Instruct
Acquisition and control unit

APPLICATIONS
- Variable-speed motor control and protection
- Surface data acquisition for monitoring downhole gauges
- Wellsite interface for all artificially lifted wells and remote monitoring with the LiftWatcher* real-time surveillance service

BENEFITS
- Provides centralized data gathering and storage for optimization, engineering analysis, and troubleshooting, eliminating multiple surface components
- Installs directly in current UniConn* universal site controller installations

FEATURES
- Remote access and control capability from multiple SCADA systems and LiftWatcher service in parallel
- Plain-language, multilingual alarms and prompts, at-a-glance wellsite assessment, dedicated function keys, and color screen
- 1 GB of internal memory with a removable USB option (up to 32 GB), multiprocessor architecture ensuring smooth performance data logging and trending up to 32,000,000 data points
- Modular design that increases expandability and serviceability
- PC-based StarView* wellsite display software for device configuration, operation, and troubleshooting
- Acquisition system for Phoenix xt150* high-temperature ESP monitoring system and Phoenix CTS* cable-to-surface artificial lift downhole monitoring system when paired with system interface card
- Acquisition system for REDA* Hotline* high-temperature ESP systems and downhole gauges when paired with high-temperature interface card

The Instruct* acquisition and control unit for artificially lifted wells provides a single platform for protection, control, and data acquisition. The unit can monitor multiple wells, operating data points, electrical system data, information from external analog or digital devices, data measured by the downhole monitoring system, and remote commands. Users can program alarm and trip settings locally or remotely.

In its basic configuration, the Instruct unit is a variable-speed motor controller and data acquisition device. The unit has built-in RS232 and RS485 ports for communication connections that can be used in a variable speed drive (VSD) application or for SCADA and LiftWatcher service connectivity.

The unit can be used as a stand-alone device to monitor up to four downhole tool systems. It can accommodate four analog and six digital input channels and provide two analog and three digital output channels, each individually configurable.

Unit upgrades are typically performed at the wellsite by using a removable USB drive or laptop computer. For remote monitoring and control, the Instruct unit can be connected to a SCADA system or the LiftWatcher service—or both in parallel, if required.
### Instruct Acquisition and Control Unit Specifications

#### Dimensions

- **Unit length, H × W × D, in [mm]**: 7.1 × 8.5 × 7.4 [180 × 216 × 187]
- **Unit weight, lbm [kg]**: 9.5 [4.3]
- **Faceplate length, H × W, in [mm]**: 7.64 × 10.59 [194 × 270]
- **Instruct unit option cards**, mm: 172 × 170 × 25
- **Standard option cards**, mm: 172 × 130 × 20

#### Power supply

- **Alternating current (AC)**: 100- to 240-V rms, 75 W, both 50 and 60 Hz
- **Direct current (DC)**: 24 V ± 2%, 75 W

#### Temperature rating

- **Operating range, degF [degC]**: –40 to 167 [–40 to 75]
- **Storage range, degF [degC]**: –76 to 185 [–60 to 85]

#### Expansion card rack

- **No. of slots**: Four
- **Cards available**: Modbus RS-232 or RS-485 communication card, PIC, EIC, and HTIC cards, Modbus TCP/IP card

#### Feature card rack

- **No. of slots**: Two

#### Input/Output

- **Digital output**: Three channels per card, 100- to 260-V AC rms, 10- to 28-V DC, 3 A maximum
- **Digital input**: Six channels per card, 24-V DC power internally supplied
- **Analog input**: Four insulated per card, double-wire channels; 0- to 10-V DC (0 to 20 mA)
- **Analog output**: Two individually configurable per card, 4- to 20-mA current loops

#### Maintenance port

- **Connection**: USB and standard serial port connector, DB9F, Modbus RS-232
- **Baud rate**: 300/600/1,200/2,400/4,800/9,600/19,200/38,400/57,600 bps
- **Serial communication**: Data bit: 8; stop bit: 1; parity: none

#### Remote communication interface

- **No. of channels**: One to six
- **Protocol**: Modbus RTU and Modbus TC/IP (with optional TCP/IP card)
- **Baud rate**: 300/600/1,200/2,400/4,800/9,600/19,200/38,400/57,600 bps
- **Serial communication**: Data bit: 7/8; stop bit: 1/2; parity: none/even/odd
- **Interface**: RS-232, RS-485, Modbus TCP/IP (one per communication card)

#### Gauge interface

- **Types of tools supported**: Phoenix xt150 system downhole gauge, Phoenix CTS system (all types), HTIC card
- **Interface**: PIC, EIC, or HTIC card

#### Data logging/trending

- **Logged events**: Starts, stops, alarms, trips, set point changes, system resets
- **Number of logged channels**: Up to 32 in parallel
- **Data storage capacity**: 32,000,000 data points
- **Sampling rate**: Individual per channel (up to one sample/s)²

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1. CSA certified and CE compliant
2. Options include sampling only when motor is running and exceeding user-set deviation limits.