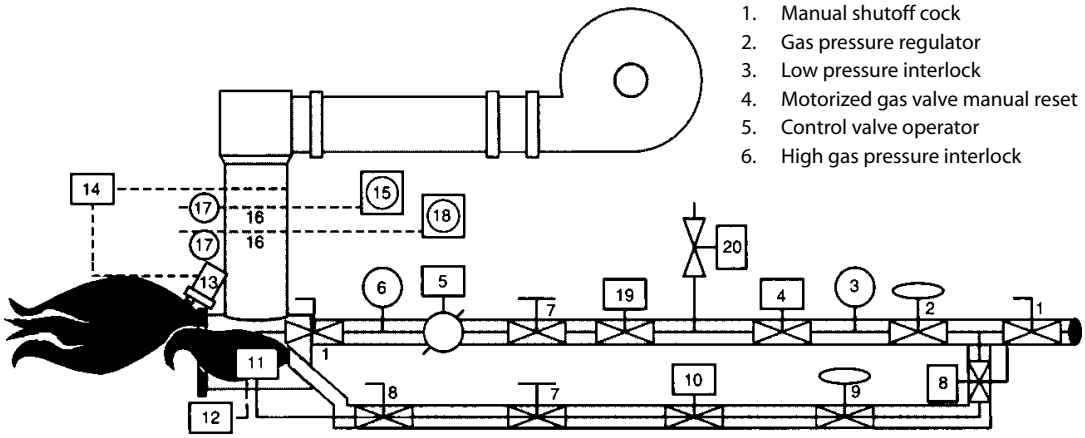
COMBUSTION SAFETY AND EFFICIENCY

Fireye flame safeguard controls are compact, modular burner control management systems designed to provide automatic ignition and continuous flame monitoring for commercial-sized heating and process burners firing any type of fuel. We've worked with our partners at Fireye to simplify the selection process, so you can pick the modules you need for your application, and be sure you have all the elements necessary for a complete burner management system.

With the increased focus on emissions control and combustion safety, we've expanded our line of portable emissions and stack gas oxygen analyzers. If you're looking for an analyzer we don't carry, our partners at RAECO can help you out.

Prices in this catalog are current at the publication date, and are subject to change without notice.

Typical Single Burner Furnace with Flame Safety System



1. Manual shutoff cock
2. Gas pressure regulator
3. Low pressure interlock
4. Motorized gas valve manual reset
5. Control valve operator
6. High gas pressure interlock
7. Test cock
8. Pilot gas cock
9. Pilot pressure regulator
10. Pilot solenoid valve
11. Gas pilot burner assembly
12. Solid-state ignition transformer
13. Flame detector
14. Primary control relay mount base
15. High limit safety shutdown
16. Thermocouple leadwire
17. Thermocouple sensor
18. Burner valve controller
19. Main gas valve automatic operator
20. Normally open vent valve

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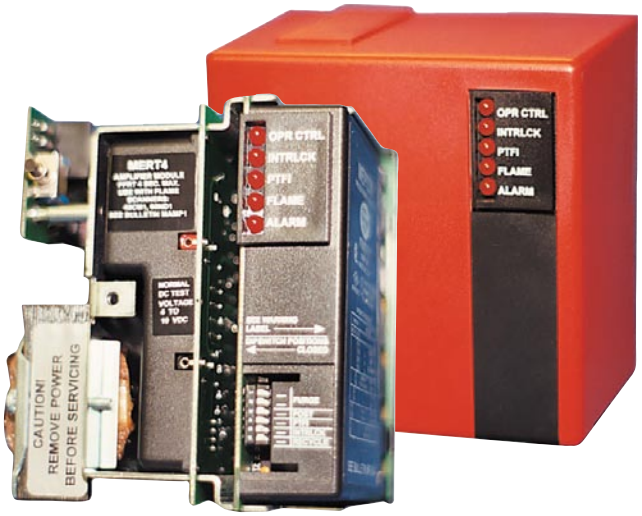
MicroM Flame Safeguard Burner Control System



MicroM Flame Safeguard controls are compact, modular burn management systems designed to provide automatic ignition and continuous flame monitoring for commercial-sized heating and process burners firing any type of fuel.

The MicroM incorporates remote reset capability and serial communications via MODBUS. The optional ED510 display can be used to access burner hours and cycles, system hours, the last 6 lockouts with burner cycle time stamp and programmer configuration. MODBUS communications capability allows the integration of the MicroM control into upper level energy management/data acquisition systems.

A complete MicroM system consists of the appropriate flame scanner/detector, plug-in amplifier, and programmer modules connected to a chassis and wiring base. Interchangeable programmer and amplifier modules allow versatility in selecting control function, timing, and flame scanning method.

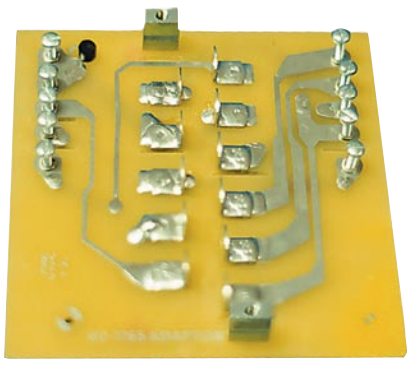
All amplifiers are available with flame failure response times of 0.8 or 3 seconds nominal (4 seconds max), and each provide a set of test jacks with a range of 0-10VDC for the measurement of flame signal intensity.

Smart LED indicators on all programmer modules indicate the current operating status of the control, and during a safety lockout, display the fault as a coded sequence, simplifying troubleshooting during a shutdown. A run-check switch is provided on the MEP500 series programmers to assist in testing size, position, and stability of the pilot. A safety checking circuit runs on each start. If flame (real or simulated) is detected prior to a start or during purge, the fuel valves will not be energized and the control will lock out.

Model Selection Guide

Component	Description	Catalog Number	Availability	Price
Chassis	120VAC Input , Standard Board	MEC120	• • • •	$332.00
	120 VAC Input with Remote Reset Capability, Interface to Alphanumeric Display, Communications, Modbus Capability	MEC120RC	• • • •	483.00
Programmer	Relight Operation, 10 Sec. PTFI	MEP100	• • • •	148.00
	Selectable Purge Timing, PTFI Timing, Recycle/Non-Recycle, Post Purge, Prove Air Open at Start	MEP230	• • • •	358.00
	Selectable Purge Timing to 60 Min.	MEP536	• • • •	449.00
Flame Scanners	Non Self-Checking Scanner, 3 Ft. Flexible Cable, 1/2" NPT Connector	UV1A3	↓	157.00
	Non Self-Checking Scanner, 6 Ft. Flexible Cable, 1/2" NPT Connector	UV1A6	↓	185.00
	Infrared Scanner, 8 Ft Shielded Cable with 90° Head	48PT2-9003	↓	247.00
	Ultraviolet Self-Checking Scanner, 120 VAC Shutter, 1" NPT Threads	45UV5-1009	↓	1346.00
	Flame Rod for Gas Flames, 12" Length, 1/2" NPT Connection	69ND1-1000K4	↓	104.00
Amplifier Modules	UV Amplifier, 0.8 Sec Flame Failure Response Rate (FFRT)	MEUV1	•	72.80
	UV Amplifier, 3 Sec FFRT	MEUV4	•	72.80
	Infrared Amplifier, 0.8 Sec FFRT	MEIR1	•	146.00
	Infrared Amplifier, 3 Sec FFRT	MEIR4	•	146.00
	UV Self-Check Amplifier, 0.8 Sec FFRT	MEUVS1	•	157.00
	UV Self-Check Amplifier, 3 Sec FFRT	MEUVS4	•	157.00
	Flame Rod/Photocell Amplifier, 0.8 Sec FFRT	MERT1	•	72.80
	Flame Rod/Photocell Amplifier, 3 Sec FFRT	MERT4	•	72.80
Wiring Base	Closed Wiring Base, Surface Mount	61-3060	• • • •	62.00
	Open Wiring Base, Cabinet Mount	61-5042	• • • •	65.90
Add functionality to your existing MicroM chassis*.				
Option Boards	Standard Local Reset Switch	MED1	• • • •	34.40
	Standard Local Reset Switch with Display Output	MED2	• • • •	57.20
	Standard Local Reset Switch with Remote Reset	MED3	• • • •	80.10
	Standard Local Reset Switch with Communications	MED7	• • • •	126.00
	Standard Local Reset Switch, Display Output, and Remote Reset	MED4	• • • •	115.00
	Standard Local Reset Switch with Display Output, Communications	MED5	• • • •	139.00
	Standard Local Reset Switch with Display Output, Remote Reset, and Communications	MED6	• • • •	172.00

*MicroM chassis model MEC120RC includes all these options.



MicroM Subbase Mounting Adapters

The MicroM can fit directly onto your existing Honeywell Flame Safeguard mounting subbase with the addition of a single mounting adapter. No need to do any rewiring or expensive re-engineering for retrofits.

To replace the Honeywell RA890 with the Fireye M-Series, use the MM-1 adapter. To replace the Honeywell R4795 with a Fireye M-Series, use the MM-2.

Model Selection Guide

Description	Catalog Number	Price
MM-1 Mounting Adapter to Retrofit to RA890 Systems	60-1764	$92.90
MM-2 Mounting Adapter to Retrofit to R4795 Systems	60-1765	92.90

BurnerLogix™ Integrated Burner Management System

Features

- Keypad-configurable parameters — no dip switches to set!
- Smart LEDs provide status and lockout codes — and provide operation without the need for the optional display
- Alphanumeric display provides clear, concise messaging
- Valve proof-of-closure during standby, startup, and shutdown
- Modbus communications built in — adjustable baud rates allow for easy adaptation to burner control system
- Open wiring base with terminal block allows testing with control installed; pigtail wiring base has color-coded and labeled leadwires
- 4-20 mA test jack signal
- New design with smaller footprint saves cabinet space

BurnerLogix

The Fireye Burner Logix System provides the proper burner sequencing, ignition and flame monitoring protection on automatically ignited oil, gas, and combination fuel burners. In conjunction with limit and operating controls, it programs the burner/blower motor, ignition and fuel valves to provide for proper and safe burner operation.

A complete BurnerLogix system includes the YB110 chassis equipped with a flame amplifier, appropriate flame detector, plug-in programmer module, wiring base and optional alphanumeric display. The chassis/flame amplifier module comes complete with mounting screws and blank display module.

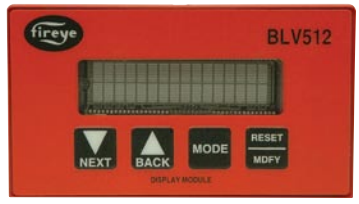
Interchangeable programmer modules allow for complete versatility in selection of control function, timing, and flame scanning means. The programming module determines functions like pre-purge time, recycling or non-recycling interlocks, high fire proving interlock, and trial for ignition timing of the pilot and main flame.

The BurnerLogix system can be used with ultraviolet, auto-check infrared, flame rod, self-check ultraviolet flame scanners, or direct coupled by choosing the proper chassis/flame amplifier module.

BurnerLogix' operational characteristics are determined by the selection of the programmer module (e.g. modulation, recycle, non-recycle, fixed firing, flame failure response time, etc.). The programmer module incorporates a plug-in design for easy installation.

Wiring bases for the BurnerLogix control are available pre-wired with 4 foot lead wires color coded and marked for easy installation or with an integral terminal block capable of accepting up to 2X 14 AWG wires. The wiring base terminal block is available with knockouts for conduit, or open ended for cabinet mounting.

Display Modules



The BurnerLogix system offers vacuum fluorescent (VFD) and liquid crystal (LCD) displays that can be either plugged in or mounted remotely to give full language descriptors of current status and diagnostic lockout information.

Both displays contain a fully functional keypad so you can easily scroll through the various menus to view the current operating status, and review programmer configuration and lockout history.

Remote mounted displays meet NEMA 4X requirements.

Model Selection Guide

Description	Catalog Number	Price
Step 1: Select Your BurnerLogix Chassis/Amplifier Module		
120 VAC 50/60 Hz, with UV non-self-check amplifier	YB110UV	$1023.00
120 VAC 50/60 Hz, with UV self-check amplifier	YB110UVSC	1262.00
120 VAC 50/60 Hz, with IR auto-check amplifier	YB110IR	1192.00
120 VAC 50/60 Hz, with flame rectification amplifier	YB110FR	1017.00
120 VAC 50/60 Hz, with direct-coupled amplifier, for use with Phoenix and Insight scanners	YB110DC	1192.00
Step 2: Select Your BurnerLogix Programmer Module		
Keypad-selectable parameters, non-recycle operation, modulation, open damper proving, 4 second FFRT	YP100	905.00
Keypad-selectable parameters, non-recycle operation, modulation, open damper proving, 2 second FFRT	YP102	905.00
Keypad-selectable parameters, non-recycle operation, fixed TFI times, pilot proving, modulation, open damper proving, 1 second FFRT	YP113	905.00
Keypad-selectable parameters, non-recycle operation, modulation, open damper proving, indefinite pilot hold, revert to pilot from auto, 4 second FFRT	YP138	905.00
Keypad-selectable parameters, recycle operation, modulation, 4 second FFRT	YP200	699.00
Keypad-selectable parameters, recycle operation, modulation, 2 second FFRT	YP202	699.00
Keypad-selectable parameters, recycle operation, low fire start, early spark termination, 4 second FFRT	YP300	525.00
Keypad-selectable parameters, recycle operation, low fire start, early spark termination, 4 second FFRT	YP302	525.00
Step 3: Add an Optional BurnerLogix Display Module		
Vacuum fluorescent display (VFD), Good -40° to 140°F	BLV512	520.00
Liquid crystal display (LCD), Good -4° to 140°F	BLL510	520.00
NEMA 4 remote mount kit for display, 4 foot cable	129-178-4	56.00
NEMA 4 remote mount kit for display, 8 foot cable	129-178-8	61.00
Step 4: Select a Wiring Base		
4" x 5", 4 foot pigtail wires, color coded and labeled	60-2810-1	93.20
4" x 7" closed base with terminal block and knockouts	60-2812-1	93.20
4" x 7" open base with terminal block	60-2814-1	93.20
Step 5: Add an Optional Expansion Module		
Expansion module for first-out annunciation	YZ300	996.00
Step 6: Select a Flame Scanner		
Non Self-Checking Scanner, 3 Ft. Flexible Cable	UV1A3	157.00
Non Self-Checking Scanner, 6 Ft. Flexible Cable	UV1A6	185.00
Infrared Scanner, 8 Ft Shielded Cable with 90° Head	48PT2-9003	247.00
Ultraviolet Self-Checking Scanner 120 VAC Shutter	45UV5-1009	1346.00
12" Flame Rod for Gas Flames, 1/2" NPT Connection	69ND1-1000K4	104.00

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Flame Monitor Series Burner Control System

Flame-Monitor Series

The Flame-Monitor Series provides the proper burner sequencing, ignition and flame monitoring protection on automatically ignited oil, gas and combination fuel burners. Interchangeable programmer and flame amplifier modules allow complete versatility in selecting control function. The flame-monitor control uses the same wiring base as the Fireye D-Series and C-Series Controls and is directly interchangeable with most models with out rewiring.

The Flame-Monitor control can be used with ultraviolet, AUTOCHECK® infrared, photocell, flame rod or self-check ultraviolet flame scanners. Special features include remote reset, remote display, expanded annunciation of safety lockouts, programmability of safety interlock messages, and remote data communications capability.

The complete Flame-Monitor control consists of a chassis, display module, programmer, amplifier, scanner and a wiring base.

EP Programmer Module

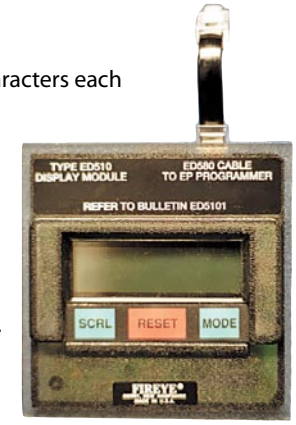
The Fireye EP Programmer Modules provide start-up programming, safe start check, and flame monitoring supervision. They ensure open damper high fire purge interlock, proof of low fire position and fuel valve end switch safety checks.

A running interlock circuit constantly monitors the limit switches, air flow switches and fuel pressure switches throughout the programmer. EP programmer modules will de-energize all fuel valve circuits within 4 seconds following a flame failure or at the end the pilot-trail-for-ignition period if no flame is detected.

The EP programmers provide a Check-Run switch to stop the control in its firing sequence at any time (except MTFI) to aid in setup, start-up, and check out of the burner and its associated interlocks.

EP programmers offer the following functions: an increase of purge timing and air flow switch opened at the start of the operating cycle. EP programmers include an RJ45 style connector to interface with the ED510 display module. EP programmers store the burner cycle and on-time history, as well as lockout history (with burner cycle and burner hour time stamp).

ED510 Display Module



- LCD backlit display with 2 lines of 16 characters each
- RJ style connector
- Mounts directly onto front face of programmers
- Continuous display of current burner status, including first out annunciation in the event of a lockout condition
- Remote display capability using DIN-sized opening and remote mounting kit.
- 3-key keypad provides historical data from the burner, the last 6 lockout conditions (with burner cycle and burner hour time stamp)

Flame Scanners

UV1A: Ultraviolet miniature non self-checking scanners suitable for fuel gases and no. 2 oil. Non-replaceable tube. Mounting collar 1/2" NPT.

48PT2: Lead sulfide scanner is designed to detect low frequency IR signals from gas or oil flames. Mounting collar is 1/2" NPT with straight or 90° mounts. 8 ft. flexible conduit. Replaceable sensor cell.

45UV5: Self-checking ultraviolet scanner for continuously fired applications where recycling in infrequent or absent. The self-checking circuit checks the electronics and the UV tube for proper operation every 4 seconds during the firing period. Suitable for fuel gases and oil. Replaceable UV tube and shutter mechanism. Mounting 1" NPT. Must be installed with metal shielding over the scanner leads.

Flame Amplifier Module

Flame amplifier modules are used with the appropriate flame scanner to provide flame scanning capability. Fireye offers ultraviolet amplifiers and flame rectification amplifiers for use with flame rods, photocells and autocheck infrared amplifiers.

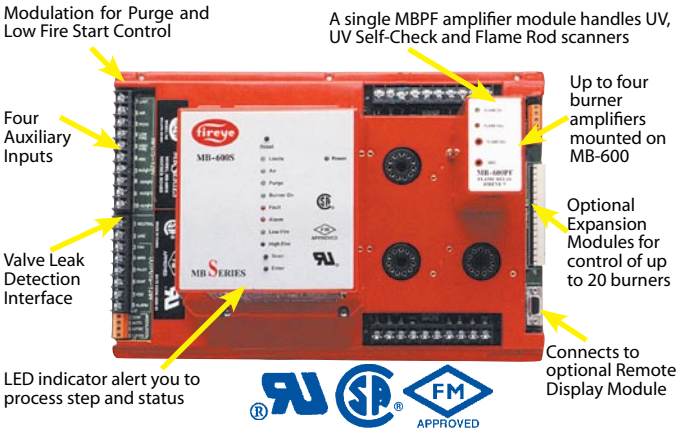
Self-checking ultraviolet scanners and amplifiers should be used in applications where burner firing operation is continuous or where the burner is on for long periods of time without cycling.

Model Selection Guide

Component	Description	Catalog Number	Availability				Price
Chassis	120VAC Chassis with Mounting Screws and Dust Cover	E110	•	•	•	•	$687.00
Program Module	30 Sec. Purge, 10/15 Sec. TFI, 4 Sec. FFRT, Non-Recycle Modulation	EP160	•	•	•	•	933.00
Display	2 Line x 16 Character LCD Display with Keypad	ED510	•	•	•	•	484.00
Flame Scanner	Non Self-Checking Scanner, 3 Ft. Flexible Cable, 1/2" NPT Conn.	UV1A3	↓				157.00
	Non Self-Checking Scanner, 6 Ft. Flexible Cable, 1/2" NPT Conn.	UV1A6	↓				185.00
	Infrared Scanner, 8 Ft Shielded Cable with 90° Head	48PT2-9003		↓			247.00
	Ultraviolet Self-Checking Scanner 120 VAC Shutter, 1" NPT Thread	45UV5-1009			↓		1346.00
	12" Flame Rod for Gas Flames, 1/2" NPT Connection	69ND1-1000K4				↓	104.00
Amplifier Module	Standard Ultraviolet Amplifier	EUV1	•				366.00
	Autocheck Infrared Amplifier	E1R1		•			541.00
	Self-Check Ultraviolet Amplifier	EUVS4			•		613.00
	Flame Rectification Amplifier	ERT1				•	360.00
Wiring Base	Surface Mount	60-1386-2	•	•	•	•	101.00
	Panel Mount	60-1466-2	•	•	•	•	101.00

Burner Control Systems

Industrial MB Series Multi-Burner Flame Safeguard System



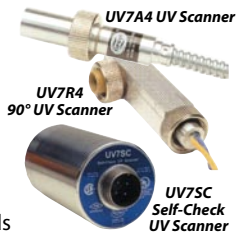
The Fireye Multi-Burner Monitoring System controls the start-up sequence and monitors the flame of up to 20 individual gas, oil or combination gas/oil burners connected to a common valve train. Dynamic on-board diagnostics check for faulty relays, proof of valve closure, high and low fire switch interlocks, and shortened air switch. The MB is even able to specifically identify which burner caused the initial flame failure.

Plug-in flame sensor modules that can sense UV, UV self-check or flame rod provide for easy replacement on an individual basis. Configuration and startup time is reduced through use of on-board DIP switches, which also allow sequencing and timing functions.

The MB-600S chassis directly powers pilot and main gas valves and ignition transformers. The built in blower output, purge timing and modulation control, let you add independent limits and a controller to create a complete combustion control system for furnace, oven or other multi-burner applications.

Specifications

Number of Burners: 20 max.
Pilot Proving Time: 7 seconds
Purge Time: 0 sec to 60 min
Pilot Trial for Ignition: 5, 10 or 15 seconds
Flame Failure Response Time: 3 (±0.5) seconds



Valve Operation: Simultaneous (all burners operate from one fuel train)
Supply Voltage: 120VAC, 50/60 Hz; *Power Consumption:* 25VA
Temperature Rating: -32° to 122°F (-36° to 50°C)
Contact Ratings: *Fan Motor:* 15 Amp Resistive; *Others:* 10 Amp Resistive

Model Selection Guide

Description		Catalog Number	Price
Step 1: Select a Chassis for your Multiburner Control System			
Chassis	120VAC 50/60Hz, Motherboard, Relay Board, Logic Module, and Power Module. 4 Auxiliary Inputs, Purge Modulation, Valve Leak Testing	MB-600S	$1734.00
	120VAC 50/60Hz, Motherboard with RS-232 Communications, Relay Board, Logic Module, Power Module. 4 Auxiliary Inputs, Purge Modulation, Valve Leak Testing	MB-632S	1866.00
	120VAC 50/60Hz, Motherboard with RS-485 Communications, Relay Board, Logic Module, Power Module. 4 Auxiliary Inputs, Purge, Modulation, Valve Leak Testing	MB-685S	1866.00
Step 2: Select a Flame Sensor Module			
Sensor Module	Plug-In Flame Sensor Module, UV/FR Plastic Case with Mounting Screws	MB-600PF	347.00
Step 3: For Systems with More than 4 Burners, Select Expansion Board Modules and Cables			
Expansion Modules	Expansion Board for up to 4 Burners	MB-604E	310.00
	Expansion Board for up to 8 Burners	MB-608E	625.00
	6" Cable for Expansion Board	59-506-1	16.80
	36" Cable for Expansion Board	59-506-3	29.50
Step 4: Select Optional Remote Display and Cable			
Display	Remote Display with Keypad	MB510	439.00
	6 Ft. Cable for Remote Display	59-507-6	23.10
	10 Ft. Cable for Remote Display	59-507-10	34.70
Step 5: Select One Flame Scanner for Each Burner on Your System			
Scanners and Accessories	1/2" NPT Straight UV Scanner, 4 Ft. Flex Conduit, Insulated Nylon Coupling	UV7A4	177.00
	1/2" NPT UV Scanner, NEMA 4, 4 Ft. Flex Conduit, Insulated Nylon Coupling	UV7A4W	236.00
	1/2" NPT 90° UV Scanner, 6 Ft Shielded Cable	UV7R4	145.00
	1" NPT Self-Check Scanner	UV7SC	951.00
	10 Ft Cable for UV7SC Self-Check Scanner	59-504-010	147.00
	Scanner Support, Max Temp 200°F	36-935	34.90
	Magnifying Lens Assembly	46-185	88.80
	Magnifying Lens	46-186	17.10
	Non-Magnifying Lens	46-187	27.60
	1/2" NPTF Insulated Nylon Coupling	35-319	17.10

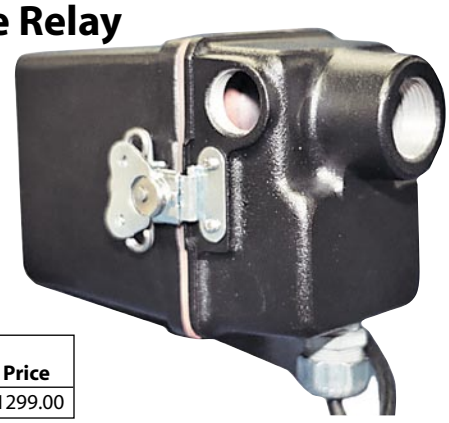
Tip: If your system has between 4 and 8 burners, select 1 MB-604E module and a connecting cable. If your system has between 9 and 13 burners, select 1 MB-608E module and a connecting cable. For systems that have 14 to 20 burners, you can mix MB-604E and MB-608E modules to fit.

65UV5 Integrated Flame Scanner with Internal Flame Relay

The 65UV5 flame scanner incorporates an internal single pole, single throw (normally open) flame relay with a fixed on/off threshold to provide flame on/flame off indication, eliminating the need for an external flame amplifier.

The scanner uses an ultraviolet tube-type sensor, and electromechanical self-checking shutter mechanism. The NEMA 4X/IP66 housing is suitable for use in Class I Division II, Group C and D hazardous environments.

The Fireye 65UV5 flame scanner is powered by 24VDC and includes an integral 10-foot four-conductor cable with cable gland. Two color-coded internal LEDs indicate flame status (off/on) and alarm condition. These can be viewed through the removable rear access screw opening.



Model Selection Guide

Description	Catalog Number	Price
Integrated Flame Scanner, 1" NPT Mounting Flange, 4 Second Flame Failure Response Time	65UV5-1000	$1299.00

Illinois, Indiana, Iowa, and SW Michigan
Phone: 800-953-7626 • 630-595-8400
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Zircomat In-Situ Stack Gas Oxygen Analyzer

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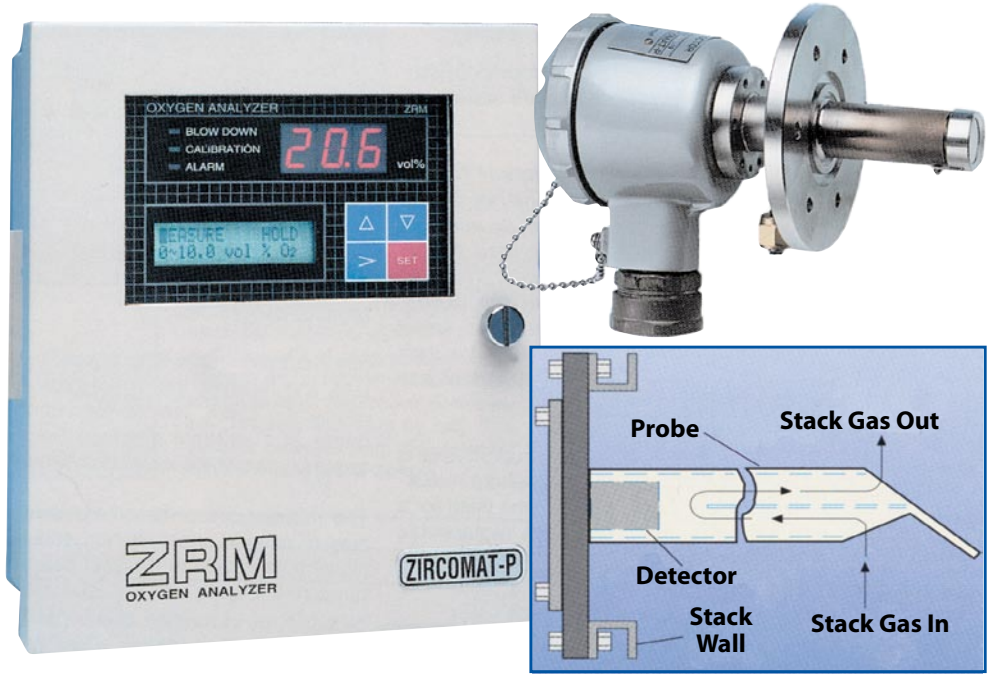


Features

- Simple to install and maintain
- One detector fits all Zircomat probes
- Detector removes for easy cleaning and repair; probe stays in place
- Calibrates automatically
- Field selectable ranges
- Selectable memory hold feature
- Hi-Lo and self-diagnostic alarms
- Interactive message panel
- Isolated 4-20 mA output signal
- Extractive sample cell available

More and more refineries and power plants are measuring excess oxygen to improve their energy efficiency and reduce fuel consumption.

In most oxygen analyzers, the electronic sensor comes in direct contact with the sample gas, so you have to remove the hot probe every time you need to service the sample gas filter or the sensor. And, you need to stock probe-length-specific spare parts inventory for these systems. The Cosa Instrument Zircomat oxygen analyzers are much more user-friendly.

The Zircomat analyzer for flue gas oxygen measurement uses Zirconia oxide sensor technology and comes in four configurations, each with unique features to suit a wide variety of combustion control applications.

In the Zircomat system, the sample gas is deflected to the sensor. To increase safety, the probe always stays in the stack. The small, hand-held oxygen detector is quickly detachable for service. And, one detector fits all Zircomat probes, any model any length!

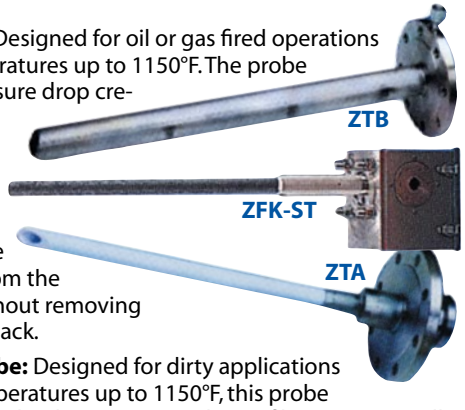
The detector is the heart of all Zircomat systems. Small and easily detachable, the detector can be serviced without removing the probe from the flue stack. You won't need to shut down your plant just to remove the probe. A replaceable sample gas diffuser on the end of the detector provides sensor protection.

The electronic transmitter is mounted in a weatherproof enclosure and receives the signals from the oxygen detector via a connecting cable. So, the transmitter can be remote-mounted at a suitable distance from the probe and detector assembly to suit the installation requirements.

The microprocessor-based transmitter has a large LED display for oxygen concentration and a 4-20 mA isolated output signal proportional to the user-selectable adjustable measuring range, 0-2% to 50% O_2. It's simple to run a manual or automatic calibration check using known value gases to flow a calibration gas through the detector's calibration gas port — without removing the detector from the process. Non-volatile memories store the zero and span gas data between calibrations.

The Zircomat transmitter can monitor and analyze performance of up to seven parameters online. Failure to meet any of these specifications will activate alarm contact. An interactive message panel displays any parameters outside the performance envelope. The self-cleaning probe feature is user-programmed from the keypad, and activates a solenoid valve for blow-back probe cleaning. You can also use the interactive panel to customize response time to process changes to suit existing combustion control parameters.

Probe Choices



ZFK Standard Probe: Designed for oil or gas fired operations with stack gas temperatures up to 1150°F. The probe uses the natural pressure drop created from stack gas passing across the probe tip to deflect the sample gas past the oxygen detector for measurement. The detector detaches from the probe for service without removing the probe from the stack.

ZTB Self-Cleaning Probe: Designed for dirty applications with sample gas temperatures up to 1150°F, this probe uses plant air to clean the detector's sample gas filter automatically at programmable time intervals and is recommended for coal and black liquor fired boilers or incinerator projects with high fly ash. The detector detaches from the probe for service without probe removal.

ZTA High Temperature Probe: Used for sample gas temperatures up to 2900°F. Available with self-cleaning function, this probe is suitable for waste incinerators, soaking pits, and glass furnace. A built-in heater maintains the sample above the dewpoint during start-up and cools the sample when the gas temperatures rise above its setpoint. The detector detaches for service without probe removal.

ZFK-ST High Temperature Probe: Manufactured from ceramic, the ZFK-ST can be used on applications burning oil or gas as a fuel with stack gas temperatures up to 2200°F. The detector detaches from the probe for service without removing the probe from the stack. High-temp alloys can be supplied for special applications.

Specifications

Sample Gas: Oxygen in flue gases
Sensor: Zirconia oxide
Measurement Range: 0-2%, Up to 50% 0.5% steps
Output Signal: 4-20 mA, linear isolated
Accuracy: ±2% of reading
Repeatability: ±0.5%
Response Time: Initial 0.1 sec./90% 7 sec
Power Supply: 115V 60Hz
Warm Up Time: Approximately 5 minutes
Cable: 20 ft. Sealtite flexible conduit, up to 1000 ft. optional

Probe	Temperature	Lengths (Inches)	Material
ZFK, ZTB	0°-1150°F	12, 20, 30, 40, 60, 80, 100, 140	S/Steel
ZTA	0°-2900°F	20,30,40,60	S/Carbide
ZFK-ST	0°-2200°F	20,40	Mullite

Air Requirement: *Self-Cleaning Probe:* 15 SCFM, 40-120 PSI; *ZTA Probe Sample Loop:* 10-20 SCFH

Probe Flange: *ZTB/ZFK/ZFK-ST:* 4" 150#RF; *ZTA:* 2.5" 150#RF
ZTA Probe: Low temperature alarm below 100°C, volt; free 1A 115V contact closure

Transmitter

Ambient Temperature: 0-130°F
Alarm Contacts: Failure in service, maintenance blow down
High/Low Alarms: Rated N/O volt free 2A 250V
Calibration: Manual or automatic
Output Signal Hold: Selectable, for self-cleaning or maintenance
Contact Outputs: Rain resistant
Contact Inputs: Autocal start/inhibit
Finish: Epoxy painted steel/SS
Mounting: Wall, panel, or 2" pipe mount
Options: Combustion efficiency, RS485 communication, remote calibration unit with solenoids and flow meter; Hazardous area transmitter available on request.

Selecting the Right Zircomat Analyzer System

Fuel Type	Gas or Oil	Gas or Oil	Coal, Oil, or Gas	Coal, Oil, or Gas
Sample Gas	Up to 1150°F	Up to 2200°F	Up to 2900°F	Up to 1150°F
Available Probe Lengths	12, 20, 30, 40, 60, 80, 100, 120, 140	20, 40	20, 30, 40, 50	12, 20, 30, 40, 60, 80, 100, 120, 140
Applications	Utility/Industrial Power Boilers, Process Heaters, Marine Boilers, Drying Furnaces, Steam Generators, Inert Gas Generators	Process Heaters, Steam Generators, Power Boilers	Soaking Pits, Blast Furnaces, Coke Ovens, Incinerators, Glass Furnaces, Boiler Fireboxes, Process Heaters, Reheat Furnaces	Utility/Industrial Power Boilers, Incinerators, Blast Furnaces, Coke Ovens, Black Liquor Boilers
Use Model...	ZRM-ZFK	ZRM-ZFK-ST	ZRM-ZTA	ZRM-ZTB

Model Selection Guide

Please issue all orders to: *Cosa Instruments, c/o Lesman Instrument Company*

Description		Catalog Number	Availability				Price Each
Zircomat Single Channel Stack Gas Oxygen Analyzer: Includes Detector, Probe, Transmitter, Connecting Cable, and User's Manual							
Zircomat-M with Standard Probe		ZRM-ZFK	↓				$4860.00
Zircomat-M with High Temp. (to 2200°F) Probe		ZRM-ZFK-ST		↓			5380.00
Zircomat-M with Self-Cleaning Probe		ZRM-ZTB			↓		4990.00
Zircomat-M with High Temp. (to 2900°F) Probe		ZRM-ZTA				↓	7115.00
Standard Probe Length	12" *(Add Solenoid Valve for Use with ZTB)*	-12-	•		•		0.00
	20" *(Add Solenoid Valve for Use with ZTA, ZTB)*	-20-	•	•	•	•	0.00
	40"	-40-		•			0.00
Probe Location	Indoor, Range: 5%, 10%, 25%	-N10-	•	•	•	•	0.00
	Outdoor, Range: 5%, 10%, 25%	-R10-	•	•	•	•	106.00
Options	None	N	•	•	•	•	0.00
	RS485 Communications	C	•	•	•	•	371.00
	Combustion Efficiency Calculation/Readout	E	•	•	•	•	797.00
Cable Length	20 Ft. Cable, Liquid-Tight Flexible Conduit	20	•	•	•	•	0.00
	Extra (to Max. 1000 Ft., No Conduit)	XX	•	•	•	•	6.50/ft.
Optional Accessories	None	N	•	•	•	•	0.00
	Remote Calibration Gas Unit, NEMA 4X Encl.	R	•	•	•	•	845.00
	Remote Gas Unit, ISA Z Serial Purge, CL1/Div2	RZ	•	•	•	•	1095.00

Optional Equipment/Accessories

Description	Catalog Number	Price Each
Solenoid Valve for ZTA, ZTB Probes	FJ-19010	$132.00
Transmitter Pipe Mounting Bracket	FJ-40001	85.00
Flame Arrestor for ZFK, ZTB Probes	FJ-11000	271.00
Large Filter with Long Bolts/Gaskets	FJ-30110	271.00
Oxygen Detector for Hazardous Areas (Class 1, Div 2, Group D)	FJ-06301	1345.00
Power Supply for Other Voltages		210.00
User's Manual	FJ-19352	35.00
Installation Prints or Reproducible Drawings		50.00

Custom Probe Lengths Available!
Call Lesman Inside Sales
1-800-953-7626

Illinois, Indiana, Iowa, and SW Michigan
Phone: 800-953-7626 • 630-595-8400
Fax: 630-595-2386

Lesman Instrument Company
www.lesman.com
sales@lesman.com

Wisconsin, and Upper Peninsula Michigan
Phone: 800-837-1700 • 262-923-1790
Fax: 262-923-1797

BTU Gas Chromatograph for Natural Gas Analysis

Features

- Compact, light weight design
- Field mountable at the pipeline
- No analyzer shelter required
- Analyzes 11 components in 300 seconds
- FM approved for use in Class 1, Div 1, Groups C, D
- Calculates 20 parameters
- Optional digital and analog outputs
- Meets ISO and GPA standards
- Foundation Fieldbus and Modbus communications
- Eliminates repairs in the field

Cosa's HGC-303 is the world's smallest gas chromatograph for C6+ analysis of natural gas. It digitally publishes 20 derived parameters, including calorific value, Wobbe index, specific gravity, compressibility, ratio of heats, total of raw concentration, and more.

The HGC-303 packs the features, functionality, and performance of a full-sized chromatograph into a 9.6" tall field transmitter. Intrinsic safety and weatherproof design allow installation at the pipeline without the cost of additional sheltering.

The HGC-303 offers pre-engineered analysis and calculations for natural gas monitoring, eliminating the need for any further programming and application work. All you need to do is hook up gas connections, power, and communications cables. The unit provides a full 11-component C6+ analysis on natural gas with a 300-second cycle time and a repeatability of 0.05% heating value.

The HGC is designed to perform reliably in natural gas applications, ranging from remote wellheads to gas processing plants, gas transmission and distribution points, and end users. The HGC's small, lightweight design facilitates a simple swap-out of the entire analyzer in minutes, rather than requiring cumbersome maintenance in the field.

Low analyzer price, easy installation, low maintenance, and reliable performance contribute to time and cost savings, and a low overall cost of ownership.

Installed systems for about $25,000. Call for details.

Specification

Measurement: Gas chromatography, using thermal conductivity detector

Measured gas streams: Up to 4 streams

Analyzed components: 11; *Analysis time:* 300 sec.

Repeatability: ±0.05% of heat value

Auto-calibration: External solenoid valve and contact required

Method: *Chromatographic:* ISO 6974, part 4; *Heat value calculation:* GPA 2172

Output: 4-20mA, Modbus RTU, ASCII via RS-232, 485, 422, Foundation Fieldbus

Process Conditions

Temperature: 14° to 122°F (-10° to 50°C)

Flow rate: 50±20 ml/min

Pressure: 7 to 70 psig at flowmeter inlet

Dust and mist: None

Moisture: 2000 ppm or less

Coexisting component limits: H2, He, O2, H2S (dry) < 0.1 mol% each

Ambient humidity range: 0-95%RH

Carrier gas: 99.99% Helium (or better purity); *Pressure:* 60 psig ±7 psig; *Flow rate:* 25ml/min

Construction

Material: *Body/Oven:* NEMA 4X, IP 65 Cast aluminum; *Wetted Parts:* 304 Stainless steel, Polyamid; *Sensor:* Platinum, Glass, Gold

Approvals: *FM:* Explosion proof Class I, Div 1, Groups C-D, T4; Flameproof Class I, Zone 1 AEX d IIB T4; Seal all conduits within 18 inches; *CE mark:* Electromagnetic compatibility (89/336/EEC, 92/31/EEC, 93/68/EEC)

Power supply: 24 VDC ±15% 4A minimum

Power consumption: 5 - 50 VA at 50°C to -10°C

Valve actuation: Instrument air or helium gas

Dimensions (WDH): 3.9" x 4.5" x 9.6"

Monitoring the Calorific Value of Natural Gas

When natural gas was cheap and plentiful, gas companies installed mechanically driven flow meters to measure the amount of energy being purchased from the gas company. These flowmeters measure the actual cubic feet of gas going through the meter. Temperature and pressure changes were mechanically compensated for in the flowmeter to get to what the industry calls standard cubic feet (SCF).

As electronic equipment and computing power evolved, it became more economically feasible to install flow monitoring instrumentation with accuracies of ±0.25%.

Better flow measurement should mean more accurate billing.

But, the missing variable in this calculation is still the natural gas's actual calorific value, the energy content of the gas, which can vary substantially and cause billing errors (usually to the end user's disadvantage).

Utility companies bill their customers based on the assumption that the delivered gas contains a fixed amount of British thermal units (BTUs) per volume. However, tests have shown that BTUs can easily fluctuate by as much as ±2%.

Normally, utilities bill based on the highest BTU value that the pipeline companies deliver. Since the BTU value is fixed at the highest rate, overpayment is a regular occurrence (and a revenue cow for utility companies).

Users regularly pay for more energy than they actually get.

With the HGC series BTU transmitters now available, realtime BTU measurement of natural gas is an affordable option for most companies. This actual content measurement allows the end user to challenge the gas utilities on their actual gas consumption.

Why haven't companies installed GCs?

Until the advent of the HGC series BTU transmitter, most companies simply would not spend the money on an expensive complicated BTU analyzer. The initial cost of the equipment, high cost of installation, and continual cost of maintaining the system overwhelmed the potential savings available.

The HGC-303 is a plug and play, zero-maintenance device that will measure and report the energy content of the natural gas as reliably as the low tech flowmeter that measures gas volume. The HGC-303 has a typical installation cost of below $25,000 and practically zero cost of ownership.

The BTU output of the HGC-303 can be fed into a Pentium-based desktop PC, plugged into an Excel spreadsheet, fed into a host computer, or interfaced to existing flowmeters and flow computers to report the correct calorific value purchased from the utility.

Handheld Combustion and Emission Analyzers

Features	Model 1600GL	Model 2000
Fuel Types	Natural Gas, Light Oil #2, Heavy Oil #6, Propane, Butane, Others	Natural Gas, Light Oil, Propane, Butane, Coke Oven Gas, Blast Furnace Gas, Coal, Wood Dry, Manufactured Gas, Others
Measured Values	Oxygen (O2) Carbon Monoxide (CO) Stack Temperature Combustion Air Temperature Stack Draft	Oxygen (O2) Carbon Monoxide (CO) Stack Temperature Combustion Air Temperature Stack Draft Nitric Oxide (NO)
Calculated Values	Carbon Monoxide Undiluted Carbon Dioxide Excess Air Dewpoint Efficiency Losses	Carbon Monoxide Undiluted Carbon Dioxide Excess Air Efficiency Losses Nitrogen Oxides (NOx)
Logging	50 or 250 Sample Points	300 or 3000 Sample Points
Special Features	RS232 and Infrared Ports	RS232 and Infrared Ports Auxiliary Input for Type K Thermocouple, 0-10V or 4-20 mA Signals Selectable Oxygen Reference Digital Manometer

Picking the Right Oxygen Analyzer

To help you pick the right analyzer for your application, members of the Lesman sales staff have completed Cosa Instruments' factory training. You can call in — with the following information — and they'll help you find the Cosa analyzer that will do exactly what your process requires.

1. Tell us about the instrument system.

- Is it a permanent or portable installation? Indoors or outdoors?
- What is the ambient temperature at installation?
- How many measurement points do you need?

2. Tell us about the process conditions.

- What is the application?
- If a combustion process, what fuels are burned?

3. Tell us about the sample gas stream.

- What is the sample gas temperature range?
- Gas condition: Is it dry? dirty? corrosive?
- What is the dewpoint of the sample gas?

4. Tell us about the in-situ probe installation.

- What is the duct size? What is the stack diameter?
- What probe length do you need? (Insertion length should be equal to 1/2 the duct size or diameter of the stack.)
- What probe material do you need?

5. Describe the available utilities.

- What is the power supply? Minimum? Maximum? Normal? Volts or frequency?
- Is instrument air a factor? Yes/No. What is the air pressure (PSIG)? What is its dewpoint?

Measurement	Sensor	Ranges	Accuracy
O_2	Electrochemical	0 to 21%	(±0.2%)
CO (H_2 Compensated)	Electrochemical	0 to 4000ppm	<4000ppm: ±20ppm <400ppm: ±5% reading
NO	Electrochemical	0 to 2000ppm	±5% reading
Stack Temperature	NiCrNI	0° to 1200°F	T< 122°F: ±1.8°F T< 257°F: ±3.6°F T< 482°F: ±5.4°F T> 482°F: ±7.2°F
Combustion Air Temperature	NiCrNi	32° to 302°F	T< 122°F: ± 1.8°F T< 257°F: ± 3.6°F T> 257°F: ± 5.4°F
Draft/Pressure	Mechanical	< 0.4" H_2O	< 0.4" H_2O: 0.012" H20 > 0.4" H_2O: 3% reading

Model Selection Guide

Please issue all orders to: *Cosa Instruments c/o Lesman Instrument Company*

Description	Catalog Number	Price Each
COSA Portable Combustion Analyzer	1600-GL	$2305.00
COSA Portable Emissions Analyzer	2000	2985.00
Options and Accessories *(Include as line items on your purchase order)*		
1600-GL: Data storage for 250 Sample Sets		207.00
2000: Data storage for 3000 Sample Points		204.00
2000: NOx measurement, range 0-2000 ppm		867.00
2000: CO Sensor cutoff with rinsing pump, programmable cutoff		364.00
2000: Integrated differential pressure measurement		124.00
2000: Dynamic pressure/flow measurement by Prandtl's pitot tube		607.00
2000: Auxiliary input for T/C, 0-10 VDC, 4-20 mA		298.00
Thermal printer, IrDA Interface		408.00
ABS plastic transport case		266.00
30" Probe		483.00
40" Probe		449.00
60" Probe		769.00
80" Probe		880.00
Multi-hole probe, 80" probe tube, for exhaust pipes 2.5" to 7"		88.00
Combustion air element, 2.5" probe, 10' cable		139.00
Combustion air element, 12" probe tube with steel cone, 8' cable		201.00
10' RS232 Cable, PC to analyzer		75.00
Printer paper, five 75' rolls		24.00
Reusable star filter		17.00

Illinois, Indiana, Iowa, and SW Michigan
Phone: 800-953-7626 • 630-595-8400
Fax: 630-595-2386

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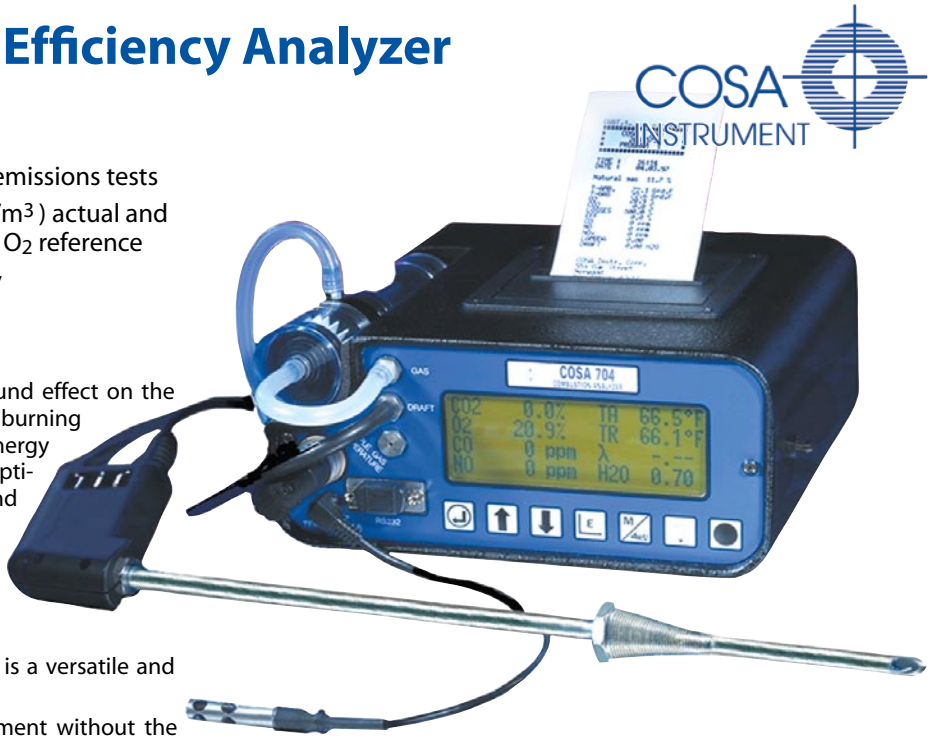
sales@lesman.com

Wisconsin, and Upper Peninsula Michigan
Phone: 800-837-1700 • 262-923-1790
Fax: 262-923-1797

Portable Combustion Efficiency Analyzer

Features

- Analyzes O_2, CO, NO, NO_2 and SO_2
- Data storage for 300 complete combustion emissions tests
- Printout (day, date, and time) in ppm (or mg/m^3) actual and ppm corrected to 3%, 7%, 15%, or selectable O_2 reference
- LCD displays all measurements continuously
- High vacuum sample pump



Large-scale energy production has had a profound effect on the environment. Emissions produced by power plants burning fossil fuels cause worries for environmentalists and energy managers alike, who recognize the importance of optimizing the combustion process to save fuel dollars and meet safety codes.

The COSA 704 has been developed to meet the demand for a portable combustion efficiency analyzer that can measure stack gas and improve total combustion efficiency. With its capacity to measure four gases (O_2, CO, NO, NOx or SO_2) the COSA 704 is a versatile and powerful instrument.

Electrochemical sensors allow reliable measurement without the errors commonly introduced by background gases.

An on-board microcomputer simplifies operation and eliminates the need for conversion charts. It provides step-by-step instructions for the user as well as digital self-calibration diagnostics — including automatic sensor calibration without the need for complex test gases.

With only minimal training, technicians can quickly make accurate gas emission measurements. The user friendly program guides the operator through easily understood menu options.

Specifications

Sensor	Range	Accuracy	Resolution
Oxygen	0% to 21%	+0.2 abs	0.1% volume
Carbon Dioxide (calc.)	0% to 20%	+0.3 abs	0.1% volume
Carbon Monoxide	0 to 10000 ppm	Greater of +10ppm or 5% reading	1 ppm
Nitrogen Oxide	0 to 2000 ppm		
Sulfur Dioxide	0 to 2000 ppm		
Nitrogen Dioxide	0 to 2000 ppm		
Carbon Monoxide	Up to 10%	200 ppm	100 ppm

Operating Temperatures: *Analyzer:* 104° F; *Probe:* 1200° F continuous, 1550° F short term (3 minutes)

Sensor Type: *O_2, CO, NOx:* Electrochemical cell; *Temperature:* Thermocouple Type K; *Draft*: Diaphragm

Power Supply: Cordless operation with built-in rechargeable battery for continuous 8-hour use or line power 115 V 60Hz

Display: LCD High-contrast readout

Diagnostics: *Calibration:* Automatic zero calibration; *Error Check:* Self-diagnostic program

Probe Length: 12" standard; 30" or 40" optional

Flexible Hose: 10 Ft. standard; 20, 30, or 50 ft. optional

Sample Pump: 10" Hg vacuum

Internal Memory: 300 complete combustion tests, IBM compatible with RS232 interface disk.

Carrying Case: Heavy-duty ABS case optional

Printer: Thermal printer

Accessories: User's manual, battery recharge unit, interface cable, disc, spare printer roll, carrying strap and sample gas filter.

Model Selection Guide

Please issue all orders to: *Cosa Instruments, c/o Lesman Instrument Company*

Description		Catalog Number	Price Each
Cosa Model 704 Portable Emission Analyzer			
To measure O_2, CO, NOx and SO_2		704.3	$4867.00
To measure O_2, CO, NO and NO_2		704.4	4867.00
To measure NOx and CO to 10%		704.5	4534.00
Sample Probe (Pick 1)	12" Length (Standard)	12P	0.00
	30" Length	30P	143.00
	40" Length	40P	242.00
Sample Gas Hose (Pick 1)	10 Ft. Length (Standard)	10H	0.00
	20 Ft. Length	20H	143.00
	33 Ft. Length	33H	247.00
	50 Ft. Length	50H	374.00

Not sure which analyzer you need? Call our factory-trained sales staff for help!

Watch our website for more information, available soon on the new Cosa combustion efficiency instruments!

TSI Portable Combustion Analyzer for NOx and SO2

- Real-time measurement just seconds after power-up
- Calculates efficiency, excess air, CO_2, and emission rates, provides NO_2 values
- Emission gas concentrations use adjustable O_2 reference
- Adjustable CO high limit pump shutdown protects CO sensor

The CA-Calc has eight adjustable factory set fuels that improve accuracy, plus five user-defined fuels with easy field setup. With pre-calibrated sensors, service is minimal. Everything can be done in minutes.

The datalogger sets the CA-Calc apart from other combustion analyzers. It stores location and specific test data, up to 350 samples for 35 sites and 75 systems. You can download the data over a serial communications interface for report management.

The basic unit measures O_2, CO, draft, and ambient and stack temperatures. Optional sensors can be added to measure NO, NO_2, SO_2, and high CO concentrations.

Specifications

Chemical	Range	Resolution
O_2	0 to 25%	0.1%
CO (H_2 compensated)	0 to 5000 ppm	1 ppm
CO (High concentration)	0 to 20000 ppm	1 ppm
NO, SO_2	0 to 4000 ppm	1 ppm
NO_2	0 to 500 ppm	0.1 ppm
CO_2 Calculated from O_2 and fuel type		

RAECO
Available for sale or rent from our partners at RAECO.
Call 800-852-9795

Model Selection Guide

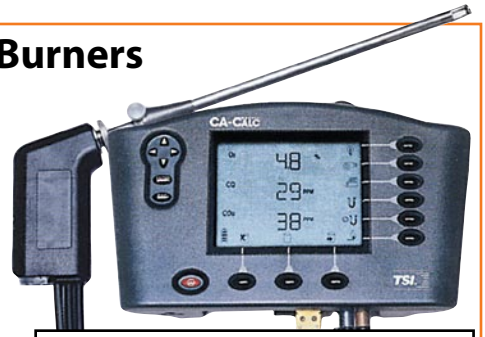
Description		Catalog Number	Price
CA-Calc with O_2 and CO Sensors		CA-6210	$2395.00
CA-Calc with O_2, CO, and NO Sensors		CA-6211	2995.00
CA-Calc with O_2, CO, NO, and SO_2 Sensors*		CA-6213	3745.00
CA-Calc with O_2, CO, NO, and NO_2 Sensors*		CA-6215	3745.00
CA-Calc with O_2, CO, and High-Concentration CO Sensors		CA-6212	2995.00
CA-Calc with O_2, CO, NO, High-Concentration CO Sensors		CA-6214	3745.00
Accessories/ Spare Parts	Replacement Water Trap and Filter	802215	100.00
	Carrying Strap (Tether)	2913011	15.00
	AC Adapter (115 VAC)	2613033*	35.00

Includes Teflon-lined sampling probe.

All models include a 12" probe with 9-foot sampling tube, water trap, carrying case, AC adapter, 4 size C alkaline batteries, operation manual and NIST-traceable certificate of calibration.

Ca-Calc CA-6203 Combustion Analyzer for Tuning Burners

- Large LCD display, intuitive operation
- Real-time data — O_2, CO, CO_2, NO, NOx, flue draft pressure, and combustion temperatures
- Provides quick tuning feedback
- Heavy-duty pump with continuous pump operation monitoring
- Automatically calculates sample averages
- Automatic baseline calibration of sensors; Recalibrates easily for critical safety checks
- Factory set fuels with adjustable parameters and sample intervals
- Stores 100 data sets
- Operates on C-Cell batteries or AC power — 24+hour battery life



CA-CALC Boiler Service Analyzer
CA-6203 ..... $1445.00

RAECO Rents
866-RENT-EHS
(866)736-8347

TSI

CA-Calc 6213 Combustion Analyzer for O2, CO, NO and SO2

- Real-time measurement seconds after power-up
- Calculates efficiency, excess air, CO_2, and emission rates, provides NO_2 values
- Adjustable CO high limit pump shutdown; Adjustable O_2 reference
- Data history sorted by system, or individual sample for printouts and report generation

CA-Calc 6213 includes 12" probe with 9-foot sampling tube, Teflon-lined sampling probe, water trap, carrying case, AC adapter, four C Alkaline batteries, and operation manual.

D *$100 Daily*
W *$200 Weekly*
M *$700 Monthly*
Buy One to Keep! *$3,745 to Buy*

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Fax: 262-923-1797

Testo 350 Portable Emissions Analyzer from RAECO

Integrated printer and on-board memory

Large backlit display with zoom function, pull down menus, page scrolling and user defined probe socket.

Rugged housing with impact protection

RS232 interface PC software

Simple, user-defined function keys

Complete sample conditioning and moisture removal system

Easy, quick change filters

Pre-calibrated sensors are swapped or field upgraded

Complete portability system is less than 10 lbs. measurement

Interchangeable battery pack

Features

- O_2, CO_2 (calculated), °F, CO, NO, NO_2, SO_2, flow ΔP, draft
- Controller for up to 65′ remote operation and readout
- Accurate NO_2/SO_2 measurement
- Automatic protection for high overrange gas levels
- Calculates efficiency, excess air, reduced NOx and CO_2
- Meets EPA CTM-034, EPA CTM-030, SCAQMD 100.1

The Testo 350 consists of three main components: the base unit, the handheld controller, and the sample probe. Various options allow you to design the perfect instrument for your tasks. A selection of probes, analysis sensors and data options are available.

The 350M basic version (4 gas max.) includes a control unit, analysis box and a flue gas probe. Measurements include O_2, CO, NO (optional), NO_2 or SO_2 (optional); temperature and differential pressure, and numerous calculated variables.

The more advanced 350XL (6 gas max.) includes O_2, CO, NO and NO_2 parameters, plus the option of upgrading an additional two measuring modules. The HC and H_2S measuring modules are only available in the XL version.

Model Selection Guide

(Add ◆ and ❍ as Separate Line Items)
■=Standard Kit Item ◆=No-Cost Option ❍=Upgrade and Add to Total Price

Description	Catalog Number	Availability				Price
350M Kit #1: Boiler and Burner	400563 3501	↓				$4995.00
350XL Kit #2: Standard	400563 3502		↓			7995.00
350XL Kit #3: Engine	400563 3503			↓		8495.00
350XL Kit #4: Low NOx/Turbine	400563 3504				↓	9995.00
Control Unit		■	■	■	■	0.00
Spare Parts*		■	■	■	■	0.00
Calibration Certificate		■	■	■	■	0.00
Peltier Chiller		■	■	■	■	0.00
DP (±80″ H2O)		■	■	■	■	0.00
CO Rinse		■	■	■	■	0.00
Fresh Air Purge Valve	0440 0557	❍	■	■	■	342.00
CO Dilution System	0554 0556	❍	❍	■	■	148.00
Touch Screen with Pencil	0440 0559	❍	❍	❍	■	274.00
Max. # Gas Sensors		4	6	6	6	
O2 (0-25%)	0390 0070	■	■	■	■	166.00
CO (0-10000 ppm)	0554 3933	■	■	■	❍	995.00
NO (0-3000 ppm)	0554 3935	❍	■	■	❍	995.00
NO2 (0-500 ppm)	0554 3926	❍	■	■	■	995.00
SO2 (0-5000 ppm)	0554 3927	❍	❍	❍	❍	995.00
CO low (0-500 ppm)	0554 3925	❍	❍	❍	■	995.00
NO low (0-300 ppm)	0554 3928	❍	❍	❍	■	995.00
CxHy (0-4%)	0554 3929	–	❍	❍	❍	1100.00
6′ Control Cable	0449 0042	■	■	◆	◆	85.00
16′ Control Cable	0449 0043	❍	❍	■	■	135.00
12″ Probe, 7′ Hose	0600 7451	■	–	–	–	312.00
12″ Probe, 7′ Hose (Teflon)	0440 7442	❍	■	■	◆	418.00
12″ Probe, 16′ Hose (Teflon)	0440 7445	❍	■	❍	◆	564.00
Software and RS232 Cable	0554 0841	❍	■	■	■	550.00
Carrying Case*	0516 0351	■	■	◆	◆	219.00
Transport Case with Sliding Drawer	0516 0352	◆	◆	■	■	495.00
Battery Pack for Control Unit	0515 0097	❍	❍	❍	❍	117.00
Battery Pack for Analyzer Box	0554 1098	❍	❍	❍	❍	235.00
Particulate Filters, 20-Pack	0554 3381	❍	❍	❍	❍	62.00
Printer Paper, 6 Rolls	0554 0568	❍	❍	❍	❍	32.00
13″ Pitot Tube (L-Type)	0635 2145	❍	❍	❍	❍	171.00
65′ Control Cable	0449 0044	❍	❍	❍	❍	274.00
4-20 mA Output Box	0554 0845	❍	❍	❍	❍	875.00
7′ NO2/SO2 Compatible Hose	0440 7442	❍	❍	❍	❍	418.00

* Includes particulate filters, printer paper, and carrying strap.

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- Temperature-controlled sensors extend testing range
- Complete sample conditioning with Peltier gas chiller and water removal system
- Dilution system 40:1 max. extends CO range to well over 100,000 ppm
- Fresh air purge; Rapid set-up for easy measuring
- Large backlit display has multipage scroll-down, zoom function, and pull-down menus

Testo 350 Kit comes with gas sensors for CO, O2, NO, and NO2, control unit, particulate filters, printer paper, carrying case and strap, transport case with sliding drawer, 12" probe with 7' hose, RS-232 cable, software, 16' remote control cable.

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