551886B

COUNTIS M04/M06

SINGLE-PHASE DIGITAL ENERGY METERS
DIRECT CONNECTION 45A

COUNTIS M04 (MID) - ref. **48C0 3104**
COUNTIS M06 (MID) - ref. **48C0 3106**

Certificate of conformity
with MID Directive.

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- Measures energies (kWh, kVArh), powers (kW, kVArh, kVA), PF, Hz, V, A, demand (power and current)
- Bi-directional measurement import and export
- Two pulse outputs
- RS485 MODBUS RTU or M-Bus communication
- Din rail mounting 35mm
- 45 A direct connect
- Class B accuracy

Safety instruction

Information for your own safety

This quickstart guide does not contain all of the safety measures for operation of the equipment (module,device), because special operating conditions, and local code requirements or regulations may necessitate further measures. However, it does contain information which must be read for your personal safety and to avoid material damages. This information is highlighted by a warning triangle and is represented as follows, depending on the degree of 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

Operation of the equipment (module, device) described in this manual may only be performed by qualified personnel. Qualified personnel in this manual means person who are authorized to commission, start up, ground and label devices, systems and circuits according to safety and regulatory standards.

Proper handling

The equipment (device, module) may only be used for the application specified in the catalogue and the user manual,and only be connected with devices and components recommended and approved by Socomec.

- Use only insulating tools.
- Do not connect while circuit is live (hot).
- Install and use the meter only in a dry, indoor environment.
- Do not mount the meter in an explosive area or expose the meter to dust, mildew and insects.
- Make sure the used wires are suitable for the maximum current of this meter.
- Make sure the AC wires are connected correctly before applying current/voltage to the meter.
- Do not connect the meter to a 3 phase - 400VAC - network.
- Do not touch the meter connecting clamps directly with your bare hands, with metal, blank wire or other material as you may get an electrical shock.
- Make sure the protection cover is placed after installation.
- Installation, maintenance and reparation should only be done by qualified personnel.
- Never break the seals and open the front cover as this might influence the functionality of the meter, and will avoid any warranty.
- Do not drop, or allow physical impact to the meter as there are high precision components inside that may break.

Introduction

This document provides operating, maintenance and installation instructions of COUNTIS M04/M06. The unit measures and displays the characteristics of single phase two wires applications. It provides voltage, current, power, frequency, power factor and energy information. COUNTIS M04/M06 are direct connection meters, they can work with direct loads up to 45A.

Two pulse outputs and 1 remote communication port are provided.

This series covers 2 models

Model	Current Input	Communication	MID
COUNTIS M04	Direct connect 45 A	RS485 Modbus	●
COUNTIS M06	Direct connect 45 A	M-Bus EN 13757-3	●

Initialization Display

When it is powered on, the meter will initialize and do self-checking.

1	888888	Full screen. Lasts for 3 seconds.
2	020105	Software version. Lasts for 3 seconds.
3	000478	Total active energy (kWh).

After the self-checking program, the meter screen will display the total active energy (kWh).

Scroll Display with Button

There is a button on the front of the meter. After initialization and self-checking program, the meter displays the measured values. The default page is total kWh. If the user wants to check other information, he needs to press the scroll button on the front panel.

1		Click the button, the LCD display will scroll the measurements.
2		Keep pressing the button for 3 seconds, the meter will enter set-up mode.

1	000478 kWh	Total active energy (kWh)
1-1	000245 kWh	Import active energy (Ea+) (kWh)
1-2	000232 kWh	Export active energy (Ea-) (kWh)
2	219.8 <	Voltage (V)
3	20.18 >	Current (A)
4	2210.2	Active power (W)
5	F 50.00	Frequency (Hz)
6	PF 100	Power factor (-)
7	Id 001	M-bus primary address (ID) or Modbus Address (ID) Default : 001
8	b 2400	Baud rate Default : 2400bps (M-Bus) 9600bps (RS485 Modbus)
9	PrtY n	Parity Option: None/Even/Odd Default: none Stop bit : 1
10	H 0000	M-Bus secondary address High (M-Bus version only - only applicable for Countis M06)
11	L 0000	M-Bus secondary address Low (M-Bus version only - only applicable for Countis M06)
12	020105	Software version

Set-up Mode

To get into Set-up Mode, the user needs to keep pressing the button for 3 seconds, the user can program the modbus address, baud rate, parity by the button directly.

The user can program the meter parameters by sending correct command via Modbus of M-bus protocol. The communication tables are available on the socomec website.

Information displayed depending on the model

COUNTIS M04

Total kWh ➔ Import kWh ➔ Export kWh ➔ Voltage ➔ Current ➔ Active power ➔ Frequency ➔ Power factor ➔ Modbus address ➔ Baudrate ➔ Parity ➔ Software version

COUNTIS M06

Total kWh ➔ Import kWh ➔ Export kWh ➔ Voltage ➔ Current ➔ Active power ➔ Frequency ➔ Power factor ➔ Address ➔ Baudrate ➔ Parity ➔ M-bus secondary address high ➔ M-bus secondary address low ➔ Software version

Communication

Pulse output

The meter is equipped with 2 pulse outputs, which are fully isolated from the inside circuit. It generates pulses in proportion to the measured energy. The pulse outputs are polarity dependent , passive transistor output requiring an external voltage source for correct operation. For this external voltage source, the voltage shall be 5-27V DC, and the maximum input current shall be 27mA DC.

OUTPUT

ATTENTION!

Pulse output must be fed as shown in the wiring diagram on the left. Scrupulously respect polarities and the connection mode. Opto-coupler with potential-free SPST-NO Contact.

Contact range: 5~27 VDC
Max. current Input: 27mA DC

Pulse output 1

Pulse output 1 is configurable. The pulse output 1 can be set to generate pulses to represent total / import/ export kWh or kVArh. The pulse weight can be set to generate 1 pulse per: 0.001 (default)/0.01/0.1/1kWh/kVArh. Pulse width: 200/100/ 60ms (default).

Pulse output 2

Pulse output 2 is non-configurable. It is fixed to total kWh.
The weight is 1000imp/kWh. The Pulse width: 60ms.

RS485 output for Modbus RTU (Countis M04 only)

The meter provides a RS485 port for remote communication. Modbus RTU is the protocol applied. For Modbus RTU, the following RS485 communication parameters can be configured from the set-up menu.

Baud rate: 1200, 2400, 4800, 9600bps (default : 9600)
Parity: NONE/EVEN/ODD (default : none)
Stop bits: 1 or 2 (default : 1)
Modbus Address: 1 to 247 (default : 001)

M-Bus communication EN13757-3 (Countis M06 only)

The meter provides an M-Bus port for remote communication. The protocol fully complies with EN13757-3.The following communication parameters can be configured via M-bus communication.

Baud rate: 300,600, 2400, 4800, 9600bps (default : 2400)
Parity: NONE/EVEN/ODD (default : none)
Stop bits: 1 or 2 (default : 1)
M-Bus network primary address: 3 digits numbers from 001 to 250 (default : 001)
M-Bus network secondary address: 00 00 00 00 to 99 99 99 99 (default : serial number of the meter)

The Modbus and M-bus communication addresses and registers can be downloaded on the socomec website.

Specifications

Measured Parameters

The unit can monitor and display the following parameters of a single phase two wires (1P+N), three phase three wires (3P) or three phase four wires (3P+N) system.

Voltage and Current
- Phase to neutral voltages 176 to 276V a.c. (in case of neutral present).
- Voltages between phases 304 to 480V a.c. (not available in single phase).
- Percentage total voltage harmonic distortion (THD%) for each phase to N (in case of neutral present).
- Percentage voltage THD% between phases (in case of neutral present).
- Current THD% for each phase

Power Factor, Frequency and Max. Demand
- Frequency in Hz
- Power factor
- Instantaneous power:
   - Power 0 to 99999 W
   - Reactive power 0 to 99999 VAr
- Volt-amps 0 to 99999 VA
- Maximum demand power since last reset
- Maximum neutral current demand, since last Reset (in case of neutral present)

Energy Measurements
- Import/Export active energy (ea+/ea-) 0 to 9999999.9 kWh
- Import/Export reactive energy (er+/er-) 0 to 9999999.9 kVArh
- Total active energy 0 to 9999999.9 kWh
- Total reactive energy 0 to 9999999.9 kVArh

Technical characteristics

General	
Voltage AC (Un)	230V
Voltage range	176~276V AC
Current input	0.25-5 (45) A
Power consumption	<1W/8VA
Frequency	50/60Hz (50Hz only for MID version)
AC voltage withstand	4KV for 1 minute
Impulse voltage withstand	6KV~1.2 µs waveform
Overcurrent withstand	30Imax for 0.01s
Pulse output 1	configurable : 1,10,100,1000 pulses per kWh/kVArh
Pulse output 2	non-configurable : 1000 pulses per kWh
Display	LCD with white backlight
Max. Reading	99999.9 kWh/kVArh

Accuracy	
Voltage	0.5%
Current	0.5%
Frequency	0.2%
Power factor	1%
Active power	1%
Reactive power	1%
Apparent power	1%
Active energy	Class B EN 50470-1/3
Reactive energy	Class 2 IEC 62053-23

Environment	
Operating temperature	-40°C to +70°C (3K7)
Storage and transportation temperature	-40°C to +70°C
Reference temperature	23°C ±2°C
Relative humidity	0 to 95%, non-condensing
Altitude	Up to 2000m
Warm up time	3s
Mechanical environment	M1
Electromagnetic environment	E2
Degree of pollution	2

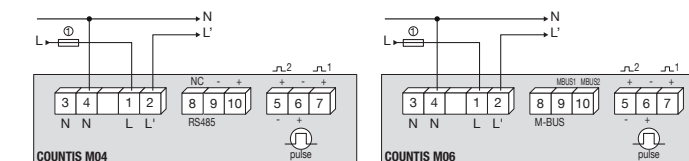| Mechanics	
Din rail dimensions	18 x 118 x 64 mm (WxHxD) DIN 43880
Mounting	DIN rail 35mm
Ingress protection	IP51
Material	Self-extinguishing UL94V-0

Dimensions

mm

Installation

DIN Rail

Wiring diagram

COUNTIS M04

COUNTIS M06
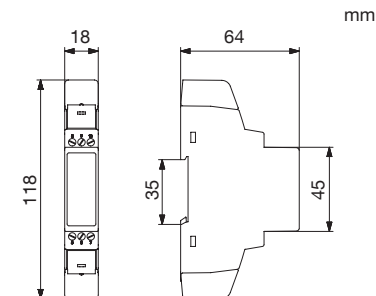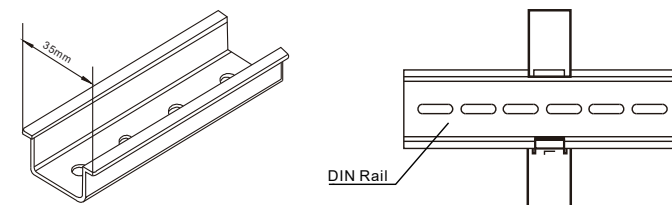
N - L: network input. **N' - L':** network output.
① 45 A gG / Am fuses max.

Cable dimensions and tightening torque

Cables dimensions	COMM / Pulse	0.5~1.5 mm²
	Load	2.5~6 mm²
Tightening torque	COMM / Pulse	0.2 Nm
	Load	2 Nm

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