Wireless Differential Pressure Transceiver Node

Applications

- **Industrial monitoring:** useful for exhaust pressure monitoring of industrial machines.
- **Filter health monitoring:** useful for tracking HVAC filter health over extended periods of time.
- **Clean room pressure monitoring:** useful for tracking differential pressured between clean rooms or controlled production environments.
- **General magnehelic gauge replacement:** digitized wireless data greatly improves the data picture provided compared to an analog magnehelic gauge.

Special Features

- Transmission range of 1,500 feet in open air
- Edge computing for small, actionable data
- Configurable sample and transmit intervals
- Transceiver nodes factory-preconfigured to pair with new or existing gateway for simple integration – up and running in 5 minutes
- LED indicators on transceiver node for power, network connection, gateway connection, and database connection status

Description & Product Highlights

Phase IV's Leap Sensors Differential Pressure transceiver node is ideal for digitizing the monitoring and recording of differential pressure. The node can function as a stand-alone monitoring node or be configured to monitor additional parameters important to the specific application, including temperature, humidity, and CO2 concentration.

Standard accessories also enhance the effectiveness of this monitoring system. Customizable flat ribbon cables and panel connectors allow for rapid replacement of calibrated temperature probe tips and allow minimal effect on environments by the sensor cable.

Additional sensors can be easily interfaced to the same node due to the baseboard's modular, multi-sensor design.

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

Differential Pressure Transceiver Node Model

Modularity and customizability
Each Differential Pressure transceiver can be custom configured to include up to two switching input sensors, as well as an additional I2C bus sensor. Off the shelf options include a temperature and humidity probe or a temperature probe.
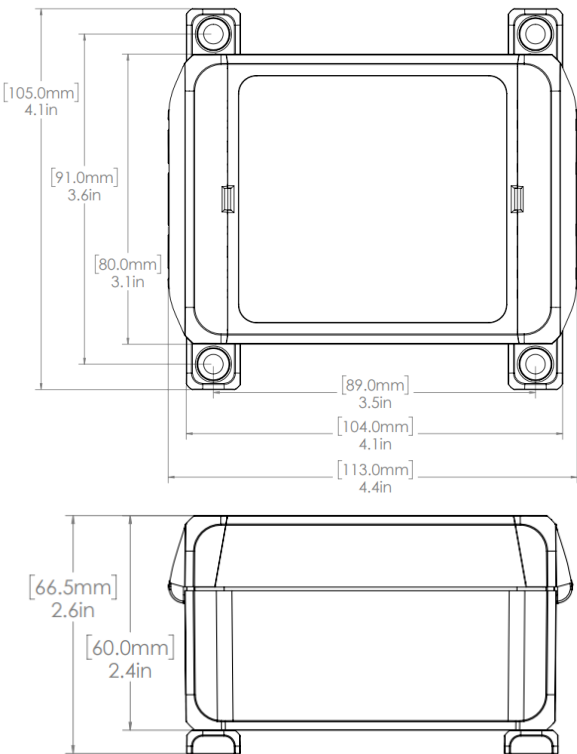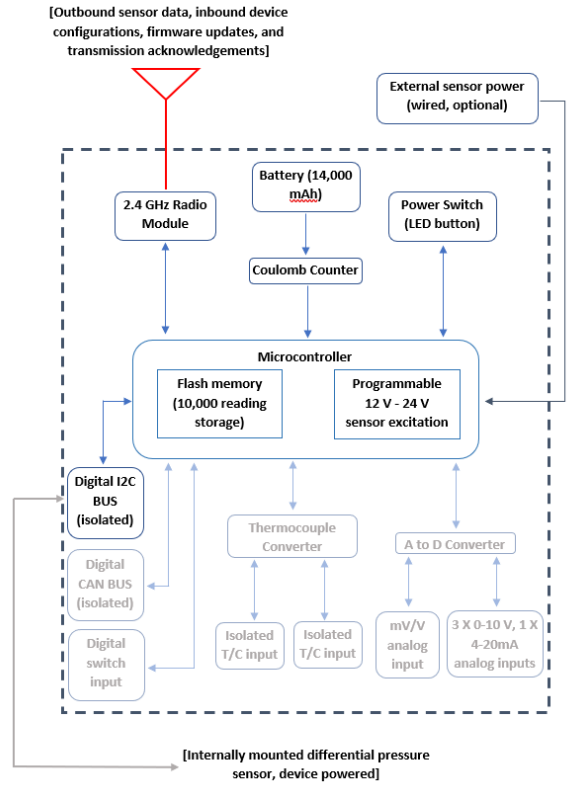
Ease of implementation
All Leap Sensors devices come pre-configured and paired with selected Leap Sensors gateways for quick and simple integration into an existing Leap Sensors system, or to function as a new stand-alone system. The Differential Pressure monitoring system comes with off-the-shelf or custom pressure connections and tubing, as well as multiple mounting kits, making instillation quick and simple.

Real-time data viewing and alters
All Leap Sensors transceiver nodes stream data to Leap Sensors gateway devices at configurable intervals. This data is accessible and viewable in real time. In addition to real-time viewing and graphing of sensor parameters, 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.

PHASE IV
ENGINEERING INC.

Leap Sensors® Differential Pressure Sensor Transceiver Node Specifications	
Differential Pressure Sensor Chip Specifications	
Sensing Ranges	0-4 inH2O, 0-8 inH2O, 0-27.7 inH2O (Contact factory for custom ranges)
Accuracy	0.25 % FS @ 25 °C, 1.5 % FS @ 0 °C to 60 °C
Proof Pressure	5 X full scale pressure
Burst Pressure	10 psi (277 inH2O)
Pressure Connections	2 mm hose barb fitting (Contact factory for custom connectors)
Power Specifications	
Battery Power	3.6V, 14,000 mAh D-cell, Lithium Thionyl Chloride, 5700 mAh
Battery Life	4-5 years at 10-minute sample and transmit intervals. On-board battery passivation prevention circuit assures long life.
Power / Current Consumption	Low sleep current assures long life Operating Current: 6mA - 30mA (depending on sensors) Transmit Current: 9mA @ 0dBm and 80mA @ 20 dBm RX Current: 11 mA
(Optional) Wall Power Specifications	
Power Adaptor	5 VDC, 1500 mW max
Barrel Jack	2.5 mm ID barrel connector (5 VDC - 3A AC/DC converter included)
Wireless Specifications	

Wireless Transmission Range	Industrial Environments**	Open-Air**
	500 ft	1,500 ft

Range Extenders	Range extenders available to extend transmission distance
RF Transmission Power	User configurable 0-20 dBm, factory configured to 20 dBm***
RF Communication Protocol	Internet Protocol based thread, IPV6LoWPAN, IEEE 802.15.4
RF Frequency and Modulation	2.4 GHz (16 Channels) DSSS provides higher noise and interference resistance
Data Security	AES 128-bit encryption with secure join and key exchange (J-PAKE)
Other Features	
Operating Temp.	- 40 °C to 60 °C, -40°C to 120°C available – special order
Gateway Compatibility	Compatible with all Leap Sensors wireless gateways
Firmware	Over-the-air upgradeable via web interface
Certifications	FCC (USA), IC (Canada)
Gateway Communication	Send and receive (data, acknowledgements, updates, and device configuration). Data stored in gateway 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	110,000 time-stamped device readings stored on transceiver node if gateway does not acknowledge writing data to database.
Enclosure & Hardware Specifications	
Dimensions	113 mm x 80 mm x 60 mm
Weight	355g typical for complete transceiver node
Material	Polycarbonate (UL 94 rated and 120C rated)
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)

[Outbound sensor data, inbound device configurations, firmware updates, and transmission acknowledgements]

[Internally mounted differential pressure sensor, device powered]

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.*