MGA prime

HIGH END FLUE GAS / EMISSION ANALYZER

for long time measurements of industrial combustions, large boilers, gas engines and turbines, furnaces and many more

- **Precise and very stable offset measuring technique, using special non dispersive infrared (NDIR) technique for enhanced long time measurements**
- **Up to 8 gas NDIR measurement: CO / CO_2 / C_3H_8 / CH_4 / SO_2 / NO / NO_2 / N_2O and oxygen with either long-life O_2-ECS or O_2-PM (paramagnetic cell)**

MRU AIRfair since 1984 ®
EMISSION MONITORING SYSTEMS

Over 30 years of innovative gas analysis!

PORTABLE HIGH END ANALYSIS TECHNOLOGY

The new MGA*prime* achieves a maximum of versatility using (NDIR) infrared technology.

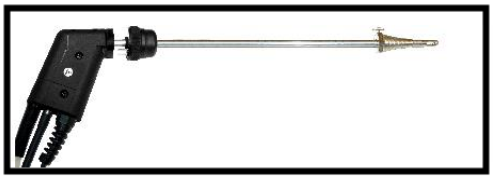
- Simultaneous analysis of up to 9 gas components!
  - CO, CO_2, NO, NO_2, SO_2, N_2O & HC using NDIR
  - O_2 using ECS or PM
- Emission calculations such as mass flow, calculated or True NO(x), plus O_2 referencing to user defined values
- Gas temperature measurement up to 2,012°F
  (use stainless steel up to 1,200°F, use Inconel tubes up to 2,012°F)
  (use ceramic up to 3,090°F)

- Integrated DUAL stage 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)

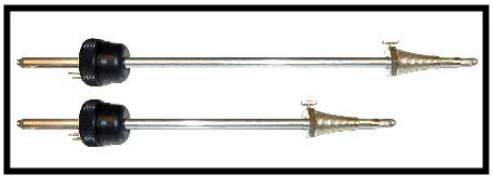
- Combustion air temperature up to 930°F, using adequate NiCrNi probes
- 7” high contrast, color touchscreen with graphical data display
- Automatic data logging
- Automatic, internal diagnostics
- Direct csv or pdf reporting
- Data transfer over LAN Ethernet or USB
- 8 channel analog outputs and 4 channel 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



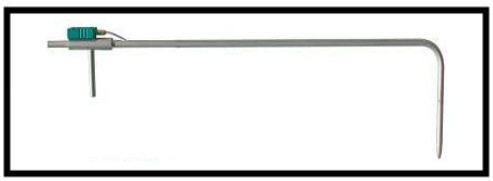
Low cost industrial probe for interchangeable probe tubes with 9' or 16' rugged, braided sheathed sampling line and Viton hose for clean combustions only



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

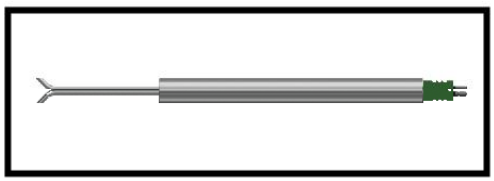
Industrial probe for interchangeable probe tubes with 9' or 16' sampling line and heated probe handle and easy replaceable quartz glass wool filter
Available with and without heated sampling line

High temp ceramic probe (3,000°F)
With temperature measurement and 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)

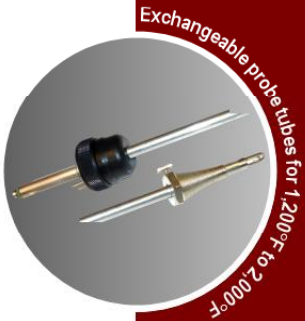
PITOT TUBES



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



MGA prime

TECHNICAL SPECIFICATIONS

MGA *prime* **HIGH END** Portable analyzer with up to 9 gas components

Measurement components		Method	Meas. range (0…min / max)	Reso-lution	Repeat-ability	Drift per 8h (Offset, Span)	Lack-of-Fit (Linearity)	Temperature drift 41°F to 113°F	Respons Time
O_2	Oxygen (long-Life)	ECS	25.00%	0.01%	< 0.2 Vol%	< 0.1 Vol%	< 0.1 Vol%	< 0.2 Vol%	20 sec
O_2	Oxygen	PM	25.00%	0.01%	< 0.01 Vol%	< 0.1 Vol%	< 0.1 Vol%	< 0.1 Vol%	20 sec
CO_2	Carbon dioxide	NDIR	40.00%	0.01%	< 1 % m.r.	< 1 % m.r.	< 2 % m.r.	< 0.5 % m.r.	120 sec
CO	Carbon monoxide	NDIR	200 / 10,000 ppm	0.1 ppm	< 1 % m.r.	< 1 % m.r.	< 2 % m.r.	< 0.5 % m.r.	120 sec
HC	Hydrocarbons (CH_4)	NDIR	500 / 10,000 ppm	0.1 ppm	< 2 % m.r.	< 1 % m.r.	< 2 % m.r.	< 0.5 % m.r.	120 sec
HC	Hydrocarbons (C_3H_8)	NDIR	200 / 10,000 ppm	0.1 ppm	< 1 % m.r.	< 1 % m.r.	< 2 % m.r.	< 0.5 % m.r.	120 sec
NO	Nitric oxide	NDIR	250 / 4,000 ppm	0.1 ppm	< 1 % m.r.	< 1 % m.r.	< 2 % m.r.	< 0.5 % m.r.	120 sec
NO_2	Nitrogen dioxide	NDIR	200 / 1,000 ppm	0.1 ppm	< 1 % m.r.	< 1 % m.r.	< 2 % m.r.	< 0.5 % m.r.	120 sec
SO_2	Sulfur dioxide	NDIR	200 / 4,000 ppm	0.1 ppm	< 1 % m.r.	< 1 % m.r.	< 2 % m.r.	< 0.5 % m.r.	120 sec
N_2O	Nitrous oxide	NDIR	200 / 1,000 ppm	0.1 ppm	< 1 % m.r.	< 1 % m.r.	< 2 % m.r.	< 0.5 % m.r.	120 sec

NOTE: m.r. = measuring range, established by the calibration gas anywhere between min to max range
CH4 = selective methane measurement ; C3H8 = non-methane measurement

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
Cable communication interface	RS485, RJ45 (Ethernet)
Wireless communication	Bluetooth, WLAN
Thermal printer	external only
Analog output 4 - 20 mA/analog input 4 - 20 mA	8 channel out / 4 channel in/user configurable
Universal analog input - AUX -	0...10 Vdc / 4...20 mA / NiCrNi / RS485
System warming up time	30 minutes (typical)
Warming up temperature NDIR bench	131°F (55 °C)
Mains free operation time / stand-by only	1 hour
Internal battery	Li-Ion , 96W, for standby
Operating conditions	41°F to 113°F, RH up to 95% non condensing
Storage temperature	-4°F to 122°F
Power supply / consumption	86 .. 265 Vac / 47…63 Hz / 105 W (analyzer only)
Enclosure material	aluminum, rubber molded impact protection
Protection class	IP20 (or IP42 inside transport case)
Dimensions	16.92“ x 11.41“ x 5.9“ (WxHxD)
Weight	from 16.5 lbs. for minimal configuration

Data subject to change without notice

MRU Instruments, Inc.
Humble, Texas 77338
Tel.: (832) 230 - 0155
Fax: (832) 230 - 1553
info@mru-instruments.com
www.mru-instruments.com

Support and sales by:

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