Wireless Production Counter & Downtime Monitor
Wireless Industrial Production Optimization System

Applications

- **Counting of production** in clean room or industrial environments
- **Downtime monitoring** of time between produced products, ideal for optimizing production processes
- Successful systems measuring muffins, biomedical equipment, lumber, beverages, and more

Special Features

- Transmission range of 1,500 ft. in open air
- Edge computing for small, actionable data
- 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 statuses

Description & Product Highlights

Phase IV's Leap Sensors Production Counter & Downtime Monitor is a perfect tool for gaining insight into a production process. It is suited for both simply monitoring production figures and downtime between products, and for optimization of procedures and processes.

The Leap Sensors wireless sensor system greatly reduces the cost and complexity of laying cables between sensors and data acquisition units. Wireless communication is much better suited for small, actionable datapoints, and allows for the data to be viewed and edge processed from any internet connected device. Additionally, this allows for a distributed system to easily aggregate data into one location.

Interfacing with the Production Counter & Downtime Monitor is quick and simple. Programmable sensor excitation and user configurable sensor calibration fields allow for any photoelectric or laser sensors to be rapidly interfaced with.

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

Production Counter Transceiver Node Model

Actionable data for post-production analysis
The Production Counter & Downtime Monitor sensor system allows for the user to easily track production datapoints daily, weekly, or monthly. Post production analysis of the actionable datapoints provides insight into processes, downtime, and procedures, allowing for any manufacturer to monitor progress and optimize a process.

Ease of implementation
All Production Counter & Downtime Monitor transceiver nodes 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. Custom firmware loaded on the device can configure the data viewing software to accept any and all new device types.

Real-time data viewing and alerts
All Leap Sensors Production Counter & Downtime 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® Production Counter &Downtime Monitor Specifications	
Photoelectric Sensor Specifications*	
Sensing Method	Polarized retroreflective, photoelectric break-beam
Light Emission	Visible red (630 nm)
Sensor Range (photo eye to reflector)	0.1 m - 5.0 m (Contact factory for offset distance configurations)
Response Time	2 kHz output frequency, 1.0 ms typical
Reflector Head Dimensions	Contact factory for application specific dimensions & drawings
Sensor Head Dimensions	21 mm x 12.8 mm x 31.2 mm
Sensor Interface	3 Wire, Digital switching output (PNP)
Output units	Digital switch output indicates product count & timing.
Operating Temperature	- 25 °C to 60 °C (Higher temp option available)
Wall Power Requirements	10-30 VDC, connects to transceiver node, provided by Phase IV
Power Specifications	
Power Adaptor	12 V, 500 ma, 6 W max
Barrel Jack	Center Positive, 2.1 mm I.D. 5.5 mm OD, 9.5 mm length.
Power / Current Consumption	Operating Current: 6mA - 30mA (depending on sensors) Transmit Current: 9mA @ 0dBm and 80mA @ 20 dBm RX Current: 11 mA

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.
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 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. Wall transformer connection IP40.
Node Antenna	Internal antenna (typical). External antenna (optional).

[Outbound sensor data, inbound device configurations, firmware updates, and transmission acknowledgements]
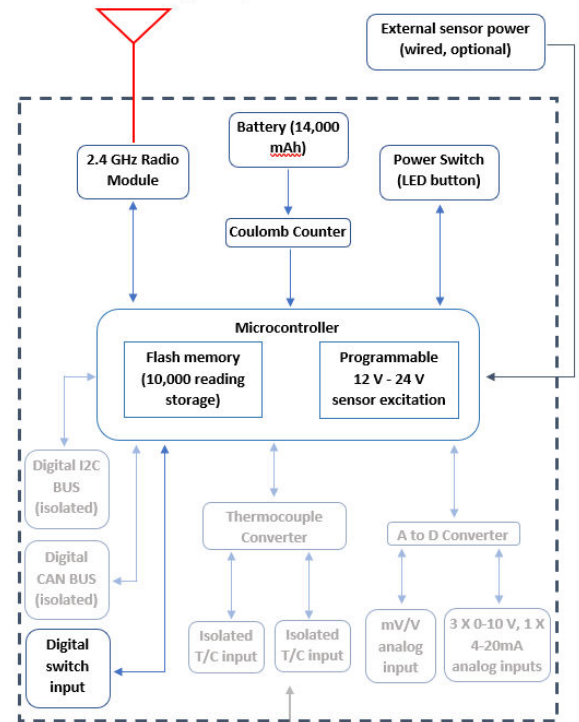
[Externally Powered Photoelectric Break-Beam Sensor Head]
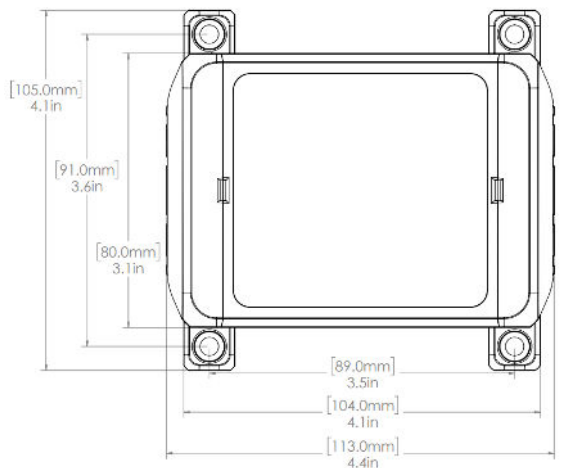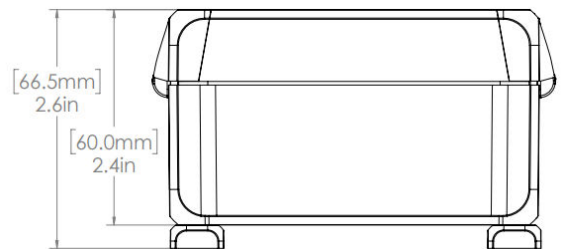
* Panel connections are customizable, consult factory for complete options.
** Transmission ranges vary with environmental conditions. Reported values are test averages.
*** Transmission power requirements are governed regionally.

Production Counter & Downtime Monitor Reported Parameters	
Parameter Name	Description and Function:
Event Count	Positively incrementing product count since reset

Average since reset	Average throughput (per minute) since device reset
Last Event Counter Interval	Downtime between the last two products
Current Event Rate	Running average of products / minute since reset
Optional:	Options below replace the "Product Count" field
Current Target	A user-settable goal for a production run
Countdown Quantity Remaining	Remaining products to be produced to meet the current target goal