



TWM-1886
Wireless Router
Installation & User Manual
Release Date: 15/09/2021 Rev:01



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1 General Definitions

TWM-1886 Wireless Router module allows the extension of the wireless network area by connecting to the coordinator or to another router. Basically, it is used to increase the communication distance between the wireless coordinator and the wireless devices.

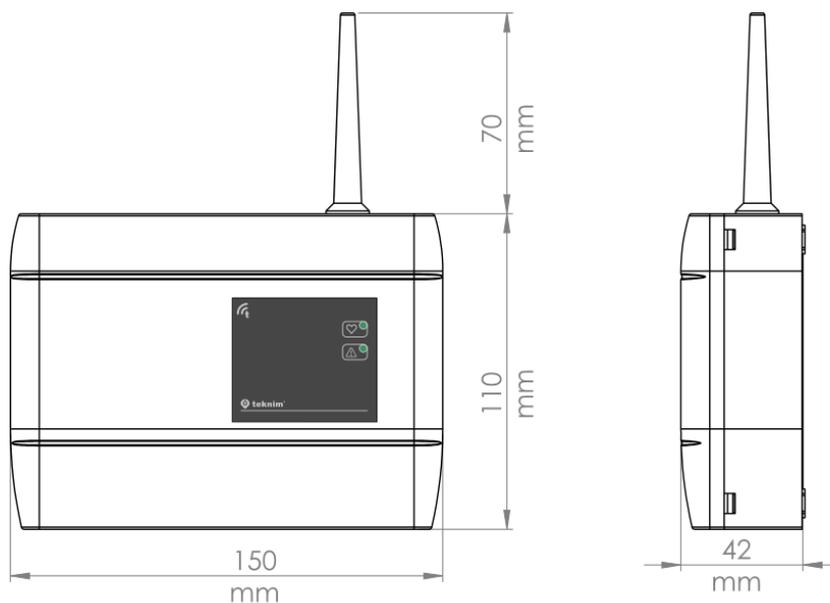
Wireless routers ensure that the data between two devices (coordinator-device, coordinator-router, router-device, router-router) are transmitted without problems and the route the data will be delivered through is determined. The coordinator assigns a unique address to all devices while connecting to the network. Routers, however, use these addresses to get the data packages to be delivered to correct targets. A wireless device can maintain the communication with the coordinator in a network where routers are used, regardless of distances.

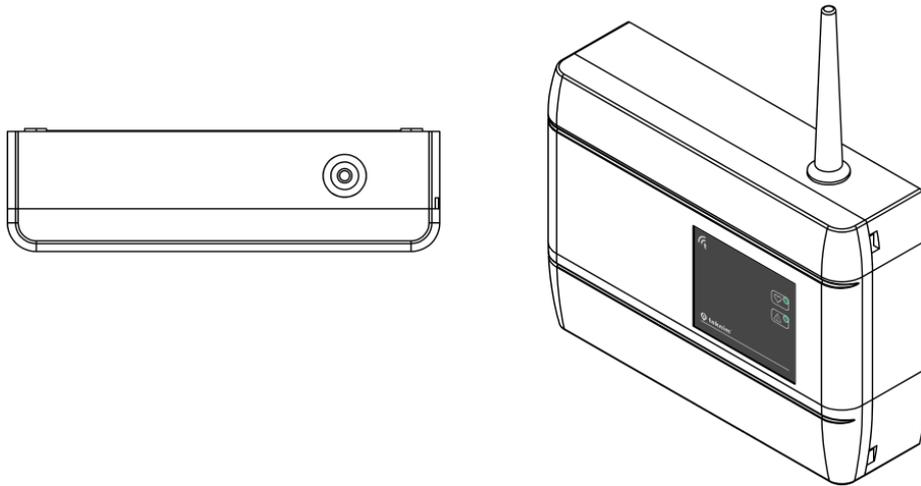
Wireless routers communicate with all devices on the network through the *TLPWAN*⁽¹⁾ protocol.

- (1) *TLPWAN* (Teknim Low Power Wide Area Network) is a wireless communication protocol developed by Teknim which allows low power consumption devices on a wider area in a stable and safe manner by using two-way communication.

2 Technical Specifications

Network Supply Voltage	18Vdc – 35Vdc
Average Current Consumption	10mA (@24Vdc)
Operating Frequency	868 MHz
Output Power	14 dBm (25 mW)
Communication Distance	500 m (open area)
Number of Channels	10
Total number of connectible devices	26
Number of Routers That Can be Connected to a Router Side-by-Side	5
Humidity	95% RH
Operating Temperature	-10 – +55 degrees
Size (mm)	150 mm x 110 mm x 42 mm + 70 mm Antenna
Housing material	White Color, ABS Plastic
Cross-section of the Cable Used	0.4mm ² ~ 1.5mm ²
Weight	185 gr





3 Installation

Under this topic, the installation of TWM-1886 Addressed Wireless Coordinator module will be explained step by step in details. Please read all steps carefully.

3.1 Mounting

The following articles must be followed carefully in order to provide a good communication with the devices connected to the coordinator:

- Choosing a proper communication channel will make the communication between the devices more stable. Channel selection can be made automatically or manually. If manual selection is to be made, initially all transmissions in the environment must be detected with the RF-analyzer and according to this, relatively the most available channel must be preferred. See programming section for manual channel selection.
- The environmental factors such as high current lines, big metal objects, computers, network lines, other cable lines, etc. that may interrupt the connection with the devices on the wireless network must be avoided.
- There must be at least 2 meters of distance from other wireless devices.
- If possible, it must be mounted at least 2 meters high from and parallelly to the ground. The antenna must remain at an angle of 90 degrees to the ground.
- It must be operated under the proper ambient conditions indicated in technical specifications. Otherwise, the operating performance will be affected.
- A suitable location must be preferred by considering the communication distance when all devices to be communicated are taken into consideration. Communication distance can be seen in technical specifications.

The mounting holes of the module are located under the module cover. In order to access those, the cover must be opened by gently pushing through the holes on the right side of the module by using a flathead screwdriver.

3.1.1 Cable Holes

The holes through which the cables necessary for module connection will pass must be prepared before wall mounting. For this purpose, holes must be broken open on the round points marked on the product housing. Before breaking open the holes, the cards inside of the module must be removed. The tabs holding the cards must be pulled gently in order to remove the cards.

Once the cards are removed, a gentle pressure must be applied behind the point to be broken open in a manner to leave a space underneath by using a thick screwdriver in order to break open the holes. The cards can be reinstalled and fixed after this procedure.

3.1.2 Wall Mounting

Mark the wall according to the 4 screw holes seen below and bore 4 holes on the wall by using a drill according to the diameters of the wall plugs included in the pack. Insert the wall plugs into the bored holes and fix the module on the wall by screwing it onto the wall.

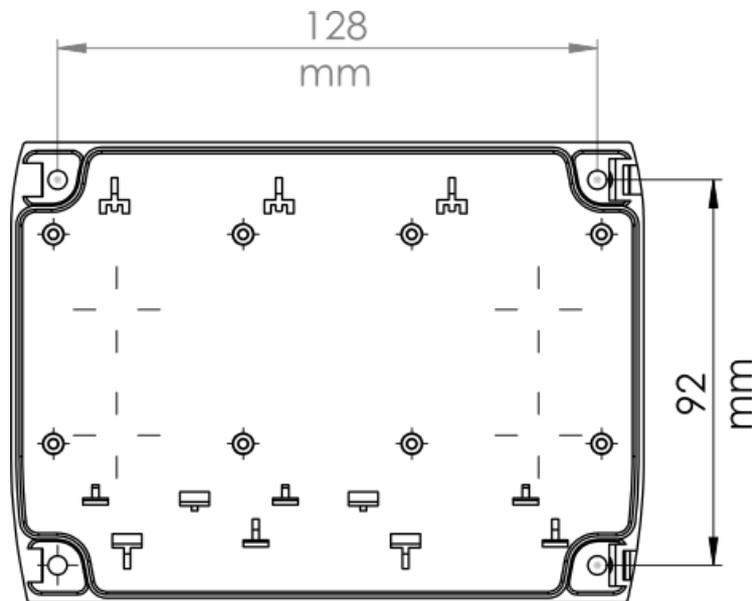


Figure 1 – Mounting Hole Sizes

3.2 Antenna Installation

TWM-1886 Addressed Wireless Coordinator module is placed in the box with the antenna wire and antenna housing disassembled. Ensure a good installation of the antenna in order to provide a good communication between devices. Otherwise, there may be distance problems and communication performance losses.

There are two superposed cards connected to each other in the module: The upper one of those is TLPWAN-RF card, while the other serves as the Flashlink interface and control card. The antenna terminal is located on the TLPWAN-RF positioned as the lower card. Pass the wire antenna through the antenna input of the box and fix it on the terminal to the right as shown in the figure. Make sure that the terminal screw is firmly tightened. An antenna that is not fixed properly may cause performance loss.

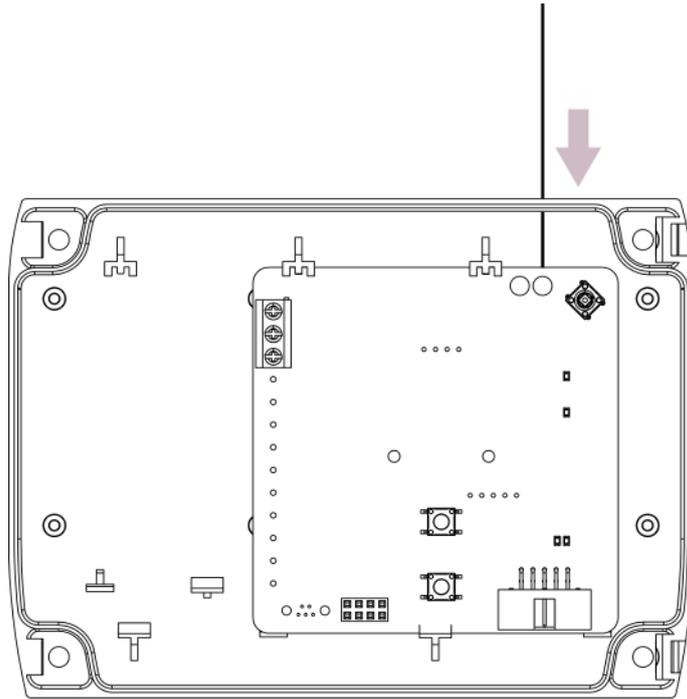


Figure 2 – Antenna Wire Installation

Once the wire antenna is fixed into its place, push the antenna housing into the antenna input tightly to fix it into its place.

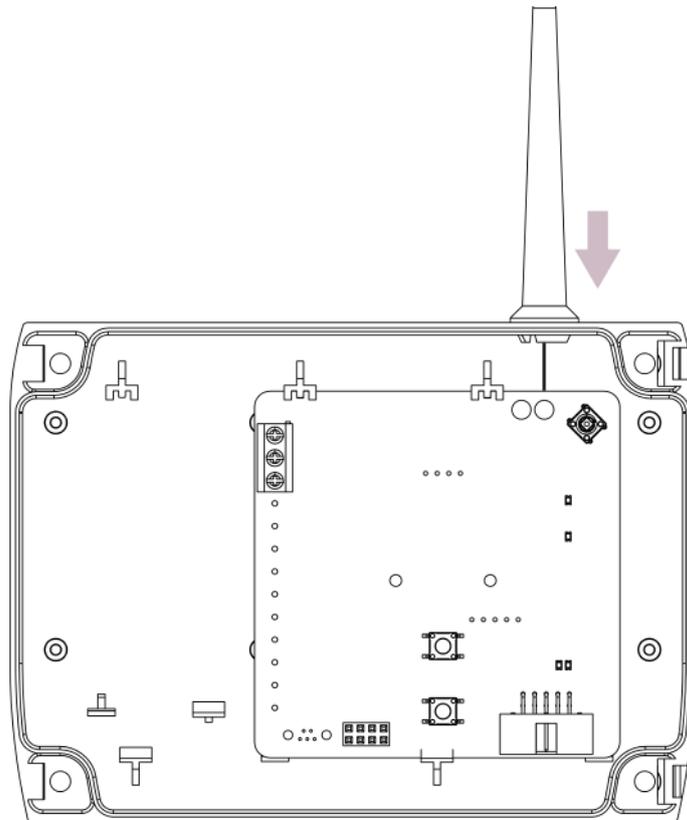


Figure 3 – Antenna Housing Installation

3.3 Supply Connection

Pass the cables from cable holes and strip their ends at a proper length, then make the supply connections as shown in the following connection diagram. Make sure that the terminal screws are tightened firmly.

Warning: The supply connection of the wireless router must be made through an uninterrupted power supply. Since the commands coming from the coordinator cannot be delivered to the devices in case of a power cut, the system will not work properly.

Warning: Supply line must not be connected to the reset AUX output.

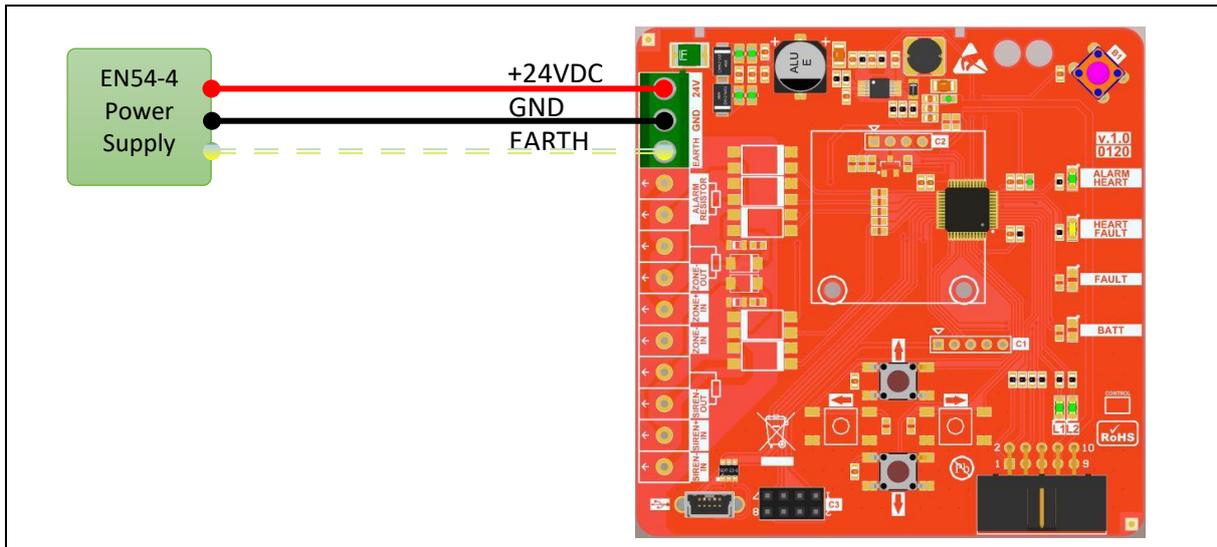
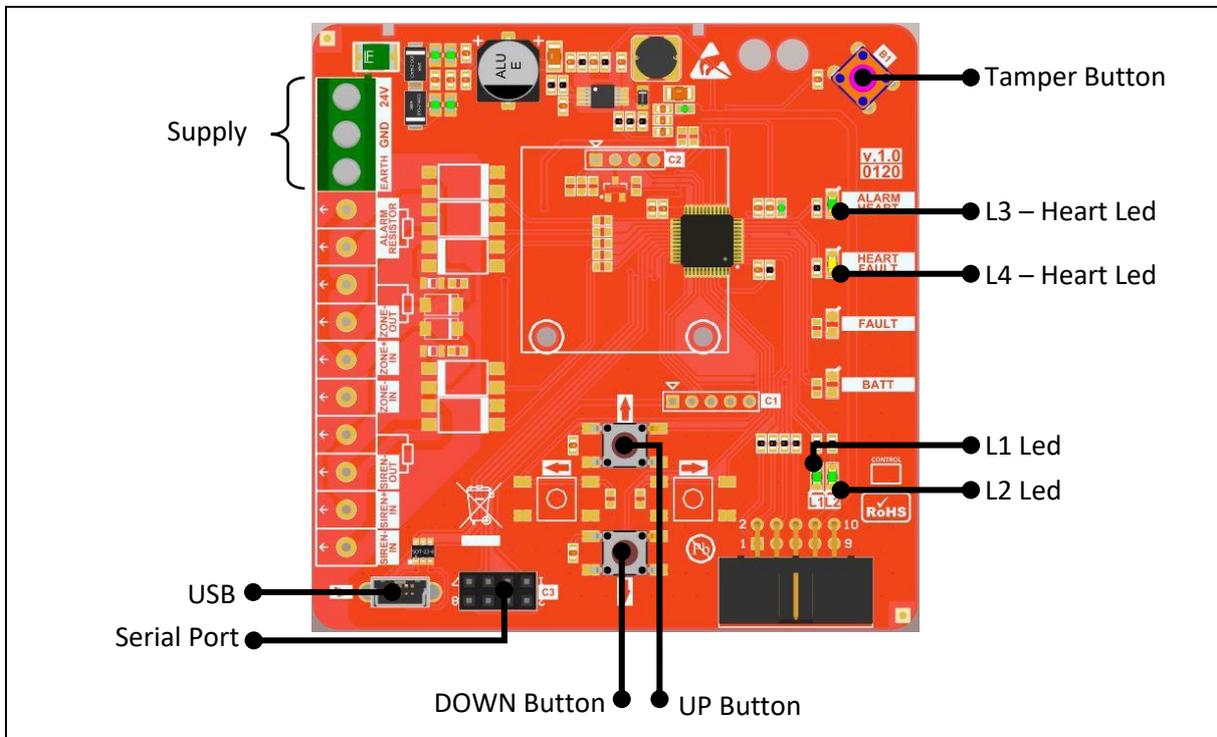


Figure 4 – Supply Connection Diagram

3.4 Module Interface



- Supply Connection: Wireless router needs an external supply. +24VDC supply voltage is provided through these terminals.
- Serial Port: It is used for software update.
- USB: It is used for monitoring and analysis programs.
- Tamper Button: It is used for detecting that the cover is opened. When the cover is opened, this will be shown as a fault on the analogue addressed fire alarm panel.
- Heart Led: It shows that the module is operating and the wireless network is set.
- Fault Led: It shows that the module has a tamper fault or the RF card is not working.
- L1 Led: It shows that the connection to the wireless network is active. In such case the wireless devices can connect to the router.
- L2 Led: It blinks continuously if there is an ongoing operation. Besides, it blinks according to the “Signal Strength Table” when a signal strength test is carried out.
- DOWN Button: It is used for connecting to any wireless network or for activating the connection to the router.
- UP Button: It is used for resetting the router or for measuring the signal strength.

4 Functions

Under this topic, the functions that the wireless router has will be explained.

4.1 Reset

Reset operation means that all operating data such as wireless network connection information and the information of the devices connected will be deleted without a communication between the router and the coordinator. In other words, it can be described as a return to factory settings. Follow the steps below in order to reset the router.

1. Press **UP** button for a long period (for 5 seconds).
2. Observe that only the fault led lights at the end of operation. The fault led will light only because the tamper button is active.

4.2 Network Connection

For the router to be connected to a network, initially, check whether the router is connected to a network or not by observing the heart led of the device. Follow the steps below for connecting the router to a network.

1. The connection permission of the respective coordinator or router must be on before the device is connected to the network. Turn on the connection permission of the coordinator or router.
2. Press **DOWN** button for a long period (for 5 seconds).
3. The device will automatically start the connection operations. This operation lasts approximately 20-60 seconds. During the operation, the L2 led will blink twice in every 2 seconds.
4. The L2 led will go off when the connection operation is completed. The heart led blinks if the connection operation is successful; while the heart led does not light if the connection operation is not successful.

Warning: Once the device is connected the network, perform a signal strength test at the point from which the device will work. The system will not operate properly if there is no connection as a result of the signal strength test. In such case, relocate the device.

4.3 Disconnection from Network

Disconnection of the router from the wireless network can be done from the coordinator as well as from the device itself. Follow the steps below to disconnect the router from the network.

1. Press **DOWN** button for a long period (for 5 seconds).
2. Observe that the heart led is off when the operation of disconnecting the router from the wireless network is completed.

4.4 Turning On the Connection Permission

Connection Permission must be activated for other wireless devices to be connected to the router. Follow the steps below for doing this.

1. Press **DOWN** button for a short period.
2. Observe that the L1 led turns on. Continuous lighting of L1 led means that the connection permission is on.

Once the connection permission is turned on, the connection operation will be activated for a period of 250 seconds. After each connection operation, this period starts from the beginning and the connection permission turns off automatically when this time is up.

4.5 Turning Off the Connection Permission

Follow the steps below for turning off the connection permission.

1. Press **DOWN** button for a short period.
2. Observe that the L1 led turns off.

4.6 Signal Strength Test

Follow the steps below for testing the quality of the connection between the router and the coordinator or another router it is connected to.

1. Press **UP** button for a short period.
2. Observe the lighting pattern of L2 led as an indicator of the signal strength.
3. Evaluate the observation result according to the Signal Strength Table.

5 Signal Strength Table (RSSI Table)

RSSI is an abbreviation being used in RF terminology. It stands for Received Signal Strength Indicator. It is a measurement value of the current strength of the radio signals received by the device. This value is directly related to the distance between the receiver and the transmitter and also to the other environmental factors. It represents the signal strength that a device has while communicating with a coordinator or a router.

In this table, the meanings of the RSSI values shown in the device list are shown. It must be observed that the RSSI values remain within the limits shown in this table before a device is physically placed in a location. Low signal strength will lead to an unhealthy communication and a low battery life.

Signal Strength (RSSI Value)	Description	Indicator
Below -90dBm	No Connection	L2 led is off.
Between -90 and -75 dBm	Poor Connection	L2 led blinks once
Between -75 and -60 dBm	Normal Connection	L2 led blinks twice
Over -60 dBm	Good Connection	L2 led blinks three times

6 Quick Installation

In this section how to set up a wireless router quickly is explained step-by-step. The topics above must be read carefully for these operations to be carried out.

1. Fix the antenna and antenna housing.
2. Mount the module on an appropriate place.
3. Connect the supply cable and energize.
4. Connect the device to a coordinator or to another router as described under the connection to network section.
5. Turn on the connection permission as described under the topic turning on the connection permission in order to connect the devices to the router (connection to PAN).
6. Make sure that the wireless devices are connected to PAN in the manner described in the installation & user manual of each device.
7. Once the device connection operations are completed, turn off the connection permission as described under the title turning off the connection permission.

7 Software Update

You may download the software files of all wireless devices under the “Firmware & Software” section of www.teknim.com.tr web site and carry out the update operation by using “Teknim Updater” software.

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EN 54-18:2005, EN 54-18:2005/AC:2007 Fire Detection And Fire Alarm Systems (Input/Output Devices) EN 54-25:2008, EN 54-25:2008/AC:2010, EN 54-25:2008/AC:2012 Components Using Radio Links TWD-1886 Teknik veriler: İmalatçıda tutulan BİLGİ-TEC-170908 bakınız.

8 Manufacturer Company and Service

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*In compliance with AEEE regulations. This product is manufactured from recyclable and reusable high quality parts and materials. Therefore, do not dispose of the product together with domestic or other wastes at the end of its service lifetime. Take it to a drop-off point for the recycling of electrical and electronic devices.

* Lifetime of this product specified and announced in the list attached to the After Sales Services Regulations published in the Official Gazette No 29029 dated 13/6/2014 is 5 years.

*The consumer may apply to the Consumer Arbitration Board or Consumer Court of the place of residence or of the consumer transactions in case of disputes arising from exercising the rights granted by the guarantee.