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DATA SHEET

W-Modbus

Produal

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APPLICATION AREA

The W-Modbus product transmits Modbus RTU signals wirelessly. It is designed to be used indoors as a Modbus RTU cable replacement.

GENERAL

All relevant personnel must acquaint themselves with these instructions before installation. Any damages to the product and its parts due to improper handling are not subject to warranty if the product not has been handled according to the outlined instructions.

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.

THE PACKAGING CONTAINS

1 x W-Modbus
1 x Instruction leaflet

MANUFACTURER

LumenRadio AB
Svangatan 2B
416 68 Gothenburg
Sweden

FCC ID: XRSTIMOMWAN201
IC: 8879A-TIMOMWAN201



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 24 V isolation transformer, this must be done in accordance with IEC 61558-1.

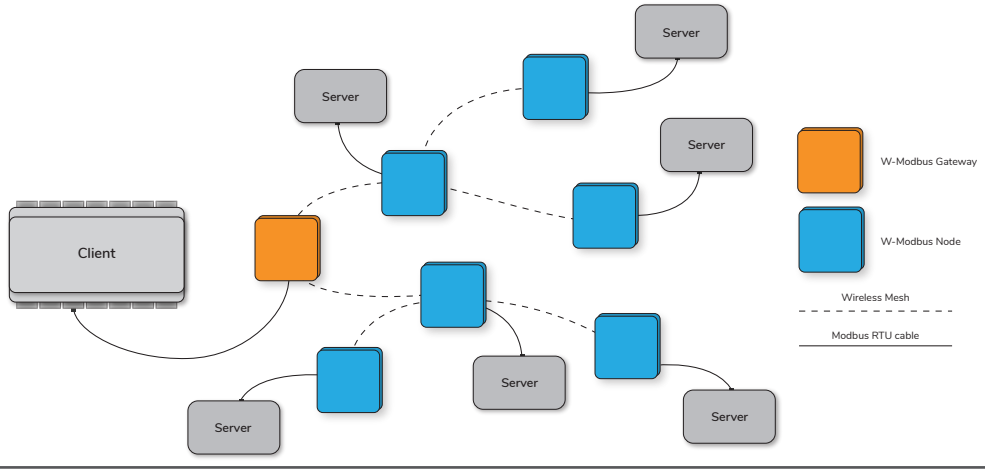
TECHNICAL DATA

Power supply:	24 VAC ±15% 50-60 Hz, 24 VDC ±15%
Max. power consumption:	2.5 W
24 V output max. power:	10 W
Auto resettable fuse:	Yes
Cable rating, connector:	solid / stranded 0.14 - 0.5 mm² / 0.2 - 0.5 mm² conductor sizes (AWG) 24 – 20
Frequency band:	2.45 GHz, ISM band (2400-2483 MHz)
Baud rate:	9600, 19200, 38400, 76800 bps
Number of Servers:	100 Servers to one Client
Number of hops:	8 hops in the meshing network
Range per hop:	500 m line of sight (approximately 50-70 m indoors with walls)
Output (ERP):	Max 20 dBm
IP class:	40
Material:	ABS UL94-V0
Colour:	White, RAL 9003
Ambient temperature:	Operating: -20 to +55°C Storage: -30 to +80°C
RH:	10 – 95% non-condensing
Weight:	95g
Dimensions:	W86.0 x H86.0 x D25.5 mm

SYSTEM OVERVIEW

A W-Modbus network consists of a single W-Modbus Gateway connected to the Modbus Client using a Modbus RTU cable and up to 100 W-Modbus Nodes, each of them connected to one Modbus Server over a Modbus RTU cable.

The W-Modbus network is built on LumenRadio's MiraMesh, a self-forming and self-healing wireless mesh technology. For more information about MiraMesh visit www.lumenradio.com



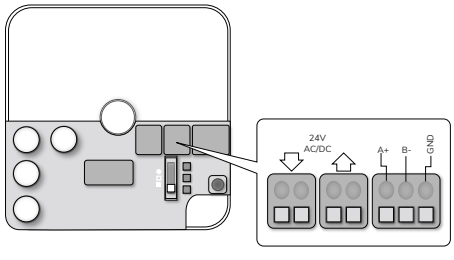
INSTALLATION

1. Confirm that the W-Modbus unit has no visible damage
2. Install the W-Modbus unit close to the Client/Server it should be connected to
3. The W-Modbus enclosure is wall mounted and fits onto a junction box. Start with mounting the back piece of the enclosure.
4. Connect the power supply and Modbus Client/Server to the W-Modbus unit, as shown to the right. Use the rear and/or top knockouts for cable entry. All W-Modbus units are factory set for Node operation without the need for additional configuration when connected to a Modbus Server.
5. Fit the front piece to the back piece
6. Check that the W-Modbus unit and its wiring are securely mounted (if the unit is powered this will be indicated by the LEDs)

W-Modbus is an end device with internal termination resistor.

POWER CONNECTION AND MODBUS CONNECTION

The W-Modbus units have 24 VAC/VDC power in/out connection and connection for Modbus communication.



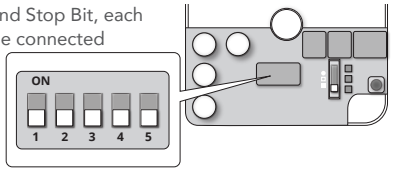
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BAUD RATE, PARITY AND STOP BIT

Set the baud rate, parity and stop bit settings on the W-Modbus Gateway to match the settings of the Modbus Client.

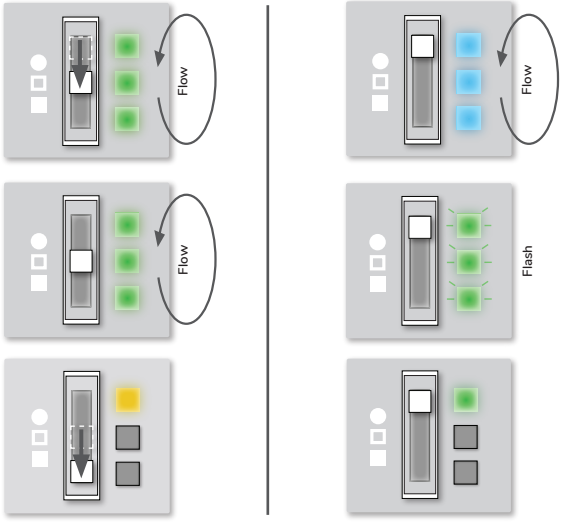
All W-Modbus Nodes are by default configured to receive their baud rate, parity, and stop bit from the W-Modbus Gateway in the system. It is possible to override the individual W-Modbus Node setup, effectively mixing settings within the network.

After setting Baud Rate, Parity and Stop Bit, each W-Modbus Node will scan for the connected Servers Modbus address (1-255) in sequence, it may take up to 2 minutes before the address is found.



	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	-
Use local serial configuration set on Node					ON
Use Gateway serial configuration on Node					OFF

COMMISSIONING



1 All uncommissioned W-Modbus Nodes will, at power up, start scanning for a W-Modbus Gateway. The LEDs will turn blue color and flow from top to bottom during this process.
To initiate the W-Modbus Gateway node scan, position the 3 pole switch in the middle position on the Gateway. During the Gateway scan process the 3 LEDs will flow from top to bottom in green color.

2 Wait for all W-Modbus Nodes to find and connect to the Gateway, the LEDs on the Nodes will start to flash in green color. This process can take up to 5 minutes.

3 When connected, set the switch on the W-Modbus Gateway to the bottom position. This will restart the W-Modbus network in secure mode. This is indicated by the top LED, yellow for W-Modbus Gateways and green for W-Modbus Nodes. In this mode the status of wireless signal strength and Modbus RTU cable connection status will be indicated by the LEDs as shown under System status.

TROUBLESHOOTING

? Does the unit have power? Press the push button, if the LEDs are not switched on, check the power connection.

? Can the Modbus Client handle the timeout requirements?

? Is the unit connected to the network?
Check the Wireless Network status LED. A Node with a flowing blue light is not connected to the network. Reference the commission section to ensure the unit flashes green before switching the Gateway into secure mode. If the flowing blue light persits the range of the unit might be too far away from the network. Try installing an extra W-Modbus unit in between.

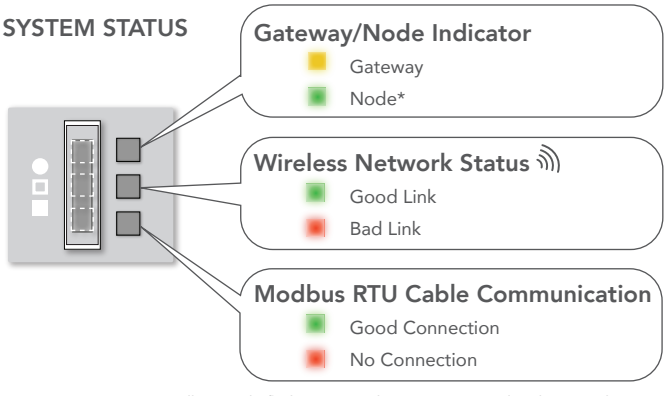
? Is the network within the limits of the maximum (100) units allowed?

? If the Wireless Network Status indicates bad wireless network (red LED) make sure the distance between W-Modbus units are within the requirements or add an extra W-Modbus unit as a repeater to get better wireless coverage.

? If the Modbus RTU Cable Communication indicates no communication (red LED) check if the Modbus RTU cable is correctly installed and make sure the Baud rate, Stop bit and Parity settings are correct.

? Have all the Nodes joined during commissioning (all LEDs flashes green) but not all nodes entered the secure network when the Gateway is set to secure network (yellow LED). Make sure only one unit is set to Gateway mode during commissioning. It is only possible to install one network at a time.

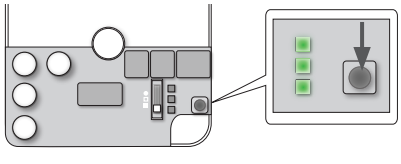
SYSTEM STATUS



*W-Modbus Node flashes green when commissioned and joining the network

PUSH BUTTON

The push button enables the LEDs, uncommissioning and firmware updates.



PUSH BUTTON		
Push	Turn ON LEDs	All LEDS turn on (turns OFF after 30 min)
Hold 10 s	Uncommissioning	Mid LED indicates blue
Hold 20 s	Firmware update mode*	Mid LED indicated red

*Find FW update instructions on www.lumenradio.com

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Information is subject to change without prior notice.