



# COUNTIS E5x

## Active energy meters

three-phase - via CT up to 6000 A

Metering, monitoring  
& power quality



COUNTIS E53 up to 6000 A via CT

### 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 464.

### 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.

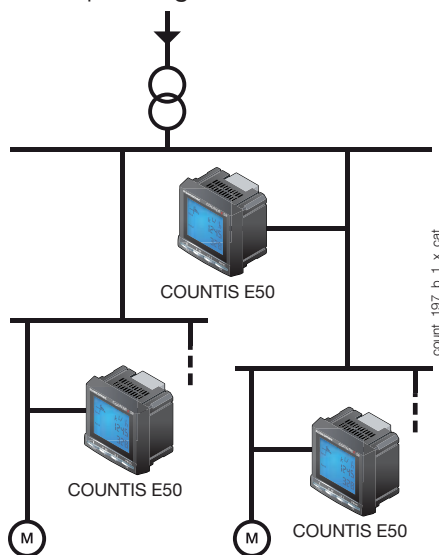
#### Detection of connection errors

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: U1, U2, U3, 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

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 <sup>(1)</sup>		4850 3011
Management software for COUNTIS	See page 464	

(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 <sup>(1)</sup>
Transition current ( $I_{tr}$ )	250 mA <sup>(2)</sup>
Reference current ( $I_{ref}$ )	5 A <sup>(3)</sup>
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 +/-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 %

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

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

(3)  $I_{ref} = I_{D0}$  (base current) =  $10 \cdot I_{tr}$  for direct connection COUNTIS.

## Connection

### Recommendation:

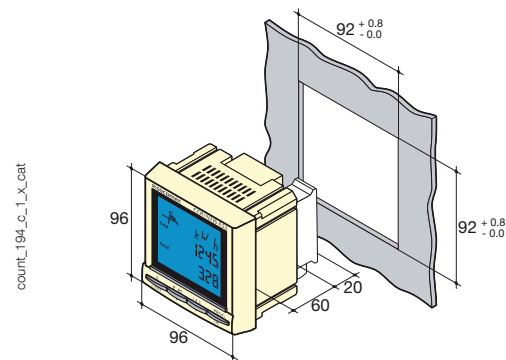
- For IT earthing systems, it is recommended that the CT secondary is not connected to earth.

## Front panel



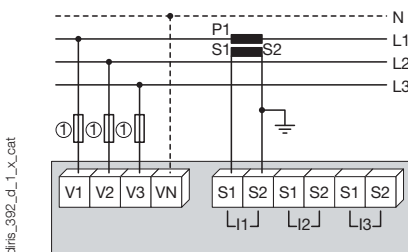
1. Backlit LCD display
2. Energy display and test function key
3. Power and power factor display key
4. Current and voltage display key
5. Programming mode access key

## Case



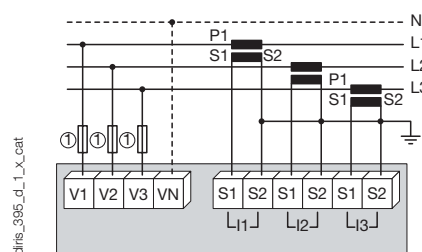
Type	Panel mounting
Dimensions W x H x D	96 x 96 x 80 mm
Case degree of protection	IP30
Front degree of protection	IP52
Display type	backlit LCD display
Voltage and current connection cross-section	0.5 ... 2.5 mm <sup>2</sup>
Current connection cross-section	1.5 ... 6 mm <sup>2</sup>
Weight	370 g

### Low voltage balanced network 3/4 wires with 1 CT

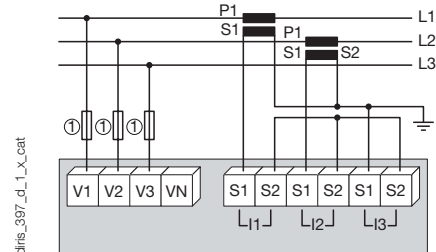


Use of 1 CT reduces by 0.5% the accuracy of the phases, the current of which is worked out by vector calculation.

### Low voltage unbalanced network 3/4 wires with 3 CTs



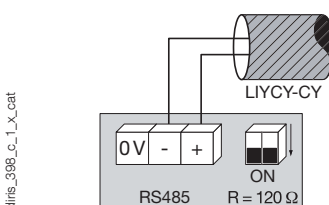
### 3 wires with 2 CTs



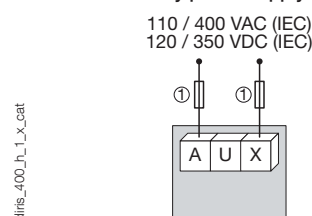
Use of 2 CT reduces by 0.5% the accuracy of the phases, the current of which is worked out by vector calculation.

### Additional information

#### Communication via RS485 link



#### AC & DC auxiliary power supply



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