APPLICATION AREA

The W-Modbus product transmits Modbus RTU frames wirelessly. It is designed to be used indoors only. If used outdoors, this unit must be installed in a protective enclosure with minimum IP65 rating. The product is intended to be used as a Modbus RTU cable replacement.

GENERAL

This manual applies to all W-Modbus products. All personnel must read these instructions before installation. Improper handling or failure to follow these guidelines will void the warranty. Do not use the product if it is damaged. For more detailed documentation, scan the QR code or visit our website: **www.lumenradio.com**

WARRANTY

The warranty or service agreement will be deemed void if:

1. The product is repaired, modified, or changed, unless such repair, modification or change has been approved by LumenRadio AB; or
2. The serial number on the product has been made illegible or is missing.

ELECTRICAL SAFETY

Only qualified electricians or service personnel trained by LumenRadio may perform interventions in connection with electrical installation. Always follow local/national rules when performing this type of electrical installation. When connecting a 24V isolation transformer, this must be done in accordance with IEC 61558-1.

POWER AND RS485 CIRCUIT CAUTION

W-Modbus uses a half-wave rectified circuit. It should not share a VAC transformer with a device using full-wave rectified circuit. The same VAC transformer can be used for W-Modbus and other device(s) if:

1. The other device(s) are half-wave rectified.
2. All power connections must have the same polarity. The "+" terminal of W-Modbus must not be connected to the "–" terminal of another device.

WIRELESS

W-Modbus uses our proprietary wireless technology called MiraMesh which operates on the 2.4GHz range of the ISM band. A Modbus network has a limit of 100 wireless nodes, where any node can be a maximum of 8 hops away from the gateway.

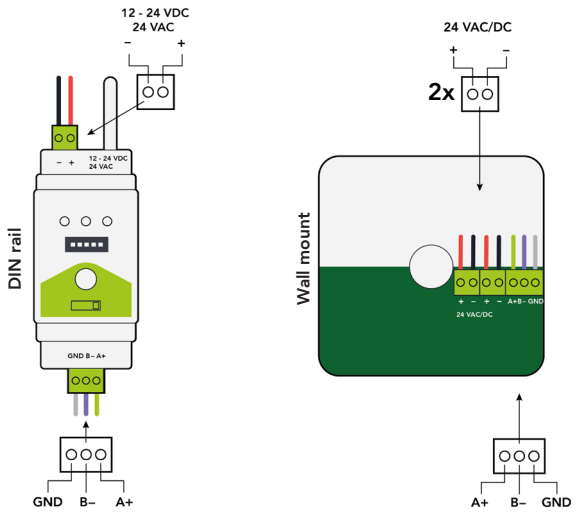
MODBUS

The W-Modbus system supports four different baud rates: 9600, 19200, 38400 and 76800. W-Modbus supports all addresses up to 255, including the reserved range from 248 to 255. If using a non-PRO product, it is possible to connect one Modbus server per wireless node. If using a PRO node it is possible to connect up to 4 Modbus servers. The wireless system introduces a dynamic response latency, typically 250ms per request. Therefore, it is recommended to set a system response timeout of 1000ms.

TECHNICAL DATA

	DIN rail	Wall mount
POWER		
Voltage range AC		
Voltage range DC	12-24VDC ±10%	24VDC ±10%
Max power consumption	2.5W	2.5W
Conductor cross section (stranded)	0.2 - 1.5mm²	0.2 - 0.5mm²
Conductor cross section (solid)	0.2 - 1.5mm²	0.14 - 0.5mm²
AWG	24 - 16	24 - 20
24V throughput power	N/A	Max 10W
Power source restriction	Only to be powered by a UL-listed LPS power supply of max 15W	
ENVIRONMENT		
Ambient operating temperature	-20 to +55°C	
Ambient storage temperature	-30 to +80°C	
Relative humidity	10 - 95% non-condensing	
MECHANICAL		
Dimensions in mm (WxHxD)	36x93x59 (excluding antenna)	86x86x25
Weight	87g	95g
Protection level	IP20	IP40

WIRING DIAGRAM



W-Modbus

Scan for full manual

www.lumenradio.com

MANUFACTURER

LumenRadio AB
Johan Willins gata 6
416 64 Gothenburg
Sweden

FCC ID: XRSTIMOWAN201 (wall mount)
XRSTIMOWAN301 (DIN rail)
IC ID: 8879A-TIMOWAN201 (wall mount)
8879A-TIMOWAN301 (DIN rail)

MET: E115504
UL 62368-1
CSA C22.2 No 62368-1

WIRING INSTALLATION

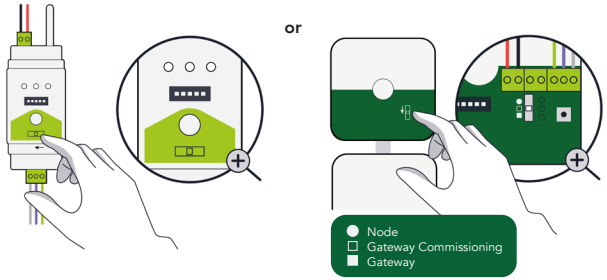
1. Confirm that the W-Modbus unit has no visible damage.

   Wall mount: The enclosure is wall mounted and fits onto a junction box. Start with mounting the backplate of the enclosure.

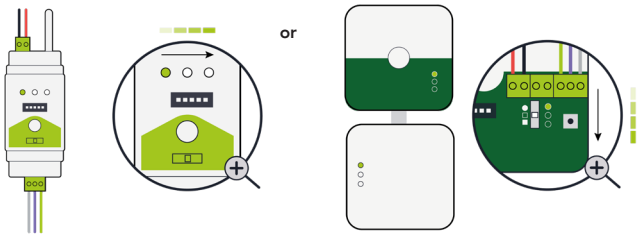
   DIN rail: The DIN rail has a clip-on mounting. Place it onto the DIN rail.
2. Connect the power supply and the Modbus device to the W-Modbus unit, as shown to the left. For a wall mounted unit, use the rear and/or top knockouts for cable entry.
3. All W-Modbus units are factory set for node operation, without the need for additional configuration. If mixing serial configuration in the system, refer to Step 3, according to table 3.1, on the next page.
4. Ensure that the W-Modbus unit and its wiring are securely mounted (if the unit is powered this will be indicated by the LEDs).
5. Wall mount: Secure the front case to the mounted back plate.

INSTALLATION GUIDE

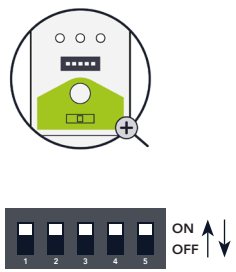
1 Choose your **gateway**, either a DIN rail or a wall mount. Power it on (see wiring on previous page). Flip the switch to the "COMM" (or ■ Gateway Commissioning position).



2 The lights now sweep green on the **gateway.**



3 Set the RS485 bus settings on the gateway using the dip switches. These settings will automatically be used for all nodes in the network unless they have been manually set to local configuration ON. If auto-baud is set to ON, the baud rate will be automatically discovered.

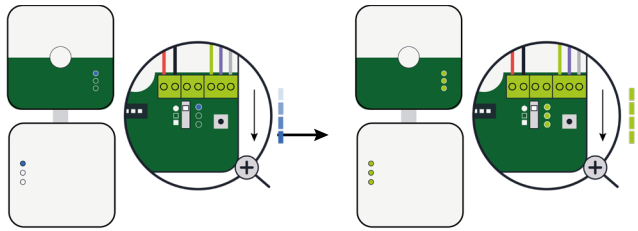


	1	2	3	4	5
9600 baud	OFF	OFF	-	-	-
19200 baud	OFF	ON	-	-	-
38400 baud	ON	OFF	-	-	-
76800 baud	ON	ON	-	-	-
No parity	-	-	OFF	-	-
Even parity	-	-	ON	-	-
1 stop bit	-	-	-	OFF	-
2 stop bit	-	-	-	ON	-
Node only: use local serial configuration					ON
Use gateway serial configuration on node					OFF

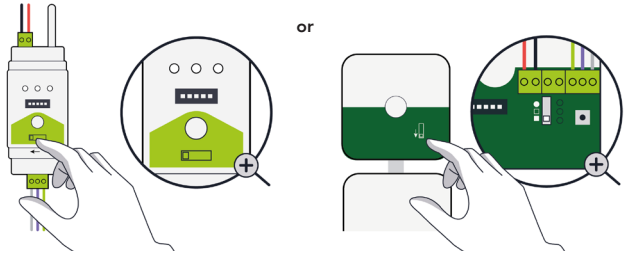
3.1 Dip switch settings

4 Install your W-Modbus node and connect it to your Modbus server device. Serial bus settings are inherited from the gateway unless local configuration is set to ON as described in Step 3.

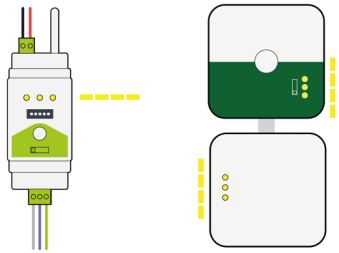
The node has successfully joined the gateway once its LEDs start flashing green. Allow for up to 5 minutes of joining time.



5 Return to the **gateway** and flip the 3-way switch to the "GATEWAY" (or □ Gateway position). This will lock and secure the network.



6 All devices will flash yellow for 10 seconds and reboot. Allow up to 15 minutes for the network to rebuild and stabilize. The Modbus controller can now start communicating with the devices in the wireless network.



7 This is a quick intro to the W-Modbus LED behaviour. For all LED combinations, scan the QR code on the other side for the full manual.

LED 1 is used to indicate gateway/node and network signal strength on node.
LED 2 is used to indicate Modbus bus activity TX/RX.
LED 3 is used to indicate valid communicating Modbus device(s) on the local bus

Mode	LED 1 MODE/NET)	LED 2 (TX/RX)	LED 3 (RS485 DATA)
Gateway Commissioning mode 3-state dip "COMM"			
Gateway secure mode 3-state dip "GATEWAY" and communicating with Modbus device		*	
Node scanning for network			
Node paired with a network			
Node scanning for network with no Modbus device			
Node joined into network and communicating with Modbus device(s)		*	

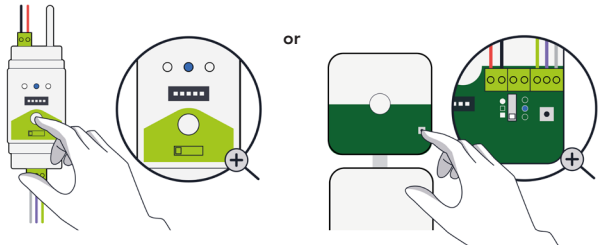
7.1 LED behaviour

*** TX**
RX

Push button		
Push	Turn ON LEDs	LEDs will be turned OFF automatically after 30 min
Double push	Rescan for connected Modbus server (only in node mode)	The third LED will blink faster to indicate that a scan for Modbus devices is running
Triple push	Activate concurrent Bluethooth for 3 min for mobile app	Mid LED flashing blue twice
Hold 5s	Turn LEDs to Always ON	Release when mid LED indicates magenta flashes green twice when activated and flashes red twice when disabled
Hold 10s	Uncommission	Release when mid LED indicates blue
Hold 15s	Shows firmware version by blinking the three LEDs	Release when mid LED indicates cyan
Hold 20s	Enter Firmware Update Mode	Release when mid LED indicates red

7.2 Button behaviour

8 Validate your installation with the mobile app. Activate Bluetooth on the **gateway** by pressing the button **3 times**. The middle LED should flash blue twice. The device will be connectable for 3 minutes.



Download the W-Modbus app at: GET IT ON Google Play | Download on the App Store