

Features



- Measurement of alternating current quantities in three-phase networks
- AC loads up to 240 V / 420 V, 16 A per phase
- LCD Graphic display with background lighting
- Menu driven configuration capabilities
- Analogue output
- 3 Limit contacts
- Serial interface RS232 (optional RS422/RS485)

Display

Display (only CLT313)

LCD Graphic display (b/w), 128 * 64 pixel
 8 rows * 21 characters, contrast adjustable
 EL-background lighting
 6 LED for mains supply, status of limit contacts, error indication and pulse of energy


Operating elements

4 short-stroke keys for configuration (Soft keys)

Measurement functions

Method of measurement	Voltage directly, current measured by internal hall effect – current transformer
Measuring rate	0,2, 0,5 or 1,0 second programmable
Sampling rate	ca. 4000 Hz
Input signals	Voltage: 3 x (0 ... 240V) Current 3 x (0 ... 16 A)
Accuracy	U, I: $\leq \pm 1,0\%$ of Range other measurements: $\leq \pm 1,5\%$ of display reading ± 5 digit
No load recognition	At current $< 0,15$ A display of current and power and at voltage $U < 2,0$ V display of voltage and power of the respective phase will be set to "zero"
Voltage-/ current factor	Current transformation (CT) from 1.00 ... 99999.99 adjustable Voltage transformation (VT) from 1.00 ... 99999.99 adjustable
EEPROM-memory	Setups, energy values and Min./Max.-values remain stored after switch off.

Measuring range and resolution

Operating modes		Range ^①	Display ^②	Resolution ^②
Active power phase 1/2/3	P ₁₂₃	0 ... ± 3,840 kW	0,00 ... ± 99,99 W	0,01 W
Induct. power phase 1/2/3	S ₁₂₃	0 ... 3,840 kVA	± 100,0 ... ± 999,9 W	0,1 W
React. power phase 1/2/3	Q ₁₂₃	0 ... ± 3,840 kvar	± 1,000 ... ± 9,999 kW	1 W
Total active power P ₁ + P ₂ + P ₃	P	0 ... ± 11,52 kW	± 10,00 ... ± 99,99 kW ± 100,0 ... ± 999,9 kW	10 W 100 W
Total inductive power S ₁ + S ₂ + S ₃	S	0 ... 11,52 kVA	± 1,000 ... ± 9,999 M/G/T W ± 10,00 ... ± 99,99 M/G/T W	1 k/M/G W 10 k/M/G W
Total reactive power Q ₁ + Q ₂ + Q ₃	Q	0 ... ± 11,52 kvar	± 100,0 ... ± 999,9 M/G/T W ± 1000 ... ± 9999 TW also VA, var	100 k/M/G W 1 TW also VA, var
Energy phase 1/2/3	W _{P123}		0,000 ... ± 9,999 kWh	1 Wh
Ind. energy phase 1/2/3	W _{S123}		± 10,00 ... ± 99,99 kWh	10 Wh
React. Energy phase 1/2/3	W _{Q123}		± 100,0 ... ± 999,9 kWh	100 Wh
Total active energy W _{P1} + W _{P2} + W _{P3}	W _P		± 1,000 ... ± 9,999 M/G/T Wh ± 10,00 ... ± 99,99 M/G/T Wh	1 k/M/G Wh 10 k/M/G Wh
Total inductive energy W _{S1} + W _{S2} + W _{S3}	W _S		± 100,0 ... ± 999,9 M/G/T Wh	100 k/M/G Wh
Total reactive energy W _{Q1} + W _{Q2} + W _{Q3}	W _Q		± 1000 ... ± 9999 TWh also VA, var	1 TWh also VA, var
Recorded total power	W _{P+}		+ 999,9 k/M/G/T Wh	1 Wh ...
Delivered total power	W _{P-}		- 999,9 k/M/G/T Wh	100 k/M/G Wh
Inductive total reactive power	W _{Q+}		+ 999,9 k/M/G/T varh	1 varh ...
Capacitive total reactive power	W _{Q-}		- 999,9 k/M/G/T varh	100 k/M/G varh
Phase voltage		0,0 ... 240,0 V _{AC}	0,0 V _{AC} ... 24,00 MV _{AC}	0,1 V _{AC} ... 10 kV _{AC}
Phase 1 - N	U ₁			
Phase 2 - N	U ₂			
Phase 3 - N	U ₃			
Average voltage	U _∅			
Phase-to-phase voltage		0,0 ... 420,0 V _{AC}	0,0 V _{AC} ... 42,00 MV _{AC}	0,1 V _{AC} ... 10 kV _{AC}
Phase 1 – Phase 2	U ₁₂			
Phase 2 – Phase 3	U ₂₃			
Phase 3 – Phase 1	U ₃₁			
Average voltage	U _∅			
Current phase 1	I ₁	0,15 ... 16,0 A _{AC}	0,0 A _{AC} ... 320,0 kA _{AC}	0,01 A _{AC} ... 100 A _{AC}
Current phase 2	I ₂			
Current phase 3	I ₃			
Total current	I			
Power factor phase 1/2/3	PF ₁ PF ₂ PF ₃	-1,0 ... 1,0	-1,000 ... 1,000	0,001
Duration of test	T	0 ... 99999 h	0,000 ... 99999 h	0,001 ... 1 h
Mains frequency	f ₁	25 ... 250 Hz	25,00 ... 250,0 Hz	0,01 / 0,1 Hz
Phase 1/2/3	f ₂ f ₃			
Measurement quadrant			1 ... 4	
Rotating field			L ₁ L ₂ L ₃ L ₁ L ₃ L ₂  bzw.	

^① Measurement without current and voltage transformer

^② Measurement with current and/or voltage transformer

Voltage supply	
Supply voltage	100 ... 240 V _{AC} , 50 ... 60 Hz, max. 0,15A

Output signals	
Analogue output	Galvanic isolated according to the adjusted operating mode BA = phase voltage, current, active-, inductive-, reactive power, power factor or frequency. Output: 0 ... 10 V < 5 mA und 0 (4) ... 20 mA, Scaling range 0 ... 20000 of the selected operating mode
Limit contacts	Three potential-free relay contacts, load: 250 V _{AC} max. 6 A delay time depending on programmed measuring rate, set point, hysteresis and circuit logical programmable freely
Pulse output	Proportional of total power (consumption) pulses will be generated via serial interface RS232 (signal TxD) and displayed at the pulse-LED duration / pause = 100 / 100 ms, max. 5 Hz, high active, scaling: 1 Wh / pulse
Interface	RS232 bi directional (optional RS422/RS485), galvanic isolated via opto coupler, ASCII-characters with 9600, 14400, 19200, 28800 resp. 38400 baud, 1 start bit, 8 data bit, 1 stop bit, without parity Block mode: automatic transmission of all measurements Inquiry mode: adjustment and inquiry of the parameter / measurements

Dimensions	
Size	Approx. 100 x 75 x 110 [mm] (B x H x L)
Material	Plastic housing for clicking on DIN rail (DIN EN 50 022, DIN 46 277)
Weight	ca. 400 g

Environment	
Ambient temperature	0 ... 50 °C, new dew allowed
Protection	Terminal block IP 20, enclosure IP 20 (DIN 40050, IEC 144)
Protective class	II (prot. Isolation)

Connection	
Interconnection techn.	Terminal screw max. 2,5 mm ² , continuous load max. 20 A 4-wire connection (artificial neutral point)

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Changes may occur without notice!