

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



MRU
AIR fair
EMISSION MONITORING SYSTEMS

since 1984®

Over 30 years of innovative gas analysis!

- 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 / CO₂ / C₃H₈ / CH₄ / SO₂ / NO / NO₂ / N₂O
and oxygen with either long-life O₂-ECS or O₂-PM (paramagnetic cell)

PORTABLE HIGH END ANALYSIS TECHNOLOGY

MRU online View Software for trending and data export



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

Linux operating system



- Simultaneous analysis of up to 9 gas components!
 - CO, CO₂, NO, NO₂, SO₂, N₂O & HC using NDIR
 - O₂ using ECS or PM
- 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 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 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

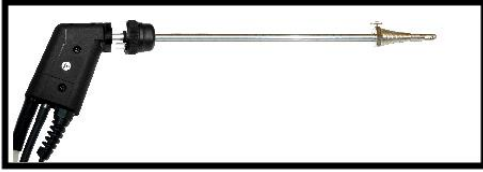


Safe transport with the aluminum framed case



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



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

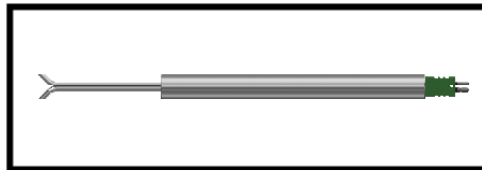


High temp ceramic probe (3,000°F)
With temperature measurement
with easy replaceable
quartz glass wool filter



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



Heated probe and heated sampling line



Heated probe handle to avoid condensation



Quartz glass wool filter in heated probe handle



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



DUAL Stage 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
optional RS485 connector for long cable data transfer using Modbus RTU protocol

TECHNICAL SPECIFICATIONS

MGA prime Portable analyzer with up to 9 gas components

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 ₂	Carbon dioxide	NDIR	0 ... 5.00 / 40.00 %	0.01%	± 0.2 % or 2 % reading
CO	Carbon monoxide	NDIR	0 ... 200 / 10,000 ppm	1 ppm	± 4 ppm or 2 % reading
HC	Hydrocarbons (CH ₄)	NDIR	0 ... 500 / 10,000 ppm	1 ppm	± 10 ppm or 2 % reading
HC	Hydrocarbons (C ₃ H ₈)	NDIR	0 ... 200 / 10,000 ppm	1 ppm	± 10 ppm or 2 % reading
NO	Nitric oxide	NDIR	0 ... 250 / 4,000 ppm	1 ppm	± 5 ppm or 2 % reading
NO ₂	Nitrogen dioxide	NDIR	0 ... 200 / 1,000 ppm	1 ppm	± 4 ppm or 2 % reading
SO ₂	Sulfur dioxide	NDIR	0 ... 200 / 4,000 ppm	1 ppm	± 4 ppm or 2 % reading
N ₂ O	Nitrous oxide	NDIR	0 ... 200 / 1,000 ppm	1 ppm	± 4 ppm or 2 % reading

* which ever is larger

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/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
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 , 96Wh, 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.
Houston, Texas 77044
Tel.: (832) 230 - 0155
Fax: (832) 230 - 1553
info@mru-instruments.com
www.mru-instruments.com

Support and sales by:

