

Z-LINE **Z109REG2**

Universal converter with galvanic isolation

ANALOG CONVERTERS



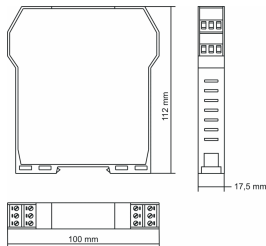
- ▶ **INPUT:** voltage (up to ± 20 V), current (up to 20 mA), RTD (Pt100, Pt500, Pt1000, Ni100, KTY81, KTY84, NTC (< 25 KOhm)), TC (J,K,R,S,T,C,B,E,N), potentiometer, rheostat,
- ▶ **STROBE** input (control analog output)
- ▶ **OUTPUT:** current, voltage, relay (SPST)
- ▶ **RESOLUTION:** programmable from 11 to 15 bits + sign
- ▶ **PRECISION:** 0.1%
- ▶ **RESPONSE TIME:** 35 ms (11 bits + sign)
- ▶ **ISOLATION:** 1.500 Vac @ 3 way
- ▶ **POWER SUPPLY:** 9..40 Vdc, 19..28 Vac

TECHNICAL SPECIFICATIONS

Z109REG2 • Universal converter with galvanic isolation



DIMENSIONS



ORDER CODES

| Code | Description | |
|--------------------|-----------------|--|
| Model | Z109REG2 | Universal converter with galvanic isolation, 10..40 Vdc, 19..28 Vac |
| Option | -ER | Square root extraction |
| Accessories | S-TOOL | Z109REG2 toolkit: setup software (ZSETUP2) + serial cable (PM001600) |

GENERAL DATA

| | | | | | | | | | | | | | | | | | | | |
|---------------------------------|---|-----------|------------|--------------|---------------------|--------------|---------------|--------------|--------------|-------------|-------------|-------------|-------------|-------------|------------|-------------|-------------|-------------|----------|
| Power supply | 9..40 Vdc, 19..28 Vac 50-60 Hz | | | | | | | | | | | | | | | | | | |
| Consumption | Max 2.5 W; 1.6 W @ 24 Vdc (20 mA output) | | | | | | | | | | | | | | | | | | |
| Isolation | 1.500 Vac @ 3 way | | | | | | | | | | | | | | | | | | |
| Input protection | Against pulse overvoltages 400 W/ms | | | | | | | | | | | | | | | | | | |
| Output/Supply protection | Against pulse overvoltages 400 W/ms | | | | | | | | | | | | | | | | | | |
| DIP switch configuration | Input type, start-end, output mode (zero elevation, scale inversion), output type (mA, V) | | | | | | | | | | | | | | | | | | |
| Software configuration | Start-end scale, root extraction, burn-out, etc. | | | | | | | | | | | | | | | | | | |
| Status indicators | Power supply, Out scale, error, alarm | | | | | | | | | | | | | | | | | | |
| Operating temperature | -10..+60°C | | | | | | | | | | | | | | | | | | |
| Humidity | Min 30%, max 90% at 40°C non condensing | | | | | | | | | | | | | | | | | | |
| Memory | EEPROM for all setup data; retention time: 40 years | | | | | | | | | | | | | | | | | | |
| Errors | V | mA | Ohm | Ni100 | Pt100 | Pt500 | Pt1000 | KTY81 | KTY84 | TC J | TC K | TC R | TC S | TC T | TCB | TC E | TC N | Vout | |
| Calibration | 0.1% | 0.1% | 0.1% | 0.1% | 0.1% | 0.1% | 0.1% | 0.1% | 0.1% | 0.1% | 0.1% | 0.1% | 0.1% | 0.1% | 0.1% | 0.1% | 0.1% | 0.1% | 0.3% |
| Thermal drift | 0.01%/°K | 0.01%/°K | 0.01%/°K | 0.01%/°K | 0.01%/°K | 0.01%/°K | 0.01%/°K | 0.01%/°K | 0.01%/°K | 0.01%/°K | 0.01%/°K | 0.01%/°K | 0.01%/°K | 0.01%/°K | 0.01%/°K | 0.01%/°K | 0.01%/°K | 0.01%/°K | 0.01%/°K |
| Linearity | 0.05% | 0.05% | | | 0.02% (>0°C); 0.05% | | | | | 0.2°C | 0.2°C | 0.5°C | 0.5°C | | 1.5°C | 0.2°C | 0.2°C | 0.01% | |
| EMI | <1% | <1% | | | | | | | | <1% | <1% | <1% | <1% | <1% | <1% | <1% | <1% | <1% | |
| CE Norms | EN 61000-6-4 / 2002, EN 61000-2-2/2005, EN61010-1 | | | | | | | | | | | | | | | | | | |

INPUT DATA

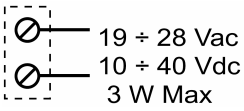
| | |
|----------------------------|---|
| Voltage input | 9 bipolar scales from 75 mV to 20 V, input impedance 1 MOhm, max resolution 15 bit + sign |
| Current input | Bipolar scales up to 20 mA, input impedance 50 Ohm, max resolution 1 µA |
| RTD input | Pt100, Pt500, Pt1000, Ni100, KTY81, KTY84 and NTC. 3 or 4 wires connection, excitation current 0,65 mA, resolution 0.1°C, RTD or cable interruption automatic detection. Resistive value for NTC: <25 KOhm. KTY81, KTY84 and NTC settable only by software. |
| TC input | TC J,K,R,S,T,B,E,N, resolution: 2,5 µV, TC interruption automatic detection, input impedance > 5 MOhm |
| Potentiometer input | Excitation voltage 300 mV, input impedance > 5MOhm, potentiometer range from 500 Ohm to 10 kOhm (with parallel resistor 500 Ohm) |
| Rheostat input | End scale min 500 Ohm, max 25 kOhm |
| Strobe input | Alternative to relay output |
| Sample frequency | 240 sps (11 bit → sign)..15 sps (15 bit + sign) |
| Response time | 35 ms (11 bit + sign)..140 ms (15 bit + sign) |

OUTPUT DATA

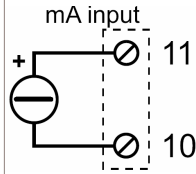
| | |
|------------------------------|--|
| Current output | Scales: 0..20 / 4..20 mA, max load resistance: 600 Ohm |
| Voltage output | Scales: 0..5 / 0..10 / 1..5 / 2..10 V, min load resistance: 2kOhm |
| Relay output | Alternative to strobe input NC relay contact, NO in case of alarm |
| Resolution | 2,5 µA / 1,25 mV |
| Output retransmission | Isolated analog output, current / voltage output Supplied active output connected to passive inputs |

ELECTRICAL CONNECTIONS

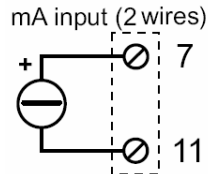
POWER SUPPLY



CURRENT INPUT

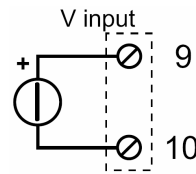


The loop is powered by the sensor

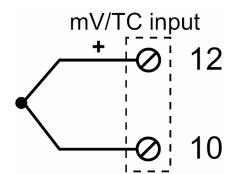


The loop is powered by the module

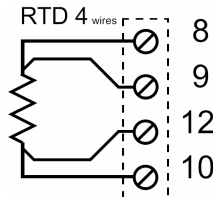
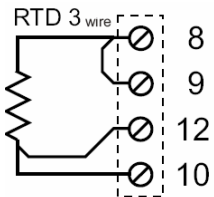
VOLTAGE INPUT



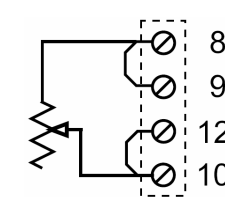
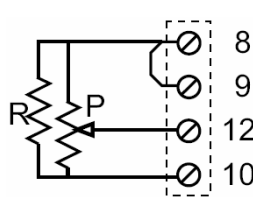
THERMOCOUPLE INPUT



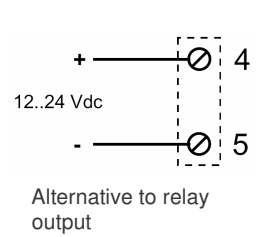
THERMORESISTANCE INPUT



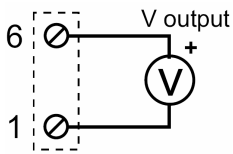
POTENTIOMETER / RHEOSTAT INPUT



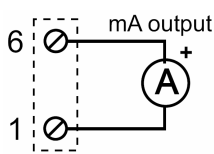
STROBE INPUT



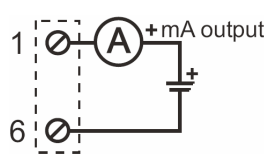
RETRANSMITTED OUTPUT



Voltage

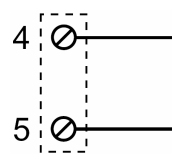


Current (supplied active output connected to passive inputs)



External power supply current

RELAY OUTPUT



Enabled alternatively to strobe input. Alarm NO / NC contact relay

DIP SWITCH CONFIGURATION

INPUT / MEASURE SCALE SELECTION

Input type selection is made by DIP switch SW1 group on the side of the module. Every kind of input signal match to end / start scale selectable by DIP switch SW2 group.

START / END SCALE FREE SETTINGS

START / END buttons under DIP-switches group SW2 enable to set start and end scale free. To complete this operation you need to use a signal generator that gives start / end scale values.

SW1

| INPUT TYPE | 1 | 2 | 3 | 4 |
|------------|---|---|---|---|
| V | 0 | 0 | 0 | 0 |
| ohm | 0 | 0 | 0 | 1 |
| mA | 0 | 0 | 0 | 1 |
| NI100 | 0 | 0 | 0 | 1 |
| PT100 | 0 | 0 | 0 | 1 |
| PT500 | 0 | 0 | 0 | 1 |
| PT1000 | 0 | 0 | 0 | 1 |
| Tc J | 0 | 0 | 0 | 1 |

SW2

| INPUT TYPE | 1 | 2 | 3 | 4 |
|------------|---|---|---|---|
| Tc K | 0 | 0 | 0 | 0 |
| Tc R | 0 | 0 | 0 | 1 |
| Tc S | 0 | 0 | 0 | 1 |
| Tc T | 0 | 0 | 0 | 1 |
| Tc B | 0 | 0 | 0 | 1 |
| Tc E | 0 | 0 | 0 | 1 |
| Tc N | 0 | 0 | 0 | 1 |
| Pot | 0 | 0 | 0 | 1 |

| START | END |
|---------|---------|
| 123 | 456 |
| 0 0 0 1 | 0 0 0 1 |
| 0 0 0 2 | 0 0 0 2 |
| 0 0 0 3 | 0 0 0 3 |
| 0 0 0 4 | 0 0 0 4 |
| 0 0 0 5 | 0 0 0 5 |
| 0 0 0 6 | 0 0 0 6 |
| 0 0 0 7 | 0 0 0 7 |
| 0 0 0 8 | 0 0 0 8 |

OUTPUT SELECTION

DIP-switches nr 7 and 8 of SW2 group enables to set output with or without zero elevation, direct or reversed output. DIP-switch group SW3 enables to select output type.

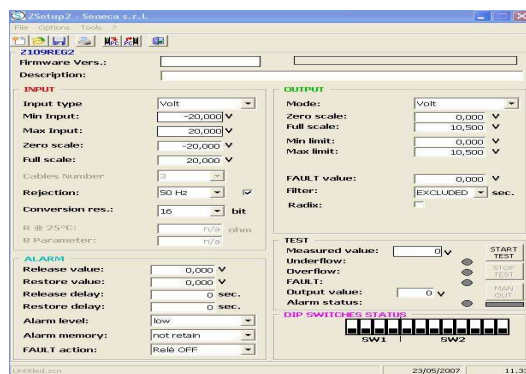
| SW2 | OUTPUT MODE |
|-----|------------------|
| 7 | 0..20mA / 0..10V |
| 8 | 4..20mA / 2..10V |
| | NORMAL |
| | REVERSED |

| SW3 | OUTPUT VOLTAGE |
|-----|----------------|
| 12 | Voltage |
| | Current |

CONFIGURATION SOFTWARE

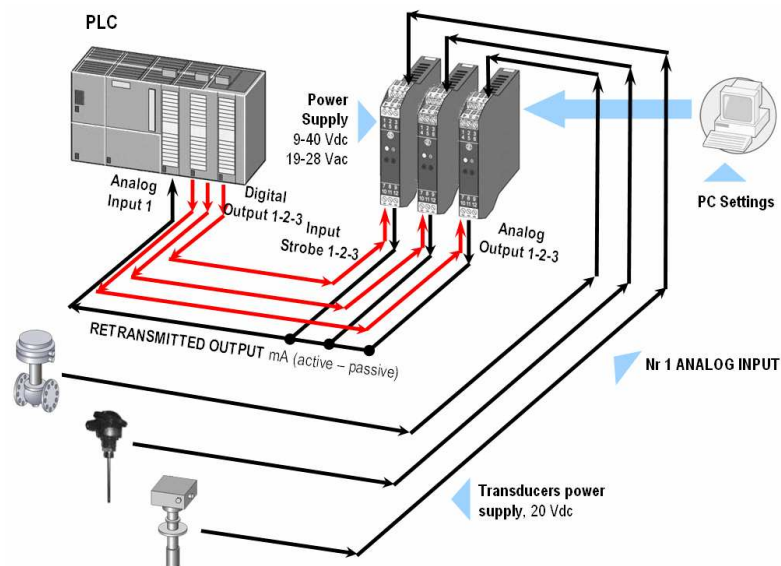
ZSETUP2 software:

- Min / max range scale; digital filter; square root extraction
- Burn-out
- Analog scale; error analog output value
- Rejection frequency (50 – 60 Hz)
- Sampling time / Resolution
- Measure 2, 3, 4 wires for RTD
- Relay alarm control, strobe configuration



APPLICATION EXAMPLES

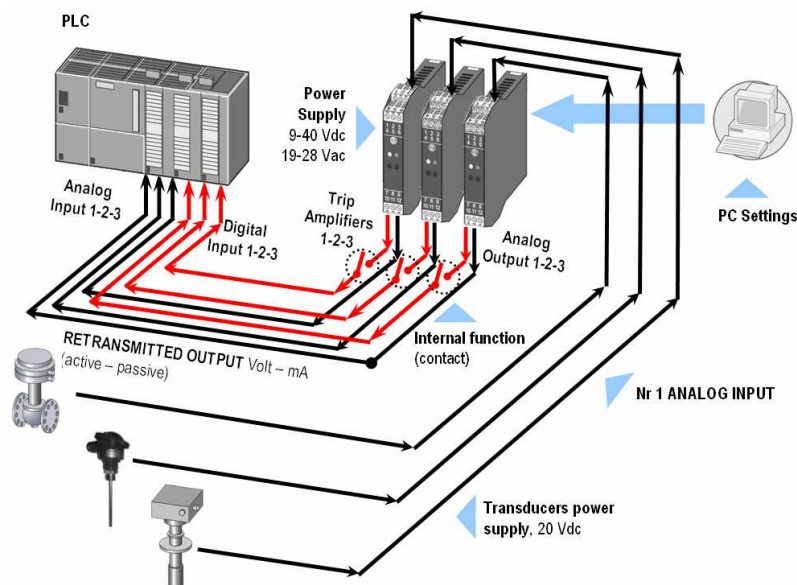
MULTIPLEXER



Advantage:

Just 1 analogue input (plc) is able to read signals outcoming from several Z109REG2.

TRIP AMPLIFIER



Advantages:

Z109REG2 can handle also threshold by a relay settable on 0..100% of universal input value.