

IWIC

IWIS-compliant WellNet system interface card

APPLICATIONS

- Power and data acquisition for permanent monitoring systems in compliance with Intelligent Well Interface Standardization (IWIS)

BENEFITS

- Reduced overall project costs and design time through use of more-modular equipment
- Reduced or eliminated data loss, and thus downtime, in the event of power failure, because of data time-stamping
- Reduced future costs, project technical risks, and time because of IWIS compliance, which permits deploying new measurement systems without having to modify the subsea infrastructure

FEATURES

- Accurate, reliable data acquisition
- IWIS compliance[†]
- Bidirectional communication
- Remote reset capability
- Voltage and current diagnostics
- Card firmware upgrades from surface using Modbus[®] TCP (local and remote)
- Fault detection, standby, shutdown, and watchdog features
- Highly efficient downhole power supply
- Supported by Schlumberger troubleshooting and commissioning software

The IWIC provides communication and power, in compliance with IWIS specifications, for permanent downhole monitoring systems using the WellNet* oil and gas well surface-downhole communication system. The card transmits continuous pressure and temperature measurements dependably and reliably for characterizing production and reservoirs in real time.

Continuous monitoring with high-speed telemetry

The IWIC communicates with downhole equipment via a proprietary communications protocol, which offers high-speed downhole telemetry for monitoring and controlling a well. The protocol is fully compatible with Schlumberger inductive coupler technology used for transmission of sandface data across multiple completion stages. The user is able to collect high-speed downhole data from multiple multisensor stations for permanent monitoring, all through a single electric line.

The card delivers ready-to-use engineering values acquired from the downhole monitoring systems and readily accessible through the surface Master Control System (MCS).

Multiple features for reliable data

By measuring and transmitting diagnostic parameters, the IWIC can verify the integrity of the customer data link and the downhole signal path. It can also validate the digital electronics and its own capacity to power the downhole monitoring systems by performing cable current and voltage measurements.

The card features an onboard clock to time-stamp data. Consequently, no incorrect time reference can be inserted, and therefore data are not lost after an unexpected power interruption.

Permanent monitoring systems using the WellNet communication system output pressure and temperature data in engineering units. No calibration coefficients need to be stored and no conversions are required, eliminating the possibility of data errors caused by mistakes in coefficient entry.

Redundancy option

Two cards can be used in parallel for redundancy. The secondary card can take over if necessary, ensuring that valuable well data is always available. The MCS sends a heartbeat signal to the primary card to keep it "alive" and monitors the signal continuously. The secondary card will be activated when the MCS signals the primary card to stop and activates the heartbeat signal to the secondary card.

Remote upgrades

The IWIC complies with stringent mechanical, electrical, communications, and testing standards. At the same time, it allows firmware to be upgraded remotely (provided access to the card is available through a transparent link), meaning that even after deployment and commissioning, changes to the card's operation can be made with ease. Future enhancements and optimizations require only a quick upload of the latest firmware via the same communication port used for gathering well data.



IWIC: IWIS-compliant WellNet system interface card.

Established track record

Having installed permanent gauges since 1972, Schlumberger is the recognized industry leader in permanent downhole monitoring and has established numerous engineering and performance benchmarks. A well-developed program for continuous performance improvement has provided one of the most reliable track records in the industry for these systems.

[†] When supplying output power greater than 18 W, the input power and heat dissipation of the card will exceed the IWIS limits of 24 W and 6 W respectively.



IWIC Specifications

General

Part number IWIC-DD 101353202, IWIC-DA 101259312 (DC- and AC-output versions, respectively)

Electrical

	AC Version	DC Version
Minimum/maximum input voltage	18 V DC/28 V DC	18 V DC/28 V DC
Maximum output voltage	275 V rms (Min. output voltage 175 V rms)	175 V DC
Minimum/maximum power dissipation	3.6 W/13.6 W	3.6 W/6 W
Maximum power consumption	63.6 W	24 W
Maximum output power	50 W	35 W (max. output current 200 mA)
Maximum output VA	150 VA	Not applicable
Operating power frequency	400 Hz ± 5%	Not applicable

Mechanical

Physical dimensions, L × W × H 3u 8hp Eurocard standard
175.8 × 100 × 35.4 mm [6.9 × 3.9 × 1.4 in]

Connector type (rear) 96-pin DIN 41612 (ISO 13628-6 standard)

Communication, Control, Software, and Firmware

Transmission channel	RS-232 or RS-422/RS-485
Transmission protocol	Modbus Serial/Modbus TCP
Baud rate	9,600 (default) to 57,600 bps
Board address	Default Modbus device ID: 6 (configurable)
Soft-start feature	Yes
Fault detection	Yes
Standby and shutdown modes	Yes
Full onboard diagnostics	Supported
Onboard real-time clock	Yes
Reconfigurable	Yes
Telemetry to gauge	WellNet oil and gas well surface-downhole communication system

Downhole Tool Support

Maximum number of stations	10 [†]
Tools supported	WellWatcher Extend* high-resolution dual-sensor PT gauge WellWatcher Flux* digital temperature array and PT gauge system Electrohydraulic and electric intelligent completion systems

Environmental

Operating temperature	−5 to 40 degC [23 to 104 degF]
Storage temperature	−18 to 50 degC [−0.4 to 122 degF]
Environmental qualifications	ISO 13628-6 standard

Reliability, Regulatory, Health, and Safety

ISO 13628-6 (excluding power) compliant	Yes [‡]
ISO 13628-6 low-power derivative	Yes
Vibration/shock/ESS [§] /burn-in qualification	ISO 13628 2006(E)
RoHS ^{††} and WEEE ^{‡‡} compliant	Yes

[†] Must not exceed the maximum output power of the card. Well parameters, such as total depth, zone distances, distance between gauges, and sensors per gauge, will have impact on the total power consumption. A predeployment study is recommended to evaluate anticipated power consumption.

[‡] When supplying output power greater than 18 W, the input power and heat dissipation of the card will exceed the IWIS limits of 24 W and 6 W respectively.

[§] Environment Stress Screening.

^{††} Restriction of Certain Hazardous Substances.

^{‡‡} Waste Electrical and Electronic Equipment.

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