GOSSEN METRAWATT

WZ11 and WZ12
Clip-On Transformers and Sensors for Alternating Current

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Features

- Pointed clip jaws for easier access with dense cable arrays
- Safety in accordance with IEC 61010-1 and IEC 61010-2-032
- Minimal transformation error
- Suitable for use with power meters thanks to minimal phase angle error (exception: WZ12A)
- Compact, handy design
- Permanently connected safety cables
- Current or voltage output



WZ11


WZ12

Applications

WZ11 and WZ12 clip-on current transformers and sensors have been developed as accessories for multimeters, power meters, power analyzers, recorders and data loggers. They are used for electrically isolated measurement of alternating current within a broad range, without interrupting the current conducting cable.

Description

The basic model WZ12A includes a soft-iron core and is used for general current measurement starting at 15 A. It demonstrates traditional, cost-effective current transformer design with a transformation ratio of 1000:1.

All other WZ12 series clip-on current sensors are equipped with a top quality metal core which reduces eddy-current loss, and allows for accurate measuring results even with low primary current.

Damping diodes integrated into the measurement output of the current transformers (with current output) protect the secondary side against overvoltages which occur if the measuring circuit is interrupted, or if the measuring instrument has not been connected.

This function is performed by internal load resistors for the current sensor models (with voltage output).

Thanks to their compact design, these current clips easily fit into any service case or accessory compartment. Depending on type, they are suitable for the measurement of motor current, for measurements at distributor terminals (WZ12A) or for the measurement of minimal to intermediate current (WZ12B) at machinery and current consumption at electronic devices, or for the measurement of residual current as of 1 mA (WZ12C, Clip 0100S with selectable measuring ranges), right on up to measurements in systems with up to 240 A.

Rugged mechanical construction and all requirements set forth by the latest international safety standards are taken into consideration in the design concept of the clip-on current transformers.

WZ11 current clips are physically somewhat larger than WZ12 series devices, but they offer a larger spectrum of current measuring ranges and a higher voltage category.

Applicable Regulations and Standards

IEC 61010-1/EN 61010-1/ VDE 0411-1	Safety requirements for electrical equipment for measurement, control and laboratory use
EN 60529 VDE 0470, Part 1	Test instruments and test procedures, protection provided by enclosures (IP code)
DIN EN 61326 VDE 0843 Part 20	Electrical equipment for measurement, control and laboratory use – EMC requirements

Characteristic Values

Type	WZ11A	WZ11B	
Measuring Range	1 … 200 A~	0.5 … 20 A~	5 … 200 A~
Allowable Overload	240 A~ *	240 A~ *	
Frequency Range (Hz)	48…65…400	30 … 48 … 65 … 500	
Output Load R_b	< 1 Ω	> 1 MΩ	
Intrinsic Error ± (% reading + 0.5 A)	0.5…10 A: 3%	0.1 A…20 A: 1%+50 mV	0.5…10 A: 3%
	10…40 A: 2.5%		10…40 A: 2.5%
	40…100 A: 2%	—	40…100 A: 2%
	100…240 A: 1%	—	100…240 A: 1%
Phase Angle Error under Reference Conditions	0.5…10 A: —	0.5…10 A: —	0.5…10 A: —
	10…40 A: 5°	10…20 A: 5°	10…40 A: 5°
	40…100 A: 3°	—	40…100 A: 3°
	100…240 A: 2.5°	—	100…240 A: 2.5°
Transformation Ratio	1000:1	1 mV/mA	1 mV/A

* Max. 10 min followed by 30 min pause

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Type		WZ12A	WZ12B	WZ12C	WZ12D	WZ12E	WZ12F	Clip 0100S
Article Number		Z219A	Z219B	Z219C	Z219D	Z823D	Z823E	Z501E
Measuring Range		15…180 A~	10 mA...100 A~	1 mA…15 A~ 1 A…150 A~	30 mA...150 A~	0.2…150 A~	20 mA…15 A~	1 mA…15 A~ 1 A…150 A~
Frequency Range		45…65…400 Hz	45…65… 500 Hz	45…65… 400 Hz	45…65… 500 Hz	30…45…65…500 Hz	30…45…65…500 Hz	45…65…500 Hz
Transformation Ratio		1000 : 1	100 mV/mA	1 mV/mA 1 mV/A	1000 : 1	10 mV/A	100 mV/A	1 mV/mA 1mV/A
Output Load		< 5 Ω	> 1 MΩ	> 1 MΩ > 10 kΩ	< 50 Ω	> 10 kΩ	11…13 kΩ	> 1 MΩ > 10 kΩ
Intrinsic Error under Reference Conditions		±3% of reading	±1.5% rdg. ±1 mA	±3% rdg. ±0.15 mA ±2% rdg. ±0.1 A	±2.5% rdg. ±1 mA	±2% rdg. ±10 mA	±2% rdg. ±1 mA	±3% rdg. ±0.15 mA ±2% rdg. ±0.1 A
Influence Error: Frequency $f_{min}…f_{max}$		±3% of reading	±1.5% rdg. ±1 mA	±3% rdg. ±0.15 mA ±2% rdg. ±0.1 A	±2.5% rdg. ±1 mA	±2% rdg. ±10 mA	±2% rdg. ±1 mA	±3% rdg. ±0.15 mA ±2% rdg. ±0.1 A
Influence Error: Temp. △/10 K (typ.)		±3% of reading	±1.5% of reading	±3% of reading	±2.5% of reading	±2% of reading	±2% of reading	±3% of reading
Typical Phase Angle Error	**45…65 Hz** **$f_{min}…f_{max}$**	undefined	3° 10°	undefined 3° 10°	3° 10°	2° 10°	2° 15°	undefined 3° 10°
Max. Overload	**continuous** **int. < 1s**	360 A 900 A	200 A 500 A	300 A 750 A	300 A 750 A	300 A 750 A	30 A 75 A	300 A 750 A
Open-Circuit Voltage		max. 15 V [1]	max. 15 V	max. 27 V	max. 27 V [1]	max. 27 V	max. 27 V	max. 27 V

[1] Clip not operated continuously at idle

Key: rdg. = of reading

Reference Conditions

Frequency	45 … 65 Hz
Waveshape	sine
Reference Temp.	21 … 25 °C
Relative Humidity	40 … 60%
Output Load	specified range

Electrical Safety

Type	WZ11		WZ12/Clip 0100S	
Safety Class	II per IEC 61010-1			
Overvoltage Category	II	III	II	III
Operating Voltage	1000 V	600 V	600 V	300 V
Contamination Level	2			
Test Voltage	5.55 kV 1 min		3.7 kV 1 min	

Ambient Conditions

Operating Temp.	–10 °C … +40 °C
Storage Temperature	–20 °C … +70 °C

Mechanical Design

Type	WZ11	WZ12	Clip 0100S
Dimensions (mm)	50 x 30 x 135	40 x 26 x 120	
Clip Jaw Opening	20 mm diameter	15 mm diameter	
Weight	approx. 180 gr.	approx. 170 gr.	
Connector Cable	600 V, Cat. II	600 V, Cat. II	
Length	approx. 150 cm	approx. 120 cm	
Plug	2 banana safety plugs		1 jack plug, 3.5 mm
Protection per IEC 529	IP 40		

Extract from Table on the Meaning of IP Codes

IP XY (1st digit X)	Protection against foreign object entry	IP XY (2nd digit Y)	Protection against the penetration of water
4	≥ 1.0 mm ∅	0	not protected

Standard Equipment

1 current transformer / sensor
1 permanently connected safety cable with connector plug
1 operating instructions

Order Information

Description	Type	Article Number
Clip-on current transformer, 1 … 200 A, 1 mA/A	WZ11A	Z208A
Clip-on current sensor, adjustable 0.5 … 20 A / … 200 A, 1 mV/mA / 1 mV/A	WZ11B	Z208B
Clip-on current transformer, 15 A … 180 A, 1 mA/A	WZ12A	Z219A
Clip-on current sensor, 10 mA … 100 A, 100 mV/A	WZ12B	Z219B
Clip-on current sensor, adjustable 1 mA … 15 A, 1 mV/mA and 1 A … 150 A, 1 mV/A	WZ12C	Z219C
Clip-on current transformer, 30 mA … 150 A, 1 mA/A	WZ12D	Z219D
Clip-on current sensor, 0.2 …150 A~, 10 mV/A	WZ12E	Z823D
Clip-on current sensor, 20 mA …15 A~, 100 mV/A	WZ12F	Z823E
Clip-on current sensor, adjustable 1 mA … 15 A, 1 mV/mA and 1 A … 150 A, 1 mV/A	Clip 0100S	Z501E

Notes concerning the selection of transformers and sensors:

All of the transformers and sensors listed above can be utilized universally for the measurement of alternating current, as long as the interconnected measuring instrument or recorder is equipped with suitable input measuring ranges and input impedance.

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