



TEMPUS-AG-4G

Base Station

4G-LoRa™ Gateway



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PRESENTATION

TEMPUS-AG-4G is a 4G-LoRa™ gateway that allows data transmission between the MyToroTempus application or platform and TEMPUS-AG devices (CT, MS, PR, MV). TEMPUS-AG-4G connects to the MyToroTempus, application or web platform, via Internet in 4G. TEMPUS-AG-4G can communicate via LoRa™ (long range radio connection) with up to 25 devices between TEMPUS-AG-CT/MV/MS/PR. TEMPUS-AG-4G can be powered by a 120VAC power supply or a solar panel. It has a buffer battery to ensure the continuity of its operation for 24 hours without any power supply (depending on the conditions of use).

INTRODUCTION

The frequency of 4G data communication:

Thanks to its SIM card, the TEMPUS-AG-4G communicates periodically over 4G with the MyToroTempusAG platform in order to:

- Transmit the informations to TEMPUS-AG-CT, TEMPUS-AG-MV.
(e.g.: irrigation programs, manual controls, ON / OFF, etc ...)
- Feed back information from TEMPUS-AG MS, TEMPUS-AG-PR
(e.g.: battery level, water volumes, sensor alerts, etc.)

The frequency is 24 times per day or 96 depending on the sim card subscription. Communications are configured every hour or every 15 min.

To activate your SIM card, send the subscription request to the dealer.

Once the SIM card has been activated, the TEMPUS-AG-4G will be operational and will be able to connect to the MyToroTempusAG platform.

RECOMMENDATION

During the first installation or if a long time has passed without having had a charge / discharge cycle, it is necessary to charge the TEMPUS-AG-4G battery, turned off, for 24 hours with 120 VAC power supply.

Follow the step 1 to wire the 120 VAC power supply for battery charging.

The disposal of a lithium battery in a fire or in a hot oven, or mechanical crushing or battery cutting, is likely to cause an explosion;

If the battery is kept in a very high temperature environment, it may cause an explosion or a liquid or flammables gas leakage; If a battery is subject to an extremely low air pressure, it may cause an explosion or a liquid or flammables gas leakage.

In case of a battery replacement, only use a SAFT MP174565 xtd battery.

SPECIFICATION

Dimensions

Diameter: 115mm

Height: 307mm

Used frequency band:

Bluetooth®: [2400-2483.5]M hz

LoRa™ [868-868.6]Mhz

4G: [2100]Mhz

Power Supply:

Power pack: INPUT: 100-240V 50/60Hz (supplied)

OUTPUT: 24VDC 0.6A

Solar panel : 12V 20W (in option)

Battery : 4V 2.5Ah

IP 54

Use:

Permitted humidity: 90% (relative humidity)

Ambient temperature: -20°C à 60°C

Warranty: 2 years

Step 1

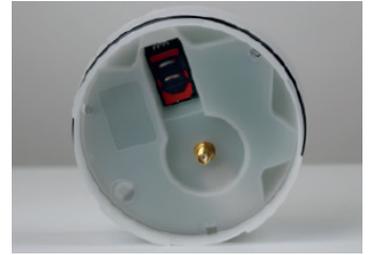
INSTALLATION

TEMPUS-AG-4G ELECTRICAL WIRING

Regardless of the power supply or solar panel, the wiring is the same. The connection of the power cable is made by a 2-core cable for which there is no polarity.

- Remove the upper and lower part of the TEMPUS-AG-4G by rotating them.
- Insert the SIM card (If not already inserted)

During the first installation it is necessary to charge the TEMPUS-AG-4G, turned off, for 24 hours with 120 VAC power supply.



1.1 Power supply

- Drill the grommet located under the lower part of the TEMPUS-AG-4G
- Pass the cable through the grommet.



- Connect the cable to the green connector.
- (No polarity to respect)



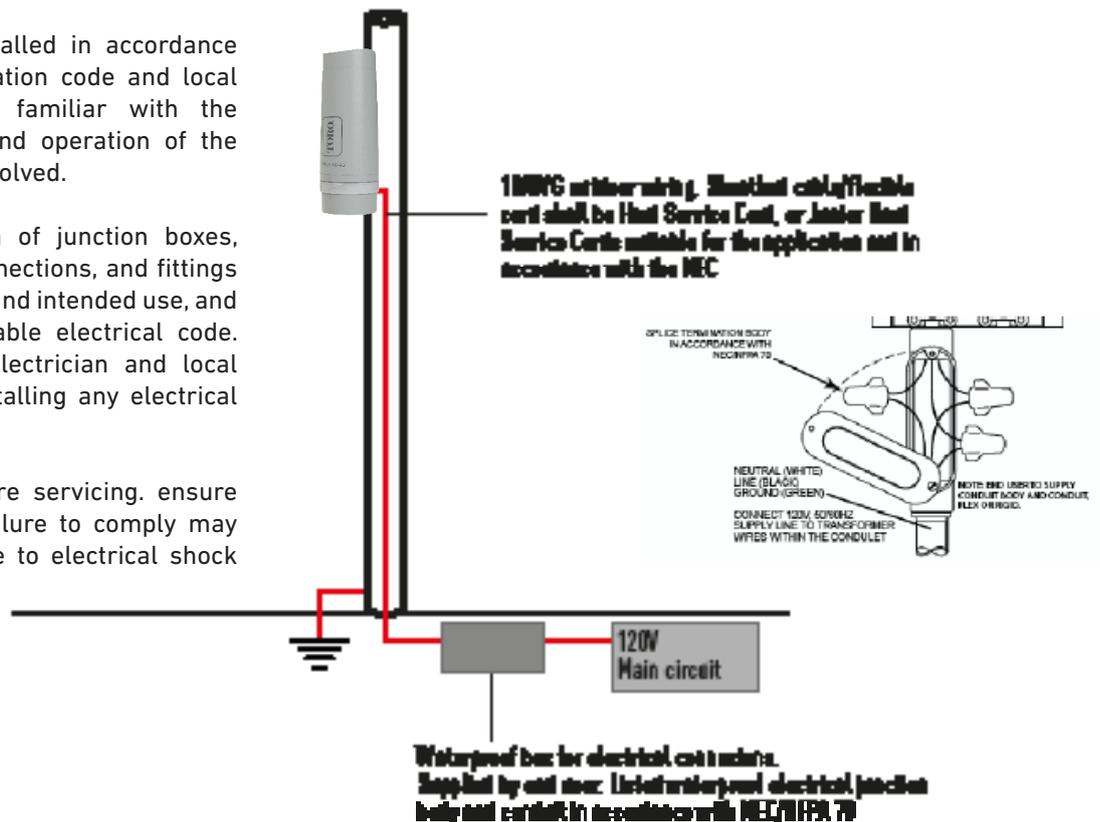
Power transformer connection and recommendations

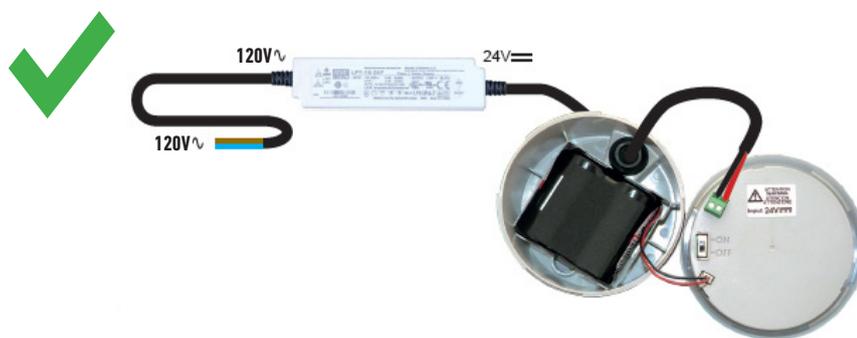
IMPORTANT SAFETY INSTRUCTIONS:

This product must be installed in accordance with the applicable installation code and local jurisdiction by a person familiar with the construction, installation and operation of the product and the hazards involved.

The use of or installation of junction boxes, conduit bodies, conduit connections, and fittings shall be for the installation and intended use, and in accordance with applicable electrical code. consult with a qualified electrician and local electrical codes before installing any electrical product.

Disconnect all power before servicing, ensure main ac breaker is off. Failure to comply may result in serious injury due to electrical shock hazard.





Prohibited connections

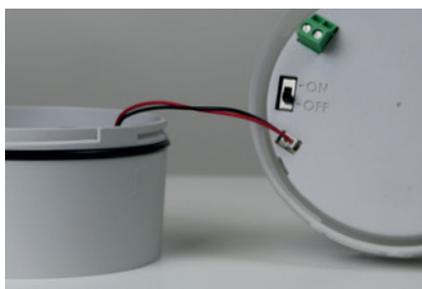


Recommendations of the power supply connection to the electricity network

- Use the power transformer supplied.
- Connect the 120Vac input of the transformer to the electrical network, protecting it with a 2A disconnecting circuit breaker.
- Connect the 24Vdc output of the transformer to the TEMPUS-AG-4G per NEC installation guidelines with suitable sheathed cable / flexible cord applicable for the intended application and water tight conduit and fittings. Sheathed cable / flexible cord shall be Hard Service Cord or Junior Hard Service Cord.
- Place the transformer and circuit breaker assembly in a Class II electrical box supplied by end user. Listed waterproof electrical junction body and conduit in accordance with NEC/NFPA 70.

1.2 Battery connection

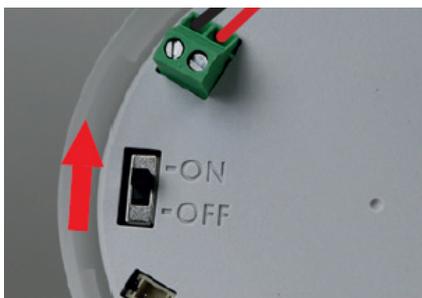
- Connect the battery.



- Set the switch to ON

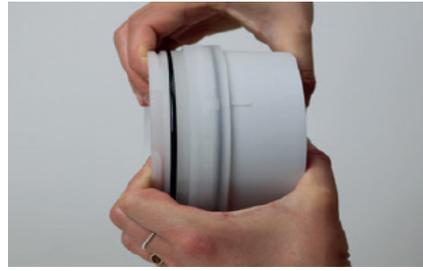
During the first installation it is necessary to charge the TEMPUS-AG-4G battery for 24 hours with 120VAC power before turning it ON.

Upon startup, the TEMPUS-AG-4G LEDs will flash red. Pair the TEMPUS-AG-4G, in the MyToroTempus App via Bluetooth, to your MyToroTempus account, following STEP 2. (We remind you that the SIM Card must be activated). The LEDs will turn green for one hour after pairing to indicate that the product is operational.



1.3 Reassembly the TEMPUS-AG-4G

- Adjust the length of the cable by pulling on it.
- Fit the parts together by applying strong pressure and lock the 2 parts.



- Adjust the cable.



- Tighten the anti-traction.



Close the TEMPUS-AG-4G

- Close the lower and upper parts using the locking pictograms



Step 2

MYTOROTEMPUS APP DOWNLOADING

1. On your smartphone or tablet, go to the «App Store» or to the «Play Store» app.



2. Search for «The Toro Company» in the search bar.

Developer

The Toro Company



3. Once found, download the MyToroTempus App



4. Once installed, activate the Bluetooth® of your smartphone or tablet.

CREATE AN ACCOUNT

To use TEMPUS-AG-4G, you need to create a MyToroTempus account

1. Launch MyToroTempus app from your smartphone and/or tablet.

2. Select the "Registration" button.

3. Follow the steps described on the app.

Note: if you already have an account on the MyToroTempusAG.com platform, you must use the same credentials

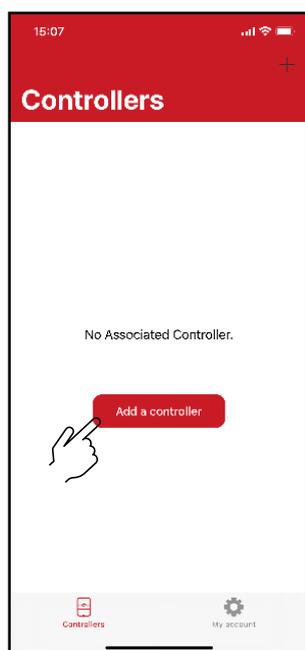
ASSOCIATION OF TEMPUS-AG-4G WITH MYTOROTEMPUS APP

1. Verify that the Bluetooth® is activated on the settings of your smartphone.

2. Launch MyToroTempus App from your smartphone and/or tablet.



3. Click on the « Add a controller » button or on the «+» button



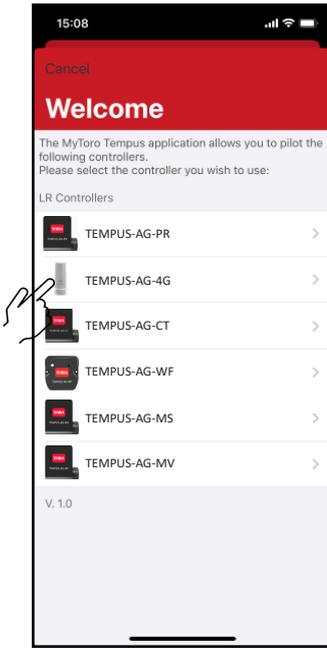
No device already installed

OR

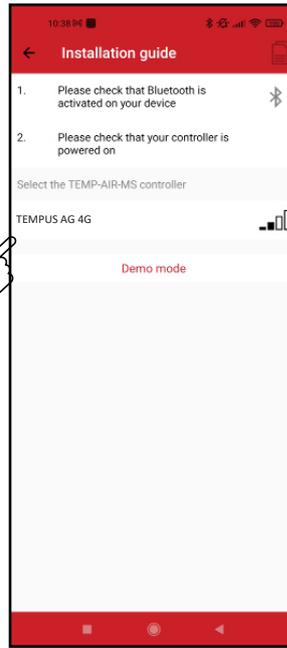


Devices are already installed

4. Select the TEMPUS-AG-4G picture from the devices list

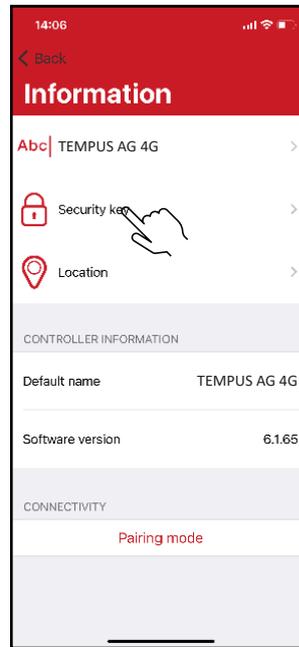
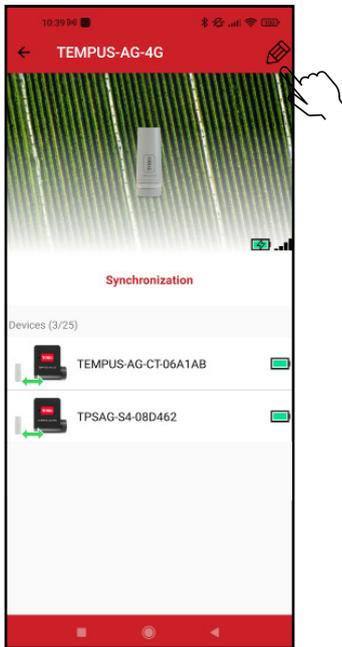


5. Select the required TEMPUS-AG-4G to be installed from the list of the available devices



Note 1: To identify your TEMPUS-AG-4G among the nearby 4G gateways, please refer to the «Default name» present on its product label.

Note 2: Please, note, from the first 2 minutes that you power on the product, the "Default name" will appear in red.



Security key

The security key allows to protect your Gateway. You can define it during the «ASSOCIATION» or access to further information by clicking on the icon "Pencil" at the top right of your screen.

LED STATUS

The LEDs are functional for one hour when starting the TEMPUS-AG-4G
Beyond this period the TEMPUS-AG-4G goes into standby mode.

- **Green LED:** normal operating (connected with the platform)
- **Flashing green LED:** LoRa™ communication
- **Red LED flashing 3 times:** Loss of GSM network.
- **Red LED flashing twice:** Hour alarm:

The TEMPUS-AG-4G is out of date. If your product is connected to the MyToroTempusAG platform, the time update will be automatic. Otherwise connect to the TEMPUS-AG-4G from the MyToroTempus application and verify that the message "Synchronization OK" is displayed.

- **Flashing white LEDs:** Searching for the best network.
- **Flashing blue LEDs:** Platform communication

Step 3

PAIRING DEVICES

To associate a TEMPUS-AG-CT/MS/MV/PR, refer to the following example.

Example of a radio association between an TEMPUS-AG device and the TEMPUS-AG-4G:

You must first have associated your TEMPUS-AG device with your account in MyToroTempus application before proceeding with the association of the device on your TEMPUS-AG-4G gateway. Refer to the user manual to associate it and then perform the following steps.

1. Select the product in the list of devices (Remember that you must be connected to your device via Bluetooth).



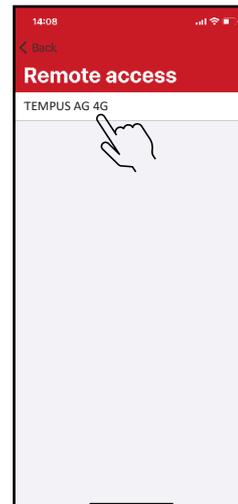
Push on  on the top right of the screen to access to information of the products. (Example with a TEMPUS-AG-CT)



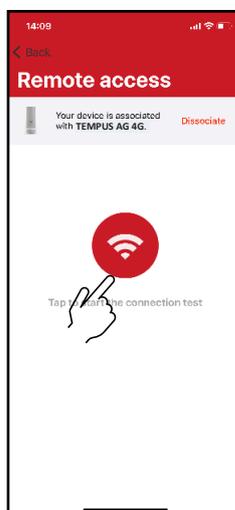
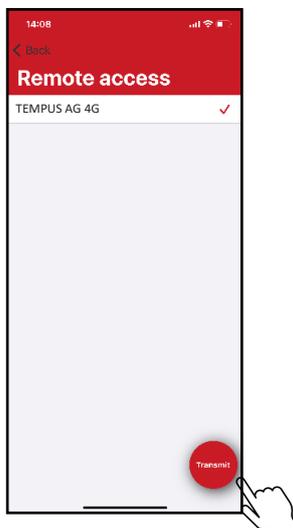
2. Push on « Remote access »



3. Select your TEMPUS-AG-4G (Refer to the «Default name» present on its product label)



4. Push on Transmit to validate the operation.



5. Your TEMPUS-AG-4G/CT/MS/PR/MV is now associated to your TEMPUS-AG-4G gateway.

Step 4

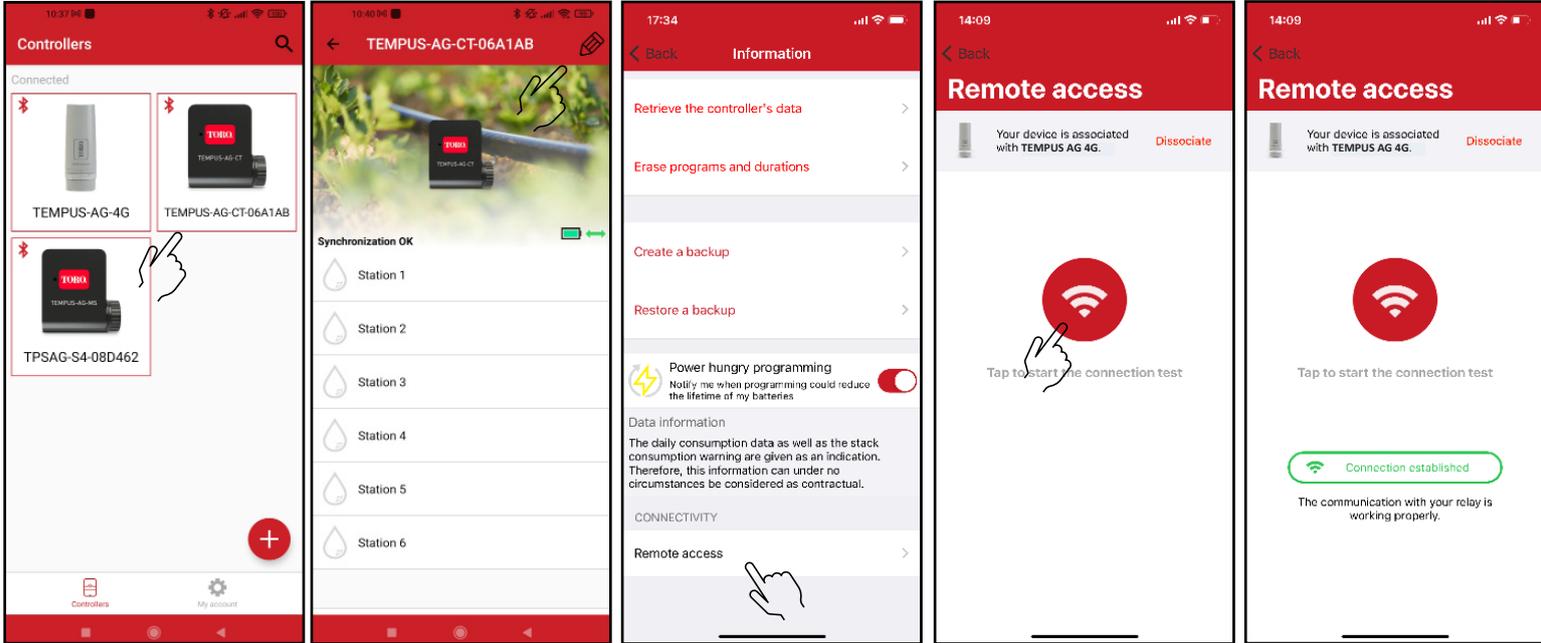
LoRa™ TEST CONNECTION

If the association of the devices is carried out before the final installation of the TEMPUS-AG-4G, this connection test can be used to validate the positioning of the latter by going to temporarily install the TEMPUS-AG-4G in its intended location then by going to position a device in each of the valve box to verify the good communication with the TEMPUS-AG-4G.

The connection test can also allow you to verify at any time the correct operation of the LoRa™ radio between your device and the TEMPUS-AG-4G.

(Example: the product fell into the upside-down valve box and no longer communicates with the TEMPUS-AG-4G).

To test the LoRa™ connection, do the following:



1. Enter the TEMPUS-AG device in Bluetooth® Then in the parameters (small pencil at the top right)
2. Push on « Remote access »
3. Push the red button to test the connection LoRa™
4. The message indicate that the LoRa™ connection between the TEMPUS-AG-4G and the device is reliable.

If the connection is not established, a "No connection established" message appears. Repeat this test several times to confirm that the connection cannot be made. In this case, the distance between the TEMPUS-AG-4G and the TEMPUS-AG device will need to be reduced.

LoRa™ STATUS CONNECTION

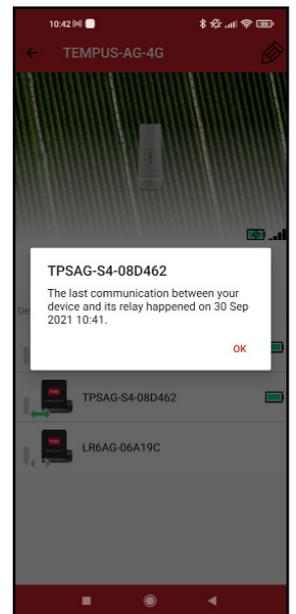
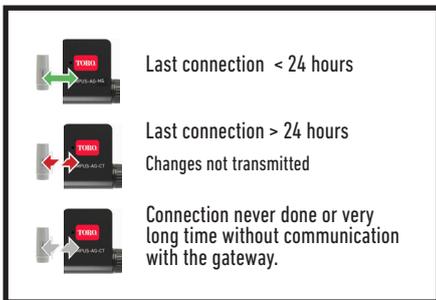
During the first installation it is necessary to charge the TEMPUS-AG-4G battery for 24 hours with 120VAC power before turning it ON.

Preamble :

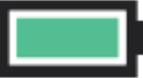
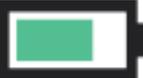
- **The communication periodicity in LoRa™ mode :**

The communication interval of the LoRa™ radio between the TEMPUS-AG(-xx) devices and TEMPUS-AG-4G is approximately 3 minutes (Battery full charged). You can see the TEMPUS-AG-4G's power mode and its battery charge status in the table on the next page.

- **Status of LoRa™ radio communication between the devices and the TEMPUS-AG-4G.** These icons indicate when the TEMPUS-AG-4G was last connected to a device via LoRa™.



LoRa™ COMMUNICATION PERIODICITY AND BATTERY STATUS ON TEMPUS-AG-4G

Power supply mode	Battery Status	Periodicity	
		LoRa™	Internet
230VAC Power supply or Solar panel	Ended Charge 	The LoRa™ radio of the TEMPUS AG 4G gateway is always activated.	Communication 3G/4G corresponding to the subscription 24 communications per day.
230VAC Power supply or Solar panel	Battery charging 		
Battery			
Battery			
Battery			
Battery			
Battery		Out of service until the battery has regained a sufficient voltage level	
Battery			

Step 5

POLE MOUNTING

- Prepare the bracket with the 2 collars.



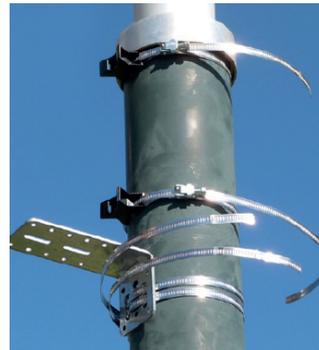
- Prepare the 2 gateway supports with the 2 collars.



- First fix the bracket on the pole.



- Then fix the 2 TEMPUS-AG-4G supports on the pole with the 2 collars.
- Do not fully tighten the collars to permit the positioning of the TEMPUS-AG-4G.



- Place the TEMPUS-AG-4G on the bracket and secure it with the clasper. If necessary readjust the height of the 2 plastic supports as well as the position of the square.



- Once properly positioned, correctly tighten all clasper cut off the excess collar.



NOTE: TEMPUS-AG-4G can also be wall mounted.

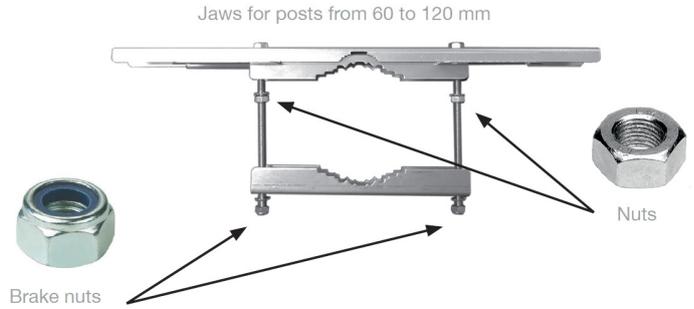
Step 6

SOLAR PANEL ASSEMBLY

The solar panel can be mounted on the wall or on a pole 40 to 60 mm in diameter, or with the addition of jaws on a pole of 60 to 120 mm.

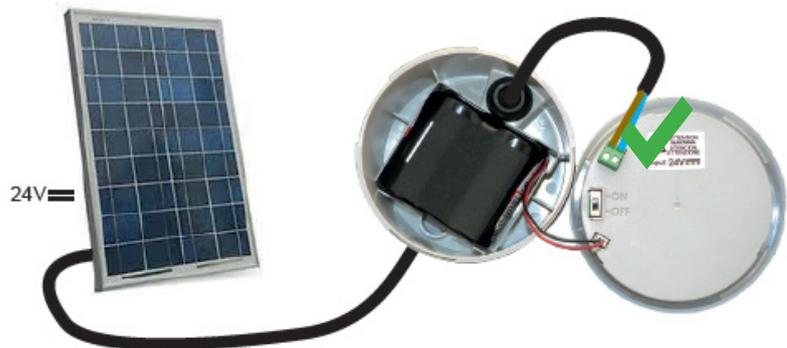


FOR THE DETAILS OF THE ASSEMBLY OF THE PANEL AND THE FLANGES, REFER TO THE INSTRUCTIONS PROVIDED IN THE BOX OF BINDINGS



Solar Panel Connection

During the first installation, before connecting the solar panel, it is necessary to charge the TEMPUS-AG-4G battery, turned off, for 24 hours with 120 VAC power supply. After 24h of charging, disconnect the transformer and connect the solar panel.



Prohibited connections



SOLAR PANEL ASSEMBLY HIGH WIND FIXATION

The Solar panel has another type of attachment sold apart from the so-called "high wind" for exposures of the solar panel to winds above 31mph.

FOR THE DETAILS OF THE ASSEMBLY OF THE PANEL AND THE FLANGES, REFER TO THE INSTRUCTIONS PROVIDED IN THE BOX OF BINDINGS



DECLARATION OF CONFORMITY

The Toro Company (Toro AG), 1588 N. Marshall Avenue, El Cajon, CA, 92020-1523, USA declare that TEMPUS-AG-4G conform(s) to the following directives, standards and/or other normative documents:
CAN ICES-003B NMB-003B FCC Part 15B

Directive 2014/53/EU (RED)

BLE standard : ETSI EN 300 328 v2.2.2

RADIO standard : ETSI EN 300 220-2 v3.1.1 & ETSI EN 300 220-1 v3.1.1

4G/2G standard : ETSI EN 301 511 v12.1.1 & TS 151 010-1 v13.4.0 & 301 908-1 v11.1.1

EMF standard : EN 62311 (2008)

and the recommendation 1999/519/CE

EMC standard : EN 301 489-1 v.1.9.2 & EN 301 489-17 2.2.1

Safety standard :

EN 62368-1 (2014) et A11 (2017) & EN 60950-22 éd2 (2017)

RoHS Directive 2011/65/EU & Directive amendment (EU)2015/863

This declaration has been issued under the sole responsibility of the manufacturer. The object of the declaration is in conformity with relevant union harmonization legislation.

GENERAL INFORMATION



This symbol indicates that the product uses a LoRa™ technology radio.



The symbol «CE» indicates that this device complies with the European standards on safety, health, environment and user protection. Devices with the symbol «CE» are intended for sale in Europe.



This symbol indicates that these types of electrical and electronic equipment must be disposed of separately in European countries. Do not dispose of this device with your household waste.
Please use the collection and recycling points available in your Country when you no longer need this device.



The TEMPUS-AG-4G device cannot be sold nor used in Denmark.



In case of contrary use to the indications given in this user manual, the device protection may be compromised.



This symbol indicates that the supply voltage is a direct voltage.

TEMPUS-AG-4G
4G-LoRa™ Gateway

For Technical Assistance:
service.wb.emea@toro.com

