



MEC-FI

AIR-FUEL RATIO CONTROL FOR LEAN-BURN TURBOCHARGED ENGINES

With today's high natural gas prices, high demand, and big backlogs in new equipment orders, older, turbocharged, lean-burn engines – larger horsepower, low- to medium-speed engines, in particular – continue to play an important role in the compression industry. The Compliance Controls MEC-FI Air-Fuel Ratio Control System was specifically designed to help owners and operators of these engines meet **three distinctive sets of issues.**

- 1 Emissions Compliance.** Because these fuel-injected engines run lean, compliance with limits on carbon monoxide (CO) and hydrocarbons (HC) usually isn't a problem. But NOx compliance, staying within regulatory limits on nitrogen oxides without costly exhaust aftertreatment, requires tight control of the lean-burn air-fuel mix. The MEC-FI maintains that control with computer speed and precision.
- 2 Operational Issues.** Maintaining air-fuel ratio controllers using the traditional pneumatics is a tricky, time-consuming chore: as much an art as a science. Unfortunately, masters of the art are growing scarcer by the day, as older personnel retire. With the MEC-FI, there's no need to train employees in pneumatic adjustments, or lose man-hours to air-fuel ratio control maintenance. The advanced MEC-FI is a "smart system" that operates *automatically*. Set it and forget it. Plus, by optimizing the lean-burn air-fuel mix, the MEC-FI helps ensure both top performance and *fuel efficiency* – which high gas prices have made a more important factor than ever in operating costs.
- 3 Troubleshooting & Maintenance.** Your best defense against malfunctions and breakdowns: optimizing engine operation and *early warning* of potential trouble. The MEC-FI delivers both. It precisely maintains proper air-fuel mix for lean-burn operation. Plus, the MEC-FI helps you keep on top of more emerging and potential performance issues – with no fewer than 26 alarms and shutdowns, covering fuel flow and fuel pressure, air pressure, manifold temperature, overspeed and more.

Problems: Solved.

Emissions compliance. Operational benefits. Less maintenance and lower maintenance costs. Other AFRCs for lean-burn, fuel-injected engines cost about the same but deliver a whole lot less. Weigh the costs against performance and benefits and you'll agree: The MEC-FI is simply the best value in turbocharged engine air-fuel ratio control.

- Emissions compliance assured
- Improved engine performance; less maintenance
- Price-competitive
- Fully automatic operation
- High-speed communications via RS-485 serial links & Modbus RTU protocol



Works better; does more – costs about the same as the others. Does anything else need to be said?



The Best Value In Turbocharged Engine Air-Fuel Ratio Control

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The MEC-FI is based on the Millennium Controller developed by FW Murphy – specifically configured for turbocharged, fuel-injected, lean-burn engine air-fuel ratio control.

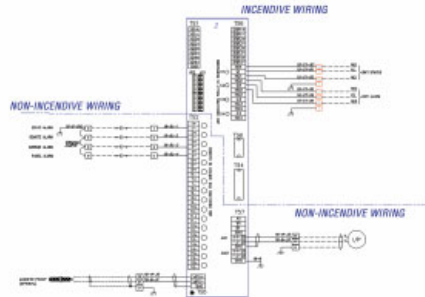
At the heart of the MEC-FI, the 100 MHz, 586-compatible microprocessor continuously monitors inputs and set points and regulates fuel-system air flow for precise maintenance of the optimum lean-burn air-fuel mix over a range of operating conditions. The system automatically adjusts air pressure to fuel pressure or fuel flow via standard PID control with a variable set point. When an out-of-limit event occurs, the controller displays an alphanumeric readout of critical machinery data or shutdown fault information. The Shutdown or Fault Snapshot feature gives operators a complete picture of system conditions at shutdown.

Greater Functionality.

The MEC-FI simultaneously uses 10 data points – more than any other turbocharged engine air-fuel control system on the market. The results: more robust, more reliable maintenance of the optimum lean-burn air-fuel mix for better engine performance, less risk of malfunction and damage, and richer insight into

potential and actual problems. No fewer than 26 alarms and shutdowns help ensure compliance and protect both the MEC-FI and your engine system.

Best of all, the MEC-FI puts an end to the time-consuming, iffy chore of air-fuel ratio control via traditional pneumatics. It's a "smart system" that operates *automatically*. It's like having an engine expert tweaking your air-fuel mix through every second of operation, from startup to shutdown – instantaneously alerting you to a wide range of performance issues that may arise.



Canadian Standard For Separation of Incandescent and Non-Incandescent Wiring

Dollars & Sense: Best Value.

Other air-fuel control systems for turbocharged engines cost about the same as the MEC-FI – but they deliver a whole lot less. Easy to install and set up, fully automatic in its operation, the MEC-FI gives you all the benefits of technology that defines the state-of-the-art. It's simply the best value in fuel-injected engine air-fuel control.

Features

- 100 MHz, 586-Compatible Microprocessor: 8 MB of RAM
- User-Programmable: Windows-based Ladder-Logic Software *IEC-61131-3 standard programming languages*
- Daylight-Filtered Vacuum Fluorescent Display *4-lines of display; 20 characters each line*
- 16-Key Pad *For set-point entry, alarm acknowledgement, start, stop, reset, etc.*
- Wall / Bracket Mount Enclosure or Free Standing
 - Window in door
 - Internal swing panel
 - DIN rail mounted terminal blocks
 - Pduit wireway
 - Ample room for customer connection
- Canadian Standard For Separation of Incandescent and Non-Incandescent Wiring
- 4 RS485 Serial Ports
- C277 Digital I/O Module
 - Reads up to 18 thermocouples or mA sources
- 10 Sets Of Data Points (Air / Fuel Map)
- Fuel Flow Totalization (Optional)

- Hour Meter
- Shutdown or Fault Snapshot
 - Provides a complete picture of system conditions at shutdown
- 4 Discrete Inputs – Normally Closed
- 2 Discrete Relay Outputs
- Shutdowns
 - GOV-10 Shutdown (Optional)
 - Low / High Fuel Flow
 - Low / High Fuel Pressure
 - Low / High Air Pressure
 - Lost Comm C277 / Power Supply
 - Air Manifold Press. Xmitter Fail
 - Fuel Pressure / Flow Xmitter Fail
 - Air Manifold Temp. Xmitter Fail
 - TC Break – Air Manifold Temp.
 - Overspeed
- 12 Alarms
- Accommodates Wide Range of Engine Configurations
 - V-Type Engine with Twin Turbochargers
 - Waste Gate & Air Damper combo
 - Other special configurations
- Operating Temperature: -40 to +85°C (-40 to +185°F)
- Millennium Controller Approved for Cl. 1, Div. 2, Grps. C & D Areas

Benefits

- Compliance Assured
- Eliminates Time-Consuming, Unreliable Pneumatic Air-Fuel Control
- Better Engine Performance
- Less Maintenance – Lower Maintenance Costs
- Improved Troubleshooting
- Better Fuel Economy
- Easy Installation & Setup
- Fully Automatic: Set It & Forget It
- Easy Integration With Other Control Systems & Data Collection / Analysis Systems
- Supports High-Speed Communications

About Compliance Controls.

Compliance Controls was formed by two of the best-known, most trusted leaders in industrial engine emissions control and equipment management solutions:



MIRATECH Corporation and FW Murphy.

Backed by our parent

companies' distribution networks, Compliance Controls focuses exclusively on delivering and supporting MEC Air-Fuel Control System solutions tailored to our customers' specific requirements.



Visit Our Website. Or Give Us A Call.

Find out more about the MEC-FI Fuel-Injected Engine Air-Fuel Ratio Control System. Visit our website:

www.compliancecontrols.com. Or simply give us a call: 918-627-5050

