EN

Z109UI$_2$
V - mA CONVERTER
WITH GALVANIC SEPARATION

GENERAL CHARACTERISTICS

- Input: voltage, current.
- Sensor powered by 2-wire technique: 20 Vcc stabilised, 20mA max with short-circuit protection.
- Measurement and re-transmission on isolated analog output, with voltage and current output .
- DIP-switch for selecting: type of input, START-END, output mode (zero elevation, scale inversion), output voltage type (mA or V).
- Front panel indicating: power on, off scale or setting error.
- 3-point insulation: 1500 Vac.

TECHNICAL SPECIFICATIONS

Power supply:	9 - 40 Vdc, 19-28 Vac 50-60Hz, max 2.5 W; 1.6W @ 24Vdc with 20mA output.
Voltage input:	Bipolar from 100 mV up to 20 V in 9 scales, input impedance 1 MΩ, resolution max 15 bit + sign.
Current input:	Bipolar up to 20 mA, input impedance ~50 Ω, resolution: 1μA.
Sampling frequency:	240 sps with 11 bits resolution + sign.
Response Time:	35 ms with 11 bits resolution.
Output:	Generated Current 0..20 / 4..20 mA, max load resistance 600 Ω Voltage 0..10 V / 2..10 V, min load resistance 2 kΩ Resolution: 2.5 μA / 1.25 mV.

Environmental conditions:	Temperature: -20..60 °C, Humidity min: 30%, max: 90% a 40°C non condensing (also see section ***Installation instructions***).			
Errors referred to max measuring range:	Calibration Error	Thermal Coefficie	Linearity error	Others
Input for voltage/current:	0.1%	0.01%/°K	0.05%	EMI(2): <1%
Voltage output (1):	0.3%	0.01%/°K	0.01%	
Protection for inputs, outputs/ power supply :	against impulsive over-voltages - EN 61000-4-5 class 2.			
Data Memory	EEPROM for all configuration data; storage time: 40 years.			
Standards	EN61000-6-4 / 2002 (electromagnetic emission, industrial environment) EN61000-6-2 / 2005 (electromagnetic immunity, industrial environment) EN61010-1/2001 (safety) All circuits are to be safely isolated from hazardous live by double insulation. The power supply transformer must comply with EN60742: isolating trasformers and safety isolating transformers requirements.			

CE

(1) Values to be added to the errors of the selected input.
(2) EMI: electromagnetic interferences.

INSTALLATION INSTRUCTIONS

The module was designed for fitting to guide DIN 46277, in a vertical position.
For optimum operation and long life, make sure adequate ventilation is provided for the module/s, avoiding placing raceways or other objects which could obstruct the ventilation grilles. Do not install the modules above appliances generating heat we advise you to install in the lower part of the panel.

SEVERE OPERATING CONDITIONS:

Severe operating conditions are as follows:

- *High power supply voltage (> 30Vcc / > 26 Vac).*
- *Power supply of the sensor at input.*
- *Use of the output on generated current.*

When modules are installed side by side, it may **be necessary to separate them by at least 5 mm** in the following cases:

- If panel temperature exceed 45°C and at least one of the severe operating conditions exists.
- If panel temperature exceed 35°C and at least two of the severe operating conditions exist.

SELECTION: INPUT / MEASURING SCALE

The type of input is selected by setting the SW1 dip-switch group at the side of the module.
Every type of input is matched to a certain number of scale beginnings and ends values which can be selected with the SW2 group.
The table below lists possible START and END values according to the type of input selected.

SW1: INPUT TYPE

INPUT TYPE (1 2 3 4)	
	V
	mA

SW2 (1 2 3 4 5 6 7 8) ← DIP-Switch to OFF position

	Voltage		Current	
	START	END	START	END
1	(*)	(*)	(*)	(*)
2	0 V	100 mV	0 mA	1 mA
3	400 mV	200 mV	1 mA	2 mA
4	1 V	500 mV	4 mA	3 mA
5	2 V	1 V	-1 mA	4 mA
6	-5 V	5 V	-5 mA	5 mA
7	-10 V	10 V	-10 mA	10 mA
8	-20 V	20 V	-20 mA	20 mA

(*) START or END are set in the memory with the programming push-buttons

SW2 : START and END

START (1 2 3)	END (4 5 6)
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8

N.B.: DIP-switches must be set while the module is powered down, otherwise, the module may be damaged.

SETTING START AND END AT WILL

The START and END push-buttons under the SW2 DIP-switch group allow to set the beginning and end scale at will within the scale pre-set through the dip-switches.
To obtain this facility it is necessary to use a suitable signal generator, able to furnish the desidered values of beginning and end scale.
The procedure is following:

1. Set through dip-switches the type of input, START and END measurement which include the required beginning and end values.
2. Power up the module.
3. Supply a calibrator or simulator of the signal you wish to measure and re-transmit.
4. Set the required START value on the calibrator (or other instrument).
5. Press the START push-button for at least 3 sec. The green LED on the front panel flashes to indicate the value has been stored.
6. Repeat points 4 and 5 for the required END value.
7. Cut power to the module and set to OFF position the dip-switches of group SW2, correspondent to the settings of START and END values.

The module is now configured for the required start and end scale. To re-program it (e.g. for a different type of input) repeat the whole procedure.

SELECTING OUTPUT

DIP-switches numbers 7 and 8 of the SW2 group enable you to set the output with or without zero elevation, or as a normal or reversed output.
The SW3 DIP-switch group enables you to select the output type.
N.B.: DIP-switches must be set while the module is powered down, avoiding electrostatic discharges, otherwise the module may be damaged.

SW2

OUTPUT MODE (7)	
	0..20mA / 0..10V
	4..20mA / 2..10V
8	
	NORMAL
	REVERSED

SW3

OUTPUT VOLTAGE (1 2)	
	Voltage
	Current

LED Indication on the front

Green LED	Meaning
Flashing (freq: 1 Flash./sec)	Out Range, Burn Out or Internal fault
Flashing (freq ≈ 2 Flash./sec)	Error on dip-switches setting
Steady ON	Indicates the presence of power supply

ELECTRICAL CONNECTIONS

We advise you to use shielded cables for connecting signals. The shield must be connected to an earth wire used specifically for instrumentation. Moreover, it is good practice to avoid routing conductors near power appliances such as inverters, motors, induction ovens, etc.

POWER SUPPLY

2 ⊘ 19 ÷ 28 Vac
3 ⊘ 10 ÷ 40 Vdc
2.5 W Max

Power supply voltage must be in the range 10 to 40 Vcc (at any polarity), 19 to 28 Vac; also see section ***INSTALLATION INSTRUCTIONS.***

The upper limits must not be exceeded, to avoid serious damage to the module.
Protect the power supply source against possible damage of the module by using a fuse of suitable size.

CURRENT INPUT

mA: + ⊘ 11, − ⊘ 10 — The loop is powered By the sensor

mA (2 wires): + ⊘ 7, − ⊘ 11 — The loop is powered by the module

VOLTAGE INPUT

V - mV: + ⊘ 9, − ⊘ 10

RE-TRANSMITTED OUTPUT

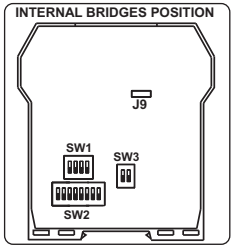
Voltage: 6 ⊘ V output + (V), 1 ⊘

Generated Current (3): 6 ⊘ mA output + (A), 1 ⊘

Ext. Power Supply Current (4): 1 ⊘ (A) + mA output +, 6 ⊘

(3) Active Output (powered) to connect to passive inputs.
(4) Unpowered passive output to be connected to active inputs. To enable it, see ***SETTINGS THROUGH INTERNAL BRIDGES***.

INTERNAL BRIDGES POSITION



SETTINGS THROUGH INTERNAL BRIDGES

ACTIVE / PASSIVE OUTPUT

Active Output	Passive Output
J9	J9

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