



Selection guide

Active energy meters and pulse concentrators

COUNTIS E

Single-circuit metering,
measurement &
analysis

Which type
of network?

Which load
current?

Network - Input current	Single-phase Direct up to 32 A		Single-phase Direct up to 63 A	Single-phase Direct up to 80 A		Three-phase Direct up to 63 A	
		new 		new 			new 
Active energy meters: COUNTIS E	E00/E02 p. 38	E03/E04 p. 38	E10/E11/E12 p. 40	E13/E14 p. 40	E15/E16 p. 40	E20/E21 p. 42	E23/E24 p. 42

Main specifications

MID: EN 50470 module B + D certification	• (E02)	• (E04)	• (E12)	• (E14)	• (E16)		• (E24)
RS485 Modbus		•		•			•
M-BUS					•		
Case	1 module	1 module	3 modules	3 modules	3 modules	4 modules	4 modules
Input voltage	230 VAC	230 VAC	230 VAC	230 VAC	230 VAC	230 ... 400 VAC	230 ... 400 VAC

Functions

Total/partial energy kWh	•/-	•/-	•/• (E10, E11)	•/-	•/-	•/•	•/•
Active power / Reactive power			•/-	•/•	•/•	•/-	
Dual tariff for kWh			• (E11, E12)	•	•	• (E21)	•
Total/partial energy kvarh							
kVA							
Load curve							
Measurement (I, V, P, Q, S, F and PF) via communication		•		•	•		•
CT connection indication							
Bidirectional (energy consumption and production)				•	•		•

Accuracy

Active energy (IEC 62053-21)	class 1	class 1	class 1	class 1	class 1	class 1	class 1
Reactive power (according to IEC 62053-23)							
Active energy (EN 50470)	class B (E02)	class B (E04)	class B (E12)	class B (E14)	class B (E16)		class B (E24)

Characteristics

Metrological LED	•	•	•	•	•	•	•
Pulse output	100 Wh		100 Wh			100 Wh	
Sealing cover (MID version only)	• (E02)	• (E04)	• (E12)	• (E14)	• (E16)		• (E24)
Phase/neutral inversion protection						•	

(1) Does not include frequency measurement. - (2) Does not include frequency measurement, nor energy production metering.

		
Pulse concentrator	COUNTIS ECi2 p. 52	COUNTIS ECi3 p. 52
Case	4 modules	4 modules
Logical inputs	7	7
Analogue inputs		2
ON/OFF output (alarm)	1	1
Partial, total, daily, weekly or monthly kWh or other types of data (liters, m³...)	•	•
Load curve from 8 to 30 minutes	•	•
RS485 Modbus	•	•

Which accuracy?

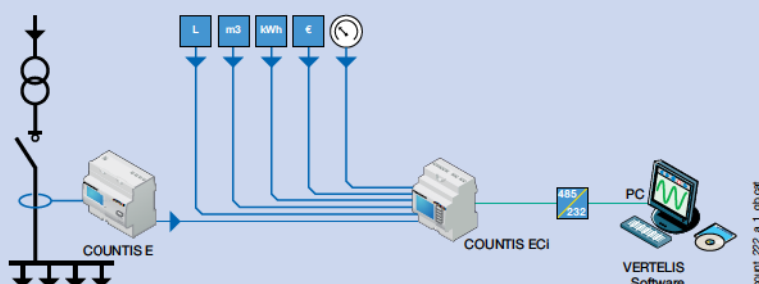
MID certification?

Communication or pulse output?

Three-phase Direct up to 63 A	3 ph Direct up to 100 A			3 x Single-phase Direct up to 100 A	Three-phase CT/5 A			Three-phase CT/5 A	
									
E25/E26 p. 42	E30/E31/E32 p. 44	E33/E34 p. 44	E35/E36 p. 44	E63 p. 50	E40/E41/E42 p. 46	E43/E44 p. 46	E45/E46 p. 46	E50 p. 48	E53 p. 48
• (E26)	• (E32)	• (E34)	• (E36)		• (E42)	• (E44)	• (E44)		
•		•	•	•		•	•		•
4 modules	7 modules	7 modules	7 modules	7 modules	4 modules	4 modules	4 modules	96x96	96x96
230 ... 400 VAC	230 ... 400 VAC	230 ... 400 VAC	230 ... 400 VAC	230 ... 400 VAC	230 ... 400 VAC	230 ... 400 VAC	230 ... 400 VAC	86 ... 520 VAC	86 ... 520 VAC
•/•	•/• (E31)	• /via COM (E34)	• /via COM (E34)	•/•	•/•	• /via COM (E44)	• /via COM (E46)	•/•	•/•
	•/-	•/via COM	•/via COM	•/via COM	•/-	•/via COM	•/via COM	•/•	•/•
•	• (E31/E32)	up to 4 via COM	up to 4 via COM	up to 4 via COM		up to 4 via COM	up to 4 via COM	•	•
		via COM	via COM	via COM		via COM	via COM	•	•
		via COM	via COM	via COM		via COM	via COM	•	•
		via COM	via COM	via COM		via COM	via COM		
•		via COM	via COM	via COM		via COM	via COM	•	•
					•	•	•	•	•
•		• (E33)	• (E35)			• (E43)	• (E45)		
class 1	class 1	class 1	class 1	class 1	class 0,5s	class 0,5s	class 0,5s	class 1	class 1
					class 2	class 2	class 2	class 2	class 2
class B (E26)	class B (E32)	class B (E34)	class B (E36)		class C (E42)	class C (E44)	class C (E46)		
•	•	•	•	•	•	•	•		
	100 Wh				configurable				
• (E26)	• (E32)	• (E34)	• (E36)		• (E42)	• (E44)	• (E46)		
	•	•	•	•	•	•	•	•	•

COUNTIS ECI pulse concentrator

Enables pulses from water, gas, compressed air, electricity meters or even analogue sensors (light, temperature, wind etc.) to be registered and stored. All data can be centralised and managed by an energy efficiency software via RS485 communication.





COUNTIS E0x

Active energy meters
single-phase - direct 32 A

new



Single-circuit metering,
measurement &
analysis

The solution for

- > Camping sites
- > Marinas
- > Shopping centres
- > Data centres



Strong points

- > Compact
- > Pulse output
- > MID certified B+D module
- > RS485 communication (MODBUS)

MID certification

- > COUNTIS E comply with the MID directive, guaranteeing accuracy and reliability when metering, an indispensable function for energy billing applications.
- > COUNTIS E MID feature tamper-proof components to prevent fraud.



Conformity to standards

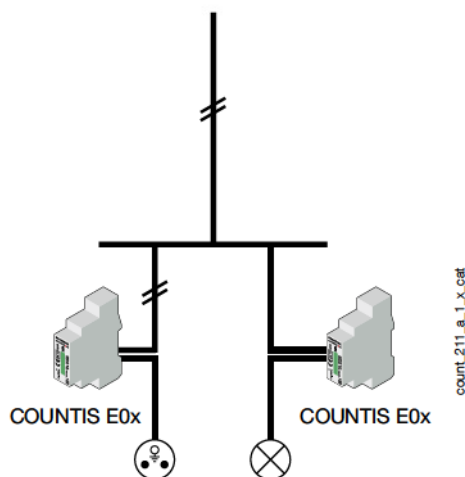
- > IEC 62053-21 class 1
- > IEC 62053-31
- > IEC 62052-11
- > EN 50470-1
- > EN 50470-3



Function

The COUNTIS E0x is a modular active electrical energy meter displaying the total energy consumed (kWh) directly on its LCD display. It is designed for single-phase load metering and is used for direct connections of up to 32 A. The COUNTIS E02 and E04 has MID certification.

Principle diagram



Advantages

Compact

The COUNTIS E0x is only 1 module wide.

Pulse output

The pulse output enables the kWh consumption to be reported to a remote system (PC/BMS) so that it can be analysed for billing, energy saving or energy cost management purposes.

MID certified B+D module

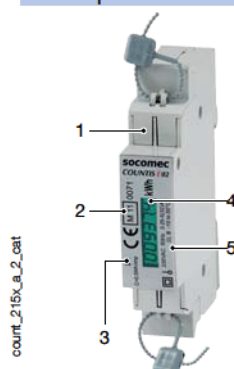
COUNTIS E products with MID certification provide the guaranteed accuracy required for applications in which sub-billing of the electrical energy consumed is necessary. "Module B+D" certification guarantees that the design and manufacturing process of products are approved by an accredited laboratory.

Common characteristics

- Compact design.
- Measurement accuracy: 1 %.
- LCD display.

Models	Key functions
E00	Pulse output
E02	MID + Pulse output
E03	MODBUS RS485 communication
E04	MODBUS RS485 communication + MID

Front panel

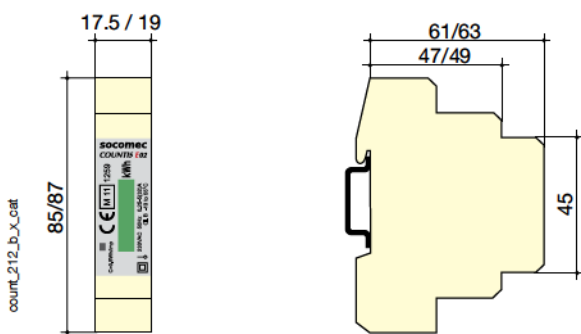


1. Terminal shrouds (COUNTIS E02 + E04).
2. MID Marking (COUNTIS E02 + E04).
3. Metrological LED (2000 pulses/kWh for E00/E02 and 1000 pulses/kWh for E03/E04).
4. kWh display.
5. Serial number (COUNTIS E02).

Electrical characteristics

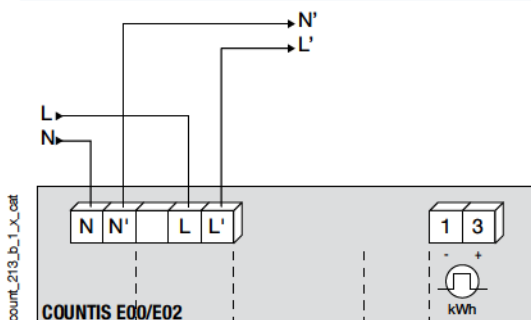
Current measurement (TRMS)		Output (pulsed)		COUNTIS E00/E02
Type	single-phase - direct 32 A	Number	1	
Input consumption	< 2 VA	Type of optocoupler	15 VDC max	
Permanent overload	32 A	Fixed pulse weight	100 Wh	
Intermittent overload	30 I _{max} for 10 ms	Pulse duration	100 ms	
Minimum current measured	20 mA	Operating conditions		
Voltage measurements (TRMS)		Operating temperature	- 10 ... + 55 °C	
Range of measurement	196 ... 264 VAC	Storage temperature	- 20 ... + 70 °C	
Input consumption	8 VA	Relative humidity	95 %	
Permanent overload	264 VAC	Communication		
Energy accuracy		Link	COUNTIS E03/E04	
Active (according to IEC 62053-21)	Class 1	Type	RS485	
Active (according to EN 50470)	Class B	Protocol	2 ... 3 half duplex wires	
Power supply		MODBUS® RTU	1200 ... 38400 bauds	
Self-supplied	yes	MODBUS speed		

Case

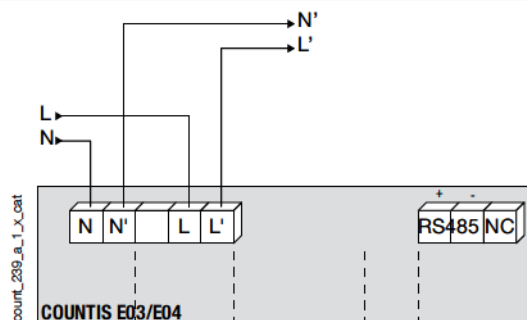


	COUNTIS E00/E02	COUNTIS E03/E04
Type	modular	modular
Number of modules	1	1
Dimensions W x H x D	17,5 x 85 x 61	19 x 87 x 63
Case degree of protection	IP 20	IP 20
Front degree of protection	IP 50	IP 50
Display type	LCD 5+1 digits	LCD 6+1 digits
Rigid cable cross-section	10 mm ²	6 mm ²
Flexible cable cross-section	6 mm ²	4 mm ²
Weight	150 g	150 g

Connection



N - L: network input.
N' - L': network output.
1 - 3: output (pulsed).



References

Type	COUNTIS E00 Reference	COUNTIS E02 Reference	COUNTIS E03 Reference	COUNTIS E04 Reference
Direct 32 A	4850 3019			
Direct 32 A - MID		4850 3020		
Direct 32 A - with MODBUS communication via RS485			4850 3029	
Direct 32 A - with MODBUS communication via RS485 - MID				4850 3030



COUNTIS E1x

Active energy meters

single-phase - direct 63/80 A

new



COUNTIS E12 - MID



COUNTIS E13

The solution for

- > Marinas
- > Shopping centres
- > Data centres



Strong points

- > RS485 communication (MODBUS or M-BUS) or pulse output
- > Dual-tariff metering
- > MID certified B+D module

MID certification

- > COUNTIS E comply with the MID directive, guaranteeing accuracy and reliability when metering, an indispensable function for energy billing applications.
- > COUNTIS E MID feature tamper-proof components to prevent fraud.



Conformity to standards

- > IEC 62053-21 class 1
- > IEC 62053-31
- > IEC 62052-11
- > EN 50470-1
- > EN 50470-3



Function

The **COUNTIS E1x** is a modular active electrical energy meter displaying the energy and power consumed (kWh and kW) directly on its backlit LCD display. It is designed for single-phase load metering and is used for direct connections of up to 63 or 80 A depending on the model).

COUNTIS E12, E14 and E16 have MID certification.

Common characteristics

- Measurement accuracy: 1 %
- Backlit LCD display (only E10/E11/E12).

Advantages

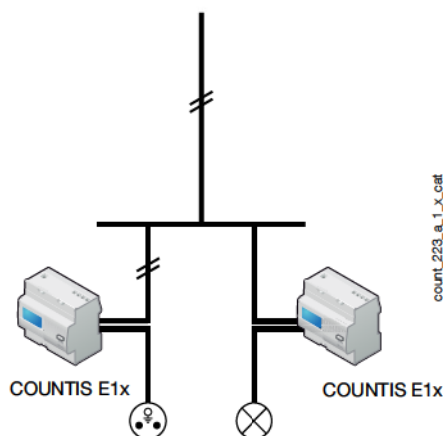
RS485 communication (MODBUS or M-BUS) or pulse output

To enable the remote reporting of energy consumption, COUNTIS E1x are provided with either a pulse output or an RS485 communication output, with MODBUS or M-BUS protocol. In addition to their reporting functions, COUNTIS E1x with RS485 can be configured remotely and enable access to multi-measurement values.

Dual-tariff metering

Two tariffs are available and can be easily accessed through the meter's display. Each tariff can be utilised to assign energy metering to different time slots (high and low demand hours) or different sources (normal/backup).

Principle diagram

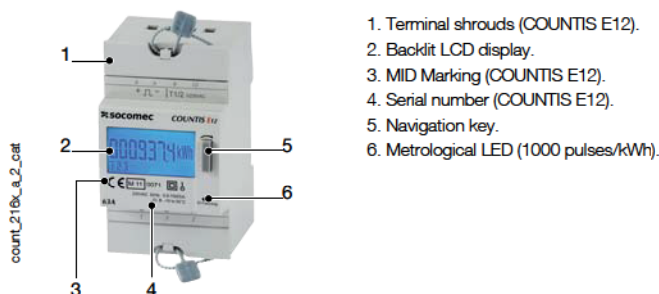


MID certified B+D module

COUNTIS E products with MID certification provide the guaranteed accuracy required for applications in which sub-billing of the electrical energy consumed is necessary. "Module B+D" certification guarantees that the design and manufacturing process of products are approved by an accredited laboratory.

Models	Key functions
E10	Pulse output
E11	Dual tariff (2 partial counters) + Pulse output
E12	Dual tariff + MID (Reset impossible) + Pulse output
E13	Dual tariff + MODBUS RS485 communication
E14	Dual tariff + MODBUS RS485 communication + MID (Reset impossible)
E15	Dual tariff + M-BUS communication
E16	Dual tariff + M-BUS communication + MID (Reset impossible)

Front panel



Electrical characteristics

Current measurement		COUNTIS E10...E12	COUNTIS E13...E16
Type		single-phase direct 80 A	single-phase direct 80 A
Input consumption		0.8 VA max.	0.8 VA max.
Startup current (I_{st})		40 mA	20 mA
Minimum current (I_{min})		0.5 A ⁽¹⁾	0.25 A
Transition current (I_{tr})		1 A ⁽²⁾	0.5 A
Reference current (I_{ref})		10 A ⁽³⁾	5 A
Permanent overload (I_{max})		63 A	80 A
Intermittent overload		1890 A max for 10 ms	2400 A max for 10 ms
Voltage measurement			
Range of measurement		230 V +/- 20 %	230 V +/- 20 %
Consumption (VA)		0.5 VA max.	0.5 VA max.
Permanent overload		280 V phase-neutral	300 V phase-neutral
Energy accuracy			
Active (according to IEC 62053-21)		Class 1	Class 1
Active (according to EN 50470)		Class B	
Power supply			
Self-supplied		yes	
Frequency		50/60 Hz	

Output (pulsed)		COUNTIS E10/E11/E12
Type of optocoupler		IEC 62053-31 Class A (20 ... 30 VDC)
Number		1
Fixed pulse weight		100 Wh
Pulse duration		100 ms
Operating conditions		
Operating temperature		-10 to 55 °C
Storage temperature		-20 to 70 °C
Relative humidity		85 %
Communication		
Link		COUNTIS E13/E14: RS485 COUNTIS E15/E16: Connection
Type		2 half duplex wires
Protocol		MODBUS® RTU
Speed		4800 ... 38400 bauds

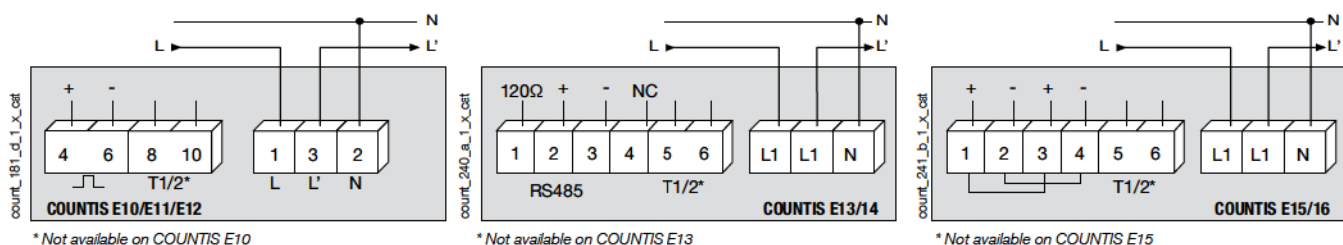
(1) $I_{min} \leq 0.5 \cdot I_{tr}$
(2) The accuracy class is guaranteed between I_{tr} and I_{max} .
(3) $I_{ref} = I_{tr}$ (base current) = $10 \cdot I_{tr}$ for direct connection COUNTIS.

Case

Dimensions		COUNTIS E10...E12	COUNTIS E13...E16
Width		54	62.5 / 64
Height		90	45
Depth		45	45

Type		COUNTIS E10...E12	COUNTIS E13...E16
Type		modular	modular
Number of modules		3	3
Dimensions W x H x D		54 x 90 x 62.5 mm	54 x 90 x 64 mm
Case degree of protection		IP 20	IP 20
Front degree of protection		IP 51	IP 51
Display type		Backlit LCD display	LCD display
Rigid cable cross-section		1.5 to 16 mm²	7 to 50 mm²
Flexible cable cross-section		1 to 16 mm²	7 to 50 mm²
Weight		170 g	170 g

Connection



References

Type	COUNTIS E10 Reference	COUNTIS E11 Reference	COUNTIS E12 Reference	COUNTIS E13 Reference	COUNTIS E14 Reference	COUNTIS E15 Reference	COUNTIS E16 Reference
direct 63 A	4850 3000						
direct 63 A - Dual tariff		4850 3001					
direct 63 A - Dual tariff and MID			4850 3002				
direct 80 A - Dual tariff + MODBUS com. via RS 485				4850 3031			
direct 80 A - Dual tariff + MODBUS com. via RS 485 - MID					4850 3032		
direct 80 A - Dual tariff + M-BUS communication						4850 3033	
direct 80 A - Dual tariff + M-BUS communication - MID							4850 3034



COUNTIS E2x

Active energy meters
three-phase - direct 63 A

new



COUNTIS E20

COUNTIS E23

The solution for

- > Industry
- > Infrastructure
- > Data centres



Strong points

- > RS485 communication (MODBUS or M-BUS) or pulse output
- > Dual-tariff metering
- > Detection of connection errors
- > MID certified B+D module

Conformity to standards

- > IEC 62053-21 class 1
- > IEC 62053-31
- > IEC 62052-11
- > EN 50470-1
- > EN 50470-3



MID certification

- > COUNTIS E comply with the MID directive, guaranteeing accuracy and reliability when metering, an indispensable function for energy billing applications.
- > COUNTIS E MID feature tamper-proof components to prevent fraud.



Services & Technical Assistance

- > Technical site audits and solution specification, commissioning, maintenance, training... Our Services & Technical Assistance experts offer you personalised support to ensure success with all your projects.

Function

The **COUNTIS E2x** is a modular active electrical energy meter displaying the energy and power consumed (kWh and kW) directly on its backlit LCD display. It is designed for three-phase load metering and is used for direct connections of up to 63 A.

Common characteristics

- Measurement accuracy: 1 %
- Backlit LCD display (only E20/E21)
- Detects connection errors

Advantages

RS485 communication (MODBUS or M-BUS) or pulse output

To enable the remote reporting of energy consumption, COUNTIS E2x are provided with either a pulse output or an RS485 communication output, with MODBUS or M-BUS protocol. In addition to their reporting functions, COUNTIS E2x with RS485 can be configured remotely and enable access to multi-measurement values.

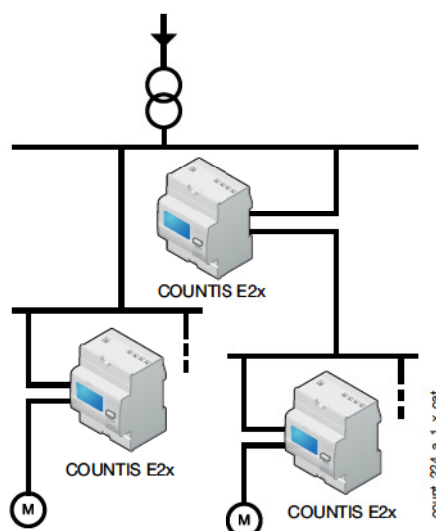
Dual-tariff metering

Two tariffs are available and can be easily accessed through the meter's display. Each tariff can be utilised to assign energy metering to different time slots (high and low demand hours) or different sources (normal/backup).

Detection of connection errors (E20/21)

The product is protected against phase/neutral inversion and detects wiring errors. This simplifies the installation and commissioning, thereby reducing associated costs, and ensures that the device operates correctly.

Principle diagram



MID certified B+D module

COUNTIS E products with MID certification provide the guaranteed accuracy required for applications in which sub-billing of the electrical energy consumed is necessary. "Module B+D" certification guarantees that the design and manufacturing process of products are approved by an accredited laboratory.

Models	Key functions
E20	Pulse output
E21	Dual tariff (2 partial counters) + Pulse output
E23	Dual tariff + MODBUS RS485 communication
E24	Dual tariff + MODBUS RS485 communication + MID (Reset impossible)
E25	Dual tariff + M-BUS communication
E26	Dual tariff + M-BUS communication + MID (Reset impossible)

Front panel



1. Backlit LCD display.
2. Navigation key.
3. Reset key.
4. Metrological LED (1000 pulses/kWh).

Electrical characteristics

Current measurement	COUNTIS E20/E21	COUNTIS E23...E26
Type	three-phase direct 63 A	three-phase direct 63 A
Input consumption	0.8 VA max. per phase	0.8 VA max. per phase
Startup current (I_{st})	40 mA	15 mA
Minimum current (I_{min})	0.5 A ⁽¹⁾	0.25 A
Transition current (I_t)	1 A ⁽²⁾	0.5 A
Reference current (I_{ref})	10 A ⁽³⁾	5 A
Permanent overload (I_{max})	63 A	63 A
Intermittent overload	1890 A max for 10 ms	1890 A max for 10 ms
Voltage measurement		
Range of measurement	230 ... 400 V +/- 20 %	230 ... 400 V +/- 20 %
Consumption (VA)	2 VA max.	2 VA max.
Permanent overload	280 V phase-neutral / 480 V phase-phase	276 V phase-neutral
Energy accuracy		
Active (according to IEC 62053-21)	Class 1	
Active (according to EN 50470)	Class B	

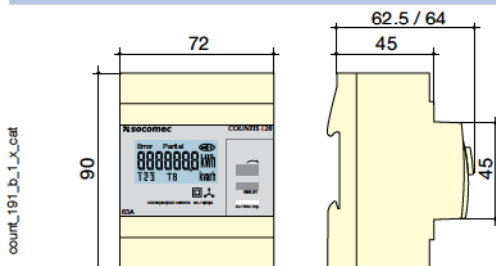
(1) $I_{min} \leq 0.5 \cdot I_t$

(2) The accuracy class is guaranteed between I_t and I_{max} .

(3) $I_{ref} = I_{B3}$ (base current) = $10 \cdot I_{B3}$ for direct connection COUNTIS.

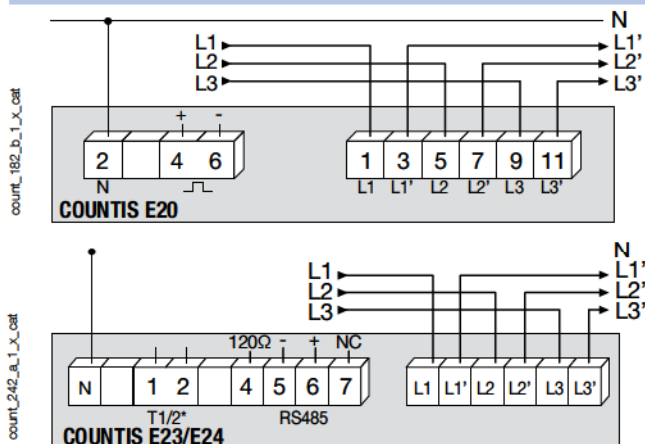
Power supply		
Self-supplied	yes	
Frequency	50 Hz	
Output (pulsed)		
Number	1	
Type of optocoupler	IEC 62053-31 Class A (20 ... 30 VDC)	
Fixed pulse weight	100 Wh	
Pulse duration	100 ms	
Operating conditions		
	E20 ... E21	E23 ... E26
Operating temperature	-10 to 55 °C	-25 to 55 °C
Storage temperature	-20 to 70 °C	-25 to 70 °C
Relative humidity	85 %	80 %
Communication		
	COUNTIS E23/E24	COUNTIS E25/E26
Link	RS485	Connection
Type	2 half duplex wires	2 half duplex wires
Protocol	MODBUS® RTU	M-BUS
Speed	1200 ... 38400 bauds	300 ... 9600 bauds

Case

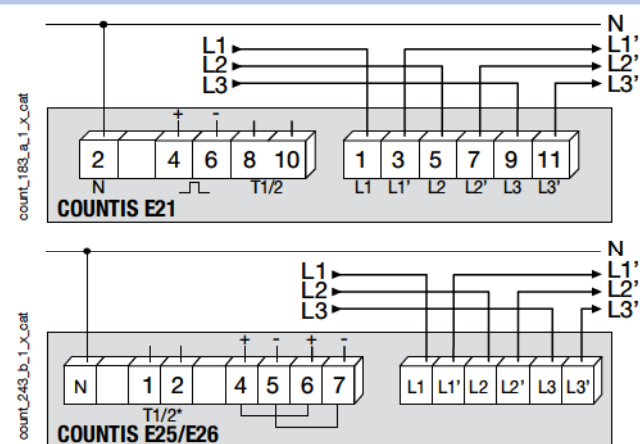


	COUNTIS E20/E21	COUNTIS E23...E26
Type	modular	modular
Number of modules	4	4
Dimensions W x H x D	72 x 90 x 62.5 mm	72 x 90 x 64 mm
Case degree of protection	IP20	IP20
Front degree of protection	IP51	IP51
Display type	Backlit LCD display	LCD display
Rigid cable cross-section	1.5 to 16 mm²	1.5 to 35 mm²
Flexible cable cross-section	1 to 16 mm²	1.5 to 35 mm²
Weight	245 g	245 g

Connection



* Not available on COUNTIS E23



* Not available on COUNTIS E25

References

Type	COUNTIS E20	COUNTIS E21	COUNTIS E23	COUNTIS E24	COUNTIS E25	COUNTIS E26
direct 63 A - three-phase	Reference 4850 3003					
direct 63 A - three-phase - Dual tariff		4850 3004				
direct 63 A - Dual tariff with MODBUS com. via RS485			4850 3035			
direct 63 A - Dual tariff with MODBUS com. via RS485 - MID				4850 3036		
direct 63 A - Dual tariff with M-BUS communication					4850 3037	
direct 63 A - Dual tariff with M-BUS communication - MID						4850 3038



COUNTIS E3x

Active energy meters

three-phase - direct 100 A



COUNTIS E32 - MID

Single-circuit metering,
measurement &
analysis

Function

The **COUNTIS E3x** is a modular active electrical energy meter displaying the energy and power consumed (kWh and kW) directly on its backlit LCD display. It is designed for three-phase load metering and is used for direct connections of up to 100 A. COUNTIS E32, E34 and E36 are MID certified.

Common characteristics

- Measurement accuracy: 1 %
- Backlit LCD display.
- Detects connection errors.

Advantages

RS485 communication (MODBUS or M-BUS) or pulse output

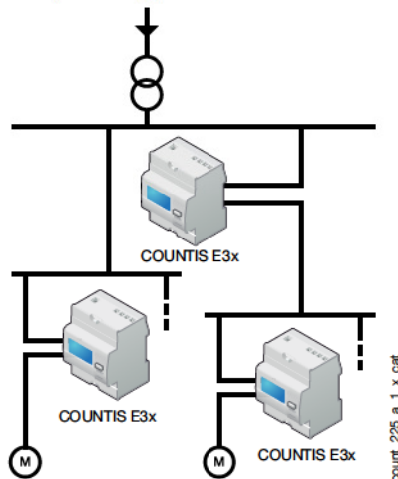
To enable the remote reporting of energy consumption, COUNTIS E3x are provided with either a pulse output or an RS485 communication output, with MODBUS or M-BUS protocol.

In addition to their reporting functions, COUNTIS E3x with RS485 can be configured remotely and enable access to multi-measurement values.

Detection of connection errors

The product is protected against phase/neutral inversion and detects wiring errors. This simplifies the installation and commissioning, thereby reducing associated costs, and ensures that the device operates correctly.

Principle diagram



MID certified B+D module

COUNTIS E products with MID certification provide the guaranteed accuracy required for applications in which sub-billing of the electrical energy consumed is necessary. "Module B+D" certification guarantees that the design and manufacturing process of products are approved by an accredited laboratory.

Bi-directional metering (available only on the E33 and E35)

This function is for metering energy production or energy consumption.

Multi-measurement and load curve

Display of electrical values (I, U, V, P, Q, S, PF) and load curve over a 7 day period via communication.

The solution for

- > Industry
- > Infrastructure
- > Data centres



Strong points

- > RS485 communication (MODBUS or M-BUS) or pulse output
- > Detection of connection errors
- > MID certified B+D module
- > Bi-directional metering
- > Multi-measurement and load curve

MID certification

- > COUNTIS E comply with the MID directive, guaranteeing accuracy and reliability when metering, an indispensable function for energy billing applications.
- > COUNTIS E MID feature tamper-proof components to prevent fraud.



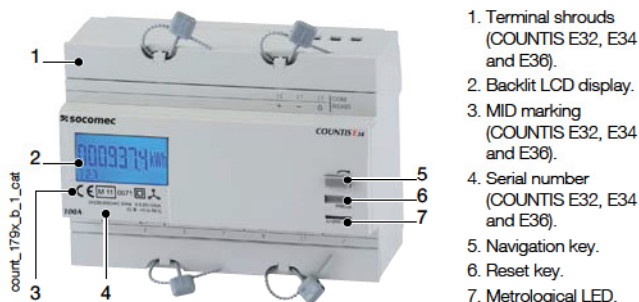
Conformity to standards

- > IEC 62053-21 class 1
- > IEC 62053-31
- > IEC 62053-11
- > EN 50470-1
- > EN 50470-3

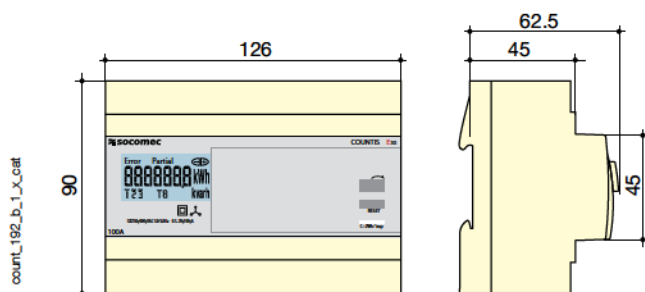


Models	Key characteristics
E30	Pulse output
E31	Dual tariff (2 partial counters) + Pulse output
E32	Dual tariff + MID (Reset impossible) + Pulse output
E33	Dual tariff + RS485 MODBUS communication
E34	Dual tariff + RS485 MODBUS communication + MID (Reset impossible)
E35	Dual tariff + M-BUS communication
E36	Dual tariff + M-BUS communication + MID (Reset impossible)

Front panel



Case



Type	modular
Number of modules	7
Dimensions W x H x D	126 x 90 x 62.5 mm
Case degree of protection	IP20
Front degree of protection	IP51
Display type	backlit LCD display
Rigid cable cross-section	2.5 to 35 mm ²
Flexible cable cross-section	2.5 to 35 mm ²
Weight	490 g

Electrical characteristics

Current measurement

Type	three-phase - direct 100 A
Input consumption	0.5 VA max. per phase
Startup current (I_{st})	80 mA
Minimum current (I_{min})	0.5 A ⁽¹⁾
Transition current (I_{tr})	2 A ⁽²⁾
Reference current (I_{ref})	20 A ⁽³⁾
Permanent overload (I_{max})	100 A
Intermittent overload	3000 A max. for 10 ms

Voltage measurement

Range of measurement	230 ... 400 V +/- 20 %
Consumption (VA)	2
Permanent overload	280 V phase-neutral / 480 V phase-phase

Energy accuracy

Active (according to IEC 62053-21)	Class 1
Active (according to EN 50470)	Class B

Power supply

Self-supplied	yes
Frequency	50 / 60 Hz

Output (pulsed) (E30/E31/E32)

Number	1
Type of optocoupler	IEC 62053-31 class A (20 ... 30 VDC)
Fixed pulse weight	100 Wh
Pulse duration	100 ms

Operating conditions

Operating temperature	-10 to 55 °C
Storage temperature	-20 to 70 °C
Relative humidity	85 %

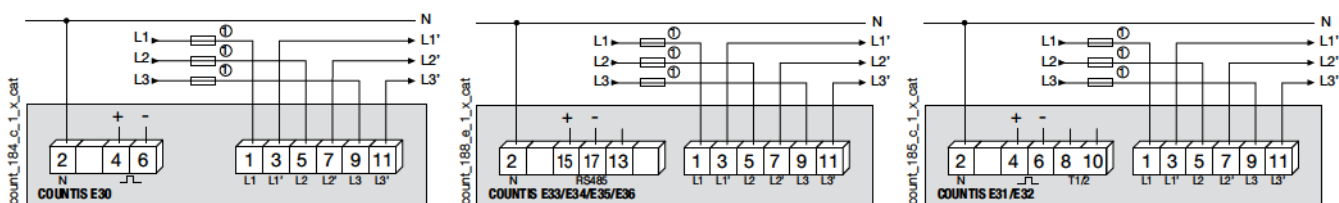
Communication	E33/34	E35/E36
Link	RS485	Connection
Type	2 half duplex wires	2 half duplex wires
Protocol	MODBUS RTU	MBUS
Speed	4800 ... 38 400 bauds	300 ... 9600 bauds

(1) $I_{min} \leq 0.5 \cdot I_{tr}$

(2) The accuracy class is guaranteed between I_{tr} and I_{max} .

(3) $I_{ref} = I_{tr}$ (base current) = $10 \cdot I_{tr}$ for direct connection COUNTIS.

Connection



References

Type	COUNTIS E30 Reference	COUNTIS E31 Reference	COUNTIS E32 Reference	COUNTIS E33 Reference	COUNTIS E34 Reference	COUNTIS E35 Reference	COUNTIS E36 Reference
100 A direct	4850 3005						
100 A direct - Dual tariff		4850 3006					
100 A direct - Dual tariff - MID			4850 3007				
100 A direct - Dual tariff with RS485 MODBUS communication ⁽¹⁾				4850 3012			
100 A direct - Dual tariff with RS485 MODBUS communication - MID ⁽¹⁾					4850 3013		
100 A direct - Dual tariff with M-BUS communication ⁽¹⁾						4850 3025	
100 A direct - Dual tariff with M-BUS communication - MID ⁽¹⁾							4850 3026
Management software for COUNTIS	See page 142						

(1) 4 tariffs through RS485 communication.



COUNTIS E4x

Active energy meters

three-phase - via CT up to 6000 A

Single-circuit metering,
measurement &
analysis



COUNTIS E44 - MID - (3000 A MID - 6000 A not MID)

Function

The **COUNTIS E4x** is a modular active and reactive electrical energy meter displaying the energies and active power consumed (kWh, kVAh and kW) directly on its backlit LCD display. It is designed for three-phase load metering with connection via CT and is suitable for applications of up to 6000 A (3000 A for MID).

COUNTIS E42, E44 and E46 are MID certified.

Common characteristics

- Measurement accuracy: 1 % / 0,5%(MID).
- Backlit LCD display.
- Detects connection errors.

Advantages

RS485 communication (MODBUS or M-BUS) or pulse output

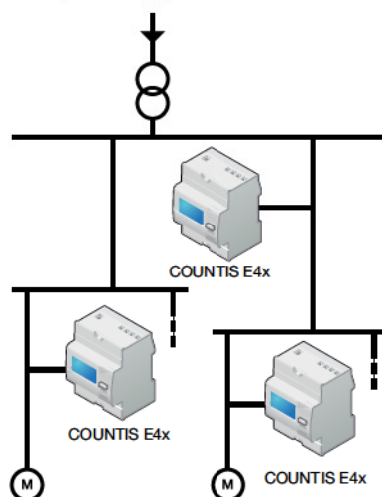
To enable the remote reporting of energy consumption, COUNTIS E4x are provided with either a pulse output or an RS485 communication output, with MODBUS or M-BUS protocol.

In addition to their reporting functions, COUNTIS E4x with RS485 can be configured remotely and enable access to multi-measurement values.

Detection of connection errors

The product is protected against phase/neutral inversion and detects wiring errors. This simplifies the installation and commissioning, thereby reducing associated costs, and ensures that the device operates correctly.

Principle diagram



MID certified B+D module

COUNTIS E products with MID certification provide the guaranteed accuracy required for applications in which sub-billing of the electrical energy consumed is necessary. "Module B+D" certification guarantees that the design and manufacturing process of products are approved by an accredited laboratory.

Bi-directional metering (available on E43 and E45)

This function is for metering energy production or energy consumption.

Multi-measurement and load curve

Display of electrical values (I, U, V, P, Q, S, PF) and load curve over a 7 day period via communication.

The solution for

- > Industry
- > Infrastructure
- > Data centres



Strong points

- > RS485 communication (MODBUS or M-BUS) or pulse output
- > Detection of connection errors
- > MID certified B+D module
- > Bi-directional metering
- > Multi-measurement and load curve

MID certification

- > COUNTIS E comply with the MID directive, guaranteeing accuracy and reliability when metering, an indispensable function for energy billing applications.
- > COUNTIS E MID feature tamper-proof components to prevent fraud.



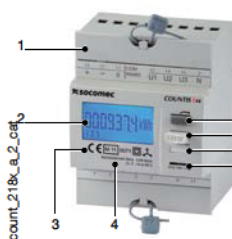
Conformity to standards

- > IEC 62053-21 class 1
- > IEC 62053-23 class 2
- > IEC 62053-31
- > IEC 62053-11
- > EN 50470-1
- > EN 50470-3



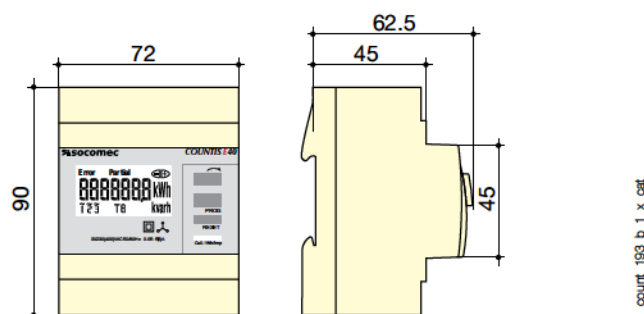
Models	Key functions
E40	Pulse output
E41	Dual tariff (2 partial counters) + Pulse output
E42	Dual tariff + MID (Reset impossible) + Pulse output
E43	Dual tariff + RS485 MODBUS communication
E44	Dual tariff + RS485 MODBUS communication + MID (Reset impossible)
E45	Dual tariff + M-BUS communication
E46	Dual tariff + M-BUS communication + MID (Reset impossible)

Front panel



1. Terminal shrouds (COUNTIS E42, E44 and E46).
2. Backlit LCD display.
3. MID marking (COUNTIS E42, E44 and E46).
4. Serial number (COUNTIS E42, E44 and E46).
5. Navigation key.
6. Reset key.
7. Metrological LED.
8. Programming key.

Case



Type	modular
Number of modules	4
Dimensions W x H x D	73 x 90 x 62.5 mm
Case degree of protection	IP20
Front degree of protection	IP51
Display type	backlit LCD display
Rigid cable cross-section	1.5 to 10 mm ²
Flexible cable cross-section	1 to 6 mm ²
Weight	230 g

Electrical characteristics

Current measurement

Type	three-phase on CT/5A up to 6000 A (3000 A for MID products)
Input consumption	0.2 VA per phase
Startup current (I_{st})	10 mA
Minimum current (I_{min})	50 mA ⁽¹⁾
Transition current (I_{tr})	250 mA ⁽²⁾
Reference current (I_{ref})	5 A ⁽³⁾
Permanent overload (I_{max})	6 A
Intermittent overload	120 A for 0.5 s

Voltage measurement

Range of measurement	230 ... 400 V +/- 20 %
Consumption (VA)	2 VA
Permanent overload	280 V phase-neutral / 480 V phase-phase

Energy accuracy

Active (according to IEC 62053-21)	Class 0,5s
Active (according to EN 50470)	Class C (E42/44/E46)

Power supply

Self-supplied	yes
Frequency	50 / 60 Hz

Output (pulsed) (E40/E41/E42)

Number	1
Type of optocoupler	IEC 62053-31 Class A (20 ... 30 VDC)
Pulse weight	100 Wh, 1 kWh, 10 kWh, 100 kWh
Pulse duration	50 ms, 100 ms, 200 ms, 400 ms, 800 ms, 1000 ms, 1500 ms

Operating conditions

Operating temperature	-10 to 55 °C
Storage temperature	-20 to 70 °C
Relative humidity	85 %

Communication	E43/E44	E45/E46
Link	RS485	Connection
Type	2 half duplex wires	2 half duplex wires
Protocol	MODBUS RTU	M-BUS
Speed	4800 ... 38400 bauds	300 ... 9600 bauds

(1) $I_{min} \leq 0.5 \cdot I_{tr}$

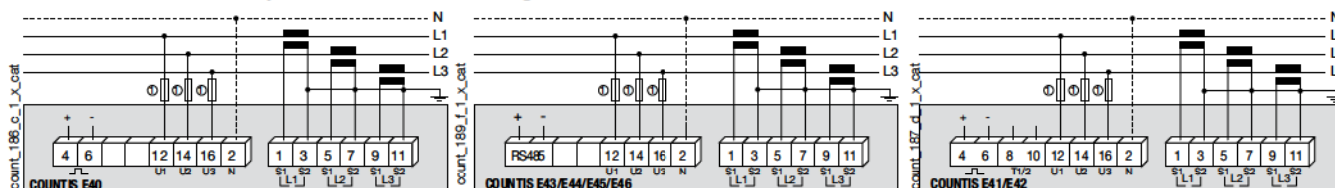
(2) The accuracy class is guaranteed between I_{tr} and I_{max} .

(3) $I_{ref} = I_{b0}$ (base current) = $10 \cdot I_{b0}$ for direct connection COUNTIS.

Connection

Recommendation:

- For IT earthing systems, it is recommended that the CT secondary is not connected to earth.
- When disconnecting the COUNTIS, the secondary of each current transformer must be short-circuited. This operation can be carried out automatically by a SOCOMEC PT1, an accessory which is included in this catalogue. Please consult us.



1. Fuses 0.5 A gG / 0.5 A class CC.

References

Type	COUNTIS E40	COUNTIS E41	COUNTIS E42	COUNTIS E43	COUNTIS E44	COUNTIS E45	COUNTIS E46
Via CT	Reference 4850 3008	Reference 4850 3009	Reference 4850 3015	Reference 4850 3017	Reference 4850 3014	Reference 4850 3027	Reference 4850 3028
Via CT - Dual tariff							
Via CT - Dual tariff - MID							
Via CT - Dual tariff with RS485 MODBUS com. ⁽¹⁾							
Via CT - Dual tariff with RS485 MODBUS com. - MID ⁽¹⁾							
Via CT - Dual tariff with M-BUS com. ⁽¹⁾							
Via CT - Dual tariff with M-BUS com. - MID ⁽¹⁾							
Management software for COUNTIS	See page 142						

(1) 4 tariffs through RS485 communication.



COUNTIS E5x

Active energy meters

three-phase - via CT up to 6000 A

Single-circuit metering,
measurement &
analysis



COUNTIS E53 up to 6000 A via CT

Function

The **COUNTIS E5x** is a panel mounted active and reactive electrical energy meter displaying energy and multi-measurement values directly on its large backlit LCD display. It is designed for utilisation on three-phase or single-phase networks with connection via CT and is suitable for applications of up to 6000 A. The CT ratio can be configured by the user via the keypad and the display, or via RS485 MODBUS communication (E53).

Common characteristics

- Measurement accuracy: 0.5%.
- Large backlit LCD display.
- Direct access to multi-measurement and metering values.
- Detects connection errors.

Advantages

RS485 MODBUS communication or pulse output

To enable the remote reporting of energy consumption, COUNTIS E5x are provided with either a pulse output (E50) or an RS485 MODBUS communication output (E53). Remote configuration of the Countis E53 is possible via RS485 MODBUS communication.

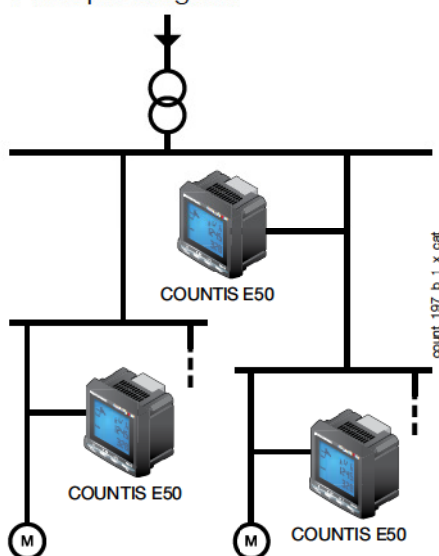
Detection of connection errors

The COUNTIS E5x is protected against phase/neutral inversion and has an integrated test function which can be utilised to detect wiring errors. This function enables CT installation errors to be corrected without having to remake connections. This simplifies the installation and commissioning, thereby reducing associated costs, and ensures that the device operates correctly.

Large backlit LCD display

Thanks to its large backlit LCD display and its multiple viewing screens with direct pushbutton access, COUNTIS E5x provide clear readings and are easy to use.

Principle diagram



They directly display a number of total/partial metering and multi-measurement values :
+/- kWh, +/- kvarh, kVAh, I, U, V, S, PF, etc.

Direct display of multi-measurement and metering values

Multi-measurement

- Currents: instantaneous: I1, I2, I3
- Voltages: instantaneous: V1, V2, V3, U12, U23, U31
- Power:
 - instantaneous: 3P, 3Q, 3S
 - maximum average: 3P
- Power factor:
 - instantaneous: 3PF

Metering

- Active energy: +/- kWh
- Reactive energy: +/- kvarh
- Apparent energy: kVAh

The solution for

- > Industry
- > Infrastructure
- > Data centres



Strong points

- > RS485 MODBUS communication or pulse output
- > Large backlit LCD display
- > Detection of connection errors
- > Direct display of multi-measurement and metering values

Conformity to standards

- > IEC 62053-23 class 2
- > IEC 62053-22 class 0.5S
- > IEC 61557-12



Management software

- > To get the most effective use from your Socomec measurement and metering devices, we offer a range of dedicated software tools. See page 142.

models	Key characteristics
E50	Pulse output
E53	RS485 MODBUS communication

References

Type	COUNTIS E50 Reference	COUNTIS E53 Reference
Pulse output	4850 3010	
RS485 MODBUS communication ⁽¹⁾		4850 3011
Management software for COUNTIS	See page 142	

(1) 4 tariffs through RS485 communication.

Electrical characteristics

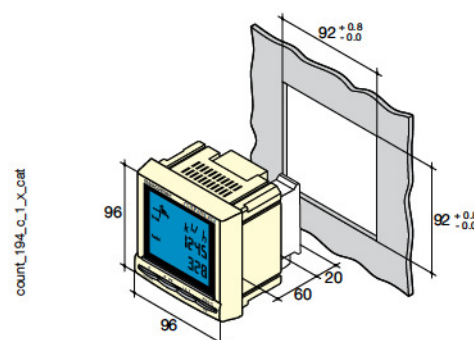
Current measurement	
Type	three-phase on CT/5A up to 6000 A
Input consumption	< 0.6 VA
Startup current (I_{st})	40 mA
Minimum current (I_{min})	50 mA ⁽¹⁾
Transition current (I_{tr})	250 mA ⁽²⁾
Reference current (I_{ref})	5 A ⁽³⁾
Permanent overload (I_{max})	6 A
Intermittent overload	50 A for 1 s
Voltage measurement	
Range of measurement	86 ... 520 VAC
Input consumption	< 0.1 VA
Permanent overload	800 VAC
Energy accuracy	
Reactive (according to IEC 62053-23)	Class 2
Active (according to IEC 62053-22)	Class 0.5S
Power supply	
Self-supplied	no
Auxiliary power supply U_s	110 ... 400 VAC / 125 ... 350 VDC $\pm 10\%$
Frequency	45 ... 65 Hz
Output (pulsed)	
Number	1
Type	100 VDC - 0.5 A - 10 VA
Max. number of operations	$\leq 10^8$
Operating conditions	
Operating temperature	-10 ... 55 °C
Storage temperature	-20 ... 85 °C
Relative humidity	95 %
Communication	
Link	RS485
Type	2 ... 3 half duplex wires
Protocol	MODBUS RTU
MODBUS [®] speed	1400 ... 38400 bauds

Front panel



1. Backlit LCD display
2. Energy display and test function key
3. Power and power factor display key
4. Current and voltage display key
5. Programming mode access key

Case



Type	Panel mounting
Dimensions W x H x D	96 x 96 x 80 mm
Case degree of protection	IP30
Front degree of protection	IP52
Display type	backlit LCD display
Voltage and current connection cross-section	0.5 ... 2.5 mm ²
Current connection cross-section	1.5 ... 6 mm ²
Weight	370 g

(1) $I_{min} \leq 0.5 \cdot I_{tr}$

(2) The accuracy class is guaranteed between I_{tr} and I_{max} .

(3) $I_{ref} = I_{tr}$ (base current) = $10 \cdot I_{tr}$ for direct connection COUNTIS.

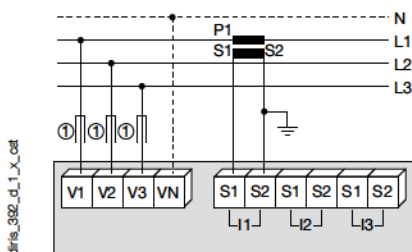
Connection

Recommendation:

- For IT earthing systems, it is recommended that the CT secondary is not connected to earth.

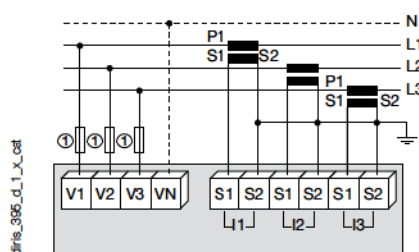
- When disconnecting the COUNTIS, the secondary of each current transformer must be short-circuited. This operation can be carried out automatically by a SOCOMEC PTI, an accessory which is included in this catalogue. Please consult us.

Low voltage balanced network 3/4 wires with 1 CT

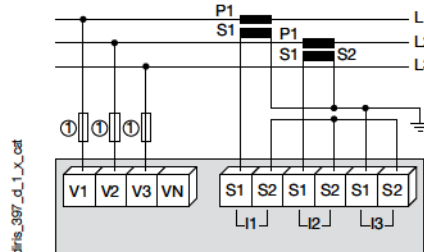


Use of 1 CT reduces by 0.5% the accuracy of the phases, the current of which is worked out by vector calculation.

Low voltage unbalanced network 3/4 wires with 3 CTs



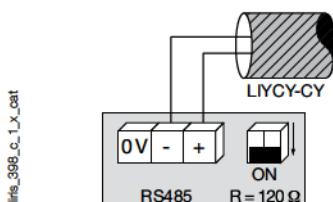
3 wires with 2 CTs



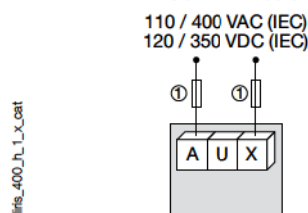
Use of 2 CT reduces by 0.5% the accuracy of the phases, the current of which is worked out by vector calculation.

Additional information

Communication via RS485 link



AC & DC auxiliary power supply



1. Fuses 0.5 A gG / 0.5 A class CC.



COUNTIS E63

Active energy meters

3 x single-phase - Direct 100 A

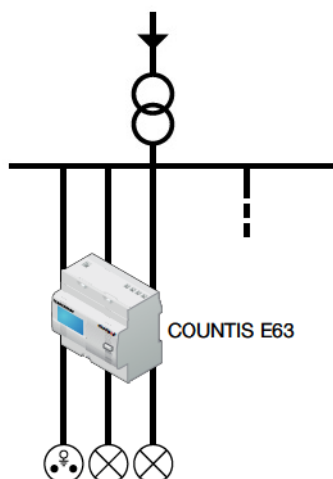


COUNTIS E63

Function

The **COUNTIS E63** is a modular active electrical energy meter which provides metering for three single-phase loads, with direct connection of up to 100 A. It directly displays the total and partial energy and power (kWh and kW) consumed by each single-phase load.

Principle diagram



count_205_a_1_x_cat

Advantages

Compact

Due to the integration of three single-phase meters in the same case (7 modules wide), the COUNTIS E63 provides significant space-saving.

Advanced multi-measurement functions

Advanced multi-measurement functions are available via RS485 MODBUS communication:

- Instantaneous currents: I1, I2, I3
- Instantaneous voltages: V1, V2, V3
- Instantaneous power: 3P, 3S
- Instantaneous power factors: 3PF
- Load curves for each of the 3 phases:
Viewing of average positive active power consumption over a programmable period.

Detection of connection errors

The product is protected against phase/neutral inversion and detects wiring errors. This simplifies the installation and commissioning, thereby reducing associated costs, and ensures that the device operates correctly.

The solution for

- > Data centres
- > Infrastructure



Strong points

- > Compact
- > Advanced multi-measurement functions
- > Detection of connection errors

Conformity to standards

- > IEC 62053-21 class 1
- > IEC 62053-31
- > IEC 62053-11



Management software

- > To get the most effective use from your Socomec measurement and metering devices, we offer a range of dedicated software tools. See page 142.

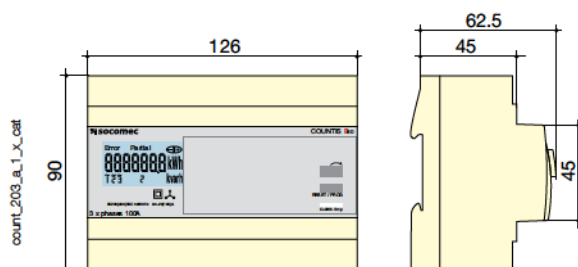
Front panel



Electrical characteristics

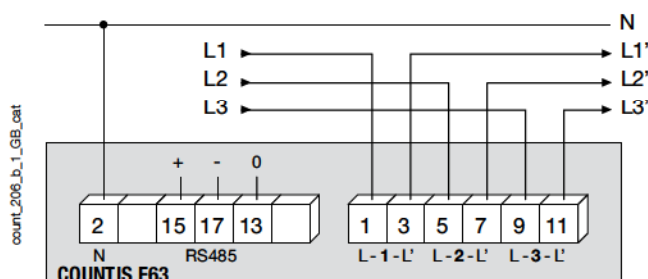
Current measurement		Power supply	
Type	3 x single-phase - direct 100 A	Self-supplied	yes
Input consumption	0.5 VA max. per phase	Frequency	50 / 60 Hz
Startup current (I_{st})	80 mA	Operating conditions	
Minimum current (I_{min})	0.5 A	Operating temperature	-10 to 55 °C
Transition current (I_{tr})	2 A	Storage temperature	-20 to 70 °C
Reference current (I_{ref})	20 A	Relative humidity	95 %
Permanent overload (I_{max})	100 A	Communication	
Intermittent overload	3000 A max. for 10 ms	Link	RS485
Voltage measurement		Type	2 ... 3 half duplex wires
Range of measurement	230 ... 400 V +/- 20 %	Protocol	MODBUS RTU
Consumption on inrush (VA)	2	MODBUS® speed	4800 ... 38400 bauds
Permanent overload	280 V phase-neutral / 480 V phase-phase		
Energy accuracy			
Active (according to IEC 62053-21)	Class 1		

Case



Type	modular
Number of modules	7
Dimensions W x H x D	126 x 90 x 62.5 mm
Case degree of protection	IP20
Front degree of protection	IP51
Display type	backlit LCD display
Rigid cable cross-section	2.5 to 35 mm²
Flexible cable cross-section	2.5 to 35 mm²
Weight	490 g

Connection



References

Type	COUNTIS E63 Reference
3 x single phase - 100 A direct with RS485 MODBUS communication	4850 3016



COUNTIS ECix

Multi-utility pulse concentrator

Single-circuit metering,
measurement &
analysis



COUNTIS ECi3

The solution for

- > Data centres
- > Industry
- > Infrastructure



Strong points

- > Up to 7 multi-utility meters and 2 analogue sensors
- > Load curves
- > RS485 MODBUS communication
- > Improved customisation

Management software

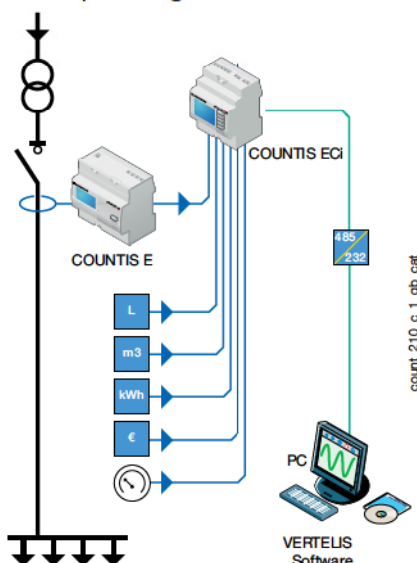
- > To get the most effective use from your Socomec measurement and metering devices, we offer a range of dedicated software tools. See page 142.

Function

The **COUNTIS ECix** is a multi-utility pulse concentrator which communicates via an RS485 link using MODBUS protocol.

It enables pulses from water, gas, compressed air, electricity meters and, for the COUNTIS ECi3, the output of analogue sensors (light, temperature, wind etc.) to be registered and stored. All data, ie. total and partial meters and load curves (available for all logical and analogue inputs) can be centralised via RS485 communication using MODBUS protocol.

Principle diagram



Advantages

Up to 7 multi-utility meters and 2 analogue sensors

- 7 logical inputs + 2 analogue inputs.
- Total, partial and programmable metering (day, week, month, year).

Load curves

Load curves are available for each of the 7 logical inputs.

A history of average values are available for the 2 analogue inputs (ECi3).

RS485 MODBUS communication

- Centralisation and transmission of pulse and analogue data to a supervision station.
- Remote configuration of COUNTIS ECi device.

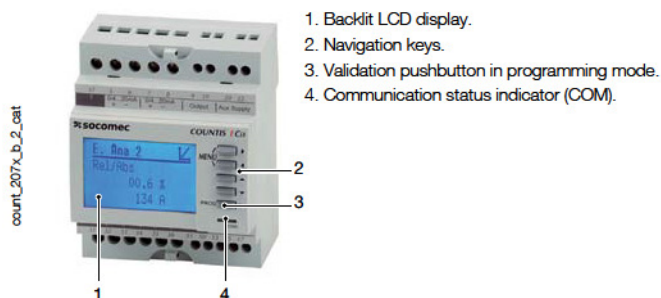
Improved customisation

- Selection of the measuring unit: kWh, m³, liters.
- Selection of the currency unit: €, K€, £, \$.

Values can be displayed in the unit of your choice and energy costs can be directly calculated.

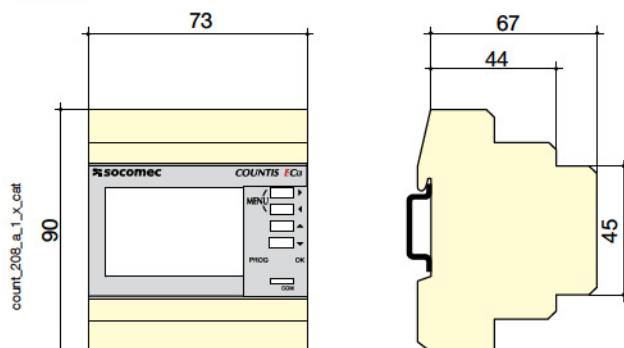
Models	Key characteristics
ECi2	7 insulated inputs
ECi3	7 insulated inputs + 2 analogue inputs.

Front panel



1. Backlit LCD display.
2. Navigation keys.
3. Validation pushbutton in programming mode.
4. Communication status indicator (COM).

Case



Type	modular
Number of modules	4
Dimensions W x H x D	73 x 90 x 67 mm
Case degree of protection	IP20
Front degree of protection	IP51
Display type	backlit LCD display
Terminal blocks type	fixed
Rigid cable cross-section	1... 10 mm ²
Flexible cable cross-section	0.5... 6 mm ²
Weight	215 g

Characteristics

Auxiliary power supply

Self-supplied	no
Alternating voltage	110 / 400 VAC
Direct voltage	120 / 300 VDC
Tolerance	± 10 %
Frequency	45 / 65 Hz
Consumption	5 VA
Insulation voltage	3.5 kV

Communication

Link	RS485
Type	2 ... 3 half duplex wires
Protocol	MODBUS RTU
MODBUS® speed	9600... 38400 bauds

Inputs

Number	7
Control voltage (integrated)	10...30 VDC
Minimum signal width	10 ms
Maximum signal width	2 s
Minimum duration between 2 pulses	30 ms
Edge triggering	rising

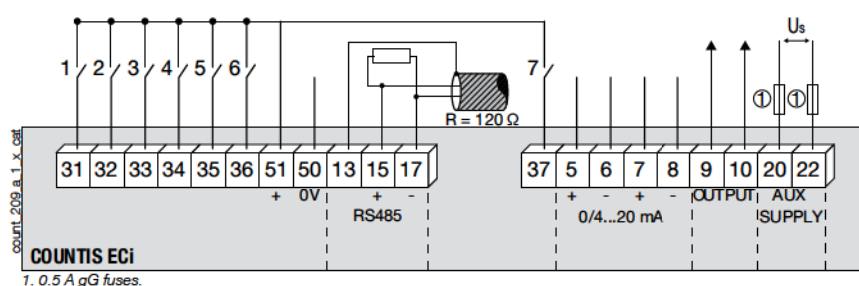
Analogue inputs (ECi3)

Number	2
Current	25 mA
Accuracy	0.5 %
Response time	500 ms
Input resistance	200 Ω
Consumption	0.1 VA

Operating conditions

Operating temperature	-10... +55 °C
Storage temperature	-20... +70 °C
Relative humidity	95 %

Connection



- 31 : logical input n°1.
32 : logical input n°2.
33 : logical input n°3.
34 : logical input n°4.
35 : logical input n°5.
36 : logical input n°6.
37 : logical input n°7.

13-15-17: RS485 link.

5-6: Analogue input n°1.
7-8: Analogue input n°2.
9-10: output.
20-22: power supply
U=110...400 VAC ± 10 %.

51-50: Inputs internal/
external power supply.

References

Auxiliary power supply U_s	COUNTIS ECi2 Reference	COUNTIS ECi3 Reference
230 / 400 VAC	4853 0000	4853 0001
230 / 400 VAC + 2 analogue inputs		
Description of accessories	Reference	Reference
Panel mounting kit	192J 8015	192J 8015
Management software for COUNTIS	See page 142	