

PRO-1250D 100A MID

DIN rail three phase four wire energy meter.



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User manual

Version 1.0



DMMetering®

1.1 Safety instructions

Information for Your Own Safety

This manual does not contain all of the safety measures for operation of this equipment (module, device) because special operating conditions, local code requirements or local regulations may necessitate further measures. However, it does contain information which must be adhered to for your own personal safety and to avoid damage to the equipment. This information is highlighted by a warning triangle with an exclamation mark or a lightning bolt depending on the severity of the warning.



Warning

Means that failure to observe the instruction can result in death, serious injury or considerable material damage.



Caution

Means hazard of electric shock and failure to take the necessary safety precautions will result in death, serious injury or considerable material damage.

Qualified personnel

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

Only people that have proper knowledge about the local standards regarding electrical installations and are allowed to work on these installations according to the local regulations are considered qualified personnel in this manual.

Use for the intended purpose

The equipment (device, module) may only be used for the application cases specified in the catalog and the user manual and only in connection with devices and components recommended and approved by Inepro Metering B.V.

Proper handling

The prerequisites for perfect, reliable operation of the product are proper transport, storage, installation and connection, as well as proper operation and maintenance. When operating electrical equipment, certain parts of this equipment carry dangerous voltages. Improper handling can therefore result in serious injury or material damage.

- Only use isolated tools suitable for the voltages the meter is used for.
- Do not connect while the circuit is energized (current is running).
- Place the meter only in dry surroundings.
- Do not mount the meter in an explosive area or exposed to dust, mildew and/or insects.
- Make sure the used wires are suitable for the maximum current of this meter.
- Make sure the AC wires are connected correctly before activating the current/voltage to the meter.
- Do not touch the meter's connection clamps directly with your bare hands, with metal, blank wire or any other conducting material as that will cause an electric shock and possibly cause injury.
- Make sure the protection cover is placed after installation.
- Installation, maintenance and repair should only be done by qualified personnel.

- Never break the seals to open the front cover as this might influence the functionality or accuracy of the meter, and will void all warranty.
- Do not drop, or allow physical impact to the meter as there are high precision components inside that may break and render the meter measurement inaccurate.

Exclusion of liability

We have checked the contents of this publication and every effort has been made to ensure that the descriptions are as accurate as possible. However, deviations from the description cannot be completely ruled out, so that no liability can be accepted for any errors or omissions in the information given. The data in this manual is checked regularly and the necessary corrections will be included in subsequent editions. If you have any suggestions, please let us know.

Subject to technical modifications without notice.

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1.2 Foreword

Thank you for purchasing the DMMetering PRO-1250D 100A MID approved DIN rail three phase energy meter. The DMMetering PRO-1250D 100A MID approved energy meter is the most advanced type electronic kWh meter available at the market. With the DMMetering product range we have introduced a large scale of energy meters on the market suitable for 110V AC to 400V AC (50 or 60Hz). Besides the normal energy meters we also developed our own pre-paid meters with chip card, chip card re-loaders and a complete PC management control system. For more information on other products please contact our sales department at sales@ineprometering.com or info@inepro.com.hk.

Although we produce the DMMetering PRO-1250D 100A MID approved meter according to the requirements of EN 50470-3 and our quality inspection is very accurate there might always be a possibility that your product shows a defect or failure for which we do apologize. Under normal conditions your product should give you years of trouble free operation. In case there is a problem with the energy meter you should contact your dealer immediately. All energy meters are sealed with a special seal. Once this seal is broken there is no possibility to claim any warranty. Therefore NEVER open an energy meter or break the seal of the energy meter. The warranty time is 3 years, after production, and only valid for construction faults.

1.3 MID certificate



CERTIFICATE

TYPE TEST OF ENERGY METERS

Manufacturer	: Inepro Metering BV		
Contact person	: D. van der Vaart		
Address	: P.O. Box 92		
Postal code, Place	: 2450 AB, Leimuiden		
Country	: The Netherlands		
Production site	: Shanghai Fengyilong Electronic Co., Ltd.	Jiangsu Linyang Electric Instrument Co., Ltd.	
Address	: Room 20D, Building 2, No. 1251, Jiangning Road	Xinchang Town, Liyang City	
Postal code, Place	: Shanghai, 200060	Jiangsu, 213372	
Country	: China	China	
Instrument	: Electronic three-phase four-wire energy meter		
	Direct connected		
Mark - Type	: PRO1250D	PRO1250D MODBUS	PRO1250D MBUS
Register	: LCD		
Accuracy Class	: 1 / B		
Measurement range	: 230/400 V		
	10(100) A		
	50 or 60 Hz		
	: 400 imp./kWh		
	-25..55 °C		
Use	: Indoor		
Protection Class	: II		
Registry method	: The meter is suitable for energy registration in one direction only and must be marked as such on the typeplate		


The energy meter meets the requirements of:

- IEC 62052-11 (2003) : Electricity metering equipment (a.c.) - General requirements, tests and test conditions - Metering equipment
- IEC 62053-21 (2003) : Electricity metering equipment (a.c.) - Static meters for active energy (classes 1 and 2)

Based on a non-recurrent examination.

The results are recorded in our test report with reference 70965037-TDT 6375-10.

KEMA T&D Testing Services - Calibration and Metering
Amhem, September 30, 2010



ir. A.P.M. Baars
Certification manager



ir. P.J.J.G. Nabuurs
Managing Director
Certificate nr. 70965037-TDT 6375-10C

The investigation reported here does not confer any right to use an approbation mark granted by KEMA.

Integral publication of this certificate and adjoining reports is allowed.
This certificate is issued provided that neither KEMA nor the RvA assumes any liability.

KEMA Nederland B.V. Utrechtseweg 310, 6812 AR Amhem, The Netherlands P.O. Box 9035, 6800 ET Amhem, The Netherlands
T +31 (0)26 3 56 2215 F +31 (0)26 4 42 6211 C&M@kema.com www.kema.com trade register Amhem 09060262

Experience you can trust.

1.4 Performance criteria:

Operating humidity	≤ 75%
Storage humidity	≤ 95%
Operating temperature	-25°C - +55°C
Storage temperature	-30°C - +70°C
International standard	EN50470-3
Accuracy class	1
Protection against penetration of dust and water	IP51
Insulating encased meter protective class	II

1.5 Specifications:

Meter type	PRO-1250D 100A
Nominal voltage (Un)	230/400V AC (3~)
Operational voltage	0.7~1.3Un
Insulation capabilities:	
- AC voltage withstand	2KV for 1 minute
- Impulse voltage withstand	6KV – 1.2μS waveform
Basic current (Ib)	10A
Maximum rated current (Imax)	100A
Operational current range	0.4% Ib- Imax
Peak current withstand	30Imax for 0.01s
Operational frequency range	50Hz ±10%
Internal power consumption	≤2W / 10VAper phase
Test output flash rate (PULSE LED)	400imp/kWh
Pulse output rate (pins 8 & 9)	400imp/kWh
L1, L2 & L3 LED indicator	Meter is connected to power
Consumption indicator (RED LED)	Flashing at load running
Data save	The data can be stored more than 20 years without power.

1.6 Basic errors:

With balanced loads

0.05Ib	Cosφ = 1	±1.5%
0.1Ib	Cosφ = 0.5L	±1.5%
	Cosφ = 0.8C	±1.5%
0.1Ib - Imax	Cosφ = 1	±1.0%
0.2Ib - Imax	Cosφ = 0.5L	±1.0%
	Cosφ = 0.8C	±1.0%

With single phase load

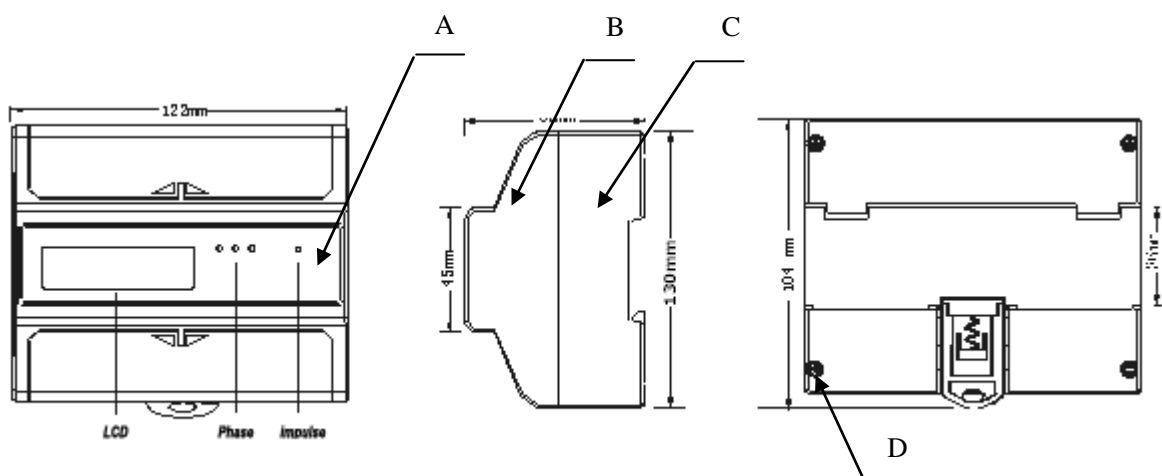
0.1Ib - Imax	Cosφ = 1	±2.0%
0.2Ib - Imax	Cosφ = 0.5L	±2.0%

1.7 Description

A	Front panel
B	Cover
C	Base
D	Security wire slot

Material

Front panel	PC inflammable plastic
Cover	ABS inflammable plastic
Base	ABS inflammable plastic



1.8 Dimensions

Height	130 mm
Width	126 mm
Depth	65 mm
Max diameter cable	11.5 mm
Weight	0.7 Kg (net)

1.9 Installation

⚠ CAUTION

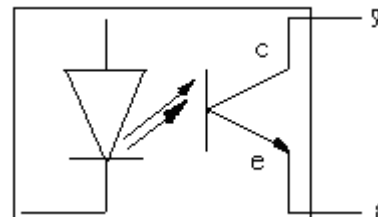
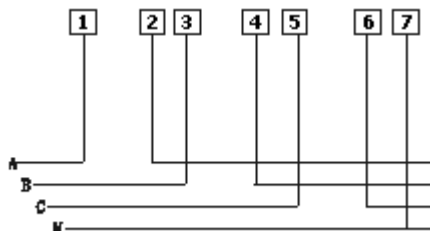
- Turn off and if possible lock all sources supplying the energy meter and the equipment that is connected to it before working on it.
- Always use a properly rated voltage sensing device to confirm that power is off.

⚠ WARNING

- Installation should be performed by qualified personnel familiar with applicable codes and regulations.
- Use isolated tools to install the meter.
- Fuse or thermal cut-off should be fitted on the supply lines.
- The meter's casing is sealed, if not properly looked after, this seal could be broken, voiding the warranty and damaging the meter.

- We recommend that the connecting wire which is used to connect meter to the outside circuit should be sized according to local codes and regulations for the maximum amount of current of the circuit breaker or other overcurrent protection device used in the circuit.
- An external switch or a circuit-breaker should be installed on the supply wires, which will be used to disconnect the meter. It is recommended that this switch or circuit-breaker is placed near the meter because that is more convenient for the operator. The switch or circuit-breaker should comply with the specifications of the building's electrical design and all local regulations.
- An external fuse or thermal cut-off which will be used as an overcurrent protection device for the meter must be installed on the supply side wire, and it is recommended that this protection device is near the meter since that is convenient for the operator. The overcurrent protection device should comply with the specifications of the building's electrical design and all local regulations.
- This meter can be installed indoor, or outdoor enclosed in a meter box which is sufficiently protected, subject to local codes and regulations.
- To prevent tampering, an enclosure with a lock or a similar device can be used.
- The meter has to be installed against a fire resistant wall.
- The meter has to be installed in a well ventilated and dry place.
- The meter has to be installed in a protective box if the meter is exposed to dust or other contaminants.
- The meter can be installed and used after being tested and can be sealed afterwards.
- The meter can be installed on a 35mm DIN rail or onto a panel with screws.
- The meter should be installed on a location where the meter can be read easily.
- When the meter is installed in an area with frequent surges for example due to thunderstorms, welding machines, inverters etc, the meter should be protected with a Surge Protection Device.
- After finishing installation, the meter can be sealed to prevent tampering.

- Connection of the wires should be done in accordance with the underneath connection diagram.



1/2	Ia In/out
3/4	Ib In/out
5/6	Ic In/out
7	Neutral
8 and 9	Test pulse output contact

1.10 Operation

Consumption indication

There is a red LED which displays the consumption measured by the PRO-1250D 100A. When power is consumed, the LED will flash. The faster the LED flashes, the more power is consumed. For this meter, the LED will flash 400 times per kWh. Please note that the meter is not suitable for reverse energy.

Reading the meter

The PRO-1250D 100A had a 7 digit LCD which has a setup of 5+2 meaning it has an accuracy of 0.01 kWh. This register cannot be reset to zero.

Pulse output

The PRO-1250D 100A energy meter is equipped with a pulse output which is optically isolated from the inside circuit. It generates pulses in proportion to the measured consumption for purpose of remote reading or accuracy testing.

The pulse output is a polarity dependant, open-collector transistor output requiring an external voltage source for correct operation. For this external voltage source, the voltage (U_i) should be lower than 27V DC, and the maximum switching current (I_{imax}) is 27mA. To connect the impulse output, connect 5-27V DC to connector 9 (collector c), and the signal wire (S) to connector 8 (emitter e). The meter pulses 400 times per kWh.

1.11 Troubleshooting

CAUTION

- During repair and maintenance, do not touch the meter connecting clamps directly with your bare hands, with metal, blank wire or other conducting material as that will cause an electric shock and possibly cause injury.
- Turn off and if possible lock all sources supplying the energy meter and the equipment that is connected to it before opening the protection cover and working on it.

WARNING

- Maintenance or repair should only be performed by qualified personnel familiar with applicable codes and regulations.
- Use insulated tools to maintain or repair the meter.
- Make sure the protection cover is in place after maintenance or repair.

Problem	Check	Solution
The power supply indicator (L1, L2 & L3 LED) are off.	<p>Is there power connected to the meter?</p> <p>Are L1, L2, L3 and N connected correctly?</p> <p>Maybe there is a fault inside the meter.</p>	<p>Check the fuses and surge protection.</p> <p>Make sure the wires are connected properly and tighten the screws if possible.</p> <p>There should be 230V AC between the N and one of the L connections and 400V AC between the L connections when power is supplied to the meter.</p> <p>Please contact technical support for a meter replacement.</p>
The consumption LED is not flashing (PULSE LED).	<p>Is there any load connected to the meter?</p> <p>Is the load on the line very low?</p> <p>Maybe there is a fault inside the meter.</p>	<p>Only if there is a load on the meter this LED will flash.</p> <p>If the load is very low, the time between 2 flashes is very long. This can be mistaken for a broken meter. As a test, an electric water boiler (~1600W) should make it blink once every 15 seconds.</p> <p>Please contact technical support for a meter replacement.</p>
The register doesn't count.	<p>Is there almost no load on the meter?</p> <p>Maybe there is a fault inside the meter.</p>	<p>Check if the consumption led is blinking (see above). 16 flashes of the LED equals 0.1kWh and should be clearly visible on the display.</p> <p>Please contact technical support for a meter replacement.</p>
No pulse output.	<p>Is DC power connected to the meter ?</p> <p>Is the pulse output connected correctly?</p> <p>Maybe there is a fault inside the meter.</p>	<p>Check the external voltage source (Ui) is 5-27V DC.</p> <p>Check correct connection: connect 5-27V DC to connection 6 (anode), and the signal wire (S) to connection 5(cathode).</p> <p>Please contact technical support for a meter replacement.</p>
Pulse output rate wrong.	<p>Maybe there is a fault inside the meter.</p>	<p>Please contact technical support for a meter replacement.</p>

1.12 Technical support

For questions about one of our products please contact:

- The Inepro Metering dealer in your region
- Your local Inepro Metering distributor
- Email: support@ineprometering.com

www.ineprometering.com



