

# Wireless Differential Pressure Transceiver Node

Phase IV Data Sheet Leap Sensors® 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.

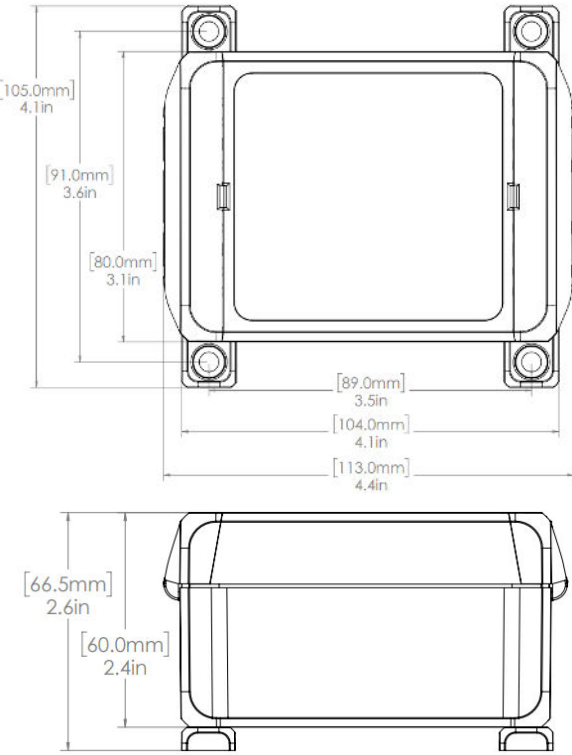
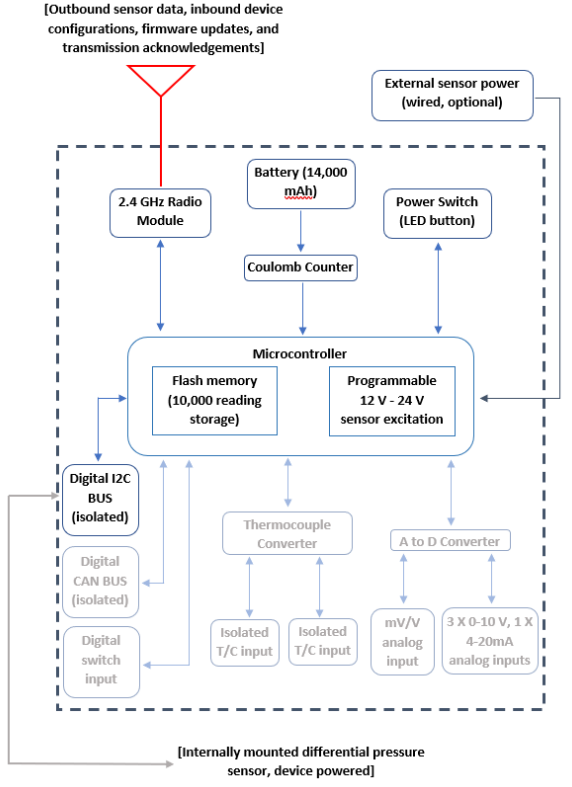
### Ease of implementation

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 installation quick and simple.

### Real-time data viewing and alerts

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.

Leap Sensors® Differential Pressure Sensor Transceiver Node Specifications	
Differential Pressure Sensor Chip Specifications	
<b>Sensing Ranges</b>	0-4 inH2O, 0-8 inH2O, 0-27.7 inH2O (Contact factory for custom ranges)
<b>Accuracy</b>	0.25 % FS @ 25 °C, 1.5 % FS @ 0 °C to 60 °C
<b>Proof Pressure</b>	5 X full scale pressure
<b>Burst Pressure</b>	10 psi (277 inH2O)
<b>Pressure Connections</b>	2 mm hose barb fitting (Contact factory for custom connectors)
Power Specifications	
<b>Battery Power</b>	3.6V, 14,000 mAh D-cell, Lithium Thionyl Chloride, 5700 mAh
<b>Battery Life</b>	4-5 years at 10-minute sample and transmit intervals. On-board battery passivation prevention circuit assures long life.
<b>Power / Current Consumption</b>	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	
<b>Power Adaptor</b>	5 VDC, 1500 mW max
<b>Barrel Jack</b>	2.5 mm ID barrel connector (5 VDC - 3A AC/DC converter included)
Wireless Specifications	
<b>Wireless Transmission Range</b>	Industrial Environments**      Open-Air**
	500 ft      1,500 ft
<b>Range Extenders</b>	Range extenders available to extend transmission distance
<b>RF Transmission Power</b>	User configurable 0-20 dBm, factory configured to 20 dBm***
<b>RF Communication Protocol</b>	Internet Protocol based thread, IPV6LoWPAN, IEEE 802.15.4
<b>RF Frequency and Modulation</b>	2.4 GHz (16 Channels) DSSS provides higher noise and interference resistance
<b>Data Security</b>	AES 128-bit encryption with secure join and key exchange (J-PAKE)
Other Features	
<b>Operating Temp.</b>	- 40 °C to 60 °C, -40°C to 120°C available – special order
<b>Gateway Compatibility</b>	Compatible with all Leap Sensors wireless gateways
<b>Firmware</b>	Over-the-air upgradeable via web interface
<b>Certifications</b>	FCC (USA), IC (Canada)
<b>Gateway Communication</b>	Send and receive (data, acknowledgements, updates, and device configuration). Data stored in gateway until confirmed write to database.
<b>LED Power Switch</b>	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.
<b>Node Internal Memory</b>	110,000 time-stamped device readings stored on transceiver node if gateway does not acknowledge writing data to database.
Enclosure & Hardware Specifications	
<b>Dimensions</b>	113 mm x 80 mm x 60 mm
<b>Weight</b>	355g typical for complete transceiver node
<b>Material</b>	Polycarbonate (UL 94 rated and 120C rated)
<b>Mounting Options</b>	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.
<b>Ingress Protection</b>	IP68 enclosure. IP67 glands, cables, switch
<b>Node Antenna</b>	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.