

WellWatcher ArConn

Multiwell rack-mountable acquisition unit

APPLICATIONS

- Acquisition unit for gauges belonging to the family of WellWatcher* permanent monitoring systems
- Local storage of acquired data and interface to remote communication systems
- Available in an ATEX/IECEX certified explosion-proof assembly

ADVANTAGES

- Real-time monitoring of multiple WellWatcher monitoring system gauges per channel, in up to 16 wells
- Centralized data gathering and storage for troubleshooting and engineering analysis
- Notification of downhole faults and undesirable well conditions
- Current and voltage diagnostics and adjustments; cable disconnect capability
- Internal logger for tracking alarm events and durations
- Internal trend memory for pressure, temperature, and diagnostic data
- Wellsite software for unit configuration, live data viewing, and data download
- Onsite and remote data recording and control through telemetry
- Onboard real-time clock with battery backup that provides data time-stamping
- Coefficient storage
- Availability of multiple industry-standard enclosure ratings

The WellWatcher ArConn* multiwell rack-mountable acquisition unit provides power for and enables data retrieval from permanent downhole pressure and temperature gauges belonging to the family of WellWatcher permanent monitoring systems.

The unit interfaces with SCADA systems monitoring the wellsite. The acquired downhole data help operators in reservoir management and optimization by identifying trends throughout the producing life of a well or field.

The unit can be installed in the standard 19-in [482.6-mm] rack typically found in control rooms on offshore platforms.

Multiple gauge capability

The WellWatcher ArConn unit has the capability to support multiple gauges in up to 16 wells, extending the range of possible applications to fields with widespread monitoring needs. Each interface card slot is equipped with a status light that indicates the communication status with connected downhole gauges.

Data acquisition and storage

The unit acquires both raw data and ready-to-use pressure and temperature engineering values at the surface. It provides an onboard clock to time-stamp the data. This feature means that no incorrect time reference can be inserted, and therefore data are not lost after an unexpected power interruption. Sensor calibration coefficients are stored on the unit itself, eliminating the possibility of data entry error.

Robust certified housing

The WellWatcher ArConn unit can be supplied in an explosion-proof ATEX and IECEx certified enclosure, allowing the unit to be housed in hazardous wellsite locations.

Data trending in real time

The internal memory of the WellWatcher ArConn unit records system alarms and acquired downhole data. The unit logs up to 1,920 alarms and events, such as communication errors with connected downhole gauges.



The WellWatcher ArConn multiwell rack-mountable acquisition unit can connect to multiple gauges in as many as 16 different wells.

The trend memory of each interface card can be configured to record the downhole pressure and temperature data from the gauges connected to it at a user-specified sampling rate. It can also record associated diagnostics data, such as cable voltage and current. Each data channel can be logged at its unique sampling rate, as fast as one sample per second, with the added capability of logging the data only when the deviation exceeds the user-set limit. Up to 4,890,000 unique data points can be stored internally.

Data transfer

Wellsite software is used to configure and locally download data (for all connected gauges) through the acquisition unit's CPU card configuration port.

For remote monitoring and control, the WellWatcher ArConn unit can be connected to a land-based SCADA system through its remote communication port or optionally via a satellite-based system. Standard Modbus® communications are available over two RS-232 or RS-485 connections by default using the communication card or via TCP/IP using the optional Modbus TCP/IP card. The acquisition unit can interface with up to four remote masters to facilitate remote communications with a variety of user infrastructure requirements.

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WellWatcher ArConn Acquisition Unit Specifications

Dimensions (H × W × D), in [mm]	7.25 × 19 × 15.75 [184.2 × 483 × 400] (standard version), which fits 19-in [48.26-cm] rack mount
Approximate shipping weight, lbm [kg]	30.0 [13.6] (standard version)
Power supply	110–240 V AC, 50/60 Hz (standard version only) Full load: 16 interface cards and 128 gauges, 625 VA (max. consumption) or 24 V DC power inputs available Full load: 16 interface cards and 128 gauges, 480 W (max. consumption)
Temperature, degF [degC]	Operating range: –4 to 122 [–20 to 50] Storage range: –40 to 158 [–40 to 70]
Configuration port	One Modbus RS-232 DB9F port; 57,600 bits per second; on CPU card
Qualifications	Standard: CE, [†] (c)UL, [‡] CSA, [§] ROHS ^{††}
Enclosure rating	NEMA 1, IP10 (standard version) Class 1, Division 2, ATEX-certified (hazardous-zone version)—requires FEED ^{†††} study to determine exact certification needs per deployment county regulations

Explosion-Proof Enclosure Specifications

Dimensions (H × W × D), in [mm]	15.6 × 25.2 × 29.5 [394.0 × 638.0 × 748.0]
Enclosure weight without acquisition unit, lbm [kg]	242.5 [110]
Enclosure rating	ATEX: II GD Ex d IIB (–4 to 104 degF [–20 to 40 degC]) temperature rating T5 (max. surface temperature of 212 degF [100 degC] for unit and 203 degF [95 degC] for cables). ^{††} Maximum 10 FIC NG fully loaded. For installations, requiring more than 10 cards, a FEED ^{†††} study must be performed.

Downhole gauge interface

No. of channels	Four by default, up to 16; one interface card per channel
No. of gauges ^{§§}	Up to eight per channel
Gauges supported ^{†††}	NPQG, DPGTA, and XPQG
Input signal voltage	70 mV to 3 V rms
Max. output current, power	250 mA, 18.75 W
Max. output voltage	75 V open circuit, 55.70 V at maximum output current
Cable voltage status	Short-circuit and open-line detection
Connection	Through CPU card configuration port, using straight DB-9 serial cable; USB for firmware upgrade

Software

PC software	Wellsite commissioning and display software
Functionality	Unit commissioning, including gauge coefficient upload; live data viewing, capture, and trending (with PC connected); internal trend memory data download to PC

Remote communication

No. of channels	Two by default, up to four
Protocol	Modbus RS-232 or RS-485 (using one communication USC100 interface card/channel); Modbus over TCP/IP
Baud rate, bits per second	300; 600; 1,200; 2,400; 4,800; 9,600; 19,200; 38,400; 57,600
Port setting	7 or 8 data bits; 1 or 2 stop bits; none, even, or odd parity

Internal data storage

Event log	Up to 1,920 events, first-in first-out basis
Type of events logged	System alarm, telemetry communications alarm
Trend data	Up to 4,890,000 data points, user-settable option to write over first data in or stop recording when memory is full
Trend data	32-bit pressure and temperature engineering data, gauge diagnostics data
Sampling rate	Up to one sample per second per channel; unique sampling rate for pressure, temperature, and diagnostics channels each; 1 second per sample, sampling rate when channel deviation exceeds user-set boundaries (when activated)

[†] Conformité Européenne.

[‡] Canadian Underwriters Laboratory.

[§] Canadian Standards Association.

^{††} Restriction of Certain Hazardous Substances.

^{†††} IIB is the gas group. II is the equipment group—electrical equipment for use in places (other than mines) containing explosive gas. The 2GD category denotes that this equipment is suitable for Zone 1 or higher (i.e., Zone 1 and Zone 2); GD denotes gas and dust.

^{§§} Certain gauges may not be compatible with a multiple-gauge configuration.

^{††††} Power consumption for each interface card is 5 W without gauges. Consumption varies with cable length and gauge type. For detailed power consumption information, refer to product manuals.

^{†††††} Front-end engineering and design.

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