EN

ALTERNATE VOLTAGE TRANSMITTER Z202-H

GENERAL SPECIFICATIONS

The Z202-H module measures the alternate voltage input value and converts it into a current or voltage signal output.
The instrument stands out for its precision class and its high input impedance. These are its general features:

- Alternate voltage input 10..490 Vac in 41 preset ranges, which can be selected by terminals and DIP-switches.
- Each range can be set and extended to the next one, and it's possible to calibrate the instrument on any full-scale in the continuous range of 0…500 Vac, without either over-setting the fixed ranges, or opening the instrument (multi-rev trimmer accessible from front panel).
- Output in current (0/4..20 mA active/passive) or in voltage (0/1..5 V or 0/2..10 V).
- High precision class: 0.3.
- Wide range of frequency input (10 Hz..1 kHz).
- Extremely short response time (< 100 ms).
- 4000 Vac galvanic insulation between voltage input, power supply and output ports.
- Power ON indication by the panel LED.
- Possibility to use the instrument as a microammeter (500 µAfs R=5 Ω).

TECHNICAL SPECIFICATIONS

Power Supply Specifications

Power Supply:	85..265 Vdc or ac from 50 to 400Hz; Insulation : 4000 Vac towards input / output ports.
Consumption:	<1,5 W at full load; < 15 mA @ 230 V ac.

Input Specifications

Voltage Input:	Alternate Voltage (1) 0..500 Vac; see the range selection table.
Input Impedance:	2000 Ω/V.
Frequency:	10 Hz..1 kHz.
Insulation:	4000 Vac towards power supply / output ports.
Overvoltage measurement Class:	CAT III 300 V, for installation on 3-phase lines up to 500 Vac f-f, 300 Vac f-n.

Output Specifications

Current Ouput:	Active or passive: 0..20 mA or 4..20 mA selectable by internal Jumper and DIP-switch. Maximum load resistance : 600 Ω. Protection : 400 W/ms. Available Voltage: < 21 V. Maximum applicable external voltage (if passive output): 28 V. Insulation : 4000 Vac towards power supply / input ports.

(1): A medium voltage value (Vcc) up to 10% of the measurement is tolerated; higher values decrease precision and can cause damages.

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Voltage Output :	Continuos Voltage: 0..5 V, 1..5 V, 0..10 V or 2..10 V selectable by internal Jumper and DIP-switch. Minumum load resistance: 2500 Ω. Protection : 400 W/ms. Insulation : 4000 Vac towards power supply / input ports.

Precision Specifications

Precision @ 25ºC (2)			***CMRR***	***Other* (3)**
45..60 Hz (4)	0.2 % om	0.05 % ofs	>80 dB	< 0.1 % ds
35..400 Hz (4)	0.25 % om	0.1 % ots	>60 dB	< 0.1 % ds
10..1000 Hz (4)	0.3 % om	0.15 % ots	>55 dB	< 0.1 % ds
Thermal Stability :	150 ppm/K.			

Other Specifications

Response Time::	For a stepped variation: max 100 ms from 10 to 90 %.
Operating Conditions:	Temperature: -10..65°C, humidy 30..95 % @ 40°C not-condensing. Group III. Storage Temperature : -20..85 °C. Altitude: up to 2000 m a.s.l.
LED signalling:	Presence of power supply (green).
Protection degree:	IP20.
Weight, Dimensions:	140 g, 100 x 112 x 17.5 mm.
Standards CE	EN60688/1997 + A1 + A2. EN61000-6-4/2002-10 (electromagnetic emission, industrial environment). EN61000-6-2/2006-10 (electromagnetic immunity, industrial environment). EN61010-1/2001 (safety).

(2): These acronyms apply: om = of measurement, ots = of the scale.
(3): A medium voltage value (Vcc) up to 10% of the measurement is tolerated; higher values decrease precision and can cause damages. This error component considers these precision degradations or eventual electromagnetic disturbances (EMI).
(4): The precision values are indicated for a sinusoidal signal with distortion of < 1%, on current reading 4..20 mA; errors on the other output scales are increased as follows: by 0.1 % for zero offset (0 mA, 0 V), by 0.1 % on fs 5 V and by 0.15 % on fs 10 V.
The precision indicated in the table can, on request, be provided on another specified scale.
Remember that the instrument indicates the average adjusted value in relation to the RMS value.

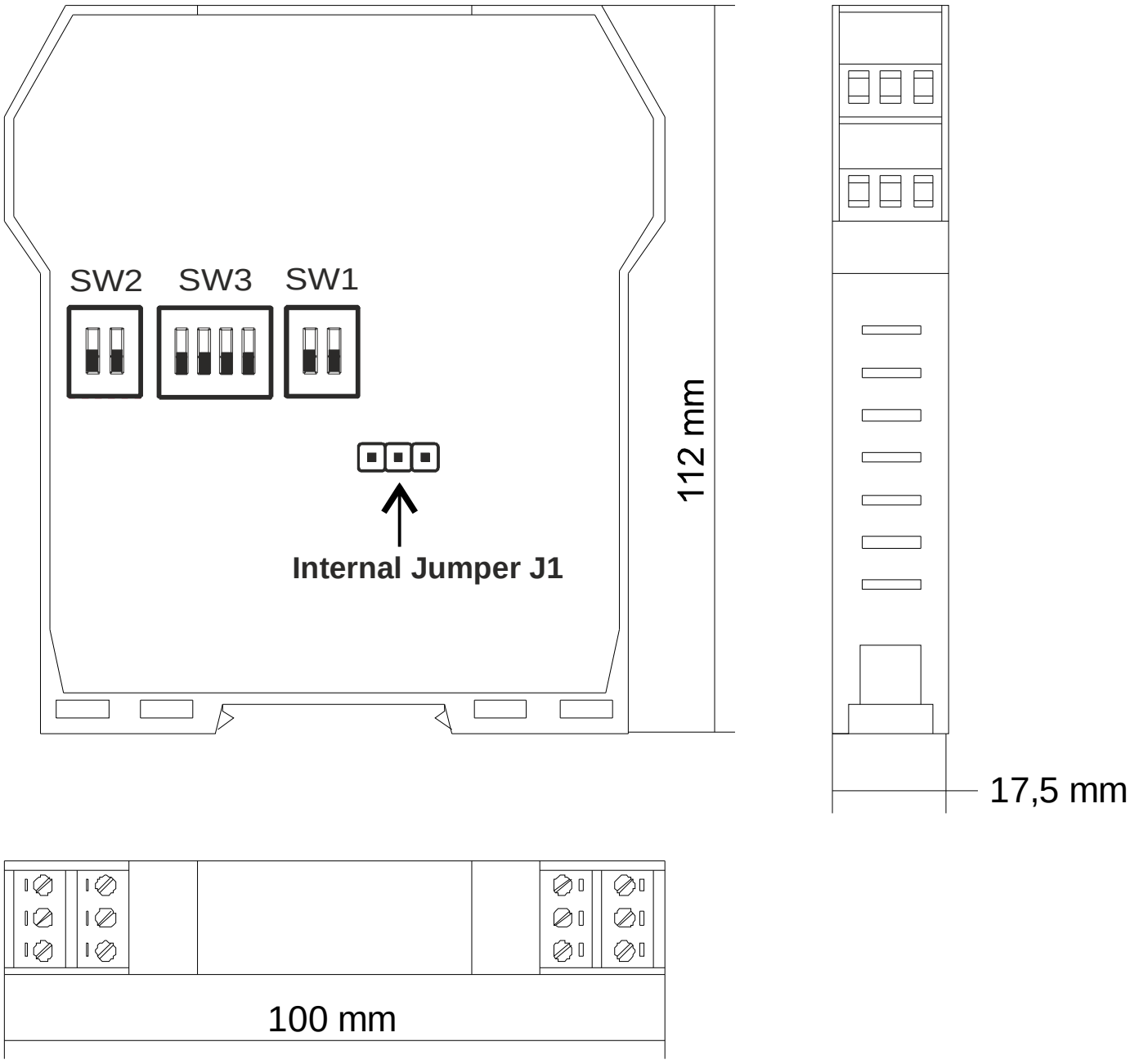
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INSTALLATION RULES

The module is designed to be installed on a DIN 46277 guide, and wired only by front terminals.

We suggest you to install the instrument vertically in order to arrange the ventilation of the module and pay attention to do not fit any objects or canals that can obstruct its ventilation louvers. Avoid fitting modules above equipment that generates heat; you are advised to fit them at the bottom of the panel or on the enclosing compartment.

Overall Dimensions / DIP-switches and Internal Jumper Position



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INPUT FULL SCALE SETTING

ATTENTION!
BEFORE YOU ATTEMPT USING THE DIP-SWITCHES, MAKE SURE THAT YOU HAVE DISCONNECTED ALL CIRCUITS AT DANGEROUS VOLTAGE.

The instrument withstands an overload of 200 % for 10 s. Higher or prolonged overload values may damage instrument's input section. We therefore advise you to carefully check the settings before applying the measurement voltage, if necessary using an ohmmeter to measure the input resistance which should be Rin = 2 000 Ω· Range (V).

The range of the instrument is established by the positions of the DIP-switches SW2 (2 way) and SW3 (4 way) and by the choice of the input terminals. The table below shows the combinations useful for the preset capacity values.
The status of the DIP-switches is indicated by a series of "1" and "0", which, in that order respectively indicate "ON" (toward the front of the instrument) and "OFF" (toward the rear of the instrument).

Full scale	***Terminals***	***SW2***	***SW3***
490 V (F)	9 (N), 12	00	1000
480 V	9 (N), 12	01	1000
470 V	9 (N), 12	01	1001
460 V	9 (N), 12	01	1011
440 V	9 (N), 12	10	1000
430 V	9 (N), 12	11	1000
420 V	9 (N), 12	11	1001
410 V	9 (N), 12	11	1011
390 V	9 (N), 12	10	1100
380 V	9 (N), 12	11	1100
370 V	9 (N), 11	00	1000
360 V	9 (N), 11	00	1001
350 V	9 (N), 11	00	1011
340 V	9 (N), 11	01	1011
320 V	9 (N), 11	00	1100
310 V	9 (N), 11	01	1100
300 V	9 (N), 11	01	1101
290 V	9 (N), 11	01	1111
270 V	9 (N), 11	10	1100
260 V	9 (N), 11	10	1101
250 V	9 (N), 11	11	1101

Full scale	***Terminals***	***SW2***	***SW3***
240 V	9 (N), 11	11	1111
230 V	8 (N), 11	01	1001
220 V	8 (N), 11	01	1011
200 V	8 (N), 11	10	1000
190 V	8 (N), 11	11	1000
180 V	8 (N), 11	11	1001
170 V	8 (N), 11	11	1011
150 V	8 (N), 11	10	1100
140 V	8 (N), 11	11	1100
130 V	8 (N), 10	00	1000
120 V	8 (N), 10	00	1001
110 V	8 (N), 10	00	1011
100 V	8 (N), 10	01	1011
80 V	8 (N), 10	00	1100
70 V	8 (N), 10	01	1100
60 V	8 (N), 10	01	1101
50 V	8 (N), 10	01	1111
30 V	8, 10	10	1100
20 V	8, 10	10	1101
10 V	8, 10	10	1111
500 μA (I)	8, 10	11	1111

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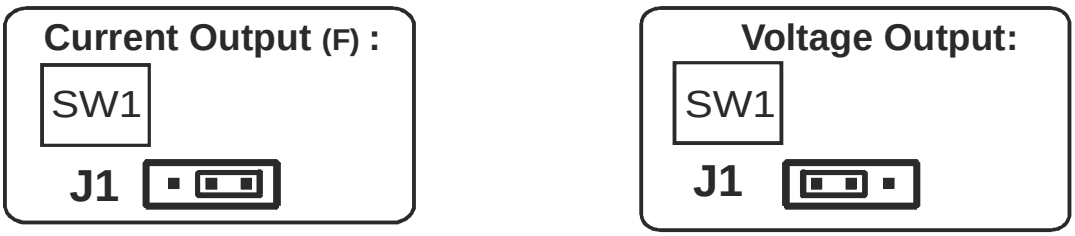
(N): If one of the two wires is neutral or earth, connect it preferably to the indicated terminal.
(I) : This is useful if you wish to use the instrument as a microammeter (500 µA fs) or for range values below 10 V (SW3.1 open).
(F): Factory configuration.

If you turn OFF ("0" position) switch SW3.1, this introduces the adjustment effect of the trimmer, accessible from the front panel. This enables you to broaden each fixed scale by a value between 0 V (0 Ω completely ccw) and 25 V (50 kΩ completely cw). The trimmer resistance can be accessed on terminals 7 and 8. In this way you can find out by how many volts the scale was increased, by measuring this resistance with an ohmmeter and dividing the value by 2000 Ω/V.
The instrument can also be 'set' by applying the known voltage on the input terminals (as on the table) and adjusting the trimmer until you obtain the required reading. When the applied voltage exceeds 42 V, *you must use an insulated screwdriver*, because the insulation of the adjusting screws is not guaranteed.
See the examples in the next paragraph.

OUTPUT SIGNAL SETTINGS

The Z202-H instrument transmits a voltage or a current signal.
The internal Jumper, accessible under the rear side of the the case, allows to select the type of the output (voltage or current).
The signal ranges instead can be set through the double DIP-switch SW1.

Current or Voltage Output Selection



(F) : Factory settings.

Output Range Settings

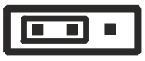
Switch 1	***Position***	***Effect***
SW 1.**1**	0 - OFF	The full scale of the voltage output is **5 V**.
	1 - ON (F)	The full scale of the voltage output is **10 V**.
SW 1.**2**	0 - OFF	The start of scale offset is disabled (**0**..20 mA**, 0**..5/10 V scale).
	1 - ON (F)	The start of scale offset is enabled (**4**..20 mA, **1**..5 o **2**..10 V scale).

(F) : Factory settings.

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EXAMPLES OF POSSIBLE CONFIGURATIONS

On the table below there are 4 examples of configuration of the Input and Output signals. The position of the jumper J1 considered on the table is the same on the figure of **Current or Voltage Output Selection**.

INPUT/OUTPUT SIGNALS	INPUT Terminals	OUTPUT Terminals	SW1	SW2	SW3	J1
INPUT: 250 Vac OUTPUT: 4..20 mA (Active)	9 (N) - 11	4 (+) - 5	x-1	1-1	1-1-0-1	
INPUT: 410 Vac OUTPUT: 0..20 mA (Passive)	9 (N) - 12	5 (+) - 6	x-0	1-1	1-0-1-1	
INPUT: 120 Vac OUTPUT: 0..10 V	8 (N) - 10	5 (+) - 6	1-0	0-0	1-0-0-1	
INPUT: 200 Vac OUTPUT: 1..5 V	8 (N) - 11	5 (+) - 6	0-1	1-0	1-0-0-0	

On the table, the “x” char indicates that the position of the correspondent DIP-switch is non influential.

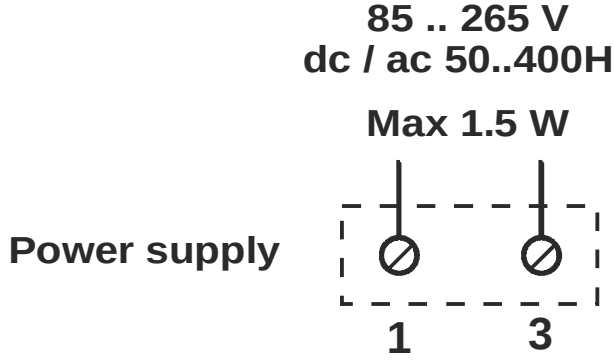
ELECTRICAL CONNECTIONS



ATTENTION!
BEFORE MAKING ANY CONNECTION TO THE INSTRUMENT, MAKE SURE THAT YOU HAVE DISCONNECTED ALL CIRCUITS AT DANGEROUS VOLTAGE.

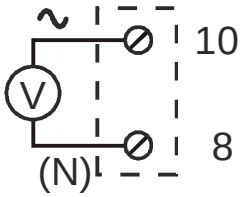
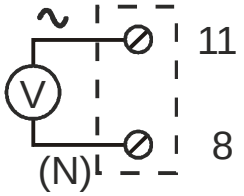
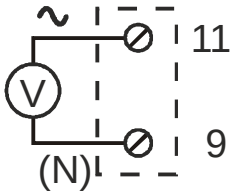
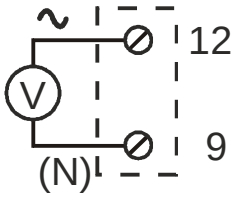
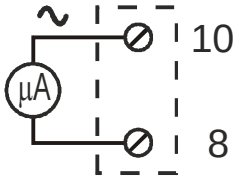
Power Supply

The power supply voltage must be in the range of 85..265 Vdc or ac from 50 to 400 Hz.
The upper limits must not be exceeded as this can seriously damage the module.
The power supply source must be protected from any failures in the module by means of a suitable limiting device.



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Connection of the Alternate Voltage Input

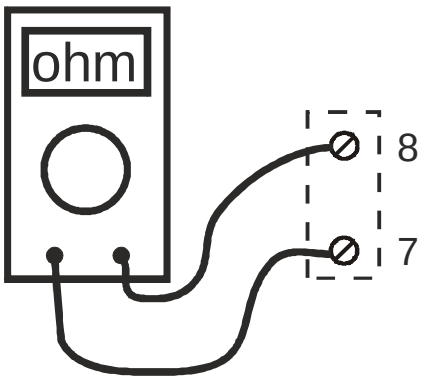
FULL SCALE : 10 .. 130 Vac	
FULL SCALE : 140 .. 230 Vac	
FULL SCALE : 240 .. 370 Vac	
FULL SCALE : 380 .. 490 Vac	
MICRO-AMMETER	

Adjust of Full scale

ATTENTION!

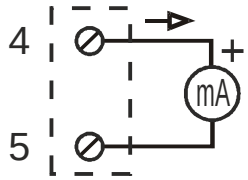
THIS OPERATION MUST BE CARRIED OUT WITH POWER CUT TO THE INSTRUMENT AND WITH THE INPUT DISCONNECTED.

The full scale can be increased by a value from 0 V to 25 V with respect to the rated value of the set full-scale.
The measurement in ohms divided by 2,000 provides the value to be added to the full-scale.
Example: if the reading is 30,000 ohm, the full scale value is increased by 30,000 / 2,.000 = 15 V

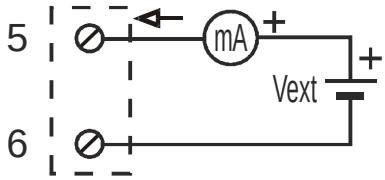


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CONNECTION OF OUTPUT

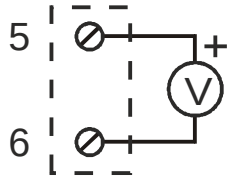


CURRENT (ACTIVE CONNECTION)

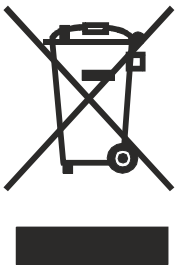


ext. supply
max 28 V

CURRENT (PASSIVE CONNECTION)



VOLTAGE



Disposal of Electrical & Electronic Equipment (Applicable throughout the European Union and other European countries with separate collection programs)

This symbol, found on your product or on its packaging, indicates that this product should not be treated as household waste when you wish to dispose of it. Instead, it should be handed over to an applicable collection point for the recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences to the environment and human health, which could otherwise be caused by inappropriate disposal of this product. The recycling of materials will help to conserve natural resources. For more detailed information about the recycling of this product, please contact your local city office, waste disposal service or thè retail store where you purchased this product.

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