Schlumberger

IFIC NG

Next-generation IWIS frequency-shift-keying interface card

APPLICATIONS

- Power and data acquisition for WellWatcher* monitoring system frequency-shift-keying (FSK) gauges in IWIS-compliant subsea intelligent completions

BENEFITS

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

FEATURES

- Accurate, reliable data acquisition
- 100% IWIS compliance
- Remote current and voltage adjustments
- Remote cable disconnection
- Coefficient storage
- Voltage and current diagnostics
- Surface-to-FSK card firmware upgrades via Modbus® TCP
- USB port for fast firmware download
- Redundancy capability
- Point-to-point protocol for communications
- Surface software for facilitating interface-to-user application, as well as configuration, commissioning, and troubleshooting

The next-generation IWIS frequency-shift-keying interface card (IFIC NG) provides communication and power for WellWatcher monitoring system FSK gauges in subsea wells. This card complies with the Intelligent Well Interface Standardization (IWIS) specifications.

The IFIC NG is able to power up to eight gauges on the same cable. The card provides the subsea network with both raw data and ready-to-use engineering values and is able to support all WellWatcher system FSK gauges.

By measuring and transmitting diagnostic parameters, the IFIC NG can verify the integrity of the subsea control module's umbilical link and the downhole signal path. It can validate the digital electronics and card-to-surface communication channels, as well as its own capacity to power the downhole gauge, by taking cable current and voltage measurements.

Storage features minimize data errors

An onboard clock time-stamps data at the card. In the event of an unexpected interruption in power, data are not lost as a result of an incorrect time reference. In addition, the card outputs time-stamped data in engineering units directly to the master control system. This feature further reduces possible sources of data error by minimizing software interfaces. It also results in more reliable data at the delivery point.

The IFIC NG stores the sensor calibration coefficients on the card itself, eliminating the possibility of data error caused by mistakes in coefficient entry.

Redundancy ensures data availability

The IFIC NG can be managed via software used in parallel for redundancy. The secondary card can take over if necessary to ensure that valuable well data are always available. The implementation of this feature needs a master control system to manage the power on the primary and secondary cards.

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Card complies with IWIS and allows easy firmware upgrades

The IFIC NG meets all mechanical, electrical, communications, and testing constraints imposed by the IWIS specification. It also allows firmware to be upgraded remotely, meaning that even after deployment and commissioning, changes to the card's operation and routine 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 the well data.

Gauges set benchmarks and establish 40-year track record

Schlumberger has installed more than 8,000 permanent downhole pressure and temperature gauges over the past 40 years and has established numerous engineering and performance benchmarks for downhole monitoring. Continual performance improvement has given Schlumberger one of the most reliable track records in the industry for these types of gauges.

IFIC NG Specifications	
Gauge interface	
Number of channels	1
Max. number of gauges†	8‡ (must not exceed max. output power of card)
Gauge types supported	All Schlumberger FSK gauges, including the X Series, N Series, PQG, HPQG, DPG-PS, and DPG-TA
Input signal voltage	70 mV (3 V rms)
Input signal frequency, Hz	1,200/2,400 with 720-Hz capture range
Max. output current/power	250 mA/18 W
Cable voltage status	Short-circuit and open-line detection
Alternative communication with subsea electronics module	
Transmission channel	RS-422 four-wire isolated (ISO 13628-6 standard), Ethernet (10/100 baseT)
Protocol	Point-to-point protocol/IP V4/TCP; Modbus/TCP
Baud rate, bps	4,800, 9,600, 19,200, 38,400, 57,600 (user configurable)
Mechanical	
Dimensions/format, mm	100 × 160 (single slot/Eurocard)
Connector/pin out	96-pin DIN 41612 (ISO 13628-6 standard)
Power	
DC input voltage level	18-28 V DC
Max. power consumption	24 W (ISO-13628-6 standard)
Environmental	
Operating temperature, degC [degF]	–20 to 70 [–4 to 158]
Storage temperature, degC [degF]	–40 to 70 [–40 to 158]
Environmental qualification	ISO 13628-6 standard

†The IFIC NG is capable of handling up to eight gauges, although certain gauges may not be compatible with a multiple-gauge configuration.

‡For configurations requiring more than six gauges, a prestudy should be conducted with the well parameters (total depth, zone distances, etc) to ensure gauge data synchronization.

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