



V24-1

 **DEWESoft®**
YEAR WARRANTY

OBSIDIAN® APPLICATIONS



STAND-ALONE DATA ACQUISITION, SIGNAL CONDITIONING & CONNECTIVITY

OBSIDIAN® combines autonomous long-term data recording, advanced signal conditioning, and industrial connectivity in a single compact system. It captures analog, digital, CAN, GNSS, and calculated data continuously or based on trigger conditions, storing it in native *.dxd, *.ch10, or *.csv formats.

High-performance signal conditioning supports voltage, current, strain, IEPE, temperature, and digital inputs. With OPC UA, MQTT, and MODBUS support, OBSIDIAN® enables bidirectional communication with PLCs and SCADA systems—streaming measurement data while receiving control commands and trigger signals. The system operates independently without a PC and can be accessed via DewesoftX, DewesoftM, or any other 3rd party openDAQ client.



FLIGHT & STRUCTURAL TESTING

OBSIDIAN® functions as a stand-alone flight test recorder and telemetry unit, supporting acquisition of analog and processed parameters in aerospace-standard CH10 format. It enables onboard recording and direct CH10 streaming to ground stations.

The system supports vibration, strain, and acoustic measurements, operational load monitoring, and real-time aeroelastic and flutter analysis during flight campaigns. It also enables ground-based structural testing with high-precision strain acquisition and direct MQTT transmission to centralized databases.



DURABILITY & FLEET TESTING

OBSIDIAN® enables reliable long-term durability and fleet testing in real-world conditions. It records road loads, strain, vibration, CAN-FD/CAN, and GNSS data autonomously without a PC, making it ideal for unattended fleet deployments. Secure onboard storage and remote access via Wi-Fi or 5G ensure efficient data management and monitoring, while recorded data can be directly used for Road-to-Rig validation in the lab.

OBSIDIAN® APPLICATIONS



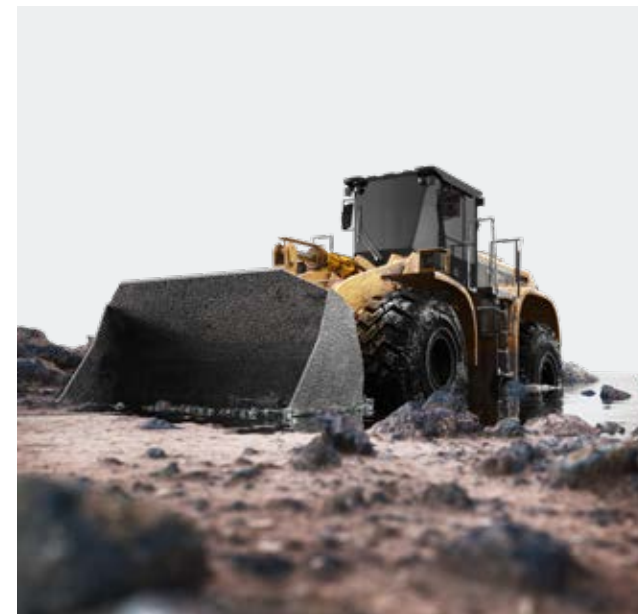
INDUSTRIAL – ETHERCAT® REAL-TIME INTEGRATION

OBSIDIAN® operates as a deterministic EtherCAT® slave, enabling direct integration with third-party PLCs and industrial controllers. It provides low-latency transmission of analog and digital signals while allowing parallel data logging for analysis. Autonomous real-time processing and redundant power support make it well suited for demanding test bench and control applications.



CONDITION MONITORING

OBSIDIAN® serves as a permanent monitoring gateway for bridges, rail tracks, tunnels, mining conveyor belts and other industrial facilities. It continuously captures structural and machine vibration health indices on-device and can send alerts via MQTT or OPC-UA only when predefined limits are exceeded—enabling efficient 24/7 remote supervision.



BUILT FOR EXTREME ENVIRONMENTS

Built for extreme conditions—from heavy trucks and mining conveyor systems to railway infrastructure—OBSIDIAN® R8w operates from -40°C to $+85^{\circ}\text{C}$, withstands high shock and vibration levels, and offers protection up to IP67 for reliable operation in demanding environments. Its compact design enables distributed installation close to sensors across large vehicles or machinery. The system can connect to proving ground networks for remote access and automatically offload collected data when network connectivity is available.

OBSIDIAN® HIGHLIGHTS

SMART EMBEDDED DATA LOGGERS & DAQ

The OBSIDIAN® platform delivers signal conditioning for any type of sensor. With a wide range of input modules, you can capture Voltage, Current, Strain, IEPE, Temperature (RTD/TC), and Digital/Counters at rates up to 20 kS/s per channel.

This proven hardware ensures gap-free data collection, storing every sample directly on the device's internal memory or SD card. When you're ready to review, DewesoftX software provides world-class visualization and processing capabilities to turn those raw recordings into actionable insights.

WIDE OPERATING TEMPERATURE RANGE

Standard OBSIDIAN® chassis are rated for operation between -10°C and 60°C. For more demanding requirements, specific configurations are available that extend this range from -40°C to 85°C, allowing for deployment in extreme thermal environments.

PERFECT SYNCHRONIZATION

OBSIDIAN® provides precise synchronization with other Dewesoft product lines and third-party systems through support for IRIG-B-DC and PTP (IEEE 1588) timing protocols. For applications requiring absolute time referencing, an optional PPS GPS module is available, delivering timing accuracy within ~20 ns.

EXPANDABLE STORAGE

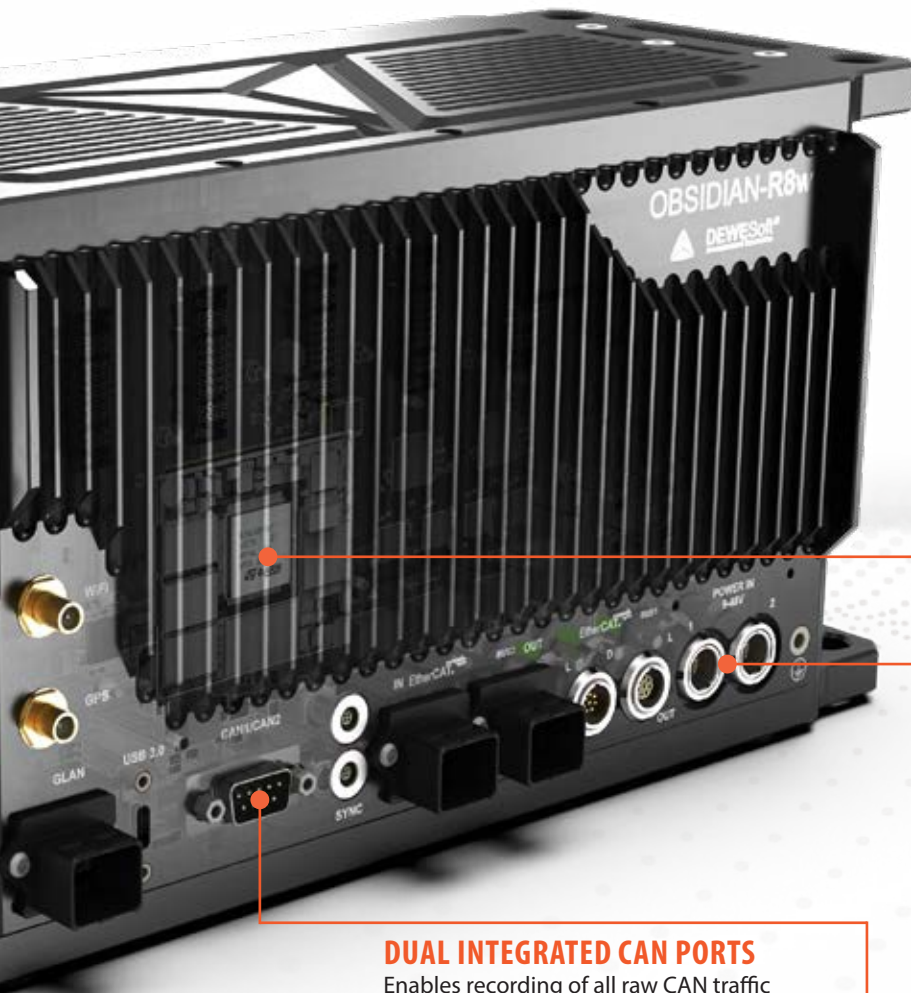
In addition to the internal 4 GB data storage, OBSIDIAN features a storage expansion slot for standard SDHC cards of up to 2 TB and a USB Type-C interface for external drives. This allows for simple storage expansion.

MULTIPLE CHASSIS OPTIONS

OBSIDIAN R12 chassis is compatible with 19" rack cabinets and can fit up to 12 I/O modules. OBSIDIAN-R8 is ready for more 8 I/O modules. OBSIDIAN-R8w is built to survive extreme conditions with IP67 environmental protection and MIL-810F vibration standards.



OBSIDIAN® HIGHLIGHTS



EMBEDDED PROCESSOR

The built-in processor with Linux OS and DewesoftRT software running is perfect for embedded applications such as unattended data recording, cloud connection and real-time control and automation.

DEWESOFTRT SOFTWARE

DewesoftRT running on the device provides on-board data storage with advanced triggering, real-time data processing, and flexible connectivity options, making it suitable for a wide range of applications.

REDUNDANT POWER SUPPLY

If the primary power supply fails, the system will be powered by a secondary power supply without any interruption or system shutdown/restart.

DUAL INTEGRATED CAN PORTS

Enables recording of all raw CAN traffic or online decoding of selected individual messages. Support of ISO 11898, J1939, as well as XCP protocol. Functionality for transmitting of any signal or constant value. Additional CAN ports using CAN slice/module.

7-YEAR WARRANTY

The instruments are built to last. Our warranty program covers that the instruments function as promised for a period of minimum 7 years from the day of the delivery.

EXTENSIVE CONNECTIVITY

Primary communication is handled via Ethernet, Wi-Fi, or EtherCAT. The system supports a wide range of standard protocols for data exchange and integration, including XCP, OPC-UA, MQTT, Chapter 10, MODBUS, and CAN/CAN-FD.

Secondary communication is provided through a dedicated EtherCAT slave port, enabling real-time data transmission to any third-party controller or PLC.

EXPAND CHANNEL COUNT

The system's channel count can be increased by utilizing the EtherCAT expansion port. This allows for the direct connection of additional KRYPTON®, IOLITE®, or OBSIDIAN® units. The expansion is handled through a single cable, providing a scalable and synchronized measurement architecture.



OBSIDIAN® is natively openDAQ-compliant, ensuring long-term compatibility with evolving measurement standards. This architecture allows for easy integration into custom software solutions and third-party environments, providing users with maximum versatility for specialized applications.

OBSIDIAN® HIGHLIGHTS

ALL-IN-ONE AWARD WINNING SOFTWARE PACKAGE COMBINES DATA ACQUISITION, VISUALIZATION, PROCESSING, CONTROL AND ANALYSIS.



MOBILE APPLICATION

DewesoftM is a lightweight, intuitive mobile and desktop application designed to extend your interaction with Dewesoft data acquisition systems (OBSIDIAN, X-line devices and SIRIUS-XHS). Whether you're working in the field or in the lab, DewesoftM enables you to check system configuration, perform calibrations, and adjust setup parameters directly from your phone, tablet, or desktop device.

With live data visualization, you can monitor measurement signals in real time using configurable widgets that mirror the familiar DewesoftX user experience.

DewesoftM runs on iOS and Android smartphones/tablets, and is also available as a desktop application for Windows, macOS, and Linux.

Mobile apps are available on the Apple App Store and Google Play, and desktop versions can be downloaded directly from our Dewesoft website.

DewesoftRT SOFTWARE

DewesoftRT is the embedded DAQ software that runs on the Linux operating system platform, powered by the OBSIDIAN's built-in ARM processor. It consists of lightweight core components for data acquisition, channel configuration, data storage, online math operations and standard interface support (OPC-UA, MQTT, XCP(TCP/IP), CAN/CAN-FD, Ethernet and EtherCAT). Flexible and expandable, its modular architecture allows it to be adapted to handle specific applications and tasks.

DEWESOFTX AS A CONFIGURATOR

DewesoftX is included with every Dewesoft instrument - even when data is recorded without a PC.

For embedded devices, it acts as a powerful configurator and enables advanced offline mathematics not available on the device itself. When opening data recorded on OBSIDIAN, all screens and calculations are available - simply press Recalculate to process the results.

PROFESSIONAL LICENSE INCLUDED

OBSIDIAN includes a DewesoftRT Professional license, which enables data storage and management (SFTP) as well as basic on-device calculations (Formula, Statistics, etc.).

Advanced data processing and communication protocols require additional licenses.



AVAILABLE AMPLIFIERS

OBSIDIAN supports a wide range of IOLITE amplifiers, making the system adaptable for many different measurement tasks. A broad selection of slices is supported, including strain and stress, IEPE, digital input and output, CAN and CAN-FD, current and voltage input, as well as temperature measurements with thermocouples and RTDs. Analog output is also available, allowing both measurement and control in one system.

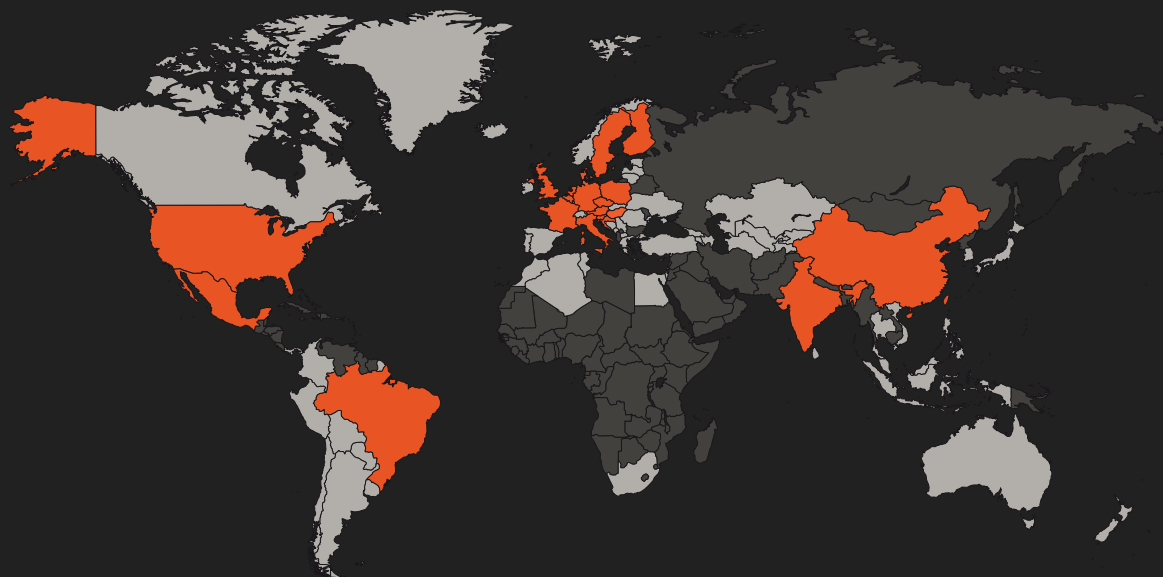
- IOLITEir-4xCAN-FD
- IOLITEir-4xHV
- IOLITEir-4xTH-HV
- IOLITEir-4xUNI
- IOLITEir-8xLA
- IOLITEir-8xLA-T3A2f
- IOLITEir-8xLV
- IOLITEir-8xLV-10V
- IOLITEir-8xLV-10V-T3A2f
- IOLITEir-8xLV-T3A2f
- IOLITEir-8xRTD-HS
- IOLITEir-8xRTD-HS-T2A4f
- IOLITEir-8xRTDp
- IOLITEir-8xTH-HS
- IOLITEir-16xAO
- IOLITEir-16xLA
- IOLITEir-16xLV
- IOLITEir-32xDI
- IOLITEr-32xDO
- IOLITEr-4xCNT
- IOLITEr-6xSTG
- IOLITEr-8xACC
- IOLITEr-8xDI-4xDO
- IOLITEr-8xLVe
- IOLITEr-8xLVe-D37
- IOLITEr-8xSTGS
- IOLITEr-8xSTGS-D37
- IOLITEirw-4xCAN-FD
- IOLITEirw-8xRTD-HS
- IOLITEirw-8xTH-HS
- IOLITEr-4xCNT
- IOLITEr-6xSTG
- IOLITEr-8xACC
- IOLITEr-8xLVe-D37
- IOLITEr-8xSTGS-D37



	OBSIDIAN-R8	OBSIDIAN-R8w	OBSIDIAN-R12
			
Description	Chassis with up to eight slots, dual EtherCAT interface, redundant power supply.	Extremely rugged chassis with up to eight slots, dual EtherCAT interface, redundant power supply. With IP67 rating useful for applications in harsh environments. Equipped with integrated Wifi/BLE and GPS module.	19 rack version with up to 12 slots, dual EtherCAT interface and redundant power supply. Perfect for in-in-lab options but equally usable in vehicle when mounted safely!
Processor	ARM Sitara AM5726 processor, 2GB RAM, Linux OS, DewesoftRT SW		
Power Supply	Dual redundant 9 - 48 V DC		
Storage	Internal 4 GB eMMC, optional SD card up to 2 TB or USB Type-C external storage		
CAN bus	2x CAN 2.0 interface, DSUB9 connector		
Network options	Gigabit Ethernet - RJ45 Dual EtherCAT® interface Primary 2x LEMO 1B 8pin (IN, OUT) Secondary 2x RJ45 (IN, OUT)	Gigabit Ethernet - RJ45 Integrated Wifi Dual EtherCAT® interface: Primary 2x LEMO 1T 8pin (IN, OUT) Secondary 2x RJ45 (IN, OUT)	Gigabit Ethernet - RJ45 Dual EtherCAT® interface: Primary 2x LEMO 1T 8pin (IN, OUT) or 2x RJ45 (IN, OUT) Secondary 2x RJ45 (IN, OUT)
GPS data	External via USB-C	Integrated 10Hz update rate 100Hz update rate with RTK option	Integrated, 10Hz update rate (optional)
IP rating	IP40	IP67	IP30
Operating temperature	-10 to 50 °C (-40 to 85 °C optional)	-40 to 60 °C (-40 to 85 °C optional)	-10 to 50 °C (-40 to 85 °C optional)
Dimensions	282 x 145 x 144 mm	322 x 162 x 155 mm	483 x 148 x 133 mm



Scan me and access the full-range specification.



DEWESOFT WORLDWIDE: SLOVENIA, Austria, Belgium, Brazil, Croatia, Czechia, China, Denmark, Finland, France, Germany, Hong Kong, Hungary, India, Italy, Mexico, Poland, Singapore, Sweden, UK, USA and PARTNERS IN MORE THAN 50 COUNTRIES

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