Gateway: Ethernet / USB and Cellular Models

Phase IV Data Sheet Leap Sensors® Ethernet and Cellular Gateway

Applications

- Wireless data acquisition from Leap Sensors transceiver nodes
- Communication of data to PCs, cloud servers, local servers, PLC's, or existing plant monitoring software via protocol conversion plug-ins

Special Features

- Transmission range of 1,500 feet in open air – range extenders available
- Compatible with up to 60 transceiver nodes simultaneously
- Cellular, USB, and ethernet interfaces supporting multiple communication protocols to interface with host networks, PLC's, computers, and cloud databases
- Simple integration into existing cloud or local database, building automation, or plant monitoring software with API command library or Modbus
- LED indicators for power and network connection status

Ethernet / USB & Cellular Gateway Model

Description & Product Highlights

Phase IV's Leap Sensors wireless system is ideal for long term remote monitoring, predictive maintenance monitoring of equipment, and in process verification monitoring.

The gateway functions as an intersection between streaming sensor data and the software interface. The gateway has the optional ability to be able to output data in MODBUS or DNP3 protocols, connect to a LAN or a local server, and pass data to a cloud storage location. API documentation also allows for easy integration into existing database systems.

Each gateway is capable of receiving data from 60 Leap Sensors node devices simultaneously and can be expanded by adding gateways.

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

Modularity and customizability

Gateways are configurable to host web-based software for small sensor installations, or to send data to a cloud or local server via 4G LTE cellular connection, or through a wired ethernet connection.

Ease of implementation

All gateways come pre-configured and paired with selected Leap Sensors transceiver nodes for quick and simple integration into an existing Leap Sensors system, or to function as a new stand-alone system.
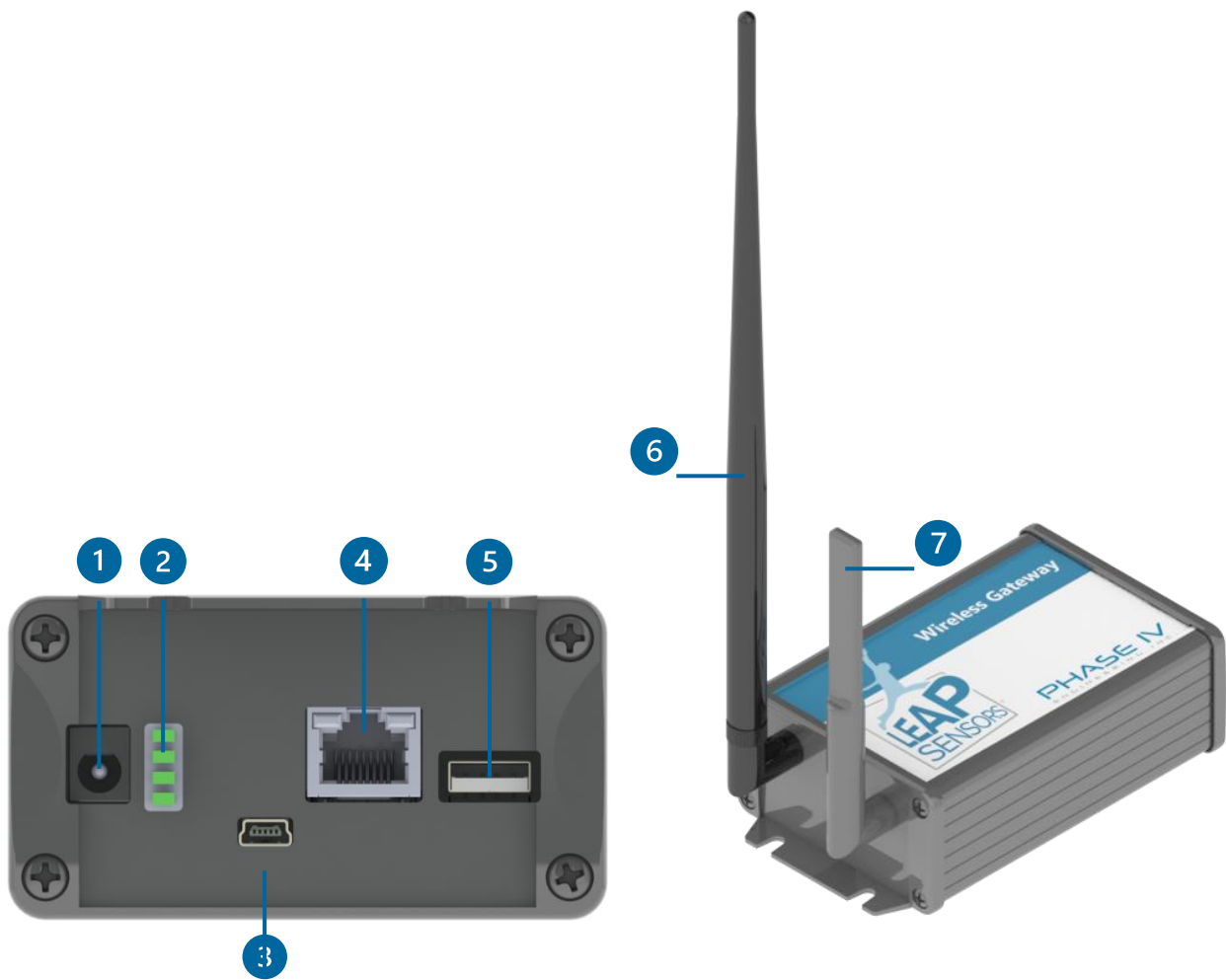
Two-way communication

The gateway both receives and passes data from transceiver nodes. This includes transmission acknowledgements to alleviate data loss, firmware updates for transceiver nodes, and configuration settings to the nodes, allowing for changes and updates to all be made over-the-air.

PHASE IV
E N G I N E E R I N G   I N C .

Leap Sensors® Gateway Specifications		
General		
Models	Ethernet / USB	Cellular
Connectivity Options	USB 2.0, Ethernet, IEEE 802.15.4 wireless, 4G LTE wireless	
IP Assignment Options	Static, DHCP	
Data Security	AES 128-bit encryption with secure join and key exchange (J-PAKE)	
Firmware	Over-the-air upgradeable via web interface	
Software Compatibility	Gateway based Leap Sensors web interface, cloud-based Leap Sensors web interface, and network-based Leap Sensors web interface	
Certifications	FCC (USA), IC (Canada)	
Operating Specifications		
Wireless Transmission Range	Industrial Environments*	Open-Air*
	500 ft.	1,500 ft.
Input Power Connector	2.5 mm ID barrel connector (5 VDC - 3A AC/DC converter included)	
Input Power	5 VDC required, 3A Max	
Operating Temperature	0 °C to 60 °C, optional - 40 °C to 85 °C	
RF Transmission Power	800 mA peak current draw	
Cellular Transmission Power	900 mA peak current draw	
Node Compatibility and Capacity		
Gateway Network Capacity	Up to 60 sensor nodes per gateway. Contact factory for application - based bandwidth	
Node Compatibility	All Leap Sensors transceiver node devices	
Communication		
RF Communication Protocol	Internet Protocol based thread, IPV6LoWPAN, IEEE 802.15.4	
RF Transceiver Carrier	2.4 GHz (16 channels), DSSS provides higher noise and interference resistance	
Sensor Communication	Receive and acknowledge	
Cellular Protocol	4G LTE (Cat-M1 protocol)	
Wired Connectivity Options	USB 2.0, RJ45 Gigabit Ethernet	
Output Protocols (via ethernet)	MODBUS TCP, DNP3, BACNET**	
LEDs	Power status, network connections status	
Enclosure & Hardware Specifications		
Single-Board Computer	(512 MB DDR3 RAM)	
Processor	T.I.® AM3358 Sitera at 1 GHz (32-bit Arm Cortex-A8)***	
On-Board O.S.	Debian 9 Linux	
Dimensions	152.1 mm x 140.1 mm x 86.9 mm without antenna	
Weight (with Antennas)	USB / ETH - 371 grams	Cellular - 412 grams
Material	Powder Coated Aluminum	
Ingress Protection	IP30, IP67 enclosure optional	
RF & 4G LTE Antenna Gain	Contact Factory	
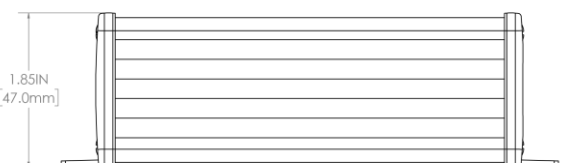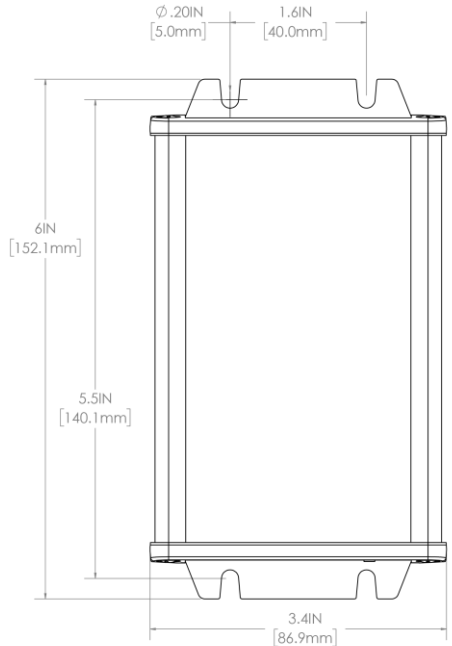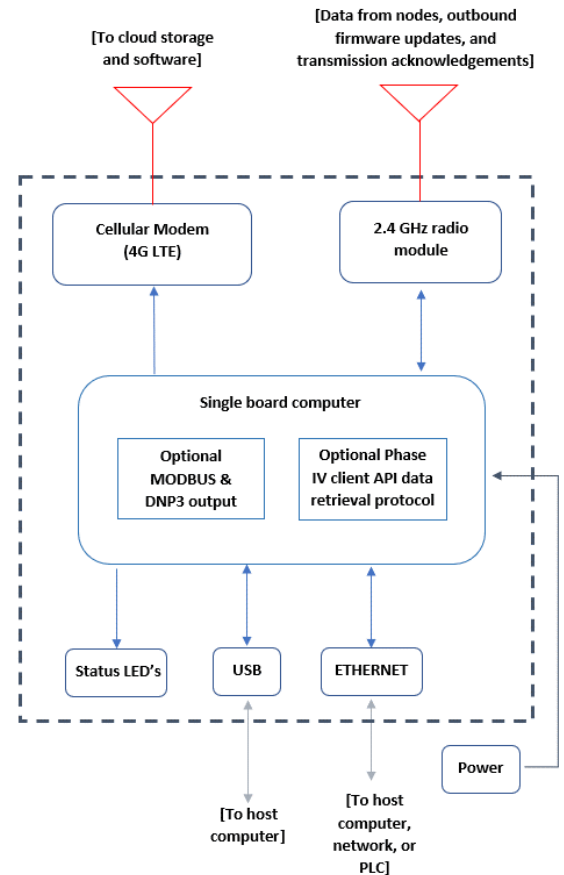
Transmission ranges vary with environmental condition. Reported values are test averages.
**BACNET interface in testing and development.*
***Gateway processor can be affected by stock, contact factory for confirmation of performance.*

[To cloud storage and software]

[Data from nodes, outbound firmware updates, and transmission acknowledgements]

Cellular Modem (4G LTE)

2.4 GHz radio module

Single board computer

Optional MODBUS & DNP3 output

Optional Phase IV client API data retrieval protocol

Status LED's

USB

ETHERNET

Power

[To host computer]

[To host computer, network, or PLC]

Ø .20IN [5.0mm]   1.6IN [40.0mm]

6IN [152.1mm]

5.5IN [140.1mm]

3.4IN [86.9mm]

1.85IN [47.0mm]

Gateway Connector Interfaces and Antenna Legend.	
1	Power Connector, 2.5 mm Center Positive, 5V 3A max current draw
2	LED Indicators for network connectivity status and power status
3	Mini-USB connection for direct to PC interfacing and Gateway Network configuring
4	RJ-45 Ethernet Port (For LAN, MODBUS TCP/IP, DNP3, BACNET connectivity)
5	USB 2.0 (not used)
6	2.4 GHz antenna (sensor & gateway communication)
7	Cellular Antenna (for streaming data to a cloud server location via 4G-LTE)