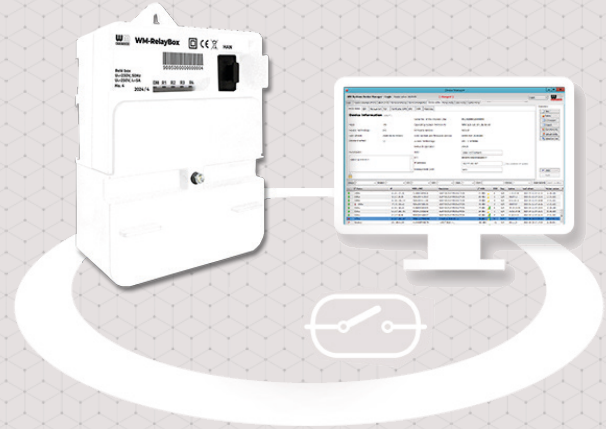# WM SYSTEMS LLc

WHITE PAPER

## ENHANCE SMART METERING INFRASTRUCTURE FOR AN IMPROVED GRID MANAGEMENT

2024

GRID MANAGEMENT
NEW CHALLANGES FOR UTILITIES

Traditionally, energy meters were simple devices that measured power consumption, forming the basis for electricity billing.

However, today's energy meters are taking on much greater responsibilities.

Beyond just power measurement, they are now essential tools for power quality monitoring, control, scheduling analysis, and the security monitoring.
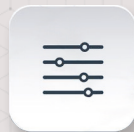
PROTECT YOUR INVESTMENT BY ADDING EXTRA RELAYS TO YOUR SMART METER FOR COMPLETE GRID MANAGEMENT

Most electricity meters do not contain switchable relays or do not support remote switching.

Adding a feature to smart meters which allows the utility and DSO to remotely turn connected devices on/off is a cost effective way to deal with this challenge.
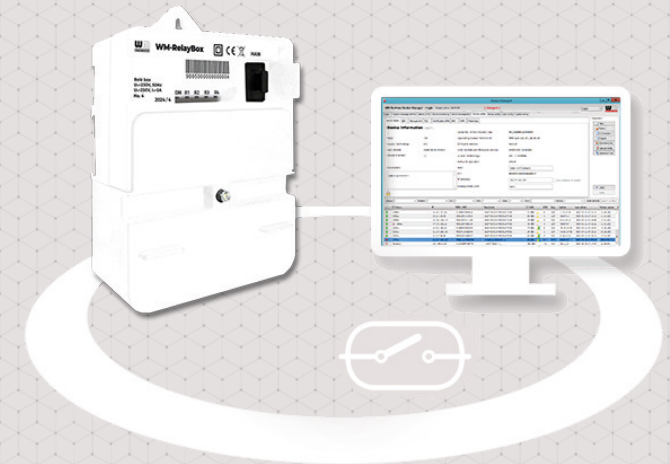
Our load control box allows utilities to remote control connected appliances or devices in homes and businesses, aligning demand with available supply.

Protect your investment! No need to change your existing meters.
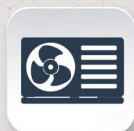
ABOUT OUR COMPANY

With over two decades of expertise, WM Systems boasts 22 years in R&D, crafting and evolving electricity metering modems, industrial routers, and IoT switches.

WM Systems offers a range of IoT solutions catered to diverse sectors, including the Smart Metering, Industrial Automation, Remote Machinery Monitoring, Smart Grid, and Street Lighting.

Certified System **certop** ISO 9001

Certified System **certop** ISO 27001

AAA ®
Highest Creditworthiness

BENEFITS FOR UTILITIES AND CONSUMERS

- **Avoiding Blackouts** – By matching demand with supply better, utilities can reduce the strain on the grid and avert power outages.

- **Encouraging Conservation** – By offering discounts to customers who participate in load control programs, utilities can incentivize energy saving.

- **Supporting Renewable Energy Sources** – Load control allows utilities to channel demand towards renewable energy when available, decreasing reliance on fossil fuels.

BENEFITS FOR UTILITIES AND CONSUMERS

- **Integrate contemporary technologies**
  Supporting the management and control of future-proof, renewable technologies in houses by integrating them into the grid – e.g. home solar panels, other modern energy carriers, charging electric cars – by enabling remote management of connected devices and equipment.

- **Additional grid uses, industrial investments**
  consumers can connect multiple devices to our RelayBox for remote management, as:

  - **Solar photovoltaic farms**
    are becoming increasingly common as we transition to a cleaner energy future. The WM-RelayBox allows operators to remote control how much energy is produced to operate efficiently.

- **Wind power plants**
  Another important source of renewable energy. Wind turbines also need remote control features to guarantee optimal operations.

- **Water pump control**
  To control water pumps in a variety of applications, such as irrigation, industrial water treatment, and municipal water supply.

BENEFITS FOR UTILITIES AND CONSUMERS
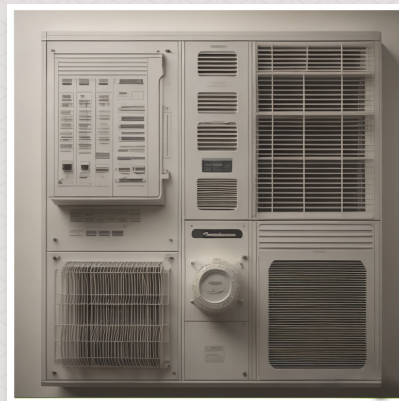
APPLICATION AREAS

- **Boiler or pump control**
Remote control of boilers or pumps in a variety of the industrial and production applications.

- **Control of ventilation system, cooling or heating system**
Remote management of exhaust fans in a variety of applications, such as industrial ventilation, residential HVAC systems, commercial kitchen ventilation.

- **Smart Metering**
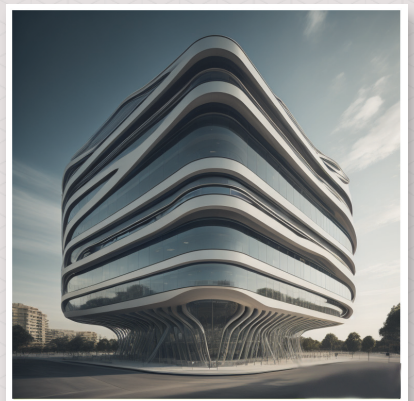Tariff control of electricity meters

- **Smart Grid**
DSOs and Solar Farm Operators

- **Smart City**
Electric Car Chargers, Boiler / Heating control

- **Industrial Automation**
Building Automation, Ventilation and Cooling control

KEY FEATURES OF OPERATION

Our device allows on-demand remote control of external devices connected to the energy meters Customer Interface.

Our 4-relay load control box is a compact and cost-effective solution. It allows utilities and DSOs to retrofit their electricity meters with smart remote control features for a fraction of the investment compared to a new smart meter.

Consumers can connect all kinds of equipment to the 4 relays in the RelayBox (switch boiler, pump, A/C, pool heating, ventilation system or cooling system, load management of solar panels, electric car charger, etc.) which can then be remote controlled by the utility or DSO in order to optimize the grid. In exchange, utilities offer different incentives for consumers.

TECHNOLOGICAL BACKGROUND

The RelayBox connects to the electricity meter (via its RJ12 E-Meter interface) and receives unidirectional (one-way) DLMS/COSEM „push" commands and messages from the Head-end System through the meter. Then it executes the relay switch requests and sends all data provided by the smart meter to the Customer Interface (CI) output interface (RJ12, separate and isolated) of the RelayBox. Consumers can use the P1 interface as a valuable tool that can help manage their energy usage and save money.

Extend your Smart Metering Infrastructure with WM-Relaybox for a complete Grid Management.

Protect your investment!
No need to change your existing meters.

Phase #1: Basic Metering Installation
House with installed electricity meter.

Phase #2: Integrate renewable energy sources
If you add solar panels later, connect our WM-RelayBox to your electricity meter in order to manage the energy production remotely.

Phase #3: Support modern forms of transportation
If you buy an electric car, add the WM-RelayBox to your existing electricity meter to control charging remotely.
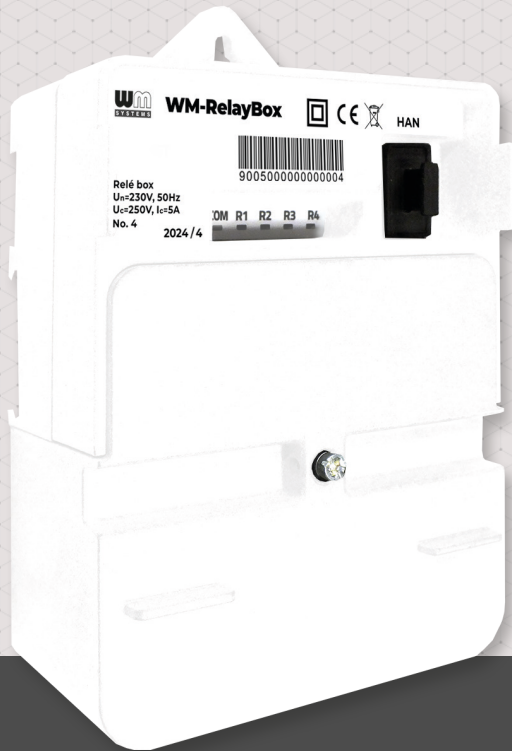

Phase #4: Installing smart sensors and controllable elements
Connect boilers, pumps, pool heating, ventilation or cooling system to the WM-RelayBox to add the remote management feature to your existing smart meter.

PRODUCTS / IoT SWITCHES

Extend the smart metering infrastructure of DSOs with a Relay Control Box for a complete Grid Management

HARDWARE

Powering / Nominal voltage / Current	~207-253 VAC, 50Hz (230VAC +10% / -10%, 50Hz) / Consumption: max. 3W
Protection	Overvoltage protection according to EN 62052-21
Ports	▪ RS485 interface (RJ12 connector, 6P6C, data speed: 9 600-115 200 bps) – for E-meter connection (protected by terminal cover) ▪ Customer Interface (HAN) output (RJ12 connector, 6P6C, RS485 compatible, data speed: 9 600-115 200 bps, galvanically isolated voltage)
Relay switching	4pcs independent, single-pole SPST relays (COM/NO, potential-free, 2-pin pairs per relay, 250VAC, 50Hz / up to 5A resistive load, protected by terminal cover)
Housing / Mounting / LEDs	Plastic (ABS) IP21 casing, Protection Class 2 / Port cover (protecting interfaces) / Dust cover for external P1/ HAN Customer Interface (RJ12) / Built-in 35mm DIN-rail mounting / 6 LEDs (power, operation status, 4 relay status)
Operating Temperature	from -40'C to +70'C
Dimensions / Weight	118 x 118 x 63mm / 370 gr.

SOFTWARE

Operation system / Configuration	Embedded, realtime operation system / Configuration software
Operation	Watchdog / Multiple relay control (on/off switching of the connected external device by each relay) / Controllable via connected electricity meter (RJ12) - unidirectional DLMS / COSEM communication with connected meter / Sending all meter data to the separate RJ12 connector (DLMS / COSEM unidirectional communication to the Customer Interface output) / Configuration at production

WM-RELAYBOX

OPERATION

DLMS / COSEM smart meter controlled switching

Unidirectional communication

Watchdog

CONNECTIVITY

RS485 - for E-Meter connection

Customer Interface (HAN output)

4 Relays (for switching)

DESIGN

IP21 casing

Port cover, dust cover

Built-in DIN-rail mounting

Overvoltage protection

FEATURES
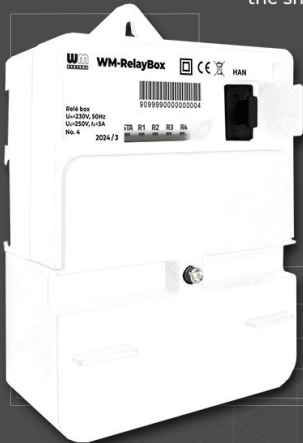
Multiple Relay Control

Smart Grid

Load Management

COMPATIBILITY

⯍ Remotely controllable 4 relays for DSOs, utilities to extend the smart metering infrastructure for a complete grid management

PROTOCOL

⇄ Transparent
⇄ IEC 62056-46 data link
⇄ DLMS / COSEM "Push"

FEATURES

✓ Remote device control
✓ Control from E-Meter
✓ Load Management
✓ AC power
✓ Built-in DIN-rail mount
✓ IP21 enclosure
✓ Terminal port cover

PORTS/PHYSICAL CONNECTORS

∷ 4 Relays (single pole SPST, AC, 5A)
∷ E-meter interface (RS485, RJ12)
∷ Customer interface (P1 / HAN): RS485, RJ12

CONTACT US

WM SYSTEMS LLc

8 Villa str., Budapest H-1222 HUNGARY
Opening hours: 9.00–17.30 CET

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iotsupport@wmsystems.hu

Website: www.wmsystems.hu

WM Systems LLc   8 Villa, Budapest, 1222 HUNGARY
Email: intersales@wmsystems.hu