

Instruments Specifications

OR35-OR36-OR38

4 to 32 ch. Teamwork instruments



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General description

The following specifications concern OR35₂, OR36₃ & OR38₃ Teamwork instruments. These systems consist of OR3x hardware containing optional inputs and processing modules, a PC with an Ethernet interface, and NVGate[®] software with optional plug-in analyzers.

Modules

The following tables detail the complete capacity of OR35₂, OR36₃, & OR38₃ hardware system. Optional or standard modules may fill the described slots.

OR35

Front-end slots	Dynamic and/or parametric analog inputs	2 slots of 4 universal inputs (BNC)
	Dynamic analog outputs	1 slot of 2 outputs (BNC)
	Externals sync	1 slot of 2 trigger/tachometer inputs (BNC)
	Dynamic Inputs (+2)	1 slot of 2 dynamic inputs shared with Externals sync BNCs
Auxiliary slots	1 slot for: TEDS	
Processor slots	PC, Disk, Bus interfaces	1 slot
	Clock synchronization	1 slot
	Trigger / tachometer / monitoring	1 slot of 1 ForceDSP
	Real-time Processing power	2 slots of 1 ForceDSP
Miscellaneous	Internal hard drive	64 GB internal SSD
	High speed serial ports	1 port for CAN Bus probe
	Remote control (power control, NVTerm™)	1 RS232 cable connection (RJ11)

OR36

Front-end slots	Dynamic and/or parametric analog inputs	4 slots of 4 universal inputs (BNC)
	Dynamic analog outputs	1 slot of 2 outputs (BNC)
	Externals sync	1 slot of 2 trigger/tachometer inputs (BNC)
	Auxiliary	2 slots of 2 inputs/outputs for optional outputs, Ext. sync or DC (parametric) inputs (BNC)
Auxiliary slots	1 slot for: TEDS	
Processor slots	PC, Disk, Bus interfaces	1 slot
	Clock synchronization	1 slot
	Trigger / tachometer / monitoring	1 slot of 1 ForceDSP
	Real-time Processing power	4 slots of 1 ForceDSP
Miscellaneous	Internal hard drive	128 to 256 GB removable SSD with USB 3.0 port
	High speed serial ports	2 ports for CAN Bus probe
	Remote control (power control, NVTerm™)	1 RS232 cable connection (RJ11)

OR38

Front-end slots	Dynamic and/or parametric analog inputs	4 slots of 8 universal inputs (BNC)
	Dynamic analog outputs	1 slot of 2 outputs (BNC)
	Externals sync	1 slot of 2 trigger/tachometer inputs (BNC)
	Auxiliary	2 slots of 2 inputs/outputs for optional outputs or Ext. sync or DC (parametric) inputs (BNC)
Auxiliary slots	1 slot for: TEDS	
Processor slots	PC, Disk, Bus interfaces	1 slot
	Clock synchronization	1 slot
	Trigger / tachometer / monitoring	1 slot of 1 ForceDSP
	Real-time Processing power	8 slots of 1 ForceDSP
Miscellaneous	Internal Hard drive	128 to 256 GB removable SSD with USB 3.0 port
	High speed serial ports	2 ports for CAN Bus probe
	Remote control (power control, NVTerm™)	1 RS232 cable connection (RJ11)

Basic hardware configuration

Hardware unit contains at least the following modules. All the other modules are optional.

OR35

Front end	4 universal analog inputs, 2 analog outputs, 2 trigger/tachometer inputs + 2 analog dynamic inputs
Processors	1 interface board (Ethernet, CAN, Disk, USB) 1 Clock synchronization module 1 master ForceDSP module for Trigger / tachometer / monitoring. 1 ForceDSP computation module
Disk	64 GB internal SSD

OR36

Front end	4 universal analog inputs, 2 analog outputs, 2 trigger/tachometer inputs
Processors	1 interface board (Ethernet, CAN, Disk, USB) 1 Clock synchronization module 1 master ForceDSP module for Trigger / tachometer / monitoring. 1 ForceDSP computation module
Disk	128 GB removable SSD with USB 3.0 port

OR38

Front-end	8 universal analog inputs, 2 analog outputs, 2 trigger/tachometer inputs
Processors	1 interface board (Ethernet, CAN, Disk, USB) 1 Clock synchronization module 1 master ForceDSP module for Trigger / tachometer / monitoring. 1 ForceDSP computation module
Disk	128 GB removable SSD with USB 3.0 port

PC requirements

Minimum	1 GB ¹ of RAM / 250 MB free on HD + storage for measurements and signals / 1024 x 768 display
Recommended (for laptop)	Dual/quad core processor (e.g.: Intel Core i5) / > 2.5 GHz / 4 GB of RAM / GPU / 1368 x 768 display / 1 GB free on HD + storage for signals
Recommended (for desktop)	Quad core processor (e.g.: Intel Core i7) / 6 GB of RAM / GPU / 1920 x 1080 display / 1 GB free on HD + storage for signals
Connections	Type: Ethernet 1000 BASE-T , 1 Gb/s : Connector: RJ45 For removable disk: USB 3.0 / For dongle key: USB 2.0
Operating systems	Windows Vista Service Pack 2 / Windows 7 / Windows 8 & 8.1 / Windows 10 / MS Office : 32 bits only

Connections

Network

OR35₂, OR36₃ & OR38₃ can operate over multiple network configurations.

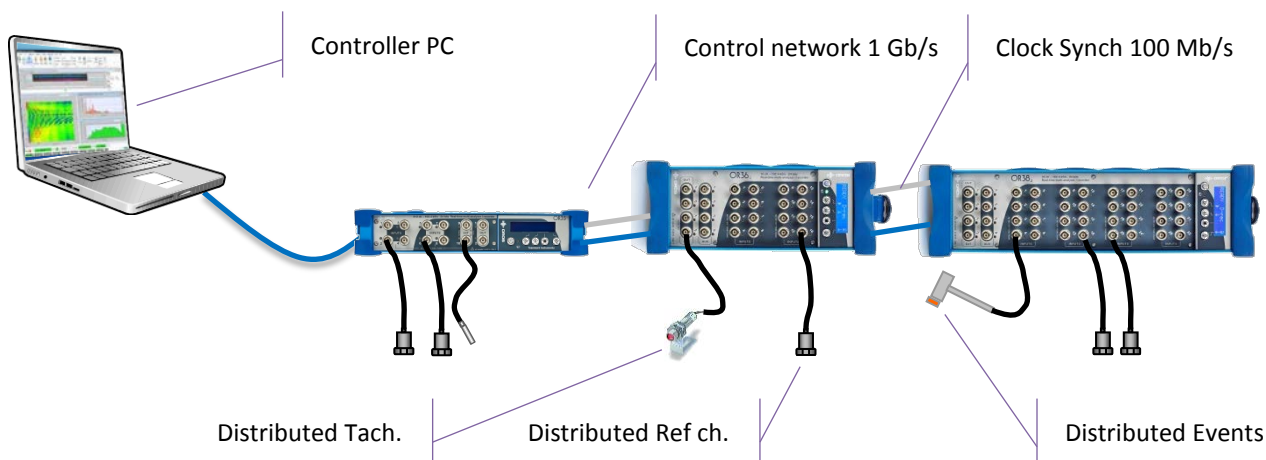
Connection to PC	Ethernet 1 Gb/s / > 100 m / Cat 5E
Security	Support SSH tunneling connections
IP management	TCP/IP / The instrument can be DHCP server (non-authoritative)
Supported Networks	WAN (Internet) / LAN (Company) / Wi-Fi (wireless)

1) Waterfall depth depends on available memory.

Cascade

OR35₂, OR36₃ & OR38₃ can be cascaded flexibly.

Synoptic



Specifications

Configuration	Switchless daisy-chain / 30+ cascaded analyzers / Mixed analyzer's type
Connections	NVGate: Ethernet 1Gb/s / Clock sync & Reference distribution : Ethernet 100 Mb/s
Cables	> 100 m per connection / Variable lengths / Cat 5E
Master/Slave	Undifferentiated analyzers' type
Accuracy	Phase : > ±0.2° @ 20 kHz / > 8 ns @ 51.2 kS/s / Amplitude: > ±0.02 dB
Synch. protocol	IEEE 1588.2 Precision Time Protocol / SyncE (synchronous Ethernet) - No phase shift
IP management	Automatic IP check and resolution at NVGate start / DHCP server (non-authoritative)

Case

Mechanicals

OR35

Weight	3 kg (6.6 lb)	
Dimensions	Case (w.h.d)	300 mm x 50 mm x 236 mm (11.81 in x 1.97 in x 9.29 in)
	Overall (w.h.d)	308 mm x 58 mm x 245 mm (12.13 in x 2.28 in x 9.65 in)

OR36

Weight	5.6 kg to 6.1 kg (12.3 lb to 13.4 lb)	
Dimensions	Case (w.h.d)	102 mm x 260 mm x 311 mm (4.16 in x 10.27 in x 12.24 in)
	Overall (w.h.d)	114 mm x 280 mm x 350 mm (4.48 in x 11.03 in x 13.78 in)

OR38

Weight	7.9 kg to 8.8 kg (17.4 lb to 19.4 lb)	
Dimensions	Case (w.h.d)	102 mm x 380 mm x 311 mm (4.16 in x 14.96 in x 12.24 in)
	Overall (w.h.d)	114 mm x 410 mm x 350 mm (4.48 in x 16.14 in x 13.78 in)

Power supply

OR35

Power	< 30 VA	
External AC Power supply	Voltage	100 to 240 VAC / 1.7 A max
	Frequency	50/60 Hz
DCin	Range	10 V to 28 V
	Overload protection	Absolute maximum < 40 V / > 31 V poles are disconnected
Battery	Type	Built-in 89 Wh Li-ion 8 modules
	Autonomy	3 h
	safety	Certified under UN38.3 and IEC 62133 regulations
	Charge time	3 h (typical)
	Charge conditions	DC power supply > 12 V

OR36

Power	< 60 VA	
External AC Power supply	Voltage	100 to 240 VAC / 1.7 A max
	Frequency	50/60 Hz
DCin	Range	12 V² to 28 V
	Overload protection	31 V (over this voltage DC poles are short-circuited)
Battery	Type	NiMh 11 modules (no memory effect)
	Autonomy	2 h
	Charge time	2 h 30 min (typical)
	Charge conditions	DC power supply > 18 V

OR38

Power	< 100 VA	
External AC Power supply	Voltage	100 to 240 VAC / 2.0 A max
	Frequency	50/60 Hz
DCin	Range	15 V³ to 28 V
	Overload protection	31 V (over this voltage DC poles are short-circuited)
Battery	Type	NiMh 17 modules (no memory effect)
	Autonomy	2 h
	Charge time	3 h (typical)
	Charge conditions	DC power supply > 24 V

2) DC power voltage > 17 V will discard the battery

3) DC power voltage > 22 V will discard the battery

Environmental / Compliance with standards

CE	Indicates compliance with EMC Directive 89/336/EEC and Low Voltage Directive 73/23/EEC	
Safety	EN 61010-1	Safety requirements for electrical equipment for measurement, control and laboratory use.
	Over-voltage Cat.	II (Local level mains, appliance, and portable equipment)
	Pollution Degree	2: Do not operate in environments where pollutants may be present.
EMC Emission	EN 50081-1	Generic emission standard: Residential, commercial and light industry.
	EN 50081-2	Generic emission standard: Industrial environment.
	IEC 61326-1	Electrical equipment for measurement control and laboratory use EMC requirements.
	CISPR 22	Radio disturbance characteristics of information technology equipment. Class B limits.
	FCC Rules	Complies with the limits for a Class B digital device.
EMC Immunity	EN 50082-1	Generic immunity standard: Residential, commercial and light industry.
	IEC 61326-1	Electrical equipment for measurement control and laboratory use EMC requirements.
	EN 50082-2	Generic immunity standard: Industrial environment.
	Linear input response range on interference	max slew rate on input: 5 V/μs
Materials	ROHS	2011/65/EU
	WEEE	2002/96/CE - 2003/108/CE - 2012/19/EU
Temperature	OR35, OR36 Operating	-20°C ⁴ to 50°C (32°F to 122°F)
	OR38 Operating	-20°C ⁴ to 45°C (32°F to 113°F)
	Storage	-20°C to 65°C (-4°F to 149°F)
	Absolute maximum rating ⁱⁱ	-35°C to 70°C (-31°F to 158°F)
Humidity	Max 80 % RH at 40°C non condensing	
Shocks	Complies with IEC 68-2-27	
	Operating	100 m/s ² (11 ms, ½ sine) and 700 m/s ² (3 ms, ½ sine)
	Storage	200 m/s ² (11 ms, ½ sine) and 1 000 m/s ² (3 ms, ½ sine)
	Absolute maximum rating ⁱⁱ	1 000 m/s ² (3 ms, ½ sine)
Vibrations	Complies with IEC 68-2-6	
	Operating	10 m/s ² , 5-500 Hz, 5mm
	Storage	25 m/s ² , 5-500 Hz, 5mm
	Absolute maximum rating ⁱⁱ	30 m/s ² , 5-500 Hz, 5mm
Enclosure	OR35	IP 30
	OR36, OR38	IP 42

Radio frequencies sensibility

	Input measured with 50 Ω terminator
Radiated RF: 80-1000 MHz, 80% AM 1 kHz, 10 V/m	< 20 μV
Conducted RF: 0.15-80 MHz, 80% AM 1 kHz, 10 V	< 100 μV
Magnetic field: 30 A/m, 50 Hz	< 2 μV

OR36 & OR38 Removable Disk

Performances	Type	1.8" - SSD - 128 GB or 256 GB - MLC NAND Flash Memory
	Shock	15 000 m/s ² - 0.5 ms ½ sine
	Vibrations	50 m/s ² - 10 to 2 kHz
	Throughput	32 inputs + 6 aux. @20 kHz BW – 10h 40min gap free
	MTBF	2 x 10 ⁶ hours
Case	Case (w.h.d)	83 mm x 20 mm x 97 mm (3.24 in x 0.78 in x 3.79 in)
	weight	0.200 kg (0.55 lb)
Connection	Into the analyzer	SATA - 1.5 Gb/s sustained read/write
	To the PC	USB 3.0 - 200 Mb/s sustained read
Power supply	On PC	USB powered
	On analyzer	Internal power supply

4) Requires a warmup which last 1 min per 1 Celsius degree below zero.

Front-end

Each front end slot of the OR35 (4 BNC + 2 BNC), OR36 (4 BNC) and the OR38 (8 BNC) can be occupied by one of the following inputs type:

- Universal inputs
- Dynamic inputs
- Parametric inputs

Universal inputs

The universal inputs gather both dynamics and parametric input in the same board and connector. The universal inputs are necessary to support the XPod signal conditioners. The type of use of the universal inputs is selectable by software (NVGate) during the analyzer operations.

The universal inputs fulfill all the performances, precision and operability of each specific input type.

Dynamic inputs

Sampling	Sampling frequencies (Additional decimators allow analysis bandwidth down to 0.8 Hz)	102.4 kHz, 65.536 kHz, 51.2 kHz, 37.768 kHz, 25.6 kHz, 16.384 kHz, 12.8 kHz, 8.192 kHz, 6.4 kHz, 5.12 kHz, 4.096 kHz, 3.2 kHz, 2.048 kHz
	Converters	One 24 bit sigma-delta ADC for each input
	Frequency relative precision	$0.5 \cdot 10^{-4}$ (typical $1 \cdot 10^{-5}$)
	Synchronization	All inputs synchronized on the same sampling clock
Anti-aliasing filter	Type	Over-sampled digital filters
	Slope	> 400 dB/octave
	Pass band ripple	< ± 0.005 dB
	Rejection of parasites bands	> 100 dB (@ frequency > 0.57 x FS)
	Effective bandwidth	0.45 x FS (ex: 23.4 kHz @ 51.2 kS/s)
Range (peak)	With amplifier (included)	±100 mV, ±300 mV, ±1 V
	Direct	±10 V
	With attenuator (included)	±40 V
Absolute accuracy	Resolution	24 bits (144 dB)
	All input ranges at 1 kHz	±0.05 dB (typical ±0.015 dB)
	Temperature variability	< 0.002 dB / 10 °C
DC offset	±100 mV, ±300 mV and ±1V ranges	< ± 100 µV
	±10 V range	< ± 1 mV
	±40 V range	< ± 2 mV
Frequency flatness and phase response⁵	<i>Inside one front-end</i>	
	±10 V range, DC to 20 kHz	< ±0.02 dB / < ±0.02 °
	±10 V range, 20 kHz to 40 kHz	< ±0.05 dB / < ±0.05 °
	±0.1 V, ±0.3 V, ±1 V ranges, DC - 20 kHz	< ±0.02 dB / < ±0.1 °
	±0.1 V, ±0.3 V, ±1 V ranges, 20 kHz - 40 kHz	< ±0.1 dB / < ±0.5 °
	±40 V range, DC - 20 kHz	< ±0.1 dB / < ±0.4 °
	±40 V range, 20 kHz - 40 kHz	< ±0.1 dB / < ±0.8 °
<i>Mixed front-ends</i>		
±10 V range, DC to 20 kHz	< ±0.02 dB / < ±0.2 °	
Cross-talk	<i>Between N (N is odd) and N+1 inputs:</i>	
	@ 1 kHz: < -120 dB, @ 20 kHz: < -96 dB, @ 40 kHz: < -90 dB	
	<i>Between any inputs excluding: N (N is odd) and N+1 inputs:</i>	
@ 1 kHz: < -140 dB, @ 20 kHz: < -114 dB, @ 40 kHz: < -108 dB		
Signal to noise ratio	<i>With 50 Ω terminators:</i>	
	±10 V range, 40 kHz bandwidth: > 100 dB, spurious lines < -115 dB of full scale	
	±10 V range, 20 kHz bandwidth: > 104 dB, spurious lines < -125 dB of full scale	
Input noise	<i>With 50 Ω terminators:</i>	
	Thermal input noise	20nV/√Hz
	±100 mV and ±300 mV ranges	20 kHz BW < 3.5 µV rms, 40 kHz BW: < 5 µV rms
	±1 V range	20 kHz BW < 5.4 µV rms, 40 kHz BW: < 8.5 µV rms
±10 V range	20 kHz BW < 44 µV rms, 40 kHz BW: < 70 µV rms	

5) Includes channel to channel match with different ranges

Dynamic inputs (continued)

Impedance		1 MΩ ±1 %, < 100 pF
Protection	Overvoltage	±60 V peak without damage - On any inputⁱⁱ
Dynamic	Spectral domain	> 140 dB⁶
Coupling	AC	Cut-off frequency 0.35 Hz ±10% (analog filter)
	DC	
	ICP	2 mA or 4 mA power supply with AC coupling (±10%)
	ICP + TEDS	ICP + reverse current on TEDS reading operations
	GND	Shortcut to ground - Automatic current limitation to 50 mA
Floating	Coupling	AC or DC / All ranges / overall voltage < ±40 V
	Common mode voltage (all ranges)	Max: ±12 V
TEDS	Standards	IEEE 1451.4 2001 revision 1
	Supported templates	Accelerometer/Force meter (25) Microphones (27, 28 and 29)

Parametric (DC) inputs

The following parametric inputs can be added to the standard OR36₃ or OR38₃ hardware configuration as follows:

- On the **auxiliary slots** by set of 2 inputs (max 4)⁷
- On the **OR36** as replacement of 4 dynamics inputs (max 12)
- On the **OR38** as replacement of 8 dynamics inputs (max 24)

The following specifications apply to the universal inputs.

Sampling	Bandwidth / Sampling	-3 dB @ 3.5 Hz Independent from dynamic sampling clock
	Converters	One 24 bit sigma-delta ADC for each input
Range (peak)	Direct	±10 V
	With attenuator (included)	±40 V
Frequencies rejection	Notch filters frequencies	50 Hz & 60 Hz @ ±1%
	Rejection	> 120 dB
Amplitude	Effective resolution	22 bits (out of noise)
	Linearity	Typ. 0.0003 % of input range peak
	Gain drift	20 ppm of input range peak/°C typ.
Offset	Offset	±10 V range: < ±1 mV / ±40 V range: < ±2 mV
	Offset drift	±10 V range: < 40 μV/°C / ±40 V range: < 160 μV/°C
Impedance		1 MΩ, 5 nF typ.
Protection	On any input ⁱⁱ	±60 V peak
Input Noise	<i>With 50 Ω terminators, excepted ±40 V range:</i>	
	Input noise	< 4 μV rms in 0.1 to 2 Hz BW – Typ 2 μV rms
	Max. Deviation	< 6 μV peak

Dynamic outputs

Sampling	Converters	One 24 bit DAC for each output
	Synchronization	Same sampling clock as the dynamic inputs
Range	Direct	±10 V peak
	With attenuator (included)	±1 V peak
	Clipping	User selectable in the output range
	Digital gain	From 10⁻⁵ to 10³
Absolute accuracy	Resolution	24 bits (144 dB)
	All output ranges at 1 kHz	±0.05 dB
	Temperature variability	< 0.1 dB / 10 °C
Frequency response	<i>Variation relative to 0 dB @ 1kHz</i>	
	All ranges, at 10 kHz	< ±0.05 dB
	All ranges, at 20 kHz	< ±0.15 dB
	All ranges, at 40 kHz	< ±0.8 dB

6) 25601 lines / 30 sec. averaging

7) DC inputs on auxiliary slots features 16 bit dedicated converters, see previous instrument specifications(M002-19-4) for details

Dynamic outputs (continued)

Noise floor level	10 V range, 20 kHz bandwidth	-110 dB of full scale, spurious lines < -125 dB of full scale
	10 V range, 40 kHz bandwidth	-105 dB of full scale, spurious lines < -125 dB of full scale
	1 V range, 20 kHz bandwidth	-99 dB of full scale, spurious lines < -110 dB of full scale
	1 V range, 40 kHz bandwidth	-94 dB of full scale, spurious lines < -110 dB of full scale
Impedance	User selectable	50 Ω, 600 Ω or Grounded
Current	Max	±10 mA
Protection	Sum of injected + generated voltages	±15 V peak , On any output ⁱⁱ Permanent short circuit supported
Total harmonic distortion	THD @ 1 kHz	< 0.002% or -94dB at 20 kHz BW
	THD @ 5 kHz	< 0.005% or -86dB at 20 kHz BW
Cross-talk	Output 0 dBV to 50 Ω terminated input	Lower than measurable noise

External sync

Sampling	Frequencies	64 times over-sampling of the current input sampling (up to 6.4 MHz)
	Converters	High speed voltage comparator and time counter
Ranges (peak)		±300 mV, ±1 V, ±3 V, ±10 V, ±40 V
Resolution	Amplitude accuracy	±1% of range
Setting	Hysteresis	1% (of input range) to input range
	Hold off	0 s to 500 s
	Slope	Rise or fall
	Hardwired pre-divider	1 to 255
Accuracy	Time resolution	> 160 ns (0.06° at 1 kHz and 1.2° at 20 kHz)
Pulse rate	Max	375 kpulse/s
Coupling	AC	Cut-off frequency 0.35 Hz ±10% (analog filter)
	DC	
Impedance		1 MΩ, < 100 pF
Protection	on any external sync ⁱⁱ	±60 V peak without damage

Expander modules (XPod)

With the universal inputs the OR35₂, OR36₃ and OR38₃ can receive signal conditioning modules called XPod. Different Xpod types are available.

Wheatstone bridge XPod

Connectors	Type	Sub-D9 – Female
Bridges	Mounting	Full, Half and quarter
	½ bridge completion resistors	2 * 10 kΩ - 0.1% - 10 ppm
	¼ bridge completion resistors	120 Ω or 350 Ω - 0.1% - 25 ppm
	Excitation voltages	0 to 10 V
	Excitation currents	0 to 4 V: < 30 mA - 4 V to 10 V: < 12 mA
	Sensing	Negative and positive probes
Amplifiers	Type	Differential - DC capable
	Gains	10 or 100
	Error	< 0.01 dB
Inputs	Ranges	±100 mV - ±1 V
	Common mode voltage	±7 V without limiting differential input
	Impedance	1 MΩ
	Noise floor levels (100 Hz to 20 kHz)	Gain 100: 2 μVrms - Gain 10: 4 μVrms
DC offset	Temperature drift	1 μV/°C
	Compensation resolution	3 % of present offset
Protection	Overvoltage	Device on: max ±30 V - device off: max ±15 V

Temperature XPod

The temperature XPod operates on the universal or parametric inputs. The XPod support thermocouple and RTDS conditioning, cold point compensation and linearization. Amplified signal are injected in the analyzer on the ±10 V range.

Connectors	Type	Mini Thermocouple/RTD type
	Pins	3 polarized pin - spring-loaded - compatible with 2 point plugs
	Material	Glass filled thermoplastic - White body
Thermocouples	Type J	-210 °C to +1 100 °C - Yellow LED
	Type K	-200 °C to +1 300 °C - Green LED
	Type T	-200 °C to +390 °C - Brown LED
	Type N⁸	-200 °C to +1 200 °C - Pink LED
	Type E	-200 °C to +800 °C - Purple LED
	Cold compensation	Integrated - 2 sensors - user on/off
RTDS	Absolute temperature error	> -150 °C : ± 0.9°C / < -150 °C : ±(0.4°C + 0.1% of MT ⁹)
	PT 100	-190 °C to +880 °C* - Blue LED
	PT 1000	-190 °C to +880 °C* - Grey LED
	Absolute temperature error	±(0.4°C + 0.3% of MT ⁹)
	Wires	3 wires connections
Current	PT100: 500 µA to 4 mA - PT1000: 500 µA to 1 mA	

Calibrated up to +800 °C

CAN BUS probe

The CAN bus probe is connected to the OR35₂, OR36₃ and OR38₃ via the high speed serial ports. It offers a passive CAN bus listener with the following specifications.

Type	Standards	CAN 2.0A & CAN 2.0B / Compliant with J1939 protocol
	Speed	125 kb/s to 500 Mb/s
Probe	Probe	High Z / Analyzer or bus powered
	Connectors	CAN : Sub-D 15 / Analyzer: High speed serial port (1,5 m)
Capacity	Channels	24 @ 10 Hz refresh rate / Synchronous with analyzer inputs

Digital computation

The following table details the calculation needs (SPUs) for each analysis plug-in of NVGate software.

FFT	Real-time FFT analysis with;
	401 lines (for 801, 1601,3201, 6401 lines, multiply requested SPU respectively by 1.25, 1.5, 2, 3)
	20 kHz bandwidth (Requested SPU are proportional to bandwidth)
	0% overlap 1 channel processing requires 1 SPU
Order analysis	Real-time order spectrum analysis (re-sampled time signal) with:
	Any duration of visualization, any averaging
	20 kHz bandwidth (Requested SPU are proportional to bandwidth) 1 channel processing requires 3 SPUs
Time Domain	Real-time time domain monitor and statistical analysis with:
	Simultaneous time view and statistical extraction. Any duration of visualization, any averaging
	20 kHz bandwidth (Requested SPU are proportional to bandwidth) 1 channel processing requires 3 SPU
1/n Octave	Real-time filter based 1/n octave analysis with:
	1/3rd octave (for 1/12 th and 1/24 th octave multiply requested SPU respectively by 2 and 4)
	20 kHz bandwidth (Requested SPU are proportional to bandwidth) 1 channel processing requires 3 SPUs
Recorder	Gap free recording with:
	51.2 kHz sampling rate gap free recording
	1 channel processing requires: 0.66 SPU

8) Add 0.1°C to absolute temperature error

9) MT is Measured Temperature

Signal Processing Units

SPU (Signal Processing Units): the previous table gives the characteristics of each analysis mode and the associated SPU consumption. For multi-analysis purpose, add the corresponding SPUs of each mode used simultaneously and increase the sum by 10%. "Real-time" means that the analysis speed is faster than the input rate and does not miss any sample.

Special DSPs modules

The following DSPs are always integrated in OR35, OR36 & OR38 hardware.

Master DSP module	Monitor computations	FFT 401 lines (max 4 Channels)
	Time domain detectors	DC, Max, Min, RMS, Kurtosis (on the monitor Channels)
	Special	Auxiliary inputs, Events, Tachs, Torsion, Generators

Computation DSPs modules

The following computation DSP modules are optional

ForceDSP

Type	Sample size	32 bit floating
	Computation words	32/40 bit
	Internal memory	16 MSample
Power	Computation capability	Up to 48¹⁰ SPU / DSP module
Input sharing	Inputs per DSP	8 max

Number of DSPs/unit

Minimum	1 Computation DSP module	Up to 48¹⁰ SPU
OR35 Max.	2 Computation DSP modules	Up to 96¹⁰ SPU
OR36 Max.	4 Computation DSP modules	Up to 192¹⁰ SPU
OR38 Max.	8 Computation DSP modules	Up to 384¹⁰ SPU

Notes

The previous specifications describe all the guaranteed capacities and performances of the instrument and are applicable to an OR35₂-10, OR36₃-16 or OR38₃-32 hardware powered for more than 15 minutes at a stabilized room temperature of 23°C ±5°C and calibrated since less than one year.

The adapted control software NVGate is described separately.

ⁱ Prepared for future use: the related specifications or options are in development.

ⁱⁱ Exceeding absolute maximum ratings damages the system and voids guarantee.

Specifications not binding; OROS reserves its right to change these specifications without notice.

¹⁰: SPUs are variable in *ForceDSPs*. Consult customer.care@oros.com for advanced real-time analysis

OROS, Leadership through Innovation

About Us

Celebrating 30-years of innovation, OROS' designs and manufacturing have been renowned for providing the best in noise and vibration analyzers as well as in specific application solutions.

Our Philosophy

Reliability and efficiency are our 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 of the technology, always based on innovation.

Worldwide Presence

OROS products are marketed in more than 35 countries, through our authorized network of representatives, offices and accredited maintenance centers.

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