Master V10 IoT module

user manual

Introduction

The COMODULE IoT device is designed to be connected wirelessly into existing network infrastructure to gather and transmit data and to be controlled remotely. It thus creates opportunities for the physical world to be digitalized, which results in improved efficiency, accuracy and economic benefits.
This manual is intended for electric bike manufacturers for COMODULE IoT module integration.

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 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 in-stalled 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.

1 Electrical Specification

Power management	● Input from Fazua R60 bike system 12VDC 500mA ● Single-cell battery management (≤ 4.2V; charge ≤0.8A; discharge protection circuit)
Bluetooth / ANT+	● Bluetooth Low Energy 5.0 compatible
Cellular connectivity (Multiple communication standards supported for global **connectivity coverage)**	● CAT-M1 / NB-IoT / 2G as default for global connectivity ● Embedded SSL for secure & encrypted communication ● MQTT communication protocol for lightweight and robust applications
Global Navigation Satellite System	● GPS, Beidou, GLONASS and Galileo are supported ● Concurrently can use 3
Onboard flash memory	● 8MB
Accelerometer	● 3-axis digital accelerometer + gyroscope
Input/Output	● CANbus communication (collect, store and transmit data from an ebike and issue commands) ● UART communication (for controlling smart lock) ● Wakeup line (open collector output to wake up several drivetrains)

	● Digital configurable output for peripheral devices: 5/8/12VDC (4.8W) ● HV output (input voltage output) to provide main battery power to 3rd party devices
Connector type	Higo Mini F male Z809FG
Environmental restrictions	● Storage temperature -20 to 45°C (90 days) ● Operating temperatures: ○ charge 0 to +45°C ○ discharge -20 to 60°C
Backup Battery	● Rated capacity 2500 mAh ● Nominal voltage 3.6 V ● Charge 0 to +45°C
Certifications (Further certifications available upon request)	● CE ● ECE R10

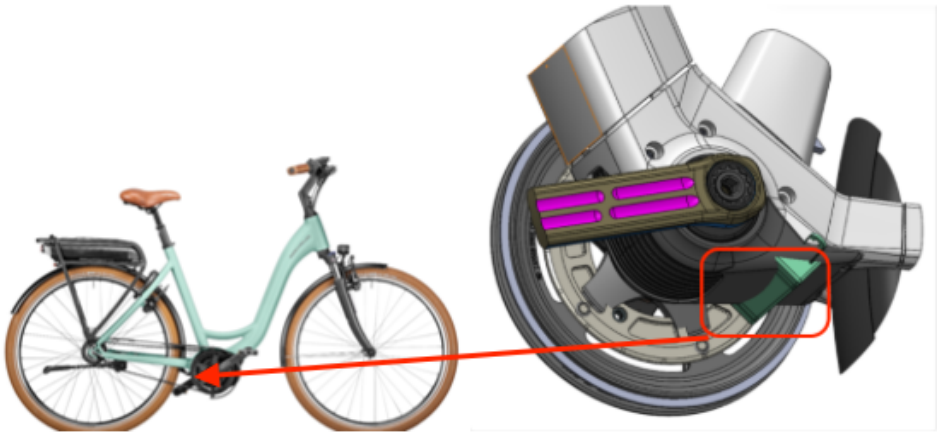
2 Mechanical Specification

Casing material	PA6+15%GF
Surface finish	VDI24
Colour	Black
Size	87X31x26mm (1012 casing w/o fixation points)
IP Class	IP 66 (when mated)

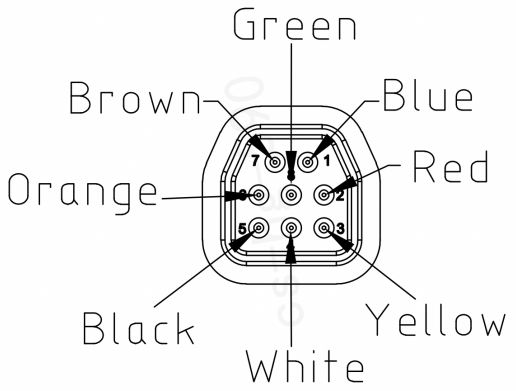
3 IoT module installation on the bike

Place the module behind the motor into the motor cover in a way that the potted surface will stay towards the motor and cable outlet on the chainwheel side. Connect Higo Mini F male Z809FG connector to dedicated cable from bike drivetrain (defined by bike manufacturer). The module will be assembled by the bike manufacturer and this is not a retrofittable equipment by the end-user.

! To satisfy RF exposure requirements, this device and its antenna must be installed and operate with a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.



4 Wiring specification

Connector	Higo Mini F male Z809FG
Cable length	100 mm +-5mm
Pinout  	

Pin no.	Wire colour	Function
1	Blue	UART TX
2	Red	VIN
3	Yellow	CANH
4	White	UART RX
5	Black	GND
6	Orange	12VDC for lock
7	Brown	12VDC for Buzzer
8	Green	CANL

5 Communication

The Product communicates with the following peripherals :

Peripheral
Fazua Ride 60 Drivetrain
Ilockit external lock
Buzzer control