



TEMPUS-AG-WF

Base Station WiFi

WiFi-LoRa™ Gateway



TEMPUS-AG-WF

*Base Station WiFi
WiFi-LoRa™ Gateway*



USER'S GUIDE

INTRODUCTION

TEMPUS-AG-WF is a WiFi-LoRa™ gateway that allows data transmission between the MyToroTempus application or platform and TEMPUS-AG devices (CT, MS, PR, MV).

TEMPUS-AG-WF connects to the MyToroTempus, application or web platform, via Internet WiFi.

TEMPUS-AG-WF can communicate via LoRa™ (long range radio connection) with up to 30 devices among TEMPUS-AG-CT/MV/MS/PR.

RECOMMENDATION

TEMPUS-AG product installation requires a pre-audit phase in order to check the connection of the products in their intended locations.

To optimize the connection between the TEMPUS-AG-WF and the TEMPUS-AG devices, it is strongly recommended :

1. Position the TEMPUS-AG-WF or its remote antenna as high as possible, with a clear environment.
2. Test the LoRa™ connection between TEMPUS-AG-WF and the devices using the test tool present in the MyToroTempus App.

LoRa™ connection frequency between TEMPUS-AG-WF and its devices is 3 minutes.

Remotely, each modification of program or manual control will be effective after 3 minutes.

On the TEMPUS-AG-MS device :

- Recording of the count, every 15 minutes.
- Feedback, every 3 minutes.

Read the following safety instructions carefully before installing or using the TEMPUS-AG-WF.

Be sure to strictly respect precautions of use.

TEMPUS-AG-WF must be installed indoors or under cover.

Install your product so that the socket outlet is near the equipment.

The socket is a disconnecting device, in case of problem, it must be easily accessible at all times. Make sure the outlet on which your power transformer is plugged has overcurrent protection and circuit breaker type short circuit protection 16mA.

Use only the power supply unit provided with the product,

INPUT : 100-240V ~ 0.2A Max 50/60Hz OUTPUT : 12V - 0.5A.

SPECIFICATION

DIMENSIONS

Width: 8 cm

Height: 8,2 cm

Depth: 1,3 cm

INSTALLATION

Permissible humidity: 90% (relative humidity)

Ambient temperature of product use: 0°C to 40°C

Warranty: 2 years

POWER SUPPLY

Power supply unit: INPUT : 100-240V ~ 0.2A Max 50/60Hz
OUTPUT: 12V 0.5A

FEATURES

Frequency band used and power emitted max :

Bluetooth®: [2400-2483.5]Mhz, 1mW

WiFi: 2.4Ghz , 25mW

LoRa™: [902-928MHz]Mhz, 100mW

Step 1

APP DOWNLOAD

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



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-WF you need to create your MyToroTempus account.

1. Launch MyToroTempus app from your smartphone and/or tablet.
2. Select the "Registration" button.
3. Follow the step described on the app.

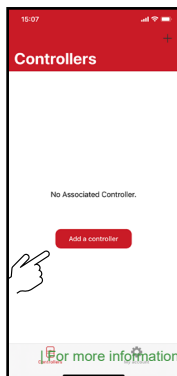
Note: if you already have an account on the MyToroTempusAG.com platform, you must use the same credentials

Step 2

INSTALLATION AND ASSOCIATION

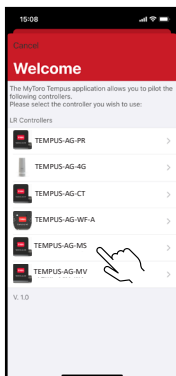
1. Make sure the place where you want to install the TEMPUS-AG-WF is covered by the Wi-Fi connection of your internet box.
2. Screw on the antenna, and connect the 230VAC power supply provided with the TEMPUS-AG-WF
3. Verify that the Bluetooth® is activated on the settings of your smartphone.
4. Launch MyToroTempus app from your smartphone or tablet.
5. Click on the «Add a controller» button or on the «+» button

No device already installed

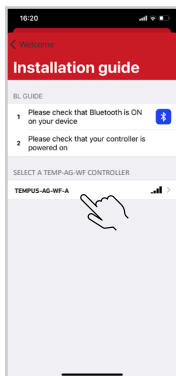


Devices are already installed



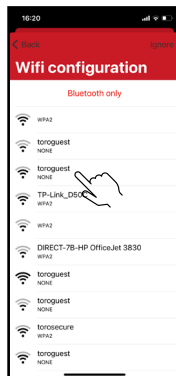


Select the TEMPUS-AG-WF from the devices list



Select the required TEMPUS-AG-WF to be installed from the list of the available devices

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



Select the WiFi network access to which you want to connect your TEMPUS-AG-WF by clicking on the corresponding line or «Ignore» if your TEMPUS-AG-WF has already been assigned to a WiFi network.

Enter the password for the WiFi network access point, then confirm.

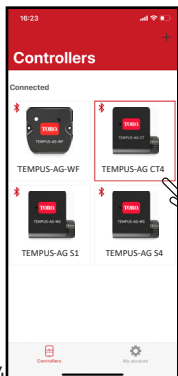
To check that your TEMPUS-AG-WF is correctly connected to the WiFi network, check that the LED on the front panel is solid green.

Step 3

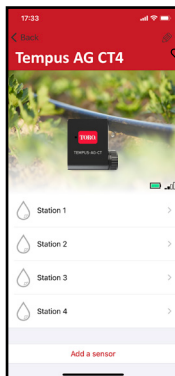
PAIRING


Association between a TEMPUS-AG device (CT/MS/PR/MV) and the TEMPUS-AG-WF:

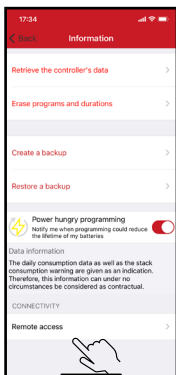
You must first have associated your TEMPUS-AG device with your account in MyToroTempus application before proceeding with the association of the device on your TEMPUS-AG-WF gateway. Refer to the device user manual to associate it and then perform the following step.



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 refers to TEMPUS-AG-CT)



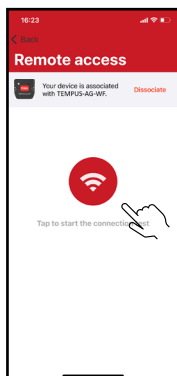
2. Push on
« Remote access »



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




4. Push on
Transmit to
validate the
operation.



5. Your TEMPUS-AG-WF
is now associated.
(Push red button to
test it)

Security key

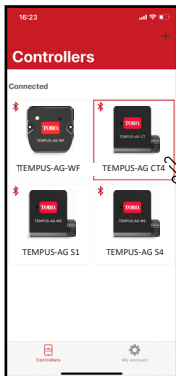
The security key allows to protect your gateway. You can define it by clicking on the icon  at the top right of your screen (you must be connected via Bluetooth).

Step 4

LoRa™ TEST CONNECTION

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

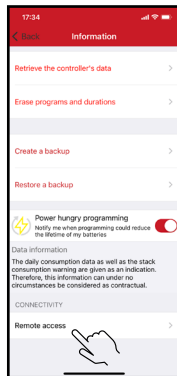
(Example: the product fell into the upside-down valve box and no longer communicates with the TEMPUS-AG-WF). To test the LoRa™ connection, do the following:



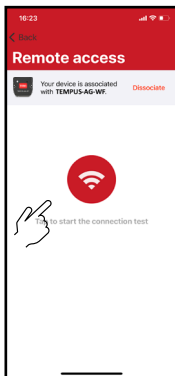
1. Enter the TEMPUS-AG device in Bluetooth®



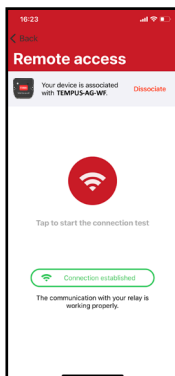
Then in the parameters (small pencil at the top right)



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-WF 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-WF and the TEMPUS-AG device will need to be reduced.

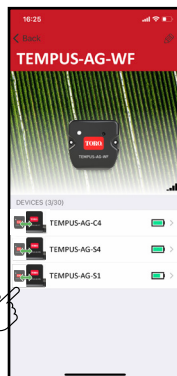
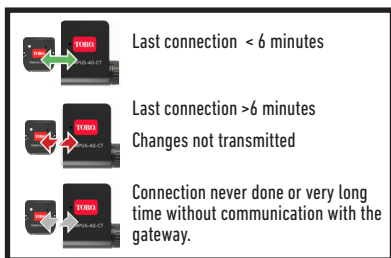
Step 5

LoRa™ STATUS CONNECTION

The communication periodicity in LoRa™ mode :

The communication interval of the LoRa™ radio between the TEMPUS-AG devices and TEMPUS-AG-WF is approximately 3 minutes.

Status of LoRa™ radio communication between the devices and the TEMPUS-AG-WF. The icons indicate when TEMPUS-AG-WF was last connected to the device via LoRa™. If you press the icon a message will inform you of the last connection."



LED STATUS

INFORMATIONS ON THE STATUS OF THE TEMPUS-AG-WF LED

- **Green LED:** normal running
- **Green LED flashing :** Firmware update in progress
- **Red LED flashing 3 times :**

Possible causes :

1. Loss of Wi-Fi access point (router) or connection not established.

Restart your router and the product.

2. During initialization, the password entered is not correct.

Trick : Enter the password of your router in a « Notes » application on your mobile. Copy the password with a long press and paste it into the corresponding field. Repeat the initialization procedure.

3. During initialization, the product may be too far from the box : bring the product closer.

- **Red LED flashing 2 times :** alarm time : the TEMPUS-AG-WF is no longer on time. If your product is connected to the MyToroTempusAG platform, the time setting will be automatic. Otherwise, connect to the TEMPUS-AG-WF from the application and check that the message « Synchronization OK » is displayed.
- **LED off :** the product is not powered.

MOUNTING (Outdoor Antenna)

In the case of mounting the antenna outdoors with the optional extension of 10 meters, we recommend protecting the antenna with a plastic tube with an internal diameter of 15mm minimum. This tube will be clogged on his upper part to protect the antenna from the rain. The cord will have to be protected by a sheath.

GENERAL INFORMATION



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



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



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.



This symbol indicates that the supply voltage is an alternating voltage.



This symbol indicates the polarity of the DC supply voltage.



This symbol indicates that the power supply unit is intended for indoor use only.



This symbol indicates that the power supply unit is a double insulation class 2 type.



This symbol indicates that the efficiency of the external power supply is level 6.

DECLARATION OF CONFORMITY

The Toro Company (Toro AG), 1588 N. Marshall Avenue, El Cajon, CA, 92020-1523, USA declare that TEMPUS-AG-WF conform(s) to the following directives, standards and/or other normative documents:

EMC

172376-764709-D: FCC CFR 47 Part 15, Subpart B

Transmissions

HBCS Report # EMC_15028_2 Rev1: LoRa module. The manufacturer declaration 10 Oct 2022, states that LoRa frequencies in use are: 920.2, 920.4, 920.6MHz; RF power less than 20dBm
FCC CFR 47 Part 15, Subpart C (BLE 2,4 GHz)

Safety

IEC 62368-1:2014+COR2:2015
CB cert FR_712764

LoRa Module

Microchip RN2903 LoRa™ module 920 MHz HB Compliance Solutions report EMC_15028_2 Rev1 26 May 2016.
Covering:
FCC title 47 of the CFR Part 51.247 (Digital transmitting device)

TEMPUS-AG-WF
WiFi-LoRa™ Gateway



FCC/IC STATEMENT TEMPUS-AG-WF

This product contains a modular approval with FCC ID : YWW-BLEMOD, T9JRN2903, 2AC7Z-ESPWR00M02 and IC : 9319A-BLEMOD, 6514A-RN2903, 21098-ESPWR00M02.

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.

Caution : the user that 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 instruction, may cause harmful interference to radio communication. 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 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.

This device contains licence-exempt transmitter(s)/receiver(s) that comply with innovation, science and Economic development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions : (1) this device may not cause interference, and (2) This device must accept any interference, including interference that may cause undesired operation of the device

TEMPUS-AG-WF
WiFi-LoRa™ Gateway



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TORO

EN

TEMPUS AG Controller CT

1-2-4-6 Stations



TEMPUS-AG-CT

Controller

1-2-4-6 Stations



USER'S GUIDE

INTRODUCTION

TEMPUS-AG-CT is a Bluetooth®/LoRa™, battery-powered, waterproof controller. It is available in 1, 2, 4 or 6 stations. Its probe input allows the connection to a rain sensor or a flow meter / water meter or pressure switch.

SPECIFICATION

DIMENSIONS

Width: 10,8 cm

Height: 4,8 cm

Depth: 11,6 cm

INSTALLATION

Rain sensor or Water meter connection
or pressure switch

Master valve connection

9V latching solenoid compatible

Maximum wiring length with solenoids: 30 m

100% waterproof (rated IP68)

POWER SUPPLY

9V 6AM6 or 6LR61 Alkaline battery (not included)

Current consumption : 0.1mA

USE

Ambient temperature of product use: -20°C to 50°C

Use in humid environment IP68
(test conditions: 1h at 1m depth)

Altitude use up to 2000m

Indoor and outdoor use

Polution level 2

Maximum relative humidity of 80% for temperatures
up to 31°C and linear decrease up to 50% of relative
humidity at 40°C

FEATURES

Bluetooth® Smart 4.0 Low Energy

LoRa™ radio communication

Permanent programming save

Internal clock saved in case of power failure < 30 s

Installing the wrong type of battery may cause an explosion or fire hazard.

INSTALLATION GUIDELINES

The TEMPUS-AG-CT is made for an outdoor use. You can place it in a buried valve box or set it on a wall (concrete, brick, cinder blocks) with 2 dowels and 2 countersunk screws of 4X40 not included.

In order to clean the TEMPUS-AG-CT, use soapy water with a sponge and then a soft cloth to wipe it off.

Step 1

APP DOWNLOAD

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



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 / CT / MS, you need to create your MyToroTempus account.

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

2. Go to «My account» by typing  on icon.

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.

Step 2

ASSOCIATION

1. Unscrew the TEMPUS-AG-CT 's cap
2. Plug the 9V 6LR61 ou 6AM6 battery and screw the cap
3. Launch MyToroTempus app from your smartphone or tablet.
4. Click on the «Add a controller» button or on the «+» button
5. Choose the TEMPUS-AG-CT from the available controllers list.
6. (Optional) Define a name and a security key for your controller and click on the button «Validate».
7. To finish your TEMPUS-AG-CT pairing, follow the next steps described in the app.

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




Security key

The security key allows to protect your controller. You can define it during the step 6 of the «ASSOCIATION» or access to further information by clicking on the icon  at the top right of your screen.

Step 3

PAIRING WITH TEMPUS-AG-4G/WF

To optimize the LoRa™ radio connection between the TEMPUS-AG-4G/WF and the TEMPUS-AG-CT controllers, we advise to install the TEMPUS-AG-CT under 800 meters to the TEMPUS-AG-4G/WF. We also advise to associate all your TEMPUS-AG Controller near the TEMPUS-AG-4G/WF before installing them in the valve boxes.

1. On the MyToroTempus mobile App, select your TEMPUS-AG-4G/WF, and enter pairing mode on the Information screen. (You must be connected via Bluetooth)
2. Select the TEMPUS-AG-CT previously installed.
3. Click on  the top right icon to access to the product's informations.
4. Click on «Remote Access».
5. Select the TEMPUS-AG-4G/WF you want to pair the controller with.
6. Click on the button «Send» or  on the bottom of your screen to validate. Once the pairing finished, you can test the connection between your TEMPUS-AG-4G/WF and your TEMPUS-AG-CT
7. Go back to «Remote access» screen.
8. Click on the button  to start the test.

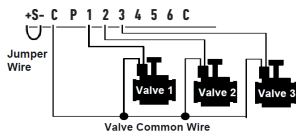
Note:

- The message «Connection established» means that the connection is reliable.
- The message «No connection established» means that it is necessary to bring the TEMPUS-AG-CT closer to the TEMPUS-AG-4G/WF or vice versa.

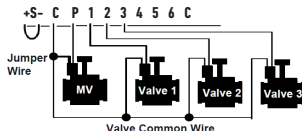
Step 4

WIRING

1. Connect the TEMPUS-AG-CT to the solenoids as described below. Use 9V pulse valves only.



2. You can connect on the P output a master valve or a Pump Start Relay. The output will automatically start 2s before the start of each station.



Step 5

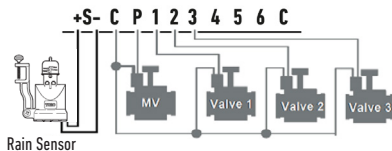
SET SENSOR



Warning, by default there are no sensor configured.

The TEMPUS-AG-CT has a +S - sensor input on which you can connect a rain sensor or a flow meter/water meter or pressure switch after cutting the blue wire. Once the sensor is connected, it is necessary to configure it in the application.

1. Using the MyToroTempus mobile app, connect to your TEMPUS-AG-CT via Bluetooth.
2. Click on Add Sensor.
3. Select your sensor type and follow the instructions given by the application



SET FLOWMETER

1. Check the «Instant Value».

Instant Value: Ensures that the volume consumed indicated on the water meter is the same as the volume displayed on the application. If a gap is noted, check the wiring (polarity) or adjust the «COEFFICIENT» value.

2. Fill in the remaining fields.

High threshold (daily volume): maximum consumption (in liter) that you do not want to exceed in a period of 24h. If the goal is exceeded you will be alerted immediately (by e-mail and notification smartphone and / or tablet).

Low threshold (daily volume): minimum consumption (in liters) that you want to achieve over a period of 24h. If the goal is not reached you will be alerted the next day at 7am (by e-mail and notification smartphone and / or tablet).

Leak alert volume: water volume threshold (in liter) from which you want to be alerted.

Station flow: for each station, read the flowmeter at time T (Cpt1), then at time

T + 5mn (Cpt2).

Make the calculation $(Cpt2 - Cpt1) / 5 \Rightarrow \text{Flow (L / min)}$

In the application fill in the results.

High Threshold (Station Flow Alerts): Maximum consumption warning threshold in % of the calibrated flow of the channel. The «High threshold» alert is immediate as soon as it is reached.

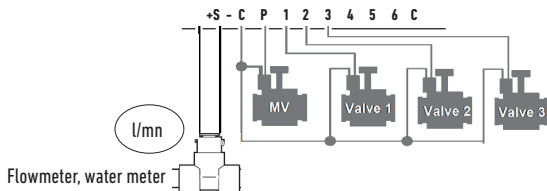
Low threshold (Station Flow Alerts): Minimum consumption warning threshold in % of the calibrated flow of the channel. The «High threshold» alert is immediate as soon as it is reached. For each station flow alert you have the possibility to define the desired type of action:

- **No action:** watering continues.
- **Permanent OFF:** resuming watering requires a manual ON command (in the application on the programmer concerned).
- **Inhibit the output:** stops the station concerned, requires the acknowledgment of the alert (in the application on the programmer concerned) to reactivate the station.

Stabilization time:

Time required before the water flow is stable when starting and stopping the station. It eliminates the peak flow (start) or leak (stop). The time is the same for all stations.

During this period, the consumption is not taken into account for triggering alerts or actions.



Connect your **+ S -** input to a water meter equipped with a flow sensor as shown above. Use dry contact flow sensors or equivalent. For polarized flow sensors, when wiring, observe the polarization :

Red wire -> + Black wire -> -

FAQ

What are the features required for the Bluetooth® product to work?

Android 4.3 (or more) Smartphones or tablets equipped with Bluetooth Smart 4.0 (or more). iOS 9.0 Apple iPhone or iPad running (or more) with Bluetooth Smart 4.0 (or more)

What is output P for?

You can connect a master valve or a pump through a relay, on P output. It will start automatically during each station watering.

What are the controller's output S (blue wire) for?

You can plug a rain sensor into S outputs, to do that you need to cut the blue wire.

How does the rain sensor work?

When connected to the wire the rain sensor acts on the stations. If it is raining, stations won't start; you must wait for the probe to dry before the programming star again. The manual control is not affected by the rain sensor conditions.


How can I restart the pairing or the pairing procedure?

To start the pairing procedure again, just bypass the 2 battery connector pins (battery removed) for 30s minimum

If my device has no more battery, do I lose my programming?

No, they are not lost, it is automatically saved.

GENERAL INFORMATION

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



This symbol indicates that the product is shock resistant.



This symbol indicates that the product is resistant to ultra violet.



This symbol indicates that the product is waterproof.



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

DECLARATION OF CONFORMITY

The Toro Company (Toro AG), 1588 N. Marshall Avenue, El Cajon, CA, 92020-1523, USA declare that TEMPUS-AG-CT conform(s) to the following directives, standards and/or other normative documents :

EMC

172376-764709-B: FCC CFR 47 Part 15, Subpart B

Transmissions

HBCS Report # EMC_15028_2 Rev1: LoRa module 915- 927.5MHz The manufacturer declaration 10 Oct 2022, states that LoRa frequencies in use are: 920.2, 920.4, 920.6MHz; RF power less than 20dBm
FCC CFR 47 Part 15, Subpart C (BLE 2,4 GHz)

Safety

IEC 61010-1: 2010 + A1:2016

IEC 61010-2-030: 2017

IEC 61010-2-201: 2017

CB cert FR_713395

LoRa Module

Microchip RN2903 LoRa™ module 920 MHz HB Compliance Solutions report EMC_15028_2 Rev1 26 May 2016.

Covering:

FCC title 47 of the CFR Part 51.247 (Digital transmitting device)

FCC/IC STATEMENT TEMPUS-AG-CT

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- 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.
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TEMPUS-AG-CT

TORO

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| For more information visit thelandscapestore.com.au | (02) 9161 3939 |



TEMPUS-AG-MS

1-4 Sensor Inputs



TEMPUS-AG-MS

Multi Sensor device
1-4 Inputs



USER'S GUIDE

INTRODUCTION

TEMPUS-AG-MS is a battery powered Bluetooth® / LoRa™, Multi Sensor device. This device allows the acquisition of measurements from sensors of temperature, humidity, flow, wind speed. TEMPUS-AG-MS transmits data via LoRa connection to a TEMPUS-AG-4G/WF gateway. TEMPUS-AG-MS available in two models: MS-4 with 4 inputs (3 sensor inputs and 1 temperature input) and MS-1 with 1 input (1 sensor input).

SPECIFICATION

DIMENSIONS

Width: 10,5 cm

Height: 4,8 cm

Depth: 11,6 cm

FEATURES

Bluetooth® Smart 4.0 Low Energy

LoRa™ radio communication

Permanent programming memory

USE

Polution level 2

Maximum relative humidity of 80% for temperatures up to 31°C and linear decrease up to 50% of relative humidity at 40°C

Indoor and outdoor use

Use in humid environment IP68

(test conditions: 1h at 1m depth)

Operating temperature: from -20°C to 50°C

Altitude use up to 2000m

POWER SUPPLY

9V 6AM6 ou 6LR61 Alkaline battery

Not included

Current consumption : 0.1mA

INSTALLATION

1 (MS-1) or 3 (MS-4) configurable inputs to choose from:

- Dry contact (rain sensor, wind sensor, ...)
- Pulse (flowmeter, wind sensor, ...)
- Analog (0-3.5V) (moisture sensor, tensiometer, ...)

1 (MS-4 only) temperature acquisition input (type Pt100) 3V5 supply sensor

The voltage value assigned to each mounted terminals is 3.3V (red wire to each inputs).

Note: the referenced sensors in this user manual are the ones recommended for the TEMPUS-AG-MS-A use.

Installing the wrong type of battery may cause an explosion or fire hazard.

INSTALLATION GUIDELINES

The TEMPUS-AG-MS is made for an outdoor use. You can place it in a buried valve box or set it on a wall (concrete, brick, cinder blocks) with 2 dowels and 2 countersunk screws of 4X40 not included.

In order to clean the TEMPUS-AG-MS, use soapy water with a sponge and then a soft cloth to wipe it off.

Step 1

APP DOWNLOAD

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/CT/MS, you need to create your 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

Step 2

ASSOCIATION

1. Unscrew the TEMPUS-AG-MS 's cap
2. Plug the 9V 6LR61 ou 6AM6 battery and screw the cap
3. Sign in with your MyToroTempus account
4. Launch Tempus AG app from your smartphone and/or tablet.
5. Click on the «Add a device» button or on the «+» button
6. Choose the TEMPUS-AG-MS from the available devices list.
7. To finish your TEMPUS-AG-MS pairing, follow the next steps described in the app.



Note: To identify your TEMPUS-AG-MS among the nearby devices, please refer to the «Default name» present on the product label.

Security key: The security key allows to protect your device. You can define it during the step 7 of the ASSOCIATION» or access to further information by clicking on the icon  at the top right of your screen.

Step 3

PAIRING WITH TEMPUS-AG-4G/WF

To optimize the LoRa™ radio connection between the TEMPUS-AG-4G/WF and the TEMPUS-AG-MS device, we advise to install the TEMPUS-AG-MS under 800 meters to the TEMPUS-AG-4G/WF. We also advise to associate all your Tempus AG device near the TEMPUS-AG-4G/WF before installing them.

1. On the MyToroTempus mobile App, select your TEMPUS-AG-4G/WF, and enter pairing mode on the information screen. (You must be connected via Bluetooth)
2. Select the TEMPUS-AG-MS device previously installed.
3. Click on the top right icon  to access to the product's informations.
4. Click on «Remote Access».
5. Select the TEMPUS-AG-4G/WF you want to pair the device with.
6. Click on the button «Send»  on the bottom of your screen to validate.

Once the pairing finished, you can test the connection between your TEMPUS-AG-4G/WF and your TEMPUS-AG-MS

7. Go back to «Remote access» screen.
8. Click on the button  to start the test.

Note:

- The message «Connection established» means that the connection is reliable.
- The message «No connection established» means that it is necessary to bring the TEMPUS-AG-MS closer to the TEMPUS-AG-4G/WF or viceversa.

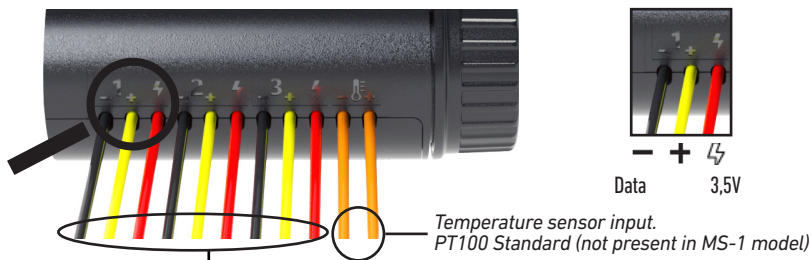
Step 4

SENSOR INSTALLATION

To ease the sensor installation we advise to follow the MyToroTempus mobile application instruction.

1. Get closer than 10 meters from TEMPUS-AG-MS and make sure your smartphone's Bluetooth is turned on.
2. Launch MyToroTempus app from your smartphone or tablet.
3. Select the TEMPUS-AG-MS previously installed. (The two devices, smartphone and MS device, must be connected via Bluetooth)
4. Click on "Add a sensor"
5. Select the type of sensor you want connect to your TEMPUS-AG-MS.
6. Select the sensor you want connect to your TEMPUS-AG-MS.
7. To properly connect the wiring and complete the sensor installation, follow the next steps described in the app.

WIRING



Configurable acquisition inputs (3 inputs for MS-4 model, 1 input for MS-1 model)

- Dry contact (rain sensor, anemometer, ...)
- Pulsive (flowmeter, ...)
- Analog 0-3.5V (humidity sensor, solar radiation...)

Red wires: 3.5V power supply

Note: The Tempus-AG-MS-1 has only 1 configurable acquisition input (three-wire entry) and it doesn't have temperature sensor input (two-wire entry).

Configurable sensor inputs (3 for MS-4, 1 for MS-1)



Types of sensors that can be connected:

- Dry contact (rain sensor, wind sensor, ...)
- Pulse (flowmeter, wind sensor, ...)
- Analog (0-3.5V) (moisture sensor, solar radiation ...)

*Example of connecting an analog input sensor:
VH400 moisture sensor*

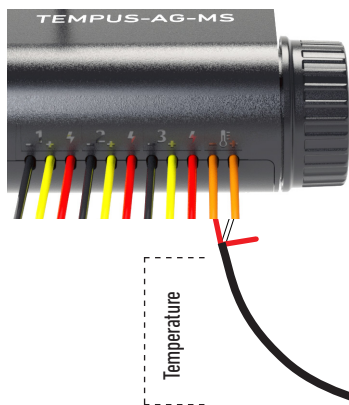
The **black wire** (- Symbol) of your TEMPUS-AG-MS-A must be connected to the **gray wire** of the VH400 moisture sensor

The **yellow wire** (+ Symbol) of your TEMPUS-AG-MS-A must be connected to the **black wire** of the VH400 moisture sensor

The **red wire** (lampo Symbol) of your TEMPUS-AG-MS-A must be connected to the **red wire** of the VH400 moisture sensor

Note: the Tempus AG MS-1 has only one configurable sensor input.

Temperature sensor (MS-4 only)



*Temperature sensor Input
(PT100 Standard)*

The **orange wire** (+ Symbol) of your TEMPUS-AG-MS-A must be connected to one of the two **red wires** of the temperature sensor

The **orange wire** (- Symbol) of your TEMPUS-AG-MS-A must be connected to the **white wire** of the temperature sensor

Note: the Tempus AG MS-1 doesn't have temperature sensor input.

GENERAL INFORMATION

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



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



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



This symbol indicates that the product is shock resistant.



This symbol indicates that the product is resistant to ultra violet.



This symbol indicates that the product is waterproof.



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

DECLARATION OF CONFORMITY

The Toro Company (Toro AG), 1588 N. Marshall Avenue, El Cajon, CA, 92020-1523, USA declare that TEMPUS-AG-MS conform(s) to the following directives, standards and/or other normative documents :

EMC

FCC CFR 47 Part 15, Subpart B

Transmissions

HBCS Report # EMC_15028_2 Rev1: LoRa module. The manufacturer declaration 10 Oct 2022, states that LoRa frequencies in use are: 920.2, 920.4, 920.6MHz; RF power less than 20dBm
CFR 47 Part 15, Subpart C (BLE 2,4 GHz)

Safety

IEC 61010-1: 2010 (THIRD EDITION) +A1:2016
IEC 61010-2-030: 2017
CB cert FR_713209

LoRa Module

Microchip RN2903 LoRa™ module 920 MHz HB Compliance Solutions report EMC_15028_2 Rev1 26 May 2016.
Covering:
FCC title 47 of the CFR Part 51.247 (Digital transmitting device)

FCC/IC STATEMENT TEMPUS-AG-MS

This product contains a modular approval with FCC ID : YWW-BLEMOD, T9JRN2903 and IC : 9319A-BLEMOD, 6514A-RN2903.

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.

Caution : the user that 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 instruction, may cause harmful interference to radio communication. 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 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.

This device contains licence-exempt transmitter(s)/receiver(s) that comply with innovation, science and Economic development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions : (1) this device may not cause interference, and (2) This device must accept any interference, including interference that may cause undesired operation of the device.

TEMPUS-AG-MS



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TEMPUS-AG-MV Controller 1 Station



TEMPUS-AG-MV

*Main valve or pump
controller*



USER'S GUIDE

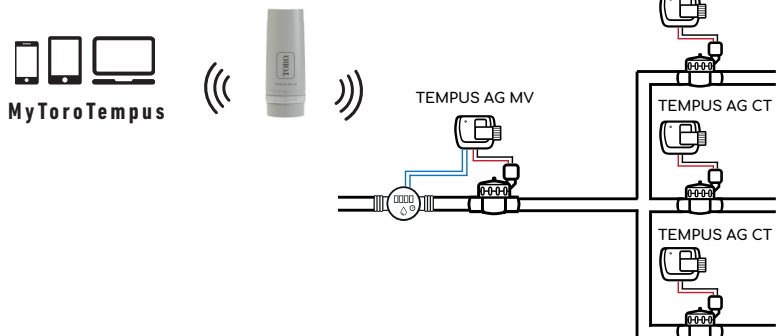
INTRODUCTION

The TEMPUS-AG-MV is a Bluetooth / LoRa connected device. This is a 9V battery supplied controller with an autonomy about approximately a year (the autonomy depends on the programming). It allows to manage a main valve or a pump (via a pump relay). It also offers a water meter input which can control the water flow from the same agriculture controllers network TEMPUS-AG-CT and transmit the information remotely through a TEMPUS-AG-4G / WF.

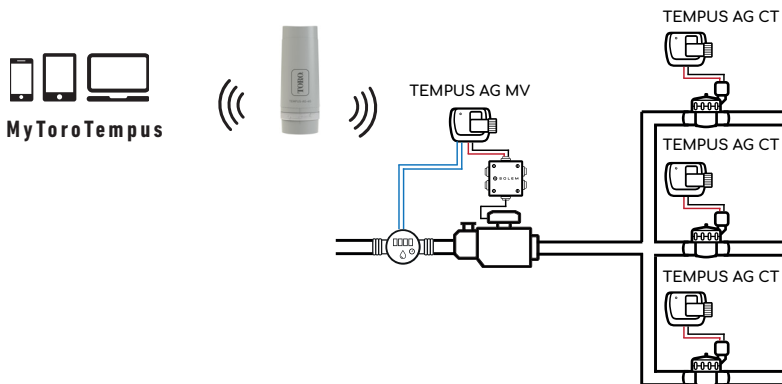
This product only operates in a controllers' cluster TEMPUS-AG-CT. The programming of this device is made automatically regarding the linked TEMPUS-AG-CT controllers programs, from the same network via MyToroTempusAG.com platform.

For any information regarding the app or the platform use, please refer to dedicated user manuals.

Main Valve use



Pump use



SPECIFICATION

DIMENSIONS

Width : 14 cm

Height : 9 cm

Depth : 5,5 cm

INSTALLATION

Connection to a rain sensor, water meter or pressure switch.

Connection to a master valve or pump relay.

Compatible with 9V pulse solenoid.

Maximum wiring length with solenoids: 30 m.

POWER SUPPLY

9V 6AM6 or 6LR61 Alkaline battery (not included)

Current consumption : 0.1mA

USE

Ambient temperature of product use: -20°C to 50°C

Use in humid environment IP68

(test conditions: 1h at 1m depth)

Altitude use up to 2000m

Indoor and outdoor use

Polution level 2

Maximum relative humidity of 80% for temperatures up to 31°C and linear decrease up to 50% of relative humidity at 40°C

FEATURES

Bluetooth® Smart 4.0 Low Energy

LoRa™ radio communication

Permanent programming save

Internal clock saved in case of power failure < 30 s

Installing the wrong type of battery may cause an explosion or fire hazard.

INSTALLATION GUIDELINES

The TEMPUS-AG-MV is made for an outdoor use. You can place it in a buried valve box or set it on a wall (concrete, brick, cinder blocks) with 2 dowels and 2 countersunk screws of 4X40 not included.

In order to clean the TEMPUS-AG-MV, use soapy water with a sponge and then a soft cloth to wipe it off.

Step 1

APP DOWNLOAD

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



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 your products, you need to create your 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.

Step 2

ASSOCIATION

1. Unscrew the TEMPUS-AG-MV 's cap
2. Plug the 9V 6LR61 ou 6AM6 battery and screw the cap
3. Launch MyToroTempus app from your smartphone or tablet.
4. Click on the «Add a controller» button or on the «+» button
5. Choose the TEMPUS-AG-MV from the available controllers list.
6. (Optional) Define a name and a security key for your controller and click on the button «Validate».
7. To finish your TEMPUS-AG-MV pairing, follow the next steps described in the app.

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

Security key




The security key allows to protect your controller. You can define it during the step 6 of the «ASSOCIATION» or access to further information by clicking on the icon  at the top right of your screen.

Step 3

PAIRING WITH TEMPUS-AG-4G/WF

The TEMPUS-AG-MV needs to be paired to a 4G gateway (TEMPUS-AG-4G) or WiFi gateway (TEMPUS-AG-WF) in order to enable a remote connection and a management from the app or from the MyToroTempusAG platform.

In order to optimize the LoRa radio communication between gateways and controllers, it is recommended to install the controller at least at 800 meters from the gateway. We also recommend to pair all of your controllers TEMPUS-AG near the gateway before setting them in valve boxes.

1. Select the TEMPUS-AG-MV previously installed.
2. Click on  the top right icon to access to the product's informations.
3. Click on «Remote Access».
4. Select the gateway you want to pair the controller with.
5. Click on the button «Send» or  on the bottom of your screen to validate. Once the pairing finished, you can test the connection between your gateway and your TEMPUS-AG-MV
6. Go back to the «Remote access» screen.
7. Click on the button  to start the test.

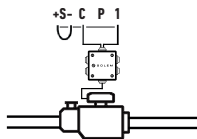
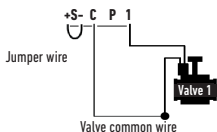
Note:

- The message «Connection established» means that the connection is reliable.
- The message «No connection established» means that it is necessary to bring the TEMPUS-AG-CT closer to the TEMPUS-AG-4G/WF-A or vice versa.

Step 4

SOLENOID VALVE / PUMP WIRING

1. Plug the TEMPUS-AG-MV as shown below. Use 9V solenoid valves only for a main valve and a relay for a pump use.



Step 5

CHOICE AND SENSOR SETUP

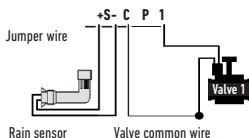


Warning, by default there are no sensor configured.

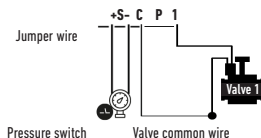
The TEMPUS-AG-MV has a + S - sensor input on which you can connect a rain sensor or a flow meter/water meter or pressure switch after cutting the blue wire. Once the sensor is connected, it is necessary to configure it in the application.

1. Using the MyToroTempus mobile app, connect to your TEMPUS-AG-MV via Bluetooth.
2. Click on Add Sensor.
3. Select your sensor type and follow the instructions given by the application.

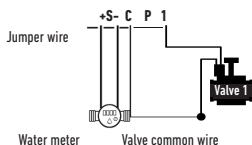
Rain sensor



Pressure switch (AON = All or Nothing)



Water meter



Connect your + S - input to a water meter equipped with a flow sensor as shown above. Use dry contact flow sensors or equivalent. For polarized flow sensors, when wiring, observe the polarization :

Red wire -> + Black wire -> -

SET FLOWMETER

1. Check the «Instant Value».

Instant Value: Ensures that the volume consumed indicated on the water meter is the same as the volume displayed on the application. If a gap is noted, check the wiring (polarity) or adjust the «COEFFICIENT» value.

2. Fill in the remaining fields.

High threshold (daily volume): maximum consumption (in liter) that you do not want to exceed in a period of 24h. If the goal is exceeded you will be alerted immediately (by e-mail and notification smartphone and / or tablet).

Low threshold (daily volume): minimum consumption (in liters) that you want to achieve over a period of 24h. If the goal is not reached you will be alerted the next day at 7am (by e-mail and notification smartphone and / or tablet).

Leak alert volume: water volume threshold (in liter) from which you want to be alerted outside periods of use.

Station flow: for each station, read the flowmeter at time T (Cpt1), start the station in manual mode for 5 minutes then at time T + 5mn (Cpt2). Read again the instant value Cpt2.

Make the calculation $(\text{Cpt2} - \text{Cpt1}) / 5 \Rightarrow \text{Flow (L / min)}$

In the application fill in the results.

High Threshold (Station Flow Alerts): Maximum consumption warning threshold in % of the calibrated flow of the channel. The «High threshold» alert is immediate as soon as it is reached.

Low threshold (Station Flow Alerts): Minimum consumption warning threshold in % of the calibrated flow of the channel. The «High threshold» alert is immediate as soon as it is reached. For each station flow alert you have the possibility to define the desired type of action:

- **No action:** watering continues.
- **Permanent OFF:** resuming watering requires a manual ON command (in the application on the programmer concerned).
- **Inhibit the output:** stops the station concerned, requires the acknowledgment of the alert (in the application on the programmer concerned) to reactivate the station.

Stabilization time:

Time required before the water flow is stable when starting and stopping the station. It eliminates the peak flow (start) or leak (stop). The time is the same for all stations.

During this period, the consumption is not taken into account for triggering alerts or actions.

SET PRESSURE SWITCH

How to set up manually your pressure switch on the pipe :

1. The contact of the pressure switch is normally closed.
2. Put the pressure switch on the pipe.
3. Remove the cap on the head of the pressure switch.
4. Check that the value is 0 using the instant value connected in bluetooth with the App.
5. Open the irrigation and check if the value is 1.
6. To set it up precisely. During irrigation Screw the screw of the pressure switch until the instant value go to 0.
7. Then always during the irrigation, unscrew slowly a little bit more the screw in order to get again the 1.

Note: You can also use a multimeter instead of the using the instant value.

FAQ

What are the features required for the Bluetooth® product to work?

Android 4.3 (or more) Smartphones or tablets equipped with Bluetooth Smart 4.0 (or more). iOS 9.0 Apple iPhone or iPad running (or more) with Bluetooth Smart 4.0 (or more)

How does the rain sensor work?

When connected to the wire the rain sensor acts on the stations. If it is raining, stations won't start; you must wait for the probe to dry before the programming star again. The manual control is not affected by the rain sensor conditions.

How can I restart the pairing or the pairing procedure?

To start the pairing procedure again, just bypass the 2 battery connector pins (battery removed) for 30s minimum

If my device has no more battery, do I lose my programming?

No, they are not lost, it is automatically saved.

GENERAL INFORMATION

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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.



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



This symbol indicates that the product is shock resistant.



This symbol indicates that the product is resistant to ultra violet.



This symbol indicates that the product is waterproof.



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

DECLARATION OF CONFORMITY

The Toro Company (Toro AG), 1588 N. Marshall Avenue, El Cajon, CA, 92020-1523, USA declare that TEMPUS-AG-MV conform(s) to the following directives, standards and/or other normative documents :

EMC

172376-764709-B: FCC CFR 47 Part 15, Subpart B

Transmissions

HBCS Report # EMC_15028_2 Rev1: LoRa module 915- 927.5MHz The manufacturer declaration 10 Oct 2022, states that LoRa frequencies in use are: 920.2, 920.4, 920.6MHz; RF power less than 20dBm
FCC CFR 47 Part 15, Subpart C (BLE 2,4 GHz)

Safety

IEC 61010-1: 2010 + A1:2016
IEC 61010-2-030: 2017
IEC 61010-2-201: 2017
CB cert FR_713395

LoRa Module

Microchip RN2903 LoRa™ module 920 MHz HB Compliance Solutions report EMC_15028_2 Rev1 26 May 2016.
Covering:
FCC title 47 of the CFR Part 51.247 (Digital transmitting device)

FCC/IC STATEMENT TEMPUS-AG-MV

This product contains a modular approval with FCC ID : YWW-BLEMOD, T9JRN2903 and IC : 9319A-BLEMOD, 6514A-RN2903

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- 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.

This device contains licence-exempt transmitter(s)/receiver(s) that comply with innovation, science and Economic development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions : (1) this device may not cause interference, and (2) This device must accept any interference, including interference that may cause undesired operation of the device.

TEMPUS-AG-MV Controller
1 Station



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TEMPUS-AG-PR



TEMPUS-AG-PR

Pressure sensor device
1 Input



USER'S GUIDE

INTRODUCTION

The TEMPUS-AG-PR is a sensor device powered by a 9V battery and used only for reading and controlling the pressure of your irrigation system. Thanks to the prewired pressure sensor, the TEMPUS-AG-PR will put the pressure under control and will alert if the thresholds are exceeded. The thresholds can be set from the MyToroTempus application or platform. TEMPUS-AG-PR transmits data via LoRa connection to a TEMPUS-AG-4G/WF gateway.

SPECIFICATION

DIMENSIONS

Width : 10,5 cm

Height : 4,8 cm

Depth : 11,6 cm

FEATURES

Bluetooth® Smart 4.0 Low Energy

LoRa™ radio communication

POWER SUPPLY

9V 6AM6 ou 6LR61 Alkaline battery
(not included)

Current consumption : 0.1mA

Sensor power supply : 5VDC (TBTS)

USE

Operating temperature : -20°C to 50°C

Indoor and outdoor use

Use in humid environment IP68

(test conditions: 1h at 1m depth)

Altitude use up to 2000m

Pollution level 2

Maximum relative humidity of 80% for temperatures up to 31°C and linear decrease up to 50% of relative humidity at 40°C.

INSTALLATION

1 Pressure Sensor

Pressure : 0 to 1600 kPa

Screw thread : 1/4" BSP

Installing the wrong type of battery may cause an explosion or fire hazard.

INSTALLATION GUIDELINES

The TEMPUS-AG-PR is made for an outdoor use. You can place it in a buried valve box or set it on a wall (concrete, brick, cinder blocks) with 2 dowels and 2 countersunk screws of 4X40 not included.

In order to clean the TEMPUS-AG-PR, use soapy water with a sponge and then a soft cloth to wipe it off.

When replacing the sensor, only use a sensor with a waterproof connector (MIPAG1XX004BAAAX).

APP DOWNLOAD

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-PR/4G/CT/MS, you need to create your 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


1. Unscrew the TEMPUS-AG-PR 's cap
2. Plug the 9V 6LR61 ou 6AM6 battery and screw the cap
3. Sign in with your MyToroTempus account
4. Launch Tempus AG-A app from your smartphone and/or tablet.
5. Click on the «Add a device» button or on the «+» button
6. Choose the TEMPUS-AG-PR from the available devices list.
7. To finish your TEMPUS-AG-PR pairing, follow the next steps described in the app.

Note: To identify your TEMPUS-AG-PR among the nearby devices, please refer to the «Default name» present on the product label.

Security key: The security key allows to protect your device. You can define it during the step 7 of the ASSOCIATION» or access to further information by clicking on the icon  at the top right of your screen.

PAIRING WITH TEMPUS-AG-4G/WF

To optimize the LoRa™ radio connection between the TEMPUS-AG-4G/WF and the TEMPUS-AG-PR device, we advise to install the TEMPUS-AG-PR under 800 meters to the TEMPUS-AG-4G/WF. We also advise to associate all your TEMPUS-AG-A device near the TEMPUS-AG-4G/WF before installing them.

1. On the MyToroTempus mobile App, select your TEMPUS-AG-4G/WF, and enter pairing mode on the information screen. (You must be connected via Bluetooth)
2. Select the TEMPUS-AG-PR device previously installed.
3. Click on the top right icon  to access to the product's informations.
4. Click on «Remote Access».
5. Select the TEMPUS-AG-4G/WF you want to pair the device with.

6. Click on the button «Send»  on the bottom of your screen to validate.

Once the pairing finished, you can test the connection between your TEMPUS-AG-4G/WF and your TEMPUS-AG-PR

7. Go back to «Remote access» screen.
8. Click on the button  to start the test.

Note:

- The message «Connection established» means that the connection is reliable.
- The message «No connection established» means that it is necessary to bring the TEMPUS-AG-PR closer to the TEMPUS-AG-4G/WF or viceversa.

SENSOR INSTALLATION

1. Get closer than 10 meters from TEMPUS-AG-PR and make sure your smartphone's Bluetooth is turned on.
2. Launch MyToroTempus app from your smartphone or tablet.
3. Select the TEMPUS-AG-PR previously installed. (The two devices, smartphone and PR device, must be connected via Bluetooth)
4. Click on "Add a sensor"
5. Select the type of sensor you want connect to your TEMPUS-AG-PR.
6. Select the sensor you want connect to your TEMPUS-AG-PR.
7. To properly connect the wiring and complete the sensor installation, follow the next steps described in the app.



1 input model : analog 0-5 V Pressure Sensor.

Red wires: 5V power supply


The sensor's wires are directly wired to the products at the factory. Only the sensor can be disconnected thanks to its waterproof Metripack-150 connector.

Metripack-150 connector



The sensor used makes it possible to measure the pressure of the irrigation system from 0 to 1600 kPa. It will be installed on the system thanks to its 1/4" BSP screw thread.

GENERAL INFORMATION

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



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



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



This symbol indicates that the product is shock resistant.



This symbol indicates that the product is resistant to ultra violet.



This symbol indicates that the product is waterproof.



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

DECLARATION OF CONFORMITY

The Toro Company (Toro AG), 1588 N. Marshall Avenue, El Cajon, CA, 92020-1523, USA declare that TEMPUS-AG-PR conform(s) to the following directives, standards and/or other normative documents :

EMC

172376-764709-E: FCC CFR 47 Part 15, Subpart B

Transmissions

HBCS Report # EMC_15028_2 Rev1: LoRa module. The manufacturer declaration 10 Oct 2022, states that LoRa frequencies in use are: 920.2, 920.4, 920.6MHz; RF power less than 20dBm
CFR 47 Part 15, Subpart C (BLE 2,4 GHz)

Safety

IEC 61010-1: 2010 (THIRD EDITION) +A1:2016

IEC 61010-2-030: 2017

CB cert FR_713031

LoRa Module

Microchip RN2903 LoRa™ module 920 MHz HB Compliance Solutions report EMC_15028_2 Rev1 26 May 2016.

Covering:

FCC title 47 of the CFR Part 51.247 (Digital transmitting device)

FCC/IC STATEMENT TEMPUS-AG-PR

This product contains a modular approval with FCC ID : YWW-BLEMOD, T9JRN2903 and IC : 9319A-BLEMOD, 6514A-RN2903

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.

Caution : the user that 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 instruction, may cause harmful interference to radio communication. 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 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.

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions : (1) this device may not cause interference, and (2) This device must accept any interference, including interference that may cause undesired operation of the device.

This device complies with FCC and ICSE RF radiation exposure limits set forth for general population. This device must be installed to provide a separation distance of at least 20cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

TEMPUS-AG-PR Controller
1 Station



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