



# Weatherford®

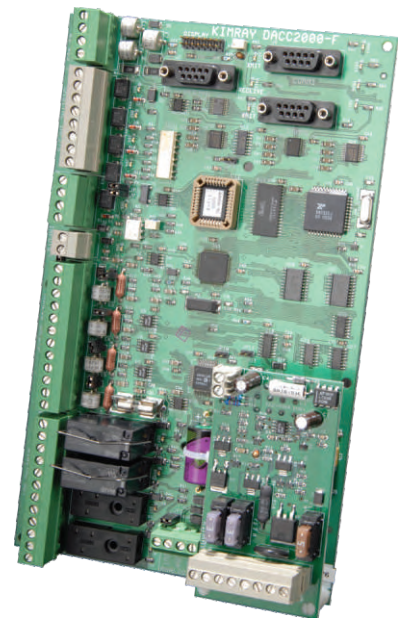
Plunger Lift

## *CEO™ D-2000 Remote Terminal Unit For Automated Systems*

The CEO D-2000 remote terminal unit (RTU) provides multiple-well flow measurement and control, functioning as a master for remote input/output modules to perform wireless plunger lift, well monitoring, and well control. This complete standalone or remote-control package, with integrated telemetry, is capable of gas/liquid flow measurement, process control, alarming, and data logging and storage. The D-2000 RTU allows for configurations that range from basic electronic flow measurement (EFM) to full well monitoring and control as well as a fully functional SCADA remote. This highly flexible system is also very dependable in harsh environments.

### *Applications*

- Multiple-meter flow measurement (orifice, V-Cone®, or turbine/positive displacement meter)
- Multiple-well measurement and control of gas flow, liquid flow, casing and tubing pressure, control valve, tank level switch, equipment run status, and run time
- Plunger lift wells (flow, tubing and casing pressure, plunger arrival sensor, control valve, bypass B valve)
- Plunger lift control (well condition-based control with autotune, complete data logging with production events, and analog trending)
- Compressor site monitoring and control (gas flow, pressure monitoring, run status, run time totalization, local and remote control)
- Water-injection well-site measurement and control (turbine flowmeter, casing and tubing pressure, choke valve control, pressure and/or flow-based control, data logging)
- Tank-level measurement and daily volume calculations using analog pressure transmitters, radar level instruments, digital level probes, and other communications-enabled level instruments



V-Cone is a registered trademark of McCrometer, Inc.



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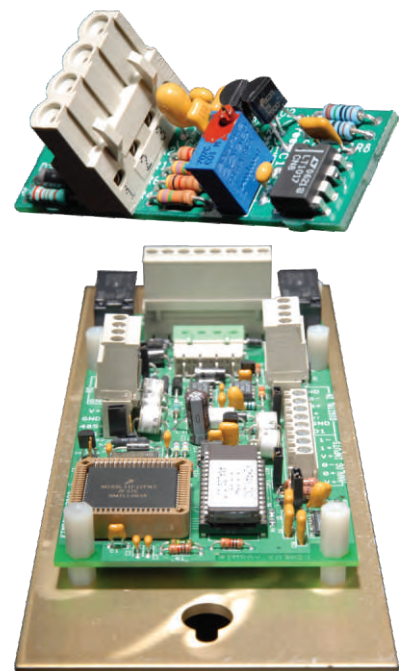
### *Features, Advantages and Benefits*

- PROControl™ (production control) package enables the operator to use powerful, field-proven algorithms for full production control and optimization. In harmony with this package, the D-2000 RTU records well performance parameter data, giving the operator insight into well operating characteristics never before available.
- The D-2000 RTU records meter calibration results, flow computer events, and flow parameter changes in a time- and data-stamped event log and also provides 35 days of hourly and daily flow computer data. The event log and data storage combine to provide a complete custody-transfer quality audit trail. Configurable trending of analog values is provided in addition to the flow computer data storage.
- The D-2000 RTU is easily configured on site, using free terminal emulation software and IMI software or configured remotely through a host system.
- Current and historical data, trend data, and production events can be viewed and analyzed remotely or on site, using a laptop, palmtop, or personal digital assistant (PDA).
- Pluggable power control board has a built-in solar battery charging regulator for solar applications. CMOS ultra-low power design enhances solar applications by minimizing panel and battery requirements.

### *RTU System Accessories*

- LCD 2-line display
- External computer interface (LOS jack)
- Instrument loop power supply (12 to 20 VDC)
- Pluggable-turbine meter amplifier interface board
- External-turbine meter amplifier interface board
- External-turbine meter amplifier CIM\* interface board
- RS-232 to RS-485 converter
- RS-232 port sharing board
- Input/output CIM board
- EPC valve controller CIM

\*CIM = Communications interface module



PROControl is a trademark of Kimray, Inc.



# CEO™ D-2000 Remote Terminal Unit

## For Automated Systems

### Specifications

#### RTU Board

<b>Enclosure System</b>	
Aluminum NEMA 4 enclosure with display cutout	16 × 12 × 10 in (40.6 × 30.5 × 25.4 cm)
Pole mounting flanges	2-in. (5.1-cm) pipe
<b>Power Requirements</b>	
CMOS ultra-low power design	
Voltage	11.5 to 16.0 VDC
Ultra-low power	<3/4 W (25 ma at 13.6 DC)
Plug-in power board	Built-in battery charging regulator, 70 W solar panel maximum Low voltage disconnect Software-controlled switch for radio power Optional 20 VDC instrument power supply
Internal voltage measurement	Battery and charger voltage
<b>Memory</b>	
Firmware memory	512 KB
Standard RAM*	512 KB
<b>Environmental</b>	
Temperature tolerance	-40° to 158°F (-40° to 70°C)
Relative humidity tolerance	0 to 95%, non-condensing
<b>Communications</b>	
4 communication ports	1 RS-485 CIM device port 1 RS-232 multipurpose port 1 RS-232 programming port 1 RS-232 communications, radio port
Multipurpose port Serial device interface examples	Multivariable flow transmitter, MVT (DP, SP, FT) Honeywell precision pressure transmitter (PPT) Siemens level probe (2 levels, 1 temperature) Modbus ASCII and RTU protocol master PLCs Downhole pressure instruments (GRC or Baker) Compressor control panels Variable speed drives Other flow computers or RTUs
Protocol	Native Kimray protocol Compact, efficient for cellular and satellite communications
Alarm notification	RTU-initiated exception reporting (cryout)

\*Lithium-battery backed-up RAM



## CEO™ D-2000 Remote Terminal Unit For Automated Systems

### Specifications

#### Input/Output

<b>Digital Inputs</b>	
4 discrete inputs	Contact closure
Optical isolation	1,500 VDC
Isolation resistance	100M ohm or greater
Transient protection	IEEE 472-1974
LED indicator	Each input
Terminals	Pluggable, compression type
<b>Digital Outputs</b>	
4 digital outputs	2 SPDT relays included; sockets for 2 additional relays
Rating	10 amp at 250 VAC and 30 VDC
Isolation	1,500 VAC
LED indicator	Each output
Terminals	Pluggable, compression type
<b>Accumulator Inputs</b>	
2 high-speed pulse inputs	1 standard, 1 amplified
LED indicator	Each input
Maximum pulse rate	25 KHz
<b>Standard input</b>	
Jumper-selectable filtering	30 Hz, 1,000 Hz, or none
Optical isolation	1,500 VDC
Isolation resistance	100M ohm
Transient protection	IEEE 472-1974
Plug-in terminals	Compression type and accepts optional pulse amplifier board
<b>Amplified input</b>	
Terminals	Compression type
Millivolt level signal sensitivity	Adjustable
<b>Analog Inputs</b>	
4 discrete high-level inputs	1 to 5 V or 4 to 20 mA DC input signals Jumper selectable
Input calibration	Software based 3-point curve-fit calibration for each input
2 dedicated (internal) inputs	Battery and charger voltage
<b>Single-ended inputs</b>	
Resolution	12 bit, A/D conversion
Accuracy	±0.05% of full scale, +1/2 lsb at 77°F (25°C)
Temperature compensation	45 ppm/°F (25 ppm/°C)
Normal mode rejection	60 db at 60 Hz
Common mode rejection	80 db at 60 Hz
Hardware filter	Single-pole 6 Hz
Software filter	Single-pole 1/2 Hz
Terminals	Pluggable, compression type
<b>Analog Outputs</b>	
2 analog outputs	1 to 5 V or 4 to 20 mA DC output signals Connection selectable
Resolution	12 bit, D/A conversion
Terminals	Pluggable, compression type



## CEO™ D-2000 Remote Terminal Unit For Automated Systems

### Available Accessories

#### Orifice or V-Cone® Measurement

Multi-Variable Flow Transmitter (MVT)	High-Accuracy Model	Standard-Accuracy Model
Reference accuracy for differential and static pressure (DP and SP)	±0.075% of calibrated span	±0.25% of calibrated span
<b>Differential Pressure Measurement (DP)</b>		
Range	0 to 400 in. H <sub>2</sub> O (0 to 10,160 mm H <sub>2</sub> O), (250 mbar)	
<b>Static Pressure Measurement (SP)</b>		
SP available ranges	0 to 750 psia (0 to 5.171 MPa), absolute	0 to 1,500 psia (0 to 10.342 MPa), absolute
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	0 to 4,500 psig (0 to 31.026 MPa), gauge	
<b>Temperature Measurement (FT)</b>		
Range	-50 to 250°F -46 to 121°C	
Accuracy	±1.0°F (±2.12°C)	
Sensor type	RTD, 100-ohm platinum (385), 4-wire	
<b>Physical Specifications</b>		
Overpressure limit	3,000 psig (20.68 MPa) for MVT ranges 750 and 1,500 psia (5.171 and 10.342 MPa)	
	4,500 psig (31.03 MPa) for MVT range 4,500 psig (31.03 MPa)	
<b>Hookup and Mounting</b>		
Process barrier diaphragm	316L stainless steel	
Process connections	1/4-in. NPT female standard flange connection	
Process head material	Zinc-plated carbon steel OR 316 stainless steel	
<b>Communications</b>		
Interface	RS-485 (2-wire data, 2-wire power)	
Format	9,600 baud, 8 data bits, no parity, 1 stop bit	
Protocol	Kimray CIM ASCII Protocol	

Note: Refer to the MVT technical specification sheet for additional details.



Intregal MVT



External MVT

V-Cone is a trademark of McCrometer, Inc.