

GTZ 4121

Current Transformer for the Monitoring of the Heating Current of Compact Controllers

3-349-389-03
2/12.10

Input

- 3 or 4 bushing-type transformers, diameter of opening: 8.8 mm
- 0 ... 40 A AC, 0 ... 20 A AC, 0 ... 10 A AC, 0 ... 5 A AC
- Power consumption: 0.25 W per transformer

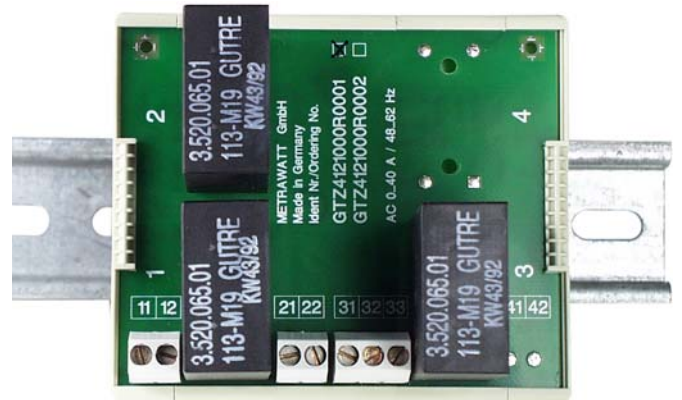
Output

- 0 ... 10 V DC, short-circuit-proof
- System behaviour
- Accuracy: 5% of measured value
- Output voltage $U = 0.2345 \cdot I - 0.015$ (U in V, I in A)

Application

The current transformer is used for the acquisition of the heating currents in a heating current monitor.

The current transformer transforms up to 4 AC currents into 1 DC voltage. In a 3-phase current system, the 3 conductor currents are transformed into one summation voltage (by adequate wiring).



Description

The conductors carrying the primary currents I1 to I4 are directly run through the bushing-type transformers 1 to 4 (see Figure 1). After that, the input currents are transformed into a DC voltage U1 to U4 in each one rectifier 5 to 8.

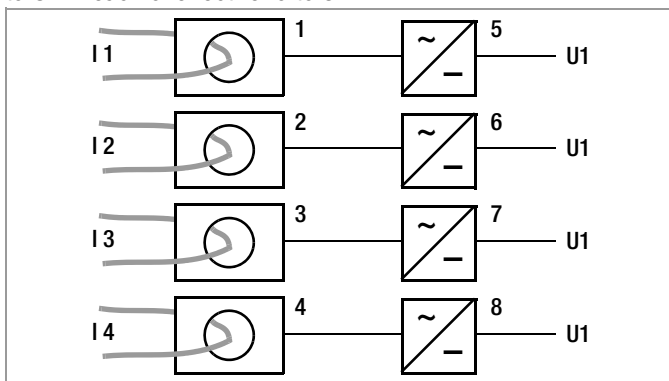


Figure 1 Block circuit diagram

Characteristic Values

Input

Number of inputs 3 or 4 bushing-type transformers
Input quantity AC current
Nominal range of use of the input quantity

Primary windings around the bushing-type transformer	1	2	4	8
Range of input quantity	0 ... 40 A	0 ... 20 A	0 ... 10 A	0 ... 5 A

Output

Output quantity DC voltage
Range of output quantity DC 0 ... 10 V
Overload limit continuously short-circuit-proof

System Behaviour

Accuracy Error limit: 5% of measured value
Reproducibility Deviation: 1% of measured value
Output voltage $U = 0.2345 \cdot I - 0.015$
Output voltage U in V
Input current I in A

Applicable Regulations and Standards

IEC 61010-1/ DIN EN 61010-1/ VDE 0411 Part1	Safety requirements for electrical equipment for measurement, control and laboratory use
DIN EN 61326-1 VDE 0843-20-1	Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 1: General requirements
DIN EN 60529 DIN VDE 0470-1	Test instruments and test procedures – degrees of protection provided by enclosures (IP code)

Influencing Quantities and Influence Errors

Influencing Quantity	Nominal Range of Use	Maximum Influence Error
Ambient temperature	0 ... 23 °C ... + 50 °C	1%
Humidity	< 75% relative humidity	1%
Frequency of input quantity	48 Hz ... 62 Hz	1%

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Reference Conditions

Reference Quantity	Reference Condition
Ambient temperature	23 °C ± 2 K
Input quantity	1 ... 40 A
Frequency of input quantity	50 Hz ± 1%
Load resistance	30 kΩ

Electrical Safety

Safety class	II
Measuring category	CAT III
Contamination degree	2
Electrical isolation	Input to output, by the isolation of the primary current lines
Test voltage	Output to output AC 500 V

Ambient conditions

Relative humidity (annual average), no condensation	≤ 75 %
Ambient temperature	
- Nominal range of use	0 °C ... + 50 °C
- Functional range	0 °C ... + 50 °C
- Storage range	- 25 °C ... + 70 °C

Mechanical Design

Type	Surface-mounting case for installation to top-hat rail or G-type rail
Bushing-type transformer	Diameter of opening: ≥ 8.8 mm
Mounting position	any
Mounting height	63 mm
Weight	0.35 kg
Protection	IP 00

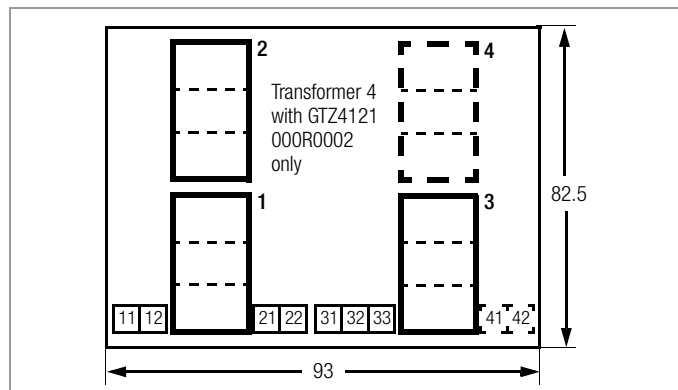


Figure 2 Dimensions

Electrical Connection

Connection element Screw terminals
 Cross section of the leads ≤ 1.5 mm²

Output (Figure 3/4)	Connection GTZ4121000R0001	
	... R0001 (3 Transformers)	... R0002 (4 Transformers)
1	-	11
	+	12
2	-	21
	+	22
3	-	31
	+	32
	+	33 ¹⁾
4	-	41
	+	42

¹⁾ Output for 3-phase current connection (see Figure 3)

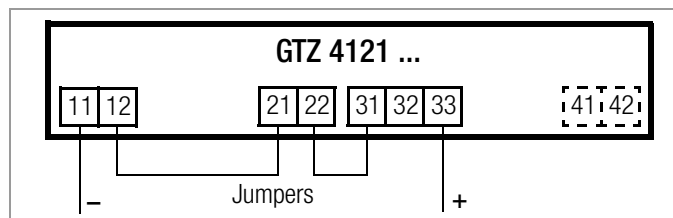


Figure 3 Connection of the outputs for 3-phase current systems (transformers 1 ... 3)

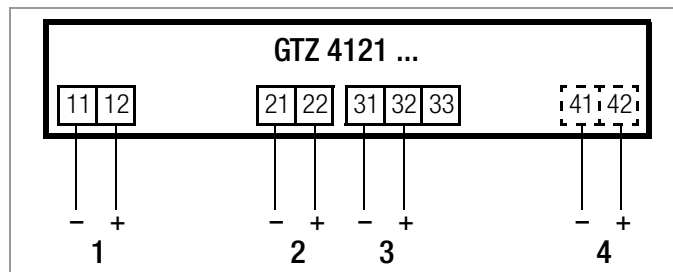


Figure 4 Connection of the outputs for AC systems

Order Information

Designation	Article Number
Current transformer for top-hat rail mounting for the acquisition of heating current	
with 3 inputs (1 3-phase current consumer or 3 AC current consumers)	GTZ4121000R0001
with 4 inputs (1 3-phase current consumer + 1 AC current consumer or 4 AC current consumers)	GTZ4121000R0002

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