LANSEN
WIRELESS BUILDING TECHNOLOGY

REPEATER RX4-series
OMS Wireless M-Bus

DEVICE
This mains powered wireless M-Bus repeaters from Lansen is a high performance, highly configurable plug-and-play device used for extending the range between meters and a collector/gateway and it is designed to cover large areas. The enclosure is chosen to make the repeater as discrete as possible.

ANTENNA
The RX4-repeater comes with two separated external SMA interfaces, one for transmitting and one for receiving, to achieve exceptionally good sensitivity on the device. This makes this repeater suitable to use outdoors in high locations, such as masts or poles, together with large antennas to receive data from meters and sensors in a large area or to transmit data to gateways far away.

PERFORMANCE
Once a minute a packet is sent by the repeater with information about the repeater, such as number of routed packets and current battery level. This packet is used for time synchronizing between repeaters in a multihop system and can also be used as an indication that a repeater is fully functional.

The RX4-repeater is highly immune to electrical disturbances such as GPRS and Wi-Fi, thanks to industrial grade immunity.

Since only high performance components are used, the repeater achieves a sensitivity of typically -113 for S-mode or -110 for T-mode and C-mode.

ROUTING
Our advanced collision avoidance algorithm minimizes problems with collisions and data repetition. To ensure proper functionality, a randomized delay is used before repeating packets.

By default, our repeaters only retransmit packets coming directly from meters. To retransmit from other repeaters, simply use our transparent static routing algorithm which allow controlled static routing between repeaters - This allows up to four repeaters to form an extended chain between meters and gateway.

The repeater supports both short and long transport header, as well as extended link layer 1-4. Our repeaters can also be configured to retransmit non-OMS wireless M-Bus packets.

CONVERTER
The repeater can be used to convert between different wireless M-Bus modes, for example, C-mode to S-mode.

FEATURES
The repeater supports synchronization via OMS time protocol. The configuration of the repeater can be protected via a 16-byte AES-key to avoid unauthorized change of the configuration. It is always possible to read out data from the repeater even without the key.

It is possible to configure a repeater for untouched retransmission, i.e., retransmits without changing anything in the packet.

All repeaters from Lansen are firmware upgradeable to ensure long-term reliability and to get the newest features.

CONFIGURATION
Our repeaters can be used right out of the box and are highly configurable to fit specific needs. Configuration is easiest with a Lansen Wireless M-Bus programming dongle together with our program, Lansen Configurator. However, repeaters can just as easily be configured using other wireless M-Bus transmitters, such as, gateways.

With Lansen Configurator it is easy to view routing between repeaters and how well repeaters hear meters.

The list below displays a couple of parameters which can be changed on the repeaters:

- Number of minutes to be active / not active
- Specific time during the day to activate (e.g., at 12:30)
- Specific days to be active (e.g., Mondays and Wednesdays)
- Suppression timer (limit number of packets per meter)
- Meter filtering (e.g., manufacturer ID or whitelisting)
- Static routing between repeaters (multihop)
- Append RSSI value of received data

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REPEATER uR/R4/RX4
OMS Wireless M-Bus 868

FIRMWARE

INPUT MODE	T/C-mode (default) or S-mode
OUTPUT MODE	C-mode (default) or T-mode or S-mode
REPETITION	2 times* - Once on each internal antenna *Models with external antenna send twice on the same antenna
MAX SENSORS	R4/RX4 = 932 sensors µR = 100 sensors
MAX PACKET LENGTH	255 bytes
FILTERING	0-30 min suppression timer, RSSI, manufacturer, whitelisting, etc.
SECURITY	Supports routing of Security Profile A and B according to OMS 4
STATUS TX INTERVAL	60 seconds
MULTIHOP SUPPORT	R4/RX4: Yes uR: Partly (Works in multihop systems if placed closest to meters)

GENERAL INFORMATION

POWER SUPPLY	M: 85-305 VAC R4-B: 2xER34615*, 38Ah, 3.6V BE: 2xER34615*, 38Ah, 3.6V + supercap *Lithium < 5g/cell, UN3091 class 9 uR-B: 2xER18505**, 7.8Ah, 3.6V **Lithium < 1g/cell, UN3091 limited quantity
STANDARDS	2014/53/EU (RED) EN 13757-3/4:2013, OMS 4.0.2* *retransmit delay time 24-148 ms EN 61000-6-1 (R4/uR, 3V/m) EN 61000-6-2 (R4-LR/RX4, 10V/m)
TEMPERATURE	M: Max: -35°/+85°, rec. -30°/+50° B: Max: -20°/+85°, rec. 0°/+50° BE: Max: -35°/+85°, rec. -30°/+50°

RADIO

RECEIVER CLASS	1,5 for µR/R4, 2 for R4-LR/RX4
OUTPUT POWER	Radiated/conducted power 868,950 T/C-mode, 868,3 S-mode < 14 dBm
TRANSMISSION	Listen before talk, polite spectrum access
HARDWARE FILTER	For LTE/GSM/GPRS and other disturbances: R4/µR: No R4-LR: Yes RX4: Yes (Enhanced)

ENCLOSURE

DIMENSIONS	A1/A2: 150x150x53 mm, uR: 80x80x25 mm
IP-CLASSIFICATION	A1/uR: IP40 A2: IP65 & IP67
COLOR	A1/A2: RAL 9003 (signal white) uR: White
MATERIAL	A1/A2: UV-resistant PC/ABS uR: ABS
FLAMMABILITY RATING	A1/A2: UL 94 HB uR: Self-extinguishing

ACCESSORY

LAN-WMBUS-D1-TC	Configuration dongle
LANSEN CONFIGURATOR	Configuration software
LAN-A-PMB-KIT-ID58-78	Pole mounting kit
LAN-MAG-R4	Magnet with telescopic shaft
LAN-R4-IP-KIT	Sealing kit for A2 enclosure

OPTIONS FOR **LAN-WMBUS-RX4** REPEATER

LAN-WMBUS -	SERIES	- POWER OPTION	- RECEIVER SENSITIVITY	- ENCLOSURE IP-CLASS	- ANTENNA TYPE
	RX4 High performance repeater with two external antennas, one for receiving and one for transmitting	**M** 230 VAC	**LR** Industrial grade immunity and improved receiver sensitivity for optimal robustness and range	**A1** IP40. Suited for indoor use	**X** Two SMA connector for external antennas
				A2 IP65 & IP67. Suited for indoor and outdoor use	

*Enhanced filtering ** In normal operating temperature	Battery	Dual Internal antenna	LTE/GSM filter	External SMA interface	Typ. sensitivity mode S/TC	Target app.	Typical lifetime expectancy**	Optimized for
LAN-WMBUS-µR-B	X	X			-107/-105	Daily	10 min/day = 5 years 4 min/day = 10 years	Indoors for hard-to-get sensors
LAN-WMBUS-R4-B	X	X			-107/-105	Hourly	3 min/h = 5 years 30 min/day = 10 year	Battery lifetime and indoor multi-floor building
LAN-WMBUS-R4-B-LR	X	X	X		-111/-108	Daily	20 min/day = 10 years	Indoor multi-floor building with better range
LAN-WMBUS-R4-B-LR-X	X		X	1 TX/RX	-111/-108	Daily	20 min/day = 10 years	Outdoor for longest range in one direction
LAN-WMBUS-R4-M-LR		X	X		-111/-108	Always on		Indoor multi-floor building with better range
LAN-WMBUS-R4-M-LR-X			X	1 TX/RX	-111/-108	Always on		Outdoor for long range in one direction
LAN-WMBUS-RX4-M-LR-X			XX*	1 TX + 1 RX	-113/-110	Always on		Outdoor for longest range in one direction

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