User Manual

Smart7™ Lid

Part #77-6811

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1. INTRODUCTION
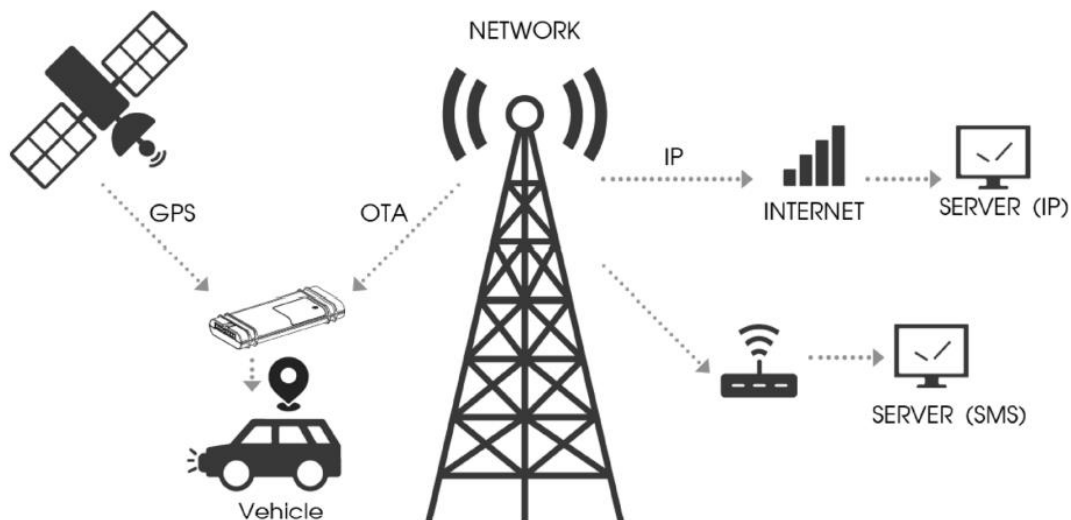
The Smart7™ Lid from Phillips Connect Technologies is a vehicle tracking device that combines GPS location with LTE and Bluetooth. The Smart7 Lid monitors vehicle functions and collects data for tracking and analysis.

The Smart7 Lid appears to the user of a server application as a single endpoint device. It can be queried, updated, and configured either through a serial connection or an over-the air (OTA) LTE IP connection. The Smart7 Lid presents itself over the connections as an enhanced cellular modem with attached functional elements. These elements include:

- GPS location engine
- General Purpose Bidirectional I/O (GPIO) pins
- Relay drive pin output
- Serial UART port
- CAN Communication (optional)
- BLE 5.0

The following is a typical application scenario:

2. HARDWARE FEATURES

The Smart7 Lid ships from the factory pre-configured for a specific set of functions and is completely configurable in the field, while providing support for external control through a Phillips Connect proprietary set of AT commands. Supported features include the following:

CELLULAR GATEWAY

An integrated cellular gateway provides continuous 4G-LTE connectivity to the trailer. A multi-carrier SIM assures comprehensive coverage.

- 4G-LTE Cat-1(bands 2, 14, 12)
- 3G-HSPA fallback (bands II, V)
- Roaming w/VPN onto TMO, ATT, VZ
- Canada, LatAm plans available ƒ Secure reports delivery with ACKnowledge
- Report queue size: 2000
- OTA update of all firmware components
- OTA update of compatible sensors

REPORTING

Reporting while on a trip includes:

- 1- to 5-minute breadcrumbs (configurable)
- Heading changes
- Sensor data and alerts Reporting while stopped includes:
- Daily heartbeats (configurable)
- Vibration / motion-detection
- TPMS and Tilt alerts
- Tractor pairing
- Door open/close
- Cargo status change
- PreCheck alerts
- Current ABS Fault Code

GPS / LOCATION TRACKING

High performance GPS tracking means you always know where your trailers are located.

- 25mm x 25mm sky-facing ceramic patch antenna
- GPS L1 band 1575MHz
- GPS-based odometer accuracy: > 99.5%

INTEGRATED ABS MONITORING (THROUGH PLC)

Compatible with most ABS manufacturers.

- Retrieved ABS data includes:
- Fault lamp status
- DTC trouble-codes (active & stored) ƒ Odometer
- VIN (if programmed into ABS)

TRAILER PRECHECK

Know what to expect before the driver arrives with Schedule-based or Remote-On-Demand PreCheck of trailer sensors… or conduct an onsite live PreCheck prior to tractor hookup.

- 1A @ 12V supply for external sensors
- External sensors include TPMS, cargo, ABS, trailer-weight, and more

BLUETOOTH WIRELESS SENSOR SUPPORT
- Bluetooth 5 LE class II transmitter
- Receive sensitivity -96dBm
- Compatible sensors include:
  - SmartPair™, Door✓™
  - SmartLock™ Gladhand
  - Micro SP Transceiver

HARNESS INTERFACES
- Optional data harness for additional wired sensors using RS485, UART, or GPI

BATTERY PACK AND POWER SUPPLY
- 10.6A-Hr recharge-able Li-ion battery pack
- ~6 months untethered operation
- 4hrs to 90% charge from either Aux or Marker circuit power
- 360mA integrated solar panel
- Maximum 2A current draw from tractor
- Tracking mode: 50mA battery current
- Idle mode: 2mA battery current
- Sleep mode: 100µA battery current

PHYSICAL DIMENSIONS AND MOUNTING
- Length 13.6" x Height 7" x Depth 4.1"
- Mount with 2 x 5/16" bolts

ENVIRONMENTAL
- IP67 protection for electronics and battery
- Operating temp. range: -40C to 70C
- Battery charging temp. range: -20C to 45C

CERTIFICATIONS
- FCC / IC
- BQB Bluetooth
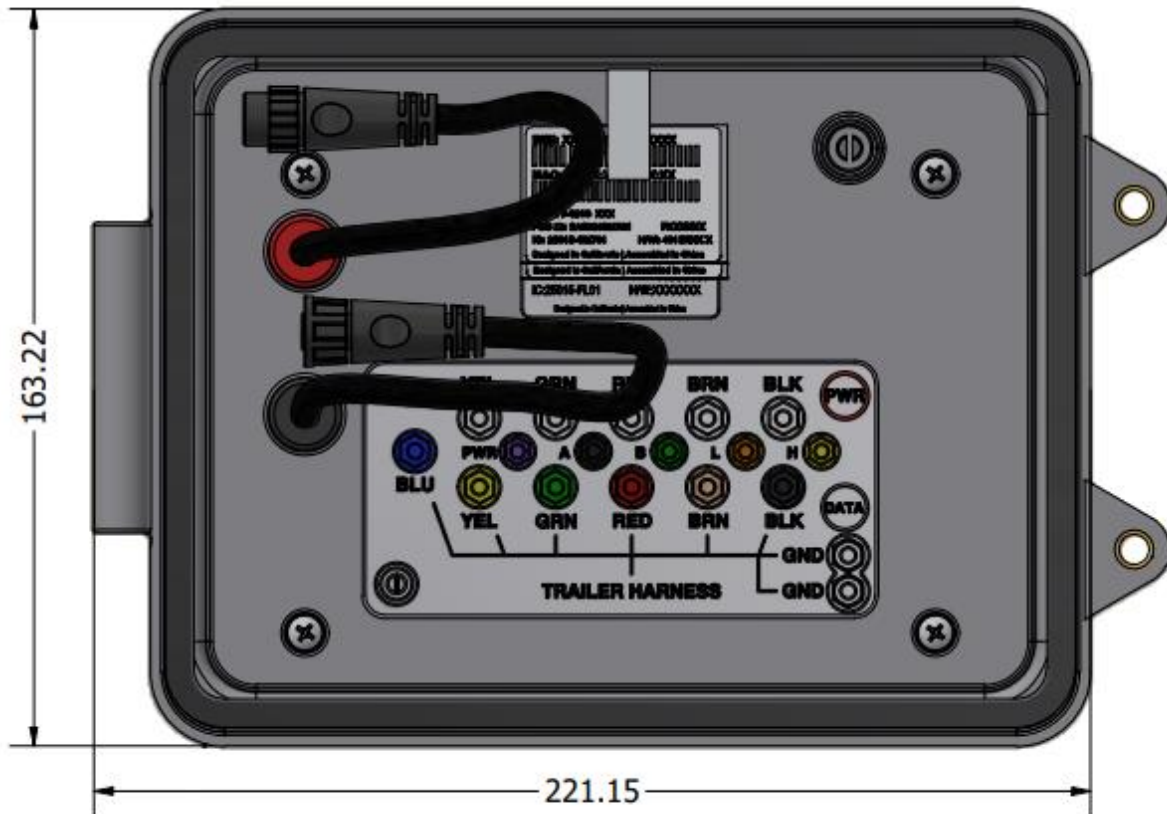- PTCRB cellular
- RoHS compliant

3. TECHNICAL DATA

Smart7 Lid RF Specifications	
4G LTE Cat 1	
Band	Band 2/4/5/12/25/26
Rx Spec	Follow TS 36.521. Ch. 7
Tx Spec	Follow TS 36.521. Ch. 6
BLE 5.0	
ISM Band	2.4 GHz
Tx/Rx Spec	Follow Chipset
GPS	
Frequency Support	L1-band (1.57542GHz)

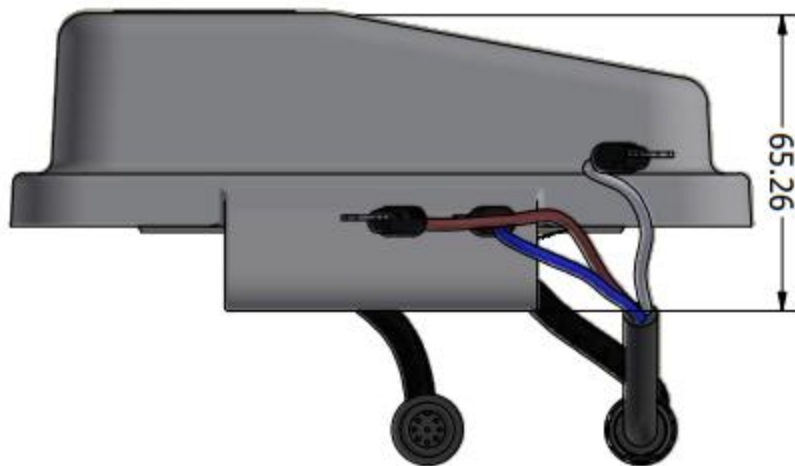| General Hardware Specifications	
Air Interface	Support for LTE Cat.M1
Frequency	4G band support Band 2/4/5/12/13/25/26
Antenna	Internal Antenna/ Chip Antenna
GPS Antenna	Dedicated high performance ceramic antenna
Voltage Monitor	Supported
Watchdog	Supported
Motion Detect	Supported

4. MECHANICAL DETAILS

4.1 FRONT/REAR DIMENSIONS

4.2 SIDE DIMENSIONS

FEDERAL COMMUNICATION COMMISSION INTERFERENCE STATEMENT

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE: FCC Radiation Exposure Statement
This equipment complies with the FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

The transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

INDUSTRY CANADA STATEMENT

This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's license-exempt RSS(s). operation is subject to the following two conditions:

(1) This device may not cause interference
(2) This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetterur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicable aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

(1) L'appareil ne doit pas produire de brouillage;
(2) L'appareil doit accepter tout brouillage radioélectrique sub, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Radiation Exposure Statement:
This equipment complies with Canada radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

5. COMPANY INFORMATION

Technology that moves us forward

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