

ESP Downhole Monitoring Systems

Predict ESP motor and cable run life by measuring ESP insulation resistance

ACE Downhole sensors are specifically designed for long life and accurate downhole pressure, temperature, and vibration delivery.



Downhole sensors

- High temperature, high pressure, and dual pressure models available
- 2 3/8-in. 8 RND EUE thread on the bottom of the sensor to mount any additional downhole components

 **10k+**
ACE Downhole sensors installed worldwide



Downhole sensors adaptors

- Most common sizes available for various ESP motor brands
- Available in carbon steel or stainless steel

2 
YEAR
warranty,
unmatched by
any competitor



Robust and capable of multiple deployments



Surface readout units

- SRU2i includes ethernet and USB connectivity
- SRU3i connects directly to a Baker Hughes Advantage/GCS drive and provides WiFi



High-voltage interface

- Rated to 5,000 VAC and tested at 7,000 VAC
- NEMA 4, 4X, 12, 13 enclosure

Benefits

- Universal compatibility with all oil field submersible pump motors
- Predict and extend ESP run life by monitoring ESP insulation resistance
- Sustain uninterrupted downhole data in applications with unstable power

Product highlights

- Completely sealed and dry design
- Patented smart circuit to protect the sensor from high voltage, current overloads, and ground fault related failures



Installation and testing

- Hydraulic pressure test unit to enable system verification at surface before installation NEMA 4, 4X, 12, 13 enclosure
- Portable surface readout unit enables sensor testing without connecting to a power source
- ACE Spooler monitors ESP while running in hole and sends an alarm to personnel on the wellsite the moment ESP cable gets damaged



DOWNHOLE SENSORS

	ACE Standard	ACE Mid Range	ACE Xtreme	ACE Xtreme Dual
Intake Pressure Range	0-5000 psi	0-5000 psi	0-6000 & 0-8000 psi	0 – 6000 psi & 0-8000 psi
Intake Pressure Accuracy	+/- 0.25% BFSL 1% FS	+/- 0.25% BFSL 1% FS	+/- 0.1% Typical 0.2% FS	+/- 0.1% Typical 0.2% FS
Intake Pressure Resolution	1psi SRU, 0.1psi SRU2, 0.01 psi Spooler & SRU3i	1 psi SRU, 0.1psi SRU2, 0.01psi Spooler & SRU3i	1 psi SRU, 0.1psi SRU2, 0.01 psi Spooler & SRU3i	1 psi SRU, 0.1psi SRU2, 0.01 psi Spooler & SRU3i
Transducer Type	Silicon Strain Gauge	Silicon Strain Gauge	Digital Strain Gauge	Digital Strain Gauge
Discharge Pressure Range	N/A	N/A	N/A	0-6000 & 0-8000 psi
Discharge Pressure Accuracy	N/A	N/A	N/A	+/- 0.1% Typical 0.2% FS
Discharge Pressure Resolution	N/A	N/A	N/A	1 psi SRU, 0.1psi SRU2, 0.01psi Spooler & SRU3i
Intake Temperature Range	32 - 275°F, 0 - 125°C	32 - 302°F, 0 - 150°C	32 - 350°F, 0 - 177°C	32 - 350°F, 0 - 177°C
Intake Temperature Accuracy	3.5°F, 2°C	3.5°F, 2°C	3.5°F, 2°C	3.5°F, 2°C
Intake Temp Resolution	1°F SRU, 0.1°F SRU2, 0.01°F Spooler & SRU3i	1°F SRU, 0.1°F SRU2, 0.01°F Spooler & SRU3i	1°F SRU, 0.1°F SRU2, 0.01°F Spooler & SRU3i	1°F SRU, 0.1°F SRU2, 0.01°F Spooler & SRU3i
Motor Winding Temp Range	32 - 600°F, 0 - 316°C	32 - 600°F, 0 - 316°C	32 - 600°F, 0 - 316°C	32 - 600°F, 0 - 316°C
Motor Winding Temp Accuracy	3.5°F, 2°C	3.5°F, 2°C	3.5°F, 2°C	3.5°F, 2°C
Motor Winding Temperature Resolution	1°F SRU, 0.1°F SRU2, 0.01°F Spooler & SRU3i	1°F SRU, 0.1°F SRU2, 0.01°F Spooler & SRU3i	1°F SRU, 0.1°F SRU2, 0.01°F Spooler & SRU3i	1°F SRU, 0.1°F SRU2, 0.01°F Spooler & SRU3i
Vibration Range	N/A	0 – 10G	0 – 10G	0 – 10G
Vibration Accuracy	N/A	0.50%	0.50%	0.50%
Vibration Resolution	N/A	0.01G	0.01G	0.01G
ESP Insulation Resistance	50kOhms-60MOhms	50kOhms-60MOhms	50kOhms-60MOhms	50kOhms-60MOhms
Maximum Motor Voltage	4160 VAC	4160 VAC	4160 VAC	4160 VAC
Physical Diameter	3.72 in.	3.72 in.	3.72 in. or 3.94 in.**	3.94 in. **
Physical Length	18.5 in.	18.5 in.	18.5 in.	23.0 in.
Physical Weight	35 lbs, 16 kG	35 lbs, 16 kG	42 lbs, 19 kG	44 lbs, 20 kG
Material	1020 CS, 316 SS	1020 CS, 316 SS	316 SS	316 SS

** Downhole sensors with 3.94 in. OD are rated to the maximum pressure of 11,000 PSI

SURFACE READOUT UNITS

	SRU	SRU2i and SRU2i-DC	SRU3i and SRU3i-DC
Power	115VAC +/- 15% 50/60Hz	115 VAC for SRU2i 10-28 VDC 1A for SRU2i-DC	115 VAC for SRU3i 10-28 VDC 1A for SRU3i-DC
Display Type	6 digit Alpha Numeric LED	8 digit Alpha Numeric LED	-
Motor Controller Connection (Isolated)	iCON Series Interface. Support for legacy controllers (F3/F5 Commander series)	iCON Series Interface. Support for legacy controllers (F3/F5 Commander series) plus additional RS-485 Modbus port	Supports GCS Legacy CITbus & Advantage CITbus
Modbus RS-485 (Isolated)	3 wire standard	3 wire standard	3 wire standard
Modbus RS-232 (Isolated)	3 wire, no handshaking required	3 wire, no handshaking required	3 wire standard
USB Modbus (Isolated)	-	Standard USB 'B'	Standard USB-A
Ethernet Modbus (Isolated)	-	Standard CAT5E 8 Pin connector	-
WiFi Interface	-	-	Standard worldwide, license free 802.11 b/g/n
Analog Outputs (Isolated)	-	4x 0-20mA User configurable (SRU2 sources power)	-
Relay Outputs (Isolated)	-	2x Form C User configurable 240VAC / 8 Amps	-
SD Datalogger	-	Up to 32 GByte (SDHC mode supported)	-
Internal Memory (SRU2i version)	-	32 GByte	-
Operating Temperature	0 - 158°F, -18 - 50°C	0 - 158°F, -18 - 50°C	0 - 158°F, -18 - 50°C
Insulation Resistance	No	Yes	Yes
Dimensions	6.00 in. x 5.25 in. x 2.25 in.	9.50 in. x 5.75 in. x 1.75 in.	7.38 in. x 5.75 in. x 1.75 in.
Weight	1.5 lbs	2 lbs	2 lbs
UL Certification	Conforms to UL Std. 61010-1	Conforms to UL Std. 61010-1	Conforms to UL Std. 61010-1
CSA Certification	Certified to CAN/CSA Std. C22.2# 61010-1	Certified to CAN/CSA Std. C22.2# 61010-1	Certified to CAN/CSA Std. C22.2# 61010-1

ACE Downhole | T: +1 918-876-3246 | E: sales@acedownhole.com

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