression.
- Extensive trigger functions (e.g., combined OR triggers and B triggers) reliably capture even rare events.

Optical Time-Domain Reflectometer (OTDR)

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Benefits

- Acceptance testing and documentation of new fiber optic installations
- Rapid localization of fiber breaks and attenuation points
- Analysis of patch panels and short-distance links
- Fault diagnosis in case of link failures
- Quality assurance during expansions and modifications

Features

- High dynamic range for campus and metro links
- Minimized dead zones for precise patch panel analysis
- High-resolution event detection
- Automatic event and attenuation analysis
- Bidirectional measurement function for standards-compliant documentation
- Fast measurement cycles for efficient troubleshooting

Optical Spectrum Analyzer (OSA)

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Benefits

- Analysis of DWDM channels in metro and campus links
- OSNR measurement on amplified links
- Interoperability testing of ZR modules
- Power and channel monitoring in multi-vendor environments

Features

- High spectral resolution (narrow RBW) for tight channel spacing
- High wavelength accuracy for grid verification
- Wide dynamic range for precise OSNR measurements
- Integrated channel and OSNR analysis functions
- High power accuracy for link budget validation
- Fast sweep times for efficient troubleshooting

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