

THE NEW STANDARD IN EMISSION TESTING



- **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 00 CTM 04 ... LAOTM D0500

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PORTABLE EMISSION ANALYZER

MRU 4 win PC Software for trending and export



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

Linux operating system



- O₂, CO, CO₂, NO, NO₂, SO₂, H₂, H₂S, CO-high, & CO-very high,
 - Up to 6 electrochemical sensors,
 - plus CO₂ / CO / CH₄ (C₃H₈) NDIR is possible!
 - Low CO, NO, NO₂, SO₂ and ranges are available
- Emission calculations such as mass flow, calculated or True NO(x), plus O₂ 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)

Bright and large color touch screen



- 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 inH₂O (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

Nylon protection case with shoulder strap



Safe transport with the aluminum framed case

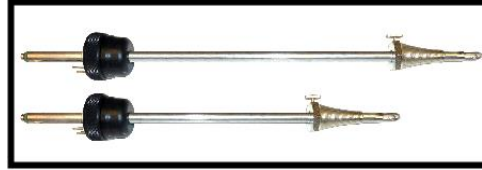


SMART GAS ANALYSIS

PROBES AND PROBE TUBES



Low cost industrial probe for interchangeable probe tubes with 9' or 16' rugged, braided sheathed 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



Heated probe and heated sampling line



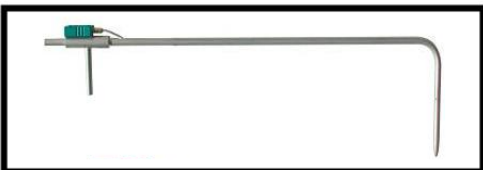
Industrial probe for interchangeable probe tubes with 9' or 16' sampling line and heated probe handle and easy replaceable quartz glass wool filter
Available with and without heated sampling line



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

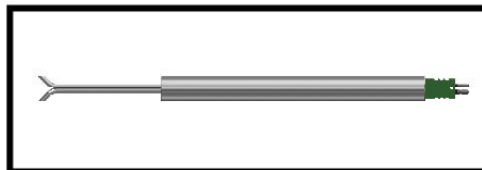


Heated probe handle to avoid condensation

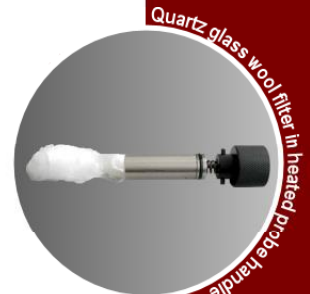


L-Type SS with or without K-Type t/c
in sizes from 4" (0.12Ø) to 79" (0.47 Ø)

PITOT TUBES



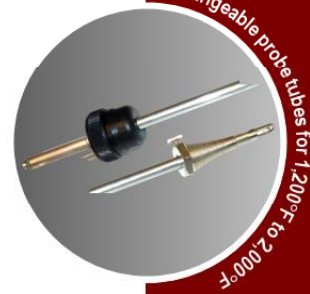
S-Type SS with K-Type t/c (59" lead) and 1.1"Ø
protection tube
available in 19" or 39" lengths (0.31"Ø)



Quartz glass wool filter in heated probe handle



- 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



Exchangeable probe tubes for 1,200°F to 2,000°F



Gas cooler

*) 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

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%
O ₂	Oxygen	PM	0 ... 25.00 %	0.01%
CO-low	CO - low	ECS	0 ... 500 ppm	0.1 ppm
CO	Carbon monoxide H ₂ compensated	ECS	0 ... 10,000 / 20,000 ppm	1 ppm
CO - high	Carbon monoxide	ECS	0 ... 2.00 / 10.00 %	0.01%
NO-low	Nitric oxide	ECS	0 ... 300 ppm	0.1 ppm
NO	Nitric oxide	ECS	0 ... 1,000 / 5,000 ppm	1 ppm
NO ₂ -low	Nitrogen dioxide	ECS	0 ... 100 ppm	0.1 ppm
NO ₂	Nitrogen dioxide	ECS	0 ... 200 / 1,000 ppm	1 ppm
SO ₂ -low	Sulfur dioxide	ECS	0 ... 100 ppm	0.1 ppm
SO ₂	Sulfur dioxide	ECS	0 ... 1,000 / 5,000 ppm	1 ppm
H ₂ S-low	Hydrogen sulfide	ECS	0 ... 50 / 500 ppm	1 ppm
H ₂ S	Hydrogen sulfide	ECS	0 ... 2,000 / 5,000 ppm	1 ppm
H ₂	Hydrogen	ECS	0 ... 1,000 / 2,000 ppm	1 ppm

Measurement components	Method	Meas. range (0...min / max)	Resolution	Accuracy **
CO	Carbon monoxide	NDIR	0 ... 3,000 / 30,000 ppm	1 ppm
CO	Carbon monoxide	NDIR	0 ... 1.00 / 10.00 %	0.01%
CO ₂	Carbon dioxide	NDIR	0 ... 5.00 / 40.00 %	0.1 ppm
HC	Hydrocarbons (CH ₄)	NDIR	0 ... 3,000 / 10,000 ppm	1 ppm
HC	Hydrocarbons (C ₃ H ₈)	NDIR	0 ... 1,000 / 10,000 ppm	1 ppm
HC	Hydrocarbons (CH ₄)	NDIR	0 ... 1.00 / 4.00 %	0.01%

* 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)
T-air	Combustion air temperature	NiCrNi	32 °F ... 932 °F (0 °C ... 500 °C)	2 °F (1 °C)
T-amb	Ambient air temperature	PT2000	32 °F ... 212 °F (0 °C ... 500 °C)	2 °F (1 °C)
P-Press	Differential pressure	Piezoresistiv	-48 ... +48 inH ₂ O (-120 ... +120 hPa)	1 Pa
V-flow	flow velocity measurement	Diff.pressure	3 ... 100 m/s	1 m/s

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/Nm ³ , 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

Support and sales by:

