

Original User Manual

E-scooter IoT module Bolt IOTD-2

FCC ID: 2BHTW-BOLT-IOTD-2

Product brief

Bolt e-scooter IoT module is the main communications gateway on a shared electric scooter. Data communication is established over LTE. GNSS receiver is used for getting the vehicle's location and BLE beacon is used for further locating it. The IoT module also communicates with other components in the vehicle. Additionally it can be used as a display unit for an electric light vehicle. The device incorporates a backup battery in case of loss of the main power source. The electronic assembly of the product is encapsulated into polyurethane

LTE is used all the time, the nominal use case is that the scooters are out on the street and always connected to the backend. Following LTE bands are used: 2, 4, 5, 12, 13, 66.

BLE - beacon enabled when vehicle is not actively rented, sometimes turned on/off on command via the LTE backend connection. 2.4GHz ISM band

Wifi - never used currently, might be used in similar situations to BLE. 2.4GHz ISM band

GNSS - always active when the device is active. Receive only on L1 and L5 bands

Legal statements

FCC statement

1. This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
 - a. This device may not cause harmful interference, and
 - b. this device must accept any interference received, including interference that may cause undesired operation.
2. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: 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 or more 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.

Device photos and labels

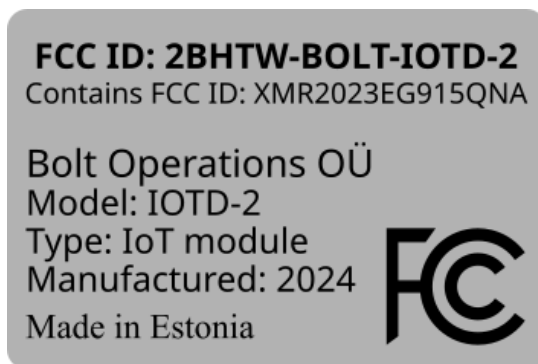


Image 1. FCC ID label

Label dimensions:

- W: 30 mm
- H: 20 mm

The label is located on the bottom side of the device on the surface of polyurethane potting:



Photo 1. Device bottom view with FCC ID label visible

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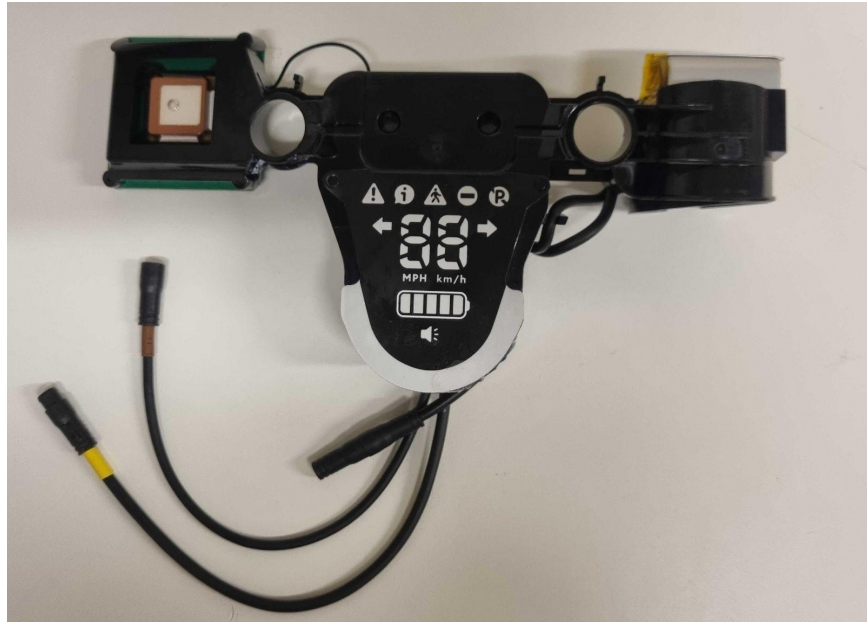
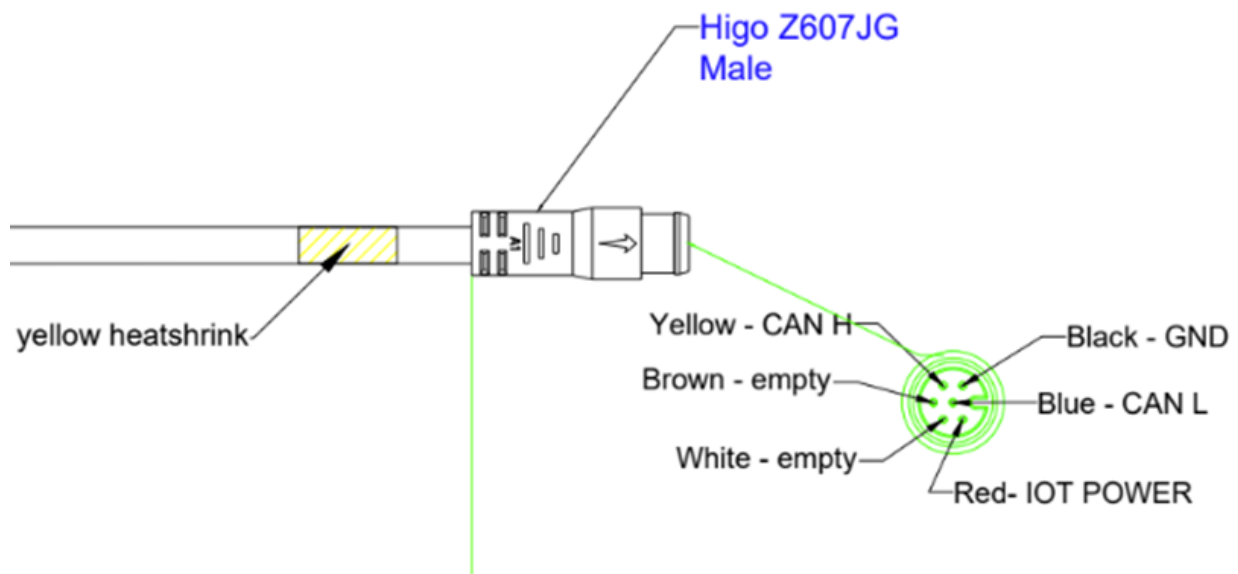
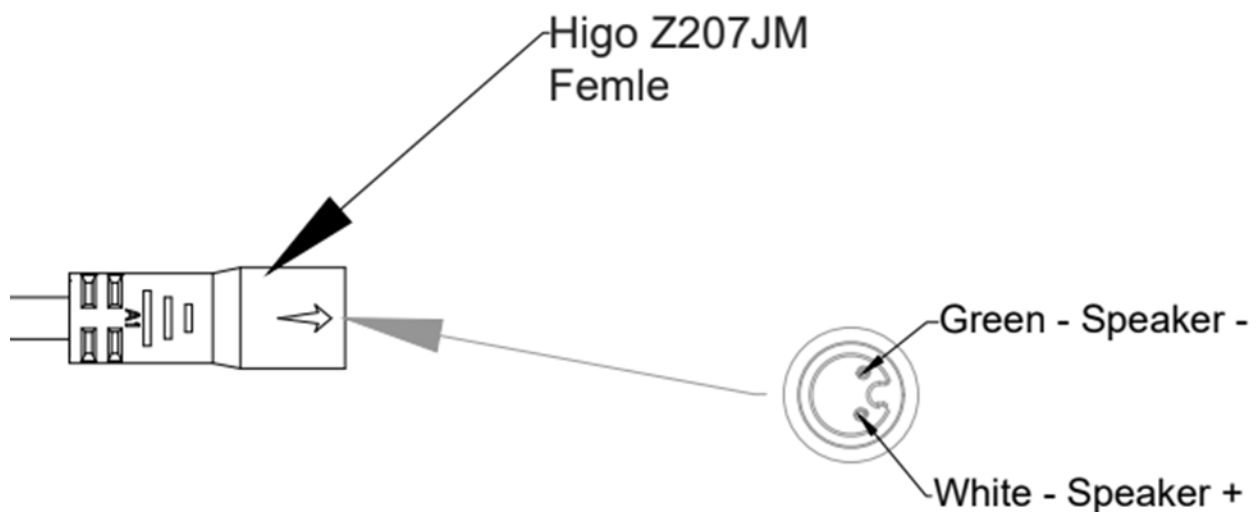


Photo 2. Device top view

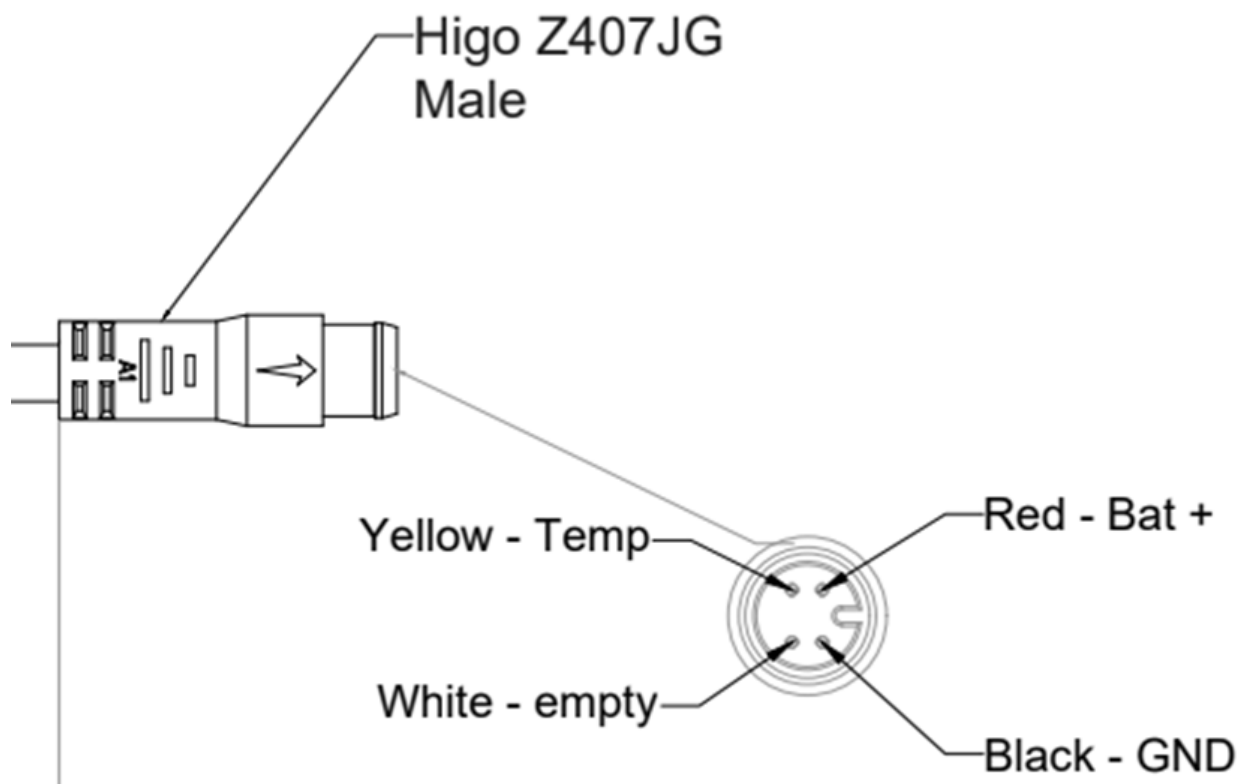
Hardware interface ports



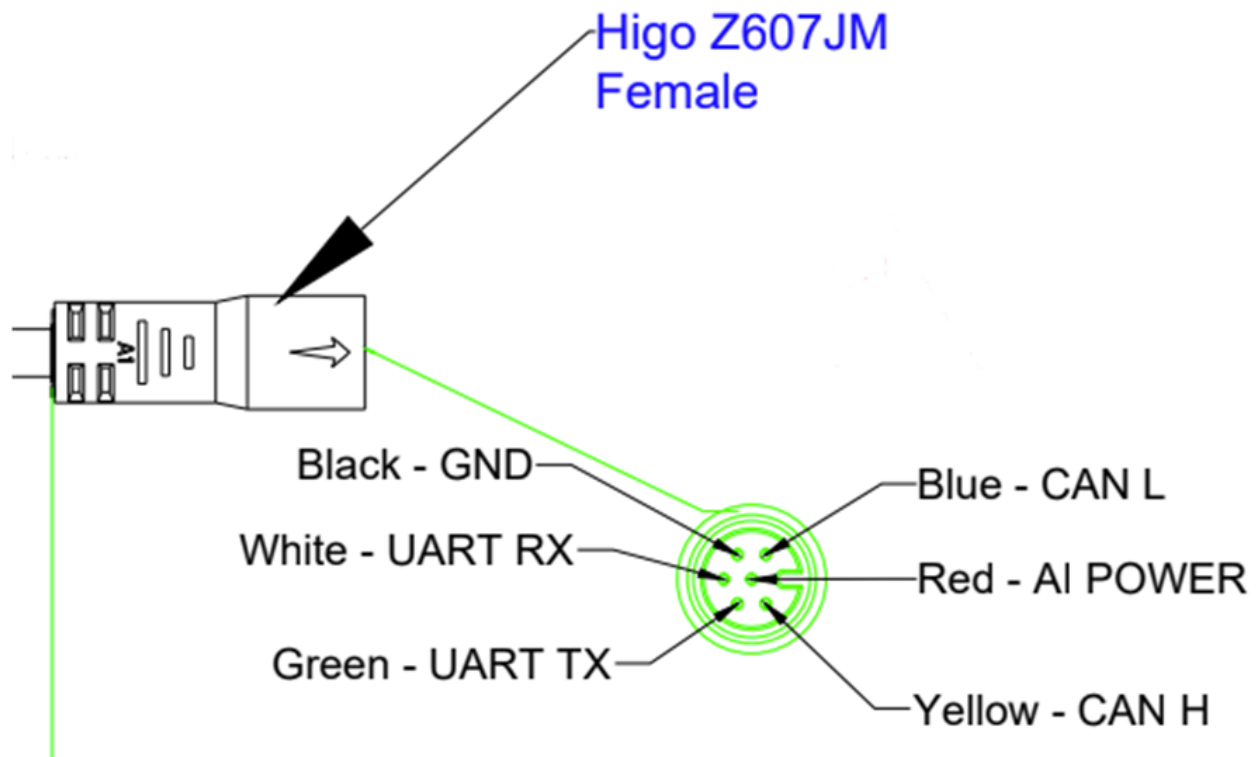
Drawing 1. Main power and CAN



Backup battery



Aux device connector



Electrical and environmental characteristics

Parameter	Min	Nominal	Max
Input power voltage	+20V	+24V	+28V
Max input current			2A
Backup battery voltage	+2.8V	+3.7V	+4.2V
UART line voltage level		+3.3V	+3.8V
CAN line voltage level		+3.3V	+12V
Operating temperature	-10°C		+85°C
Storage temperature	-20°C		+85°C
Backup battery operation	0°C		+55°C