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DEM3A M-Bus Series Specification

Three-phase Direct-connected Smart DIN-rail Meter (MID Certification)

DEM3A304: with M-Bus communication, RTC, TOU tariffs, tariff switching and multiple metering modes

DEM3A204: with M-Bus communication, tariff switching and multiple metering modes

More options to meet diverse requirements!



Three-phase Smart DIN-rail Meter

DEM3A Series, maximum load 100A

Designed in accordance with MID requirements (MID certification in progress)

Suitable for all sub-metering applications

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Revision Date	Revision Description	Revised by
2026.07.23	Created the new product specification based on the DEM3A304/DEM3A204 technical data delivery sheet and mechanical data delivery sheet	Product Department

1. Product Overview

DEM3A M-Bus series comprises three-phase, direct-connected smart DIN-rail meters built on a high-speed processing chipset. It is designed for metering applications such as photovoltaic systems, energy storage systems and factory energy monitoring. The meters support direct connection with a maximum current of 100 A. Their wide operating temperature range of -40°C to +70°C meets the requirements of outdoor EV chargers exposed to direct sunlight. The compact DIN-rail design also enables convenient installation. DEM3A304 and DEM3A204 support M-Bus communication, deliver excellent metering accuracy and provide a comprehensive feature set for applications requiring accurate measurement and reliable data transmission.

2. Key Features

- Comprehensive metering: import and export energy measurement
- Accuracy class: Class 0.5 (Class C)
- M-Bus communication: multiple baud rates from 300 to 9600 bps; addresses 1 to 250
- Multi-tariff function: DEM3A304 supports four TOU tariffs plus external tariff switching; DEM3A204 supports external tariff switching only (dual tariff)
- Communication: M-Bus compliant with EN 13757-3
- Backlit LCD: displays voltage, current, energy, power and other information; automatic scrolling with a default interval of 5 s
- Self-diagnostics, alarms for monitored variables and safety protection functions
- MID certification (in progress)
- Direct connection up to 100 A; no CT or PT required
- Wiring check and screen saver functions

Model	M-Bus Communication	Battery	TOU Tariffs	Dual Tariff	Wiring Check	Multiple Metering Modes
DEM3A304	√	√	√	√	√	√
DEM3A204	√			√	√	√

3. Specifications

3.1. Electrical Parameters

Voltage connection	Direct connection
Rated voltage	3*120/208V-3*230/400V
Voltage tolerance	0.8 to 1.15 Un
Frequency	50/60Hz
Current connection	Direct connection
Basic current (Ib)	5A
Minimum current (Imin)	0.15A (MID) /0.25A (IEC)
Maximum current (Imax)	100A
Power consumption	≤2W/10VA
Pulse constant	1000 imp/kWh

3.2. Measurement Accuracy

Voltage	±0.5%
Current	±0.5%
Frequency	±0.5%
Active power	±0.5%
Reactive power	±0.5%
Active energy	Class 0.5 (Class C)
Reactive energy	Class 1 (Class B)

3.3. Communication Parameters

Communication interface	M-Bus
Protocol	M-Bus protocol (EN 13757-3)
Communication type	Bidirectional
M-Bus configuration	M-Bus address (1 to 250) Baud rate (300/600/1200/2400/4800/9600 bps) 7 data bits / 1 stop bit / even parity

3.4. Functional Parameters

Metering functions	Monitors energy consumption and key electrical variables, including active/reactive power and power factor; calculates current/voltage harmonic content and apparent energy
Metering modes	1. Import + export (absolute sum); 2. Import - export (algebraic sum); 3. Import only; 4. Export only; 5. Net energy after offsetting import and export
Tariffs	DEM3A204: external tariff switching (default: Tariff 1); DEM3A304: TOU tariffs plus external tariff switching (default: TOU tariff)
Self-diagnostics	EEP detection
Event alarms	Alarms for monitored variables (kW, A, V L-N, V L-L, PF, kvar, kVA), with configurable activation thresholds and delays
Firmware upgrade	Local upgrade
Other functions	Wiring check Screen saver Page filter Run-hour counter Total harmonic distortion (THD)

Note: DEM3A204 is a battery-free version without RTC or TOU tariffs; it supports external tariff switching only.

3.5. General Parameters

LCD display	Energy display defaults to 5+3 digits and automatically changes to 6+2, 7+1 or 8+0 as the value increases
LCD refresh time	500ms
LED	Red pulse LED
Keys	Page navigation and settings
IP rating*	IP20
Overvoltage category	Category III
Protection class	Class II
Rated impulse voltage	6kV
Mounting	DIN-rail mounting (3 modules)
Wiring configuration	Direct connection; 3P4W / 3P3W (Delta mode)

*Note: This product series must be installed in an enclosure rated IP54 for outdoor use or IP51 for indoor use.

3.6. Terminal Parameters

Parameter	Terminals 1, 2, 3, 4, 5, 6	Terminals 7, 10, 11, 12, 13
Conductor cross-section	25mm ²	1.5mm ²
Stripping length	12-14mm	5-6mm
Screwdriver size	Phillips, $\Phi 5/6$ mm	Phillips, $\Phi 3$ mm
Tightening torque	2.5N·m	0.4N·m

3.7. Environmental Parameters

Operating temperature	-40~+70℃
Storage/transport temperature	-40~+70℃
Reference temperature	25 ± 2℃
Relative humidity	≤95%, non-condensing
Altitude	≤2000m

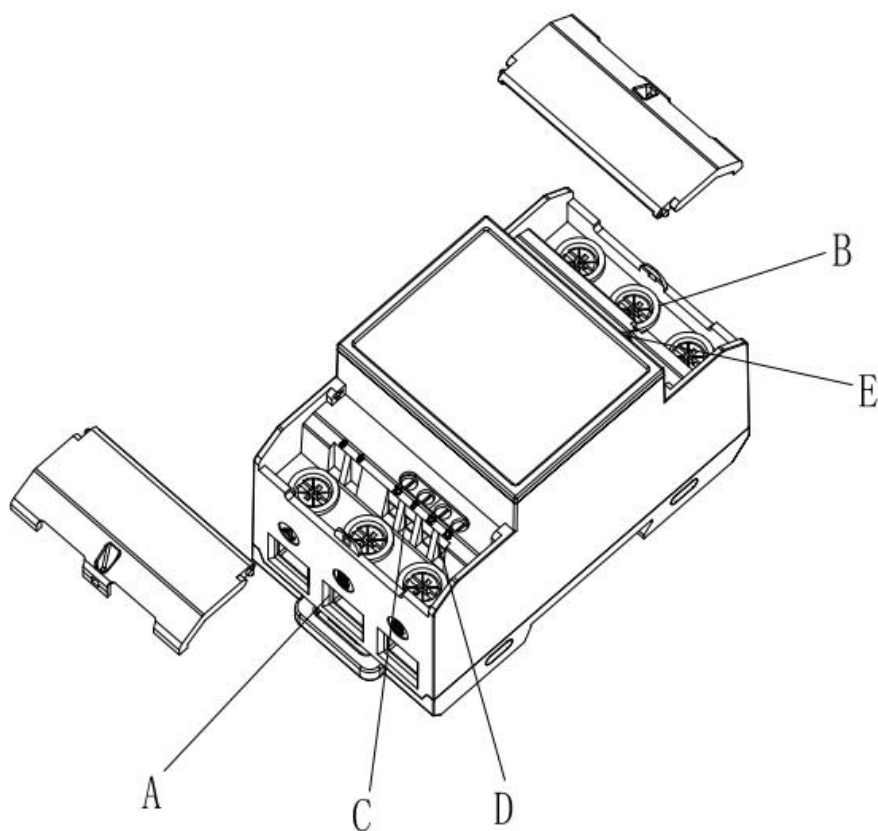
3.8. Reference Measurement Conditions

Ambient temperature	25 ± 2℃
Frequency	50/60Hz ± 5%
Current	5 A, 100 A
Voltage	120 V ±20%, 230 V ±20%
External magnetic field	Immunity to an external magnetic field of 400 mT (static magnetic field)

3.9. Standards and Regulatory Certification

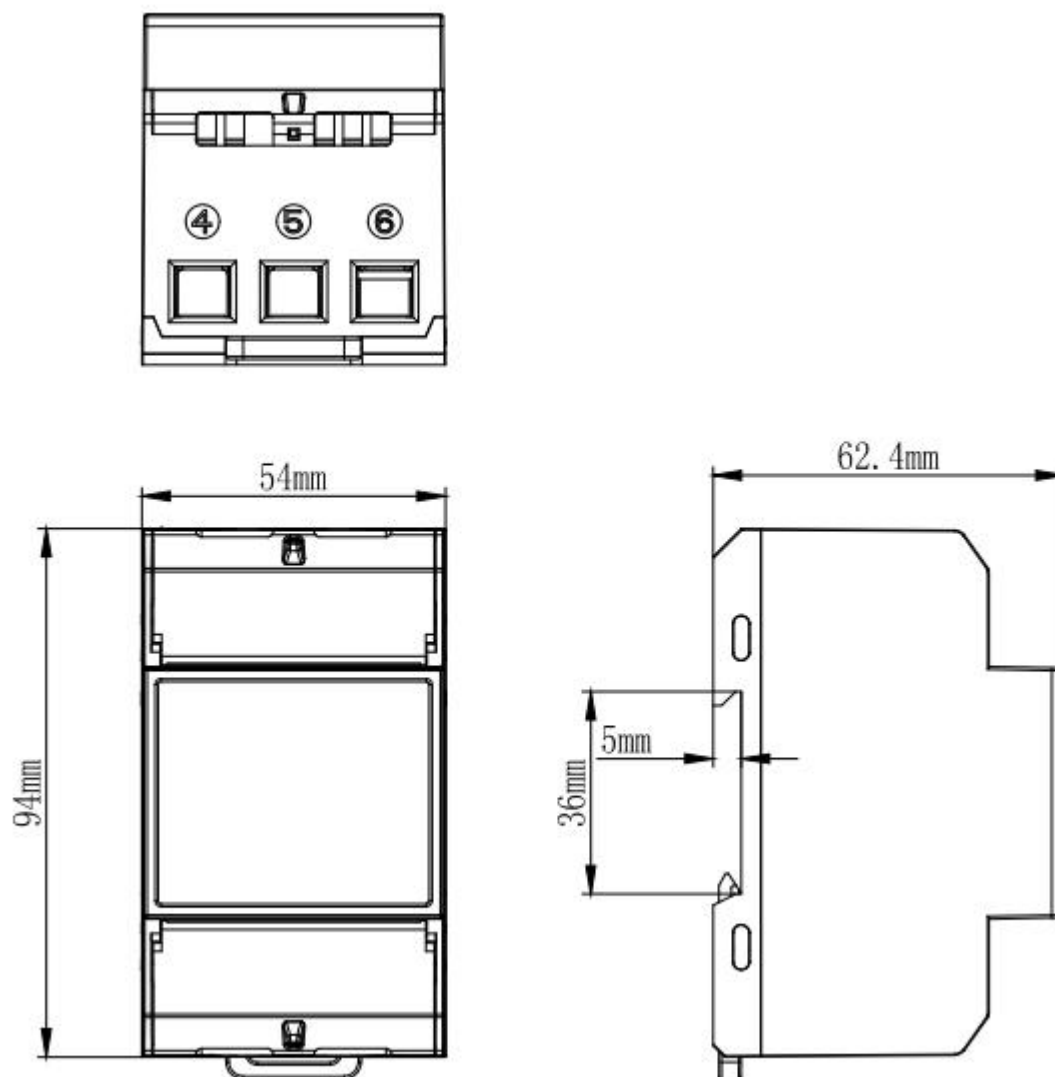
Applicable standards	IEC 62052-11:2020 IEC 62053-21:2020 IEC 62053-24:2020 EN 50470-3:2022
Product certification	MID (certification in progress)

4. Structure



Reference	Description
A	L1/L2/L3 outputs
B	L1/L2/L3 inputs
C	Tariff switch
D	M-Bus interface
E	N input

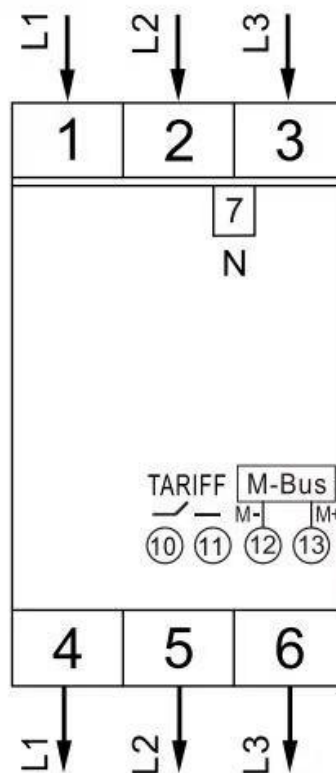
5. Dimensions



Housing dimensions

54mm×94mm×62.4mm

6. Wiring



Note: Tightening torque must not exceed 0.4 N·m for terminals 7, 10, 11, 12 and 13, or 2.5 N·m for terminals 1, 2, 3, 4, 5 and 6. Exceeding these values may strip the threads.

- Terminals 1 to 6 are the current and voltage sampling terminals;
- Terminal 7 (N) is the neutral terminal;
- Terminals 10 and 11 are used for tariff switching and when terminals 10 and 11 are not connected, the switch is open and Tariff 1 is applied; otherwise, Tariff 2 is applied;
- Terminals 12 and 13 form one M-Bus interface;

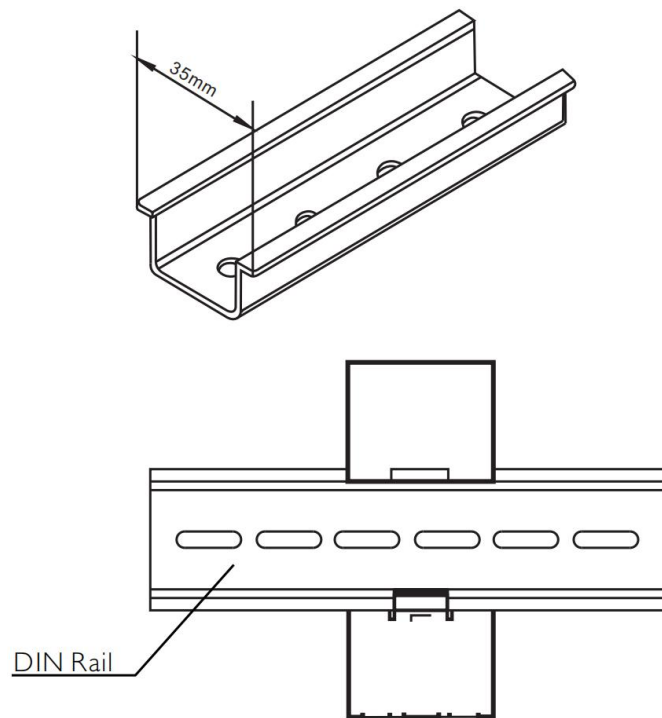
7. Installation Instructions

Mount on a standard 35 mm DIN rail. The meter must be installed in an indoor or outdoor meter enclosure.

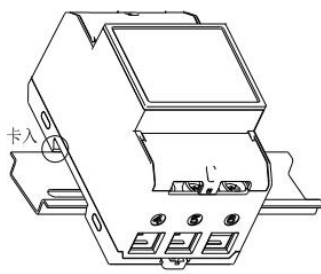
- For installation: First engage the upper latch of the meter with the rail. After confirming that the upper latch is fully engaged, press the meter toward the rail until it locks into place. Caution: Always engage the upper latch before pressing the meter onto the rail. Pressing it directly may break the upper latch.
- For removal: Pull down the lower rail latch, then lift the lower part of the meter away from the rail. Once

the lower part is disengaged, push the meter upward to release the upper latch and complete removal.

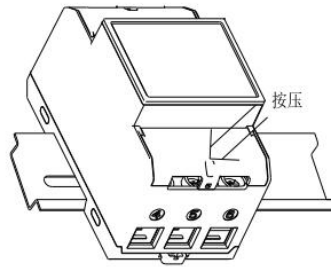
Caution: Always disengage the lower part before pushing the meter upward. Forcing the meter off directly may break the upper latch.



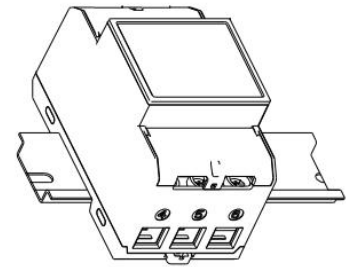
安装



1. 将电表上方卡扣卡入导轨内

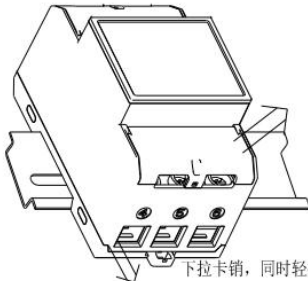


2. 按压电表下半部分，将电表下半部分也嵌入导轨

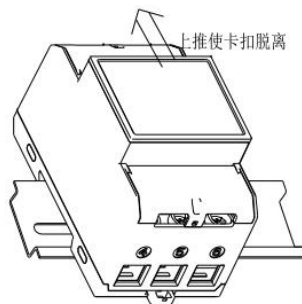


3. 安装完成

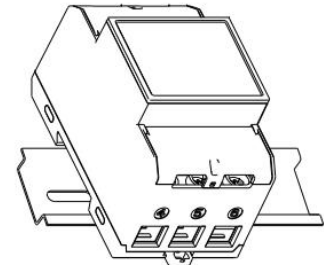
拆卸



1. 下拉电表下方卡销，然后轻轻抬起电表下半部分使其脱离导轨



2. 下半部分抬起后将电表向上推，使上方卡扣也脱离导轨



3. 拆卸完成

8. Safety Instructions

- In accordance with Directive 2014/32/EU, the meter must be installed in mechanical environment M1, with low shock and low vibration.
- In accordance with Directive 2014/32/EU, the meter must be installed in electromagnetic environment E2.

8.1. Storage and Transport

The meter must be protected from severe shock during transport and storage and must be transported and stored in accordance with GB 13384-2008, General Technical Conditions for Packaging of Instruments. Keep the meter in its original packaging at an ambient temperature of 0 to 40° C, with relative humidity not exceeding 85% and no corrosive gases in the air. Store packaged meters on racks and stack no more than 10 cartons high. After unpacking, stack individually packaged meters no more than five layers high.

8.2. Personal Safety Information

This manual does not cover every safety measure required for operation of this equipment (module or device), because special operating conditions, local codes or local regulations may require additional measures. However, the information contained herein is mandatory and must be followed to protect personal safety and prevent equipment damage. Depending on the severity of the hazard, warnings are highlighted by a triangle containing an exclamation mark or lightning symbol.



Failure to follow the instructions may result in death, serious injury or major damage.

8.3. Electrical Hazard



Indicates an electric shock hazard. Failure to take the required safety precautions may result in death, serious injury or substantial property damage.

8.4. Qualified Personnel

Installation and operation of the equipment described in this manual may be performed only by qualified personnel.

Qualified personnel are persons authorized to install, connect and use this equipment, who possess appropriate knowledge of electrical equipment, grounding and circuits, and who meet applicable safety and regulatory requirements.

8.5. Intended Use

The equipment (device or module) may be used only for the applications specified in the catalogue and user manual, and only with equipment and components approved by YTL.

8.6. Disclaimer

We have reviewed the content of this publication and made every effort to ensure that the descriptions are as accurate as possible. However, deviations cannot be completely excluded, and we accept no liability for errors or omissions in the information provided or for any resulting liability.

The information in this manual is reviewed regularly, and subsequent editions will include necessary revisions. Please contact us if you have any suggestions.

Technical specifications are subject to change without prior notice.

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8.7. General Warning

After unpacking, verify the equipment is complete and undamaged. In case of doubt, do not use it and contact technical personnel. Installation must be carried out only by a skilled electrician. All generally applicable safety precautions must be observed.

If the equipment malfunctions or fails, switch it off immediately. Always contact qualified technical personnel for repair. Failure to comply with the above requirements may compromise equipment safety.

8.8. Additional Safety Instructions for Installation

- During installation, all terminal clamps must be tightened correctly and ensure that the conductors are inserted correctly into the terminal clamps.
- Conductors that are too small may cause poor contact, arcing and damage to the meter or its surroundings.
- Ensure that the conductors used are rated for the maximum current of the meter.
- Before energizing the meter or applying voltage, ensure that the AC conductors are connected correctly.
- Any other rules that may affect the normal and safe use of the meter must also be observed, even if not stated in this section. To prevent accidents, installation must be performed by qualified technical personnel.

9. Warranty

If the 18-month warranty period reveals that the product does not comply with the technical specifications, the manufacturer will repair and return the product, provided that its seals are intact.

9.1. Warranty Period

The warranty is based on the commercial invoice issued by our company and is valid for 18 months from the date the meter leaves our warehouse, excluding repair time caused by unavailable spare parts and delivery lead time.

9.2. Warranty Coverage

Provided that the user strictly follows the transport, storage, installation and operating instructions and the company seals remain intact (that is, the meter seals have not been removed), the user must provide valid evidence if the meter fails to meet the quality requirements, such as photographs of the meter and certificate, local user feedback documents or documents issued by relevant government authorities.

We will repair, replace or accept the return of the meter under the following circumstances:

- The issue was not demonstrated and no prior explanation was provided;
- The product does not comply with the implementation standard indicated on the product or its packaging;
- (If the standard shown on the product or packaging was specified by the customer but differs from the company product standard, the customer must accept the corresponding responsibility);
- The product does not conform to the quality status indicated in the product specification, physical sample or other reference.

The disposition of nonconforming meters will be agreed with the user. Normally, repaired products or replacements will be provided with the next order. Special cases will be resolved through mutual agreement.

Note: The warranty does not apply when no valid invoice is available, evidence corresponding to the order quality issue cannot be provided, damage is caused by force majeure, or the warranty period has expired. The product may still be returned for repair, but transport and other related costs shall be borne by the customer.

9.3. Technical Support

For any questions regarding our products, please contact:

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