USER MANUAL

Z204

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Seneca Z-PC Line module: **Z204**

The Z204 module measures the alternate and/or continue input voltage value and converts it to a current (0..20 mA) or voltage (0..10 V) programmable output signal, proportional to the RMS (Root Mean Square) input value.

General characteristics

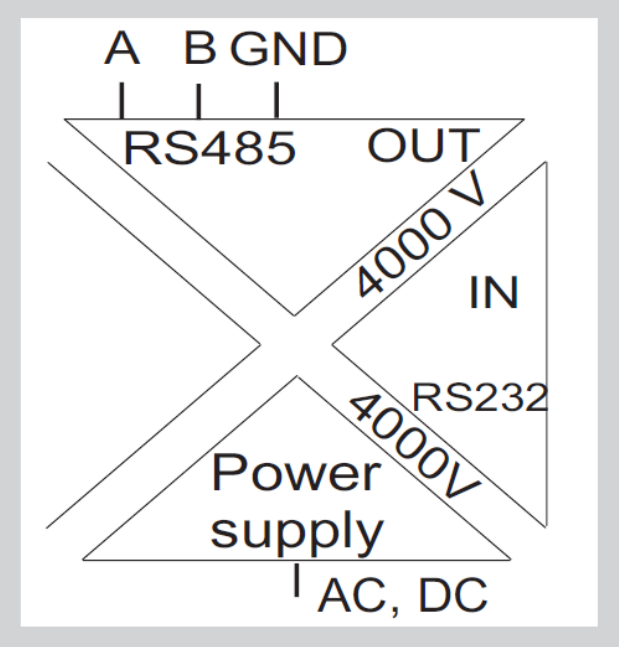
- Input voltage up to 1200 V (DC scale) and 850 V RMS (AC scale), which scale can be selected by Dipswitches and the configuration have to be downloaded on the Z204 by software (Easy, Z-NET).
- If the screw terminals mode is selected «analog output», output can be turned between: current (0..20 mA, programmable) or voltage (0..10 V, programmable).
- High precision: input class is 0.5, outputs class is 0.1.
- Input frequency range: DC..30 Hz-300 Hz.
- 4000 V galvanic isolation between voltage input and the other terminals.
- 1500 V isolation between the output terminals and the power supply terminals.
- Power ON, fail, RS485 Tx, RS485 Rx: indications by the LED panel

Features

Power supply	10..40 VDC (free polarity) or 19..28 VAC 50..60 Hz. Insulation toward the output terminals: 1500 V. Insulation toward the input: 4000 V
Consumption	<1 W at 24Vdc.
Voltage input	Continue voltage 0..1200 Vdc; alternate voltage 0..850 Vac Input impedance: 800 kohm. Frequency: DC..30 Hz-300 Hz. Precision class: 0.5.
Passband	At 1 kHz, error is 1.5%
Current output	Range: 0..20 mA can be selected via DIP-switch. Maximum load resistance: 500 ohm. Precision class: 0.1
Voltage output	Range: 0..10 V can be selected via DIP-switch. Minimum load resistance: 1 kohm. Precision class: 0.1
Thermal stability	100 ppm/K.
Response time	For a stepped variation: 1 s from 10 to 90%.
Operating temperature	Operating temperature: -20..65 °C, storage temperature: -20..85 °C humidity 30..90% at 40°C non-condensing.
LED signals	Power ON (green), fail (yellow), Rx/Tx (red).
Protection	IP20.
Weight, dimensions	140 g, 100 x 112 x 17.5 mm.
Overvoltage class	II, up to 600 Vrms; I, up to 1000 Vrms. For higher voltage / class values, an overvoltage limitation (external to the device) is necessary.

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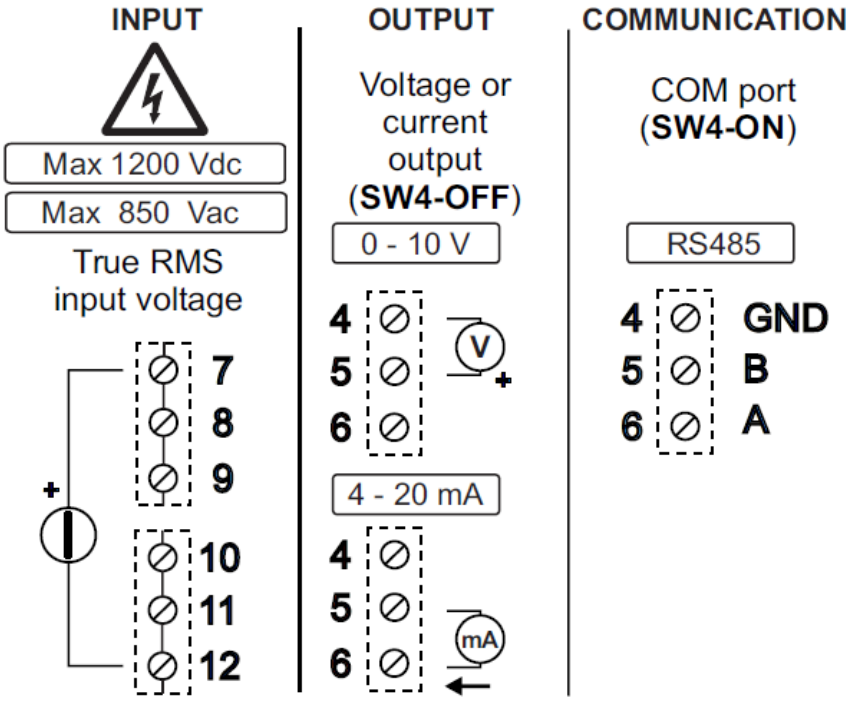
Conform to CE standards	EN61000-6-4 (2007) (electromagnetic emission, industrial environment) EN61000-6-2 (2006) (electromagnetic immunity, industrial environment) EN61010-1 (safety) All the circuits must be provided with double isolation against circuits under dangerous voltage. The power supply transformer must comply with EN60742 standards for isolation transformers and safety transformers.



The power supply transformer necessary to supply the module must comply with EN60742 (Isolated transformers and safety transformers requirements). To protect the power supply, it is recommended to install a fuse.

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Connections



Connect the pole «+» of voltage input, indifferently, to one of the screw terminals 7, 8, 9 (equipotentials).

Connect the pole «-» of voltage input, indifferently, to one of the screw terminals 10, 11, 12 (equipotentials).

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Dip-switches table

In the following tables: box without circle means Dip-Switch=0 (OFF state); box with circle means Dip-Switch=1 (ON state).

SW1 – INPUT SCALE		
1	2	Meaning
		DC scale: 0..150 Vdc; AC scale: 0..100 Vac
●		DC scale: 0..500 Vdc; AC scale: 0..350 Vac
	●	DC scale: 0..850 Vdc; AC scale: 0..600 Vac
●	●	DC scale: 0..1200 Vdc; AC scale: 0..850 Vac

SW2 - BAUDRATE		
1	2	Meaning
		Baud-rate=9600 Baud
	●	Baud-rate=19200 Baud
●		Baud-rate=38400 Baud
●	●	Baud-rate=57600 Baud

SW2 - ADDRESS						
3	4	5	6	7	8	Meaning
						Address and Baud-Rate are acquired from memory(EEPROM)
					●	Address=1
				●		Address=2
				●	●	Address=3
			●			Address=4
X	X	X	X	X	X	……
●	●	●	●	●	●	Address=63

SW3 - RS485 TERMINATOR	
1	Meaning
	RS485 terminator disabled
●	RS485 terminator enabled

SW4 – OUTPUT MODALITY FOR SCREW TERMINALS 4 – 5 - 6	
1	Meaning
	Analog output 0..10 V (voltage), 0..20 mA (current)
●	RS 485 communication

The Z204 module is factory configured with 1000 Vdc full scale.

To change the input start scale / stop scale, set the Dip-Switch SW1 as shown in the previous table and configure the Z204 module using the software (Easy, Z-NET).

To obtain the best resolution, configure the Dip-Switch SW1 selecting the lower input scale (between the four scales in the previous table) including the new stop scale. Example: if the software-configured new full scale is 680 Vdc, set the Dip-Switch SW1-1=»0», SW1-2=»1» (corresponding to 0-850 Vdc).

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RS 485 register table

Name	Range	Interpretation of register	R/W	Default	Address
MachineID	/	Word	R		40001
	Id_Code (Module ID)			0x4900	
FWREV	/	Word	R		40002
	Firmware Code				
Baudrate	/	Word	R/W		40003
	Baud-rate for RS485 (baud-rate of module/node if parameters are configurated by memory modality): 0=4800; 1=9600; 2=19200; 3=38400; 4=57600; 5=115200; 6=1200; 7=2400			38400	
Scale and outset		Word	RW		40004
	Input scale setting is bit[1,0]: 0=DC scale is 0-150Vdc, AC scale is 0-100 Vac 1=DC scale is 0-500Vdc, AC scale is 0-350 Vac 2=DC scale is 0-850Vdc, AC scale is 0-600 Vac 3=DC scale is 0-1200Vdc, AC scale is 0-850 Vac Output signal type is bit[2]: 0=output is current; 1=output is voltage			Bit [1,0]=3 Bit 2 = 0	
Delay		Word	R/W		40005
	Delay for RS485 (delay of communication response): from 0x0000=0 (no delay) to 0xFFFF=65535			0	
Address and Parity	Address: from 0x01=1 to 0xFF=255	MSB, LSB	R/W		40006
	Address for RS485 (address of module/node if parameters are configurated by memory modality)			1	Bit [15:8]
	Parity for RS485: 0=there isn't; 1=odd; 2=even			0	Bit [7:0]
Input start		Word	R/W		40007
	Input start scale (in V/10)			0	
Input stop		Word	R/W		40008
	Input stop scale (in V/10)			10000 (=1000 V)	
Out start scale (if current)		Word	R/W		40009
	Output start scale, for current (in uA)			4000	
Out stop scale (if current)		Word	R/W		40010
	Output stop scale, for current (in uA)			20000	

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Out start scale (if voltage)		Word	R/W		40011
	Output start scale, for voltage (in mV)			0	
Out stop scale (if voltage)		Word	R/W		40012
	Output stop scale, for voltage (in mV)			10000	
Status		Bit	R		40045
	Error status register, bit[0]=1: flash setting error; bit[1]=1: flash tarature error				
V RMS		Word	R		40046
	Input voltage RMS value, in V/10 (example: 10000=1000 VRMS)				
V RMS float		Floating point	R		40047(MSB) 40048(LSB)
	Input voltage VRMS value				
Command		Word	R/W		40050
	To reset, write 0xC1A0 (49568 decimal) in this register				

LEDs for signalling

In the front-side panel there are 4 LEDs and their state refers to important operating conditions of the module.

LED	LED status	Meaning
PWR	ON	The module is power on
ERR	ON	Internal error
RX	ON	Data are being received through the RS485 communication port
TX	ON	Data are being transmitted through the RS485 communication port

Easy-SETUP

To configure the Seneca Z-PC Line modules, it is possible to use Easy-SETUP software, Free-downloadable from the www.seneca.it.

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