Wireless Pressure Direct to Cellular Transceiver Node

Phase IV Data Sheet Leap Sensors® Transceiver Node

Applications

- Ideal for monitoring important pressures in remote locations - or where a powered gateway is not possible.
- Common applications include: water pressure monitoring, well pressure, remote equipment monitoring, pond level monitoring, predictive maintenance, and remote tank monitoring.
- Integrates a variety of pressure transducer types with a wide range of outputs (0-5 V, 0-10 V, 0-12.5 V, 4-20 mA, or Digital (I2C, Modbus RTU RS485).
- Add other sensors, such as temperature, to the same node.

Special Features

- Configurable to provide power to most industrial pressure transducers and transmit any sensor signal listed below.
- Edge computing gives small, actionable data.
- Configurable (over the air) sample and transmit intervals to fit many application requirements.
- Simple integration into existing Leap Sensors® system.
- Preconfigured to connect with an exiting client network for simple installation – up and running in 5 minutes.
- LED indicators for power, network connection, and database connection status.

Description & Product Highlights

Phase IV's direct to cellular Leap Sensors® Pressure Transceiver Node does not use a gateway and can be totally battery-powered or locally powered.

The Leap Sensors® wireless sensor system greatly reduces the cost and complexity of laying cables between sensors and data acquisition units. In addition, edge computing creates easily transmissible, small, actionable data to trigger alerts.

Interfacing with most industrial pressure sensors is quick and simple with programmable 12V or 24V sensor excitation and user configurable sensor calibration fields.

The Leap Sensors® system is intended primarily for the purpose of performing industrial sensor measurements.

Transceiver Node

Modularity and Customizability
Each direct to cellular Pressure Transceiver Node has the capability to support and interface simultaneously with up to four analog voltage sensors, two thermocouples, a mV/V output sensor (strain bridge, load cell, potentiometer, RTD), a digital switching input, and digital busses (I2C, CAN, Modbus RTUS RS485). This makes the Multi-Sensor Transceiver Node ideal for all remote sensing applications and semi-custom applications. Interfacing multiple sensors to one transceiver node provides a substantially lower price compared to individual sensing devices.
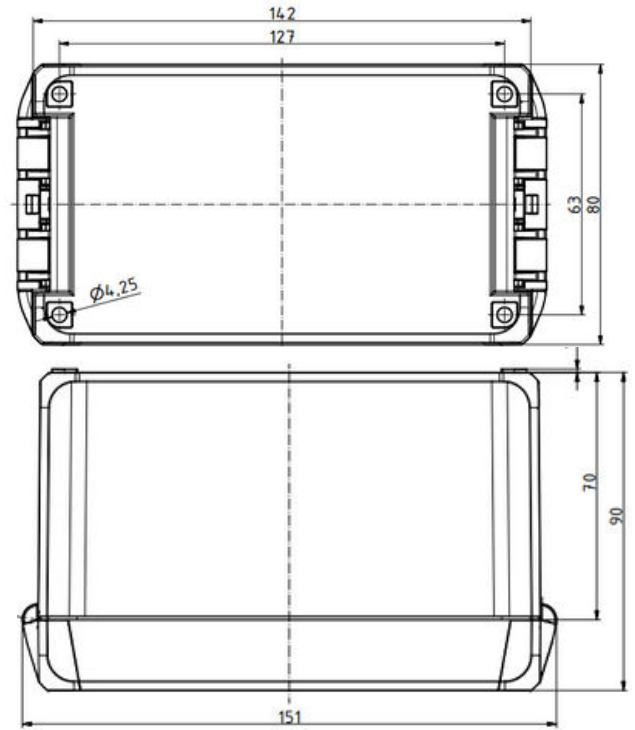
Ease of Implementation
All Leap Sensors transceiver nodes come pre-configured and securely paired with your password protected cloud software for quick and simple integration into an existing Leap Sensors system, or to function as a new stand-alone system. Custom firmware loaded on the device can configure the data viewing software to accept and all new device types.

Real-time Data Viewing and Alerts
All leap Sensors transceiver nodes stream data to the cellular radio at configurable intervals. This data is accessible and viewable in real time. In addition to real-time viewing and graphing of sensor data, alerts based on any sensor condition are configurable, and can be sent via phone call, email, or text for instant communication of a sensor reaching an alert condition.

LEAP SENSORS®

PHASE IV ENGINEERING INC.

WIKA Smart in sensing

Leap Sensors® Multi-Sensor Node Specifications Leap Sensors® Multi-Sensor Node Specifications		
General Sensor Specifications		
Analog Input Signals	**Isolated 24-Bit ADC:** 2 x 0-10 V 1 x 0-12.5 V 2 x 4-20mA 1x Amplified mV/V (strain, load cell)	**Optional Thermocouple:** 2 x Isolated Thermocouples
Digital Input Signals	1 x Isolated I2C BUS or RS485 - Modbus RTU 1 x Isolated CAN BUS	1 x Digital Input (3.3V to 24V)
Programmable Sensor Excitation	12 V @ 80 mA max, 24 V @ 25 mA max – turned-on only immediately prior to reading sensor	
Sensor Interface	Pre-configured IP67 2-6 pin M8, 8 pin M12, cable gland, two female thermocouple connectors*	
Output units	User and factory configurable through Leap Sensor Manager software.	
OPTIONAL Integrated and Isolated Thermocouple Sensing (Cold Junction Compensation)		
Specifications	+-0.0625 °C resolution, open and short circuit detection	
Compatible Thermocouple Types	K, J, T, N, S, E, B, R	
Thermocouple Accuracy	Typical: +/- 2C from -150C to 200C Typical: +/- 1% of full scale from 200C to 1300C. Overall accuracy if a combination of the electronic and the thermocouple used and the accuracy of the cold junction compensation. Consult the data sheet for the thermocouple to determine the full system accuracy. Thermocouples are not typically used for high accuracy temperature measurements.	
Temperature Reading Range	Electronics reads from K-Type: -150C to 1300C S-Type: -10C to 1600C B-Type: -300 to 1800C Other types – contact us	
Thermocouple Connection	Pigtail cable with standard female miniature flat pin connectors. The enclosure IP67 rating may be reduced if the thermocouple "pigtail" cable has a braided jacket	
Power Specifications		
Battery Power	Dual 3.6 V, 14,000 mAh D-cell, Lithium Thionyl Chloride	
Battery Life	Battery life estimate: 8 year battery life when transmitting every 8 hours. 2.75 year battery life when transmitting once per hour. 1 year battery life when transmitting every 20 minutes.	
Power / Current Consumption	Low sleep current assures long life	
Wireless Specifications		
Wireless Transmission Range	Within cellular service coverage.	
RF Communication Protocol	Direct to cellular network (Verizon standard) LTE-M/NB-IoT	

Pressure Sensor(s)

Other Features	
Node Operating Temperature	-40 to 60C standard
Firmware	Over-the-air upgradeable via web interface
Certifications	FCC (USA), IC (Canada)
Cellular Communication	Send and receive (data, acknowledgements, updates, and device configuration). Data stored in sensor node until confirmed write to database.
LED Power Switch	Recessed in the enclosure to prevent accidental power cycling. On-switch is recessed. Off-switch flush with surface. Immediately resets transceiver node when turned off. Integrated green and red LED indicate wireless connection status at power-up
Node Internal Memory	Time-stamped device readings stored on transceiver node if gateway does not acknowledge writing data to database.

Enclosure & Hardware Specifications	
Dimensions	150 mm x 80 mm x 90 mm
Weight	~600g typical for complete transceiver node
Material	Polycarbonate (UL-94)
Mounting Options	Optional feet (shown in drawing) can be mounted horizontally or vertically. Screws can also be passed through the enclosure (when the lid is open) for mounting without feet.
Ingress Protection	IP68 enclosure. IP67 glands, cables, switch
Node Antenna	Internal antenna (typical). External antenna (optional)

* Panel connections are customizable, consult factory for complete options.
** Transmission ranges vary with environmental conditions. Reported values are test averages.
*** Transmission power requirements are governed regionally.