

For more information on [Enginuity](#) products and services contact the following location.

Dresser-Rand
Enginuity, Gas Engine Technology Center
4700 McMurry Ave Suite 101
Fort Collins, CO 80525
Tel: 970-224-0170
Fax: 970-224-0171

For a complete listing of products and services, visit www.dresser-rand.com or contact one of the following Dresser-Rand locations.

**Dresser-Rand
Corporate Headquarters**

West8 Tower Suite 1000
10205 Westheimer Road
Houston, TX 77042 USA
Tel: (Int'l +1) 713-354-6100
Fax: (Int'l +1) 713-354-6110
email: info@dresser-rand.com

112, Avenue Kleber
75784 – Paris Cedex 16
Tel: (Int'l +33) 156 26 71 71
Fax: (Int'l +33) 156 26 71 72
email: info@dresser-rand.com

Regional Headquarters

The Americas

Dresser-Rand
West8 Tower Suite 1000
10205 Westheimer Road
Houston, TX 77042 USA
Tel: (Int'l +1) 713-354-6100
Fax: (Int'l +1) 713-354-6110

EMEA

(Europe, Middle East, Eurasia, Africa)
Dresser-Rand S.A.
31 Boulevard Winston Churchill
Cedex 7013
Le Havre 76080 France
Tel: (Int'l +33) 2-35-25-5225
Fax: (Int'l +33) 2-35-25-5366 / 5367

Asia-Pacific

Dresser-Rand Asia Pacific Sdn Bhd
Unit 9-4, 9th Floor
Bangunan Malaysian Re
17 Lorong Dungun
Damansara Heights
50490 Kuala Lumpur, Malaysia
Tel: (Int'l +60) 3-2093-6633
Fax: (Int'l +60) 3-2093-2622
Fax: (Int'l+60) 3-2093-2622

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Form 2189

Dresser-Rand

Enginuity iCS

Adaptive Air/Fuel Ratio Controller

Dresser-Rand's leadership in technology, business processes, and operational excellence creates products and services capable of achieving the highest level of client satisfaction and long-term loyalty throughout the global energy industry.

Dresser-Rand's Enginuity brand intelligent compliance system (iCS) puts you in control of meeting emission compliance regulations.

The Enginuity iCS adaptive AFR is an affordable, state-of-the-art air/fuel ratio controller for natural gas engines, especially those used by gas producing, processing, and transmission companies. It is based on a platform that combines air/fuel ratio with adaptive catalyst control and oxygen sensor health. The wide range of control authority quickly manages engine speed and load variation.

Simple Operation, Low Maintenance

The Enginuity iCS adaptive AFR is simple to operate, requires little maintenance, and is easy to install.

- A stationary or handheld terminal monitors data and checks and clears faults, alarms, or shutdowns
- It includes PC software for diagnostics, monitoring, and calibration; self-diagnostics pinpoint problems and generate alarm warnings and fault codes, reducing downtime for repairs

- Data transmission capability allows transmission of control measures and status via ModBus® communications, a data logging system, or supervisory control.

Reliable Performance

The iCS complements existing engine controls to provide an air/fuel ratio management system. Closed-loop exhaust oxygen feedback or Kilowatt feedback ensures optimum efficiency and low emissions under all operating conditions.



System Features

- Microprocessor-based
- Pre-catalyst, closed-loop, exhaust oxygen feedback control
- Post-catalyst, exhaust oxygen feedback, cascade control allows adaptation to changing catalyst performance
- Post-catalyst exhaust oxygen control – set-point is variable with engine load
- Catalyst temperature monitored to protect catalyst from engine fueling malfunctions (2 K-type thermocouples)
- Open-loop valve positioning if critical oxygen sensor malfunctions or large transient load changes occur
- Appropriate fuel valve positions retained over engine load range for virtually fail-safe operation
- One or two fuel metering valves driver for “V” engine configuration
- RS-485/ModBus® communication support
- Comprehensive diagnostics
- Manual closed-loop enable switch
- Alarm and shutdown relays
- LED driver for power indication, alarm, and shutdown
- Easy-to-install plug-in terminal strip connectors.

Easy Installation

The electronic control module accepts control signals directly, so no additional signal interface modules or complicated wiring plans are needed. The rugged enclosure and system components provide conduit connections for clean, protected plant wiring. Plug-in terminal strip connectors allow easy installation and make diagnostics quick and uncomplicated.

iCS Air/Fuel Control Kits

Increase your ROI by reducing operating costs and using the latest technology. Your investment is enhanced by a strong commitment to service and client satisfaction that is an Engenuity hallmark.

The iCS Air/Fuel Control Kit includes:

- iCS Air/Fuel Ratio control
- Custom programming CD
- Installation and operation manual
- EGO sensor(s) and sensor harness
- HEGO sensor and sensor harness
- Hub, weld on, HEGO sensor
- MAP sensor and sensor harness
- Fuel control valve(s)
- Manual shut off valve(s), 3/8 in.
- Thermocouples, K-type
- MPU, 2.5 x 5/8 in. 18
- MPU harness, 180° connector, 50 ft.

Additional Options:

- Programmer, (hand-held, panel mount or bezel, panel mount)
- Display, remote-mounted
- MPU, 4.5 x 5/8 in. 18
- MPU harness, 90° connector
- Fuel valve mounting plate

SPECIFICATIONS

Inputs

- Two unheated Zirconia exhaust oxygen sensors (0–1 Vdc)
- One heated Zirconia exhaust oxygen sensor (0–1 Vdc)
- Two K-type thermocouples
- One intake manifold absolute pressure sensor (0–5 Vdc; 0–3 bar absolute)
- One magnetic pickup (0.20–100 Vrms; 8–10,000 Hz)
- One “G-lead” pulse from ignition system (± 250 V max)

Outputs

- Two PWM fuel metering valves
- One alarm relay (250 Volts @ 75 mA max non-inductive load)
- One shutdown relay (250 Volts @ 75 mA max non-inductive load)

Environmental Specifications

- Temperature ranges:
 - Ambient operating temp.: -40 to +55° C (-40 to +131° F)
 - Storage temp.: -40 to +105° C (-40 to +221° F)
- Classification: UL/cUL, Class 1, Division 2, Group D (E205501)
- Enclosure: 305 x 254 x 127 mm (12 x 10 x 5 in) NEMA 12/13, quick-release latches

Communications

- RS-232 handheld interface 6-Pin RJ-12
- RS-232 PC interface DB9
- RS-485/ModBus data transmission (optional)

Diagnostics

- Power supply voltage
- Oxygen sensor health
- Oxygen sensor heater circuits
- Manifold pressure sensor
- Closed-loop functions
- Catalyst efficiency
- Catalyst temperature
- Control fail-safe operating modes
- Pre-catalyst exhaust oxygen closed-loop control on failure of post-catalyst oxygen sensor
- Open-loop valve positioning mode on failure of pre-catalyst exhaust oxygen sensor
- Valve default position on failure of manifold pressure sensor

Power Requirements

- Power rating: 9–30 Vdc (12 Vdc or 24 Vdc nominal)
- Power consumption: 70 W maximum (application specific)

