VARIO luxx

THE NEW STANDARD IN EMISSION TESTING

USB · SD · Bluetooth · AUX · LAN · 4-20 mA

Flow · Pressure · Draft · ΔP · Δ°F · °F · CH_4 C_3H_8 · H_2 · H_2S · SO_2 · NO_x · NO_2 · NO · CO_2 · CO · O_2

- Portable and Semi-Continuous Applications
- High precision gas analysis accuracy
- Intuitive touch screen and LINUX OS
- Interfaces such as Ethernet (LAN), WLAN, USB, Bluetooth, RS485, 8 channel analog Outputs
- CTM 30, CTM 34 and ASTM D6522 compliance

MRU AIRfair since 1984 ®

EMISSION MONITORING SYSTEMS

Over 30 years of innovative gas analysis!

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DIAMOND SCIENTIFIC

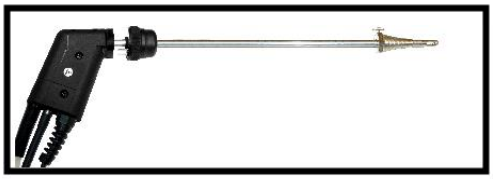
PORTABLE EMISSION ANALYZER

For tuning, trouble-shooting, compliance reporting or long-term, semi-continuous monitoring of nearly any combustion/emission application

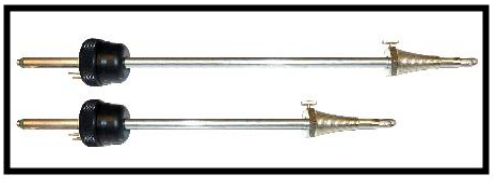
- O_2, CO, CO_2, NO, NO_2, SO_2, H_2, H_2S, CO-high, & CO-very high,
  - Up to 6 electrochemical sensors,
  - plus CO_2 / CO / CH_4 (C_3H_8) NDIR is possible!
  - Low CO, NO, NO_2, SO_2 and ranges are available
- Emission calculations such as mass flow, calculated or True NO(x), plus O_2 referencing to user defined values
- Gas temperature measurement up to 2,012°F
  (use stainless steel up to 1,200°F, use Inconel tubes up to 2,012°F)
  (use ceramic up to 3,090°F)
- Integrated Peltier cooler with automatic condensate drain pump
- Automatic zeroing using 3-way solenoid valve
- Internal sample flow monitoring
- Strong, regulated sample gas pump
- Fresh air inlet nozzle
- Differential pressure or stack gas pressure +/- 40 inH_2O (100 hPa)
- Combustion air temperature up to 930°F, using adequate NiCrNi probes
- 7” high contrast, color touchscreen with graphical data display
- Automatic data logging
- Automatic, internal diagnostics
- Direct csv or pdf reporting
- Data transfer over LAN Ethernet or USB
- 8 channel analog outputs and 4 channel analog inputs (4-20mA)
- Single universal input 0-10V. 4-20mA, t/c, or RS485
- Internal 10,000 data memory and external 4GB USB-stick
- Universal power supply handles up to 600W heated sample line
- Rugged aluminum enclosure with rubber molded impact protection

SMART GAS ANALYSIS

PROBES AND PROBE TUBES



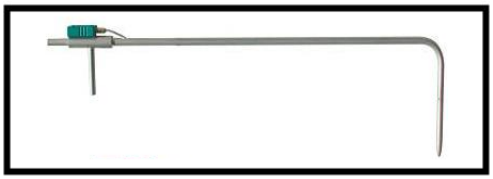
Low cost industrial probe for interchangeable probe tubes with 9' or 16' rugged, braided sheated sampling line and Viton hose for clean combustions only



probe tubes (4" to 80" long) in SS (1,200°F) or Inconel (2,000°F) Also available with sintered metal filter

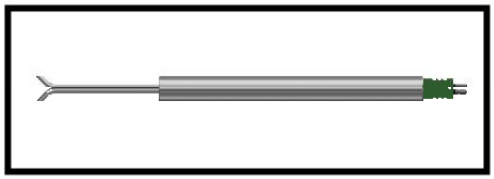
Industrial probe for interchangeable probe tubes with 9' or 16' sampling line and heated probe handle and easy replaceable quartz glass wool filter Available with and without heated sampling line

High temp ceramic probe (3,000°F) With temperature measurement with easy replaceable quartz glass wool filter

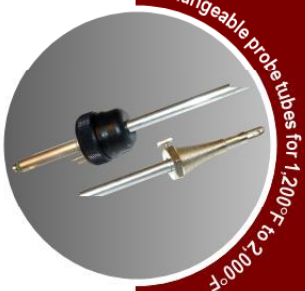


L-Type SS with or without K-Type t/c in sizes from 4" (0.12Ø) to 79" (0.47 Ø)

PITOT TUBES



S-Type SS with K-Type t/c (59" lead) and 1.1"Ø protection tube available in 19" or 39" lengths (0.31"Ø)



1	Pressure-/diff. Pressure
2	Pressure-/diff. Pressure
3	Combustion air temperature
4	AUX-port
5	Probe electrical connector
6	Outlet fan of gas cooler
7	Sample gas inlet
8	Fresh air inlet port
9	Sample gas outlet port (VENT)
10	Condensate outlet port
11	Sample gas filter
12	Loudspeaker
13	Ethernet (LAN)
14	USB socket*
15	Second USB socket (option)
16	RS485 (option)
17	Analog outputs 4 ... 20 mA
18	Mains power supply

*) including USB stick in MRU design for data storage and transfer
optional USB to WLAN dongle for wireless data transfer
optional USB to Bluetooth dongle for wireless data to smartphone with MRU4u app
optional RS485 connector for long cable data transfer using Modbus RTU protocol

VARIO *luxx*

TECHNICAL SPECIFICATIONS

VARIO *luxx*	Portable analyzer with up to 6 electrochemical sensors and 3 gas NDIR bench
Fuel types	Natural gas, propane, butane, #2, #5, & #6 light oils, heavy oil, kerosene, distillate #1, diesel, coal, coal anthracite & bituminous, wood (dry, 10%, 20%, 30%, &40% M.), pellets, and four user defined fuel types

Measurement components		Method	Meas. range (0…min / max) *	Resolution	Accuracy **
O_2	Oxygen (long-Life)	ECS	0 … 25.00 %	0.01%	0.2%
O_2	Oxygen	PM	0 … 25.00 %	0.01%	0.1%
CO-low	CO - low	ECS	0 … 500 ppm	0.1 ppm	± 2 ppm or 5 % reading
CO	Carbon monoxide H_2 compensated	ECS	0 … 10,000 / 20,000 ppm	1 ppm	± 10 ppm or 5 % reading
CO - high	Carbon monoxide	ECS	0 … 2.00 / 10.00 %	0.01%	± 0.01 % or 5 % reading
NO-low	Nitric oxide	ECS	0 … 300 ppm	0.1 ppm	± 2 ppm or 5 % reading
NO	Nitric oxide	ECS	0 … 1,000 / 5,000 ppm	1 ppm	± 5 ppm or 5 % reading
NO_2-low	Nitrogen dioxide	ECS	0 … 100 ppm	0.1 ppm	± 2 ppm or 5 % reading
NO_2	Nitrogen dioxide	ECS	0 … 200 / 1,000 ppm	1 ppm	± 5 ppm or 5 % reading
SO_2-low	Sulfur dioxide	ECS	0 … 100 ppm	0.1 ppm	± 2 ppm or 5 % reading
SO_2	Sulfur dioxide	ECS	0 … 1,000 / 5,000 ppm	1 ppm	± 10 ppm or 5 % reading
H_2S-low	Hydrogen sulfide	ECS	0 … 50 / 500 ppm	1 ppm	± 2 ppm or 5 % reading
H_2S	Hydrogen sulfide	ECS	0 … 2,000 / 5,000 ppm	1 ppm	± 5 ppm or 5 % reading
H_2	Hydrogen	ECS	0 … 1,000 / 2,000 ppm	1 ppm	± 5 ppm or 5 % reading

Measurement components		Method	Meas. range (0…min / max)	Resolution	Accuracy **
CO	Carbon monoxide	NDIR	0 … 3,000 / 30,000 ppm	1 ppm	± 15 ppm or 2 % reading ***
CO	Carbon monoxide	NDIR	0 … 1.00 / 10.00 %	0.01%	± 0.1 % or 2 % reading
CO_2	Carbon dioxide	NDIR	0 … 5.00 / 40.00 %	0.1 ppm	± 0.3 % or 2 % reading
HC	Hydrocarbons (CH_4)	NDIR	0 … 3,000 / 10,000 ppm	1 ppm	± 20 ppm or 2 % reading
HC	Hydrocarbons (C_3H_8)	NDIR	0 … 1,000 / 10,000 ppm	1 ppm	± 10 ppm or 2 % reading
HC	Hydrocarbons (CH_4)	NDIR	0 … 1.00 / 4.00 %	0.01%	± 0.05 % or 2 % reading

*** overload range of ECS is usable only for short duration** **** which ever is larger** ***** with hourly zeroing**

OTHER MEASUREMENTS AND CALCULATIONS		Method	Meas. range (0…min / max)		Resolution		Accuracy **
T-gas	Flue gas temperature	NiCrNi	32 °F … 2,192 °F	(0 °C … 1.200 °C)	2 °F	(1 °C)	± 2°F or 2 % reading
T-air	Combustion air temperature	NiCrNi	32 °F …. 932 °F	(0 °C … 500 °C)	2 °F	(1 °C)	± 2°F or 2 % reading
T-amb	Ambient air temperature	PT2000	32 °F …. 212 °F	(0 °C … 500 °C)	2 °F	(1 °C)	± 2°F or 2 % reading
P-Press	Differential pressure	Piezoresistiv	-48 … +48 inH2O	(-120 … +120 hPa)	1 Pa		± 2 Pa or 1 % reading
V-flow	flow velocity measurement	Diff.pressure	3 … 100 m/s		1 m/s		± 1 m/s or 1 % reading

AUX-connector	Software	for K-thermocouple, 0 … 10 Vdc , 4 … 20 mA, RS485
Combustion analysis	Software	Losses, excess air, Lambda, dew point
Emission calculations	Software	mg/Nm3, reference O_2, g/s, kg/h

GENERAL TECHNICAL DATA

Operating system	LINUX
Display, operation	7“ TFT (800 x 480 px) color display, backlit, with touch and swipe operation
Data storage type	10,000 data sets internal and external USB-Stick
Interface to PC / Notebook	Ethernet, Bluetooth, WLAN, RS485
Data transfer over cable / wireless	RS485, RJ45 (Ethernet) / Bluetooth, WLAN
Analog output 4 ... 20 mA	8 channel, user free configurable
Analog input 4 ... 20 mA	4 channel, user free configurable
Universal analog input - AUX	0 … 10 Vdc / 4 … 20 mA / K-type / RS485
Mains free operation	Li-Ion , 48 Wh, for appr. 1 hr „stand-by“ (optional additional battery, 48 Wh Li-Ion)
Operating temperature	41°F … 122°F; RH up to 95 % not condensing
Storage temperature	-4°F … 122°F
Power supply	86 … 265 Vac / 47 … 63 Hz / 105 W (up to 600 W with heated sampling line)
Protection class	IP20 (or IP42 inside transport case)
Dimensions	(W x H x D) 16.92" x 11.41" x 5.9" (430 x 290 x 150 mm)
Weight	appr. 16.5lbs (7,5 kg), for minimal configuration

Data subject to change without notice

Distributed By:
DIAMOND SCIENTIFIC
625 Peachtree Street
Cocoa, FL 32922
Phone: 1-321-223-7500
info@diamondsci.com
www.DiamondSci.com