

OR34
4 CHANNEL
COMPACT ANALYZER

My **OROS**

NOISE AND VIBRATION ANALYZERS

www.oros.com

OR34

COMPACT ANALYZER

OR34 is the compact real-time multi-analyzer that integrates the best of sound & vibration analysis technology in an ultra mobile instrument. OR34 is the synthesis of the ultimate OR3x technology and OROS' wealth of experience in measurement. Designed to offer the essentials in a professional instrument, OR34 will follow you everywhere. Choose OR34 and go straight to the essentials.

OR34 has been designed to handle day-to-day measurements. OR34 integrates the best of OROS' 15 years of experience in designing and manufacturing noise and vibration analyzers. This instrument contains the essential functions covering the entire measurement process in a compact unit.

LIGHT

Weighting less than 1.5 kg (3.2 lb), OR34 is the lightest analyzer of its class. OR34 is ultra-portable and can be carried easily along with your laptop for intensive use. Its exceptional robustness makes it the instrument you can trust.

PROFESSIONAL


OR34 is designed for professionals working in the field as well as in labs. Its rigorous design, based on high quality materials and electronics (aluminum case and independent power supply) ensures stable and accurate measurements in all situations. This makes OR34 the most reliable solution for mobile dynamic signal measurement and analysis.

EFFICIENT

Designed for measurement, OR34 is the perfect combination of features selected for optimum acquisition efficiency in all situations.

OROS is the manufacturer of noise and vibration analyzers that entirely designs and manufactures its products. We master software and hardware empowering the contribution of each part for maximum instrument efficiency. This makes OROS analyzers the most accurate and reliable instruments for noise and vibration.





OR34 is part of the OR3x analyzer range from 2 to 64 channels in truly portable instruments. They are all based on OR3x technology and NVGate® offering full multi-analysis and real-time performance.

GO STRAIGHT TO THE ESSENTIALS

NVGate®, the OROS noise and vibration software platform, controls all the analyses and measurements carried out by OR34. As part of the OR3x analyzer range, OR34 benefits from the innovative functions developed for the biggest systems. Offering parallel analysis capability, OR34 opens a new dimension focusing immediately on any part of the measurement. Whatever the situation, on-line measurement or office post-analysis, you run the same software application, with or without OR34 connected.

READY, SET, GO

Tried and tested tools enhance analysis, operation, storage and report capacities, while keeping them simple. From measurement preparation to reporting tasks, experienced functions help you reduce test set-up and configuration time.

EASY

The ergonomic, intuitive, modern interface places the analysis functions at your fingertips. All set-ups are based on graphics tools, making advanced set-up easy to handle. NVGate® provides measurement wizards that guide users focusing on the measurement application rather than understanding the software.

COMPATIBLE

NVGate® is the standard for analyzers, handling results from any unit, whether OROS or another model. This capability makes NVGate® the central tool for all your noise and vibration measurements.

ALL AT ONCE

ALL IN ONE INSTRUMENT



OR34

TECHNOLOGY FOR MEASUREMENTS

The OR34 integrated multi-analyzer is based on OR3x, the technology breakthrough in dynamic measurement systems. Created by OROS for measurement efficiency, OR3x innovates in terms of both hardware and software architectures. The extraordinary capabilities of this unique concept have been brought to the OR34 analyzer.

24 BITS / 40 KHZ

All inputs are based on the latest analog and digital technologies making OR34 the accurate instrument that enhances the meaning of measurements.

- State-of-the-art analog conditioning stages use 24 bits ADC to the full. Up to 40 kHz bandwidth inputs ensure extremely high amplitude (± 0.05 dB) and phase (0.05°) precision.
- OR3x inputs integrate ICP, AC/DC and floating coupling.

INTEGRATED AND DEDICATED DSPs

OR3x analyzers include multiple DSPs that ensure analysis integrity. All channels are then processed in real-time whatever the analysis modes, regardless of the PC. 3 dedicated DSPs (digital signal processors):

- 1 Master DSP for monitoring, triggering, and signal generation.
- 1 Ethernet/Recorder DSP to ensure continuous communication between analyzer and PC for gap-free recording
- 1 computation DSP that provide independent power to achieve real-time analysis whatever the mode (FFT, 1/n Octave, Order) and the bandwidth.

TRIGGERS AND GENERATORS AS STANDARD

Enhance your measurement capacity with additional dedicated channels. They come as standard and can be used simultaneously with the dynamic inputs, thanks to the dedicated master DSP and connectors.

- OR34 integrates a high quality 40 kHz generator ($\pm 10V$ / 24 bits / THD < 0.002%) for any type of excitation (playback, noises, and sweep) available during analysis.
- OR34 integrates 2 high-speed external syncs for high-speed tachometer (up to 100 000 RPM with 64 pulses/rev) and sharp triggering (resolution < 160 ns).

RUGGED INSTRUMENT

You work in the field, OR34 does it too:

- These instruments are built in a strong aluminium body reinforced by an external 2 mm thick shell, providing high protection against shocks.
- OR34 includes a controlled fan, which regulates internal temperature avoiding precision errors in warm conditions. For quiet acoustic acquisition, the fan can be disabled.
- OR34 complies with the most demanding EMC standard (IEC61326:2002-A) for measurement in industrial environments thanks to its fully decoupled Ethernet PC connection.
- All inputs are protected against over-voltage up to ± 60 V without damage.

VERSATILE POWER SUPPLY

OR34 accepts many types of power supply for easy field operation:

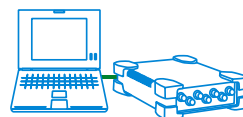
- DC in a wide range of voltages (10 to 28 V)
- AC (100 V to 240 V) compatible with all international standards.

VERSATILE ETHERNET 100 MB/S LINK

OR34 is linked to the PC via a fast and reliable 100Mbit/s Ethernet connection. As this connection is a standard for PC and industrial devices, OR34 units can be easily connected to a LAN architecture or via wireless tools.

A WAY - A MODE

OR34 operates throughout the entire measurement process providing operating modes suited to each step of your measurement process.



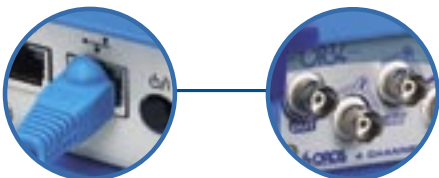
**REAL-TIME
ANALYSIS**



**OFFICE
POST-PROCESSING**



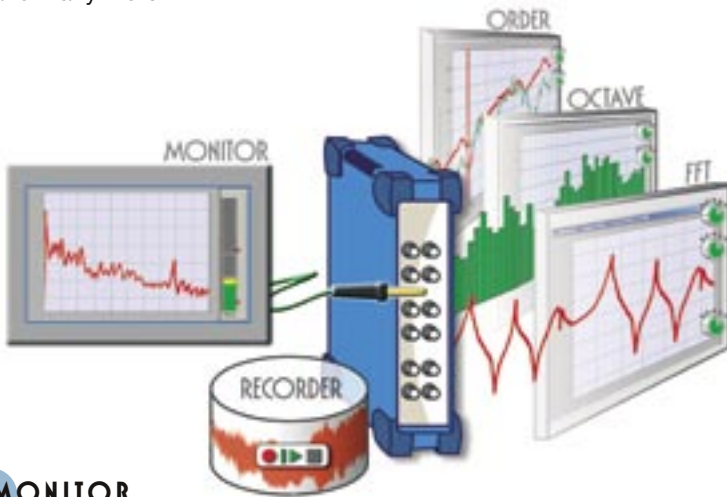
**STAND
ALONE**



Created by OROS for measurement efficiency, NVGate® innovates in terms of both functions and interface. NVGate® brings its extraordinary flexibility to the OR34 analyzer.

MULTI-ANALYSIS AS STANDARD

OR3x technology provides a unique feature in real-time parallel analysis capability. The analyzer operates with one independent plug-in for each analysis mode. To achieve this, OR3x technology takes advantage of its dedicated DSP architecture, a real-time, multi-processor and multi-task operating system. This enables OR3x multi-analyzers to record and analyse simultaneously, compute FFT and track synchronous order during one run-up and many more.

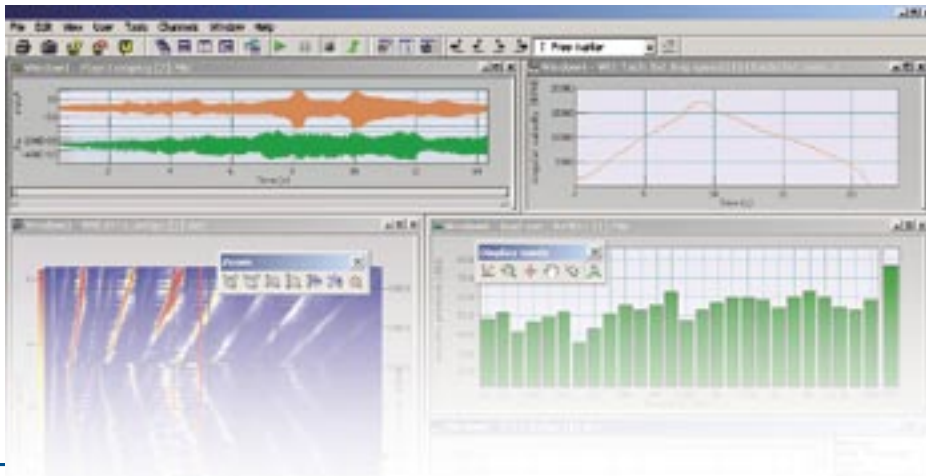


MONITOR

OR3x analyzers include a 4-channel monitor, which continuously runs FFT and time domain detectors. The FFT keeps a large band signal overview during dedicated analysis. Time domain detectors - DC, filtered RMS, Max, Min, and kurtosis - are available for profiles and advanced triggering. The monitor inputs can be hot-swapped during acquisition and analysis.

WATERFALL

NVGate® Waterfall collects and synchronizes any kind of data, and offers the best of 3D and referenced profile displays. You can correlate measurements from different analysis modes (FFT, 1/n Octave, Order, overall) with specific references (RPM, DC, RMS) adding a new dimension to basic analysis. With the OR3x waterfall, make the most of multi-analysis!



NVGATE® WORKSPACE

Whether you are an expert or a beginner, you will appreciate the specific functions that make measurement faster, easier and more efficient.

- **ANALYZER SETTING BROWSER:** Reach any analyzer setting in a maximum of 3 steps with its intuitive tree architecture.
- **PROJECT MANAGER** lets you manage settings and measurement with exchange capabilities for data or setting transfers. Reproduce measurement set-up, filters your measurements database, exchange data, and comment on results!
- The **CONTROL PANEL** editor enables you to define the setting you want to access directly, creating a dedicated instrument panel.
- **REPORT GENERATION:** set up the format of your reports, and manage it easily. NVGate® reports are Word® documents.
- **DEDICATED MODES** fit the type of settings, graphics and available results for acoustics, rotating, and structural fields of interest.
- **MACROS** recorder and editor include algorithmic functions and is able to generate dialog boxes for user interaction.
- **MASKS:** Define the permissible boundaries for your results, check them in real-time and generate alarms.
- **SEQUENCES** let you automate measurements set from a simple Excel® sheet.
- **NVDRIVE®** and **LINK TO MATLAB®** are external TCP/IP control languages that provide automation and results input from your own application.
- **CALIBRATION** tool and **TRANSDUCER DATABASE MANAGEMENT** simplify transducers settings management.
- **SET-UP WIZARDS:** downloadable applicative set-up guides make OR34 a dedicated tool for your application, regardless your background.

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OR34 SOLUTIONS

A P P L I E D I N S T R U M E N T

OROS proposes a set of solutions, the NVSolutions®, that make your analyzer a fully applied instrument.

STRUCTURAL ANALYSIS

Modal data acquisition, using roving impact hammer or shaker excitation, requires specific displays and functions. The OR34 FFT plug-in analyzer features a high dynamic range, automatic node increment, easy control of force and response weightings, averaged FRF and coherence preview. For shaker excitation, it includes advanced sweep/step sinus and noise generation. OROS Structural Solutions, OROS ODS and OROS Modal, based on task-oriented wizards, guides the user from geometry definition to modal parameters extraction and animated deflection shapes.

INDUSTRIAL ACOUSTICS

In R&D product design and troubleshooting, the instrument is sufficiently flexible to take general-purpose acoustic studies in its stride. The 1/nth Octave plug-in analyzer features automated microphone calibration, real-time CPB processing, overall time history profiles and reporting with a flexibility and power matching the widest range of applications.

OROS Sound Power, Sound Intensity and Sound Quality Meter Solutions are specially dedicated to their corresponding applications. These solutions feature task-oriented interfaces that guide the user easily along the application. Type 1 accuracy and automated procedures are required for fast and reliable tests. The answer lies in OROS Sound Power and Sound Intensity Solutions, where the acquisition is guided in accordance with recommendations given in International Standards.

The OROS Sound Quality Meter Solution enables the user to estimate sound quality by calculating the psychoacoustic metrics.

ROTATING

From engine gearboxes to steam turbines, sound and vibrations are related to rotating speed. In order to measure these phenomena, OROS proposes a set of tools based on one or several tachometers.

The Waterfall is a powerful analysis tool enabling the user to study variations in spectra and overall levels over time.

For run-up, torque application or stable speed trials, the FFT plug-in analyzer features Constant Band Tracking with up to 8 tracked orders per channel.

The Synchronous Order plug-in analyzer, based on signal re-sampling, gives accurate results on applications involving fast run-up, coast-down, or rotor balancing.

REPORTING

During field tests, reports can be generated easily on the spot for each measurement as standard Microsoft Word® documents.

For presentations of your test campaign, OROS Reporter Solution enables you to organize and present your results efficiently in common Microsoft Office applications such as PowerPoint®. The exported displays are active documents so they can still be handled in the report itself, making it easy for working groups, to share information.

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FRONT-END

CHANNEL COUNT	2 or 4 inputs ♦ BNC
INPUTS CHANNELS	Sampling: 2 k to 102.4 kHz 24 bits ADCs ♦ ± 17 mV to ± 10 V ♦ AC/DC/ICP®
INPUT ACCURACY	Phase ± 0.02° ♦ Amplitude ± 0.02 dB ♦ Frequency ± 0.005 % ♦ 120 dB dynamic ♦ up to 20 kHz
OUTPUT CHANNELS	1 output generator ♦ ±10 V range ♦ 24 bits DACs ♦ 0 to 40 kHz ♦ THD < 0.002%
EXT. SYNC CHANNELS	2 ext. sync triggers/tachs. ♦ ± 10 V range ♦ Time resolution < 160 ns (0.06° at 1 kHz)
POWER SUPPLY	External AC 100 to 240 V ♦ DC 10 V to 28 V ♦ 15 W ♦ Internal battery 15 Min (NiMh)
LINK TO PC	Ethernet 100 base T ♦ 100 Mb/s ♦ Up to 100m ♦ Wireless capable
DSPS	1 computation DSP (24 SPU) ♦ 1 master DSP ♦ 1 recorder DSP
DIMENSIONS	w: 54 mm, h: 215 mm, d: 163 mm ♦ (2.1" x 8.4" x 6.4") ♦ 1.5 kgs (3.2 lbs)

ANALYSIS MODES

NARROW BAND FFT ¹	0.8 Hz to 40 kHz ♦ 101 to 6401 lines ♦ Time or spectral domain averaging ♦ Linear, exponential, peak hold & ref peak hold averaging ♦ A, C weighting ♦ Constant band order tracking ♦ Full matrix cross spectrum ♦ FRFs H1 & H2 ♦ Coherence ♦ 2 to 128 time FFT zoom simultaneous with wide band FFT ♦ FDSA
1/N CPB OCTAVE ¹	1/1, 1/3 rd , 1/12 th , 1/24 th octave ♦ User selectable frequency span ♦ Complies with IEC1260 A,B, C weighting ♦ Short Leq, Fast, Slow, Impulse, linear & exponential averaging ♦ Instantaneous and averaged Spectrum ♦ Global averaged and weighted levels ♦ Max and min spectrum
SYNCHRONOUS ORDER ¹	Time domain re-sampling and interpolation ♦ 1 to 1/32 nd order resolution ♦ Max order 6.25 to 400 ♦ Time or spectral averaging ♦ Linear, exponential, peak hold & ref peak hold averaging A, C weighting ♦ Integrated order tracking ♦ Overall analysis on order band
RECORDER	8 tracks + ext. sync recorder/player ♦ 2 user selectable frequencies on the same record Record from start to stop, start to time and time to stop ♦ multi-record file ♦ File split: tracks and time
OVERALL	4 channel time domain analyzer ♦ DC, Max, Min, RMS, Skew, Kurtosis User selectable frequency band ♦ User selectable average time
MONITORING	4 channel FFT (401 lines, Hanning) analyzer ♦ Hot plug of any input (do not stop running analysis or recording)
WATERFALL ACQUISITION	Collects and synchronizes any results from Overall, FFT, Octave, Synchronous order 1 to 10.000 slices ♦ Profiles and 3D real-time displays ♦ One shot or continuous scrolling acquisition Synchronized cursors between displays
MULTI-ANALYSIS	All analysis modes can run simultaneously on any channels with separated bandwidth, averaging, triggering, and filtering.

I/O FUNCTIONS

GENERATORS	Pure tone ♦ swept sine with frequency tracking ♦ 1 Multi-sine random noises ♦ File playback ♦ Input playback ♦ Burst ♦ Chirp
TACHOMETER	2 ext tach ♦ tach from any dynamic input ♦ pre-divider 2 to 1024 Virtual tach (compute gear ratio) up to 1 200 000 RPM
TRIGGERING	All the following events can start and stop averaging, start a new record, trigger analysis and acquire a slice: Edge from ext. sync or any input ♦ RPM & Delta RPM ♦ Level & delta level from DC, max, min, RMS or kurtosis value ♦ Manual ♦ Time interval ♦ Event combination (and, or, precedence) ♦ Generators steps, stabilization and burst ♦ Available results from any analysis mode.

REAL-TIME PERFORMANCES

REAL TIME FFT	4 channels ♦ 40 kHz ♦ 401 lines
1/N OCTAVE	4 channels ♦ 25.6 kHz ♦ 1/3 rd octave
SYNCHRONOUS ORDER	4 channels ♦ order max 100 ♦ Resolution 1/8 th of order ♦ 12 000 RPM
RECORDING	4 channels 20 kHz + 2 ext sync (6.4 MHz) ♦ Records on PC hard disk ♦ 32 bit/sample
MULTI-JOB ¹	Up to 4 parallel FFTs (4 ch. each), 2 parallel synchronous order analyzers (4 ch. each)

DISPLAYS

TIME	Triggered blocs ♦ Weighted blocs ♦ Filtered blocs ♦ Compressed view of large file X/Y view of triggered blocks
NARROW BAND	Magnitude ♦ Phase ♦ Bode ♦ Imaginary & real part ♦ Polar
1/N OCTAVE	1, 1/3 rd 1/12 th , 1/24 th linear and weighted overalls
PROFILES	RPM, DC, Max, Min, RMS, kurtosis, order and overall Vs time or RPM.
WATERFALL	3D Narrow band ♦ 3D Octave ♦ Colour-spectrogram ♦ X/Y, Y/ref, order and frequency extraction views
VIEW METER	Digital display of RPM, DC, MAX, MIN, Order (magnitude and phase) ♦ Alarms levels
ON ALL DISPLAYS	Trace overlay with saved result or real-time measurement ♦ Y scale Lin, Log or dB ♦ EU, EU ² , EU ² /Hz, EU/Hz Zooms & translations on X, Y, Z axis ♦ Dual cursor ♦ Multi-graph, multi-trace Markers (peak, max, sideband, power band, harmonics, free) ♦ Operators, compare, average

IMPORT/EXPORT

EXPORT	UFF ♦ TXT ♦ SDF ♦ Matlab® ♦ Wav audio (with frequency selection) ♦ Wav OROS.
IMPORT	TXT ♦ AE2 ♦ Wav ♦ Excel®
COMPATIBILITY	Windows 98SE ♦ 2000 (SP3 or higher) ♦ XP pro ♦ MSWord® ♦ MExcel®

SPECIALS

MASKS	Mask editor for freq. Spectrum, order spectrum, profiles (magnitude/phase), 1/n Octave spectrum Real-time alarms ♦ Link to macro.
MACROS	Excel® like macros ♦ Graphic based recorder/editor ♦ Algorithmic instructions Interactive query management
NVDRIVE	External TCP/IP control of NVGate® ♦ Access setup, data take-in, data injection Operates in the same computer or through LAN and Internet.
SEQUENCER	Imports acquisition setup sequences from Excel® ♦ Sequence navigator lets you select the current step

¹: Optional plug-in analyzer

ORDERING INFORMATION

2 CHANNEL UNITS

OR34-FREQ-2 FFT analyzer for vibrations, Impact, CBT
OR34-OCT-2 1/n Octave analyzer (complies IEC1260)
OR34-ORD-2 Synchronous order tracking analyzer

4 CHANNEL UNITS

OR34-FREQ-4 FFT analyzer for vibrations, Impact, CBT
OR34-OCT-4 1/n Octave analyzer (complies IEC1260)
OR34-ORD-4 Synchronous order tracking analyzer

All presented configurations are guaranteed for 20 kHz real-time acquisition, record and analyses.

ADDITIONAL ANALYSIS MODES

The following analysis modules can be added to the previous units:
ORNV-FREQ FFT plug-in analysis mode for vibrations, Impact, CBT
ORNV-OCT 1/n Octave plug-in analysis mode (complies IEC1260)
ORNV-ORD Synchronous order tracking plug-in analysis mode
ORNV-OVA Overall acoustics detector set (complies IEC 61-672)

NVSOLUTIONS® MODULES

The following additional software modules are available for real-time and post-analysis:

ORNVS-REP General reporting tool
ORNVS-ODS Operating Deflection Shape animator
ORNVS-MOD Modal analysis software suite
ORNVS-SQM Sound quality meter
ORNVS-SP Real-time Sound Power module
ORNVS-SI Real-time Sound Intensity module

OR34 unit and its options can be ordered from your local representative, using the above mentioned codes.
Note that this list does not show the entire configuration and options related to the OR34 analyzers.



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