DIGITAL 24-CHANNEL 'HYDRA' MODULAR RAKE SYSTEM

This fully self-contained multi-channel integrated probe rake system supports simultaneous measurement from up to three independent seven-hole probes, providing an ultra-compact and high-productivity alternative to single-point probe scans, at a much lower cost than laser-based systems of comparable capability. With all of the required sensing, A/D and communications systems on board, this high-precision flow measurement system provides plug-and-play functionality with no additional hardware required.

The modular structure enables probe stings to be interchanged, for fast replacement in case of damage and the option of using a variety of sting architectures with a single sensor package. Sting arrangements including 3x 7-hole probes, 6x 4-hole probes, 24x total pressure and 2x 12-hole 'omni' rakes available.

3x 7-hole probe configuration shown (3 channels unused)

- Flow speed ranges up to 100 m/s at standard conditions
- All software, drivers and NI LabVIEW development kits included; connect via USB, UART; CAN and Ethernet adaptors avalable.
- Modular structure enables sting to be changed within seconds avoiding the need for time-consuming repairs
- Local fluid temperature, humidity and absolute static pressure also measured
- Inertial positioning sensor which can be used for alignment and vibration warning
- Low-profile, in-line sensor package measuring under 20 mm in diameter
- Up to 24 channels of true differential pressure measurement
- Sting geometry and probe arrangement fully customizable

Specification

Standard sensor specifications (custom available on request)	
Product code	MD24HP-6K9
Standard pressure range	6.9 kPa FS
Maximum overpressure	34 kPa
Sensor repeatability[1]	± 0.024 % FS
Sensor accuracy[2], inc. calibration	± 0.25 % FS

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Total error band after auto-zero[3]	± 1.25 % FS	
Operational mode	24 channels true differential, with common reference	
Operating temperature range	-40° to +85° C non-condensing	
Compensated temperature range	0° to +50° C non-condensing	
Storage temperature range	-40° to +85° C	
Vibration	Sensors rated to 10 g, 10 Hz to 2 Hz	
Shock	50 g, 6 ms duration	
Maximum relative humidity	95 %	
Fluid temperature sensor[5]	-40°C - 85°C ± 0.5°C	
Relative ambient humidity sensor specification	0 % to 100 % RH, +/- 3%	
Ambient temperature sensor specification[3]	0°C - 65°C ± 0.5°C	
Ambient absolute pressure sensor specification	30-110 kPa FS, +/- 0.1kPa	
IMU specification	3 axis gyro, 125 °/s FS, ± 3.9 x10-3 °/s 3 axis accelerometer, 2g FS, ± 0.061 mg	
Communications	USB	UART
Voltage	Via USB	Regulated 5 Vdc
Power	490 mW	
Data acquisition rate	200 Hz. Typ., simultaneous sampling	
Digital resolution	24-bit	
System specification[6]	2.5 GHz quad core Intel i5 with 8 Gb RAM	

Measurement specifications - 3x 7-hole probe rake standard configuration	
Product code	MD24HP-6K9-3X7
Reference pressure	Supplied via reference port (integrated reference ports optional)
Sting material	Hardened 316 stainless steel
Sting diameter	3.7 mm
Standard tip geometry	Hemispherical with 380 μm holes
Angular measurement range	Typ. ±60° ; max ± 80°

[1] Includes errors due to pressure non-linearity, pressure hysteresis and non-repeatability.
[2] Includes errors due to pressure non-linearity, pressure hysteresis, non-repeatability and calibration uncertainty.
[3] Total residual error after auto-zero, excluding residual temperature sensitivity.
[4] Temperature is measured from probe body. Temperature readings may depend on thermal management.
[5] Temperature is recorded on the PCB and will be affected by waste heat generated.
[6] Minimum requirement for real-time data conversion. Offline post-processing required on slower systems.

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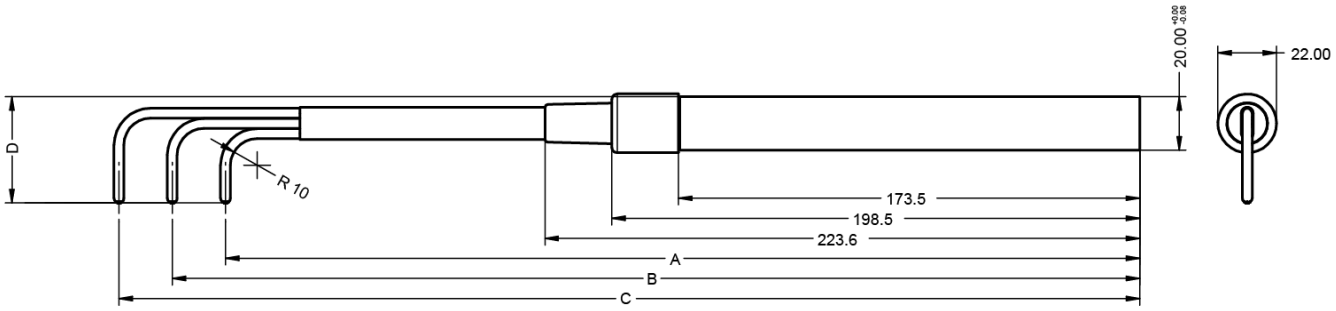
Additional custom modifications available:

- Variety of sting configurations available (including 3x 7-hole probe, 6x 4-hole probe, 24-port static rake and spherical omni-probes)
- Custom enclosure design service
- Custom software and driver development service
- Calibration service
- Extended product support and warranty
- External trigger/synch configuration available
- CAN or Ethernet comms

Dimensions

MD24HP-6K9-3X7



Dimensions A, B, C & D can be customer-specified
Dimension A - min 380 mm
Dimension C - max 240 mm
Dimension D - min 36 mm