

LNG (MAIN BOARD)

USER MANUAL

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CivicSmart, Inc. owns several related entities including Duncan Parking Technologies, Inc. For simplicity, these related entities are referred to as "CivicSmart" as in this document.

This document describes interfaces and usage of the LNG Main Board. The LNG Main Board is a modular processor and communications board intended to be used in LNG Parking Meters and Roadside repeater/gateways. The board is used only within authorized end products and not to be used outside of these end products.

Unless otherwise agreed upon, CivicSmart expressly warrants products against defects in materials and workmanship for twelve (12) months from the date of installation or fourteen (14) months from date of delivery (whichever is sooner). No maintenance on the products is allowed for end users and all parts under this limited warranty for repair will be managed through the relevant CivicSmart Service Center location

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.

Changes or modifications not expressly approved by Duncan Parking Technologies, Inc. could void the user's authority to operate the equipment and are not permitted.

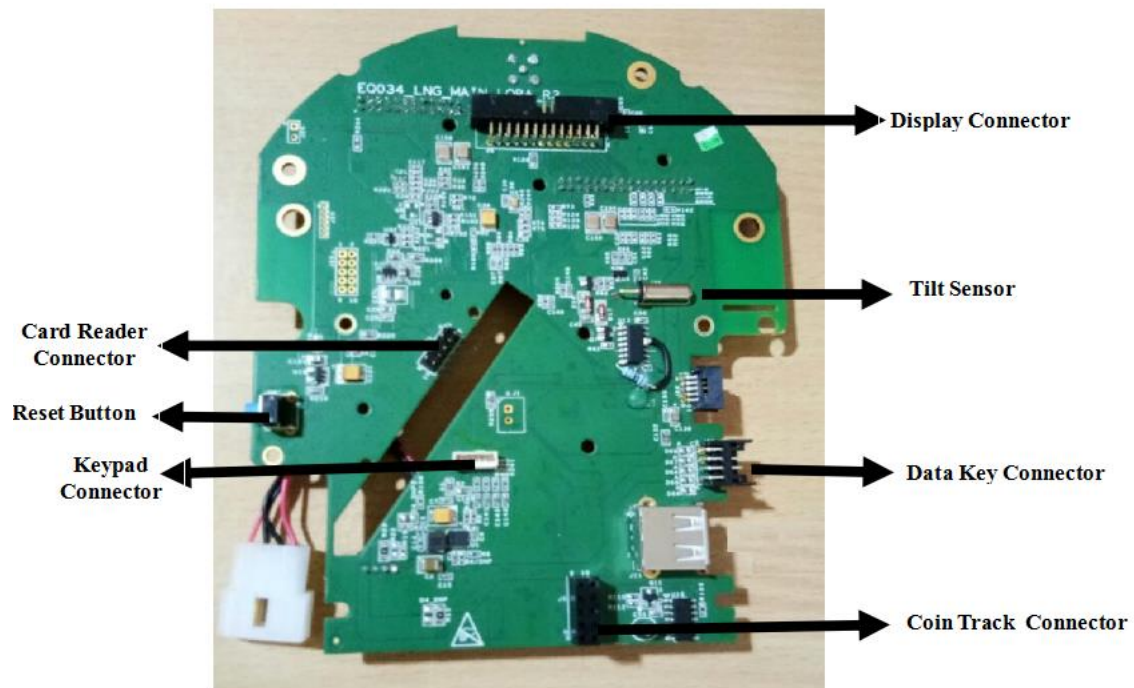
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Overview

The LNG Main Board has the following onboard main components:

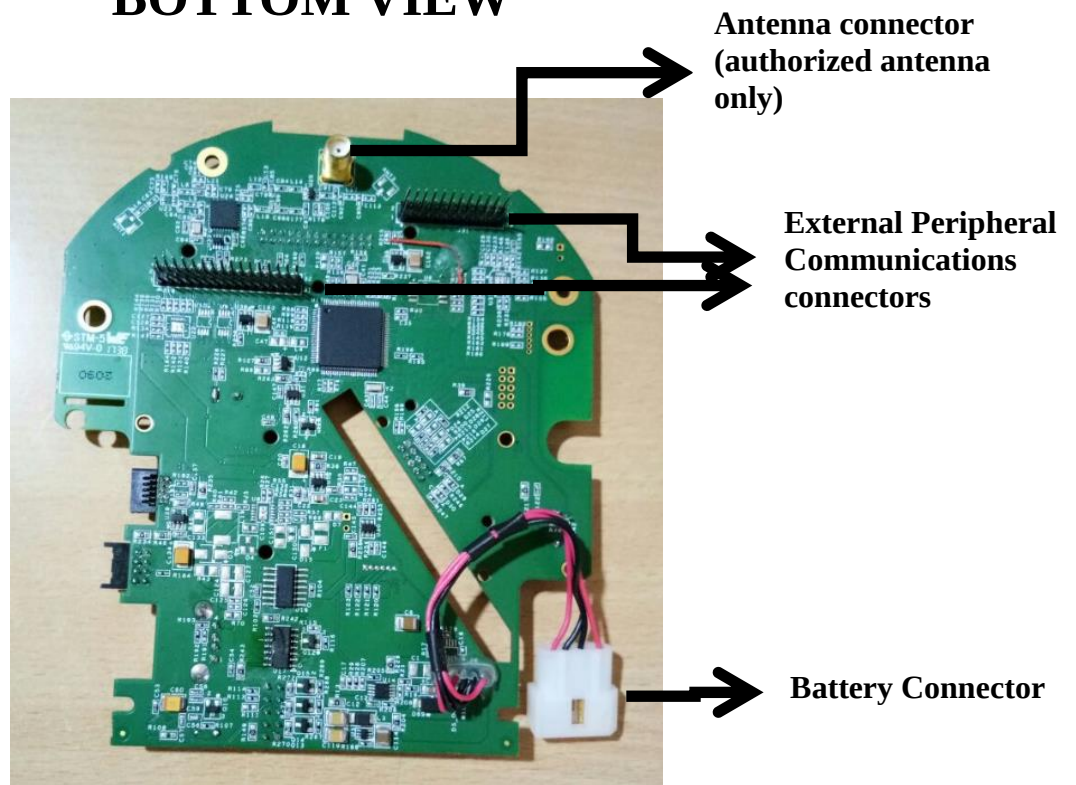
- 1) Texas Instruments MSP series microcontroller
- 2) Onboard power regulation with battery inputs
- 3) Onboard charger (to be used only in Roadside Gateway/repeater products)
- 4) Onboard Flash memory
- 5) Onboard LoRa transceiver with antenna connector
- 6) Onboard reset button
- 7) Onboard tilt sensor (optional)
- 8) Buffered IOs for peripherals
 - a. Card reader
 - b. Keypad
 - c. Display
 - d. Programming interface
 - e. Unique external ID key
 - f. Data key and field programming interface
 - g. Coin track
 - h. External peripheral I/O

TOP VIEW



- | | |
|---------------------------------|--|
| 1. Display Connector | - To connect a display unit |
| 2. Card Reader | - To access the card reader assembly |
| 3. Reset Button | - To reset the board |
| 4. Keypad Connector | - To access a compatible keypad |
| 5. Tilt Sensor | - For vandalism detection and maintenance indication |
| 6. Data Key Connector | - Secondary data key interface |
| 7. Data/ID Key Connector | - Unique external identification and programming |
| 8. Coin Track Connector | - To access a coin track assembly |

BOTTOM VIEW



1. **SMD Connector** - To connect authorized antenna within authorized products. Only listed antennas in Appendix A are permitted.
2. **CB Connector** - To connect external peripheral communications boards
3. **Battery Connector** - To connect the battery

Power Requirements

Approved meter products to be powered by a rechargeable Li-ion battery with the following specifications:

- nominal voltage 3.6V
- capacity 3000 mAh or higher
- peak continuous current rating 1A

Charging components are not populated in the meter version of the boards.

Approved roadside pole mounted gateway products are to be powered by a rechargeable Li-ion

battery with the following specifications:

- nominal voltage 3.6V
- capacity 3000 mAh or higher
- peak continuous current rating 1A

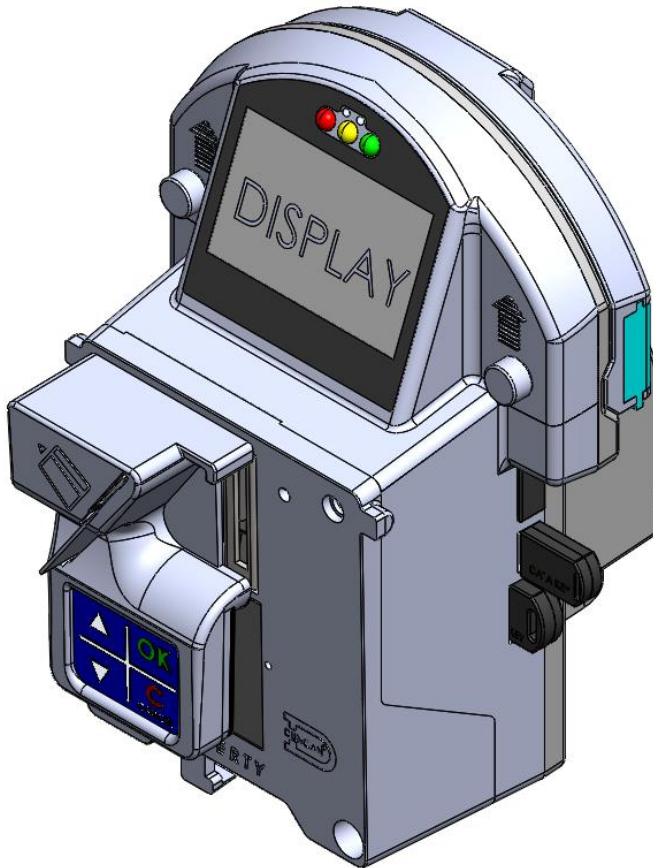
The Li-ion battery in a roadside pole mounted gateway products can be charged by an external power source with the following specifications:

- nominal voltage 12V
- maximum input voltage 18V
- input current 500mA

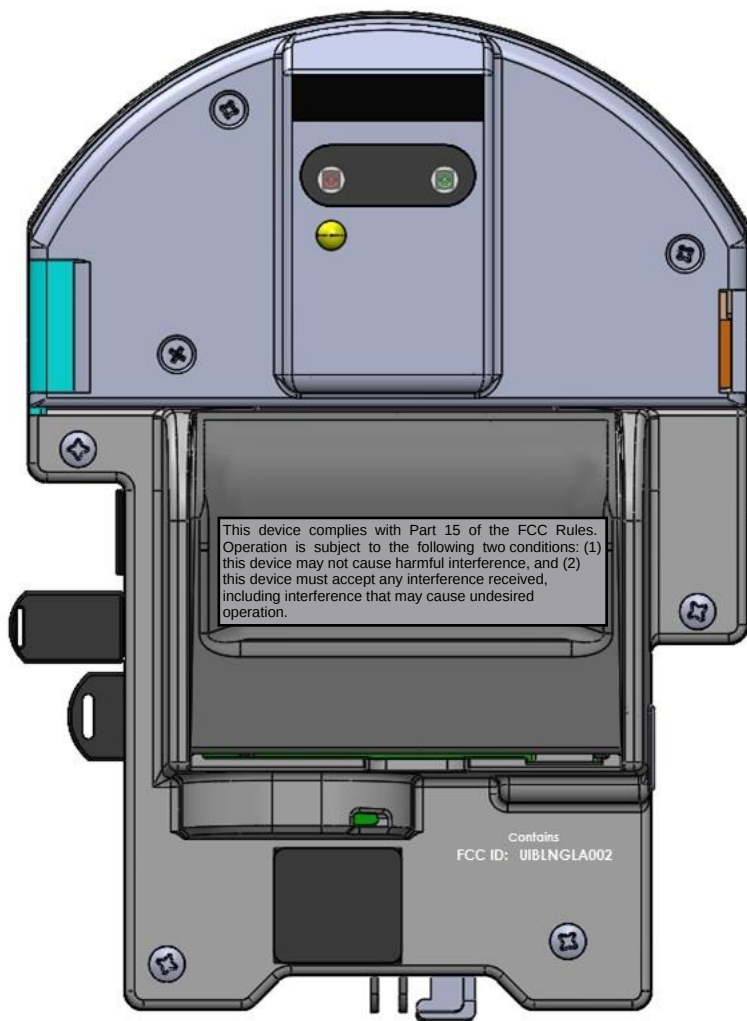
Approved OEM End Products

The LNG Main Board can only be used in the specified end products listed below:

1. LNG parking meter



Note that the board is securely mounted inside with the authorized antenna and not available for external antennas. Limited external buffered interface connectors are available.



Note: Place the following FCC 2-part warning on device:

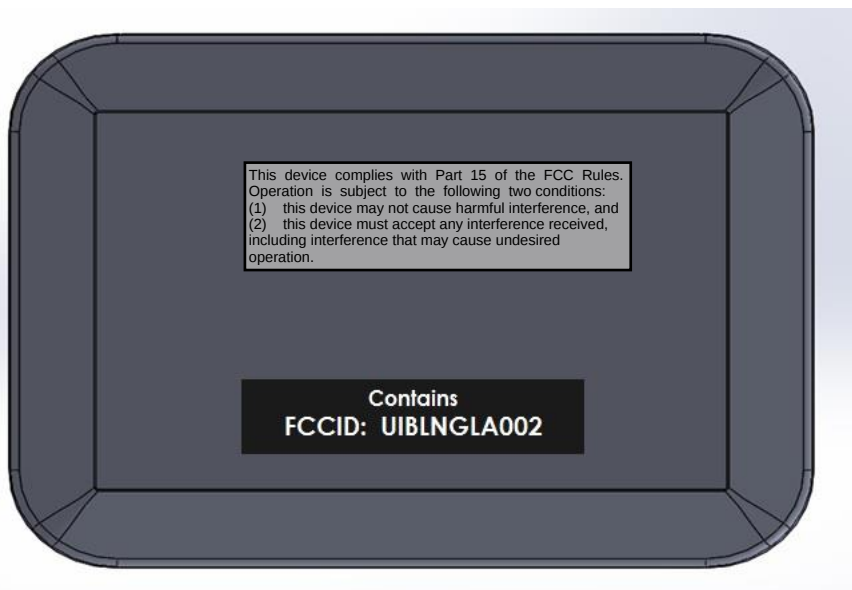
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Place the following note in the host product manual:

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. This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

2. Roadside gateway



Note that the board is securely mounted inside to be used with the authorized antenna only.
No external interface connectors are available.

Note: Place the following FCC 2-part warning:

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.

Place the following note in the host product manual:

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. This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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