



NW-MBC-64E

M-Bus Data Concentrator · 64 meters · Ethernet standard · modular 4G / NB-IoT

The NW-MBC-64E is a wired M-Bus (EN 13757-2/-3) master and data concentrator designed by NET WIZARDS and engineered with WOM Technologies. It powers and polls up to **64 water, gas or heat meters** daisy-chained on one two-wire bus, decodes each manufacturer's telegram into a normalised reading and delivers it over **MQTT, HTTP(S) or TCP** to the NET WIZARDS cloud platform or any Meter Data Management (MDM) system for billing and analytics.

Ethernet is standard. A **Mini PCIe expansion slot** accepts a 4G LTE or NB-IoT / LTE-M module, so the same unit serves LAN-connected plant rooms and cellular-only sites.



64

M-BUS UNIT LOADS ON ONE
BUS

3

UPLINKS: ETHERNET · 4G
NB-IOT

MQTT

HTTP(S) · TCP · TLS 1.2

3 yr

WARRANTY
MTBF > 200,000 H

M-Bus master, EN 13757

- ✓ Up to 64 slaves (64 × 1.5 mA unit loads) with automatic load adjustment
- ✓ 300 – 9 600 bps with per-meter baud-rate search
- ✓ Primary and secondary addressing; bus scan and auto-discovery
- ✓ Multi-telegram readout (FCB) for meters with long data sets
- ✓ Short-circuit / over-current protection with automatic recovery
- ✓ Polarity-free two-wire connection; line, star or tree topology

Meter-profile engine

- ✓ Manufacturer-specific VIF/DIF decoding for Diehl HYDRUS, Kamstrup MULTICAL / flowIQ, Integra Metering, Itron, Sensus, Zenner, Axioma, Apator and generic EN 13757-3 meters
- ✓ Normalised JSON payload: meter ID, medium, volume, flow, reverse flow, alarms (leak, burst, dry, tamper, battery), timestamp
- ✓ New meter profiles loaded in the field without changing hardware
- ✓ Configurable readout schedule: 1 min to monthly, global or per meter

Connectivity & integration

- ✓ 2 × 10/100 Mbit Ethernet (RJ45): WAN + LAN / daisy-chain to next unit
- ✓ Mini PCIe slot for 4G LTE Cat-1 / Cat-4 or NB-IoT / LTE-M module, nano-SIM, SMA antenna
- ✓ MQTT / MQTTS, HTTP / HTTPS (REST push), raw TCP client; TLS 1.2
- ✓ Store-and-forward buffer keeps readings during WAN outages capacity
- ✓ Optional Modbus TCP server for BMS

Industrial design

- ✓ Wall mount (fastening triangle) or 35 mm DIN-rail clip
- ✓ PC+ABS alloy, UL94 V-0, fire-retardant, low-CIH, EN 60695-2-11
- ✓ -25 ... +70 °C operating (-40 ... +85 °C limit range)
- ✓ IP51 (IEC 60529), IEC 61140 class II (double insulated)
- ✓ Web UI and NET WIZARDS cloud device management with OTA firmware



PRODUCT VIEWS & CONNECTIONS



Top / front view. Status LEDs (Rx, Tx, Power, Uplink), serial-number barcode, four sealed cable entries on the lower edge.

- ① **M-Bus terminal:** 2-wire, polarity-free, pluggable 3-pole (M+, M-, shield); accepts 0.5–1.5 mm².
- ③ **SIM & antenna:** nano-SIM (4FF) behind sealing plug; SMA female to the Mini PCIe module.



Connection panel (cover removed, left to right): 3-pole pluggable terminal - M-Bus M+/M- and shield; DC power input jack; nano-SIM holder with sealing plug; SMA antenna connector for the Mini PCIe cellular module; 2 × RJ45 10/100 Ethernet.

- ② **Power input:** 9–36 V DC jack / terminal, reverse-polarity and surge protected.
- ④ **Ethernet:** 2 × RJ45 with link / activity LEDs; WAN plus pass-through LAN port.

COMMUNICATION ARCHITECTURE: BUILDING DEPLOYMENT

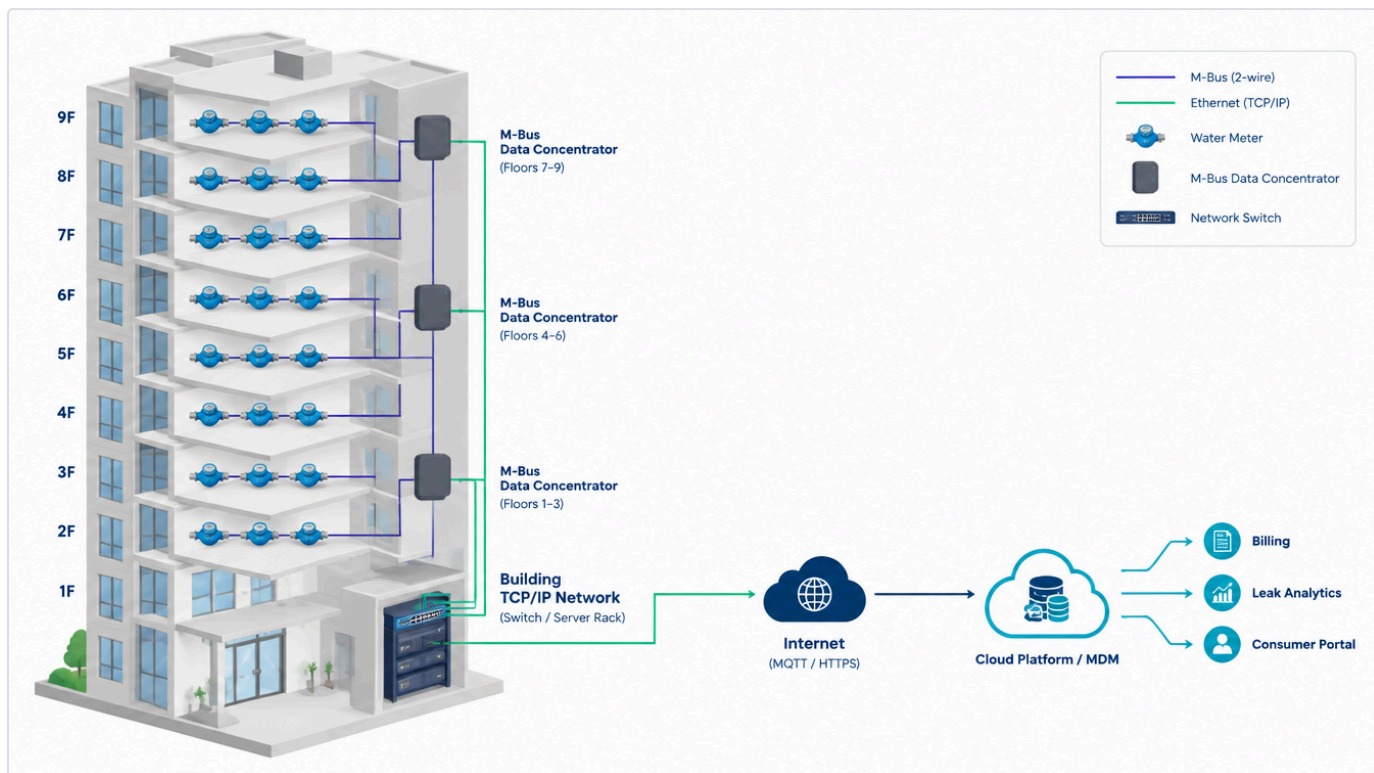


Figure 1. Typical residential-tower deployment: apartment water meters on each floor are daisy-chained on a two-wire M-Bus; one NW-MBC-64E per three floors (or per riser, up to 64 meters) powers the bus, reads every meter on schedule and pushes normalised readings over the building TCP/IP network to the Internet and on to the NET WIZARDS cloud platform / MDM for billing, leak analytics, alerts and the consumer portal. Where no LAN exists, the Mini PCIe 4G or NB-IoT module takes over the uplink.



COMMUNICATION ARCHITECTURE: DEVICE DATA FLOW

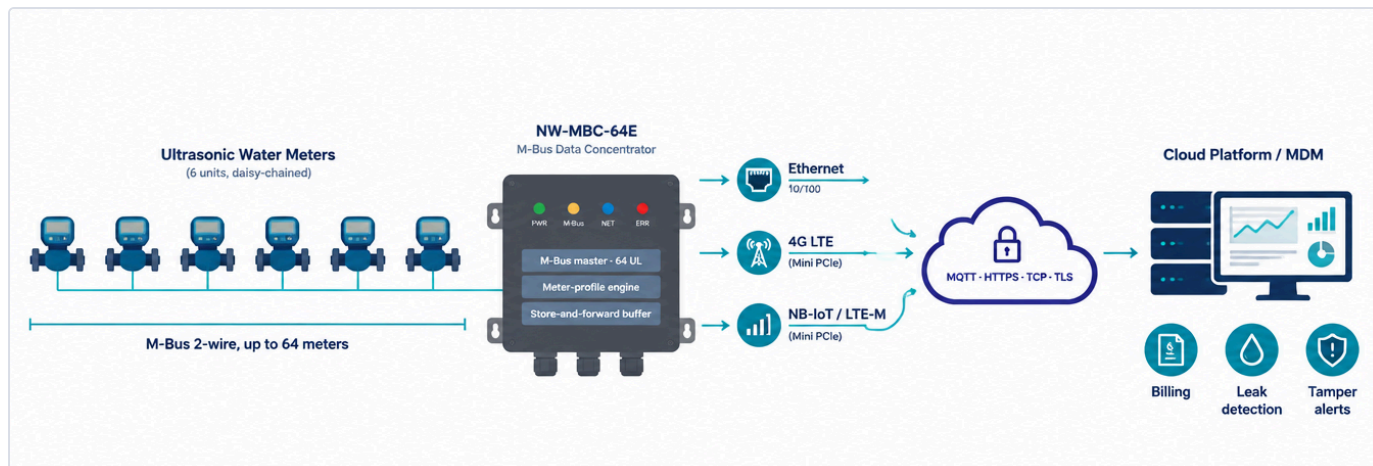


Figure 2. Data path from meter telegram to billing record. The concentrator energises the bus, polls each meter by primary or secondary address, decodes the manufacturer-specific telegram with the matching meter profile, time-stamps and buffers the reading, and publishes it over the selected uplink. Readings are acknowledged by the platform before being cleared from the local buffer.

TYPICAL APPLICATIONS

Residential towers & compounds

One concentrator per riser or per three floors reads apartment water meters for sub-billing by the developer, owners' association or utility.

Industrial & commercial estates

Tenant-level water, gas and chilled-water heat meters consolidated into one MQTT feed for the facility's energy and billing platform.

District & utility networks

Bulk and boundary meters in pump rooms and valve chambers, with 4G or NB-IoT backhaul where no LAN exists.

TECHNICAL SPECIFICATIONS

M-BUS MASTER INTERFACE

Standard	EN 13757-2 (physical / link), EN 13757-3 (application); compatible with EN 1434-3 meters and OMS wired profiles
Capacity	64 unit loads ($64 \times 1.5 \text{ mA}$) = 64 meters on one bus; automatic load adjustment
Bus voltage / current	Mark 36 V DC / Space = Mark - 12 V; max. bus current 120 mA; internal resistance $\leq 10 \Omega$
Baud rates	300 / 600 / 1 200 / 2 400 / 4 800 / 9 600 bps, 8E1; automatic baud-rate detection per meter
Addressing	Primary (1-250), secondary (ID / manufacturer / version / medium), wildcard search, broadcast
Protection	Short-circuit and over-current cut-off with automatic recovery; ESD $\pm 12 \text{ kV}$ (contact), surge 1 kV line-to-line
Cable / distance	Unshielded 2-wire, 0.5-1.5 mm ² ; up to 1 000 m per segment at 2 400 bps (longer at 300 bps or with repeater)
Connection	Pluggable screw terminal, 3-pole (M+, M-, shield), polarity-free

UPLINK COMMUNICATION



Ethernet (standard)	2 × 10/100BASE-TX, RJ45, auto-MDI/X (WAN + LAN pass-through); IPv4 (IPv6), DHCP client / static; NTP time sync
Cellular (modular)	1 × Mini PCIe slot (USB-signalled) + 1 × nano-SIM; qualified modules: 4G LTE Cat-1 / Cat-4 with 3G/2G fallback, NB-IoT (Cat-NB1/NB2) / LTE-M (Cat-M1); bands per regional variant (GCC: LTE B1/B3/B8/B20/B28; NB-IoT B8/B20)
Antenna	1 × SMA (female) for cellular; optional external antenna for pits / basements
WAN failover	Ethernet primary, cellular backup (configurable)
DATA & PROTOCOLS	
Head-end protocols	MQTT 3.1.1 / 5.0 (publish & subscribe), MQTTS (TLS 1.2), HTTP / HTTPS POST (JSON), raw TCP client; optional Modbus TCP server
Payload	Normalised JSON per meter: ID, manufacturer, medium, volume (m ³), flow, reverse volume, status / alarm flags, battery, meter timestamp, gateway timestamp, RSSI; raw telegram pass-through optional
Meter profiles	Generic EN 13757-3 decoder plus manufacturer profiles (Diehl HYDRUS / ALTAIR, Kamstrup MULTICAL 21 / flowIQ, Integra Metering, Itron Aquadis+ / Cyble M-Bus, Sensus, Zenner, Axioma Qalcosonic, Apator, Relay PadPuls pulse adaptors); custom profiles created during project integration
Readout schedule	1 min – 31 days, global or per meter; on-demand read via MQTT command; retries and time-outs per meter
Local storage	Store-and-forward ring buffer ≥ 100 000 readings (≈ 60 days of hourly reads for 64 meters); event log
Security	TLS 1.2 with server / client certificates, per-device credentials, HTTPS web UI with role-based users, signed firmware
Management	Embedded web UI (commissioning, bus scan, live readout, diagnostics), NET WIZARDS cloud device management, OTA firmware and profile update, configuration backup / restore
HARDWARE & POWER	
Processor / memory	32-bit industrial SoC, RAM / flash
Indicators	4 × LED: Rx (M-Bus receive), Tx (M-Bus transmit), Power, Uplink; RJ45 link / activity LEDs
Service port	USB / console for local configuration and recovery
Power supply	9 – 36 V DC (24 V DC nominal), DC jack; reverse-polarity and surge protected; optional 100–240 V AC adapter / DIN PSU
Power consumption	typ. 3 W idle, max. 8 W with 64 loads and cellular TX
MECHANICAL	
Installation	Wall mount: fastening triangle; DIN rail (35 mm) mount by DIN-rail clip
Enclosure material	PC+ABS alloy plastic, UL94 V-0 compliant, insulating, fire-retardant, low CIH, EN 60695-2-11 compliant material
Dimensions	116 × 173.9 × 50 mm (W × H × D) with triangle mounting / DIN-rail mounting clip
Ingress protection	IP51, IEC 60529 compliant; IEC 61140 class II compliant
Weight	Around 350 g without package / antenna (TBD)



ENVIRONMENTAL

Temperature	Operating: -25 °C ... +70 °C; limit range of operation: -40 °C ... +85 °C; storage: -40 °C ... +85 °C
Humidity	Operating: 5 - 98 % RH @ 50 °C non-condensing; storage: 98 % RH @ 50 °C non-condensing
Environment	WEEE: Directive 2012/19/EU compliant, RD 110/2015 compliant. Material: Directive 2011/65/EU (RoHS), 2004/107/EC compliant
COMPLIANCE & RELIABILITY	
EMC / safety	IEC/EN 61000-6-2, -6-4; IEC 61000-4-2/-3/-4/-5/-6/-8; EN 62368-1; CE / RED; UAE TDRA type approval (cellular variants)
MTBF	> 200 000 hours
Warranty	3 years

ORDERING INFORMATION

MODEL	DESCRIPTION
NW-MBC-64E	M-Bus Data Concentrator, 64 unit loads, 2 × 10/100 Ethernet, Mini PCIe slot (empty), wall / DIN-rail, 9-36 V DC
NW-MBC-64E-4G	As above with 4G LTE Cat-4 module (regional bands) and antenna fitted
NW-MBC-64E-NB	As above with NB-IoT / LTE-M module and antenna fitted
NW-MBC-PSU-24	100-240 V AC to 24 V DC power adapter
NW-MBC-CLOUD	NET WIZARDS cloud platform device-management and MDM integration licence (per device / per year)

Package: 1 × unit, pluggable terminal block, DIN-rail clip, quick-start guide; antenna with cellular variants. Specifications subject to change without notice. NET WIZARDS L.L.C. ISO form FM-13-01 Rev:2.