inepro®

PRO1-S
PRO1-2T
PRO1-Mb
PRO1-Mod

PRO 1 Series MID
DIN rail single phase two wire energy meter

User Manual

Product version: 1.12

RoHS
LEAD FREE
COMPLIANT

1 Index

2 Safety instructions

Information for your own safety

This manual does not contain all of the safety measures for operation of this meter 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 material damage. This information is highlighted by a warning triangle with an exclamation mark or a lightning bolt depending on the degree of actual or potential danger:

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

Caution
This 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 device described in this manual may only be performed by qualified personnel. Only people that are authorized to install, connect and use this device, who have the proper knowledge about labeling and grounding electrical equipment and circuits and can do so in accordance with local (safety)regulations, are considered qualified personnel in this manual.

Use for the intended purpose

This device 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. During its operation certain parts of the meter might carry dangerous voltages.

- Only use insulated tools suitable for the voltages this meter is used for.
- Do not connect while the circuit is connected to a power or current source.
- Only place the meter in a dry environment.
- 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 other conducting material as you will risk an electric shock that could cause possible injury, serious injury or death.
- Make sure the protection covers are replaced after installation.

- Maintenance and repair of the meter should only be carried out by qualified personnel.
- Never break any seals (if present on this meter) 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 meteras there are high precision components inside that may break and affect the meter measurement negatively.
- All clamps should be properly tightened.
- Make sure the wires fit properly in the connection clamps.
- If the wires are too thin it will cause a bad contact which can spark causing damage to the meter and its surroundings.

Exclusion of liability

We have checked the contents of this manual 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 are checked regularly and the necessary corrections will be included in subsequent editions. If you have any suggestions, please do not hesitate to contact us.

Subject to technical modifications without notice.

Copyright

Copyright Inepro Metering August 2011.

It is prohibited to pass on or copy this document or to use or disclose its contents without express permission of Inepro Metering BV. Any duplication is a violation of the law and subject to criminal and civil penalties. All rights reserved, particularly for pending or approved patent awards or registered trademarks.

3 Foreword

Thank you for purchasing this energy meter. Inepro has a wide product range of devices. We have introduced a large number 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 visit our website at www.ineprometering.com.

Although we produce this device according to international standards and our quality inspection is very accurate it's still possible that this device 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 distributor immediately. Most of our 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 device. The limited warranty is 5 years after production date, divided into various periods., after production, and only valid for production faults.

4 Certificates

5 Specifications

Casing	PC flame resistant plastic
Nominal voltage (Un)	230V AC
Operational voltage	195-253VAC
Insulation capabilities:	
- AC voltage withstand	4KV for 1 minute
- Impulse voltage withstand	6KV – 1.2µS waveform
Basic current (Ib)	5A
Maximum rated current (Imax)	45A
Operational current range	0.4%Ib-Imax
Overcurrent withstand	30Imax for 0.01s
Operational frequency range	50Hz ±10%
Internal power consumption	≤2W/Phase - ≤10VA/Phase
Test output flash rate (RED LED)	10.000 imp/kWh
Pulse output rate	10.000, 2.000, 1.000, 100, 10, 1, 0.1 or 0.01 imp/kWh
Pulse width	
- ≤ 5625W	32ms
- > 5625W	11.2ms
Data store	The data can be stored for more than 10 years without power

5.1   Performance criteria

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

5.2   Basic errors

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%

5.3   Infra-red specification

Infrared wavelengths   900- 1000nm
Communication distance   Direct contact
Protocol   IEC62056-21:2002 (IEC1107)

5.4   M-bus communication specifications (PRO-Mb only)

Bus type   M-bus
baud rate   300, 600, 1200, 2400, 4800 and 9600 (default)
Range   ≤1000m   64PCS*
Downlink signal   Master to slave，Voltage modulation
Uplink signal   Slave to master，Current modulation
Cable   JYSTY （n×2×0.8）
Protocol   EN13757-3
Max. number of meters   64*

*Note that the maximum number of meters is dependent on the converter, baudrate (the higher the baudrate the smaller the number of meters which can be used) and the circumstances under which the meters are installed.

5.5   RS485 communication specifications (PRO-Mod only)

Bus type   RS485
Protocol   MODBUS RTU with 16 bit CRC
Baud rate   1200, 2400, 4800, 9600 (default)
Address range   0-247 user settable
Maximum bus load   60 meters per bus
Range   1000m

5.6   Dimensions

Height without protection cover   90 mm
Height   117 mm
Width   17.5 mm
Depth   63 mm
Max diameter power connection clamps   10 mm^2
                                           (Solid copper)
Weight   0.08 Kg (net)
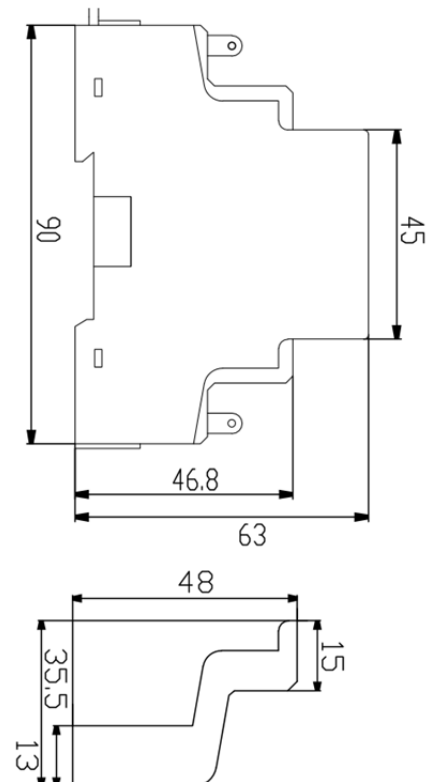
6 Installation

![caution symbol] 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 symbol] WARNING
• The installation should be performed by qualified personnel familiar with applicable codes and regulations. • Use insulated tools to install the device. • A fuse, thermal cut-off or single-pole circuit breaker should be fitted on the supply line and not on the neutral line.

- The connecting wire, connecting the device to the outside circuit, should be sized in accordance with local regulations for the maximum amount of the current breaker or other overcurrent protection devices 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 and the device supplying energy. 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 used as an overcurrent protection device for the meter must be installed on the supply side wires. It's recommended that this protection device is also placed near the meter for the convenience of 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, in accordance with 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 device can be installed on a 35mm DIN rail.
- The meter should be installed on a location where the meter can be read easily.
- In case the meter is installed in an area with frequent surges for example due to thunderstorms, welding machines, inverters etc, the meter is required to be protected with a Surge Protection Device.
- The device should be sealed immediately after installing it in order to prevent tampering

- Connection of the wires should be done in accordance with the connection diagram as shown below:
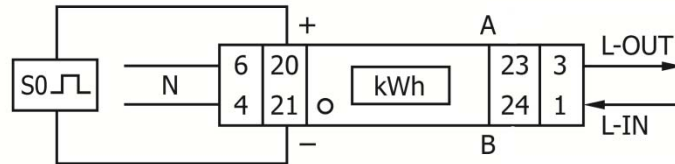
1	phase line in (L-IN)	
3	phase line out (L-OUT)	
4	neutral line in (N)	
6	neutral line out (N)	
20 and 21	Pulse output contact (S0)	
23 and 24	PRO1-S	Not in use
	PRO1-2T	External tariff input (230V)
	PRO1-Mb	M-Bus communication contact
	PRO1-Mod	Modbus communication contact

7 Operation

7.1   Energy flow indication

The red LED on the front panel indicates the power flow measured by the meter. When power flows, the LED will flash. The faster the LED flashes, the more power flows. For this meter, the LED will flash 10.000 times per kWh. The first display indication of the meter in the scrolling mode is either FW (forward) or RV (reverse)

7.2   Re-active energy indication

The dispay will show Kvarh to indicate the meter is measuring re-active energy.

7.3   Tariff indication

The LCD will show a dot underneath the word tariff on the name plate to indicate tariff 2 is active

7.4   Reading the meter

A red LED on the front panel indicates the consumption measured by the meter. 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 10.000 times per kW.

The meter is equipped with a 6 digit LCD. For the energy consumption the meter will display 9999.99 kWh and switch to 99999.9 kWh when over this value and so on.

7.5   LCD display of the meter

The LCD display has two rows. The upper row contains dots. The most left one is for indicating energy flow direction (forward/ reverse). The most right one is will flash when there is communication to an external device (only on selected models). The lower row is used to show al other metering info.

Reverse   Tariff   Communication
indicator   indicator   indicator
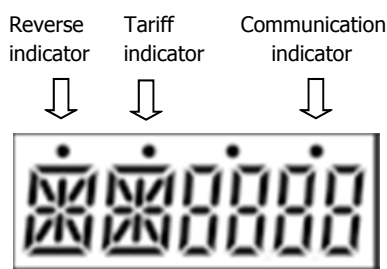
This means that certain displays have the same abbreviations, but the dot above will distinguish if it is for forward (no dot) or reverse (dot). Please compare the displays below:
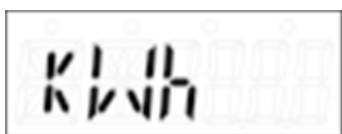
Total forward active energy   *Total reverse active energy*
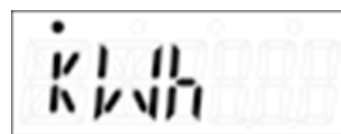
Dataside	Primærskjerm	Sekundær skjerm	Beskrivelse	Notat	Programmerbar
1	FW / FW t1 / FW t2 Eller	RV / RV t1 / RV t2	Retningen strømmen går. Måleren viser enten FW (normalt) eller RV (reversert)		
2	kWhtot	000000	Totalforbruk kWh		
3	kVArht	000000	Totalt reaktivt forbruk	Normalt og reversert forbruk	
4	kWh	000000	Total aktiv energi (kWh)		
5	kWh	000000	Total reversert energi (kWh)		
6	kVArh	000000	Total reaktiv energi		
7	kVArh	000000	Total reversert reaktiv energi		
8	kWh t1	000000	Aktiv energi tariff 1		
9	kWh t1	000000	Reversert aktiv energi tariff 1		
10	kVArh1	000000	Aktiv reaktiv energi tariff 1		
11	kVArh1	000000	Reversert reaktiv energi tariff 1		
12	kWh t2	000000	Aktiv energi tariff 2		
13	kWh t2	000000	Reversert aktiv energi tariff 2		
14	kVArh2	000000	Aktiv reaktiv energi tariff 2		
15	kVArh2	000000	Reversert reaktiv energi tariff 2		
16	V 0000	i/t	Spenning (V)		
17	A 0000	i/t	Forbruk i (A)		
18	HZ0000	i/t	Frekvens (Hz)		
19	kW	0.000	Aktiv energi (kW)		
20	kVAr	0.000	Reaktiv energi (kVAr)		
21	kVA	0.000	Aktiv energi (kVA)		
22	PF	0.000	Strømfaktor (PF)		
23	RT 05	i/t	Displayets scrolle tid	Fra 1-30 sekunder	Knapp/iR

24	bL btn	-	Lysmodus	På, av eller knapp	Knapp/iR
25	S0	20000	Pulsutgangsfrekvens	Standard 1000	Kun iR
26	C-05	-	Kodetabell	Kalkulerings tabell	Kun iR
27	MbS Id	000	Mbus ID	Standard 000	iR+Mbus
28	MOd Id	001	ModBus ID	Standard 001	iR +Mod-Bus
29	M bAud	9600	Kommunikasjonshastighet	Standard 9600	iR+Mbus +Mod Bus
30	kWh 0	000000	Tilbakestillbart dagsforbruk		Knapp/iR
31	SOft-1	00FF	Programvareversjon		
		FFFF	Programvareversjon del 2		
32	SOft-2	00FF	Programvareversjon		
		FFFF	Programvareversjon del 2		

Scrolle funksjon

Automatisk scrolling, displayet scroller automatisk hvert 10 sekund mellom alle verdier.

Endring av scrollefunksjon:
Trykk på knappen i 5 sekunder og slipp knappen.

RT 05
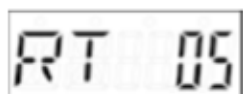
Etter at knappen har blitt sluppet, vil lyset blinke 2 ganger AV/PÅ for å indikere at du er i programmeringsmodus.
Trykk på knappen for å velge scrolletid (1-30sekunder)
Etter at valg tid er satt og knappen er sluppet, må man vente 10 sekunder for at måleren skal lagre denne verdien.

Manuel scrolling

Ved å trykke på knappen vil du gå igjennom alle data som kan leses ut av måleren (verdier som kan lese av avhenger av modell)

7.7 Back light

The meter is equipped with a blue backlight.

7.7.1 Change the back light setting

Press the button for 5 seconds during the display of page BL btn and release the button

After releasing the button the backlight will blink twice OFF/ON to indicate you are in programming mode.

Press the button to select the backlight mode;
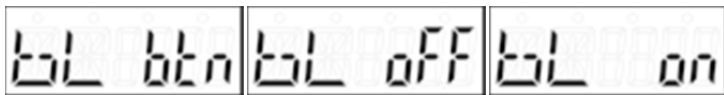
bl btn	Press button to activate light
bl off	Always OFF
bl on	Always ON

After choosing the desired scrolling time release the button and wait 10 seconds to program the new data in the meter.

7.7.2 Day counter reset

The meter is equipped with a day counter for consumed energy. This is the energy forward calculated and can be reset to zero by the user

7.7.3 How to reset the day counter back to 0

Press the button for 5 seconds during the display of page kWh 0 and release the button
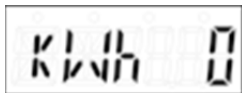
After releasing the button the backlight will blink twice OFF/ON to indicate you are in programming mode

The meter will switch to the next display:

Press the button again for 5 seconds to reset to zero

7.8 S0 pulse output

The 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 dependent, open-collector transistor output requiring an external voltage source for correct operation. For this external voltage source, the voltage (Ui) should be lower than 27V DC. The maximum switching current (Imax) is 100mA. To connect the impulse output, connect 5-27V DC to connector 20 (collector), and the signal wire (S) to connector 21 (emitter).
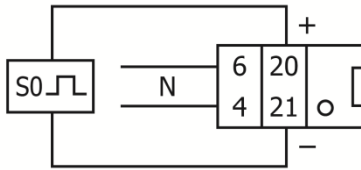
pin 20 (collector)
pin 21 (emitter)

To change the pulse output you need to purchase a IR eye head and PC software from your dealer. Selectable S0 output rates are mentioned in paragraph 6 specifications.

7.9   Setting the total (combined) energy calculation

The meter allows you to display the total energy (usage) shown on the display in accordance to different calculation methods.

 indicating that the total energy is the sum of forward + reverse

To change the calculation method used, please use the infra-red eye, which can be bought separately and software which can be downloaded via the website of Inepro. On how to use the infra-red eye to read out values and change settings, a separate manual is available. For this, please contact your local distributor or Inepro Metering bv.

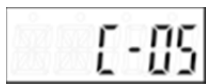You can use the following calculation methods for total energy as follows:

Code	Total (active) energy
C-01	Forward only
C-04	Reverse only
C-05	Forward + Reverse
C-06	Reverse – Forward
C-09	Forward – Reverse
C-10	Forward – Reverse

7.10   Communicating via the M-bus output(PRO1-Mb only)

The meter is equipped with an M-bus port, the data can be read out via this port. The communication protocol conforms to the EN13757-3 standard.

The meter can communicate with your PC. In order to read out the meter registers first install and configure the PC software. Use an M-bus level converter to connect the PC and the meter. The cable should be connected to terminals 23 and 24. The default communication adress of the meter is 001.

Note: PC software is available at request.

7.11   Communicating via the Modbus output(PRO1-Mod only)

The meter can communicate with your PC. In order to read out the meter registers first install and configure the PC software. Use an RS485 level converter to connect the PC and the meter. The cable should be connected to terminals 23 and 24. The default communication adress of the meter is 001.

Note: PC software is available at request.

8 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, serious injury or even death.   • 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.   • Turn off and lock all power supply to the energy meter and the equipment to which it is installed before opening the protection cover to prevent the hazard of electric shock.
⚠ 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.   • The case is sealed, failure to observe this instruction can result in damage to the meter.

Problem	Possible cause	Check/Solution
The red consumption LED is not flashing (PULSE LED).	There is no load connected to the meter. The load on the line is very low.	Connect a load to the meter. Check with an Ohm-meter if the load value is very low.
The register doesn't count.	There is almost no load connected to the meter	Check if the red consumption LED is flashing. 10.000 flashes of the LED at 100 pulses per kWh equals 0.01kWh.
No pulse output.	The pulse output is not supplied with DC power. The pulse output is not connected correctly.	Check the external voltage source (Ui) is 5-27V DC with a voltage meter Check if the connection is correct: the 5-27V DC should be connected to the collector connection (pin 20+) and the signal wire (S) to the emitter connection (pin 21-).
The pulse output rate is wrong.	Is the correct pulse rate set via the infra red eye and software?	Download or request the software and use the infra red eye which can be bought seperately.
If non of the above works, please contact technical support		

8.1   List of errors in display

It could be that one the following errors is displayed on the meter:

Display shows	Kind of errors	Measures
Err 01	EEPROM error	Please contact technical support for a meter replacement.
Err 02	Program code checksum error	Please contact technical support for a meter replacement

8.2   Technical support

For questions about one of our products please contact:

- Your local Inepro Metering distributor
- Email: support@ineprometering.com
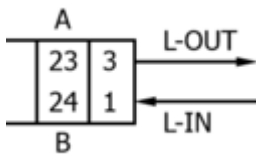
www.ineprometering.com

1 Appendix PRO1-2T

How to switch between T1 and T2

The meter is equipped with 2 tariff functionality which need to be activated by an external voltage connected to the terminals 23/24

This is an AC voltage between

Additional LCD readings for the 2 tariff version

 Indicating that the current energy direction is Forward and T2 is active

 Indicating that the current energy direction is Reverse and T2 is active

 Forward active energy for tariff 2

 Reverse active energy for tariff 2
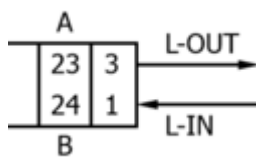
 Forward reactive energy for tariff 2

 Reverse reactive energy for tariff 2

2 Appendix PRO1-Mb

The PRO1-Mb can be connected for M-Bus communication. The defaults for Mbus communication are:

- Baudrate 9600 bits/sec
- 8 data bits
- even parity
- 1 stop bit

The M-Bus connection is on the terminals 23/24

The secondary addressing is preset to the last 8 digits of the serial number printed on the side of the meter. However this can be changed to a more convenient number through IR or Mbus communication.

The baudrate can be lower to values 4800, 2400, 1200, 600 and 300 baud. <u>Data, parity and stop bit cannot be changed.</u>

For the registers used in the meter and how to interpreted the data, see the appendix "Register matrix".

Although INEPRO does not give support on third party software and hardware, we noticed good experiences with Relay products with our customers.

More detailed info on M-Bus can be found:

http://www.m-bus.com/mbusdoc/default.php

3 Appendix PRO1-Mod

The PRO1-Mod can be connected for Modbus communication. The Modbus implementation used is Modbus basic (standard). This means the following:

- Baudrate 9600 bits/sec
- 8 data bits
- even parity
- 1 stop bit

The baudrate can be lower to values 4800, 2400, 1200. Data, parity and stopbit cannot be changed.

The Modbus connection is on the terminals 23/24
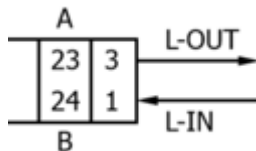
When connecting the meter through a serial converter (RS485) for testing, please be aware that because of not implementing the complete Modbus infrastructure, there will be a need to put an additional resistor (120 ohms/ 0.25 watts) across the terminals (23 & 24) on the meter side.

For the registers used in the meter and how to interpreted the data, see the appendix "Register matrix".

More info on Modbus can be found:

Physical:
http://www.modbus.org/docs/Modbus_over_serial_line_V1_02.pdf

Protocol:
http://www.modbus.org/docs/Modbus_Application_Protocol_V1_1b3.pdf

4 Appendix Infra-Red PC software

All PRO1-series meters are capable to be read out and configured by IR. The standard used is IRDA (IEC62056-21:2002 (IEC1107)).

IR converter and accompaning software are sold separately. Please contact your dealer.

5 Appendix Registry matrix

Register Address	Contents	Read/Write	Datablocks	HEX response	PRO1-S IR	PRO1-2T IR	PRO1-Mb Mbus	PRO1-Mb IR	PRO1-Mod Modbus	PRO1-Mod IR	Remarks
1000	Serial number	Read	04	signed	R/W	R/W	R/W	R/W	R/W	R/W	
1010	Meter code	Read	02	signed	R	R	R	R	R	R	
1018	Meter ID (Mbus/Modbus)	Read/write	01	signed	n/a	n/a	R/W	R/W	R/W	R/W	001~247 (001 default: 000 broadcast)
1020	Baud Rate	Read/write	01	signed	n/a	n/a	R/W	R/W	R/W	R/W	9600 (default), 4800, 2400, 1200, 600, 300
1050	Protocol Version	Read	02	signed	R	R	R	R	R	R	
1054	Software Version	Read	02	signed	R	R	R	R	R	R	
1058	Hardware Version	Read	02	signed	R	R	R	R	R	R	
1060	Meter Amps	Read	01	signed	R	R	R	R	R	R	
1066	S0 output rate	Read/write	02	Float - Big Endian (ABCD)	R/W	R/W	R/W	R/W	R/W	R/W	10000, 2000, 1000 (default), 100, 10, 1, 0.1, 0.01
107A	Combined Code	Read/write	01	signed	R/W	R/W	R/W	R/W	R/W	R/W	01, 04, 05 (default), 06, 09 and 10
1510	LCD cycle time	Read/write	01	signed	R/W	R/W	R/W	R/W	R/W	R/W	0~30 (seconds, 10 seconds default)
2000	Voltage	Read	02	Float - Big Endian (ABCD)	R	R	R	R	R	R	
2020	Grid Frequency	Read	02	Float - Big Endian (ABCD)	R	R	R	R	R	R	
2060	Current	Read	02	Float - Big Endian (ABCD)	R	R	R	R	R	R	
2080	Total Active Power	Read	02	Float - Big Endian (ABCD)	R	R	R	R	R	R	
20A0	Total reactive power	Read	02	Float - Big Endian (ABCD)	R	R	R	R	R	R	
20C0	Total Apparent Power	Read	02	Float - Big Endian (ABCD)	R	R	R	R	R	R	
20E0	Power Factor	Read	02	Float - Big Endian (ABCD)	R	R	R	R	R	R	
2200	Tariff	Read/write	01	signed	n/a	n/a	R/W	R/W	R/W	R/W	01 (t1 saved), 02 (t2 saved), 11 (t1 not saved), 12 (t2 not saved)
3000	Total Active Energy	Read	02	Float - Big Endian (ABCD)	R	R	R	R	R	R	
3100	T1 Total Active Energy	Read	02	Float - Big Endian (ABCD)	n/a	R	R	R	R	R	
3200	T2 Total Active Energy	Read	02	Float - Big Endian (ABCD)	n/a	R	R	R	R	R	
3020	Forward Active Energy	Read	02	Float - Big Endian (ABCD)	R	R	R	R	R	R	
3120	T1 Forward Active Energy	Read	02	Float - Big Endian (ABCD)	n/a	R	R	R	R	R	
3220	T2 Forward Active Energy	Read	02	Float - Big Endian (ABCD)	n/a	R	R	R	R	R	
3040	Reverse Active Energy	Read	02	Float - Big Endian (ABCD)	R	R	R	R	R	R	
3140	T1 Reverse Active Energy	Read	02	Float - Big Endian (ABCD)	n/a	R	R	R	R	R	
3240	T2 Reverse Active Energy	Read	02	Float - Big Endian (ABCD)	n/a	R	R	R	R	R	
3060	Total Reactive Energy	Read	02	Float - Big Endian (ABCD)	R	R	R	R	R	R	
3160	T1 Total Reactive Energy	Read	02	Float - Big Endian (ABCD)	n/a	R	R	R	R	R	
3260	T2 Total Reactive Energy	Read	02	Float - Big Endian (ABCD)	n/a	R	R	R	R	R	
3080	Forward Reactive Energy	Read	02	Float - Big Endian (ABCD)	R	R	R	R	R	R	
3180	T1 Forward Reactive Energy	Read	02	Float - Big Endian (ABCD)	n/a	R	R	R	R	R	
3280	T2 Forward Reactive Energy	Read	02	Float - Big Endian (ABCD)	n/a	R	R	R	R	R	
30A0	Reverse Reactive Energy	Read	02	Float - Big Endian (ABCD)	R	R	R	R	R	R	
31A0	T1 Reverse Reactive Energy	Read	02	Float - Big Endian (ABCD)	n/a	R	R	R	R	R	
32A0	T2 Reverse Reactive Energy	Read	02	Float - Big Endian (ABCD)	n/a	R	R	R	R	R	

Open ambitions