



///FSA
SYSTEM  **M**

DEALER MANUAL

///FSA

INDEX

WARNING AND SECURITY

1. OVERVIEW

5

2. BATTERY AND CONTROLLER

6

3. MOTOR

9

4. POWER ON / OFF

12

5. RANGE EXTENDER

15

6. CHARGING PORT

18


7. BATTERY INSERTION

19

8. CONNECTORS




20














IMPORTANT NOTICE

- This manual is intended only for use by experienced mechanics.
- Read the user manual carefully.
- The warranty is voided with any structural change to the product.
- User manual on our website (<http://www.fullspeedahead.com>).
- Follow the laws and regulations of each country.
- The Bluetooth® trademark and logos are registered trademarks of Bluetooth SIG, Inc. Any use of this trademarks by FSA-VISION is subject to a License.
-  This device uses ANT+ Protocol.




WARNINGS

-  Do not deform, modify or disassemble the battery or weld directly on the battery. Failure to comply may result in leakage, overheating, explosion, or battery fire.
-  Do not leave the battery near heat source. Do not heat the battery. Failure to comply may result in leakage, overheating, explosion, or battery fire.
-  Do not expose the battery to strong impacts. Failure to comply may result in leakage, overheating, explosion, or battery fire.
- Do not immerse the battery in the water, and avoid connectors getting wet. Failure to comply may result in leakage, overheating, explosion, or battery fire.
- To charge the battery, use the specified FSA battery charger and observe the indicated rules.
- Do not leave the battery permanently connected to the battery charger.

 Model: InTube Nominal Voltage: 36V Capacity: 252Wh / 7Ah Max Charge: 42V 2A Max Discharge: 15A Made in Italy	<ul style="list-style-type: none">- Do not short-circuit - Do not expose to water- Do not expose to direct sunlight (max 60°C)- Never leave battery unattended during charging- Do not disassemble, puncture, crush, heat or burn- Keep away from flammable material- Use only the original charger- May explode if damaged- Keep away from children- UN 38.3 compliant	          10INR19/66-2 CCXXxxYYyyZzW Li-ion  
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DANGERS

- When the bike is moving, avoid being distracted by the power/level battery button.
- Before using bike on busy road, familiarize yourself with starting the e-bike. The bike could start too abruptly to keep control.
- Do not disassemble the product.
- If liquid is leaking from the battery, and should come into contact with the eyes. Immediately rinse the affected area with water without rubbing the eyes and contact a doctor. If these instructions are not observed, ocular lesions may occur.
- Do not insert or remove the plug when it's wet. In the event of non-compliance, electric shocks may occur.
-  Do not leave the battery in places exposed to direct sunlight, inside a vehicle on a hot day, or in other warm places. This could cause battery failure.

Lithium Ion Battery:



Li-ion



For disposal, completely discharge the battery and go to a suitable collection center (RAEE-European directive 2012/19/EU and 2006/66/EC). This symbol is only valid within the European Union). Battery packs, accessories and packaging should be sorted for environmental-friendly recycling. Don't dispose the battery pack into household waste.

1. OVERVIEW



Image - Rear View



Image - Front View

2. BATTERY AND CONTROLLER

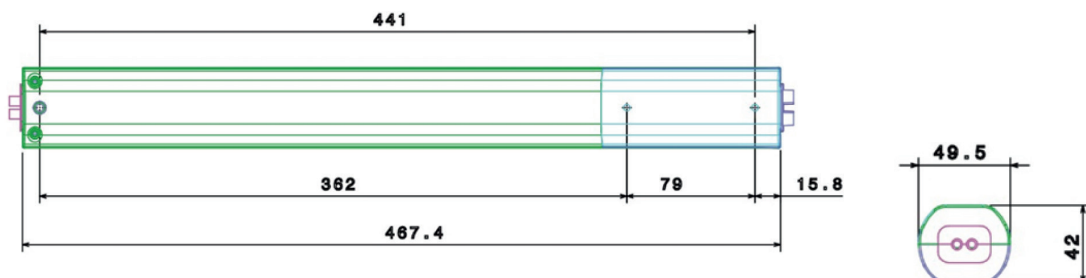
Once the controller has been inserted into its housing on the battery, the assembly looks like this:

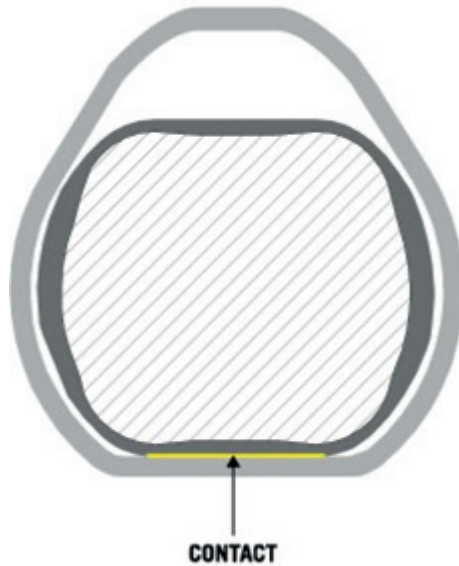


Image - Battery and Controller

Fixing screws:

The three battery assembly screws and the relative holes on the frame must comply with the following measurements. The assembly screws have the task of fixing the battery position inside the down tube and anchoring it firmly to the inner wall of the frame.





Dimensions: Length 469mm. Section 42.0 x 49.5mm.

This section of the down tube and the battery shows how the battery must rest firmly (yellow) on the inner wall of the tube, while on the other sides, a minimum distance must be respected which can vary according to the construction tolerances of the frame, we recommend at least 1mm minimum space. The controller must be screwed in perfectly.

Controller:

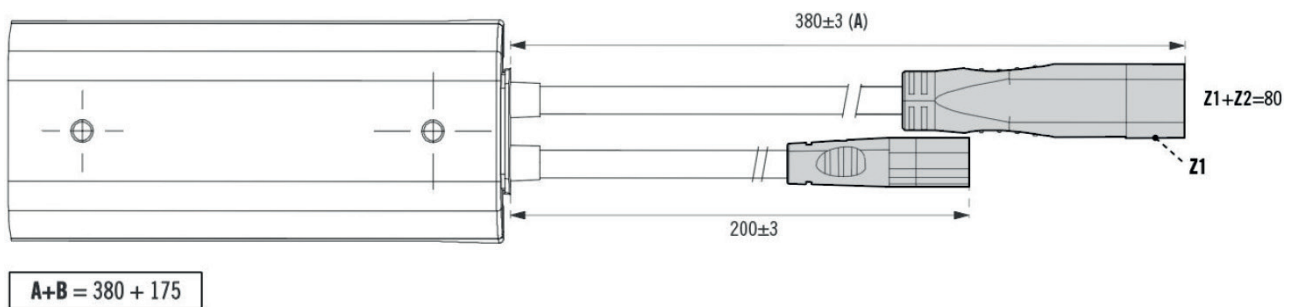
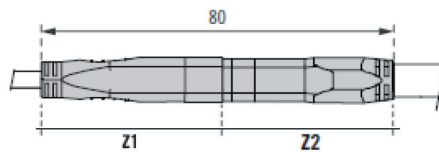


Image - Controller



- Completely charge the battery, before the first use.
- If you don't plan to use the battery for long periods (more than 3 months), store it at a charge level between 30% and 60%. After 6 months, check the charge level and top up if necessary, between 30% and 60%. A battery left discharged for a long period of time can be damaged and/ or its significantly reduce its charging capacity.

BATTERY FEATURES

Temperature range of use	0 - +40 Degrees Celsius	Battery type	Li-ion
Temperature range of charging	+10 - +40 Degrees Celsius	Nominal capacity	252 Wh
Long life storage temperature	0 - 20 Degrees Celsius, Humidity <65%	Max Output	15 A
Charging voltage	CC-CV 2A max 42.0 V	Motor Type	Brush-less DC
Type of cell	18650	Weight	1,4kg (1,7kg with controller)
Recharge cycle	500 (60% capacity)	Charging time	4h (100%)
Nominal Voltage	36 V		

3. MOTOR

Shimano Compatibility

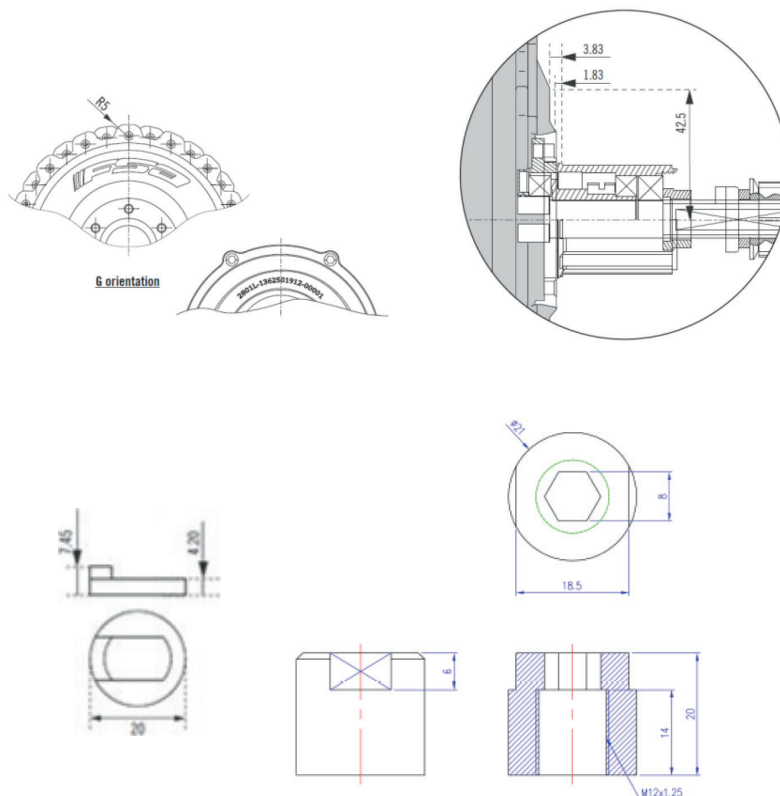
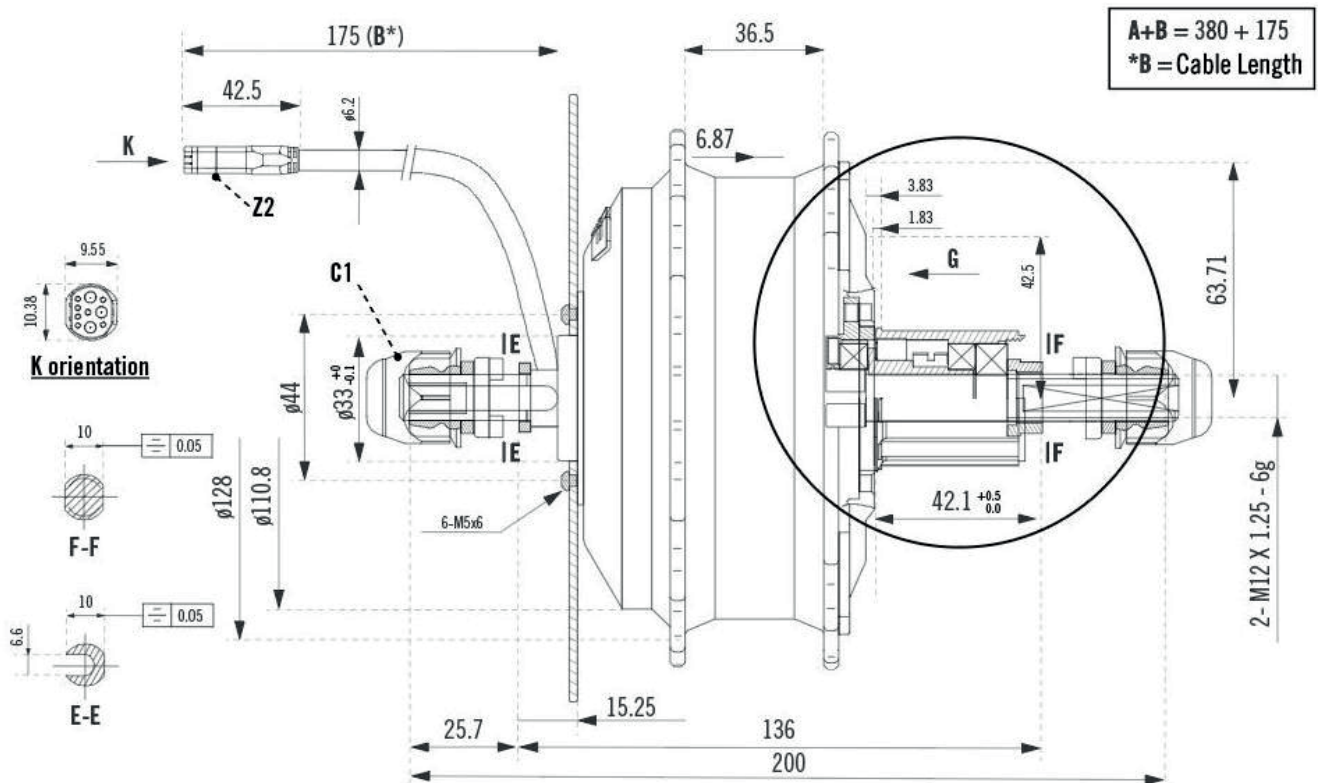
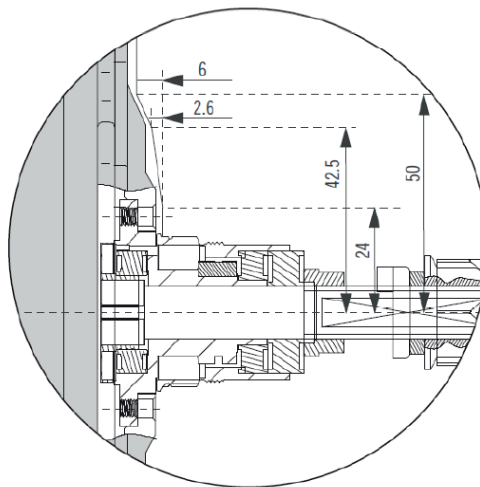


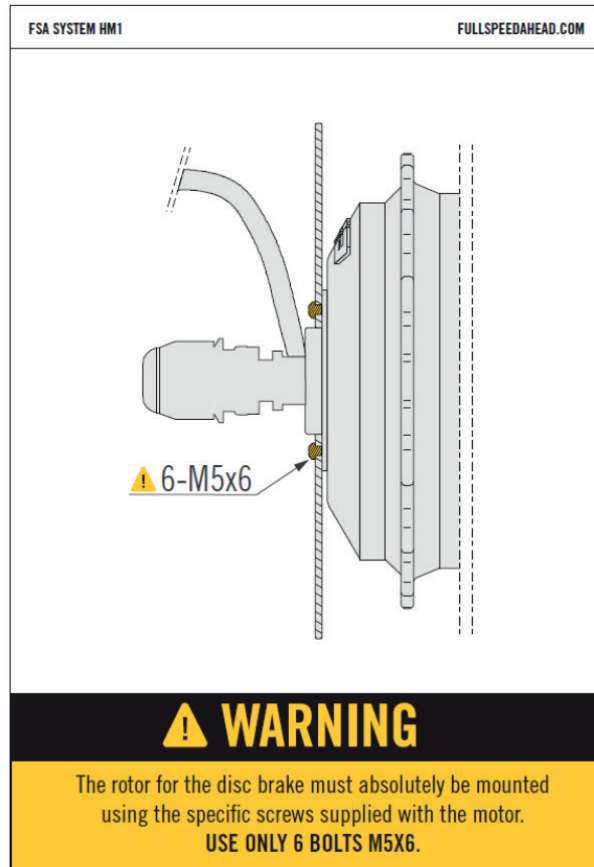
Image - Motor 2D Shimano, end cap

A+B = 380 + 175
***B = Cable Length**



- Frame design: Open Drop-Out OLD: 135+1mm
- Diameter holes: 3.2mm
- Number holes: 16 Left, 16 Right
- Rotor diameter: $\geq 160\text{mm}$

WARNING ROTOR BOLTS

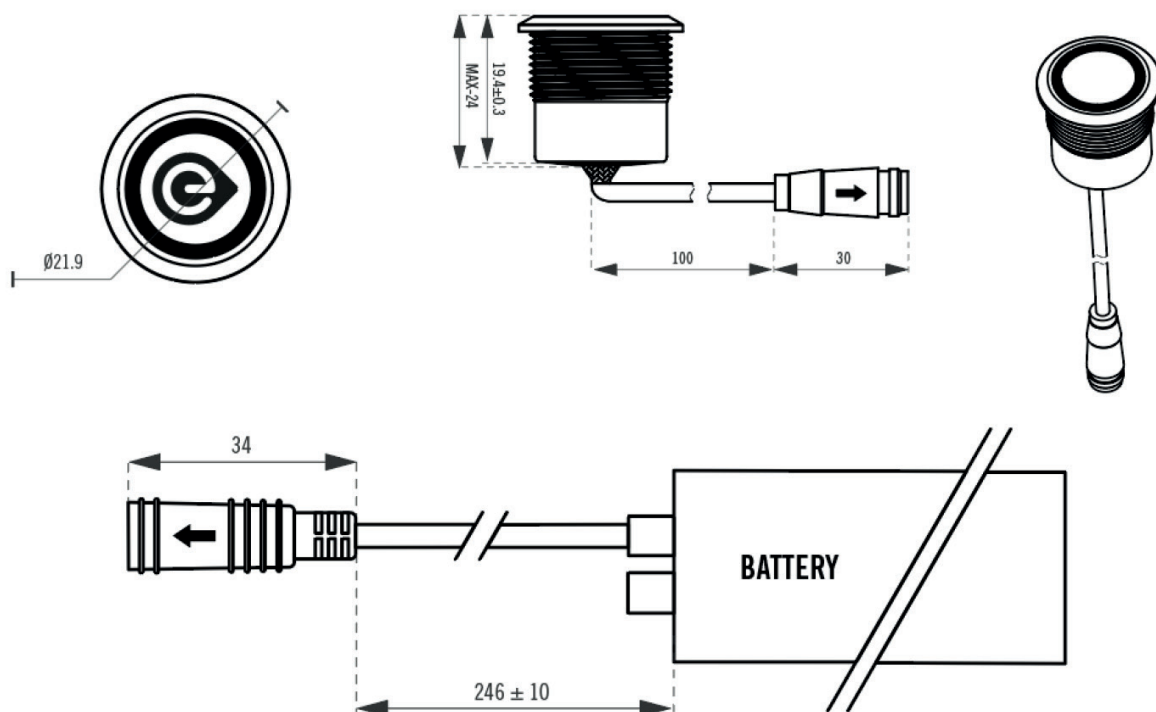


Motor Features:	
Power (W)	250
Max Speed (km/h)	25
Voltage (V)	36 (Min: 30; Max: 42)
Wheel size (Inch)	28
Color	Black
Hexagon disc brake screw	M5x8 (x6)
Disc Brake Diameter	>=160mm

4. POWER ON / OFF

Power ON / OFF Button:

- To turn ON the system, press the button for 1 second.
- To turn OFF the system, press and hold the button for 4 seconds.



Specifications:

- Mechanical Life: 1000,000 cycles;
- LED Life: 50,000 hours;
- LED Rating: 20mA 12VDC;

Button material:

- Shell material: Aluminium Alloy;

Assistance Level:

When switched on, the system automatically selects the ECO level (green).

Meanwhile, please don't place your feet on the pedals and do not move the bike, it must be stationary (0km/h), in order to allow the torque sensor and speed sensor to calibrate themselves. As soon as the light turns to the green, the bike can be mounted and feet placed on the pedals.

To select the desired assistance level, press the button: with each successive press, the assistance level increases: 1 green, 2 blue, 3 pink, 4 yellow, 5 red. At selected level 5, a further pressure on the key will return to level 1.

"The FSA System HM 1.0 is equipped with an integrated torque sensor that self-calibrates each time the System is switched on. It is absolutely essential that there is no load on the pedals during turning ON (do not put your feet on the pedals when turning ON), otherwise, the torque sensor cannot be calibrated correctly.



We do not recommend turning the System OFF and ON when riding the bike.









If you want to ride without motor assistance, just select level 1 - GREEN."

				
Level 1	Level 2	Level 3	Level 4	Level 5
Eco: Green Light	Blue Light	Pink Light	Yellow Light	BOOST: Red Light
Neutral	Active	Active	Active	Active

Battery Level:

While using the system, regardless of the level of assistance selected, it will be possible to check the battery charge level.

A flash of light, will be displayed every 2 seconds, indicating the state of charge of the battery. An accurate reading of the battery charge level can be made via the APP.

			
 75~100%	 50~75%	 25~50%	 25%↓
Green Flash	Blue Flash	Yellow Flash	Red Flash

Recharge Battery step:

Connect the battery charger to the main socket and connect the battery charger to the e-bike charging socket. The battery charger will automatically switch on and the e-bike button will start flashing every 2 seconds. (0.5 sec. ON; 1.5 sec. OFF).

Battery charger indicator.

- **Red:** Charging. (Flashing e-bike button with color level battery; See above, as battery level).
- **Green:** Full charge.

Error/fault condition report:

Any error of system or protections (use out of the limits or faults) are signaled by a flashing of the button.

- **Yellow:** Temporary error (0.5 sec. ON; 0.5 sec OFF).
- **Red:**
 1. The battery is not connect to controller or CAN-bus. No data reading (0.5 sec. ON; 9.5 sec OFF).
 2. The battery is charging. The level of charge is at the minimum (0.5 sec. ON; 4.5 sec OFF).
 3. Permanent failure, disconnect the battery, isolate it and return (0.5 sec. ON; 0.5 sec OFF).

5. RANGE EXTENDER - INSTALLATION

Install the range extender holder on the seat tube or down tube of your frame using the two screws provided with the frame. Make sure that the screws have Loctite on them and are properly tightened. Do not overtighten the screw. The FSA RE Holder comes with a specific Velcro strap to secure the RE inside the holder.



Use only the FSA RE holder; do not use any other system.
Make sure to use the strap to fix the RE using the Velcro strap.

5. RANGE EXTENDER - CONNECTION

Connect the cable of the range extender to the IT charging port. Using your finger, turn the lock-ring clockwise until a full stop, make sure the lock-ring is properly engaged and tightened



If the cable is too long please use the specific hook in the back of the range extender to secure the slack of cable. You might want to hook the cable in position before fitting the RE inside the RE holder



5. RANGE EXTENDER - USE AND MAINTENANCE

The range extender is activated by the main IT button: when you turn on the FSA System, it will automatically check for a RE connected. If a RE extender is present it will be activated automatically. You can use the power button to check the RE level or to force the RE to turn on, however if it is not connected to a IT battery will turn off by itself.

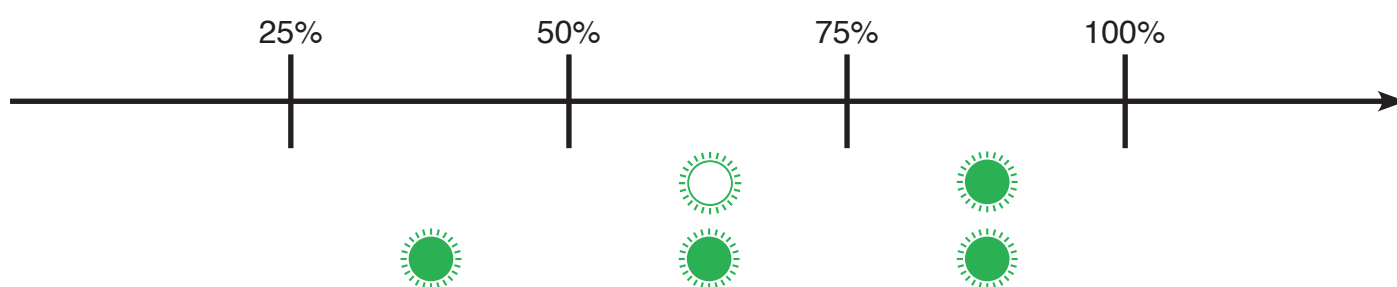
When the RE activation procedure is completed you will see the two led on, the led combination will depend from the state of charge.

0%-25%: One LED blinking

26%-50%: One solid LED

51%-75%: One Solid LED + One blinking LED

76% -100%: Two solid LED



The system will start using the RE extend first, when the RE charge reach 0%, the system will start using the IT. Be aware that during this phase the IT will turn off, it will be necessary to turn on the system. Please be aware during this phase do not apply force on the pedal to avoid problems with the calibration.

DO not unplug the RE when the system is ON, if you unplug the RE when the system is on the system will go in error mode. In case this might happen, turn off the system and then turn on again. Make sure not to use oil or aggressive detergent on the range extender, this might damage the plastic shell or compromise the waterproofing of the system. Check periodically the cover button to make sure there are no cracks and it's not peeling off.

To charge the range extender please use the specific adaptor and plug it to the same charged used for the main IT battery. Do not use other adapter or other charger to charge the battery.

6. CHARGING PORT

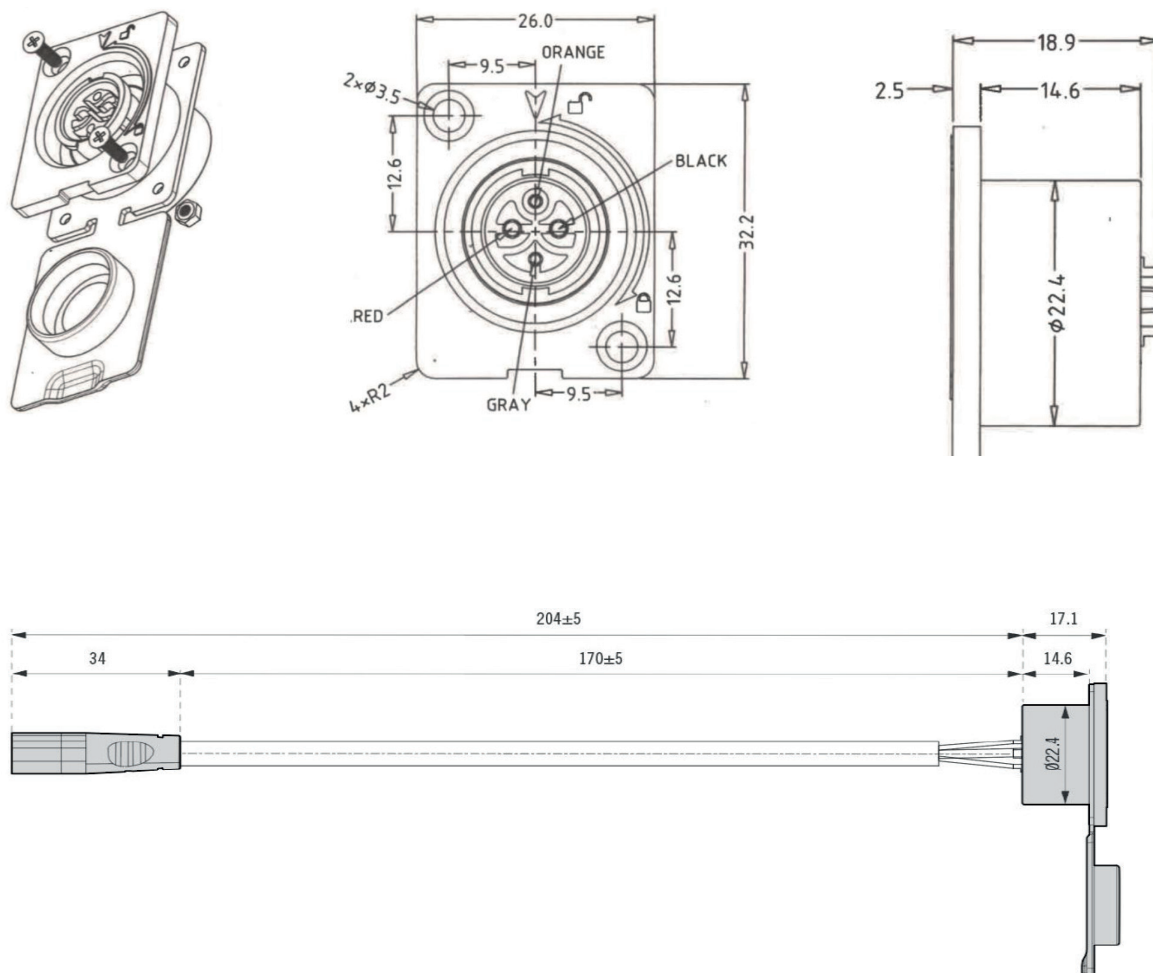
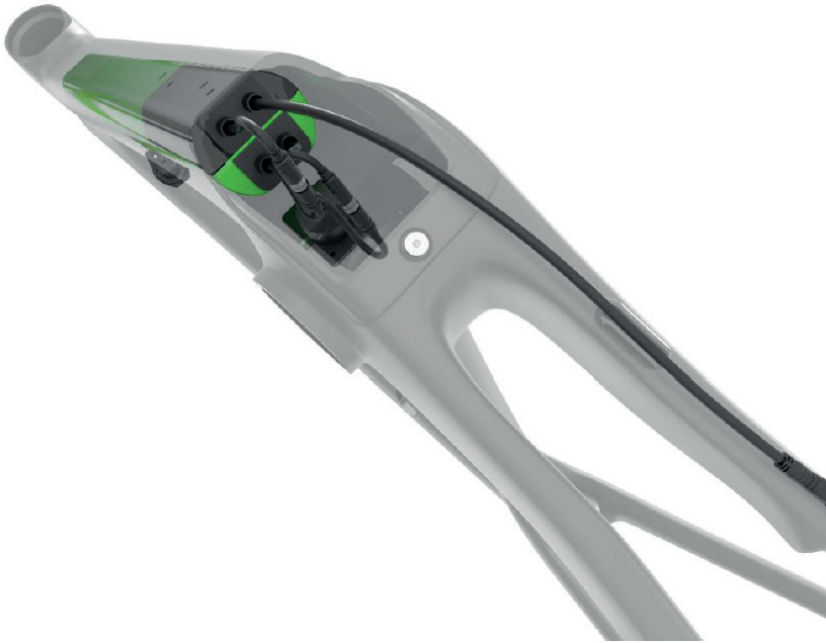


Image - Dimensions Charging port



Image - Charging port in the frame

7. BATTERY INSERTION

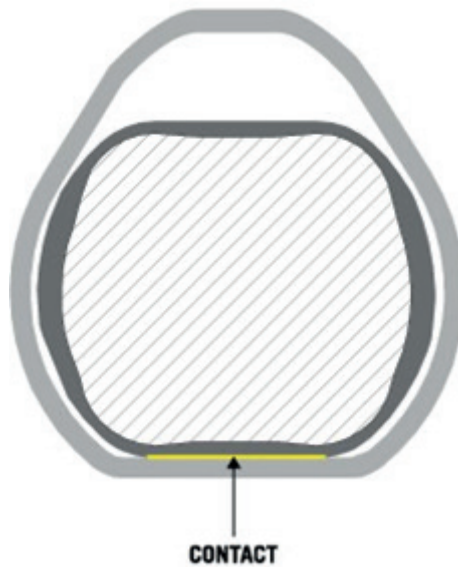


W/o BB shell cover for battery insertion



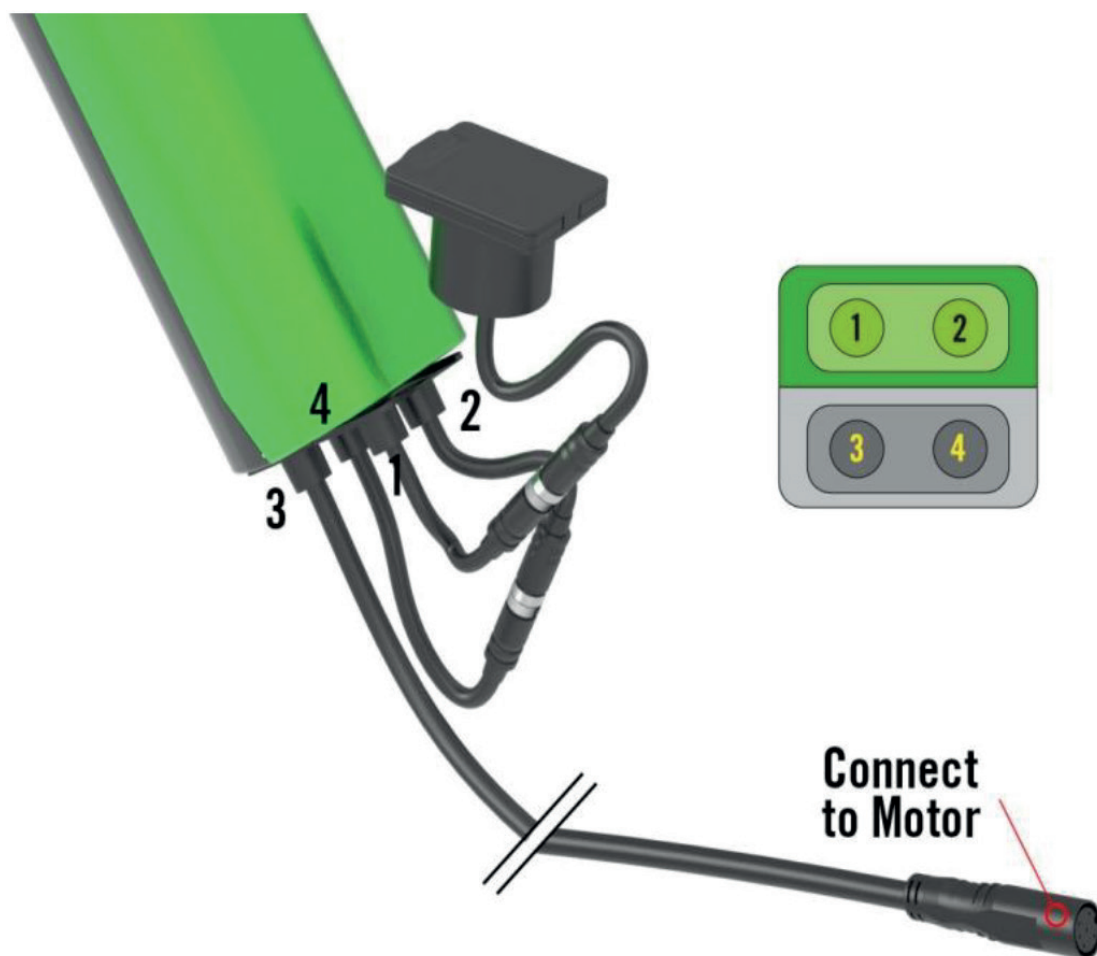
W BB shell cover

Contact Frame-Battery:



This section of the down tube and the battery shows how the battery must rest firmly (yellow) on the inner wall of the tube, while on the other sides, a minimum distance must be respected which can vary according to the construction tolerances of the frame, we can recommend at least 1mm minimum space.

8. CONNECTORS



- Connect Battery (1) or (2) to Charger Port
- Connect Battery (1) or (2) to Controller (4)
- Connect Controller (3) to Motor

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