WIRELESS SENSORS TECHNOLOGY

PLUS TWP-4AI
INSTALLATION GUIDE

IG_PLUS_TWP-4AI_E02A

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TEKONELECTRONICS.COM

PLUS TWP-4AI WIRELESS SYSTEM
INSTALLATION GUIDE

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01

WGW420 PLUS WIRELESS GATEWAY CONFIGURATION

step **01**

WGW420 PLUS WIRELESS GATEWAY CONFIGURATION

TEKON CONFIGURATOR SOFTWARE is only compatible with the Microsoft® Windows® Operating System.

01 Connect the antenna to the *Gateway*.

02

Wiring

Connect the power supply and then the *RS485-USB* cable to the *Gateway*.

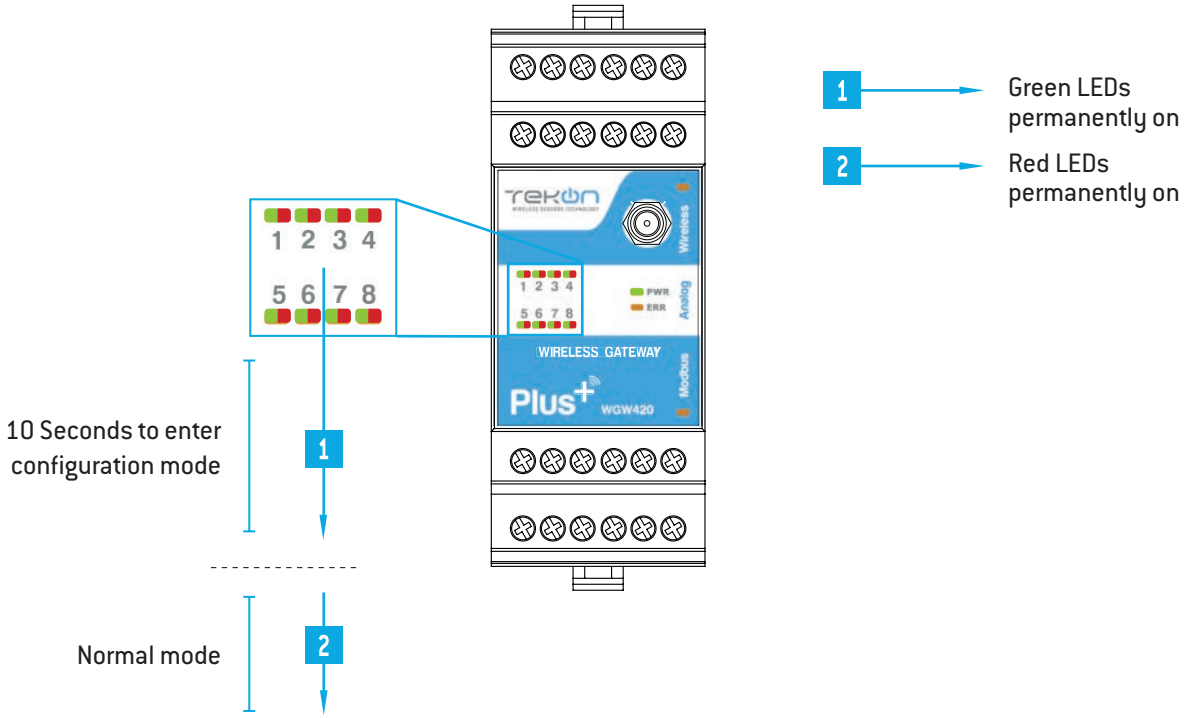
Wire Indication:
Blue - GND; Brown - +24 VDC; Orange - Data+ (A); Black - GND; Yellow - Data - (B)

03 Power ON the device.

step
01
WGW420 PLUS WIRELESS GATEWAY CONFIGURATION

04

Check device connection state by LED indication.



05

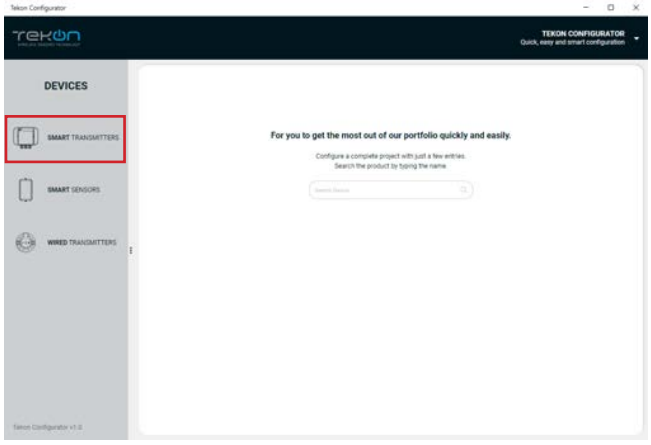
Open *Tekon Configurator Software*[1]

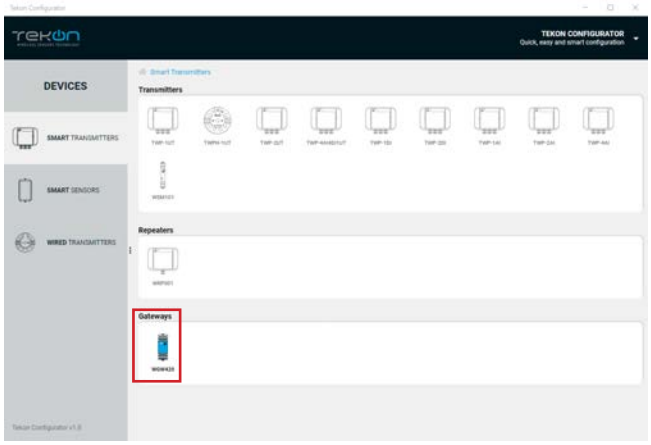
[1] Tekon Configurator software is free of charge and available at www.tekonelectronics.com

06 Open the WGW420 PLUS Wireless Gateway device page.

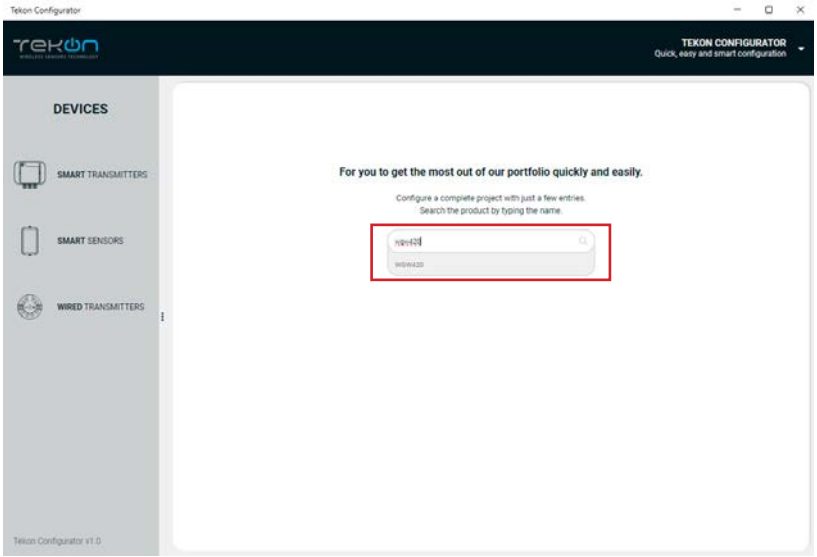
You can enter the device's page in the following ways:

1st option: Click on *"SMART TRANSMITTERS"* in the left menu and then click on the WGW420 device.





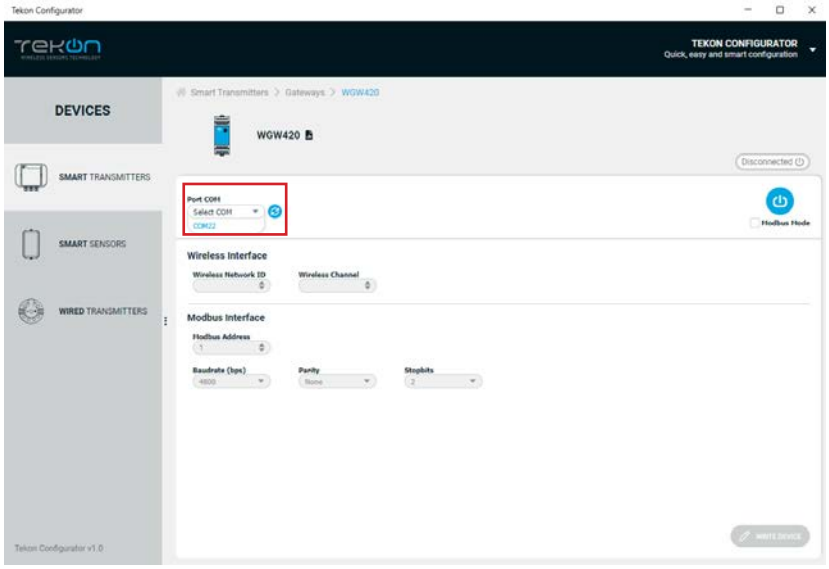
2nd option: Type the name of the device in the *"Search Device"* field on the home page and select.



step
01
WGW420 PLUS WIRELESS GATEWAY CONFIGURATION

07

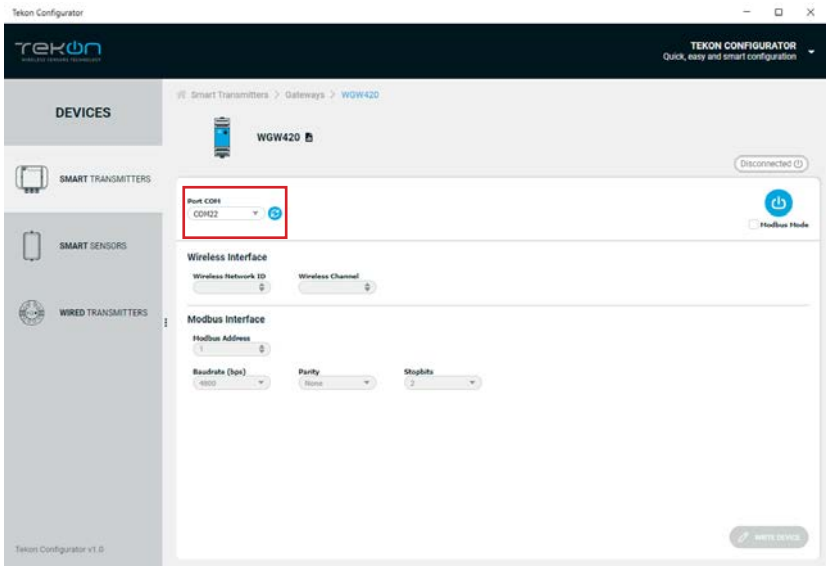
Load the "Port COM" corresponding to the WGW420 Wireless Gateway.



NOTE:
If the USB cable has already been connected before opening the device page, "Port COM" will appear in the list, otherwise you need to click on the " " button.

08

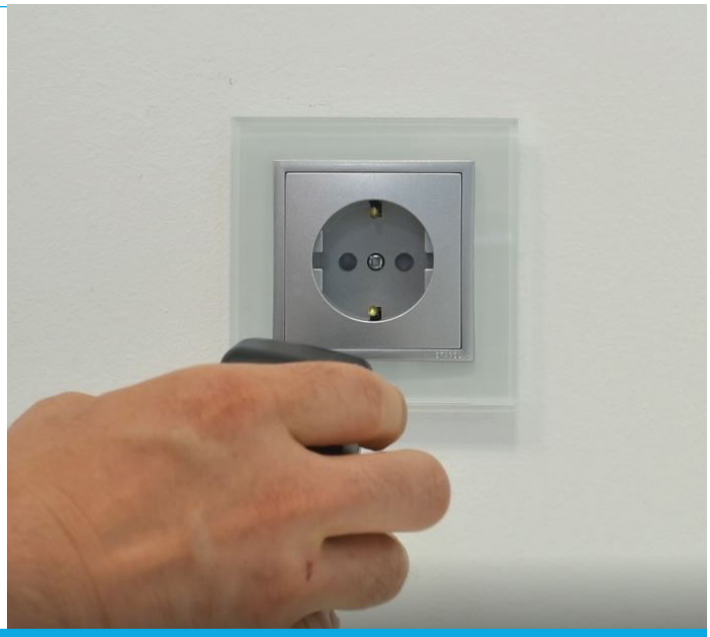
Select corresponding *Port name*[2].



[2] You can check device's serial port name in "Device Manager" on Microsoft ® Windows® operating system.

09

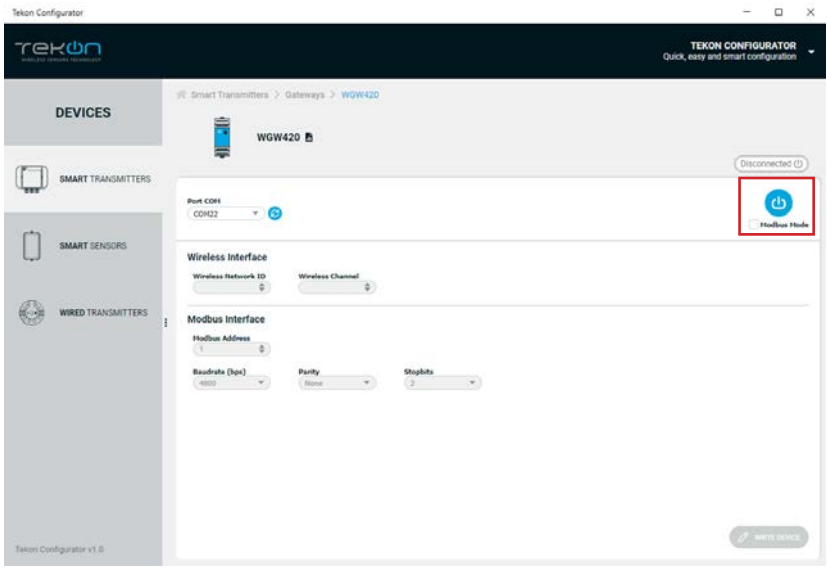
Perform a power cycle on the *Gateway*.



NOTE:
After power up, you have 10 seconds to enter configuration mode by clicking on Connect button ( ) (while green LEDs are permanently on).
In this mode, you can manage device parameters: *Modbus Address*, *Modbus Baudrate*, *Modbus Parity*, *Wireless Network ID* and *Wireless Channel*.

10

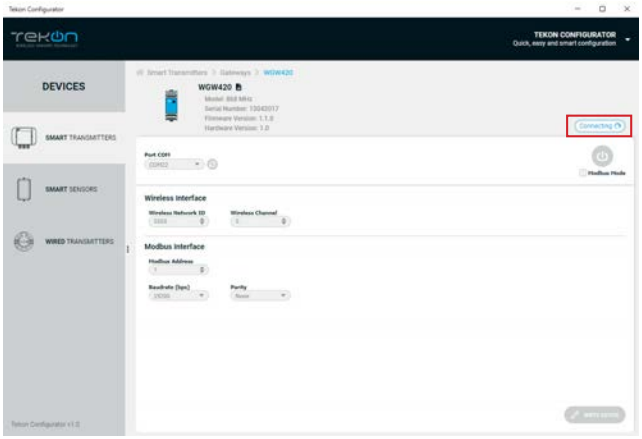
Click on *Connect* ( ) button.



step
01
WGW420 PLUS WIRELESS GATEWAY CONFIGURATION

11

The software will connect to the device.

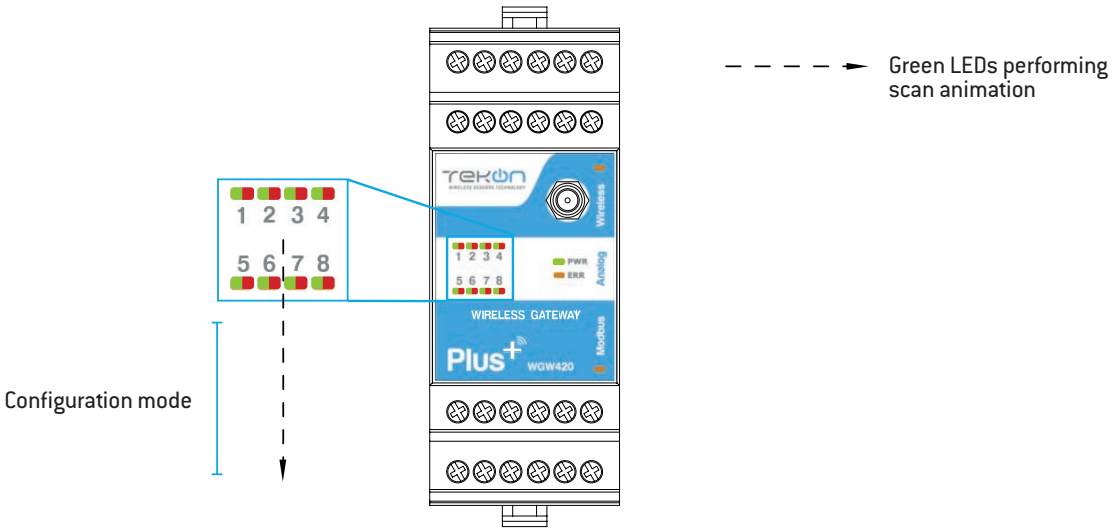


NOTE:
If the software is unable to connect to the device, the Connection Failed status is displayed. If it hasn't connected, go back to the previous steps and check the port COM.

12

When the software connects to the device, the "Connected" message will be displayed.

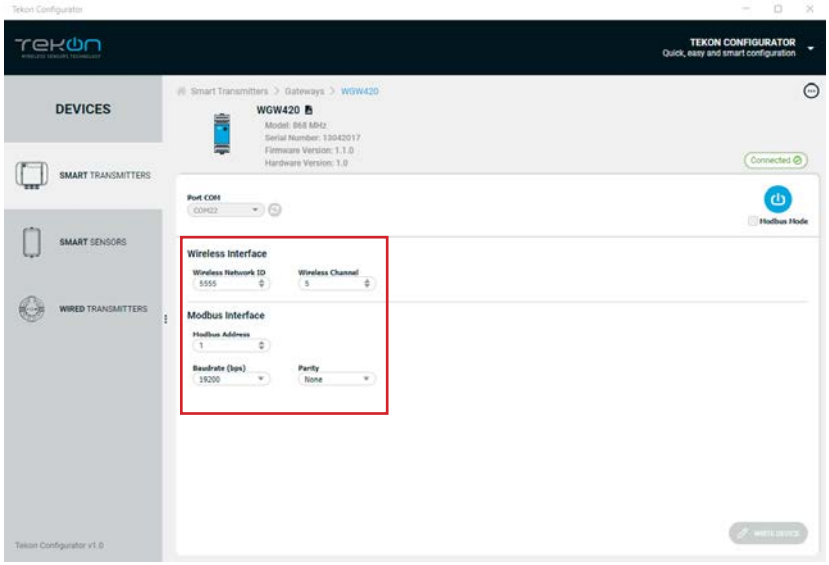
You can also verify configuration mode activation by checking LEDs on the gateway.



NOTE:
When the 10-second time frame to enter configuration mode is exceeded, the LEDs will turn permanently red and the gateway will enter normal operation mode.
To get back in configuration mode, you need to perform a power cycle - step 8.

13

Take note of device configuration data available, namely: *Modbus Address*, *Modbus Baudrate*, *Modbus Parity*, *Wireless Network ID* and *Wireless Channel*.

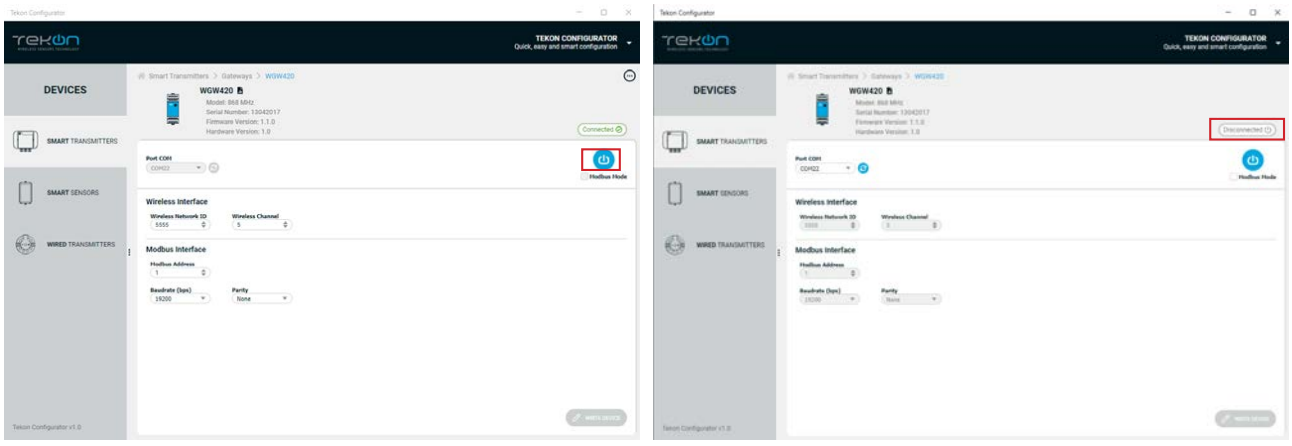


NOTE:
The wireless network connection between devices is ensured by setting the same *Wireless Network ID* and *Wireless Channel* parameters.

You can change the editable parameters. To save your changes, click on WRITE DEVICE. If the changes have been written to the device, the symbol (✔) will appear.
If not, the symbol (✖) will appear: try again and check that the device is connected correctly.

14

Click on the *Disconnect* button.



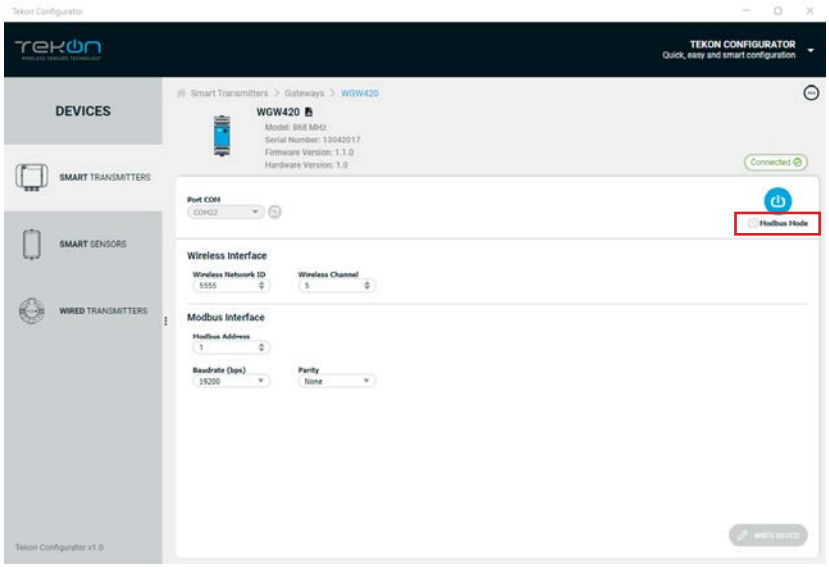
The “Connected” status changes to *“Disconnected”*.

step
01
WGW420 PLUS WIRELESS GATEWAY CONFIGURATION

15

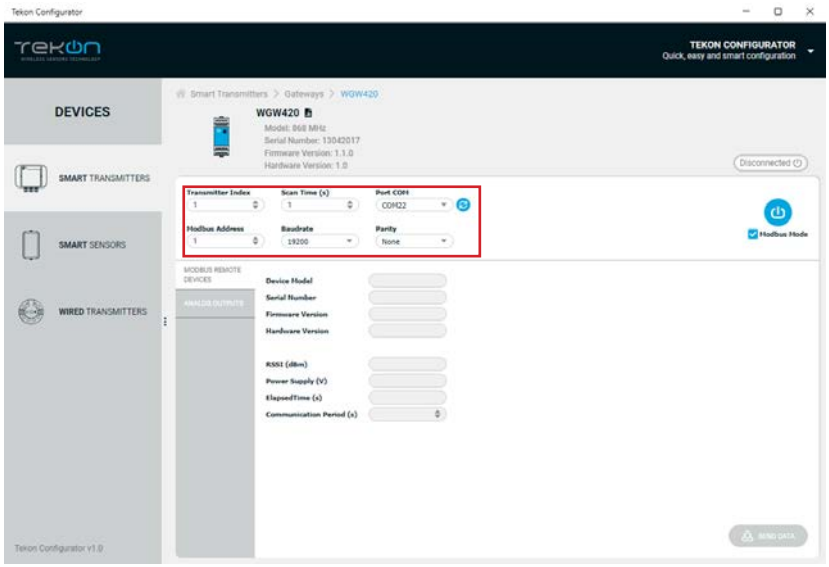
Modbus Communication

Select modbus mode in the checkbox below the Connect button.



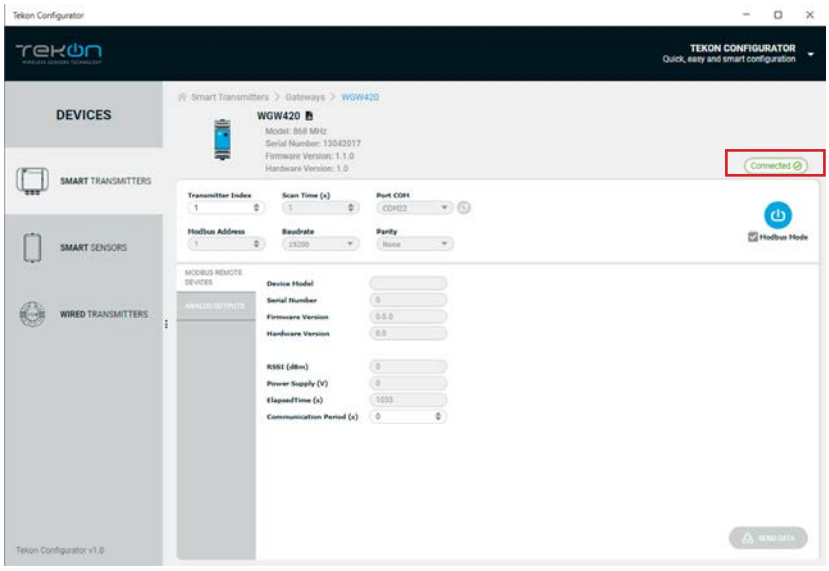
16

Ensure that *Port name*, *Baudrate*, *Parity* and *Modbus Address* fields are the same as those obtained in configuration mode.

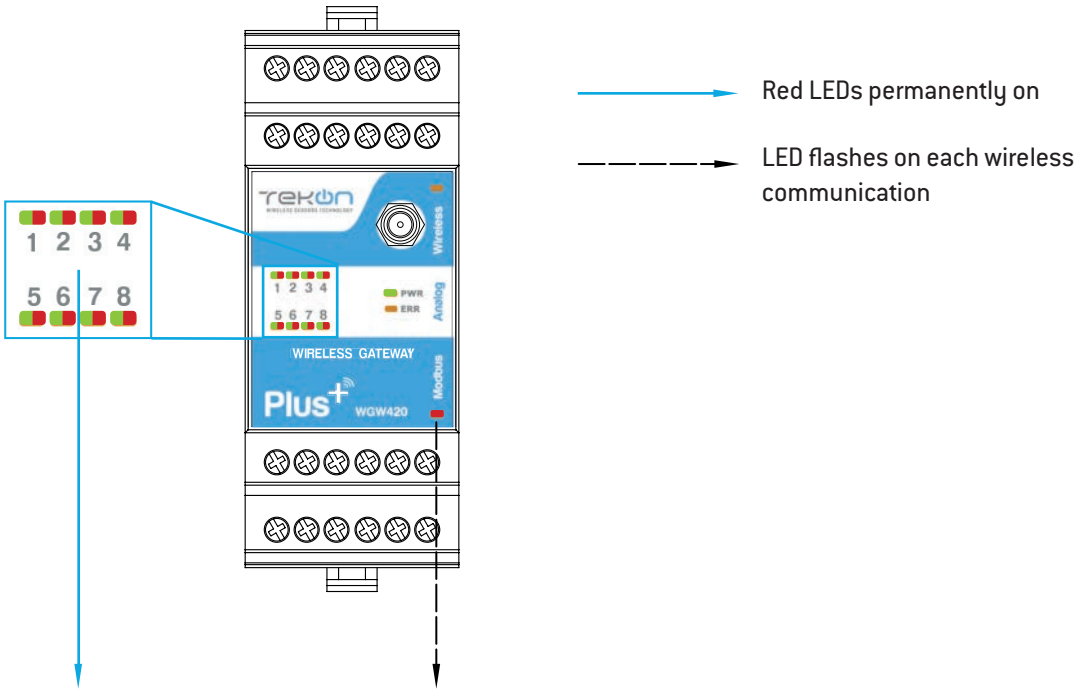


17

Click on connect and check that the status is *"Connected"*.



16



NOTE:
See WGW420 Datasheet to access LED indication information - page 4.

step

02

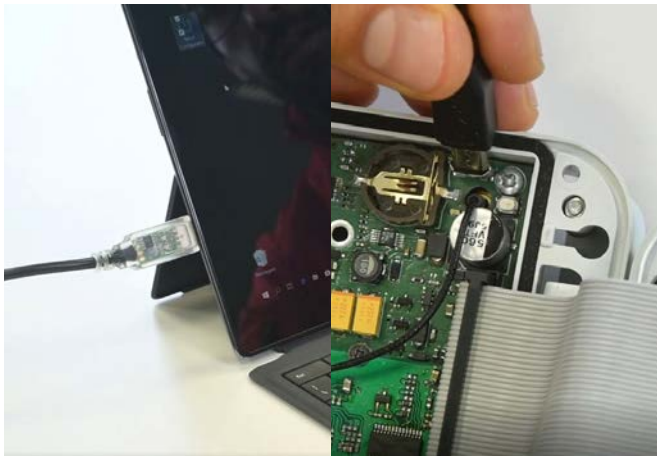
TWP-4AI PLUS WIRELESS TRANSMITTER CONFIGURATION

step **02**

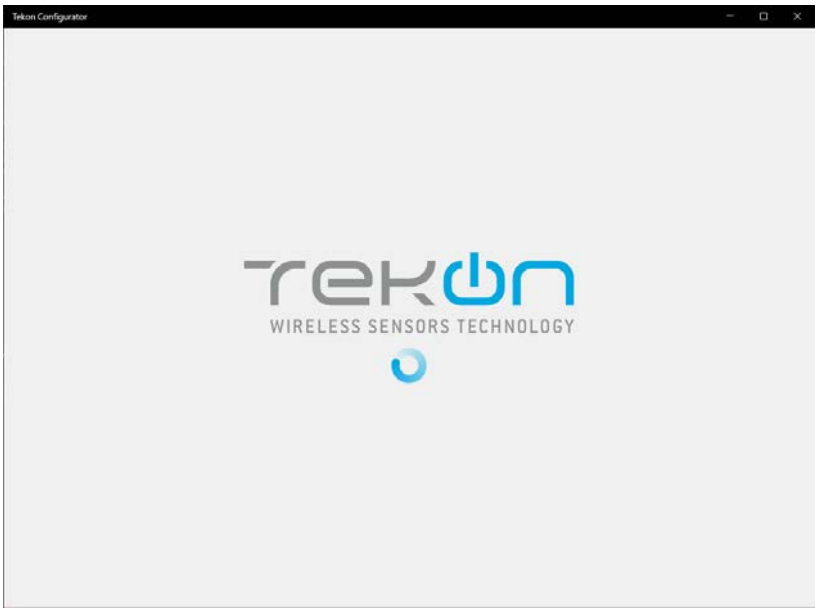
TWP4AI PLUS WIRELESS TRANSMITTER CONFIGURATION

01 Loosen the 4 screws of the case and open it.

02 Connect a micro USB cable to the computer and then to *TWP4AI PLUS Wireless Transmitter*.



03 Open *Tekon Configurator Software*



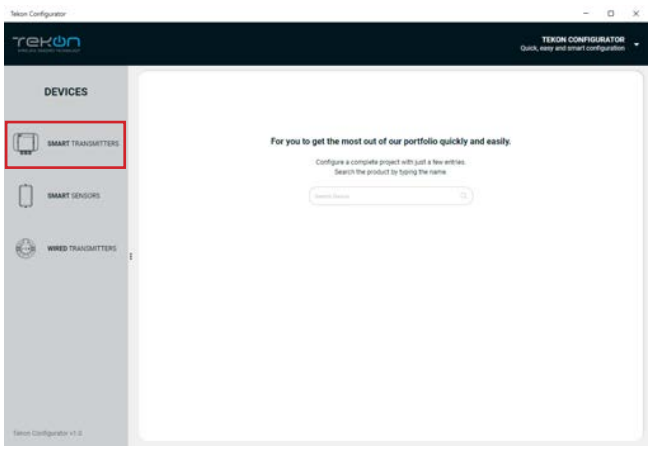
step
02
TWP4AI PLUS WIRELESS TRANSMITTER CONFIGURATION

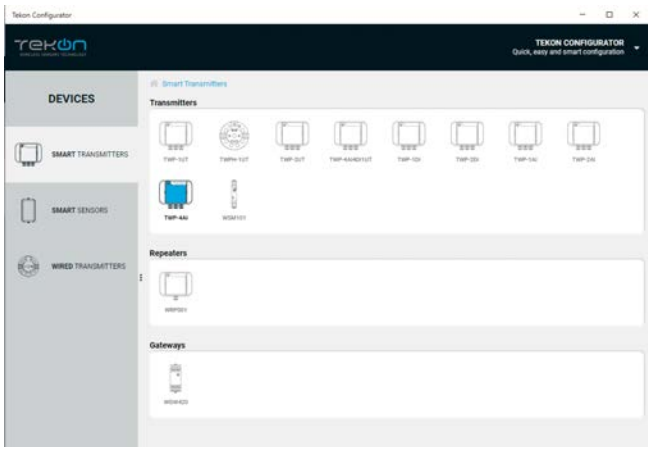
04

Open the TWP-4AI PLUS Wireless Transmitter device page.

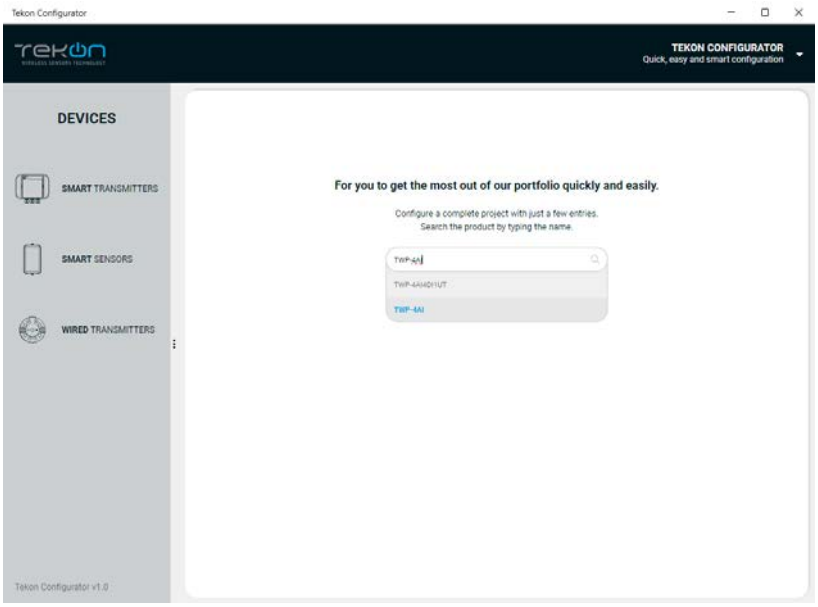
You can enter the device's page in the following ways:

1st option: Click on *"SMART TRANSMITTERS"* in the left menu and then click on the TWP-4AI.

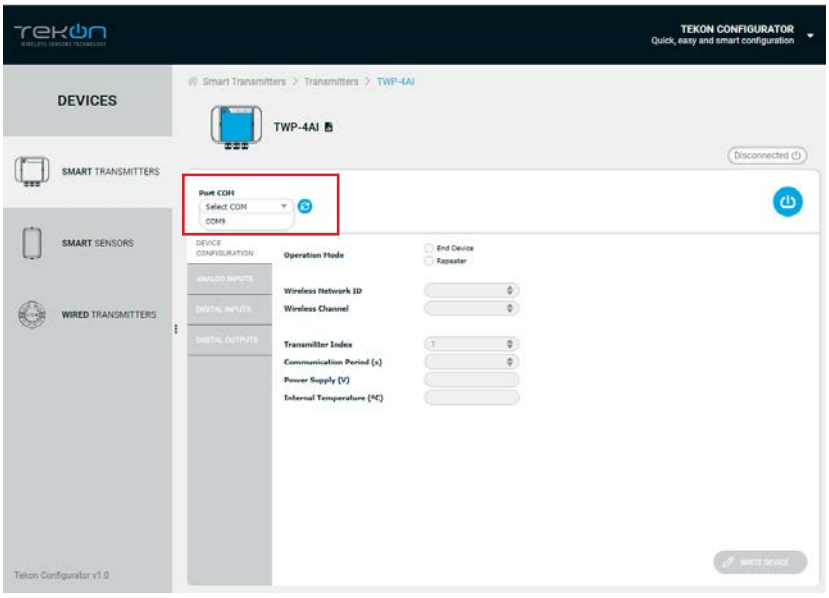




2nd option: Type the name of the device in the *"Search Device"* field on the home page and select.

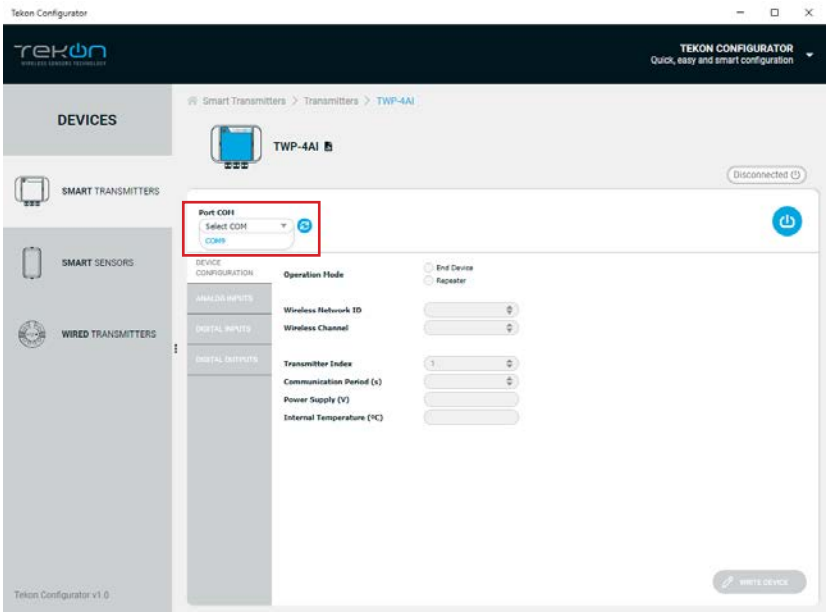


05 Load the "Port COM" corresponding to the TWP-4AI PLUS Wireless Transmitter.



NOTE:
If the USB cable has already been connected before opening the device page, "Port COM" will appear in the list, otherwise click the button [ ]

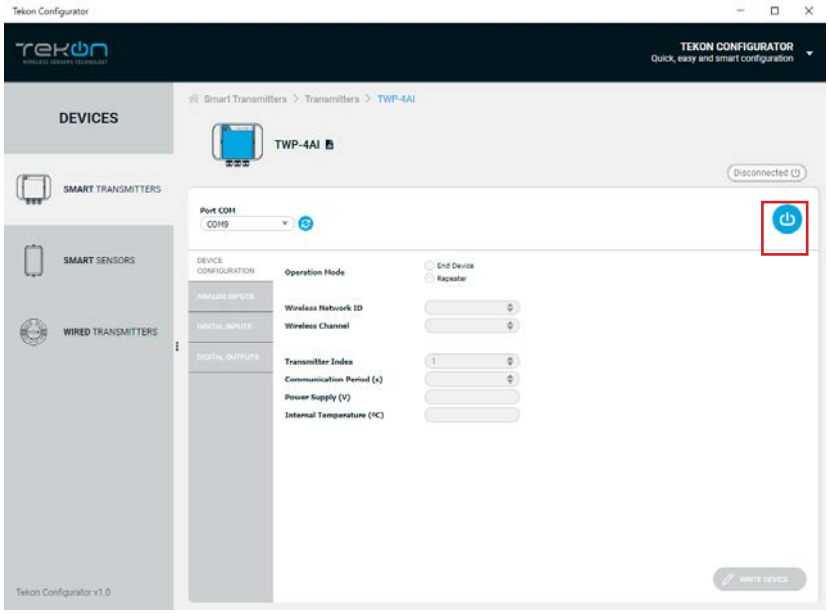
06 Select corresponding *Port Com*[2].

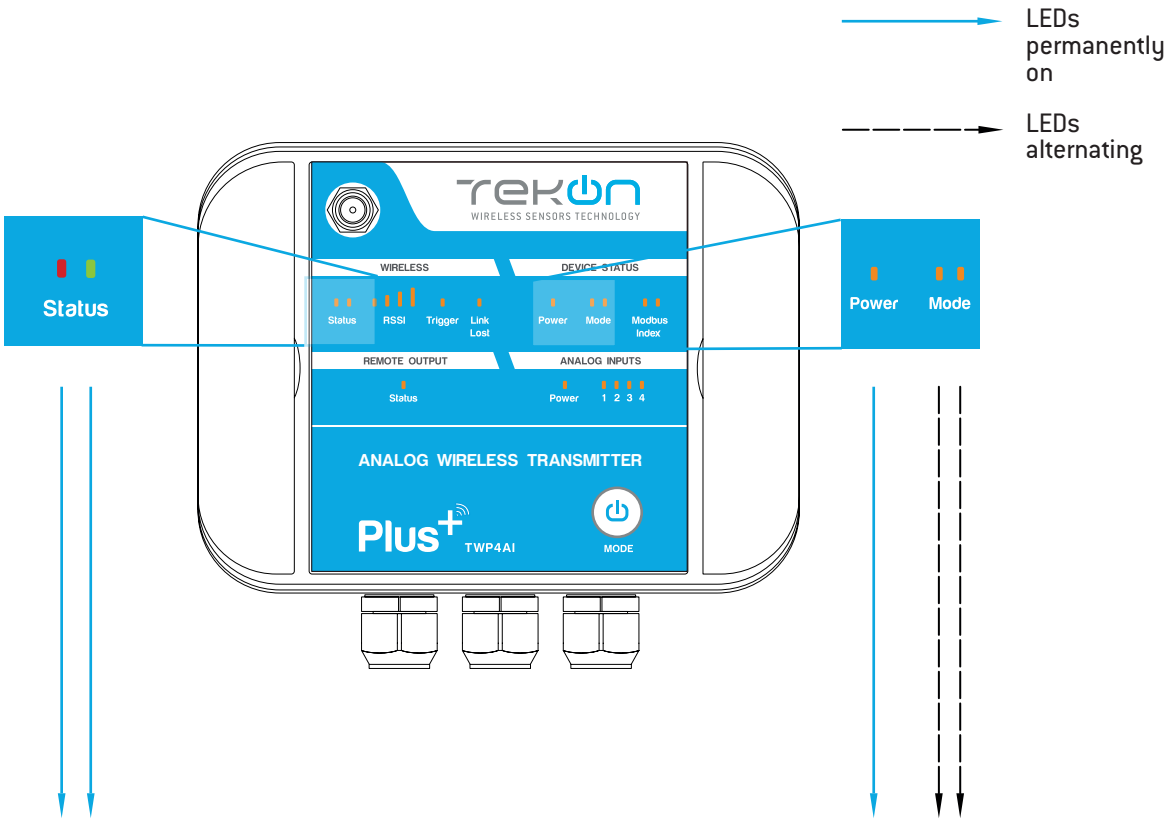


[2] You can check device's serial port name in "Device Manager" on Microsoft ® Windows® operating system.

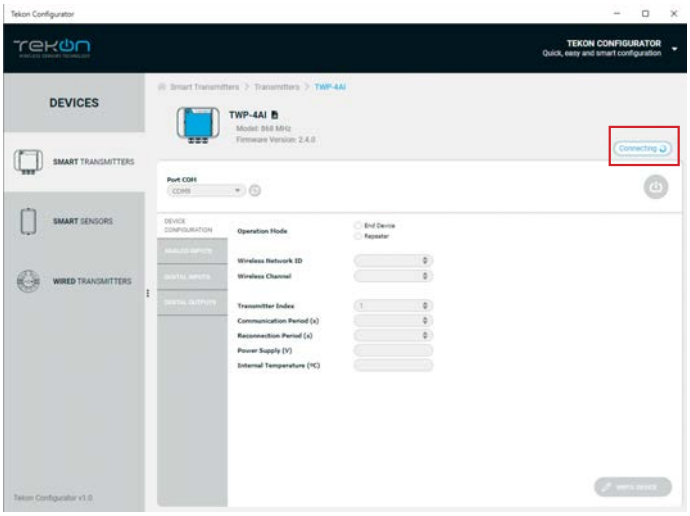
step
02
TWP4AI PLUS WIRELESS TRANSMITTER CONFIGURATION

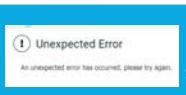
07 Click on the "Connect" button ( ) to enter *Configuration Mode*.





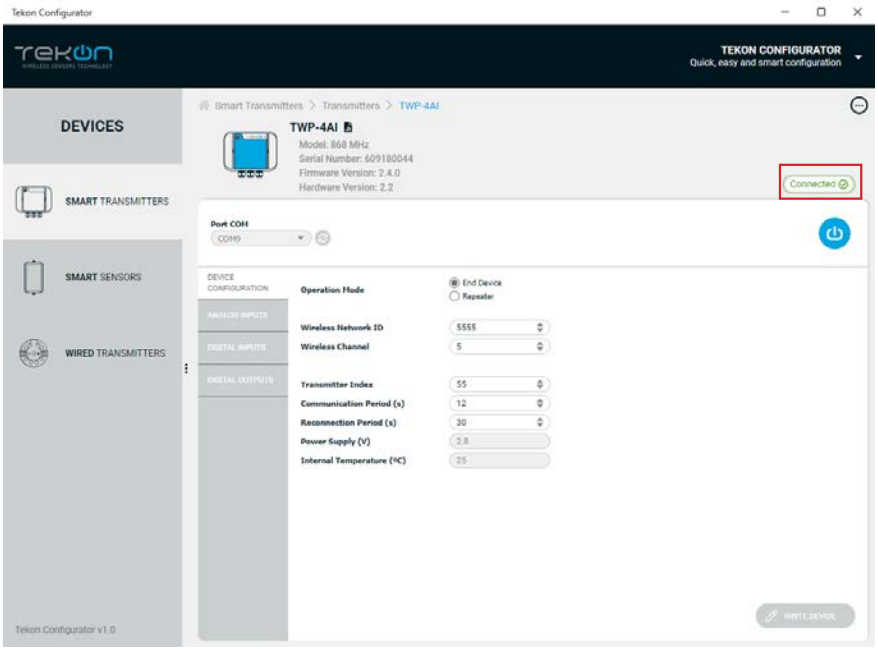
08 The software will connect to the device.



NOTE:
If the software is unable to connect to the device, the 

status is displayed. If it hasn't connected, go back to the previous steps and check the port COM.

09 When the software connects to the device, the "*Connected*" message will be displayed.

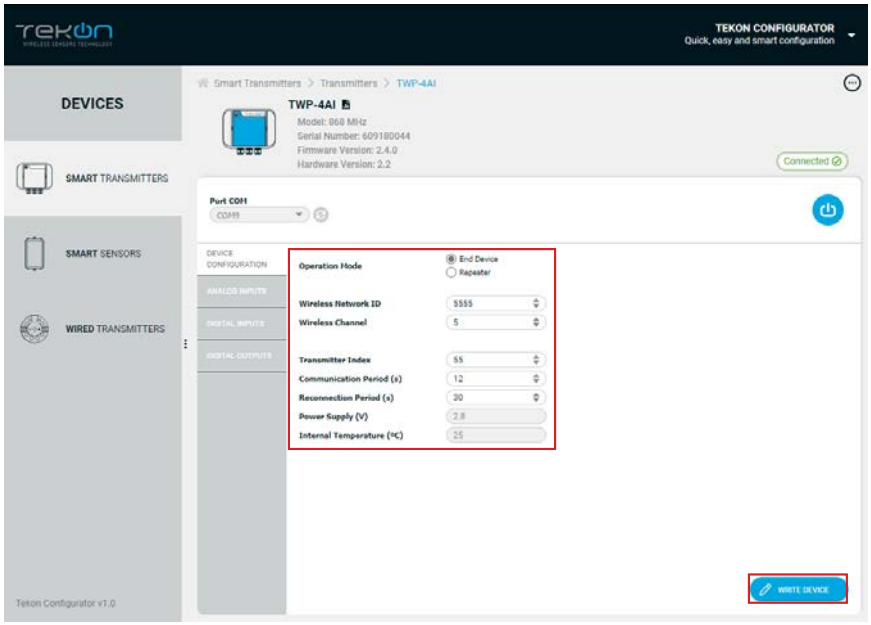


step 02

TWP4AI PLUS WIRELESS TRANSMITTER CONFIGURATION

10

Configure *Wireless Network ID* and *Wireless Channel* previously obtained from *Gateway*.
The wireless connection between both devices is ensured by setting the same *Wireless Network ID* and *Wireless Channel* parameters. Gateway Modbus Index will define the modbus registers window used to store information sent by the transmitter. Each transmitter should have a different *Gateway Modbus Index* in order to avoid information override.
Click on *Write Device* button to update *Transmitter* settings.



On this page you can configure the transmitter's *communication period*, i.e. the time interval between measurements and communication of the values to the gateway. In addition, you can configure the *reconnection period* which is only triggered when communication between the gateway and the transmitter fails. When communication fails, the transmitter will try to connect to the gateway using the following logic:
- 5 attempts with the communication period set;
- N attempts with the reconnection period until communication is successful.

The default reconnection period is 30 minutes. Please note that short reconnection periods (< 30 minutes) will impact the transmitter's autonomy if communication takes a long time to be re-established.

NOTE:
The "WRITE DEVICE" button will only be active when there is a change to one of the editable fields, if there is no change it will be deactivated.

While the settings are being written, the following icon will be displayed next to the "*WRITE DEVICE*" button ( )

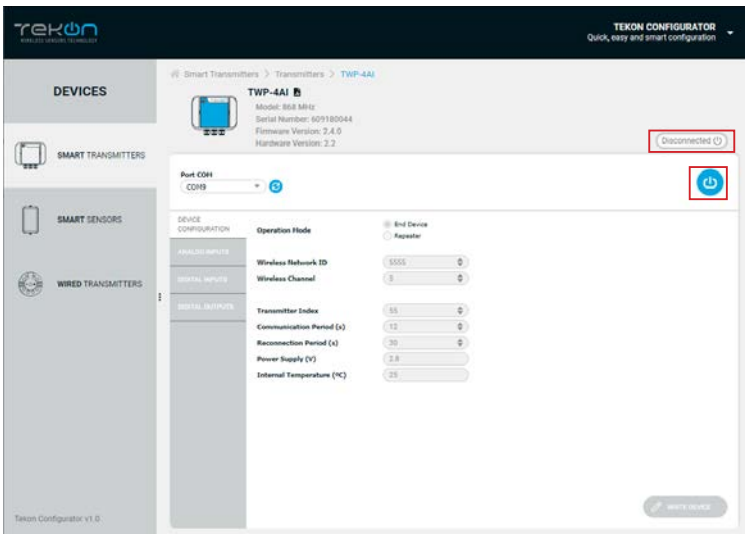
If the changes to the device have been written, the following symbol will appear ( )

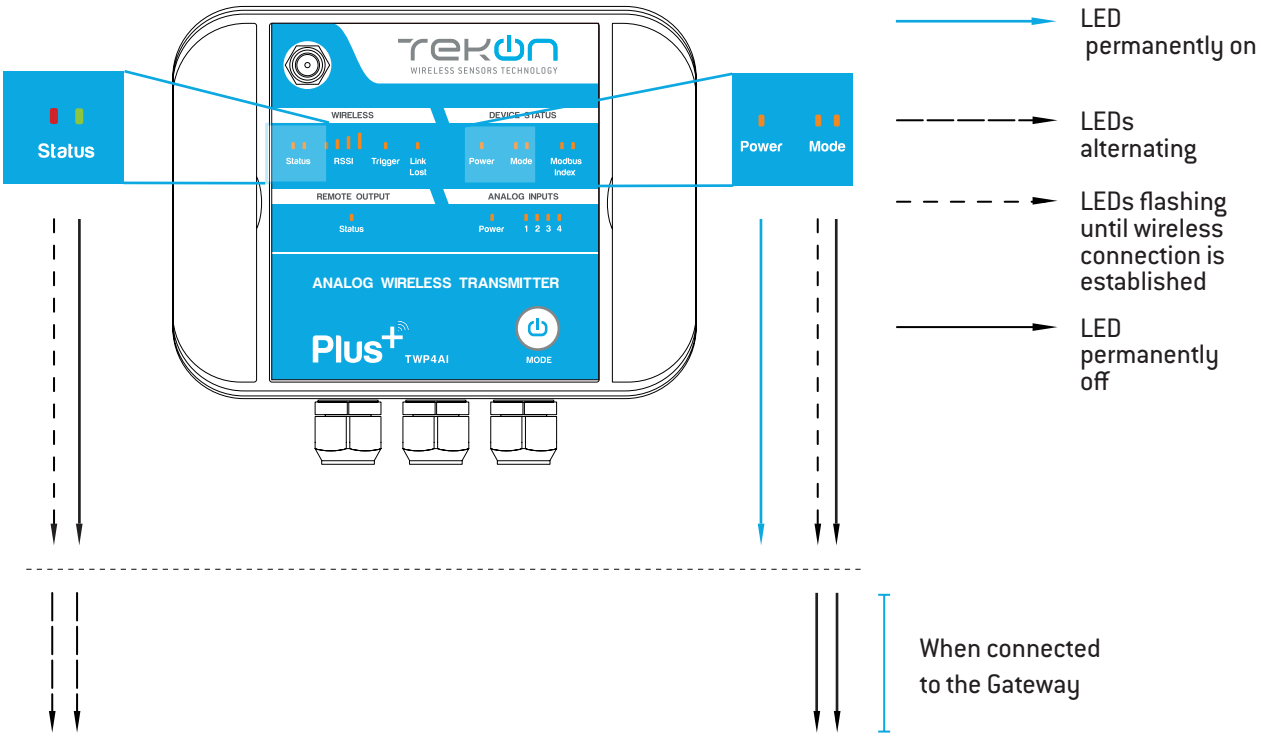
If not, the following symbol will appear ( ),try again and check that the device is connected correctly.

11

Click on the button ( ) to exit *configuration mode* and return the device to normal operating mode.

After clicking on *Disconnect* button, the device will permanently attempt to connect to a wireless network.
If there is no communication, the Status LED flashes slowly and the Mode LED flashes quickly. When there's a successful connection directly to a wireless network, both status LEDs alternate quickly - during 1 minute if the transmitter is operating as end device or permanently if operating as repeater.





NOTE:
Make sure that the devices are at a distance of at least 3 meters or remove the antenna from the gateway (in case both devices are near each other).

step

03

TWP-4AI TRANSMITTER ANALOG INPUTS CONFIGURATION

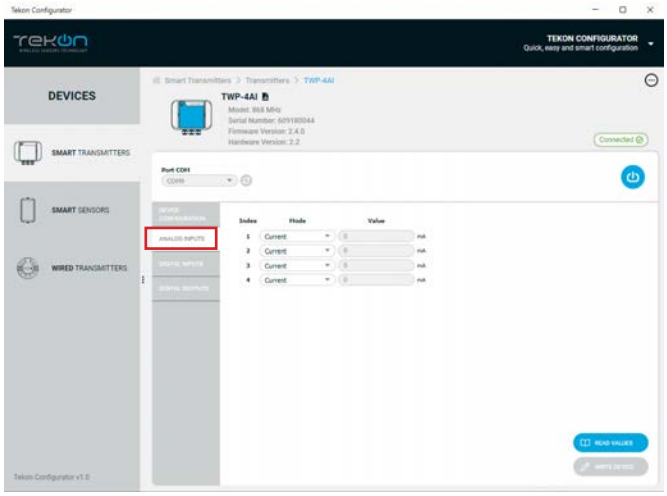
step **03**

TWP4AI TRANSMITTER ANALOG INPUTS CONFIGURATION

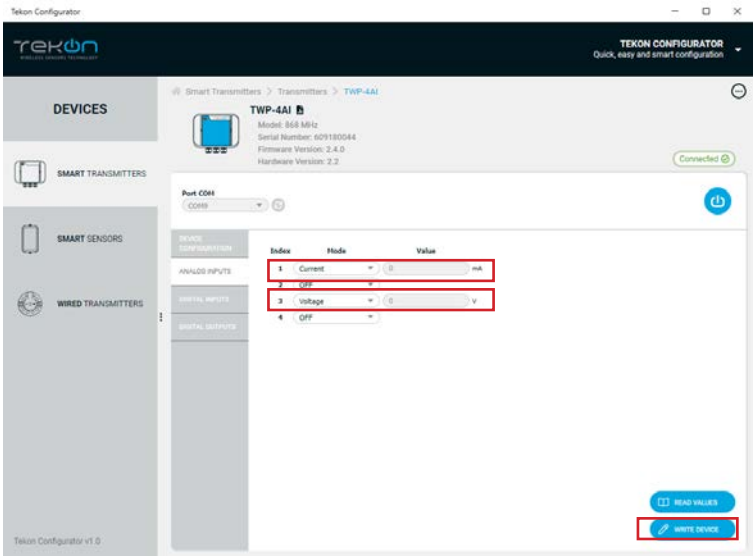
NOTE:
By default, analog inputs are switched OFF for power optimization.
Each analog input can be configured independently, as current input [0..20mA] or voltage input [0..10V]

01 To enter in *Configuration Mode* follow steps 01 to 10 of TWP4AI PLUS Wireless *Transmitter* Configuration.

02 In the Tekon Configurator Software, click on *"Analog Inputs"* to open the sensor settings.



03 Select *Current* option on Analog Input 1 and *Voltage* option on Analog Input 3 operation mode and click *Write Device*.

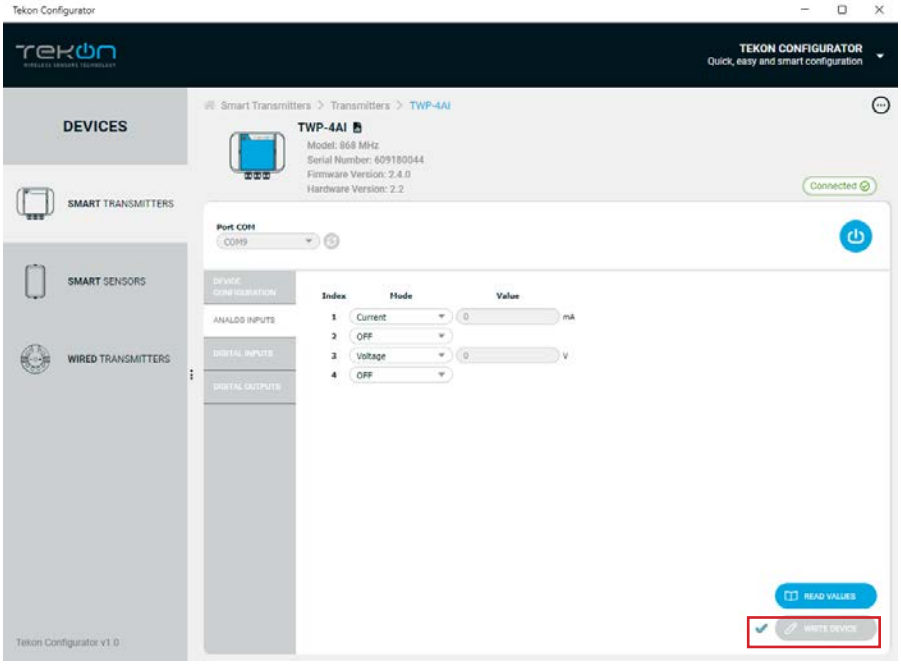


step 03

TWP4AI TRANSMITTER ANALOG INPUTS CONFIGURATION

04

Wait for the software to write the new setting to the device. Wait for the status ↻ to change to ✓.

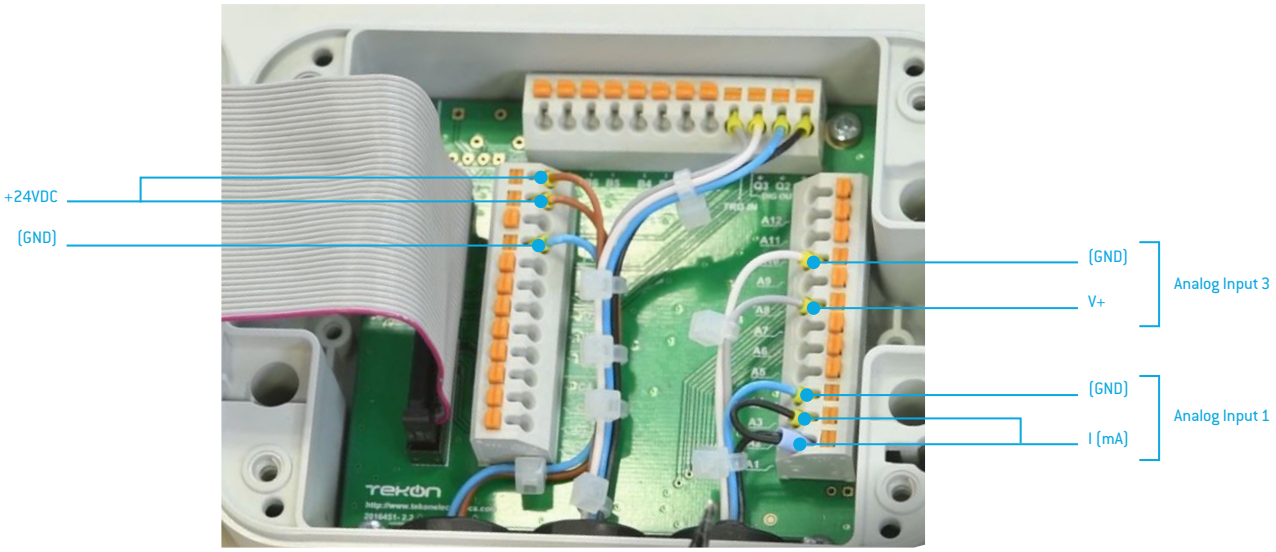


If the writing of the device is not completed, you will see ✗. Make sure that all the steps have been carried out correctly.

05

Wiring

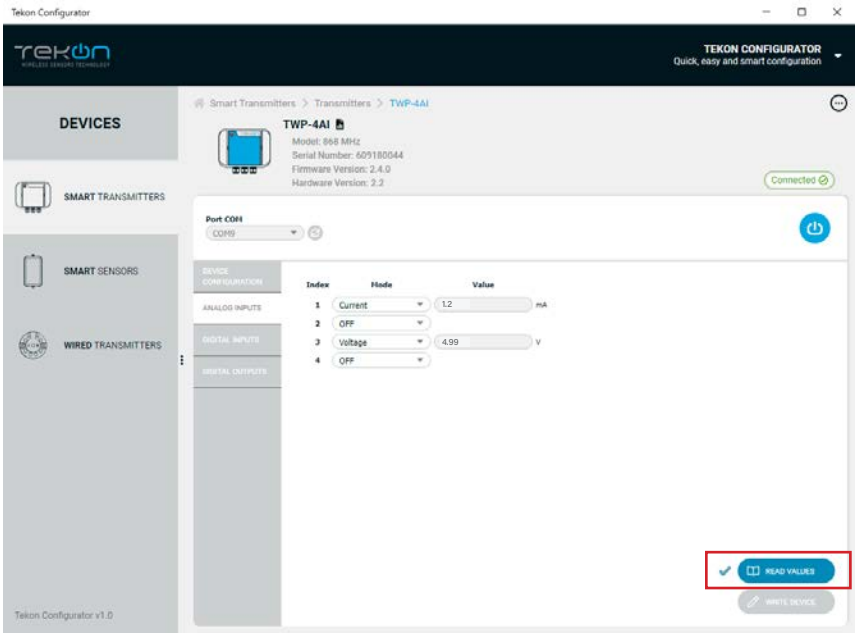
Wire the device according to the diagram below.



step **03**

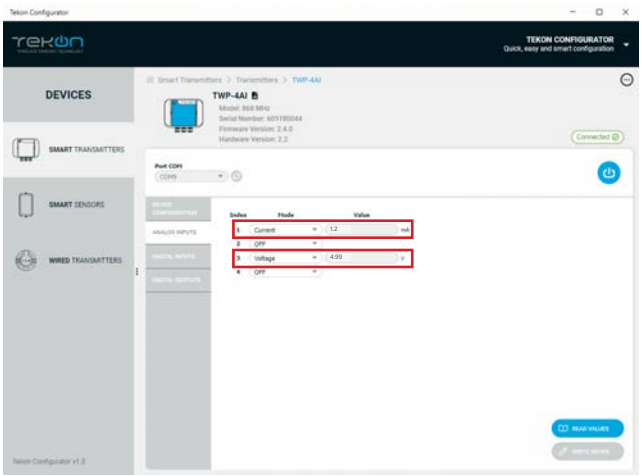
TWP4AI TRANSMITTER ANALOG INPUTS CONFIGURATION

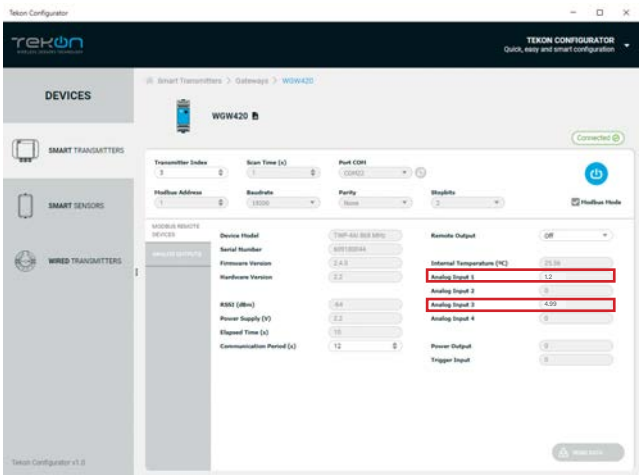
06 Validate configuration by clicking on *Read Values* button.



NOTE:
Configuration and Operation validated.
Measured value of current and voltage depend on the setup. In this example 12mA (12000uA) and 5V (5000 mV) are being injected.

07 Exit configuration mode and compare data sent by wireless communication.





step

04

TWP-4AI TRANSMITTER DIGITAL INPUT CONFIGURATION

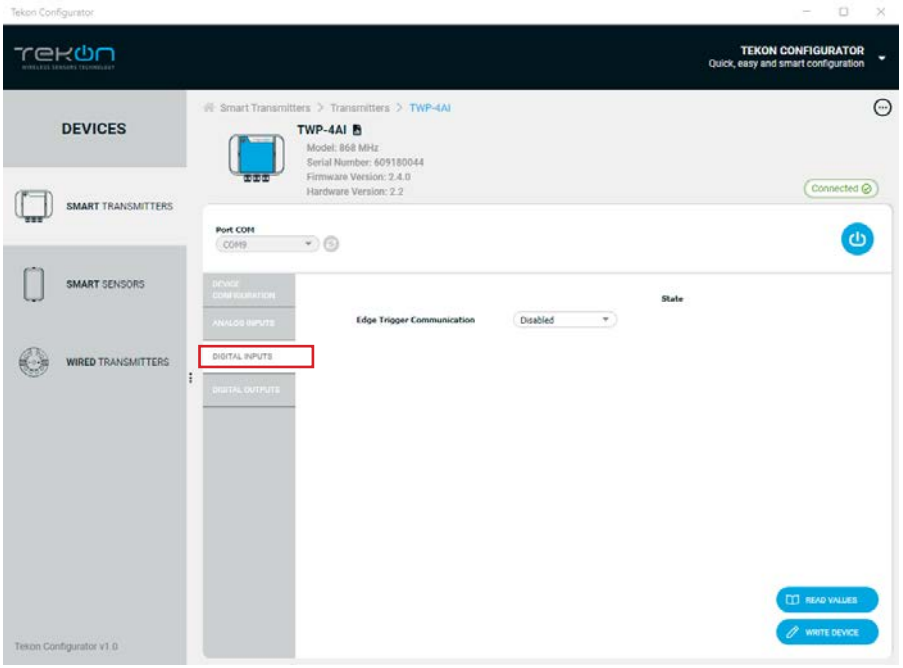
step **04**

TWP4AI TRANSMITTER DIGITAL INPUT CONFIGURATION

NOTE:
Sink type Digital Input.

01 To enter in *Configuration Mode* follow steps 01 to 10 of TWP4AI PLUS Wireless *Transmitter* Configuration.

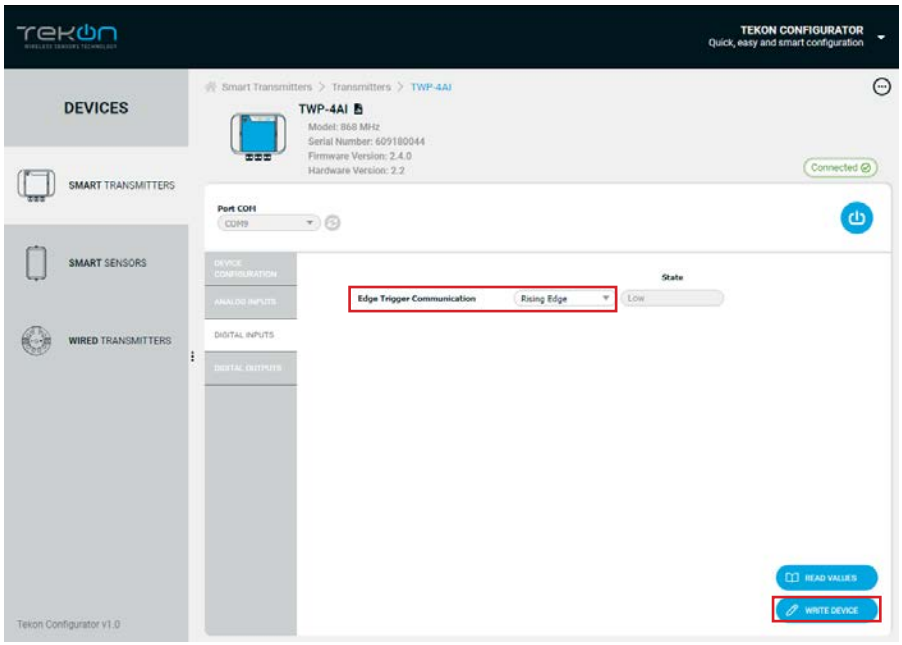
02 In *Tekon Configurator Software* select *Digital Inputs* menu.



step
04 TWP4AI TRANSMITTER DIGITAL INPUT CONFIGURATION

03

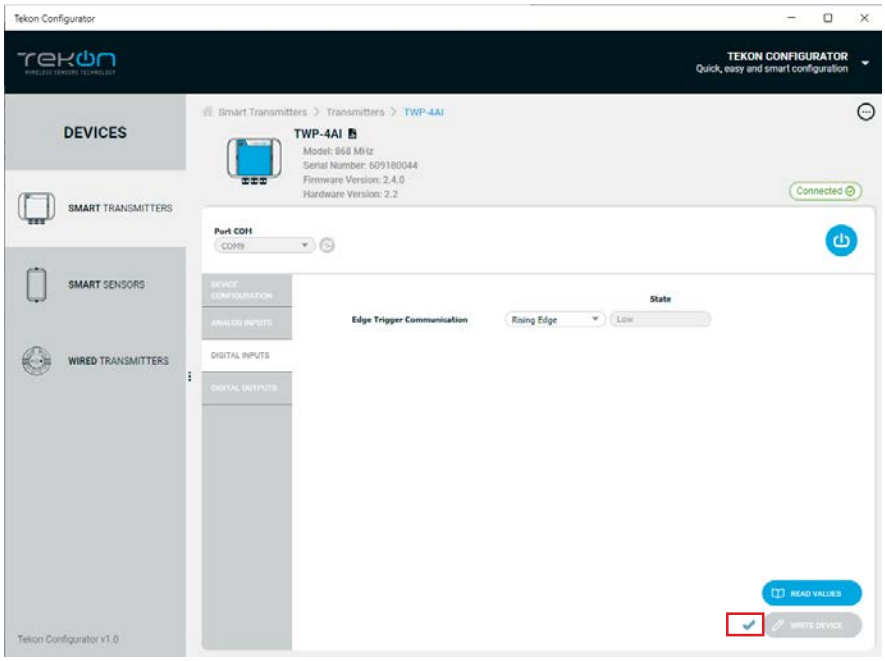
Select Operation Mode *Rising Edge* and click on *Write Device* button.



04

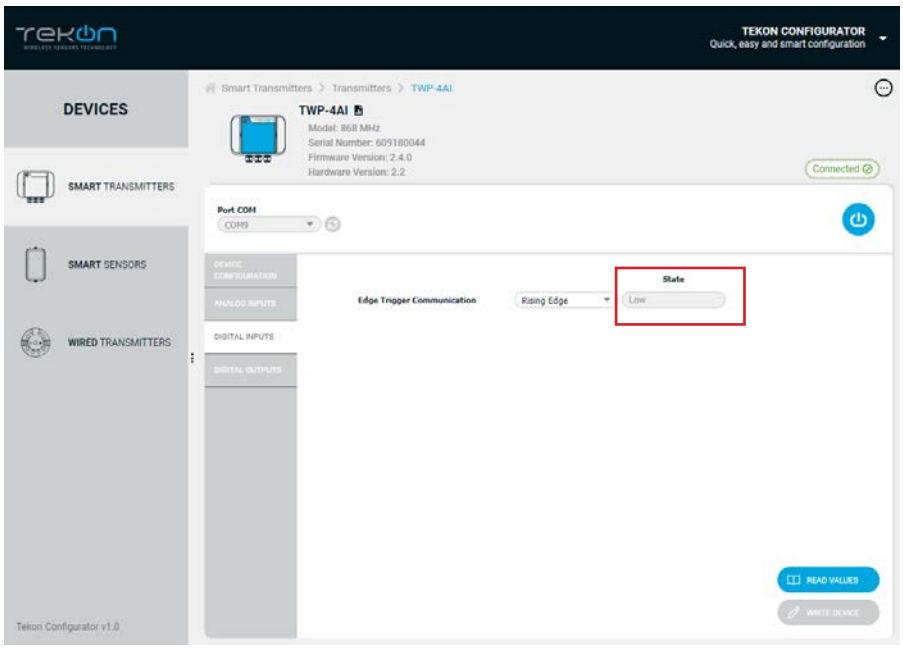
Wait for the software to write the new setting to the device. The status of should change to .

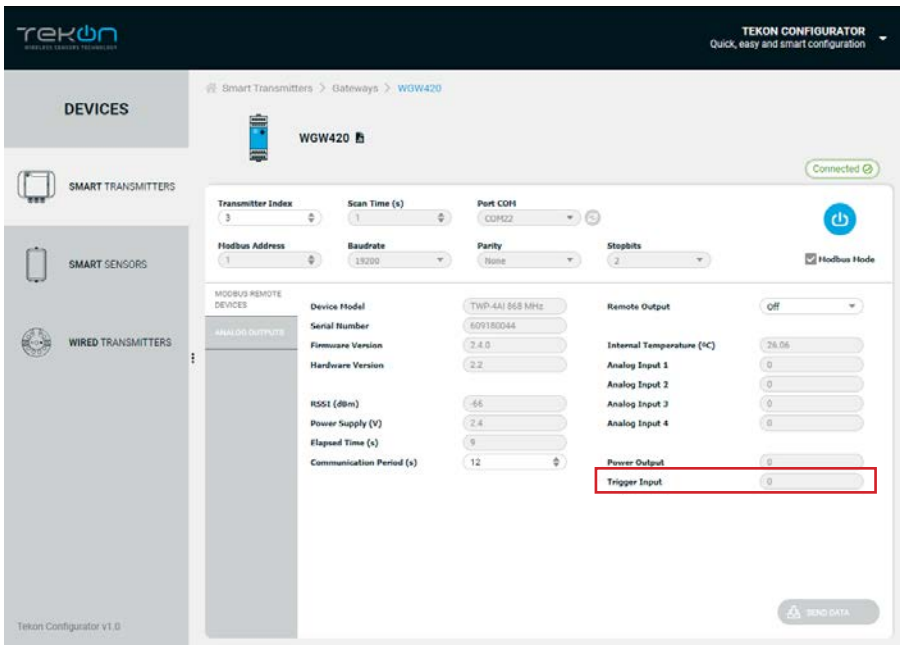
If the writing of the device is not completed, you will see . Make sure that all the steps have been carried out correctly.



05

Validate functionallity and click on *Disconnect* button.
Wait for the device to connect the Gateway and observe data in Tekon Configurator window.





step

05

TWP-4AI TRANSMITTER DIGITAL OUTPUTS CONFIGURATION

step **05**

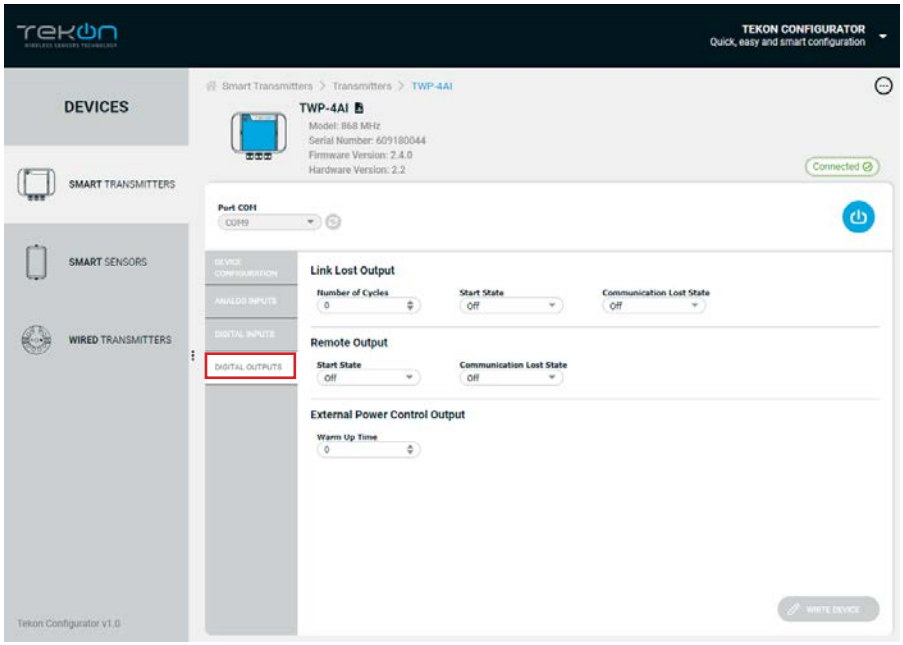
TWP4AI TRANSMITTER DIGITAL OUTPUTS CONFIGURATION

01

To enter in *Configuration Mode* follow steps 01 to 10 of TWP4AI PLUS Wireless *Transmitter* Configuration.

02

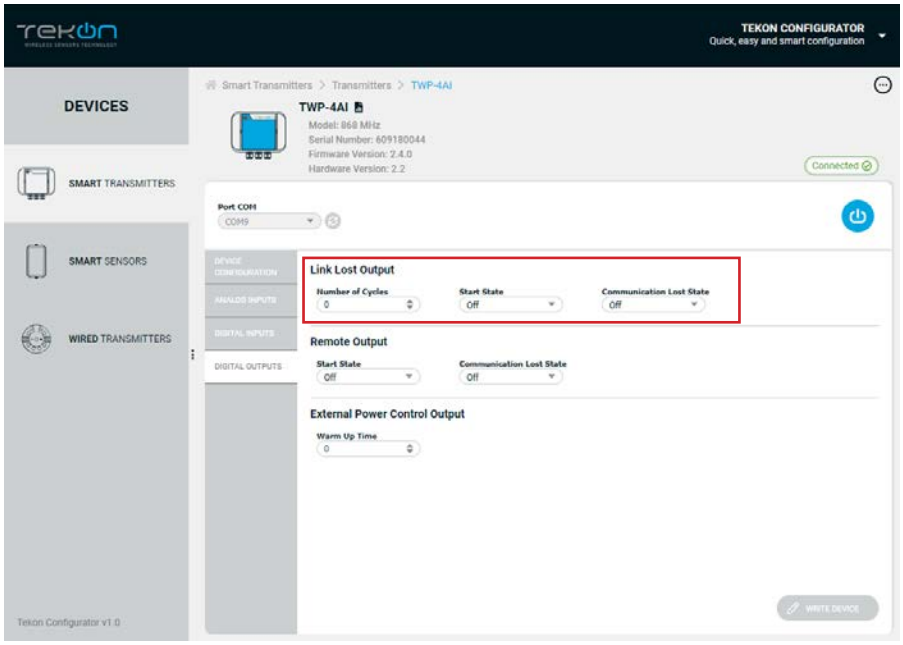
In *Tekon Configurator Software* select *Digital Outputs* menu



03

Link Lost Output

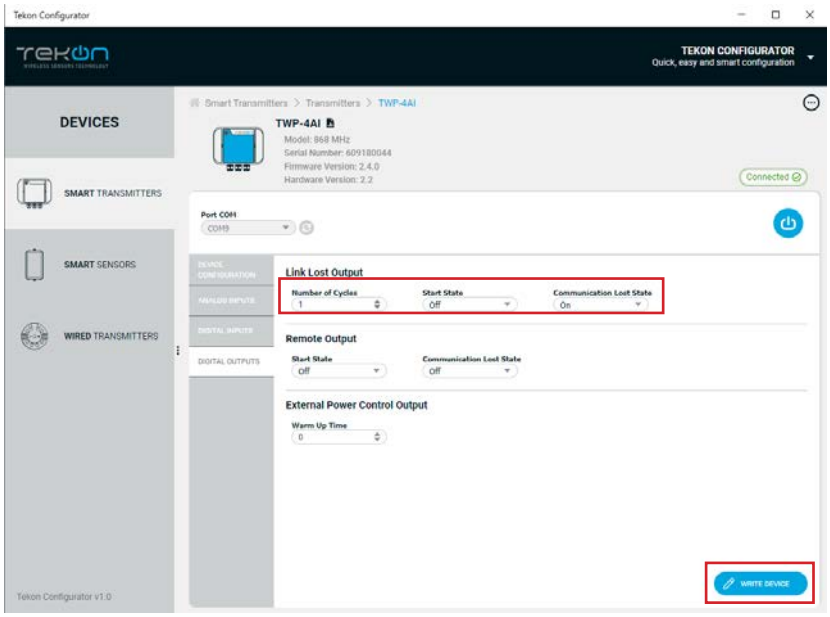
Output that outputs wireless connection state of the device.



step
05 TWP4AI TRANSMITTER DIGITAL OUTPUTS CONFIGURATION

03.1

Select *cycle number*, *start state* and *communication lost state* and click on *Write Device* button.

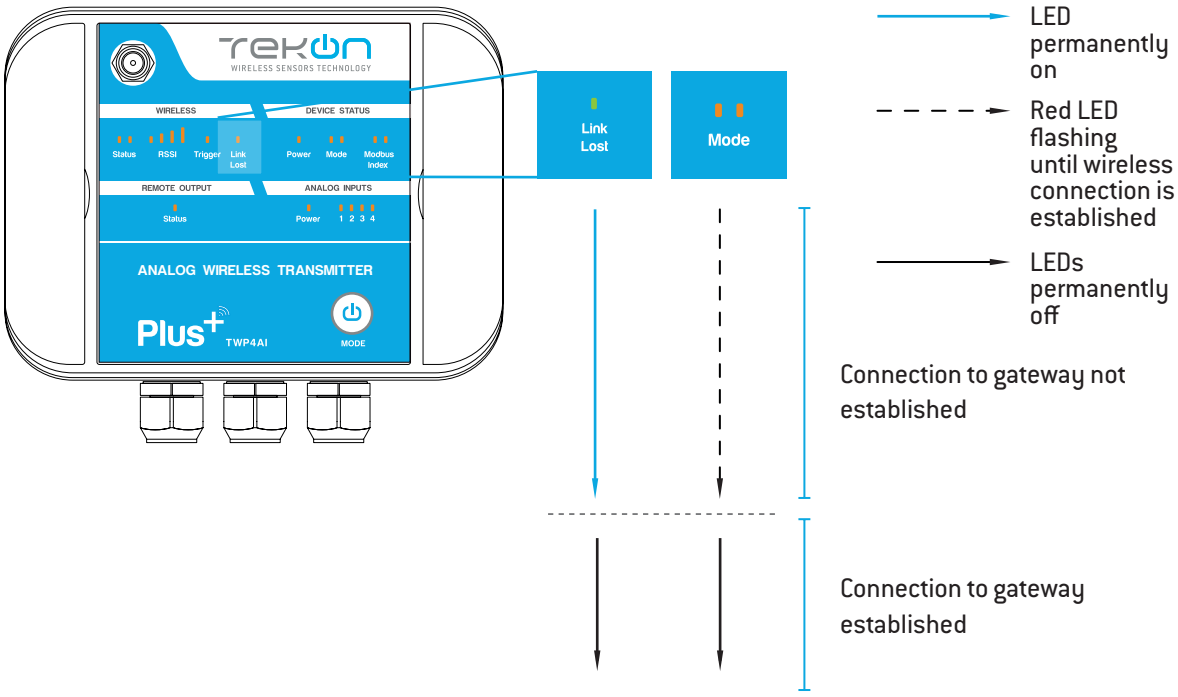


Wait for the software to write the new setting to the device. The status of should change to ✔.

If the writing of the device is not completed, you will see ✘. Make sure that all the steps have been carried out correctly.

03.2

Exit configuration mode and verify setup by checking LEDs indicators..

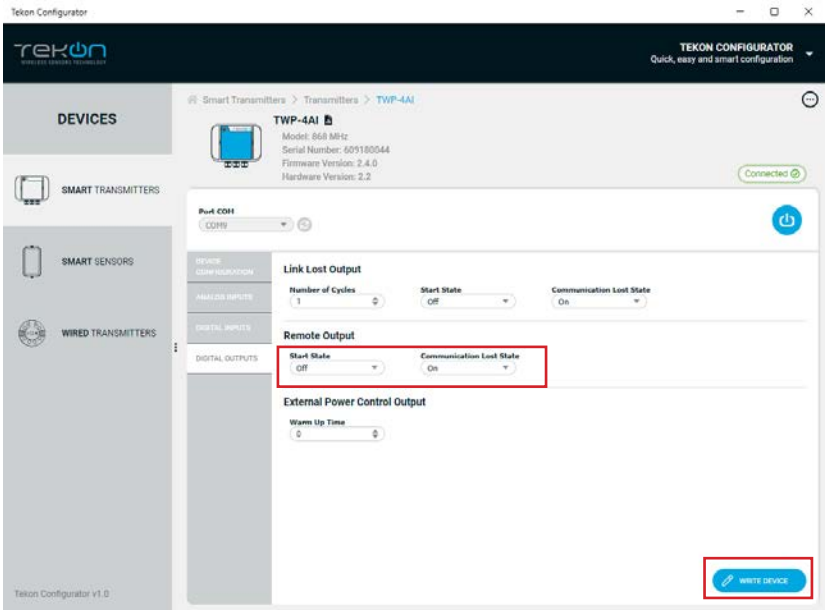


04 Remote Control Output

Digital output remotely controlled by Gateway modbus protocol.

04.1

Define *Start state* and *Communication lost state.* Click on *Write device* button.

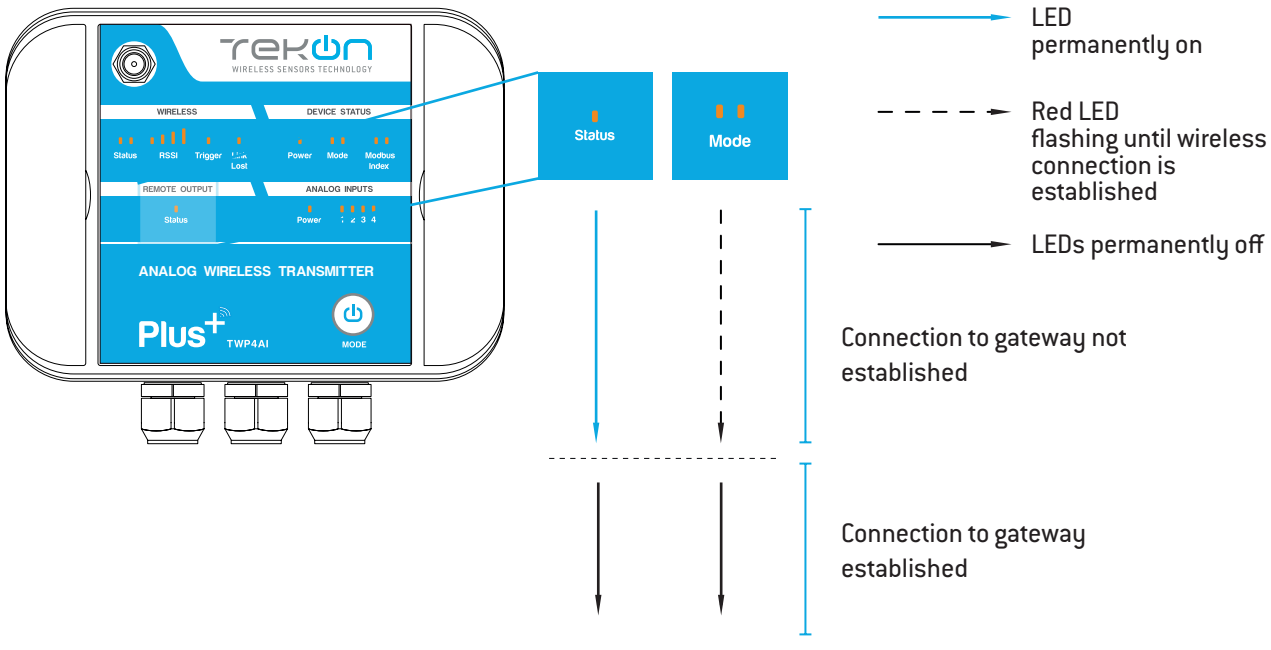


Wait for the software to write the new setting to the device. The status of should change to ✔.

If the writing of the device is not completed, you will see ✘. Make sure that all the steps have been carried out correctly.

04.2

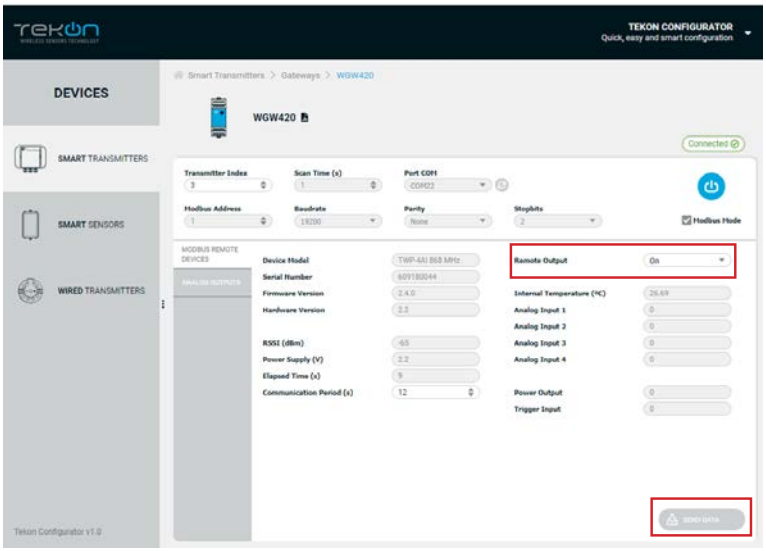
Exit configuration mode and verify setup by checking LEDs indicators.

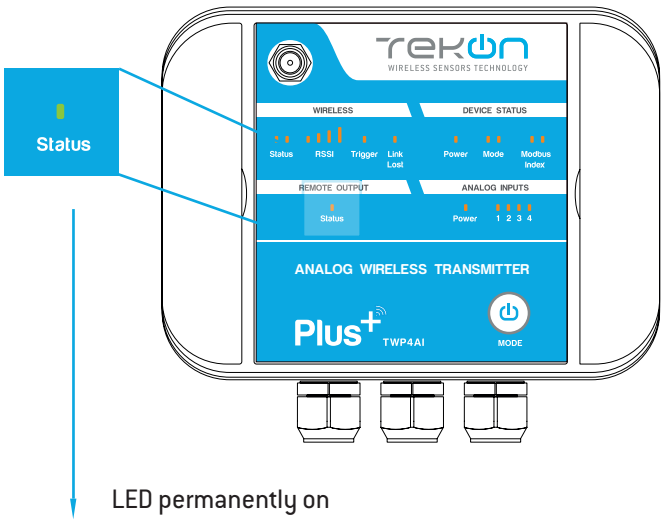


step
05 TWP4AI TRANSMITTER DIGITAL OUTPUTS CONFIGURATION

04.3

Using the Tekon Configurator you can change the State of Remote Output by setting the modbus register on the gateway. The Gateway will send the information in the next time the transmitter performs a communication.





05

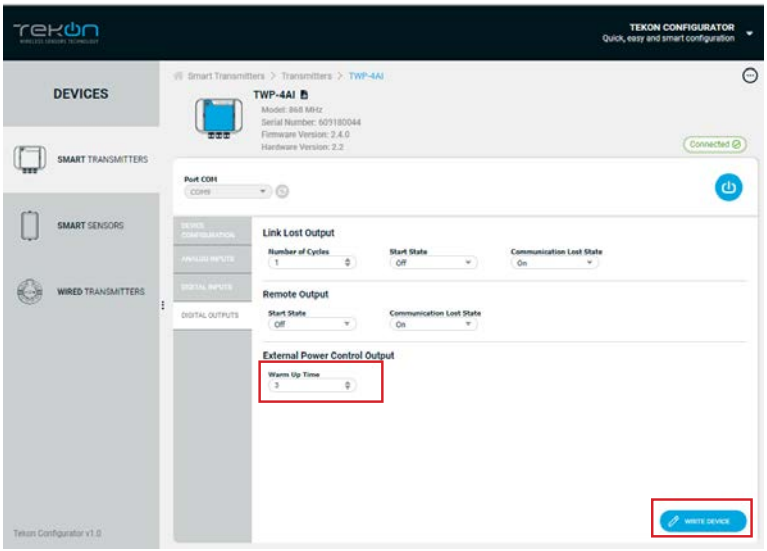
External Power Control Output

Time configurable output to power on an external device before data acquisition and transmission.

TWP4AI TRANSMITTER DIGITAL OUTPUTS CONFIGURATION

05.1

Define *Warm up time* and click on the *Write device* button.

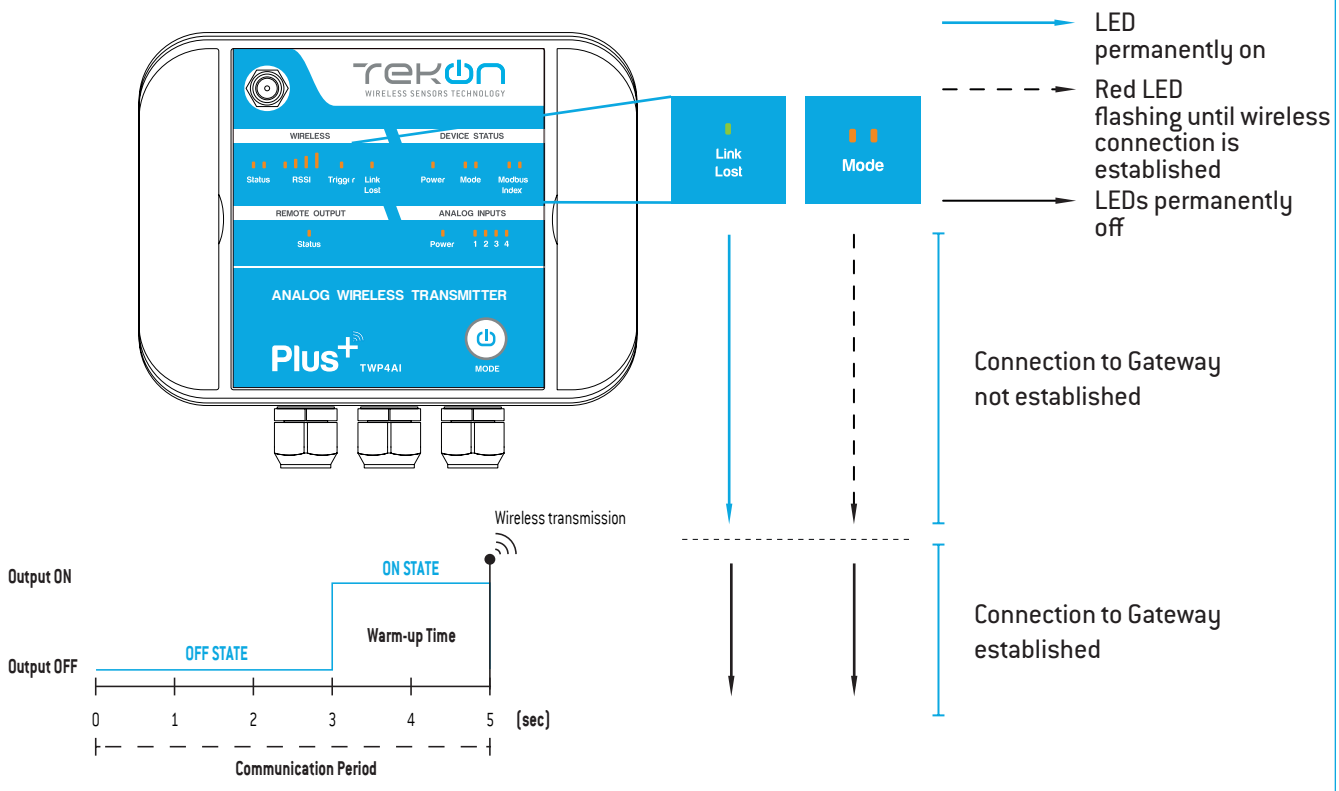


Wait for the software to write the new setting to the device. The status of should change to .

If the writing of the device is not completed, you will see . Make sure that all the steps have been carried out correctly.

05.2

Exit configuration mode and verify setup by checking LEDs indicators.



NOTE:
Diagram only applies after the transmitter and gateway are connected.

step

06

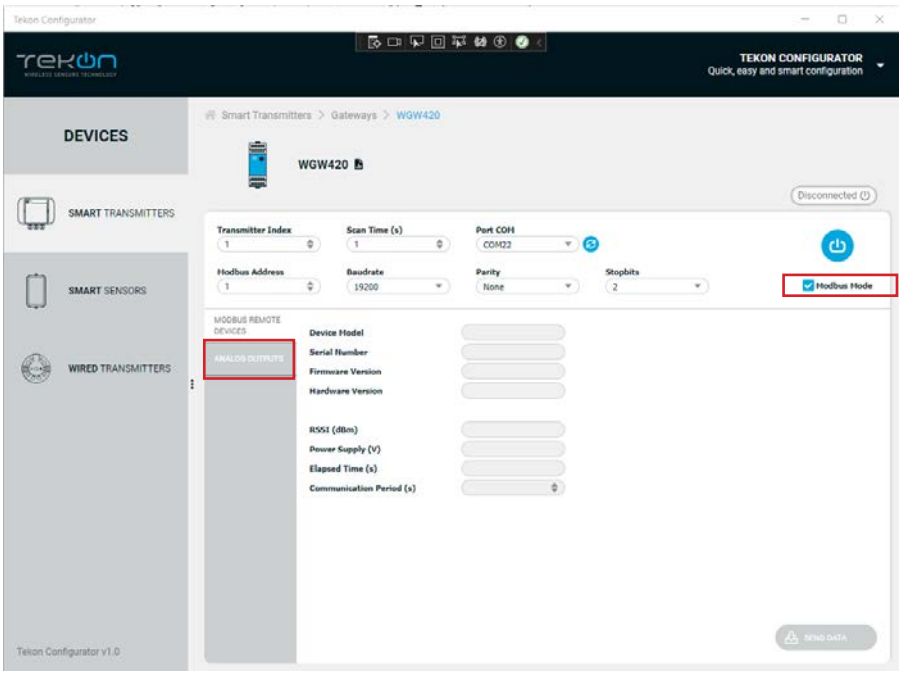
WGW420 GATEWAY ANALOG OUTPUTS CONFIGURATION

step **06**

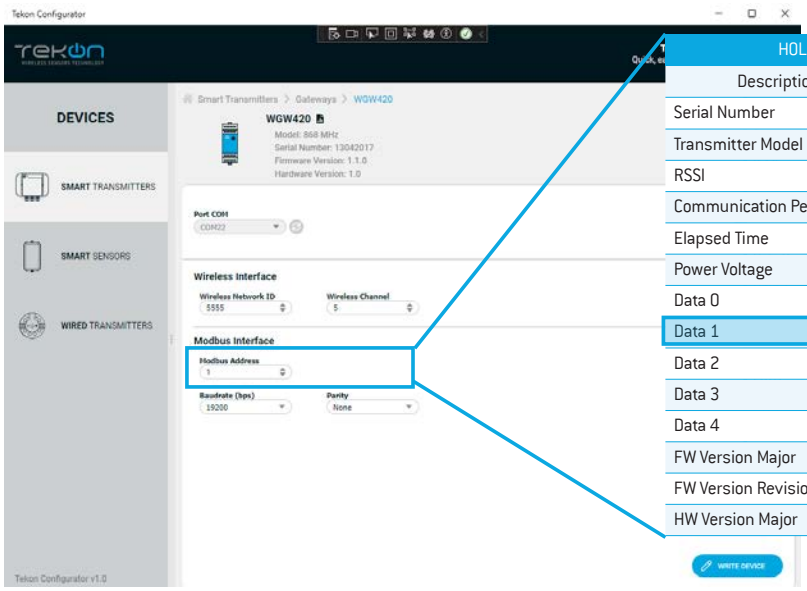
GATEWAY ANALOG OUTPUTS

01 Follow steps 01 and 14 of the PLUS Wireless *Gateway* Configuration.

02 In *Tekon Configurator Software* select *MODBUS MODE* >> *ANALOG OUTPUTS*



03 Considering the transmitter configuration with Modbus Address=1, there is a Gateway Modbus Address Window corresponding to Modbus address window [0-19].



MB Add

HOLDING REGISTERS - TRANSMITTERS DATA		
Description	Address	
Serial Number	(Transmitter Modbus Index-1) x 20+0	0
Transmitter Model	(Transmitter Modbus Index-1)x20+2	
RSSI	(Transmitter Modbus Index-1)x20+3	
Communication Period	(Transmitter Modbus Index-1)x20+4	
Elapsed Time	(Transmitter Modbus Index-1)x20+5	
Power Voltage	(Transmitter Modbus Index-1)x20+6	
Data 0	(Transmitter Modbus Index-1)x20+7	
Data 1	(Transmitter Modbus Index-1)x20+9	9
Data 2	(Transmitter Modbus Index-1)x20+11	
Data 3	(Transmitter Modbus Index-1)x20+13	
Data 4	(Transmitter Modbus Index-1)x20+15	
FW Version Major Minor	(Transmitter Modbus Index-1)x20+17	
FW Version Revision	(Transmitter Modbus Index-1)x20+18	
HW Version Major Minor	(Transmitter Modbus Index-1)x20+19	19

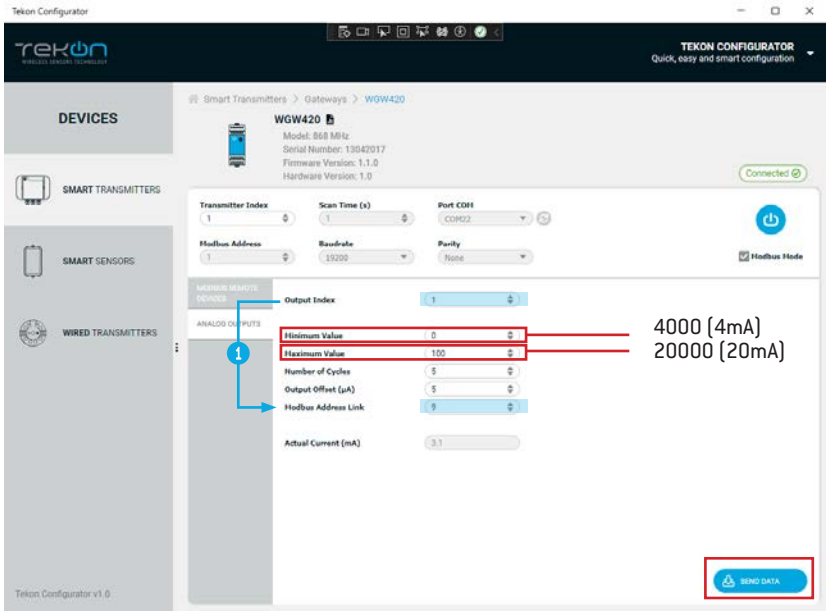
NOTE:
Transmitter analog input 1 data is received and stored at the Gateway Modbus address [9].

step 06

GATEWAY ANALOG OUTPUTS

04

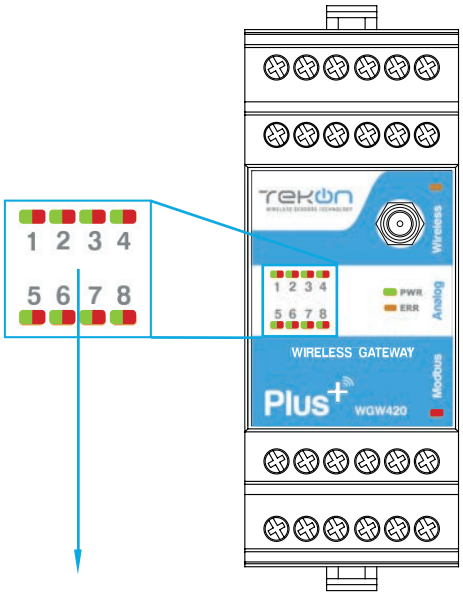
Link *Analog Output Index 1* (Gateway) to *Analog Input 1* (Transmitter) and configure MB Add Link according to the previous step. Set minimum and maximum values and click on *Write*



NOTE:

① Output index 1 is linked to modbus address [9], according to mapping table of step 03.

Modbus address double word (float 32) value is converted into 4..20 mA scale according to minimum and maximum defined values.



1 → Green led permanently on during a closed current loop

2 → Red led permanently on during an open current loop

step

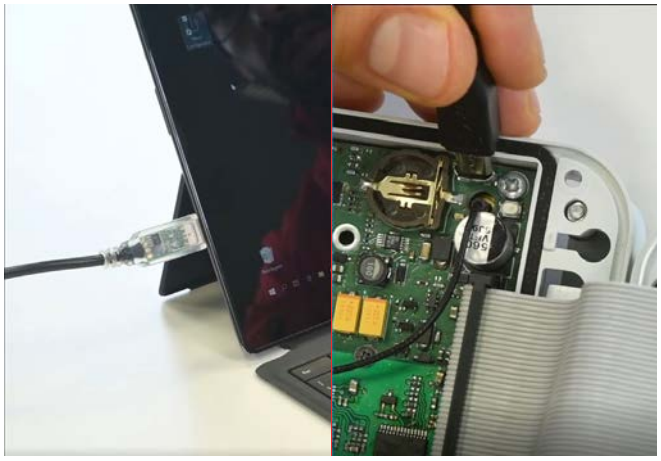
07

WRP001 PLUS WIRELESS REPEATER CONFIGURATION

step
07
CONNECT AND CONFIGURE THE PLUS WIRELESS REPEATER

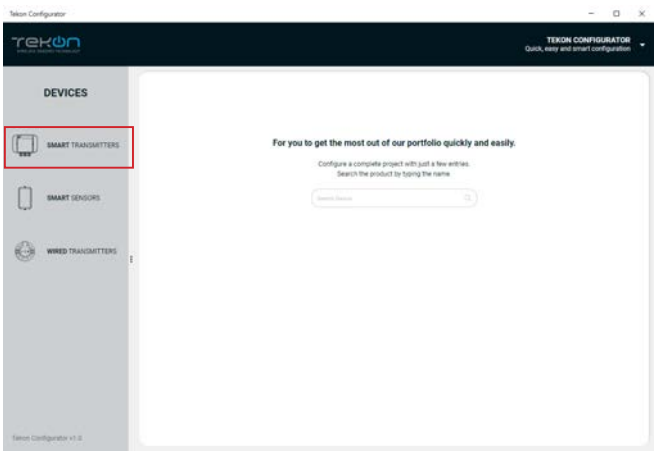
01 Loosen the 4 screws of the case and oppen it.

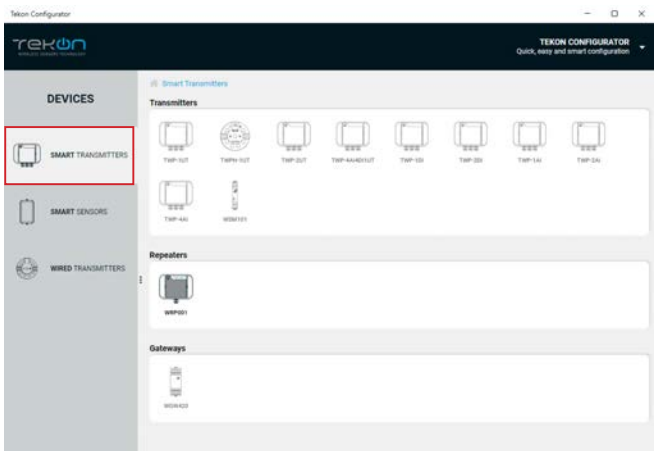
02 Connect a micro USB cable to the computer and then to *WRP001 PLUS Wireless Repeater*.



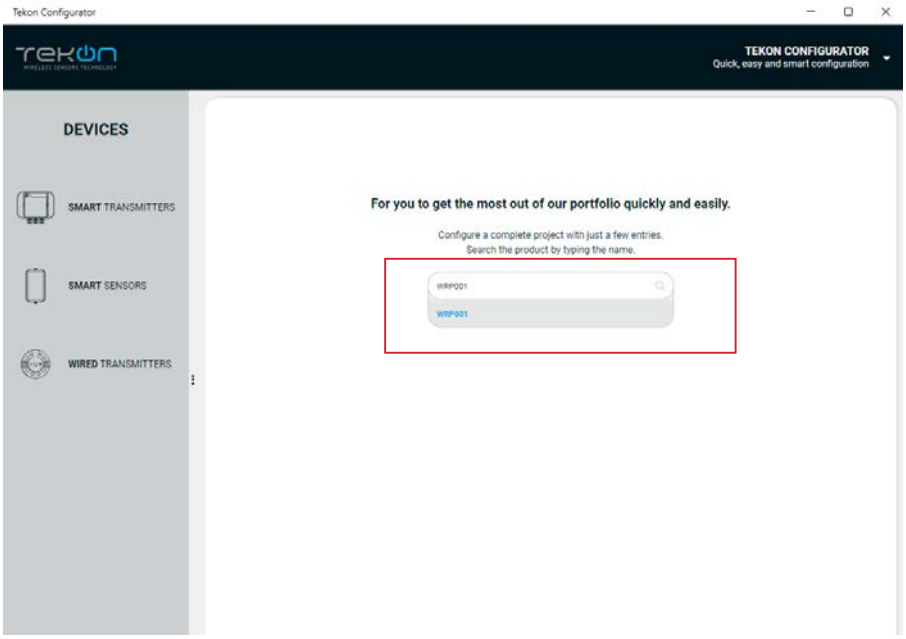
03 Open the WRP001 PLUS Wireless Repeater device page. There are two different ways to get to the device page.

1st option: Click on "SMART TRANSMITTERS" in the left menu and then click on the device.



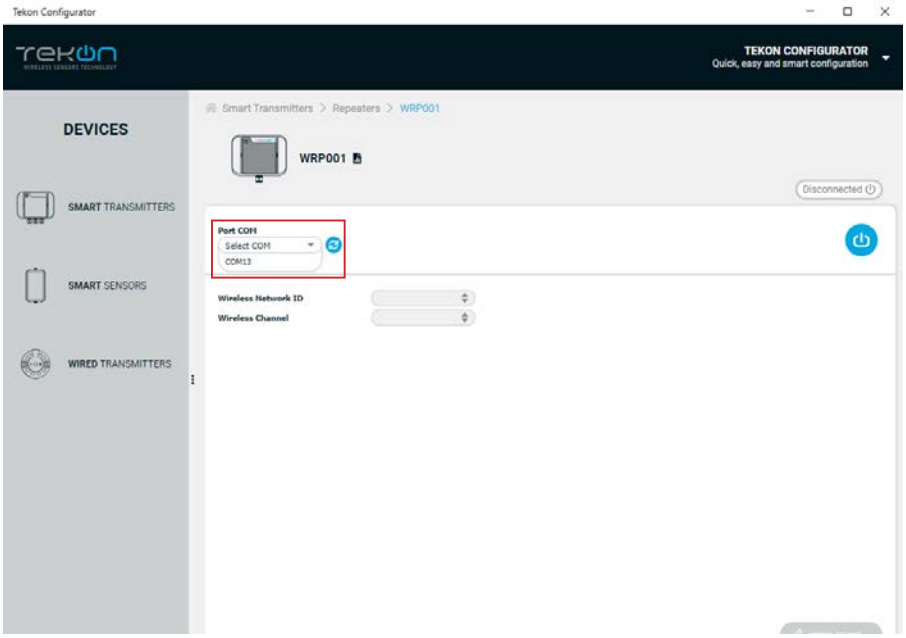


2nd option: Enter the name of the device in the "Search Device" field on the home page and select.



04

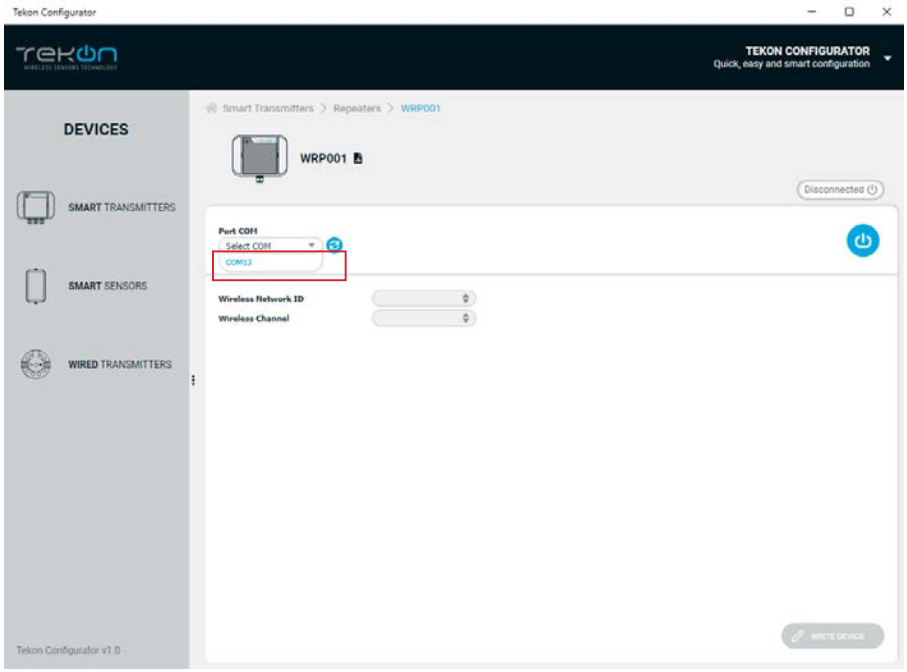
Load the "Port COM" corresponding to the WRP001 PLUS Wireless Repeater.
If the USB cable has already been connected before opening the device's page, the "COM Port" will appear in the list, otherwise click on the button .



step
07
CONNECT AND CONFIGURE THE PLUS WIRELESS REPEATER

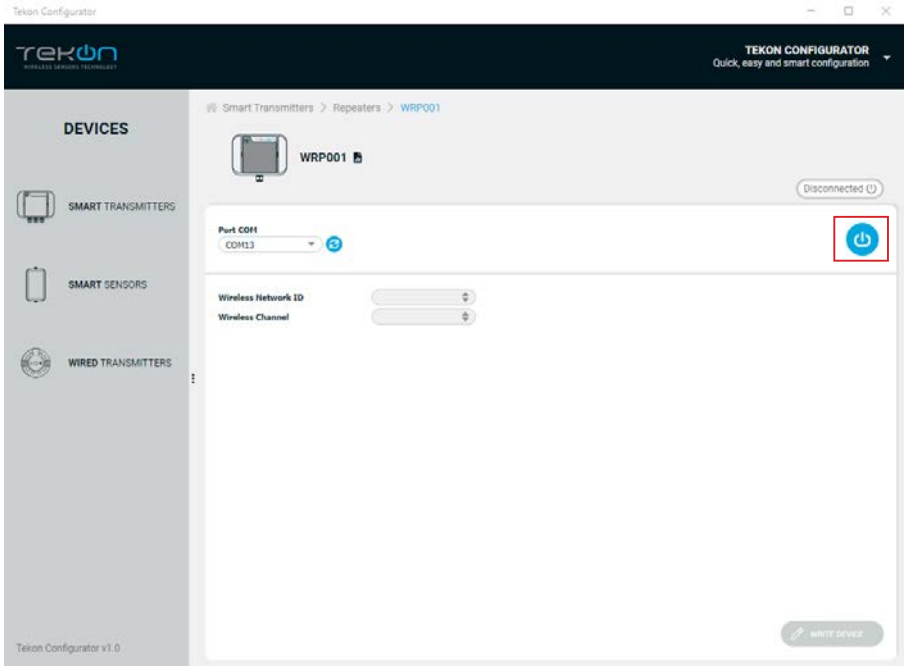
05

Select *Port Com*[1].



06

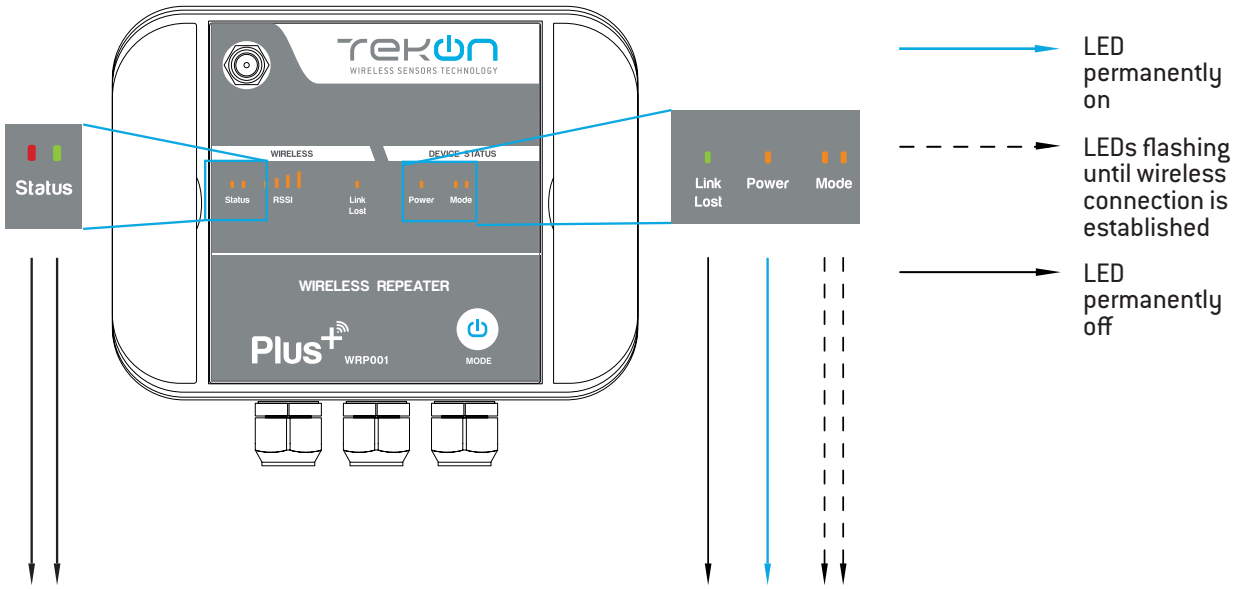
Click on *Configuration Mode* ( ) button.



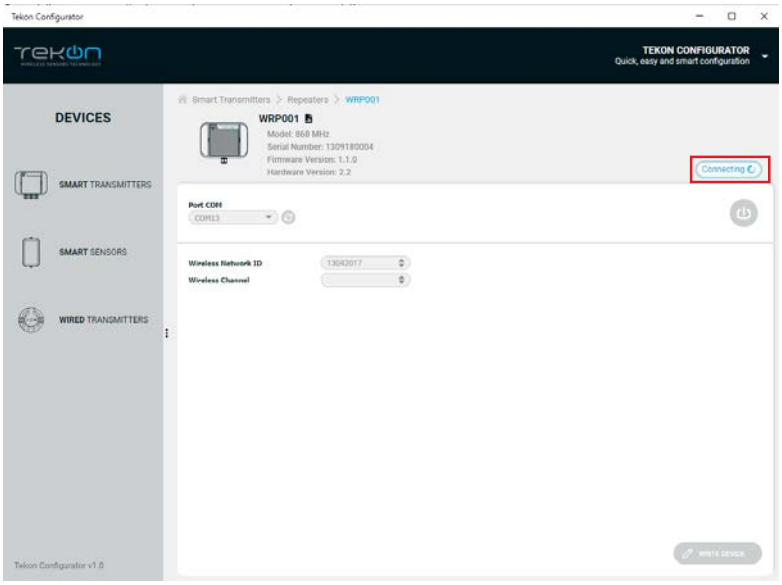
[1] You can check device's serial port name in "Device Manager" on Microsoft® Windows® operating system.

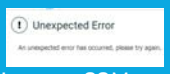
step 07

CONNECT AND CONFIGURE THE PLUS WIRELESS REPEATER



07 The software will connect to the device.

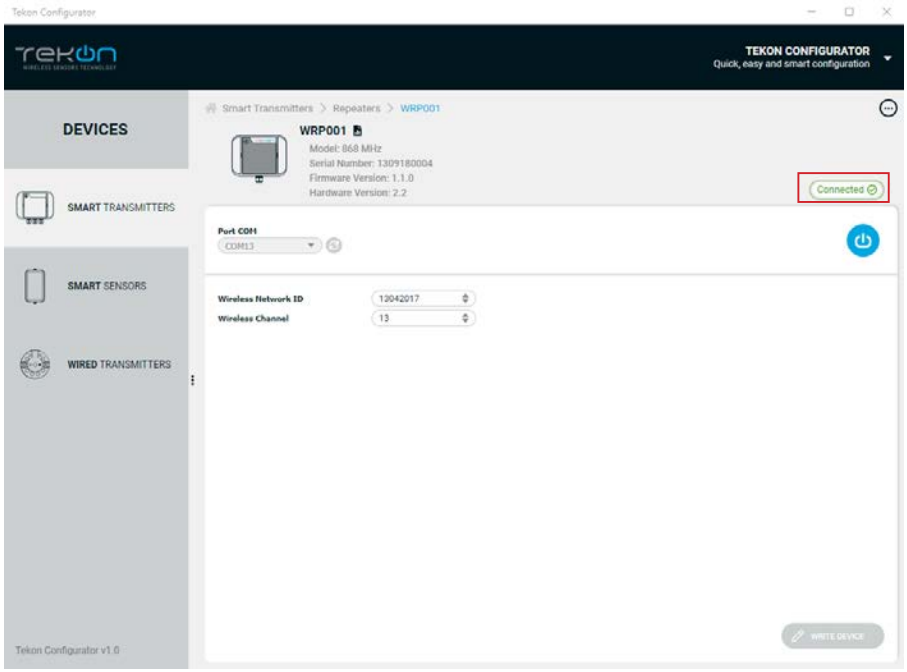


NOTE:
If the software is unable to connect to the device, the  status is displayed. If it hasn't connected, go back to the previous steps and check the port COM.

step
07
CONNECT AND CONFIGURE THE PLUS WIRELESS REPEATER

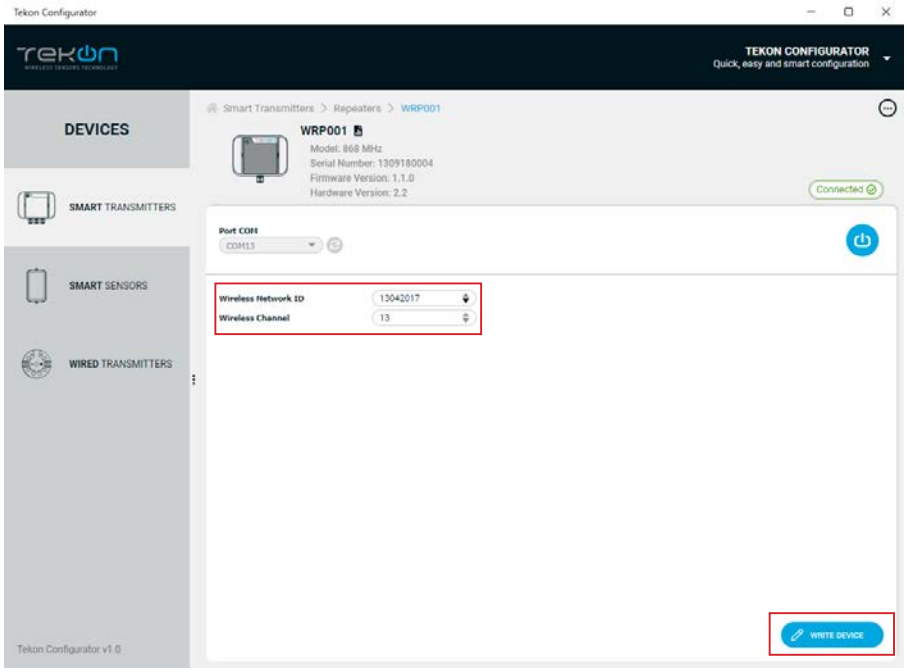
08

When the software connects to the device, the *"Connected"* message will be displayed.



09

Configure the "*Wireless Network ID*" and "*Wireless Channel*" previously obtained from the Gateway.
Click on the "*WRITE DEVICE*" button to update the transmitter settings.

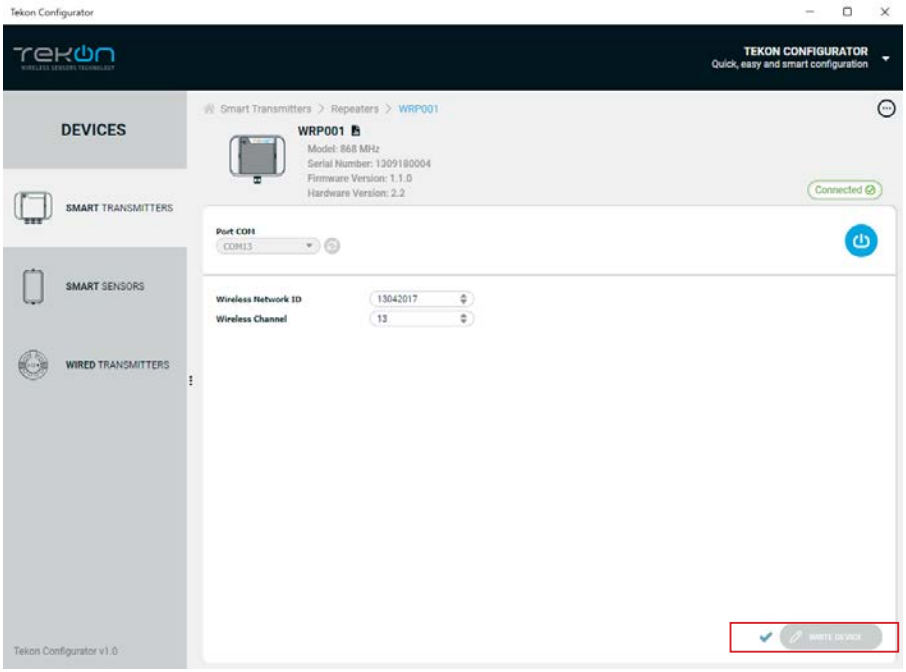


step **07**

CONNECT AND CONFIGURE THE PLUS WIRELESS REPEATER

10

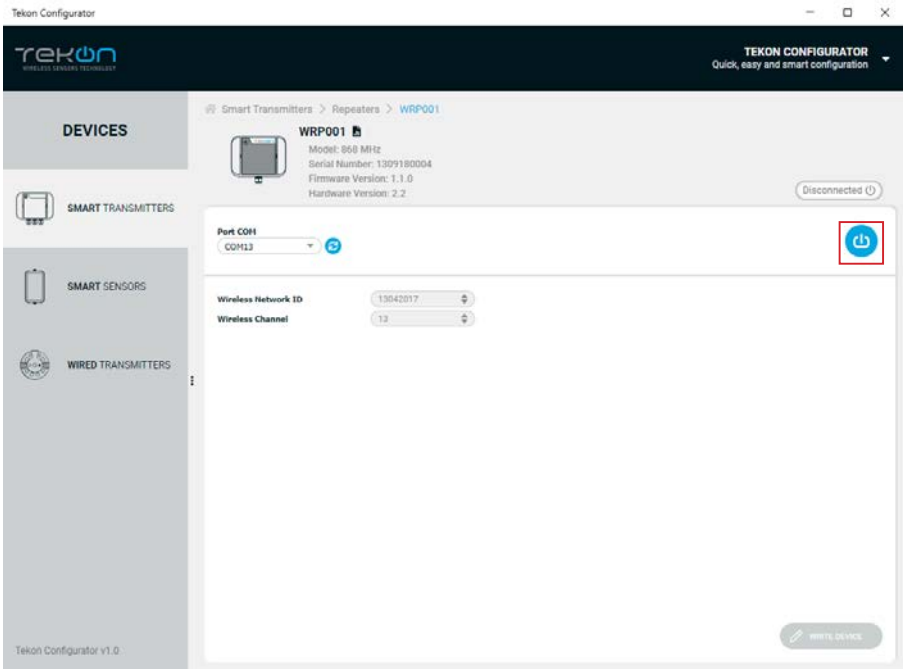
Wait for the software to write the new setting to the device. Wait for the status to change to .



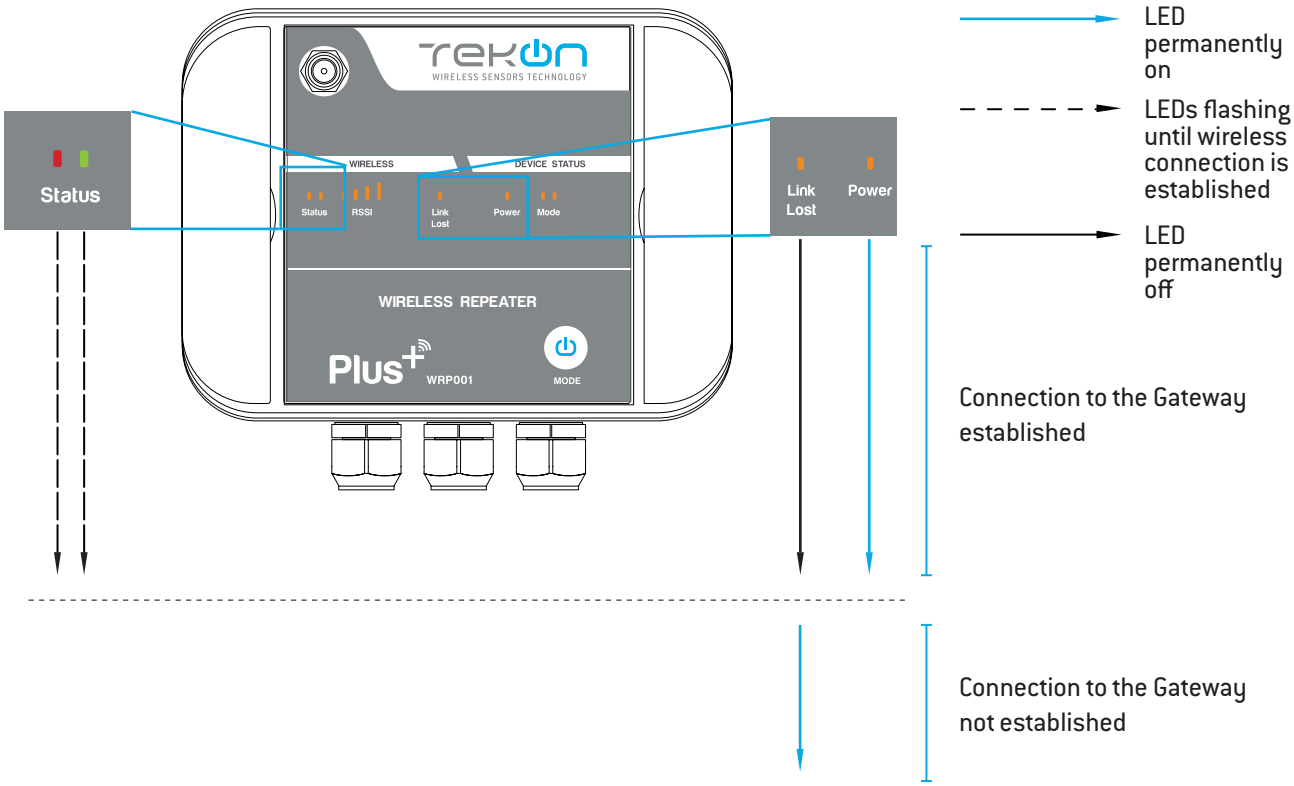
If the writing of the device is not completed, you will see . Make sure that all the steps have been carried out correctly.

11

Click to exit the configuration and return to normal operating mode.



step
07 CONNECT AND CONFIGURE THE PLUS WIRELESS REPEATER



step

08

SITE SURVEY MODE

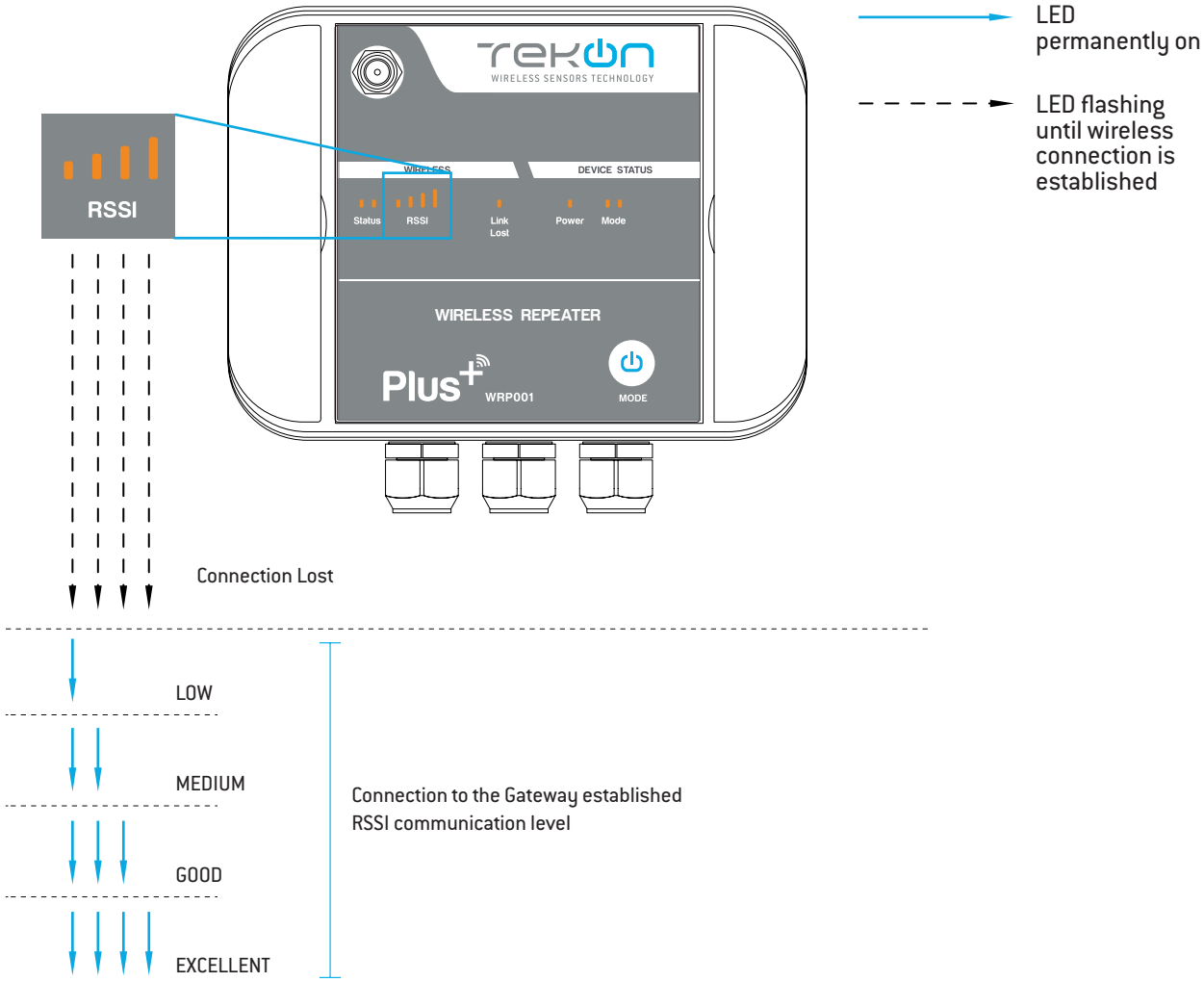
step
14 SITE SURVEY MODE

Refers to following devices: *TWP4AI Transmitter*, *TWP-4AI4DI1UT Transmitter*, *WRP001 Repeater* and *TWPH-1UT Transmitter.*
Site survey mode is a tool that allows a quick wireless signal strength evaluation at the site of installation. It doesn't require additional equipment or software.

01

Press and hold Mode (⏻) button untill Status LEDs are permanently on and Mode LEDs flash.

RSSI LEDs indicate the signal strength.



02

Press and hold Mode (⏻) button untill RSSI LEDs switch off and device resumes normal operation mode.

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