OROS Leadership through Innovation

About Us
OROS’s design and manufacturing have been renowned for providing the best in noise and vibration testing and analysis solutions.

Our Philosophy
Reliability and efficiency are your ambition everyday. We know you require the same for your measurement instruments: comprehensive solutions providing performance and assurance, designed to fit the challenges of your demanding world.

Our Emphasis
Continuously paying attention to your needs, OROS collaborates with a network of proven scientific affiliates to offer the latest technology, always based on innovation.

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Made for your Demanding World

Automotive
- EV/HV
- Cars
- Heavy vehicles
- Railways
- Components

Aerospace
- Aero engines
- Aircraft, helicopters
- Subsystems
- Defense systems, satellites

Energy & Process
- Power generation
- Oil & gas
- Chemical
- Petrochemical

Marine
- Shipbuilding
- Propulsion
- Defense

Precision Machining & Process
- Machine tools
- Micro-electronic machines
- Components
- Robots & conveyors

R&D
- Prototype validation
- In-vehicle tests
- Simulation models updating and correlation

Acceptance
- Test benches
- Field commissioning

Diagnostics
- Troubleshooting
- Root cause determination

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Application Based
Instruments, software and services to meet your needs and expectations in noise and vibration analysis for test bench, in the field or in the laboratory.

Noise
➤ Sound power
➤ Source localization
➤ Psychoacoustic & sound design
➤ Building acoustics

Rotating
➤ Jet engine testing
➤ In-flight testing
➤ Rotordynamics & balancing
➤ Factory acceptance testing
➤ MRO - Maintenance Repair Overhaul
➤ On-site commissioning / Troubleshooting diagnostics

NVH
➤ In-vehicle testing
➤ Prototype validation
➤ EV/HV
➤ Powertrain testing
➤ Cabin noise & acoustic comfort
➤ TPA - Transfer Path Analysis

Structural Dynamics
➤ Bump test
➤ ODS - Operating Deflection Shape
➤ Modal analysis
➤ Building vibration

Quality & Process Control
➤ Microelectronics production equipment
➤ End of line production testing
➤ Machine tool fine tuning
OROS Solutions Improve your Efficiency
OROS designs and manufactures portable, rugged and real-time noise and vibration analyzers with efficient software solutions for all your tests and measurements.

Software - From R&D to diagnostics

Rotating
- Order tracking
- Torsion & twist
- Rotodynamics
- Turbomachinery vibration
- Reciprocating machines diagnostics
- Single, dual and multplane balancing
- Monitoring

Acoustics
- 1/n octave
- Multichannel sound level meter
- Sound power
- Sound intensity
- Sound mapping & source localization
- Sound quality: psychoacoustics & sound design
- Near-field acoustic holography (air or underwater)
- TPA - Transfer Path Analysis
- EV/HA/NAH

Data Acquisition & Signal Processing
- Recording
- TDA - Time Domain Analysis
- FFT - Narrow Band Spectral Analysis

Structural Dynamics
- Bump test
- FRF & cross-spectrum
- ODS - Operating Deflection Shape
- Modal analysis

Instruments - From 2 to 32 channels, cascadable up to 1000+

Flexible Connection
- Mobile analyzer
- Wi-Fi
- Remote access
- Distributed configuration
- Large channel count systems

Multioperations
- PC free recording
- Real-time & post-analysis
- Multi-analysis
- Handles any transducer

Made for the Field
- Portable
- Rugged
- Real-time
- Multichannel

Accurate
- DSP-based
- 24 Bit – 40 kHz – 140 dB
- ± 40 V input range
- ±0.02 dB / ±0.02°

Services - Everywhere close to you

Training
- Initial
- Advanced
- Webinar

Coaching
- Software customization
- Measurement and analysis

Testing
- Diagnostics expertise
- Troubleshooting
- Tools for automation

A Dedicated Team
- Dynamic and responsive Services department
- Worldwide hotline
- Global Accredited Maintenance Centers (worldwide coverage)
- Rentals
- Ready-to-go systems at any time

Maintenance and Contracts
- Premium contracts
- Software updates
- Hardware upgrades
- Calibration
Teamwork Instruments

For Teams & Fleets
Flexibility: Handles any transducer • Dual licenses system • Synchronous multi-tasking (live and post)
Multi-environments: Robust design • Standalone & remote monitoring modes • Easy integration for test benches
DataCare: Embedded dedicated processing (DSPs) • High-end metrology in all locations • Retrieveable SSD hard-drives

Connections for any Situation

OR34 Compact Analyzer
OR34 is a real-time analyzer that integrates all the necessary features for standard noise & vibration testing in education, R&D and production environments.
- 4 ch 10 V, 2 high speed tach, 1 generator
- High DSP density: ½ DSP/channel
With UPS & Ethernet it operates in:
- General purpose noise & vibration testing
- Education & training
Real-time analysis with a 1 DSP per channel capacity, whatever the demand. OR34 is an excellent solution for high speed test benches, especially for torsional and balancing applications.

OR10 Mobile DAQ
OR10 - Mobile DAQ System (MODS) is designed for measurement situations where mobility, autonomy and data security are the most important requirements needs.
- 4 to 8 channels, 2 high speed tach, CAN bus & µSD card
- Ethernet, Wi-Fi & GPS
With up to 4 hours battery life, it operates as:
- Standalone recorder
- Control with dedicated NVGo Android App
- Front-end of NVGate software platform
It is fully compatibility with the OROS software suite and the native DataSet Management technology, make MODS the perfect complement to your Teamwork instruments fleet.

OR35, OR36 & OR38 Instruments
From 2 to 32 channels per chassis, and with daisy chain distribution the OR35, OR36 and OR38 instruments’ range perfectly suits your measurement requirements with its high level of versatility and performance. Designed to be shared, these instruments provide exactly the same performance and capacities per channel no matter the model.

Full Combination Options
- Switchless daisy chain distribution
- Best in class cross channel phase 0.2 ° 460 kHz
- Local processing and storage: extend the system power as channel number grows
- Auxiliary tach/triggers and generators on all chassis’s

Made for Everyday Efficiency
- Exchangeable XPod strain & temperature conditioners
- PC free, direct standalone recording
- USB ports for recording or charging/powering of accessories
- Wi-Fi connectivity

Powerful Instruments
- Fixed / removable embedded SSD 16 to 512 GB
- Dynamic or parametric (DC, 10 S/s) universal inputs
- Scalable Force DSPs up to 8/chassis
- 2 to 3 hours autonomy on internal batteries
- Wi-Fi, Gb-Ethernet, secure internet connections (SSH)

OR36 Teamwork instrument based
- Reinforced enclosure
- Protection against shocks and projections
- Laptop hosting space with lock
- Cord power supply for power connection
- Expandable mouse tablet
- Protected recorder control panel & Mobi-Disk access
The Mobi-Pack is designed for harsh environments such as helicopter transportation or industrial machinery monitoring and standalone operation.

Mobi-Pack
Mobi-Pack is a ruggedized OR36 package designed for harsh field conditions.
- OR36 Teamwork instrument based
- Reinforced enclosure
- Protection against shocks and projections
- Laptop hosting space with lock
- Power supply for power connection
- Expandable mouse tablet
- Protected recorder control panel & Mobi-Disk access

Connections for any Situation
Teamwork Technology
DataCare, focus on the Best of your Signals

OROS Teamwork instruments include common «edge technologies» with an ability to process and store data faster, providing more efficient real-time results. Designed to accurately capture the right data at the right time, this powerful architecture combines many advanced capabilities.

Handle any Transducer

Front-end designed to handle any type of transducer with no hassle
- Accelerometer, microphones, force & pressure with ICP & TEDS
- Torque, power, etc... including parametric DC mode (part of universal inputs)
- Prox. probe & keyphasor with ±40 V

Temperature XPod
- RTD, PT100, PT1000
- J, K, T, N, E, T thermocouples
- Integrated linearization
- Automatic cold junction compensation

Wheatstone Bridge XPod
- Full, ½ and ¼ bridge
- Automatic bridge balance
- 120/350 Ω built-in resistors 0.5%
- Continuous 0 to 10 V excitation compensation

Gap-Free Multi-Analysis

When using OROS instruments for real-time analysis a gap-free analysis is guaranteed: all single samples are captured and processed thanks to the DSP based technology. This is very important as critical information may be stay hidden in the signal when using a non gap-free system.

The DSP based architecture of OROS systems ensures full real-time analysis avoiding any gap in the sample stream.
- Scalable DSP
- From 2 to 8 channels per DSP
- Multi-task analyses
- 100% deterministic

Flexible Recording

The edge technology permits secure, high speed real-time multi-tasking of your data without compromising efficiency. Recording raw data can be monitored with computed results (profiles, color maps, spectra, levels). Such results are used as graphical test signatures.

Real-time analysis can be re-analyzed anytime with the raw data recording backup.

Designed for the Field

Teamwork instruments extend the need for laboratory accuracy to the field.
- ½ day battery life
- MIL-STD-810-F
- Robust aluminum casing
- -20°C to 50°C
- Portable

Versatile Generators

All analyzers have high-performance outputs driven by a flexible multi-signal generator module.
- Controls experimental shakers
- 1 to 6/chassis, cascadable
- Fully synchronized
- High resolution down to 25 μHz
- Pure / Multi / Swept sine, white/pink noise, chirp, burst, file playback
- Uncorrelated noises

Fluid real-time results at all times with edge computing and storage.
Data Acquisition & Signal Processing

NVGate, the Teamwork Software Platform

NVGate is the OROS software platform. It manages instruments’ setup and signal analysis in both real-time and post-processing. NVGate gathers the basis of noise & vibration measurements backbone with front-end setup, signal processing, calibrations, transducers’ database, live results graphs, reports and measurement automation tools.

From Acquisition to Reporting, a Platform for your Performance
The OROS software feature natively embedded technologies that enhance your efficiency, security and quality.

Usage Driven Workflow
Based on OROS experience of user’s feedback, the ergonomics are optimized for a reduced number of clicks.
- Toolbox flexibility
- Ribbon access for setups, displays and actions
- Relode saved and shared setups
- Advanced display tools: live linked cursors, maths operators, D&M based comparison

Automation for Optimized Efficiency
For test benches and production lines, automated process is key for an optimized efficiency.
- Non specialist’s usage: start and run
- Dedicated control panels
- Mask editors and alarms
- Macros and sequences for automated data acquisition, data storage and reporting
- Template based Word/Excel automatic reports

Simultaneous multianalyses
The platform features the following analyses in real-time and post-processing:
- Signal recording
- TDA - Time Domain Analysis
- Single and multiple FFTs
- 1/n octave and sound level overalls
- Order tracking

Data Management Designed for Teams
Teamwork require to easily browse, filter & sort large datasets and setups:
- Measurements measurements by contextual properties and attachments
- Team shared data and setups
- Use any PC or network directory: database free
- A platform data management for the software suite
- Multiple data formats imports and exports

Multi-Purpose Analysis for your Daily Use

Just Store It - Recorder
The time signal is recorded to be post-analyzed later on
- Parallel results monitoring for optimized efficiency, comfort and security
- Gap-free parallel sampling rates: slow @10 S/s, fast (selectable up to 102.4 kS/s), oversampled @6.4 MHz for tachs
- Pre-event recording

A Glance at It - Time Domain Analysis
A first step into analysis allowing:
- Looking at signals from seconds to hours
- Displaying typical scalar values (True DC, Min., Max, RMS, 0-Pk, Pk-Pk, Crest factor, Kurtosis) as view meters and profiles
- Triggering other analysis/recording

Get into It - FFT
The FFT module is the swiss-knife of noise and vibration analysis providing narrow band analysis. It is used for most applications including structural dynamics, acoustics, and rotating analysis. It offers from basic to advanced analysis results:
- Spectra up to 40 kHz with 25601 lines
- Frequency, time and synchronous time averaging
- Lissajous, shaft view, envelope demodulation
- All units: RMS, Peak, pk-pk, PSD, ESD, RMS PSD
- Single/double integration & differentiation filters

Track its Evolutions - Waterfall
Results can be stored in a pile referenced as a function of time, RPM or other parametric data (temperature, torque etc...)
- 3D, colormap, profiles, Bode displays
- Band level, order and max order extraction sections
- Multigraph linked cursors for comparison analysis

Catch it on the fly - NVGo
For situations demanding the upmost portability for data recording, OR10 DAQ is in action:
- The NVGO App to setup and monitor results via an android device
- A complete front-end setup and parallel monitoring of signals, spectra & levels
Rotating Speed Measurements

OROS 3-Series analyzers feature flexible and accurate shaft speed measurement tools. Tachometer signals are over-sampled to ensure accurate rotating speed and phase. Signals can be adjusted for better pulse detection using filters, holdoff and hysteresis.

- **External Trigger Channels**
  - 2 tachometer inputs are standard (up to 6/chassis)
  - High sampling rate of 6.4 MHz (<152/μs resolution) to allow an accurate phase measurement

- **Angular Sampling**
  For crankshaft, timing and valve analysis on engines.

Order Tracking Analysis

**Order Based Diagnostics: ORDiag**

- Rotation synchronous levels (RMS, Min/Max, Pk-Pk, Crest factor)
- Angular correlation
- Roders, ORFs

Using proven real-time angular resampling algorithms, SOA extracts amplitude and phase of orders; even from fast transients.

- Up to 40 kHz real-time analysis
- Order or angular domain averaging
- Max order contribution search
- Simultaneous order analysis on 2 shafts

**Synchronous Order Analysis (SOA)**

Provides stable and repeatable measurements for any speed-varying machinery. Using proven real-time angular resampling algorithms, SOA extracts amplitude and phase of orders; even from fast transients.

**Integrated Frequency to Voltage Converter**

This function allows using the external synch channels directly as inputs for torsional & twist measurement.

**Output Shaft Rotating Speed Computation**

Based on 1 or 2 tachometers and the gear ratio. Provides phase and RPM from any shaft on the kinematics including CVT belts.

**Monitoring**

Use as a standalone monitoring system with ability to trigger actions based on defined alarm conditions. The system operates autonomously and can be accessed remotely for further diagnostics.

- From basic to advanced triggering conditions
- Pre-trigger time domain signal recording
- Advanced and flexible actions on alarms (emails, external applications, macros)

**Torsion & Twist**

The Instantaneous angular Velocity Converter (IVC) provides instantaneous angular velocity signal to be analyzed.

- Integrated frequency to voltage converter
- Cross phase tracking: the order cross-phase relatively to a reference channel for torsional resonances at specific orders identification.
- Virtual inputs compute the static and dynamic twist from 2 tachometers’ signals.

**Single, Dual & Multiplane Balancing**

Assists the user during the test and the correction process:

- Rigid or flexible rotor
- 1 or 2 sensors per plane
- Synchronous Order Analysis based
- ShaftView
- Kinematics’ markers
- Levels & profiles
- Balancing prognosis, Trim

**Turbomachinery Vibration : ORBIGate**

ORBIGate, the turbomachinery software, gathers all functions required for turbomachinery rotordynamics analysis into one simple to use dedicated user interface.

- Tabular list: gap voltage, overall, orders amplitude and phase (0.5X, 1X, nX), Sub1X, SMax
- Orbits (Overall and nX filtered)
- Full shaft motion: Shaft centerline + clearance circle + orbits
- Bode, polar and trend plots
- Full and half spectrum, cascade and waterfall
- Gap voltage reference
- Slow roll vector reference for run-out correction
- Real-time acquisition, post analysis (based on raw signal recording) and data navigation

**Reciprocating Machines Diagnostics: EngineDiag**

Integrate the machine mechanical properties and kinematics (number of cylinders, machine cycles, timing diagram) into NVGate, the noise and vibration software platform. The Advisor offers an easy software configuration and displays results based on the machine characteristics and instrumentation.

- Synchronous time signals with cycles overview
- Overall level on the machine cycles and kinematic phases
- Results comparison and trend
- Angle-Frequency representation based on Wigner-Ville algorithm
- Cylinder phase alignment
**Structural Dynamics**

**From Acquisition to Modal Analysis**

Structural dynamics aims at understanding the mechanical behavior of vehicles, components and industrial machinery. The success of such analysis starts with an efficient and high quality data acquisition in the field: the key main features required for achieving this have been built into our solutions.

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**Structural Data Acquisition**

With its dedicated structural mode, the FFT software module offers a comprehensive tool set for FRF and cross-spectra acquisition. Whether impact hammer, shaker excitation, or natural excitation is used, structural data can be acquired with confidence.

- Use the appropriate results and display: Frequency Response Function (FRF), cross-spectra, force spectrum, coherence, trigger blocks.
- Any input can be set as the reference which generates a multiple reference FRF and cross spectrum matrix.
- Manage small to large amounts of structural data by cascading instruments.
- Define the measurement sets in Excel and use our node path sequencer to track all measurement points.
- Hammer impact auto-range.
- Use the appropriate weighting window (uniform, force/response).
- Excitation validity check based on results preview: FRF, Force spectrum, Coherence, Trigger blocks.
- Accept/reject impact hammer measurement after checking coherence.
- Connect up to 6 shakers for open-loop excitation with our output generators.
- Excitation signals such as swept sine, chirp, random, can be generated simultaneously.
- Export the FRF in Universal File Format (UFF), MATLAB® and ASAM format.

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**Modal**

OROS proposes a comprehensive and powerful modal package adapted to all user levels from novices to modal experts. It features Operating Deflection Shape (ODS), Experimental Modal Analysis (EMA) as well as OMA (Operational Modal Analysis) using powerful state of the art algorithm making analysis of complex structures accessible without expertise.
Acoustics Analysis

From Benchmarking to Troubleshooting

Teamwork instruments provide accurate and comprehensive results from any noise phenomena. Acoustic analysis can be performed simultaneously with other signal processing such as FFT, recorder, or order tracking.

Sound Power

In multiple situations, the sound emitted from objects need to be quantified: sound power is the ideal quantity for this. Depending on the test environment the best method to apply may vary. If it is a field test, Sound Intensity based techniques will be typically applied. If it is a repetitive test based on a test bench, the sound pressure based technique (Sound Power) is the ideal one.

Sound Pressure Based

The Sound Power software provides sound power determination based on the sound pressure levels measured by microphones around the test object. It is ideal for a test bench: indoor (laboratory anechoic environments) or outdoor environment.

- Fulfills main international standards for free field environments: ISO 3744
- Dedicated interface for easy and repeatable operation
- All microphone positions measured at once
- Overall and Spectra real-time display
- Type-1 precision results in dBA
- Direct Sound Power determination
- Automatic standard validity check
- Background and environmental corrections
- Repeatability and directivity checks
- Test reporting with Excel

Sound Intensity Based

The Sound intensity software provides sound power determination based on the sound intensity measured by an intensity probe following the point-by-point testing (ISO9614-1) or the scanning procedure (ISO9614-2). It is ideal for tests in the field.

- Real-time sound intensity spectrum
- Guided measurement procedure following ISO9614-1 & 2
- Field criteria and indicators calculation
- Automatic sound power report
- Calibration module for phase calibration and pressure-residual intensity index
- Probe remote control management

Overall Acoustics: Levels & Profiles

The OVA plug-in, a multichannel sound level meter, extends the analyzer’s capabilities to a comprehensive acoustic measurement system.

- Complies with the latest standards such as IEC 61672
- Runs 3 RMS and a true peak detector/channel
- Time filtering and weighting
- User selectable 3rd order 10 Hz high pass
- Long duration profile memory (100,000 points/channel)

Octave Analysis

- 1, 1/3rd, 1/12th, 1/24th octave
- Complies with IEC 61260 and IEC 60804
- A, C weighting filters and other common ISO standards
- Fast, slow, impulse time filtering
- Leq, Short Leq, User Leq, Constant BT
- Mask, Min/Max live overlay
- 1/n octave waterfall with profile extraction by band
- Dedicated DSP processing
- Up to 40 kHz

Sound Source Identification

Sound source identification (SSI) techniques offer informative acoustic maps and quantitative information on test objects. These techniques are based on which sound source the user can quickly locate, determine the root cause of the unwanted noise, and decide where the noise reduction effort is to be concentrated. There are three main techniques. Sound intensity mapping is an easy and cost-efficient method, especially in noisy environments. Though measurements at many points are required to achieve accurate localization. In contrast, beamforming and near-field acoustic holography (NAH) are array-based approaches. Beamforming is well-suited for providing a quick overview of the complete test object at medium to high frequencies. While NAH focuses on sub-sets of the object and provides detailed acoustical information.

Sound Intensity Mapping

- Classical exploded 2D view & Advanced 3D graphics sound mapping
- Levels and spectra selectable by segment
- Narrow band, octave, and 1/3 octave
- Guided acquisition procedure
- Multiple measurement surfaces creation
- View the source behavior at several frequencies simultaneously
- Intensity probe remote control management
- Detect stationary noise sources

Near-field Holography Air & Underwater

- Detect both transient and stationary noise sources
- Perfect tool for benchmarking competing solutions
- Detect stationary and repeatable transient noise sources

Beamforming

- Soundspot visualizes the dominant noise source in real-time video
- Ultra-compact system: the lightest handheld sound camera in the market
- Fully automatic setup and user-friendly interface, allows immediate acoustic investigation anywhere by anybody
- Automatic distance measurement by the optical system
- Acoustic map corresponding to the selected octave band
- Sonometer mode for measuring sound pressure level in dBA or dBA
- Post-processing software SoundSpot-Office available
- Detect both transient and stationary noise sources

Abstract:

Acoustics Analysis

From Benchmarking to Troubleshooting

Teamwork instruments provide accurate and comprehensive results from any noise phenomena. Acoustic analysis can be performed simultaneously with other signal processing such as FFT, recorder, or order tracking.
**Acoustics Analysis**

**NVH**

Trains, planes, cars, all means of transport are affected by noise and vibration challenges. Although the R&D departments of vehicle manufacturers deal directly with these issues when designing vehicles, it is often necessary to take further actions once the first prototype has been released. To reduce noise, actions can be implemented either at the source, on its transfer path, or at the level of final emission into the passengers’ ears.

**TPA: Transfer Path Analysis**

In NVH, one of the key objectives is to characterize how noise and vibration reach a target, for example the ear of the driver. This is achieved experimentally by carrying Transfer Path Analysis (TPA). It allows ranking the main sources in growing order of contributions at the target. To fulfill the needs of this application, OROS proposes a unique TPA solution designed in cooperation with the ICR company.

- Full Transfer Path Analysis solution including analysis software, acquisition instruments and services
- Allows contributions determination and ranking along the path
- Range from a few to a large number of subsystems
- Intuitive dedicated interface looking at contributions evolutions vs operating conditions
- Frequency distribution of contributions: narrow-band, 1/3 octave spectra
- Intuitive data selection management and navigation
- Easy and flexible export of data for reporting

**ATPA unique advantages**

- No requirement to mechanically isolate the various sources, resulting in shorter testing time
- Allows contributions from panels, structural paths, and sources to be ranked
- Separates Air-borne contributions from Structure-borne contributions
- Coherent and Energetic analysis extending the analysis to high frequencies
- Synthesis calculation allowing for a full test validity check

**Sound Quality: Psychoacoustics & Sound Design**

The Sound Quality software module is the ideal tool for psychoacoustic metrics determination and intuitive sound design.

- Accurate and standardized psychoacoustic metrics determination: Loudness (DIN 45631/A1, ISO 532-1, ISO 532-2), Sharpness, Fluctuation Strength, Roughness, Prominence Ratio, Tone-to-Noise Ratio, Articulation Index, and Speech Intelligibility Index
- Interactive sound filtering: Frequency-based and Order-based
- Auditory spectrogram: Time-frequency aurally related analysis, making aural sensation visible
- Intuitive sound design via innovative editing and resynthesis of auditory representations
- Comprehensive frequency analysis, including modulation analysis and wavelet analysis
- Order analysis and RPM-based display
- Playlist management for fast and easy comparison
- Distance spectrogram for visualizing differences between two sounds

**EV/HV: Electric Motor Noise**

Characterizing and mitigating noise from electric motors require to use the appropriate tools: the EV/HV NVH module, developed in cooperation with the EOMYS company, is designed for that purpose.

**Powertrain setup:**

- Management of your EV/HV motor topologies (PMSM, SCIM...)
- Analysis of the main excitations (frequencies, wavenumbers)

**Electric markers:** spot the frequencies

- Spot instantly electromagnetic excitations (slotting frequencies, PWM, ...) based on motor and converter characteristics
- Allows the separation of magnetic excitations from the structural response
- Spatiogram: characterize the contributing electric forces patterns

- Represent the noise resulting of one spatial distribution of the electromagnetic forces for the whole range of rpm during a runup
- Allow to determine how much a specific wavenumber (so one distribution of the forces) contributes to the emitted noise. It is calculated from the data captured on the surface of the stator.
Services

Everywhere Close to You

Responsiveness is the key to offering the highest level of services. OROS relies on a powerful network of subsidiaries, offices, resellers, maintenance centers and qualified partners. They are the first steps to your productivity.

Training

Experts from OROS offer theoretical and applied training sessions on noise and vibration. Our training programs are defined with you according to your needs: content can be either initial or advanced depending on your level and skill. Our objective is to work side-by-side with you as you use of your system to maximize your profitability and efficiency. We offer applied training programs at your facility. We also offer remote web-based training sessions with one of our many expert instructors.

Coaching

Assistance with your Measurements

When resources are not available to you (lack of resources, skills, or systems), we offer assistance with your on-site measurements. We manage the entire process of your tests and measurements, up to and including final test reports. We help optimize your measurement process depending on your application and field requirements.

Expertise in Diagnostics

We even perform the measurement for you with on-site diagnostics or prototype characterization.

Customization

When your needs go beyond typical use, we are able to answer the need for your specific requirements and adapt to your specifications. With our flexible platform, we are able to customize either the instrument or software. We tap into our years of experience and know-how to find the best solution for you.

Automation Tools

We offer a large panel of tools for automation that streamlines your testing. As an example, our macros and sequences are very powerful tools that create automated procedure.

Integration

NVDrive allows you to implement your own solution. From a simple add-on to complete test benches, build your program that drives and get results from Teamwork instruments through a TCP/IP interface.

Renting

Based on a range of modular instruments from 2 to 32 channels, the OROS line of Teamwork analyzer technology enables them to cascade or be distributed up to 1000 channels. Instruments, conditioners and software licenses are flexible and interchangeable.

The OROS Customer Care department is at your disposal to propose rentals of instruments and/or software modules to help you in your fleet management.

Hardware: increase capacity and performance of your instruments.

Software: try other OROS software modules according to your applications or rent any additional function on an as-needed basis.

Premium Contracts

1, 2 or 4 years renewable contracts to extend your warranty

➤ 3 months satisfied or exchanged period

➤ Hotline (Help-desk support)

➤ Full coverage on your instrument (calibration and maintenance)

➤ Guaranteed turn around time [4 days] for hardware repairs and calibration

➤ Loaner units on longer time-frame repair or calibration

➤ Access to a personalized section on the myOROS website for software updates, tech-notes and other non-public downloads

➤ Calibration reminders

➤ Priority service at our maintenance center

➤ Privileged access to extended services at a preferential rate: urgent loan within 1 day,

The OROS Service Department

Paying the greatest attention to our customers' satisfaction, OROS devotes a dedicated department, the Services Department, to ensure the best use of our technology. The dynamic and responsive team closely works with all the OROS experts: technical, R&D, manufacturing, marketing and sales.

Global Accredited Maintenance Centers

With worldwide coverage (China, Europe, India, Japan, Saudi Arabia, South Korea, USA), OROS is in close proximity to its customers, ensuring your instruments are up and running when you need it. Technicians are certified on a regular basis by OROS specialists, enabling them to repair, calibrate and upgrade all OROS systems.
### General Specifications

#### Instruments

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<th>OR35</th>
<th>OR36</th>
<th>Multi-Pack®</th>
<th>OR38</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dynamic range (Vpp)</td>
<td>0.5</td>
<td>2.5</td>
<td>2</td>
<td>4</td>
<td>10</td>
<td>100</td>
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<tr>
<td>Sample rate</td>
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<td>500</td>
<td>1 kS/s</td>
<td>2 kS/s</td>
<td>4 kS/s</td>
<td>65.536 kS/s</td>
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<td>Auxiliary</td>
<td>Digital/Analog</td>
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<td>2</td>
<td>3</td>
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<td>Reference types</td>
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<td>BNC</td>
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<tr>
<td>Inputs</td>
<td>100 mV</td>
<td>500 mV</td>
<td>1 V</td>
<td>2 V</td>
<td>5 V</td>
<td>10 V</td>
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<tr>
<td>Outputs</td>
<td>±20 V</td>
<td>±20 V</td>
<td>±20 V</td>
<td>±20 V</td>
<td>±20 V</td>
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</tr>
<tr>
<td>Channels</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>8</td>
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<tr>
<td>Channels</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>4</td>
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</tr>
<tr>
<td>Channels</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>4</td>
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</tr>
</tbody>
</table>

#### Accessories

**CAN bus interface (CAN)**

- **Signals**: CAN bus TX, TX-EXT, RX, RX-EXT
- **Interface**: CAN bus
- **Applications**: CAN bus (2 to 124), CAN bus (1 to 255), CAN bus (1 to 500)
- **Specifications**: CAN bus (2 to 124), CAN bus (1 to 255), CAN bus (1 to 500)

**Strain gauges (X Pxi)**

- **Material**: Resistance wire
- **Applications**: Strain gauges, load cells, actuators, etc.
- **Specifications**: Strain gauges, load cells, actuators, etc.

**Temperature (X Pxi)**

- **Material**: Thermocouple
- **Applications**: Temperature measurement
- **Specifications**: Thermocouple, RTD, etc.

#### NVGate® (software base)

**Graphics**

- **Graphical features**: NVGate software enables the creation of custom graphs with a variety of options and customizable settings.

**Data management**

- **Project manager**: Users can schedule projects and tasks, manage timelines, and track progress.

**Real-time analysis**

- **Performance per DSP**: OR34, OR35, OR36, and OR38

**I/O functions**

- **Inputs/Outputs**: Device supports various input and output configurations.

**Compatibility**

- **Automation**: NVGate allows for seamless integration with a wide range of automation systems.

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Worldwide Coverage

Our Maintenance Centers provide close proximity to our customers. Technicians are certified on a regular basis by the OROS specialists.

Our representatives are carefully selected for their knowledge and expertise in noise and vibration analysis. They are regularly trained and updated on OROS products.

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