

WellWatcher Quartz Extend

AC- or DC-powered high-resolution dual-sensor PT gauge



Rated up to 20,000 psi
[138 MPa]



Rated to 302 degF
[150 degC]

APPLICATIONS

- Single and multizone intelligent completions
- Wells requiring injection monitoring
- Distributed temperature measurements when combined with WellWatcher Flux* digital temperature array and PT gauge system
- AC version used in multistage completions with:
 - WellWatcher Flux* inductive coupler
 - HEWM hydraulic and electric downhole wet-mate connector
 - Manara* production and reservoir management system
- DC version used in high-noise environments such as wells with electrical submersible pumps (ESPs)

BENEFITS

- Optimizes reservoir drainage
- Acquires continuous pressure and temperature measurements in real time, enabling immediate corrective actions
- Reduces time and costs with cost-effective monitoring and simplified single-cable architecture for multidropping

FEATURES

- Downhole pressure, temperature, and flow measurements
- High-temperature electrical technology for long-term reliability
- Highly reliable connectivity with Intellitite* downhole dual-seal dry-mate connector
- AC version has multidrop capabilities with WellWatcher Flux* multizonal reservoir monitoring system
- Continuous access to system diagnostic parameters
- Fully welded hermetically sealed housing

The WellWatcher Quartz Extend* AC- or DC-powered high-resolution dual-sensor PT gauge is part of the family of WellWatcher* permanent monitoring systems. It provides continuous, repeatable, and reliable pressure and temperature data as well as—using the ΔP method—downhole flow rate measurements. This makes it possible to characterize production and reservoir behavior in real time. In addition, it can be used to optimize flow control valve positions to maximize productivity or injection throughout the life of a well.

For completions that do require multizone monitoring, WellWatcher Quartz Extend gauges can be installed in each of the zones. Power and telemetry are provided by a single permanent cable. This configuration optimizes the completion architecture by simplifying installation and decreasing the number of wellhead and packer penetrations.

Bidirectional, high-rate data transfer

The gauges use proprietary telemetry for bidirectional, high-rate data communication; the same cable is also capable of transferring a large supply of electrical power to downhole tools. The gauge is fully compliant with Intelligent Well Interface Standardization (IWIS) specifications, the industry standard for interfacing with subsea systems, enabling fully transparent bidirectional communication without complex protocols.

For completions that require multizone monitoring or multistage, WellWatcher Extend AC stations can be installed in each zone and is compatible with WellWatcher inductive coupler.

WellWatcher Quartz Extend DC gauge communications are immune to high-noise environments, such as those created by ESPs.

Long-term accuracy and reliability

The WellWatcher Quartz Extend PT gauge is designed with the most advanced and proven technology available today. Long-term reliability results from

- high-temperature-rated multichip module electronics and quartz sensors
- proprietary telemetry for bidirectional data communication
- on-board system monitoring and diagnostics
- downhole firmware download capabilities
- proprietary advanced Intellitite connector technology
- built-in protections to prevent failure propagation through the intelligent completion
- fully welded assemblies
- corrosion-resistant alloys.



WellWatcher Quartz Extend AC- or DC-powered high-resolution dual-sensor PT gauge.

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WellWatcher Quartz Extend AC-Powered PT Gauge Specifications

Sensors	
Type	Quartz pressure and temperature
Number in one gauge	1, 2, or 3 sensors
Calibrated working pressure range, psi [kPa]	Atmospheric to 20,000 [137,900]
Calibrated working temperature range, degC [degF]	-25 to 150 [-13 to 302]
Other calibrated ranges	Available on request
Pressure accuracy (typical)	±0.015% full scale
Temperature accuracy (typical), degC [degF]	±0.15 [±0.27]
Pressure resolution at 1-s sample rate, psi [kPa]	<0.008 [<0.055]
Pressure drift at maximum pressure and temperature	±0.02% full scale per year
Temperature resolution at 1-s sample rate, degC [degF]	<0.005 [<0.009]
Temperature drift, degC [degF]	<±0.1 [±0.18] per year at 177 degC [351 degF]
Physical characteristics	
Max. working hydrostatic pressure rating, psi [kPa]	20,000 [137,900]
Overall length (2 pressure sensors), mm [in]	2,159 [85] without cable heads and Y-block 2,794 [110] with cable heads and Y-block
Gauge diameter (except radial connection), mm [in]	31.75 [1.25]
Sensor pressure port reading options	Tubing, annulus, and control line
Corrosion resistance	NACE MR0175
Service	H ₂ S
Typical power consumption, W	1.5 at 150 degC [302 degF]
Power factor	0.85

WellWatcher Quartz Extend DC-Powered PT Gauge Specifications

Sensors	
Type	Quartz pressure and temperature
Number in one gauge	1, 2, or 3 sensors
Calibrated working pressure range, psi [kPa]	Atmospheric to 16,000 [110,316]
Calibrated working temperature range, degC [degF]	5 to 150 [41 to 302]
Other calibrated ranges	Available on request
Pressure accuracy (typical)	±0.015% full scale
Temperature accuracy (typical), degC [degF]	±0.15 [±0.27]
Pressure resolution at 1-s sample rate, psi [kPa]	<0.008 [<0.055]
Pressure drift at maximum pressure and temperature	±0.02% full scale per year
Temperature resolution at 1-s sample rate, degC [degF]	<0.005 [<0.009]
Temperature drift, degC [degF]	<±0.1 [±0.18] per year at 177 degC [351 degF]
Max. overtemperature, degC [degF]	177 [351]
Physical characteristics	
Max. working hydrostatic pressure rating, psi [kPa]	16,000 [110,316]
Overall length (without cable head), mm [in]	WN1P: single sensor 740 [29.13] WN2P: dual sensor 1,080 [42.52]
Gauge diameter (except radial connection), mm [in]	31.75 [1.25]
Intellitite connector options	R: true redundant metal-to-metal seal W: fully welded fast connector
Sensor pressure port reading options	Tubing, annulus, control line, and flowmeter
Corrosion resistance	NACE MR0175
Service	H ₂ S
Min. storage temperature, degC [degF]	-55 [-67]
Min. nondestructive turn-on temperature, degC [degF]	-25 [-13]
Well integration	
Max. number of stations	10 on one twisted-pair cable
Max. cable length at max. temperature, m [ft]	7,000 [22,965]
Max. distance between tools, m [ft]	No limitation
Surface communication systems	
Surface acquisition options	WellWatcher SoloConn* single-well acquisition unit
Subsea interface	IWIC card, fully IWIS compliant; communication Modbus® over serial or PPP
Acquisition software	RTAC* real-time acquisition and control software running on a PC topside or SCADA systems Proprietary commissioning software during installation

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