

DUOS WIRELESS SYSTEM INSTALLATION GUIDE

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Table of contents







CHECK WIRELESS COMMUNICATION BETWEEN THE DUOS TRANSMITTER AND THE GATEWAY

Page 18

DUOS WIRELESS SYSTEM INSTALLATION GUIDE

Table of contents





LEGEND:



Important information for the setup;

Take n

Take note of the information;

Validation of a setting;

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01 CONNECT AND CONFIGURE THE DUOS WIRELESS GATEWAY



NOTE:

If your device is a DUOS IoT GATEWAY, please consider the information on this page. If your device is a DUOS GATEWAY, please go to the next page to start the equipment setup.



MINIMUM REQUIREMENTS

The right application of DUOS IoT GATEWAY only occurs if all minimum requirements are met by the customer side. The architectural minimum requirements needed to successfully use this device are:

- Ethernet cable (included with your DUOS IoT GATEWAY);
- DHCP server;
- Web browser with the latest version;

You must have a DHCP server in your network. The main purpose of this kind of server is to automatically provide and assign IP addresses and other networks parameters to connected devices.

To begin the configuration of DUOS IoT GATEWAY, the pin of button mode, must be in the *Config Mode* side.

After completing the setup procedures, go to step 5 to begin the connection to the platform.



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01 CONNECT AND CONFIGURE THE DUOS WIRELESS GATEWAY

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

01	Connect the antenna to the <i>Gateway</i> .	
02	Connect the <i>DUOS RS485-USB</i> cable to the computer and then to the Gateway.	<image/>
03	Check the device connection through the LED signature in the red and blue LEDs are active, both the cable of the red and blue levels of the red an	 le and <i>Gateway</i> are working correctly. LED flashes slowly LED switched on and steady LED flashes every second whenever it sends beacons to new elements to join the network to enter mode
		device receives data from other equipment.



		he menu DUOS >> Gateway >> Config
C File Tools Help	TekOn Configurator	↔ _ □ ×
Devices Transmitters Thead THP1217 THP1217 THP1217 THP1217 THP121 THP101 THP101 THT201 THM501 THM501 THM601 THM601 THM601 WIReless WGW1104 WGW410 Composition THP121 THM601 THM	Serial Port Configuration Port Name COM3 • Baudrate 19200 • Parity None • Refresh Serial Ports 2 Gateway Repeater Transmitter Modbus Configuration 3 Modbus Address 1 • Modbus Baudrate 19200 • Modbus Parity None • Wireless Network ID: Wireless Channel • Read Write	Not Connected

05

Select the Serial Port of the DUOS Wireless Gateway

Click on the *Refresh Serial Ports* button.

Tools Help Serial Port Configuration Fransmitters Head THU1102 Baudrate 19200
 THP1217 Parity None - Refresh Serial Ports Not Connected TH71216 Gateway Repeater Transmitter THM501 Modbus Configuration THM601 Modbus Address TDU1218 Modbus Baudrate 19200 • Unknown Model Wireless

¹ Tekon Configurator software is free of charge and available at <u>www.tekonelectronics.com</u>



O1 CONNECT AND CONFIGURE THE DUOS WIRELESS GATEWAY

	TekOn Configurator	+ _ 🗆 🗙
le Tools Help		
Devices Transmitters Head THU1102 THU1102 TH1217 TH1216 TH1201 THT201 TH1201 THM501 THM501 TMM501 TMM501 Wireless Wireles	Serial Port Configuration Port Name COM3 Baudrate COM3 Parity COM1 Gateway Refresh Serial Ports COM1 Gateway Represent Modbus Configuration Modbus Configuration Modbus Address 1 Modbus Suddrate 19200 Modbus Parity None Wireless Network ID: Wireless Channel	Not Connected
PLUS	Click on connection button to start	

07 Remove the *DUOS RS485-USB* cable from the *Gateway* side and reinsert it.



NOTE:

After reinserting the cable, you have 10 seconds to enter in configuration mode by clicking on the Connect () button, while the blue LED flashes slowly.

In this mode, you can manage the device parameters: *Modbus Address*, *Modbus baud rate*, *Modbus Parity*, *Wireless Network ID* and *Wireless Channel*.

² You can check the device port name in the Device Manager menu in the Windows operating system.



step CONNECT AND CONFIGURE THE DUOS WIRELESS GATEWAY 08 Click on the *Connect* () button to enter configuration mode. The status string at the bottom of the software window gives feedback of reading operations, as well as the Gateway LED indication. ወ TekOn Configurator File Tools Help Devices Serial Port Configuration 4 Transmitters Port Name COM9 -🔺 🥘 Head 6 THU1102 Baudrate 19200 -THP1217 Configuration Mode Parity None 👻 Refresh Serial Ports THT1216 🙆 THP101 Gateway Repeater Transmitter THT201 Modbus Configuration 🙆 THM501 🙆 THM601 Modbus Address 1 ▲ ▼ 🔊 DIN Rail TDU1218 Modbus Baudrate 19200 -TDU1219 Gateway 868MHz Modbus Parity None 🔻 Wireless FW v1.3.0 👹 WGW1104 HW v1.0 Wireless Network ID: 16777217 WGW410 Wireless Channel 13 🥏 DUOS PLUS Read Write Read device successfully \mathbb{T} – – – – LED flashes slowly 0 ——— LED flashes quickly $\|$ LED switched on and steady 1 ╢ L I Т 10 Seconds to enter L 1 configuration mode I 1



NOTE:

When 10 seconds have been exceeded, the blue LED is steady and it is no longer possible to enter configuration mode. In this case, the cable must be removed and reinserted - step 2.



01 CONNECT AND CONFIGURE THE DUOS WIRELESS GATEWAY

09

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

ዕ	TekOn Configurator	+ ×
File Tools Help Devices Transmitters Transmitters Trul 102 THU102 THU102 THU102 THT1216 THP101 THT201 THM501 THM601 THM601 THM601 THM601 WGW1104 WGW410 DU0S PLUS	Serial Port Configuration Port Name QOM9 Baudrate 19200 Parity None Refresh Serial Ports Gateway Repeater Modbus Configuration Modbus Address 1 Modbus Parity None Wireless Network ID: 13 Read Write	Configuration Mode
	Read device successfully	

10

NOTE:

The wireless network connection between devices is ensured by the *Wireless Network ID* and *Wireless Channel field parameters.*

Click on the *Disconnect* (🧐) button.

The Modbus interface and the wireless network are active if the blue LED is on and steady and the red LED is flashing once per second.

File Tools Help Devices Transmitters Baudrate 19200 File Tools Help Serial Port Configuration Port Name COM9 Baudrate 19200 Parity None Refresh Serial Ports Configuration Mode Configuration Mode Gateway Repeater Transmitter Modbus Configuration Gateway Repeater Transmitter Modbus Configuration Gateway Beadress Modbus Address Modbus Baudrate 19200 Modbus Baudrate 19200 Modbus Parity None Gateway 868MHz FW v1.3.0 Wireless Network ID: 16777217 HW v1.0	ዕ	TekOn Configurator	↔ _ □ ×
WGW410 Wireless Channel 13	File Tools Help Devices Transmitters Head Head Hu1102 THU102 THU102 THU102 THU102 THU102 THU102 THU102 THU102 THU102 THU102 THU102 THU102 TU1218 TDU1218 Wireless Wireless Wigw1104 WGW410	Serial Port Configuration Port Name COM9 • Baudrate 19200 • Parity None • Refresh Serial Ports Gateway Repeater Transmitter Modbus Configuration Modbus Address 1 • Modbus Baudrate 19200 • Modbus Parity None • Wireless Network ID: 16777217	Configuration Mode



11

01 CONNECT AND CONFIGURE THE DUOS WIRELESS GATEWAY

Modbus Communication

Open the Modbus tab of the Gateway and set the previously saved configurations.



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







01 CONNECT AND CONFIGURE THE DUOS WIRELESS GATEWAY

12

Click on the *Connect* (9) button and check the operation status at the bottom of the window.



The messages *Connected to Modbus* and *Reading successfully* will appear if the *Serial Port* configuration parameters are correct and the Modbus connection established.

If the blue LED is on and steady and red LED flashes once per second, the *Gateway* is fully operational on the Modbus and wireless interfaces.



02 CONNECT AND CONFIGURE THE DUOS WIRELESS TRANSMITTER

The following steps are valid for any *Transmitter* from the *DUOS* system.

The device (previously mentioned as "unknown model"), as well as the firmware and hardware versions, will be detected when the USB is set. The Tekon Configurator software graphical interface is then adjusted to the detected device.





NOTE:

Although the transmitters are physically equal, probe compatibility is different. This means that the DUOS TEMP Wireless Transmitter is only compatible with temperature probes (models: Plug and Play probe and Temperature Probe), whereas the DUOS Hygrotemp Wireless Transmitter is only compatible with temperature and humidity probes (models: TK07-PFT5 and TK07-MFT9-HC01).

02

Open a new window of the *Tekon Configurator Software* and select the menu *DUOS* >> *Transmitter*.

Devices Transmitters Head THU1102 TH1217 TH1217 TH1216 TH1216 TH1201 TH1201 TH1501 THM501 THM601 DIN Rail TDU1218 TDU1218 TDU1219 Wireless WGW1104 WGW410 DU0S PLUS	Serial Port Configuration Port Name COM12 Baudrate 19200 Parity None Refresh Serial Ports Gateway Repeater Transmitter 2 Measure 1 Measure 2 Measure 3 Battery Voltage V Comm. Period s Transmitter ID V Wireless Network ID: Wireless Channel Read Write Click on connection button to start	Not Connected



step

CONNECT AND CONFIGURE THE DUOS WIRELESS TRANSMITTER

03

Connect the *DUOS TRANSMITTER SARC* cable to the computer and then to the transmitter.

After cable connection, all LEDs stay active during 10 seconds.





04

Click on the *Refresh Serial Ports* button.

File Tools Help		
:		
Devices	Serial Port Configuration	E
 Transmitters 	Port Name COM3 -	
4 🥘 Head		5
THU1102	Baudrate 19200 -	
THP1217	Parity None Refresh Serial Ports	Not Connected
THT1216		
THP101 THT201	Gateway Repeater Transmitter	
THM201		
C THM501	Measure 1	
A S DIN Rail	Measure 2	
TDU1218	Measure 3	-
TDU1219	Battery Voltage V	Unknown Model
🔺 🛜 Wireless	Comm. Period s	
👹 WGW1104	Transmitter ID	
👹 WGW410	Wireless Network ID:	
🧼 DUOS	Wireless Channel	
PLUS	×	
	Read Write	
	Click on connection button to start	



step	
02	CONNECT AND CONFIGURE THE DUOS WIRELESS TRANSMITTER

Ø	TekOn Configurator	↔ _ □ <mark>×</mark>
File Tools Help		
Devices Transmitters Head THU1102 THU1102 THP1217 TH1216 TH1216 TH1217 TH1216 TH1216 TH1201 TH1201 TH1201 THM501 THM501 THM501 THM501 THM501 TH1218 TDU1218 TDU1218 TU1219 WGW1104 WGW410 WGW410 PLUS	Serial Port Configuration Port Name COM1 Baudrate COM3 COM3 COM7 COM1 COM1 Gateway Refresh Serial Ports Comn Period S Transmitter V V Comm.Period S Transmitter V V V Comm.Period S Transmitter V V V Comm.Period S Transmitter V V Comm.Period S Click on connection button to start	Not Connected

06

Remove the cable from the *Transmitter* side and reinsert it. This will access the device's configuration input window during 10 seconds.



³ You can check the device port name in the Device Manager menu in the Windows operating system.



02 CONNECT AND CONFIGURE THE DUOS WIRELESS TRANSMITTER

07

The status string at the bottom of the software window gives feedback on reading operations.

ዕ	TekOn Configurator	+
File Tools Help Devices Transmitters Head THU1102 THU1102 TH1217 TH1217 TH1217 TH1217 TH1216 TH1217 TH1216 TH1217	Serial Port Configuration Port Name COM12 • Baudrate 19200 • Parity None • Refresh Serial Ports Gateway Repeater Transmitter Internal Temperature 18.1 °C External Temperature 18.1 °C Battery Voltage Comm. Period 10 5	← _ □ Configuration Mode UOS TEMP Sensor: TK9808
 Wireless WGW1104 WGW410 DUOS ↓ PLUS 	Transmitter ID 55 - Wireless Network ID: 16777217 Wireless Channel 13 - Read Write	FW v2.1.1 HW v3.1

The device's identification data is now available in the software window. In this guide, the *DUOS TEMP Wireless Transmitter* has been considered.

Click on *Connect* (99) button to enter configuration mode. These configurations are read automatically.

In configuration mode, the *Transmitter* activates 4 LEDS: 2 blue LEDs flash and the red and green LEDs remain active and steady.





NOTE:

After reinserting the cable, you have 10 seconds to enter configuration mode by clicking on the Connect () button, while the blue LEDs flash slowly.

When the 10 seconds have been exceeded, the blue LEDs are steady and it is no longer possible to enter configuration mode.

In that case, the cable must be removed from the Transmitter and reinserted - step 3.



08

02 CONNECT AND CONFIGURE THE DUOS WIRELESS TRANSMITTER

Configure the *Wireless Network ID* and the *Wireless Channel* previously obtained from the *Gateway*. The wireless connection between both devices is ensured by the *Wireless Network ID* and the *Wireless Channel* parameters.

Ensure that the *Transmitter ID* is unique in the network. Each device must have a different *Transmitter ID*. Change it (if necessary) and take note to view the data later.

Click on the *Write* button to update the settings for the *Transmitter*.

ዕ	TekOn Configurator	+
File Tools Help Devices Transmitters Thutuno THU102 TH1216 TH1216 TH1216 TH1216 TH1216 TH1201 THM501 TU1219 TU21	Serial Port Configuration Port Name COM12 • Baudrate 19200 • Parity None • Refresh Serial Ports Gateway Repeater Transmitter Internal Temperature 18.4 °C External Temperature 18.1 °C Battery Voltage 5.1 V Comm. Period 10 s Transmitter ID 55 • Wireless Network ID: 16777217 Wireless Channel 13 •	Configuration Mode
	Writing Success	



02 CONNECT AND CONFIGURE THE DUOS WIRELESS TRANSMITTER

09

Click on the *Configuration Mode* () button to exit setup and start the equipment in normal operation mode.

File Tools Help Devices Serial Port Configuration	
	1

After this procedure:

• The *Transmitter* awaits connection to the *Gateway*, when only the red LED flashes;



• The *Transmitter* is connected via wireless and its data is available in the *Gateway*, when the red and green LEDs flash.





NOTE:

If the green LED does not flash, communication as not been established. 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). The *Transmitter LEDs* remain active during 1 minute. After this period, all LEDs shut down in order to optimise battery life.

To reset the transmitter, the batteries should be removed, during - at least - 50 seconds (in sleep mode) or instead, as the transmitter has a magnetic switch, a magnet can be used to reset it by passing the magnet close to the transmitter's front side in the blue LED's area.



03 CHECK WIRELESS COMMUNICATION BETWEEN THE DUOS TRANSMITTER AND THE GATEWAY

01

Place the two windows of Tekon Configurator software devices' side by side, in order to analyse communication between both devices.



02

Select the configured *Transmitter ID* in the *Gateway* window. After this, it is possible to access the address window of the *Transmitter* in analysis.

The communication between devices is successfull when the *Communication Period* field is in compliance with its duration cycle. Therefore, as soon as the cycle duration has finished, it will turn back to 0.

Communication does not occur if the *Elapsed Time* field presents a higher value than the *Communication Period* field.

In the following example, it was established that the temperature monitoring cycle (or *Communication Period*) is 10 seconds. Therefore, the *Elapsed Time* field will turn back to 0 as soon as it reaches 10 seconds and the analysed parameters (in this case, the temperature) will be updated in accordance with ambient conditions.

You can define the communication period of the *Transmitter* in the write field by clicking on the *register* (] button.

¢	TekOn Configurator	* _ = ×
File Tools Help		
Devices Transmitters Bernold Head Devices Head Devices Devices Devices Action Devices Device	Serial Port Configuration Port Name COM13 • Refresh Time 0.5 • Baudrate 19200 • Modbus Address 1 • Parity None • Refresh Serial Ports Cor Gateway Repeater Transmitter Cor	anected to Modbus
 THT201 THM501 THM601 DIN Rail TDU1218 TDU1219 	Modbus Configuration Transmitter ID 55 Address Value RSSI 1136 96 48 dBm	DUOS TEMP. Sensor: TK9808
Wireless WGW1104 WGW410 DUOS PLUS	Comm. Period 1137 10 10 s Elapsed Time 1138 4 4 PWR Volt. 1139 51 5.1 Internal Temp. 1143 14.25 eC 1 External Temp. 1145 14.25 eC 1	
	Reading successfully	



04 CONNECT AND CONFIGURE THE DUOS WIRELESS REPEATER





02

Connect the *DUOS RS485-USB* cable to the computer and then to *Repeater*.



Check the device connection through the LEDs indication.





Dpen the <i>Tekon Co</i>	onfigurator Software and select the I	menu DUOS >> Repeater.	•
File Tools Help	Tekon Configurator		
Devices Transmitters Transmitters THU1102 THU101	Serial Port Configuration Port Name COMI • Baudrate 19200 • Parity None • Refresh Serial Ports Gateway Repeater Transmitter Repeater ID • Wireless Network ID: Wireless Channel • Read Write	Not Connected	
	Click on connection button to start		
	Click on connection button to start		

04

Click on Refresh Serial Ports button.

- -TekOn Configurator ↔ ዕ File Tools Help Devices Serial Port Configuration Transmitters Port Name COM3 -Ş 🔺 🥘 Head Baudrate 19200 -THU1102 THP1217 Not Connected Parity None -Refresh Serial Ports THT1216 THP101 Gateway Repeater Transmitter THT201 🙆 THM501 * * Repeater ID 🗑 THM601 Wireless Network ID: 🔺 🕥 DIN Rail TDU1218 * * Wireless Channel Unknown Model TDU1219 Wireless Read Write 👹 WGW1104 WGW410 DUOS PLUS Click on connection button to start



🙆 THP101

THT201
THM501

🙆 ТНМ601

TDU1219 Wireless

WGW1104 WGW410

DIN Rail

04 CONNECT AND CONFIGURE THE DUOS WIRELES	S REPEATER
05 Select <i>Port name</i> of the device. ⁴	
tekOn Configurator	+ _ 🗆 🗙
File Tools Help	
Devices Serial Port Configuration	
▲ Transmitters Port Name COM3 ▼	
THU1102 Baudrate COM3 COM3 COM3 COM3	2
THP1217 Parity COM7 Refresh Serial Ports COM1	Not Connected

Re COM13

Click on connection button to start

Gateway

Repeater ID

Wireless Network ID:

Wireless Channel

ransmitter

*

* *

Read Write

Unknown Model

06

Remove the cable from *Repeater* and reinsert it. After reinserting the cable you have 10 seconds to enter configuration mode by clicking on the *Connect* [] button, while the blue LED flashes slowly.





NOTE:

When the 10 seconds have been exceeded, the blue LED remains steady and it is no longer possible to enter *Configuration mode*. In that case, the cable must be removed from Repeater and reinserted.

 $^{^{\}rm 4}$ You can check the device port name in the Device Manager menu in the Windows operating system.



File Tools Help Oevices Transmitters Image: The Head TH1102 TH1102 TH1101
 Transmitters Head THU1102 TH1217 TH1217 TH1216 TH71216 TH71216 TH71216 TH71216 TH71217 TH12011 THM501 Gateway Repeater Transmitter TRepeater ID 201 Configuration Mode Gateway Repeater Transmitter Wireless Wireless Wireles<
 Transmitters Head THU1102 TH1217 TH1217 TH1216 TH71216 TH71216 TH71216 TH71216 TH71217 TH12011 THM501 Gateway Repeater Transmitter TRepeater ID 201 Configuration Mode Gateway Repeater Transmitter Wireless Wireless Wireles<
 Head THU1102 THU1217 TH1216 THT1216 THT5211 THT5211 THT5211 THT501 THM501 THM601 Wireless Network ID: TDU1218 TDU1218 Wireless Channel TS Read Write Write Read Write Repater 868MHz FW v1.0 HW v1.0
Image: The Tight of the T
 TH1216 TH1216 TH1216 TH1211 Gateway Repeater Transmitter THM501 Repeater ID 201 ◆ TM1201 Wireless Network ID: 16777217 Wireless Channel TDU1218 Wireless Channel Wireless Work104 Work410 PLUS
Cateway Repeater Transmitter Image: Third Stateway Repeater Image: Transmitter Image: Third Stateway Repeater Repeater Image: Third Stateway Repeater Repeater Image: Third Stateway Read Write
Image: The second se
Wireless Network ID: 16777217 DIN Rail Wireless Network ID: 16777217 TDU1218 Wireless Channel 13 Wireless Repeater 868MHz FW v1.3.0 FW v1.3.0 WGW1104 Read WGW410 DUOS PLUS Image: Comparison of the second s
TDU1218 TDU1219 Wireless Channel 13 → Repeater 868MHz FW v1.3.0 WoW1104 WGW1104 WGW1104 WGW410 OUOS PLUS
Wireless Read Write HW v1.0 WGW1104 WGW410 OUOS PLUS
WGW1104 WGW410 DUOS PLUS
DUOS PLUS
Read device successfully
Read device successfully
LED switched off
└─── 🔅 💽 ● ● ● ● 💽 🛒 LED flashes slowly
LED flashes quickly
LED switched on
POWER ON (red/green LED)



CONNECT AND CONFIGURE THE DUOS WIRELESS REPEATER

08

Make sure that *Wireless Network ID* and *Wireless Channel* in the *Repeater* window have the same values as the ones that were obtained in the *Gateway* configuration window.

<mark>ل</mark>	TekOn Configurator	↔ _ □ ×
File Tools Help Devices Transmitters	Serial Port Configuration	,
 Head THU1102 THP1217 THT1216 THP101 	Baudrate 19200 * Parity None * Refresh Serial Ports Gateway Repeater Transmitter	Configuration Mode
THT201 THM501 THM501 DIN Rail TDU1218 TUU1219 Wireless Wireless WWGW1104 WGW410 DUOS PLUS	Repeater ID 201 Wireless Network ID: 16777217 Wireless Channel 13 Read Write	Repeater 868MHz FW v1.3.0 HW v1.0
	Read device successfully	



NOTE:

If there is more than one *Repeater* in the network, make sure that the *Repeater ID* is unique in order to avoid network conflict.

09

Change configuration fields (if necessary) and click on *Write* () button to update the *Repeater ID* parameter.

ტ	TekOn Configurator	↔ _ □ ×
File Tools Help Devices ▲ Transmitters ▲ Bead ④ THU1102 ④ THU1102 ⑥ THP101 ⑥ THP101 ⑥ THP101 ⑧ THP101 ⑧ THP101 ⑧ THP101 ⑧ THP101 ⑧ THP101 ⑧ THP101 ⑧ THP101 ⑧ THD1218 ③ THU1218 ③ TU1218 ③ TU1219 ▲ Wireless ■ Wirel	Serial Port Configuration Port Name COM13 • Baudrate 19200 • Parity None • Refresh Serial Ports Gateway Repeater Transmitter Repeater ID 201 • Wireless Network ID: 16777217 Wireless Channel 13 • Read Write	Configuration Mode Configuration Mode
	Writing Success	



10

CONNECT AND CONFIGURE THE DUOS WIRELESS REPEATER

Click on the *Configuration Mode* () button to exit the setup programme.

ወ	TekOn Configurator	+
File Tools Help Devices Transmitters Transmitters Head THU1102 THT1217 THT1216 THT1216 THT1216 THT1216 THT1216 THT1216 THT1216 THT1216 THT1217 THT1216 THT1217 THT1217 THT1217 THT1217 THT1217 THT1217 THT1217 THT1218 THU1102 THT1217 THT1217 Wireless WGW1104 WGW1104 WGW1104 WGW1104 WGW1104 WGW1104 WGW1104 TUUS	Serial Port Configuration Port Name COMIS • Baudrate 19200 • Parity None • Refresh Serial Ports Gateway Repeater Transmitter Repeater ID 201 • Wireless Network ID: 16777217 Wireless Channel 13 • Read Write	Configuration Mode Configuration Mode Repeater 868MHz FW v1.3.0 HW v1.0
	Read device successfully	



NOTE:

In order to establish communication between the Repeater and the Gateway, make sure that both devices are at a distance of at least 3 meters or remove the antenna from the repeater (in case both devices are near each other). These procedures will guarantee communication quality.

At this moment, it is possible to check if:

• The *Repeater* is trying to connect to the network when the red LED flashes every second.





04 CONNECT AND CONFIGURE THE DUOS WIRELESS REPEATER

• The *Repeater* is connected to the wireless network when red and green LEDs flash. -11 • LED switches on and remains steady I – – – Red/green LED flashes as soon 1 -1 as connection between the T devices has been established. I 1



O1 Cancer the switch pin to Normal Mode. Ug the ethernet cable that follows with your gateway to the device's input and to your network. O2 O3 O4 O5 O5





The access through this interface only allows the configuration and consultation of DUOS IoT GATEWAY. Unable to send data to the cloud over this channel.

The DUOS IoT GATEWAY appear with an SSID with the following configuration *WGW4IoT-hostname*. By default, the devices follow with the SSID *WGW4IoT-<serialnumber>*

n	3
U	J

Connect to the wifi network that comes from your gateway.

Use the password *bresimar* to login.

vodafone P	🗓 🕲 🤶 . II 67% 🔳
w	/i-Fi
Ativar ou desativar	
Wi-Fi	
Wi-Fi+ Experiência de Internet otimizada	Desativado >
Redes disponíveis	
BRESIMAR	
WGW4IoT-Tekon	(i).
OpenWrt	
WGW4IoT-DUOS@TEKON	
DOMBRESIMAR	



DUOS IoT GATEWAY has a fixed IP address assigned to be accessed via mobile phone, tablet or pc (through Wi-Fi). The interface designed to interact with the device can be accessed through its fixed IP (192.168.128.1) or its SSID address (http://Tekon). The factory-defined and configurable access data are:

- Login: admin

- Password: admin



NOTE:

This password and username must be changed to improve the security level.



NOTE:

After a power-on cycle, the first access to the gateway may have a long time waiting time and should not be confused with a lack of response.



NOTE:

SSID address access is only possible until it is changed. After the change, you must access by the user-defined SSID.

04

Check your network credentials. Click on *Settings* >> *IP Network* tab.

By default, your gateway has a static ethernet IP address for the network (192.168.100.1). You can choose to keep this IP address or activate the DHCP feature to be assigned a dynamic IP address by the network.

IP Network Table Search:
Interface II DHCP II IP Address II Netmask II Gateway II MAC Address II eth0 Disabled 192.168.00.1 255.255.25 192.168.0.250 40.a3.6b.c2.1c.4c If If Manage lo Disabled 127.0.1 255.0.0 00:00.00.00.00 00:00.00.00 If If Manage If Manage If Manage If If Manage If If Manage If If Manage If If Manage If If If Manage If If Manage If If Manage If If If If If If If If If
Interface II DHCP II IP Address II Netmask II Gateway II MAC Address II eth0 Disabled 192.168.100.1 255.255.255.0 192.168.0.250 40.a3.6b.c2.1c.4c If Manage lo Disabled 127.0.0.1 255.0.0 00:00:00:00:00:00 If If Manage If Manage If Manage If Manage If If Manage If Manage If If </td
etho Disabled 162.168.00.1 255.255.255.0 192.168.0.250 40.a3.6b.c2.1c.4c If Manage lo Disabled 127.0.0.1 255.00.0 00.00.00.00.00.00 If Manage ra0 Disabled 192.168.128.1 255.255.255.0 40.a3.6b.c2.1c.4a
Io Disabled 127.0.0.1 255.0.0 00/00.00.00.00.00 ra0 Disabled 192.168.128.1 256.255.256.0 40.a3.6b.c2.tc.4a
ra0 Disabled 192.168.128.1 255.255.256.0 40:a3.6b:c2:1c:4a
Showing 1 to 3 of 3 entries Previous 1 Next
NTP
NTP Peer pt.pool.nlp.org
Q [®] Test 即Ddate
Proxy Configuration
HTTP Proxy
HTTPS Proxy
🕒 Update



)	enable the	option to	get an dyna	amic IP addro	ess assigne	ed by your ne	etwork, click (
	Tekon IoT Gatewa Communication Me		DR NETWORK SETTING	is etwork Cloud Services	Monit System		1 admi
	IP Network Tab				monit Oyatem		
		entries	IP Address	Netmask	Gateway	Search:	11
	eth0	Disabled	192.168.100.1	255.255.255.0	192.168.0.250	40:a3:6b:c2:1c:4c	I Cer Manage
	lo	Disabled	127.0.0.1	255. <mark>0.0.0</mark>		00:00:00:00:00:00	
	ra0	Disabled	192.168.128.1	255.255.255.0		40:a3:6b:c2:1c:4a	
	Showing 1 to 3 o	of 3 entries					Previous 1 Next
	NTP						
	NTP Peer		pt.pool.ntp.org				
	Ø6 Test						🖺 Update
	Proxy Configur	ation					



A pop-up window will show up. Click on the validation box, next to the *DHCP* label to enable the option and click on the *Update* button to save the changes. You will be redirected to the previous page.

IP Network Table		Interface	eth0		
Show 10 • en		DHCP IP Address	92.168.100.1	Search:	
Interface 4	Enabled	Netmask	255.255.255.0	ress 2:1c:4c	C2' Manage
ю	Disabled	Gateway	192.168.0.250	0:00:00	
ra0 Showing 1 to 3 of 3 e	Disabled ntries	MAC Address	40:a3:6b:c2:1c:4c	2:1c:4a	vious 1 Next
NTP			Close	Update	
NTP Peer		pt.pool.ntp.org			
©© Test					🖺 Update



Write down the IP address of your device's ethernet port. It will be needed later.



CONFIGURE A PROXY SERVER (OPTIONAL)

lick	on the Upd	ate butto	on to save th	ne change	25.				
				Netmask		MAC Address	lt		
	eth0	Disabled	192.168.100.1	255.255.255.0	192.168.0.250	40:a3:6b:c2:1c:4c	41	☑ Manage	
	lo	Disabled	127.0.0.1	255.0.0.0		00:00:00:00:00:00			
	ra0	Disabled	192.168.128.1	255.255.255.0		40:a3:6b:c2:1c:4a		10-01	
	Showing 1 to 3 of 3 er	ntries					Previou	s 1 Next	
	NTP								
	NTP Peer		pt.pool.ntp.org						
	© Test							🖺 Update	
	Proxy Configuration	n							
	HTTP Proxy								
	HTTPS Proxy								
	and the second second second								
								🖺 Update	



NOTE:

The proxy address must consider the full path configuration like in the example: 'http://my.proxy.com:9000' or 'https://my.secure.proxy.com:9000'



ACCESS TO DUOS GATEWAY IOT THROUGH ETHERNET

08	The connection to DUOS IoT GATEWAY through Ethernet is made using your web browser. You can access by the hostname (http:// <hostname>) or via IP address (http://<192.168.100.1>). The default login credentials are: - Login: admin - Password: admin</hostname>
	© Not seem 182.108.10.1
	Sign in Usamame admin Password ▲ topn
	Powered by Frankeler



NOTE:

DUOS IoT GATEWAY access credentials displayed by default can be edited in *Settings* » *Users* menu.



TRANSMITTER ACTIVATION

At login, the graphical interface displays the transmitters that are connected to the network. The first presentation of the devices connected to the network is through a vertical listing (1). To get an overview of your system, at the bottom of the main page, you will find information about the activity and links established (2).

Nost Recent Values			
Show 10 • entries	s	earch:	
Hub ID Name		Status	1
1 N/A Showing 1 to 2 of 2 entries Status Overview		Previous 1 Next] (1]]
Showing 1 to 2 of 2 entries Status Overview] (1
Showing 1 to 2 of 2 entries	Gateway]
Showing 1 to 2 of 2 entries Status Overview	Gateway Uptime: 3.17		(1
Showing 1 to 2 of 2 entries Status Overview Network]



The transmitters are listed in ascending numerical order. By default, the name appears with "N/A" until it is edited and reset. The *Hub ID* field match to the Transmitter ID field defined in Tekon Configurator over the transmitter configuration.

10

Click on the *Hub ID* field of the transmitter to activate. You will be redirected to the selected transmitter page, select the *Properties* tab [1], in the *Status* property, choose the *Active* state [2] and click on the *Update* button [3] to save the change.

Tekon IoT Gateway HOME SENSOR	NETWORK SETTINGS		ADMIN-
Sensor Hub - 1			
(1) Measurements Properties Modbus	5		
Properties			
Name			
System Id	1:0:0:0		
Network Id	1:0:0:1		
Firmware Version	3.0.0		
Refresh Time (seconds)	16		
Status	UNDEFINED		. (2)
Description	UNDEFINED ACTIVE INACTIVE		
Synchronize to Cloud	0#		
		🏥 Del	ete 🕒 Update (3)





The transmitter is activated. Transmitter information available for all the interfaces.



If you would like to send data from this transmitter to Tekon IoT Platform, set the *Synchronize to Cloud* field to *On* mode and save the changes. We will return to this subject shortly.

11

- In the "Properties" tab, fill in the fields:
- "Name" and "Description" according to your preference;
- "Refresh Time" according to the intended transmitter communication period;

Save the changes in the Update button.

Tekon IoT Gateway HOME SENSOR N	IETWORK SETTINGS	1 ADMIN-
ensor Hub - 1		
Measurements Properties Modbus		
Properties		
Name	DUOS CO2 - Comercial Wharehouse	
System Id	1:0:0:0	
Network Id	1:0:0:1	
Firmware Version	3.0.0	
Refresh Time (seconds)	16	
Status	ACTIVE	•
Description	Black DUOS CO2 transmitter in comercial wharehouse	
Synchronize to Cloud	011	
	Delete 2	1 Update



The transmitter is configured.



		CONNECTION TO TEKON IOT PLATFORM	
12	In the DUOS IoT GATEWA	Y page, go to Settings >> Cloud Services.	
	(in) Teleon for Gateway HOME SENS	OR NETWORK SETTINGS	
	Communication Module Users Tekon Cloud	Data Import/Export Network Cloud Services Montt System	
	Server URL	http://iot19.tekonelectronics.com/	
	API Key	clia46279.0bdid-4915-0bdid-10ado40561a7e	
	Status	On	
	\$ Test Credentials	Validate Credentials Update	
	Tekon Cloud - Sensor hubs	configuration	
	Show 10 T entries	Search:	
		C02 - Comercial Wharehouse Cloud Synchronization Off	
	Showing 1 to 2 of 2 entries	Previous 1 Next	

13

In a new browser page, access your Tekon IoT Platform and go to *Settings* >> *Administration*.

* Favorites O Al O	INSYS	Could not find any information for the following datase	PERSONAL AREA	
filter dashboards Q		Coald not find any inclination for the following datase	auts -	
INSYS				
	Humidity Temp	perature Conter		
	● 53.5%	و است 28 ^{°C} -310471		
		28°C -310471 © 07/24/08/9 12:15 M		
		© 2019 - ERESIMAR AUTOMAÇÃO, S.A.		



	14	Click on the view option to see the <i>gateway</i> user data	a and copy the API key.
Hame getony Geto		waters second reconcises	CLANGUAGE CRESONAL AREA A PERSONAL AREA A ADMINISTRATION
No data Communication details Agi key		Name getressy Usersmane getressy Perfile Getressy So disk	
		No data Communication details Api key]

×.	
	5

In the DUOS IoT GATEWAY page, fill in the fields: - "Server URL" with your Tekon IoT Platform address;

- "API Key" with the Api key previously copied;

Change the *Status* field value to *On*.

Tekon Cloud Server URL http://iot19.tekonelectronics.com/ API Key Status Status on of Test Credentials Tekon Cloud - Sensor hubs configuration Status 1 DUCS CO2 - Comercial Wharehouse	ettings			
Server URL http://u119.tekonelectronics.com/ API Key Image: Comparison of the server	Communication Module Users Data	Import/Export Network Cloud Services	Monit System	
API Key Status C C C C C C C C C C C C C	Tekon Cloud			
Status Co	Server URL	http://iot19.tekonelectronics.com/		
Off Test Credentials I Validate Credentials Tekon Cloud - Sensor hubs configuration Show 10 • entries Hub ID Name Status 1 DUOS CO2 - Comercial Wharehouse	API Key	cla452713b86-4715-9405-75a4a4055a7e		
Image: Im	Status	On		
Now 10 v entries Search: Hub ID Name Status 1 DUOS CO2 - Comercial Wharehouse Cloud Synchronization Off V	og Test Credentials		Validate Credentia	Is 🖺 Update
Hub ID Name Status 1 DUOS CO2 - Comercial Wharehouse Cloud Synchronization Off ▼	Tekon Cloud - Sensor hubs conf	iguration		
1 DUOS CO2 - Comercial Wharehouse Cloud Synchronization Off	Show 10 • entries		Search:	
	Hub ID Name		Status	
Chaulas 1 to 2 of 2 option	1 DUOS CO2	- Comercial Wharehouse	Cloud Synchronization Off	•
Previous 1 Next	Showing 1 to 2 of 2 entries		Previous	Next



16

step

You can test the credentials declared. Click on *Test Credentials* button to test the credentials authenticity. If the credentials are authentic, a success message will show next to the button.

You can validate the credentials. This step will ensure data the credentials entered are authentic. Click on the *Validate Credentials* checkbox.

Click on *Update* button to save the changes. If *Validate Credentials* is checked, the configured data is stored only if valid. Pay attention to the received message.

ettings		
communication Module Users	Data Import/Export Network Cloud Services	Monit System
Tekon Cloud		
Server URL	http://iot19.tekonelectronics.com/	
API Key	c8a40271 (bbb: 4115 (bbb) 1ba4e4050a7e	
Status	On	
📽 Test Credentials 🖌 Authe	ntication Ok	Validate Credentials
Tekon Cloud - Sensor hubs	configuration	
Show 10 • entries		Search:
Hub ID Name	•	Status
1 DU03	S CO2 - Comercial Wharehouse	Cloud Synchronization Off
Showing 1 to 2 of 2 entries		Previous 1 Next



Your DUOS GATEWAY IoT is now connected to your Tekon IoT Platform instance.



18

05 CONNECT THE DUOS WIRELESS INT GATEWAY

ATTACH TRANSMITTER DATA TO TEKON IOT PLATFORM

Access to your Tekon IoT Platform, click at the *Datasources* menu and the button () to edit the datasource where you want to send the transmitter data.

	ashboard 🛋 datasources 🌲 Alarms 👻 🛢 data			💠 SETTINGS - Ů LOG
atasources				
				+ Add dataso
Name •	Date 0	Communication 0	variables state 0	
DUOS CO2 915MHz - TESTE ACV	09/23/2019 11:11:57 AM +01:00	✓ ak	or ok	01
INSYS	07/26/2019 12:15:33 PM +01:00	✓ ak	or ak	• <i>1</i>
PLUS 5		✓ ak	✓ ak	01
PLUS 55	09/17/2019 2:48:09 PM +01:00	O error	v at	0/
Teste INSYS Andril		✓ ok	v ak	01
20 *				
		© 2019 - BRESIDUAR AUTOMAÇÃO, S.A.		
		© 2019 - BRESIMAR AUTOMAÇAD, S.A.		

19

Copy the API key from the datasource and go back to your DUOS IoT GATEWAY page. On the page, select the transmitter you want to match, fill in the *API Key* field with the copied value.

You can test and validate the credentials, as explained in the step 16.

Click on *Update* button to save the changes.

Settings						
Communication N	vlodule	Users Data I	Import/Export Network Cloud Service	s Monit System		
Tekon Cloue	d					
Server URI	<u>.</u>		http://iot19.tekonelectronics.com/			
API Key			c8a4627f-9b8d-4f15-9d06-1ba4e4056a7e			
Status			On			
Q ^e Test Cr	redentials	 Authenticatio 	on Ok		Validate Credentia	ils 🖹 Update
Tekon C	Cloud - Se	nsor hubs cor	nfiguration			
Show	10 🔻	entries			Search:	
	Hub ID	Name		3	Status	
_	1	DUOS CO	O2 - Comercial Wharehouse	С	loud Synchronization On	•
		API Key	fe966bf6-7c1c-417b-bbf2-f42bbdafc3	37		
	Crest Crest	tentials			🔲 Validate Credentials 🛛 🖺 Up	date



step 05

CONNECT THE DUOS WIRELESS IOT GATEWAY



NOTE:

The message "Cloud Synchronization On" will only be visible if you have activated the option "Synchronize to Cloud" in the "TRANSMITTER ACTIVATION" step to activate your transmitter. If you did not perform the validation, the message "Cloud Synchronization Off" will be displayed in the "Status" field.



Your transmitter is now connected to your Tekon loT Platform.



NOTE:

Perform a reboot in the gateway. Remove the *DUOS RS485-USB* cable on the gateway port and reconnect it.

VERIFY COMMUNICATION WITH TEKON IOT PLATFORM

20

To verify if the information acquired by the transmitter is effectively reaching your Tekon IoT Platform, click on the Datasources menu and check the date of the latest communication between the platform and the transmitter. This log will tell you if the communication process is on or not.

WIRELESS SENSORS TECHNOLOGY						
tasources						
				+ Add datase		
			search			
lame •	Date 0	Communication 0	Variables state 0			
UOS CO2 915MH2 - TESTE ACV	09/23/2019 11:11:57 AM +01:00	∽ ek	✓ ak	01		
NSYS	07/26/2019 12:15:33 PM +01:00	✓ ek	✓ dk	0 /		
LUS 5		✓ ak	of ak	01		
LUS 55	09/17/2019 2:48:09 PM +01:00	0 error	v ak	0/		
este INSYS Andril		✓ ek	✓ ek	• <i>1</i>		
20 -						
_						
		© 2019 - BRESIMAR AUTOMAÇÃO, S.A.				



	C	OATA CO	MMUNICA	TION OVE	R MODBUS	S TCP/IP	
21	You can pre-check th In each transmitter y						
	Click on the transmit	ter / hub y	ou want to ar	nalyze and s	select the Mo	dbus tab.	
			ETTINGS	5		1 ADMIN-	
	Sensor Hub - 40						
	Measurements Properties	Modbus					
	Modbus						
	Show 25 v entries				Search:		
	Register Variable	Actual Value	Register Address	Register Value	Register Type	Register Format	
	Transmitter Model	DUOS TEMP	819	0x000003	Holding Register	UINT16	
	Probe Sensor Model	TK9808	820	0x000001	Holding Register	UINT16	
	RSSI	-22	821	0x00002C	Holding Register	UINT16	
	Communication Period	60	822	0x00003C	Holding Register	UINT16	
	Elapsed Time	33	823	0x000021	Holding Register	UINT16	
	Power Supply Voltage	5	824	0x000032	Holding Register	UINT16	
	FW Version Major Minor	3.0	825	0x000300	Holding Register	UINT8_UINT8	
	FW Version Revision	0	826	0x000000	Holding Register	UINT16	
	HW Version Major Minor	3.3	827	0x000303	Holding Register	UINT8_UINT8	
	Last Internal Temperature	20.69	828	0x41A58106	Holding Register	DOUBLE	
	Last Temperature	20.44	830	0x41A38106	Holding Register	DOUBLE	
	Showing 1 to 11 of 11 entries		_				

22

In this page, you have the selected transmitter modbus scheme.

- (1): variable names;
- (2): current value recorded;
- (3): modbus address;
- (4): register value;
- (5): register type;
- (6): register data type;

Sensor Hub - 40

Modbus					
Show 25 • entries (1) Register Variable	(2) Actual Value	(3) Register Address	(4) Register Value	(5) Search: Register Type	(6) Register Format
Transmitter Model	DUOS TEMP	819	0x000003	Holding Register	UINT16
Probe Sensor Model	TK9808	820	0x000001	Holding Register	UINT <mark>1</mark> 6
RSSI	-22	821	0x00002C	Holding Register	UINT <mark>1</mark> 6
Communication Period	60	822	0x00003C	Holding Register	UINT16
Elapsed Time	33	823	0x000021	Holding Register	UINT16
Power Supply Voltage	5	824	0x000032	Holding Register	UINT16
FW Version Major Minor	3.0	825	0x000300	Holding Register	UINT8_UINT8
FW Version Revision	0	826	0x000000	Holding Register	UINT16
HW Version Major Minor	3.3	827	0x000303	Holding Register	UINT8_UINT8
Last Internal Temperature	20.69	828	0x41A58106	Holding Register	DOUBLE
Last Temperature	20.44	830	0x41A38106	Holding Register	DOUBLE





NOTE:

In this example we used the transmitter / hub 1. The first modbus address of its variables starts at 0. To find the modbus address calculation formula defined for DUOS IoT GATEWAY, please refer the datasheet on Tekon Electronics website.



To access to the records via Modbus TCP/IP in real time, you must use a program developed for this purpose, external to Tekon Electronics.



- DUOS IOT GATEWAY IP;
- Port: 1502;

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