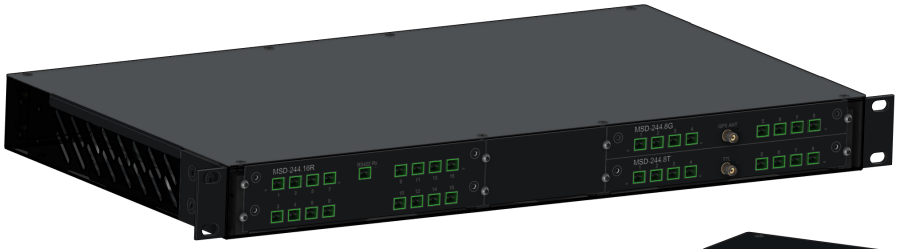
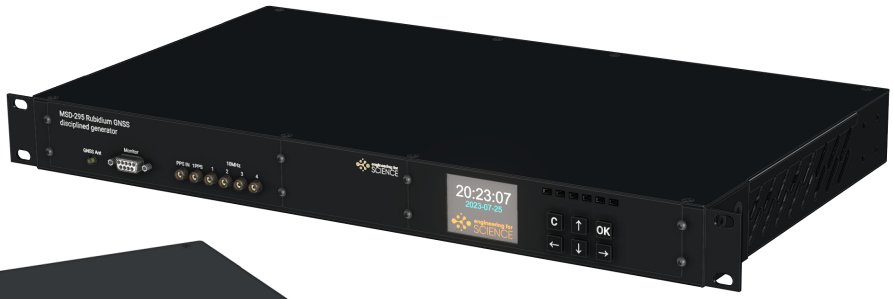
MSD-200 Series

We develop advanced instruments for science research, industrial measurements and other special applications

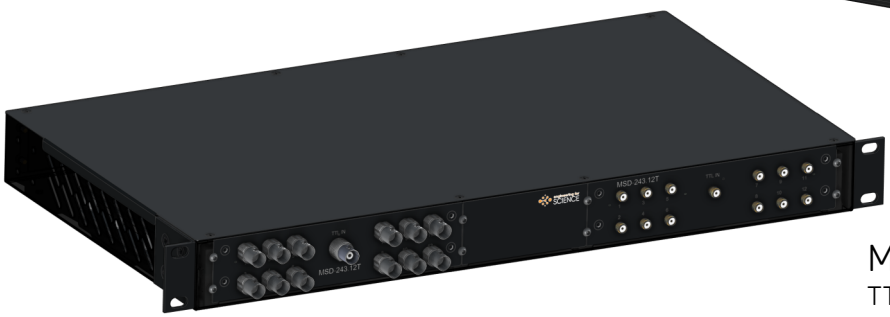
The MSD-200 series — rack 19" mount, modular device for scientific applications.



MSD-244
RS422 Splitter



MSD-295
Rubidium 10MHz/1PPS
GPSDO



MSD-243
TTL Splitter

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MSD-200 modules can be combined to create a customized measurement or signal distribution system. They offer several advantages over traditional instruments, such as:

- Flexibility: Modular devices can be easily reconfigured to meet different measurement needs, without requiring extensive hardware changes or calibration.
- Scalability: Modular devices can be expanded or reduced by adding or removing modules, depending on the number and type of signals to be measured.
- Cost-effectiveness: Modular instruments can reduce the total cost of ownership by saving space, power, and maintenance costs, as well as enabling the reuse of modules across different applications.

Some examples of modules are:

- Signal generation modules, which can produce analog or digital signals for testing, simulation, or calibration purposes.
- Signal distribution modules, which can split input signal such 1PPS, ToD (NMEA, IRIG), 10MHz to multiple outputs with very low jitter and delay.
- Data acquisition modules, which can measure analog or digital signals from sensors, transducers, or other sources.
- Signal analysis modules, which can perform various operations on signals, such as filtering, averaging, FFT, or spectrum analysis.

In the future, we will develop new modules for research in the field of time synchronization in measuring devices, fiber optic sensors, including those based on the Sagnac effect, time transfer modules via a 2-wire lines (RS-422) or single-mode fiber optic with automatic correction of signal delays.

The MSD-200 series is a 1U, rack mount, modular scientific device. It allows the installation of various modules like generators, signal splitters, meters in one rack mount case.

Technical data (common)

Description	Value
Model	MSD-200, **M**odular **S**cientific **D**evice
Ambient temperature	0°C to 50°C (operation) -20°C to 70°C (storage)
Humidity	0-85% non-condensed
Power supply	Single or redundant, 85...264V AC, 100...370V DC or 48VDC (36-72VDC) or mixed
Dimensions	1U250: small case, 444 mm (W) x 45mm (H) x 250 mm (B) – 1U - 19 inch rack mount 1U350: medium case: 444 mm (W) x 45mm (H) x 330 mm (B) – 1U - 19 inch rack mount Desktop: 250mm (W) x 45mm (H) x 275 mm (D) – 1U/10-inch
Weight	3 - 8 kg (depends on number of modules)
Warranty	Three-Year Limited Warranty
Technical support	Company offers free lifetime technical support via email. Extended support contracts available.
Power	230VAC, 48VDC, 60W (max)

MSD-200 distribution modules

Code	Type	# of Outputs	Description
MSD-243	Pulse TTL	12	Digital signal TTL @50Ω splitter module for 1PPS, IRIG-DCLS, 10MHz. Sockets: BNC or SMA. Input card MSD-OCP. Non-isolated.
MSD-244	Pulse RS422	16	Digital signal RS-422 Tx splitter module for 1PPS, IRIG-DCLS. Terminal block 3.5 mm. Input card MSD-OCP. Non-isolated.
MSD-245	Pulse RS232	16	Digital signal RS-232 Tx splitter module for NMEA, ToD etc. time codes. Terminal block 3.5 mm. Input card MSD-OCP. Non-isolated.
MSD-246	Analog 13dBm	12	Analog signal up to 10MHz sinus (13dBm@50Ω) splitter module for 10MHz sine wave. Sockets: BNC or SMA. Input card MSD-OCP. Non-isolated.
MSD-247	Fiber optic	12	Fiber optic, Single Mode 1550n, up to 10 km splitter module for 1PPS, IRIG-DCLS, 10MHz. Sockets: SC. Input card MSD-OCP.
MSD-248	RS-422	8x2	Digital signal RS-422 Tx splitter module for 1PPS and TimeCode. 8x M8 sockets with 2 serial lines each. Input card MSD-OCP. Non-isolated.

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MSD-200 OCP cards

Code	Type	Inputs	Isolation	Description
TTLX1SMA	Pulse TTL	1	N	Digital signal TTL @50Ω input card for 1PPS, IRIG-DCLS, 10MHz. SMA Socket.
TTLX2SMA	Pulse TTL	2	N	Digital signal 2xTTL @50Ω input card for 1PPS, IRIG-DCLS, 10MHz. Sockets: 2xSMA. Automatic switching to the backup input after loss of signal at the master input.
TTLX1BNC	Pulse TTL	1	N	Digital signal TTL @50Ω input card for 1PPS, IRIG-DCLS, 10MHz. BNC Socket.
RS422X1	Pulse RS422	1	N	Digital signal RS-422 Rx input card for 1PPS, IRIG-DCLS. 1xTerminal block 3.5 mm.
RS422IX1	Pulse RS422	1	Y	Digital signal RS-422 Rx, isolated input card for 1PPS, IRIG-DCLS. 1xTerminal block 3.5 mm.
RS422X2	Pulse RS422	2	N	Digital signal 2xRS-422 Rx input card for 1PPS, IRIG-DCLS. 2xTerminal block 3.5 mm. Automatic switching to the backup input after loss of signal at the master input.
RS422IX2	Pulse RS422	2	Y	Digital signal 2xRS-422 Rx isolated inputs card for 1PPS, IRIG-DCLS. 2xTerminal block 3.5 mm. Automatic switching to the backup input after loss of signal at the master input.
RS232X1	Pulse RS232	1	N	Digital signal RS-232 Rx input card for 1PPS, IRIG-DCLS. 1xTerminal block 3.5 mm.
RS232X12	Pulse RS232	2	N	Digital signal 2xRS-232 Rx input card for 1PPS, IRIG-DCLS. 2xTerminal block 3.5 mm. Automatic switching to the backup input after loss of signal at the master input.
FOX1SC	FO	1	Y	Fiber optic input card for 1PPS, IRIG-DCLS, 10MHz. SC Socket.

** Modules: MSD-243X require the selection of the appropriate version of the OCP card .*

MSD-200 instrumentation modules

Code	Type	Description
MSD-291	1PPS Delay meter	TTL and RS422 delay meter, resolution 100ps, ranges 12 ns to 500 ns and 250 ns to 8 ms, standard deviation: 35ps with internal GNSS reference receiver. External GNSS antenna.
MSD-295	Rubidium/GNSS oscillator	High precision rubidium oscillator driven generator of 10MHz and 1PPS reference signals. It delivers unmatched signal purity, frequency stability for 10MHz sine wave, 10MHz pulse and 1PPS. It can be disciplined from internal GNSS receiver to get more accurate UTC time scale.

MSD-200 power supplies

Code	Type	Voltage	Description
MSD-201-30W	AC	230V	single* 85-265VAC/100-370VDC 30W power supply module
MSD-201-60W	AC	230V	single* 85-265VAC/100-370VDC 60W power supply module
MSD-202-30W	DC	48V	single* 36-72VDC 30W power supply module
MSD-202-30W	DC	48V	single* 36-72VDC 60W power supply module

** For redundant power you must order two power modules.*