

ESLIC

Subsea link interface card

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The ESLIC subsea link interface card provides communication and power for WellWatcher* permanent downhole pressure and temperature gauges. The small size and standard format of the card allow easy integration with many third-party subsea control modules.

Using common components and firmware permits quick adaptation to meet project-driven changes and future evolution in pod design.

Able to power up to four gauges on the same cable, the ESLIC card sends both raw data and ready-to-use pressure and temperature engineering values to surface.

Operation

Unlike previous generation interface cards, the ESLIC card has an onboard clock to time-stamp data at the interface. In the event of any unexpected interruption in system power, no data will be lost as the result of an incorrect time reference applied either by the subsea pod or the master control system (MCS).

Accurate pressure gauge data is dependent on accurate gauge coefficient data. Gauge coefficients are loaded and stored directly on the ESLIC card, eliminating the requirement for manual entry in an MCS.

Time-stamped data in engineering units are directly output from the ESLIC card and easily retrieved through a serial port at the MCS. Data reliability and retrieval are enhanced by minimizing the software interface between downhole instruments and the delivery point.

Enhanced reliability

Though ESLIC cards are designed for the reliability requirements of subsea operations, two cards can operate in parallel to provide backup redundancy. In this configuration, one ESLIC is designated as the main card, the other as the backup card. In the event of a main card failure, operation immediately switches to the backup card to ensure valuable data acquisition is uninterrupted.

Future flexibility

The ESLIC card is capable of having the firmware upgraded remotely, meaning that even after deployment and commissioning, changes to operation and routine can be performed 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.

Diagnostics

By measuring and transmitting diagnostic parameters, the ESLIC card is capable of verifying the integrity of the subsea control module's umbilical link and the downhole signal path.

Applications

- WellWatcher permanent reservoir monitoring systems in sub-sea wells

Benefits

- Improved data quality and access because of simplified software interface
- Better data quality and security because of time-stamping of data at subsea interface
- Uninterrupted data acquisition made possible by redundant operational capacity

Features

- Time-stamp of data using onboard clock
- Battery backup for onboard clock
- Remote current and voltage adjustments
- Remote cable disconnection
- Gauge coefficient storage
- Voltage and current diagnostics
- Firmware upgradable from surface
- Gauge simulator
- Redundancy

By performing repeated cable current and voltage measurements, the ESLIC card has the ability to validate the operation of the digital electronics and card-to-surface communication channels as well as its own capacity to adequately power the downhole gauge.

A gauge simulator on board the ESLIC card sends a known gauge telemetry signal through the cable. Amplitude of gauge modulation voltage is measured by the ESLIC card to determine the integrity of the communication with the gauge validating downhole telemetry.

This feature is also valuable during interface testing with the subsea electronics module and MCS.

Third parties may access board-level data and diagnostic functions provided they meet certain interface requirements outlined in the manual. Additional diagnostics and troubleshooting can be performed through a transparent link using a proprietary Schlumberger software package.

Versions

To meet the interface requirements of industry-leading subsea control module or “pod” vendors, the ESLIC card comes in four versions. The ESLIC 200 version isolates the power supply from the telemetry device on the two-circuit board.

Specifications	
Gauge Interface	
Number of channels	One
Max. number of gauges [†]	Four [†] (must not exceed maximum output power of card)
Input signal voltage	70 mV (3-V rms)
Input signal frequency	1,200 Hz (2,400 Hz with 720-Hz capture range)
Max. output current	150 mA
Max. output power	6.2 W (for ESLIC 220) 8.25 W (for ESLIC 100 series)
Cable voltage status	Short-circuit and open-line detection
Communication	
Transmission channel	RS-485 two-wire or RS-422 four-wire
Protocol	Modbus [®] remote terminal unit
Baud rate	4,800/9,600/19,200/38,400 (jumper select)
Address Range	
ESLIC 100 series	20 hexadecimal to 3F hexadecimal [32 to 63 decimal]
ESLIC 220	1–247 decimal (firmware configurable)
Dimensions	
ESLIC 101	100 mm × 160 mm
ESLIC 110	100 mm × 160 mm
ESLIC 120	100 mm × 160 mm
ESLIC 220	100 mm × 160 mm × 26 mm
Format	Eurocard
Connector	
ESLIC 101	Hypertac [®] 53M
ESLIC 110	DIN 96
ESLIC 120	Double DIN 96
ESLIC 220	DIN 96
Direct Current Input Power	
Input	18–28V DC
Consumption [‡]	
ESLIC 100 series	2.1 W (on standby)
ESLIC 220	3.25 W (on standby)
Environmental	
Temperature range	–20 degC to 70 degC

[†] ESLIC is capable of handling up to four gauges, although certain gauges may not be compatible with a multiple gauge configuration.

[‡] ESLIC 100 series consumption is 2.1 W without gauges, and ESLIC 220 consumption is 3.25 W without gauges. Consumption varies with cable length and gauge type. Typical consumption value for an ESLIC with single permanent quartz gauge and 5-km permanent downhole cable is 3.25 W (ESLIC 100 series) or 4.25 W (ESLIC 220). For detailed power consumption information, please refer to product manuals.