

Installation Manual MF-400 IoT Satellite Bridge

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Preliminary note

Please read manuals of the installed systems to make sure that all safety requirements are fulfilled at any time.

Safety Instructions



An external fuse or circuit breaker (max. 20A) must be provided in the onsite installation as an interrupt facility for the Enclosure system. – Only applicable for AC powered systems!



WARNING Risk of electrical shock, fire, personal injury or death.

- Do not use a power supply without proper grounding (Protective Earth). Use the terminal on the input block for earth connection. Make sure that protective earth is connected according to all local and national codes and regulations!
- Turn power off before working on the device. Protect against inadvertent re-powering.
- Make sure that the wiring is correct by following all local and national codes.
- Do not modify or repair the unit.
- Do not open the electronic units, e.g. power supply, as high voltages are present inside.
- Use caution to prevent any foreign objects from entering into the housing.
- Do not use in wet locations or in areas where moisture or condensation can be expected while cover is not mounted.
- Do not touch during power-on, and immediately after power-off. Hot surface may cause burns.

Terminology and Abbreviations

PE	PE is the abbreviation for Protective Earth and has the same meaning as the symbol.
Earth, Ground	This document uses the term "earth" which is the same as the U.S. term "ground".
T.B.D.	To be defined, value or description will follow later.
AC 230V	A figure displayed with the AC or DC before the value represents a nominal voltage with standard tolerances (usually $\pm 15\%$) included. E.g.: DC 12V describes a 12V battery disregarding whether it is full (13.7V) or flat (10V)
230Vac	A figure with the unit (Vac) at the end is a momentary figure without any additional tolerances included.
50Hz vs. 60Hz	As long as not otherwise stated, AC 100V and AC 230V parameters are valid at 50Hz and AC 120V parameters are valid at 60Hz mains frequency.
may	A key word indicating flexibility of choice with no implied preference.
shall	A key word indicating a mandatory requirement.
should	A key word indicating flexibility of choice with a strongly preferred implementation.
DCE	data communication equipment
DTE	data terminal equipment

Required Tools

- | | | |
|------------------------|-----------|-------------------------------------|
| • Phillips screwdriver | PH3 | enclosure lid |
| • Phillips screwdriver | PH2 | battery |
| • Slotted screwdriver | 0.6x3.5mm | terminal blocks |
| • Wrench | #8 | pole mount enclosure & IDP terminal |
| • Wrench | #10 | LoRaWAN antenna |
| • Wrench | #13 | solar panel |
| • Zip ties | | |
| • Wire cutter | | |

Technical overview

The MF 400 IoT Satellite Bridge provides network server connectivity for 100 remote LoRaWAN™ sensors via Inmarsat IsatDataPro (IDP) satellite terminals and can operate continuously from a single 80W solar panel

The MF 400 runs an optimized protocol to ensure that airtime satellite costs per sensor are kept to a minimum. This makes the MF 400 IoT Satellite Bridge a standalone, low power, low cost solution for adding satellite connectivity to your existing COTS LoRaWAN™ sensor devices.

The MF 400 IoT Satellite Bridge supports LoRaWAN™ version 1.0.2. The MF 400 IoT Satellite Bridge is compatible with a very wide range of commercial off the shelf (COTS) LoRaWAN™ sensors.

Both the communication device and the solar charger are installed in IP67 rated CPN enclosures for harsh environments.



1. Mount the CPN Enclosure to the pole

Mount the Enclosure to the pole by using the pole mount located at the backside of the Enclosure.



2. Mount the solar panel to the pole

Mount the solar panel to the pole by using the pole mount located on the backside of the solar panel.



3. Mount the antenna to the pole

Plug the antenna cable into the antenna and use its pole mount to secure it onto the top of the pole.

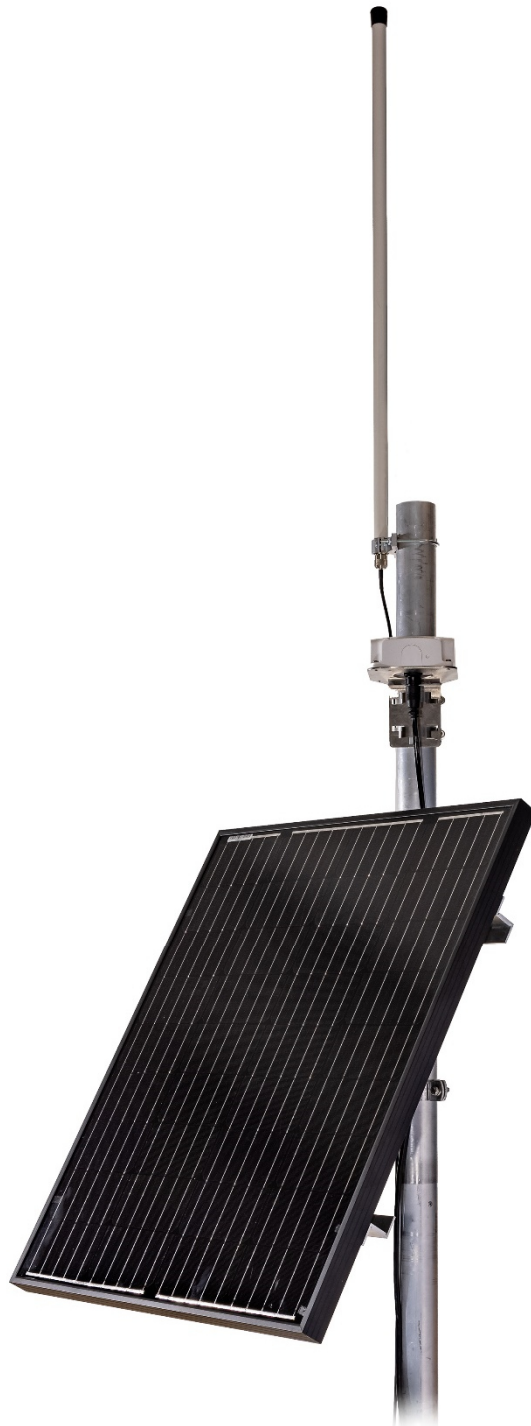
Please make sure that your installation matches antenna cable requirements!



4. Mount the IDP-Terminal to the pole

Plug the IDP cable into the IDP terminal and use its pole mount to secure it onto the Pole.
We recommend using zip ties to fix the cables to the pole.

Please make sure that your installation matches cable requirements!



5. Open the CPN Enclosure

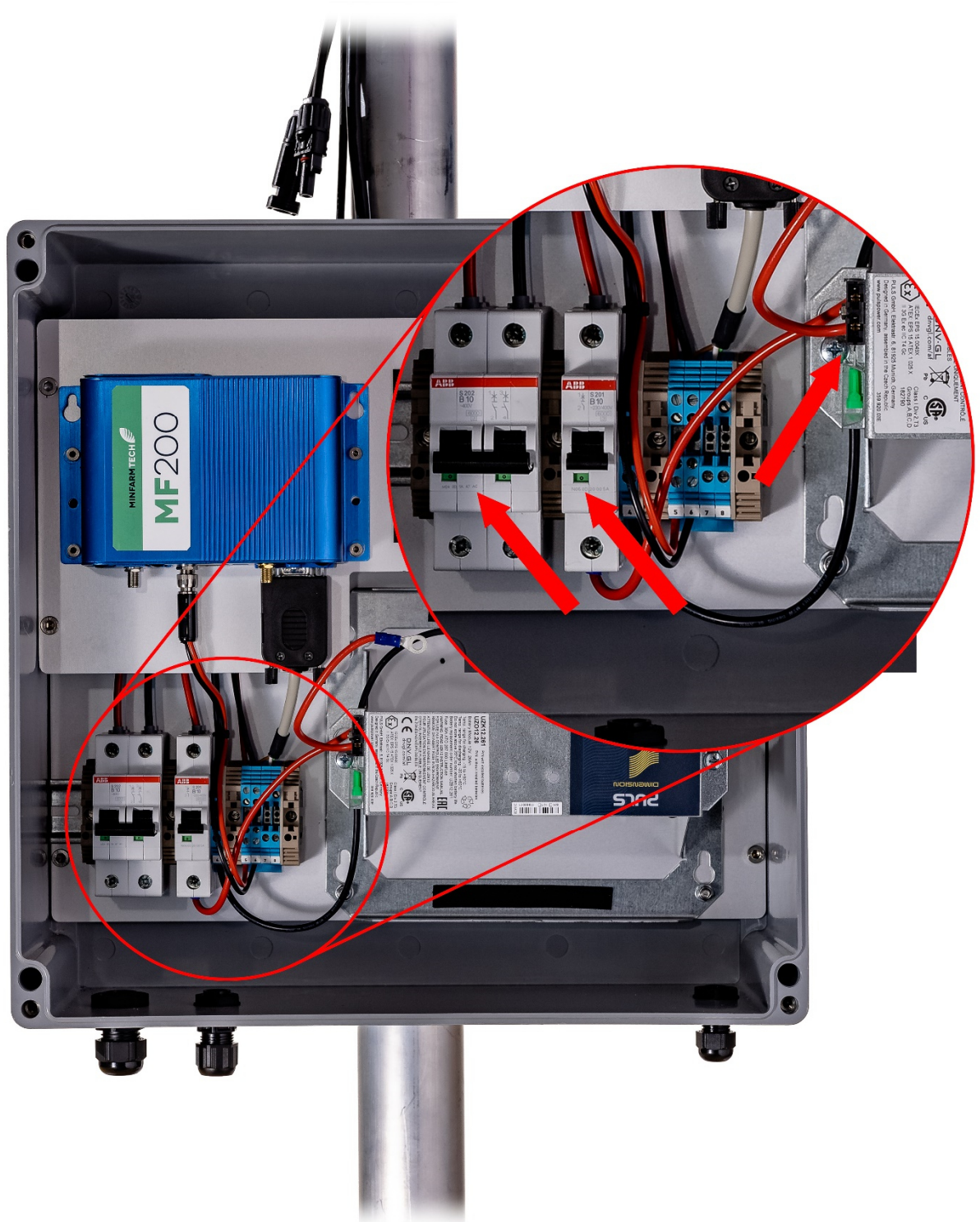
Loosen the 4 marked screws of the cover and remove it from the Enclosure



6. Ensure all circuit breakers are switched off / not plugged in

Make sure all circuit breakers are switched off and pointing down. Ensure that there is no fuse plugged into the battery mount.

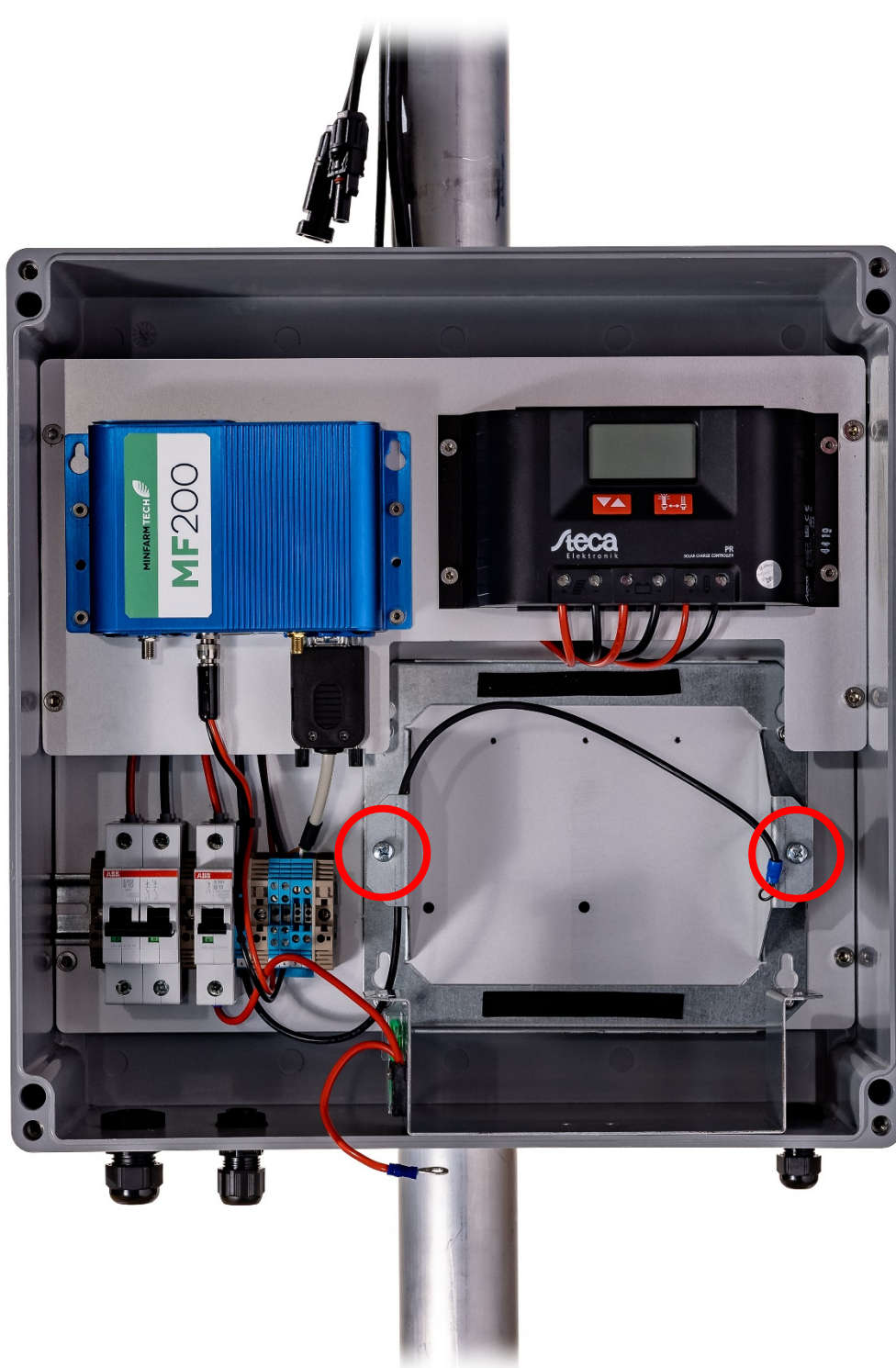
Red = On
Green = Off



7. Remove the top of the battery-mount

Remove the top cover of the battery mount by loosening the 2 marked screws.

Make sure that all circuit breakers are switched to OFF during installation!



8. Insert the battery into the Enclosure

Insert the battery into the Enclosure and reinstall the top cover of the battery mount using the 2 marked screws.

Make sure that all circuit breakers are switched to OFF during installation!



9. Connect the battery to the Enclosure

Connect the battery to the Enclosure by connecting the **Red** and **Black** wires as shown below.

Make sure that all circuit breakers are switched to OFF during installation!



10. Connect the solar panel cables to the Enclosure

Insert the solar panel cable into the Enclosure and connect them to the double circuit breakers inside the Enclosure. The **Red** marked cable (positive pole (+)) has to be connected to the left side of the double circuit breaker (+), the **Black** marked cable (negative pole (-)) to the right side of the double circuit breaker (-).

Make sure that all circuit breakers are switched to OFF during installation!



11. Connect both sides of the solar panel

Plug both sides of the solar panel cable together. **Red** to **Red** and **Blue** to **Blue**.

Make sure that all circuit breakers are switched to OFF during installation!

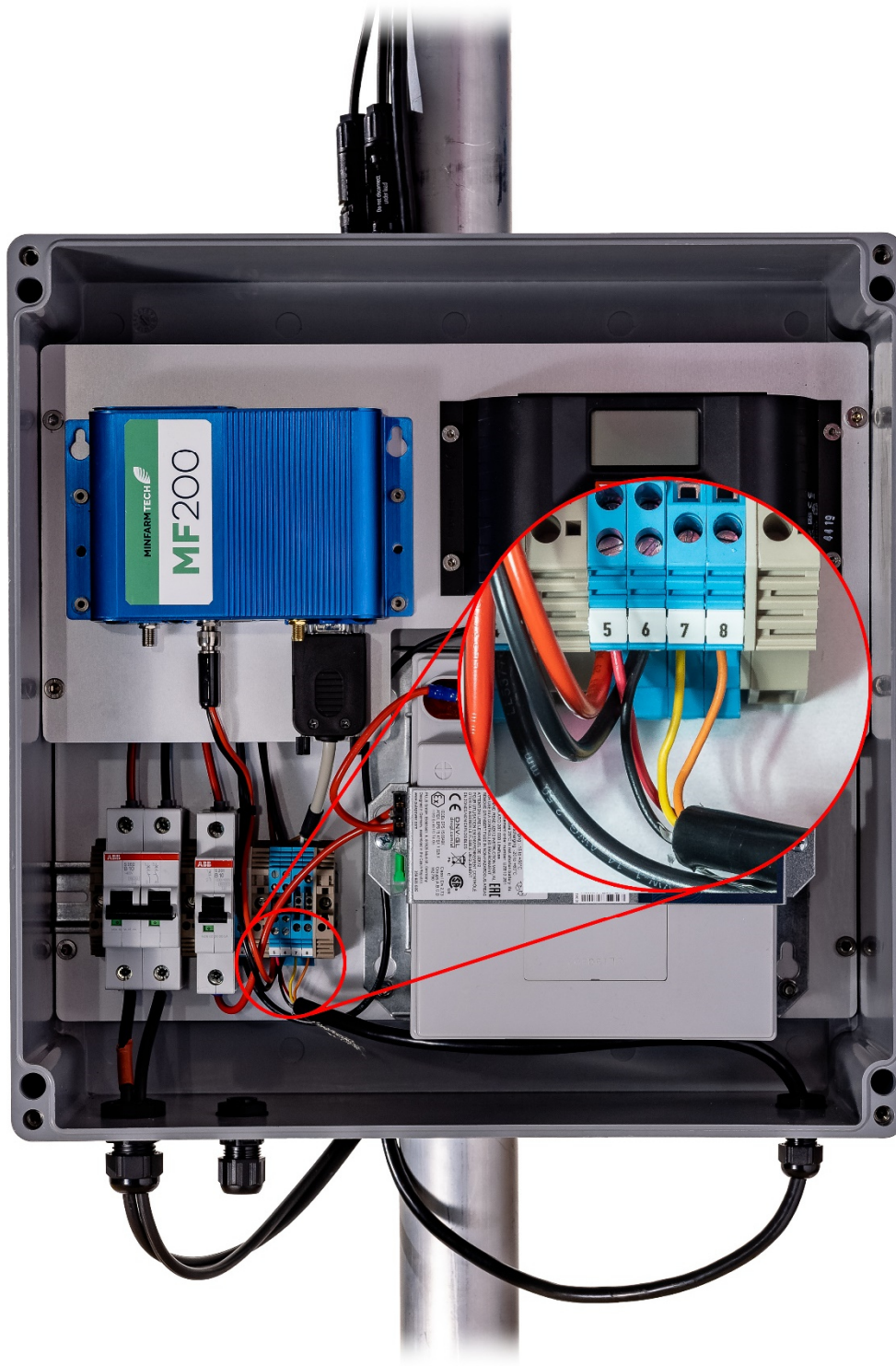


12. Insert the cable of the IDP and connect it

Insert the cable coming from the IDP terminal (DCE) into the Enclosure and connect it to the terminal blocks marked from #5 to #8. Connect the wires as following:

	#5	#6	#7	#8
ST-6100	Red (+ PWR)	Black (- GND)	Yellow (RX)	Orange (TX)
ST-2100	Grey (+ PWR)	Brown (- GND)	Yellow (RX)	Green (TX)

Make sure that all circuit breakers are switched to OFF during installation!



13. Insert the antenna cable and connect it

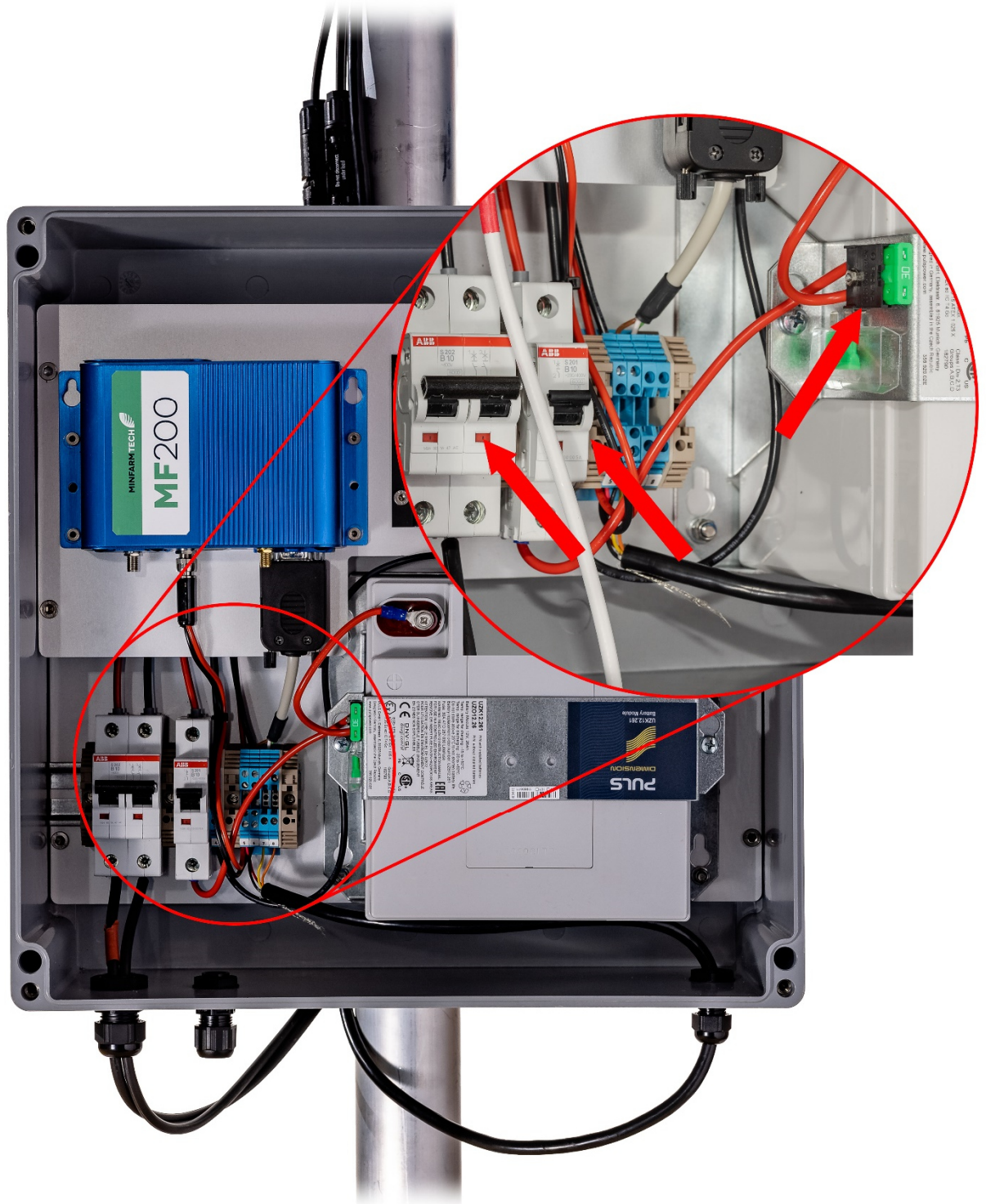
Insert the antenna cable into Enclosure and connect to the connector located on the bottom left of the MF 200 (RF).

(depending on the cable you might need to use an SMA adapter)



14. Switch on / plug in all circuit breakers inside the Enclosure

Switch on all circuit breakers and plug in the fuse that goes into the battery mount.



15. Check if the system is operating properly

Make sure the solar panel is connected and the batteries are charging.

Please ensure that all cable glands are tightened to get the IP-67 rating and the strain relive for the cables.



16. Close the CPN Enclosure

Screw in the 4 marked screws of the cover to reinstall it to the Enclosure.



Any questions or suggestions?

Do not hesitate to contact us!

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