

SOLARPack 410

Solar-Powered Single Run Flow Computer Features:

- Accurate gas measurement
- API 21.1, BLM#5,EUB#17
- Low power consumption
- Configurable power management
- Local *Bluetooth*® wireless communications
- Integrated or 3rd-party radio options



Say goodbye to obsolete chart recorder technology and bulky multi-component flow computers with the SOLARPack 410 solar-powered single run flow computer, an evolution in gas measurement technology. Designed for use in remote locations where solar is the only power and technician access is less than ideal, the SOLARPack 410 incorporates a dedicated single run flow computer, solar/battery power supply and communication system within an all-in-one, compact, easy-to install package.

Single Run Flow Computer

The SOLARPack 410 provides fast, dedicated gas measurement calculations according to API 21.1. Configuration of the product's single flow run is accomplished using the RealFLO™ software application. Since the flow computer is incorporated in the product, the need for costly programming tools and integration effort is reduced or eliminated. At sites with minimal access, SCADA hosts such as ClearSCADA and RealFLO can make use of an optional integrated 900MHz spread-spectrum or other third-party radio. Now part of a network, the SOLARPack 410 becomes an integral part of a complete EFM SCADA system.

Innovative All-In-One Design

Leveraging years of experience in the design of compact RTUs and flow computers, Control Microsystems has incorporated many innovative features within the product's single enclosure, including a digital backlit LCD, integrated spread-spectrum radio and Bluetooth wireless technology enabled interface. and ClearSCADA's

custom EFM object the SOLARPack 410 becomes a complete electronic flow measurement system

Chart Recorder Replacement

Gone are the days of low-accuracy, high-maintenance analog pen recorders, whose data charts need collection and replacement on a regular basis. The SOLARPack 410 offers a cost-effective solution for natural gas producers and gatherers to replace their chart recorders.

The product boasts a number of important advantages over traditional chart recorders, including:

- „Paperless data recording.
- No more pens and charts!
- Increased accuracy through the use of high precision pressure and temperature sensors.
- More frequent sensor readings
- Less frequent trips to the site.

Walk-up and Wireless SCADA

With the SOLARPack 410, retrieval of accurate and accountable flow measurement data is as easy as one, two, three:

1. Drive or walk up to the site,
2. Connect through a local *Bluetooth* connection,
3. Upload all events, alarms and accumulated flow readings to a laptop computer.

The corrosion resistant aluminum enclosure is rated Type 3RX and can be installed on a standard 2" pipe. It can also be mounted on a wall, installed with optional Unistrut hardware or supported on the pipeline infrastructure by the sensor itself. For added flexibility, the pressure sensor

can be mounted directly on the bottom of the enclosure or remotely, at a distance from the enclosure.

Accurate Sensor

The stainless steel/silicone fluid pressure sensor is highly accurate: $\pm 0.05\%$ of Span for Spans $\geq 10\%$ of URL, and stable: Long-Term Drift less than $\pm 0.05\%$ of URL per year over a 5-year period. It's available in a low-profile process connection configuration and supports a wide range of differential and absolute pressures.

Flexibility

For installations where gas flow calculations are not enough, the SOLARPack 410 provides extra I/O: a turbine input that accumulates flow such as water condensate production, and a flow-proportional digital output that can trigger a third-party gas sampler. The product is rated for use in Class I, Division 2 Groups A, B, C and D Hazardous Locations and has cCSAus approval.

Specifications

Flow Calculations AGA-3 1992/2000 orifice plate and V-Cone
Density Calculations AGA-8, 1992 (detailed) and NX-19
Event/Alarm/History Logs 35 days hourly history, 35 days daily history, 700 events and 300 alarms
API 21.1, BLM Onshore Order #5 and EUB Directive 17

Configuration Interface RealFLO 6.40 and newer
Protocols COM2 and COM3: Modbus RTU/ASCII
Temperature Measurement Terminations for one: RTD input, 100 ohm platinum 0.385 ohms/°C, 3 and 4 wire, auto detection and compensation. RTD accuracy: $\pm 0.28^{\circ}\text{C}$ ($\pm 0.5^{\circ}\text{F}$)
This does not include
RTD uncertainties, which are additive.

Counter Input One: Turbine Meter, jumper-selectable for use with turbine meter amplifiers or dry contact closure

Gas Sampler Output One: selectable as sourcing or sinking
Configurable Pulse Width, 0.1s to 5.0s in 0.1s increments

Communication Ports Com 1: Direct to internal sensor or RS-485, 2-wire, half duplex to external sensor
Com 2: Defaults to optional internal spread spectrum radio until external device is detected on the RJ-45 modular jack and the jack is enabled for RS-232

Com 3: Integrated *Bluetooth* wireless technology

Bluetooth Communication General : Radio modem compatible with *Bluetooth* wireless technology enabled products. Frequency hopping, spread-spectrum. Encryption, PIN

identification and Error Correction.

Frequency: 2.402 to 2.48 GHz.

Distance: *Bluetooth* Class 1. Up to 100m (330 ft.) (when communicating with another Class 1 device)

Antenna: Integrated chip antenna

Radio Optional FreeWave FGR09CSU 900MHz, Frequency-Hopping, Spread-Spectrum
Or third-party radio connected to Com2

Processors One: 32-bit ARM microcontroller, 32MHz clock, integrated watchdog timer

Two: microcontroller co-processors

Memory 4MBytes CMOS RAM, non-volatile, lithium battery retains contents for 2 years with no power

16MBytes Flash ROM, 1kBytes EEPROM

Battery Charger Solar Panel Power: 32W max.

Shunt regulation, temperature compensated.

Battery type: DIP switch-selectable for Cyclon Pure Lead or VRLA, [Valve Regulated Lead Acid]. VRLA types include: Gelled Electrolyte (Gel) or Absorbed Glass Mat (AGM)

Charge voltage: DIP switch-selectable for 14.4V or 13.8V (VRLA only)

Float voltage: DIP switch-selectable for 13.8V or 13.5V (VRLA only)

Display Backlit LCD, 2 lines X 20 characters, indication of flow data, charging states
(Battery test, Charge and Float)

LEDs Tx (Com2), Rx (Com2), Run, Status, Force

Enable Input Non-contacting wake-up switch, power management

Accuracy Differential pressure ranges 200 to 840 inH2O

$\pm 0.05\%$ of Span for Spans $\geq 10\%$ of URL

Differential pressure range 30 inH2O

$\pm 0.10\%$ of Span for Spans $\geq 10\%$ of URL

Absolute pressure ranges 30 inH2O

$\pm 0.05\%$ of Span for Spans $\geq 10\%$ of URL

Stability Long-Term Drift less than $\pm 0.05\%$ of URL per year over a 5-year period

Ambient Temperature Effect: Total effect for a 28°C (50°F) change within Normal Operating Condition Limits is $\pm(0.03\% \text{ URL} + 0.06\% \text{ Reading})$;

Differential pressure for 30 inH2O is $\pm(0.18\% \text{ URL} + 0.025\% \text{ Reading})$.

For Absolute pressures in 3000psi range the effect is $\pm(0.02\% \text{ URL} + 0.06\% \text{ Reading})$.

For Absolute pressures in 5300 psi range effect is $\pm(0.15\% \text{ URL} + 0.06\% \text{ Reading})$.

System Voltage 13.5V nominal

Under Voltage Lockout System Off: 10.0V (typical)

System On: 11.5V (typical)

Power Consumption 108mW with Integrated sensor interface, gas flow calculations, display for 15 minutes per week and *Bluetooth* communications for 7.5 minutes per week

130mW with external sensor version, as above

Add 44mW with optional integrated FreeWave radio receiving 90 minutes per day

Add 700mW with optional integrated FreeWave radio receiving 100% of the time

Add 9mW with optional integrated FreeWave radio transmitting 10 minutes per day

Add 3mW with Gas Sampler with one 2A pulse, 0.1seconds duration, and 15 minute period

Power Management User-configurable for Continuous Wake mode, Enable Input Activation and Scheduled Wake mode

I/O Terminations Screw terminations, 12 to 24 AWG, 20A contacts

Dimensions

Internal Sensor Version

10.94 inch (278 mm) wide, 18.62 inch (473 mm) high, 10.55

inch (268 mm) deep

All dimensions include mounting tabs, latches and low profile sensor.

Dimensions

External Sensor Version

10.94 inch (278 mm) wide, 15.88 inch (403 mm) high, 10.55 inch

(268 mm) deep

All dimensions include mounting tabs and latches.

Mounting 2 in. pipe, wall, Unistrut, sensor mounting (internal sensor version only)

Packaging Type 3RX, aluminum with powder coat paint

Environment SOLARPack 410 (not including the display and battery)

5% RH to 95% RH, non-condensing, -40°C to 55°C (-40°F to 131°F)

Display: -20°C to 55°C (-40°F to 131°F)

Warranty • SOLARPack 410 (including sensor): 3 years (parts and labor)

• Battery and Solar Panel: Refer to original manufacturer's warranty

Safety Electrical Equipment for Use in Class I, Division 2

Groups A, B, C and D Hazardous

Locations. cCSAus

Digital Emissions FCC 47 CFR Part 15, Subpart B, Class A

Verification EN61000-6-4: 2001 Electromagnetic

Compatibility Generic Emission Standard Part 6-4: Industrial Environment.

Immunity EN61000-6-2: 2001 Electromagnetic Compatibility

Generic Standards Part 6-2:

Immunity for Industrial Environments

Declaration This product conforms to the above Emissions and

Immunity Standards and therefore

conforms with the requirements of Council Directive 89/336/

EEC (as amended) relating

to electromagnetic compatibility and is eligible to bear the CE

mark. The Low Voltage

Directive is not applicable to this product.