

Power Analyser

UMG 20 CM

Residual current monitoring (RCM)

Technical Data



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Installation

Position of installation

The UMG 20 CM can be installed in switch cabinets or in the small installation distributors according to DIN 43880.

It can be installed in any mounting position.

Mounting

It is assembled on a 35 mm top-hat rail in accordance with DIN EN 60715. The device is fastened on the rear using a top-hat rail clip.

Installation

Supply voltage

The UMG 20 CM requires supply voltage to operate. The type and amount of the supply voltage required is specified on the rating plate.

Device dimensions

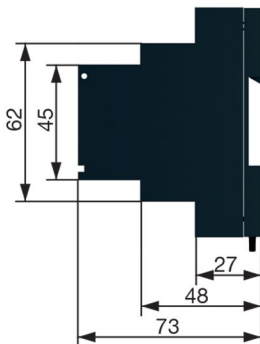
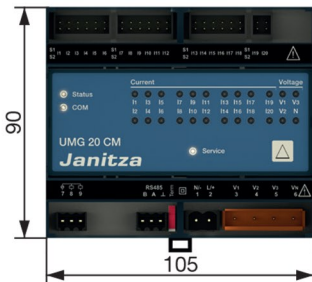


Fig. device dimensions



Dimensions provided in mm

Labels

A rating plate with the manufacturer, serial number and item number is attached to the device:



Display and control elements

General meaning of the LED colours and signals

Colour	Meaning
Green	Normal mode: no irregularities on the system or device
Yellow	Warning message: Check necessary, system and device are ready for operation again
Red	Triggering message: Function of system or device can be adversely affected

Meaning of the LEDs

LED	Colour	Signal	Meaning
Status	Green	Lights	Device is operational
		Flashing 1 Hz	Start process of the device is running – measurement values are not yet available
	Red	Lights	Device fault
	Off	-	Device has no supply voltage or is defective
COM	Green	Brief flashing	Modbus® request is successfully answered. If requests are continuously sent, the light changes from briefly flashing to solid.
	Red	Brief flashing	Invalid Modbus® request (CRC, unknown function). If requests are continuously sent, the light changes from briefly flashing to solid.
COM	Red	Lights	Violation of the Modbus® protocol: Request with too many bytes received OR two requests are received consecutively without having issued an answer
	Off	-	No Modbus® activity
Service	Off	-	Normal mode
	Yellow	Lights	Device address input active
	Green	Brief flashing	Input confirmation for button code
Voltage V1..V3	Red	Flashing 1 Hz	Measuring amplifier fault
		Flashing 4 Hz	Measuring range exceeded
		Lights	Star voltage too high
		Lights with breaks	Star voltage is too low
	Green	Lights with breaks	Star voltage OK, outer conductor voltage too low. Example: Lights V1 and V2 are green with breaks, the U2-U1 voltage is missing.
		Lights	Star voltage and outer conductor voltage OK
Voltage N	Off	-	Normal mode
	Yellow	Lights	Earth connection of the RS485 interface not connected
Current 1...20	Red	Flashing 1 Hz	Transformer connection fault or measuring amplifier fault
		Flashing 4 Hz	Measuring range exceeded
		Lights	Overcurrent triggering message
		Lights with breaks	Undercurrent triggering message
	Yellow	Lights	Overcurrent warning message
		Lights with breaks	Undercurrent warning message
	Green	Lights	Address currently selected for entering the device address
		Lights with breaks *	Current is in the target range. Undercurrent warning threshold < current < overcurrent warning threshold The lighting time approximately signals the level of the flowing current.
	Off	-	Current < 1/9 overcurrent warning threshold AND undercurrent warning threshold = 0 (= no lower limit value set)

* Lighting duration increases with increasing current levels

Technical data

UMG 20 CM technical data

General information	
Item no.:	14.01.625
Type of measurement	Continuous real effective value measurement up to the 63rd harmonic
Operating voltage	90 ... 276 V AC and DC
Measurement in quadrants	4
TN, TT, IT networks	TN, TT, IT
Measurement in single-phase/multi-phase networks	1 ph, 2 ph, 3 ph and up to 20 times 1 ph

Measured voltage input	
Overvoltage category	300 V CAT III
Measured range, voltage L-N, AC (without transformer)	10 ... 300 Vrms
Measured range, voltage L-L, AC (without transformer)	10 ... 480 Vrms
Resolution	0.1 V
Impedance	1.3 M Ω / phase
Frequency measuring range	45 ... 65 Hz
Sampling frequency	20 kHz / phase

Measured current input	
Evaluation range of the operating current	0 ... 63 A (600 A) *
Evaluation range of the residual current	10 ... 1000 mA
Resolution	1 mA
Cut-off frequency	3.2 kHz
Relative deviation	+/- 1%

*Caution: Available with firmware 8.0 and higher

Monitoring function	
Response function	0...650 s
Reset delay	0...650 s
Triggering the delay	10 ms

Digital inputs and outputs	
Number of digital outputs	2
Switching voltage	max. 60 V DC, 30 V AC
Maximum current	350 mA
Switch-on resistance	2 Ω
Maximum line length	up to 30 m unscreened, from 30 m screened

Mechanical properties	
Weight	270 g
Device dimensions in mm (H x W x D)	90 x 105 x approx. 73
Protection class per EN 60529	IP20
Assembly per IEC EN 60999-1 / DIN EN 50022	35-mm DIN top-hat rail

Environmental conditions	
Temperature range	Operation: K55 (-10 °C ... +55 °C)
Relative humidity	Operation: 5 ... 95% (at 25 °C)
Operating altitude	0 ... 2000 m above sea level
Degree of pollution	2
Mounting position	any

Electromagnetic compatibility	
Electromagnetic compatibility of equipment	Directive 2004/108/EC
Electrical equipment for use within certain voltage limits	Directive 2006/95/EC

Equipment safety	
Safety requirements for electrical equipment for measurement, control, and laboratory use	
Part 1: General requirements	IEC/EN 61010-1
Part 2-030: Particular requirements for testing and measuring circuits	IEC/EN 61010-2-030

Immunity from interference	
Class A: Industrial area	IEC/EN 61326-1
Electrostatic discharge	IEC/EN 61000-4-2
Voltage drops	IEC/EN 61000-4-11

Emissions	
Class B: Residential area	IEC/EN 61326-1
RFI field strength 30 ... 1000 MHz	IEC/CISPR11/EN 55011
Radiated interference voltage 0.15 ... 30 MHz	IEC/CISPR11/EN 55011

Safety	
Europe	CE labelling

Function parameters

Function	Symbol	Precision class / relative measuring deviation	Measurement range
Total effective power	P	1 (EN61557-12)	-655 kW .. +655 kW ¹⁾
Effective power for outer conductor p	Pp	1 (EN61557-12)	-32.7 to +32.7 kW ¹⁾
Total reactive power	QA, QV	-	-
Reactive power for outer conductor p	Qp	1 (EN61557-12)	0 to 32.7 kvar ¹⁾
Total apparent power	SA, SV	-	-

Function	Symbol	Precision class / relative measuring deviation	Measurement range
Apparent power for outer conductor p	Sp	1 (EN61557-12)	0 to 32.7 kVA ¹⁾
Total active energy	Ea	1 (EN61557-12)	-42.9 .. +42.9 GWh ¹⁾
Effective energy for outer conductor p	Ep	1 (EN61557-12)	-2.29 .. +2.29 GWh ¹⁾²⁾
Total reactive power	ErA, ErV	-	-
Total apparent energy	EapA, EapV	-	-
Frequency	f	0.05 (EN61557-12)	45 .. 65 Hz
Phase current	I	1 (EN61557-12)	0 .. 63 Arms ¹⁾
measured neutral current	IN	1 (EN61557-12)	0 .. 63 Arms ¹⁾
Residual current	IDiff	+/-2 %	2 .. 1000 mArms
Voltage	UL-N (Vp)	1 (EN61557-12)	10 .. 300 Vrms
Voltage	UL-L (UpG)	1 (EN61557-12)	10 .. 520 Vrms
Total power factor	PfA, PfV	-	-
Power factor for outer conductor p	PfP	1 (EN61557-12)	-1 .. +1
Short-term/long-term flicker	Pst, Plt	-	-
Voltage drops	Udip	-	-
Voltage increases	Uswl	-	-
Transient overvoltage	Utr	-	-
Voltage interruption	Unit	-	-
Voltage unbalance	Unba	-	-
Voltage unbalance	Unb	-	-
Voltage harmonics	Uh/U	+/-2 %	0 .. 100%, to 1.8 kHz ³⁾
THD of the voltage	THDu	-	-
THD of the voltage	THD-Ru	+/-2 %	0 .. 100%
Current harmonics	Ih/I	+/-2 %	0 .. 100%, to 1.8 kHz ³⁾
THD of the current	THDi	-	-
THD of the current	THD-Ri	+/-2 %	0 .. 100%
Mains signal voltage	Msv	-	-

1) The information applies to operation with a current transformer load combination with a measuring range of 63 A.

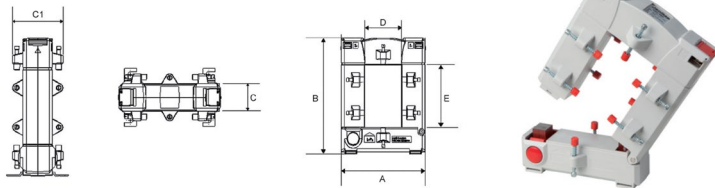
2) When the maximum values are reached, the display jumps to the opposite end of the measuring range.

3) Larger measurement deviations must be expected above the specified frequency.

With 3.2 kHz, up to +/-20% can occur.

Technical data for the usable current transformer

Divisible residual current transformer type A



Type	Transformer ratio	Max. primary residual current [mA] *	Dimension [mm]					Item no.
			A	B	C / C1	D	E	
KBU 23D	600/1	1000	93	106	34/58	20	30	15.03.400
KBU 58D	600/1	1800	125	152	34/58	50	80	15.03.401
KBU 812D	600/1	1800	155	198	34/58	80	120	15.03.402

* When using the analogue inputs of the UMG 20 CM

Connection example

