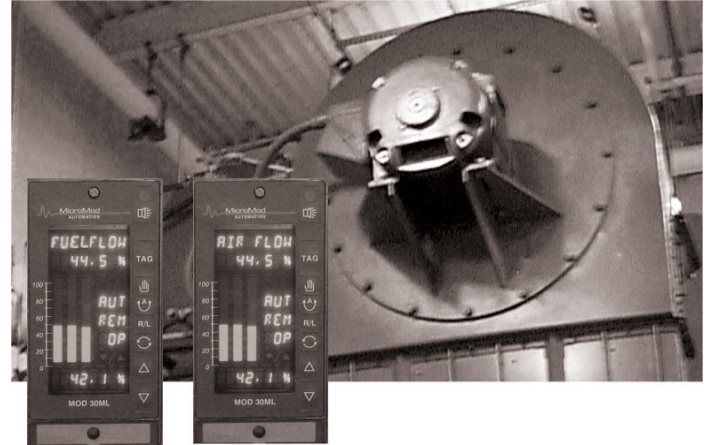


STEAMPAK Series MeterPAK Combustion Control System Full Metered with O2 Trim

- **Full metered for best control & improved efficiency**
- **Cross-limited for safety**
- **Continuous fuel/air ratio adjustment**
- **Enhanced environmental protection**
- **Opacity, FGR Control & Retransmission options**
- **Application-specific installation & operation manuals**
- **2-year Warranty**



SYSTEM DESCRIPTION

MeterPAK is a pre-engineered package for full metered fuel-air ratio control with O₂ trim and cross-limits for oil- and gas-burning boilers. It provides tighter control, improved boiler efficiency and a high degree of safety.

MeterPAK can be used as a standalone boiler control system or with a plant master controller such as MicroMod's PlantPAK. It consists of a Fuel Controller and an Air Controller with a highly secure peer-to-peer communication network. The Fuel Controller contains the Boiler Master and Fuel Flow control loops, and provides totalization and indication of the fuel flow(s). It also includes the option for Flue Gas Recirculation control. The Boiler Master can be set up for local Drum Pressure control, or as a Bias Station operating with a Plant Master, or Dual Mode control, allowing bumpless switching between functions if necessary.

The Air Controller contains the Air Flow and Oxygen Trim loops, and includes the continuous Efficiency Calculation which is standard in MeterPAK. Indication of opacity can be enabled as a standard option. Separate lightoff and low-fire settings are provided for each fuel for greater flexibility.

Cross Limits on fuel and air ensure sufficient combustion air at all times, preventing a fuel-rich atmosphere. To provide for additional safety and ease of operation the controllers have automatic mode switching based on the status of the Air Controller and the BMS. "Reject to manual" is a standard preconfigured feature. A high stack temperature trip feature is included as standard.

Inputs are provided for Low Fire, Purge and Release-to-Auto signals from the flame safety system. To provide for additional safety and ease of operation the control strategy includes mode interlocks that prevent the operator from switching to Automatic control mode if the correct Low Fire, Purge and Release-to-Auto signals are not received.

All entries for commissioning/setup data can be made through the front panel of the controller. No special software or external programming device is required for installation, startup or operation. MeterPAK is Field Flexible: all options are preconfigured in the standard strategy and can be enabled at any time with the simple addition of an I/O module and a few keystrokes on the controller front panel.

EQUIPMENT DESCRIPTION

The MeterPAK system includes:

- Two controllers, preconfigured, with the I/O required for fully metered combustion control with O₂ trim
- Application-specific documentation for the installation, startup and operation of the system.

The MeterPAK controllers are multiloop controllers with modular I/O. The integral high-visibility displays provide clear, informative screens for ease of operation. Each controller includes its own CPU, power supply, display, and field I/O terminations. The controller memory is non-volatile RAM which contains the configured database and all current process parameters. The power supply is 85-250Vac or 24Vdc, and the front panel is designed to NEMA 4. Isolated, single-point I/O protects the controllers and adjacent signals from electrical damage and ensures continued operation. Each controller includes RS-485 Modbus RTU communications as standard, and a secure, independent peer-to-peer network provides communication between the Fuel and Air controllers.

MeterPAK OPTIONS

Flue Gas Recirculation (FGR) Control - maintains a predetermined ratio of flue gas to air.

Opacity - provides indication of stack opacity. Requires a signal from an Opacity meter.

Retransmission - allows selection of Fuel Output, Drum Pressure, Oxygen, Stack Temperature or Boiler Efficiency for retransmission via 4-20mA signal.

Remote Faceplate - the BoilerPAK controller can be ordered in a flushmount package with a remote faceplate for installation in shallow panels. The faceplate can be mounted up to 8 feet (2.4 meters) from the controller body. The remote mounted faceplate is gasketed and sealed in the same manner as the standard faceplate but does not carry the NEMA 4 rating.

Backup Memory Module - provides redundant, removable nonvolatile RAM which backs up the controller database. In addition, if left on the controller during operation, it is updated every 50ms with current process data such as output values, controller mode, and tuning parameters for immediate restart of the system after a power outage or equipment failure, with the latest values.

Field Instrumentation - MicroMod can provide a pressure transmitter, O₂ analyzer and other field instruments. Contact our Sales or Customer Service department for assistance.

Custom Application Engineering - if the standard MeterPAK configuration doesn't meet your application needs, MicroMod will work with you to develop a cost-effective solution to improve your boiler's efficiency and provide better response to load changes.

SteamPAK Series

MeterPAK is just one of MicroMod's pre-engineered packages for industrial and institutional boiler controls. The SteamPAK family includes:

DrumPAK - one, two- and three-element drum level control

PlantPAK - plant master controller, with optional lead/lag

BoilerPAK - single-point jackshaft position control

TrimPAK - combustion control with fuel-air ratio and O₂ trim for jackshaft boilers

BurnerPAK - Burner Management Systems for single-burner, dual-fuel boilers

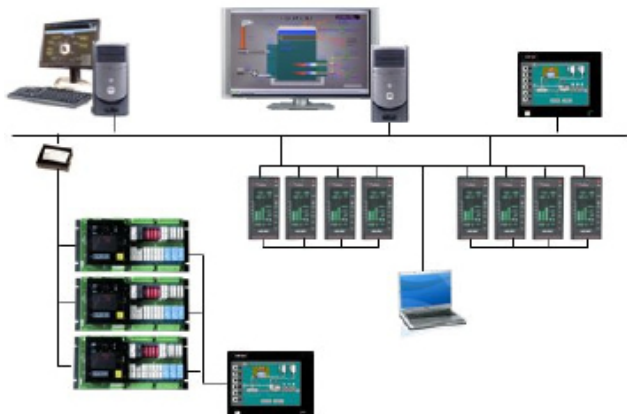
TrimPAK-PLUS - prewired combustion control panels with color touchscreen operator interface, for one or two boilers

Watchman - integrated boiler control panels for combustion and drum level control, with color touchscreen operator interface

Combustion control packages are also available for High Temperature Hot Water systems.

Plantwide System

All SteamPAK products can be integrated into a plantwide, Ethernet-based system with advanced operator stations, alarm/event logging and reporting.



Inputs / Outputs:

Analog Inputs

- 4-20mA with transmitter power, isolated
 - Drum Pressure
 - Gas Flow
 - Oil Flow
 - Excess O2
 - Air Flow
 - Combustion Air Temperature
 - Stack Temperature

- 4-20mA, isolated (no transmitter power)
 - Plant Demand
 - Opacity (option)

Analog Outputs (4-20mA, isolated)

- Gas Flow Actuator
- Oil Flow Actuator
- Air Flow Actuator
- Air Flow VFD Demand
- FGR Actuator (option)
- Retransmission (option)

Digital Inputs (110Vac, isolated)

- Fuel Select
- Low Fire
- Purge
- Release-to-Auto

Digital Outputs (Mechanical relay 110Vac, isolated)

- Alarm Horn
- Boiler Trip

Power Supply: 85-250V rms, 50-400Hz

Power Consumption (120V rms, 60Hz, Full load):
50W maximum

Operating temperature: 0 to +50°C

Storage Temperature: -40 to +75°C

Humidity: 5 to 95% RH, noncondensing

ORDERING INFORMATION

MeterPAK is a licensed package. The following end-user information must be supplied with each package ordered:

- End-user Company Name and Complete Address
- Contact Name
- Telephone and Fax Number
- Email address

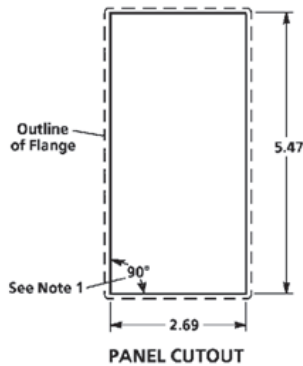
	MTR					B
	01 - 03	04	05	06	07	08
MeterPAK Full Metered Combustion Control System with Cross-Limits ¹	MTR					
Auxiliary Control None FGR Control		0 1				
Data Acquisition Options None Opacity Retransmission variable Opacity and retransmission			0 1 2 3			
Mounting Standard Remote faceplate				0 1		
Operator Language English Spanish					E S	
Design Level Design Level						B

¹Includes online efficiency calculation and indication

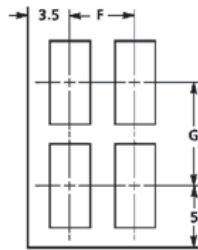
Available Options (please specify on order):

Backup Memory Module (blank) 2010PZ10000B
Field Instruments (flow / pressure / temperature measuring elements and/or transmitters)
Custom Application Engineering - per hour

MOUNTING DIMENSIONS



DISTANCE BETWEEN CENTERS

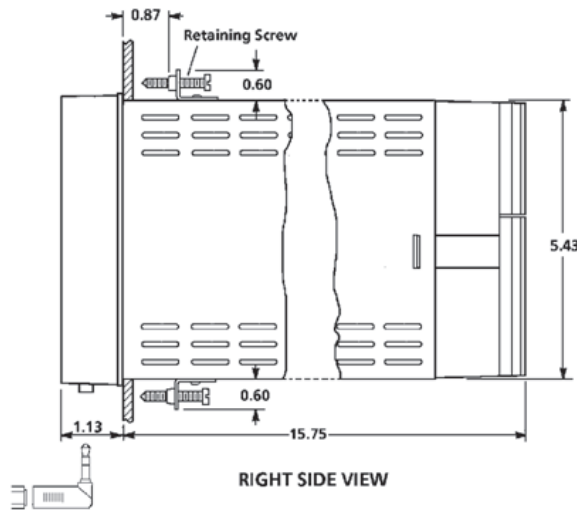
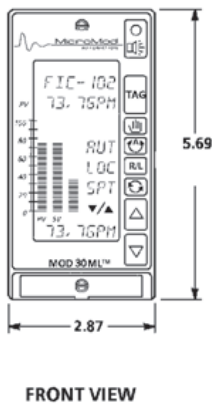


Distance between centers when mounting multiple controllers (inches)

	F	G
Recommended	4.0	8.0
Minimum	3.5	7.0

Notes:

- When mounting housings in a panel or in a rack with a bezel turn the retaining screws until the point touches the back of the panel or rack. Excessive tightening of retaining screws can distort the housing. The housing must be square after adjusting retaining screws.
- All dimensions in inches (mm)



inches	mm	inches	mm
0.6	15.2	5.43	137.9
0.87	22.1	5.47	138.9
1.13	28.7	5.69	144.5
2.69	68.3	7	177.8
2.87	72.9	8	203.2
3.5	88.9	15.75	400
4	101.6		

The Company's policy is one of continuous product improvement and the right is reserved to modify the information contained herein without notice.

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