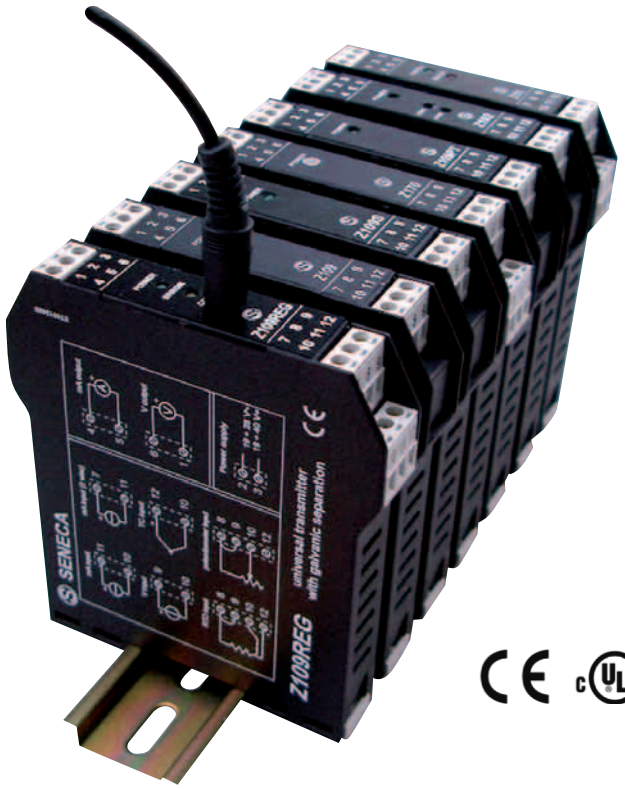
# Z-LINE

Z-LINE

Modular signal conditioners

SHORT GUIDE




- Analogue and digital signal converters
- Galvanic isolators
- Communication interfaces
- Temperature converters
- Pulses converters
- Universal converter
- Limit alarm trips and switches

SENECA

# INDEX

# Z-LINE

## OVERVIEW

Z-Line series offers a full range of signal conditioners including **Signal Converters, Transmitters, Galvanic Isolators, Splitters, Trip Amplifiers** and **Maths Modules.** They are easy to use, simple to install and have a universal (ac/dc) low voltage supply.

### Specifications Z-LINE

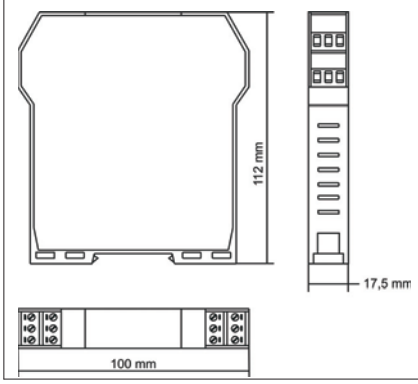
**Power supply** : 10 – 40 Vdc / 19 – 28 Vac / 85..265 Vac/dc / 5..30 Vdc loop powered
**Maximum power consumption** : 2.5 W
**Isolation**: from 1500 Vrms (up to 4.000 Vrms) for 1 minute at three points (power supply/input/output)
**Operating temperature**: 0 - +50 °C / -10..+60 °C
**Storage temperature**: -20 - +70 °C
**Maximum humidity**: 90% at +40 °C (non-condensing)
**Connections**: Screw-fit removable terminals for wires up to 2.5 mm²
**Mounting**: For guide 35 mm DIN 46277
**Case dimensions**: 17.5 x 100 x 112 mm
**Case material**: Nylon 6 filled with 30% fibreglass – self-extinguishing class V0

### CE and UL Standards

All Serie Z products comply with the directives concerning electromagnetic compatibility in INDUSTRIAL ENVIRONMENTS:
EMISSION in compliance with:
- Standard EN 50081-2
- Conducted EN 55011
- Radiated EN 55011

IMMUNITY in compliance with:
- Standard EN 50082-2:
- ESD EN 61000-4-2
- Burst EN 61000-4-4
- Radio frequency EN 50140 / 141

### Dimensions




### Highlights

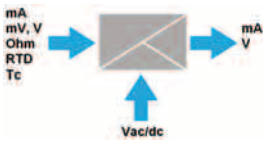
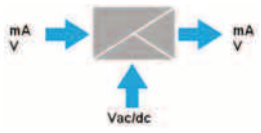
#### Connections and Mechanics
- Screw-fit removable terminals
- Rail mounting
- Compact housing (17.5 mm wide)

#### Parameters configuration
- Configuration via DIP switch / Software (Z-SETUP) / Hand Held configurator (Test-3)
- Setup software for universal converter
- Selection input / output / filter / scaling / com / burn out etc.

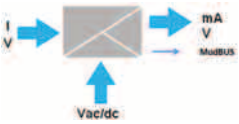

#### Transducers power supply
- Source for transducers
- Active input 2 wires
- Minimum voltage of 20 Vdc and current of 20 mA

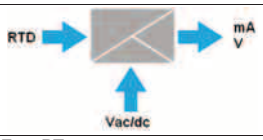
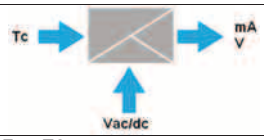
#### Standard signals
- ANALOG: currents (bidirectional, active or passive), voltage (bipolar), resistance (2 or 3 wires potentiometer, rheostat), electric parameters
- SENSORS: RTD (thermoresistance 2, 3, 4 wires), TC (thermocouples J K R S T E B N), Load Cell (strain gauge)
- Any kind of PULSES
- Electric parameters: W, I, V, cosfi, f

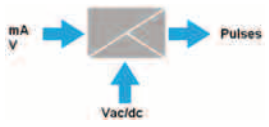
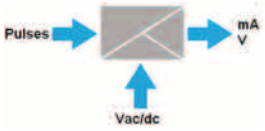
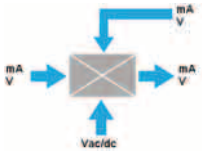

#### Isolation & Power Supply
- 3 way (Input / Supply / Output) galvanic isolation from 1.500 to 4.000 Vac
- Supply range: from 10 to 265 Vac/dc
- Switching supply

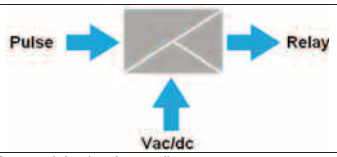
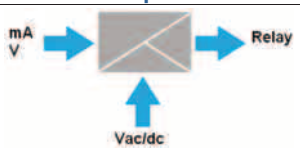
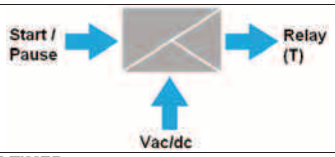
| | Z109REG | Z109REG2•Z109REG2-H | Z109UI2 | Z109S |
|---|---|---|---|---|
| |  |  |  |  |
| | Universal converter / isolator | Universal converter / isolator with advanced functions | DC current -voltage isolator / converter | DC current isolator |
| FUNCTIONAL DIAGRAM |   |   |   |   |
| ORDER CODE | **Z109REG**<br>**-ER** (square root extraction) | **Z109REG2** (9..40 Vdc/19..28 Vac)<br>**Z109REG2-H** (85..265 Vac/dc)<br>**-ER** (square root extraction) | **Z109UI2** | **Z109S** |
| INPUT NR | 1 | 1 analog, 1 strobe | 1 | 1 |
| INPUT TYPE | **Voltage (mV, V)**<br>Bipolar 0..20 mA<br>Bipolar 0..2, 0..5, 0..10 V<br>**Current (mA)**<br>Bipolar 0..20 mA<br>**RTD**<br>Pt100 (-200..+600°C)<br>**Thermocouple**<br>Type J, K, R, S, T, E, B, N<br>**Potentiometer**<br>0,5..15 kΩ | **Voltage (mV, V)**<br>Bipolar from 75 mV up to 20 V<br>Resolution 15 bit + sign<br>**Current (mA)**<br>Bipolar up to 20 mA<br>Resolution 1 µA<br>**RTD**<br>Pt100, Pt500, Pt1000, Ni100, KTY81, KTY84, NTC<br>3, 4 wires measurement<br>Scale: -200..600 °C<br>Resolution 0,1°C<br>**Thermocouple**<br>Type J, K, R, S, T, E, B, N<br>Resolution 2,5 µV<br>**Potentiometer / Rheostat**<br>Potentiometer: 500 Ω ..10 kΩ<br>Rheostat: 500 Ω..25 kΩ<br>**Strobe**<br>Alternative to relay output | **Voltage (mV, V)**<br>Bipolar from 75 mV up to 20 V<br>9 scales<br>Resolution 15 bit + sign<br>**Current (mA)**<br>Bipolar up to 20 mA<br>Resolution 1 µA | **Current**<br>2 scales: 0/4..20 mA |
| OUTPUT NR | 1 | 1 analog, 1 relay | 1 | 1 |
| OUTPUT TYPE | **Voltage (V)**<br>2 scales: 0..2, 0..10 V<br>**Current (mA)**<br>2 scales: 0..20, 4..20 mA | **Voltage (V)**<br>4 scales: 0/1..5V, 0/2..10V<br>Min load impedance 2 kΩ<br>**Current (mA)**<br>2 scales: 0/4..20 mA<br>Max load impedance 600 Ω<br>**Relay**<br>Alternative to strobe input<br>NC / NO in case of alarm | **Voltage (V)**<br>4 scales: 0/1..5V, 0/2..10V<br>Min load impedance 2 kΩ<br>**Current (mA)**<br>2 scales: 0/4..20 mA<br>Max load impedance 600 Ω | **Current (mA)**<br>2 scales: 0/4..20 mA<br>Max load impedance 600 Ω |
| PRECISION CLASS | 0,2% | 0,1% | 0,1% | 0,2 % |
| THERMAL DRIFT | 0,02 % f.s. / °C | 0,01%/°K | 0,01%/°K | 0,02 % f.s. / °C |
| LINEARITY | 0,05% (V,I), 0,2% (RTD),1°C (TC) | 0,05% / 0.4% | 0,05 % (V,I), 0,01% (Vout) | 0,05 % |
| SETTINGS | DIP switch<br>Z-SETUP (PC software) | DIP switch<br>Z-SETUP2 (PC software)<br>Test-3 (hand held calibrator) | DIP switch<br>Jumper | |
| POWER SUPPLY | 9..30 (option) - 19..40 Vdc<br>19..28 Vac; (50..60 Hz) | Z109REG2: 9..40 Vdc;<br>19..28 Vac; (50..60 Hz)<br>Z109REG2-H: 85..265 Vac/dc | 9..40 Vdc<br>19..28 Vac; (50..60 Hz) | 9..40 Vdc<br>19..28 Vac; (50..60 Hz) |
| SENSORS SUPPLY | Active input 2 wires (min 18 Vdc) | Active input 2 wires (min 20 Vdc) | Active input 2 wires (min 20 Vdc) | Active input 2 wires (min 20 Vdc) |
| POWER CONSUMPTION | 2,5 W (max) | 2,5 W (max)<br>1,6 W (24 Vdc, 20 mA) | 2,5 W | 2,5 W |
| ISOLATION & PROTECTIONS | 1.500 Vac (1 at 3 way)<br>Input: 60 V / 200 mA<br>Pulses 400 W / ms | 1.500 Vac (1 at 3 way)<br>Pulses 400 W / ms | 1.500 Vac (1 at 3 way)<br>Input: 60 V / 200 mA<br>Pulses 400 W / ms | 1.500 Vac (1 at 3 way)<br>Input: 60 V / 200 mA<br>Pulses 400 W / ms |
| FRONT LED | Power supply<br>Error | Power supply<br>Error<br>Alarm | Power supply | Power supply |
| RESPONSE TIME | 300 ms | 35 ms (11 bit)..140 ms (16 bit) | 35 ms (11 bit)..140 ms (16 bit) | < 60 ms |
| OPERATING TEMP. | 0..+55°C | -10..+60°C | -10..+60°C | 0..+50°C |
| DIMENSIONS | 17,5 x 100 x 112 mm | 17,5 x 100 x 112 mm | 17,5 x 100 x 112 mm | 17,5 x 100 x 112 mm |
| CONNECTIONS | Screw fit removable terminals | Screw fit removable terminals | Screw fit removable terminals | Screw fit removable terminals |
| WEIGHT | 200 g | 200 g | 200 g | 200 g |
| APPROVALS | CE | CE cULus | CE | CE |
| NORMS | EN 50081-1, EN 50082-2, EN 61010-1 | EN 61000-6-4 / 2002, EN 61000-2-2/2005 / EN 61010-1, EN 60742 | EN 55011, EN 61000-4-2, EN 61000-4-4, EN 50140 / 141 | EN 55011, EN 61000-4-2, EN 61000-4-4, EN 50140 / 141 |

| | | Z102 | Z110 | Z-4AI-D | Z-4TC-D | Z-SG |
|---|---|---|---|---|---|---|
| | |  |  |  |  |  |
| | | **Potentiometric to DC isolator / converter** | **DC current isolator (loop-powered)** | **4 Current / voltage A/D converter** | **4 Thermocouples A/D converter** | **Strain gauge to DC isolator / converter** |
| **FUNCTIONAL DIAGRAM** | |   |   |   |   |   |
| **ORDER CODE** | | **Z102** | **Z110S** (single channel)<br>**Z110D** (double channel) | **Z-4AI-D** | **Z-4TC-D** | **Z-SG** |
| **INPUT** | **NR** | 1 | 1, 2 | 4 | 4 | 1 analog, 1 digital |
| | **TYPE** | **Potentiometer**<br>2 wires: 0..300 Ω (I=6mA); 0..500 Ω (I=3,6 mA); 0..1 KΩ (I=1,8 mA)<br>3 wires: Vref=1,8 Vcc, from 200 Ω to 1 MΩ | **Current (mA)**<br>4..20 mA | **Voltage (V)**<br>2..10 V f.s<br>Resolution 16.000 points<br>Impedance: 100 KΩ<br>**Current (mA)**<br>±20 mA (bipolar)<br>Resolution 16.000 points<br>Impedance: 100 Ω | **Voltage**<br>± 80 mV<br>Impedance 10 MΩ<br>**Thermocouples**<br>Type J, K, R, S, T, E; B, N | **Analog**<br>Strain gauge load cell, 4 or 6 bridge connections, min 87 Ω for 1..4 load cells (350 Ω) or 1..8 load cells (1.000 Ω);<br>Sensitivity: 1..64 mV/V<br>**Digital**<br>Tare calibration / threshold weight |
| **OUTPUT** | **NR** | 1 | 1,2 | 2 | 2 | 1 analog, 1 digital |
| | **TYPE** | **Voltage (V)**<br>4 scales: 0..5, 1..5, 0..10 2..10 V<br>Load impedance > 2,5 KΩ<br>**Current (mA)**<br>2 scales: 0..20, 4..20 mA<br>Loop impedance < 600 Ω | **Current (mA)**<br>4..20 mA | **Digital**<br>Channels from/to control unit (1 settable as clock or reset input) | **Digital**<br>Channels from/to control unit (1 settable as clock or reset input) | **Current (mA)**<br>0..20, 4..20 mA<br>**Voltage (V)**<br>0..10, 0..5 Vdc<br>**Digital**<br>Tare calibration / threshold weight |
| **INTERFACE** | | | | RS485 2 wires, 1.200..115k bps<br>RS232 (setup) | RS485 2 wires, 1.200..115k bps<br>RS232 (setup) | RS485 ModBUS RTU 2 wires, 1.200..115k bps<br>RS232, 2.400 bps |
| **PRECISION CLASS** | | 0,2% | 0,1% | | | 0,01% |
| **THERMAL DRIFT** | | 0,02 % f.s. / ° | 0,02 % f. / °C | | | 0,0025% / °C |
| **LINEARITY** | | 0,05 % | 0,1 % f.s | | | 0,01% |
| **SETTINGS** | | DIP switch (zero, span) | | PLC IEC 61131 libraries<br>DIP switch (filter time, input time, scales, serial interface | PLC IEC 61131 libraries<br>DIP switch (filter time, input time, scales, serial interface | DIP Switch<br>Z-NET3 (PC software) |
| **POWER SUPPLY** | | 9..30 (option) - 19..40 Vdc<br>19..28 Vac (50..60 Hz) | Self powered on input | 9..30 (option) - 19..40 Vdc<br>19..28 Vac (50..60 Hz) | 9..30 (option) - 19..40 Vdc<br>19..28 Vac (50..60 Hz) | 10..40 Vdc<br>19..28 Vac |
| **CONSUMPTION** | | 2,5 W | | | | 2 W |
| **ISOLATION & PROTECTIONS** | | 1.500 Vac 3 way<br>400 W/ms impulsive over-voltages | I/O isolation 1.500 Vac<br>I/O protection: up to 35 Vdc max | 1.500 Vac<br>Input protection 60 V continuous | 1.500 Vac<br>Input protection 60 V continuous | 1.500 Vac |
| **FRONT LED** | | Power supply | | Power supply<br>Fault<br>Data transmission<br>Data receiving | Power supply<br>Fault<br>Data transmission<br>Data receiving | Power supply<br>Fault<br>Data transmission<br>Data receiving |
| **RESPONSE TIME** | | 40 ms | 100 ms | < 400 ms | < 400 ms | < 10 ms |
| **OPERATING TEMP.** | | 0..+50°C | 0..+50°C | 0..+50°C | 0..+50°C | -10..+65°C |
| **DIMENSIONS** | | 17,5 x 100 x 112 mm | 17,5 x 100 x 112 mm | 17,5 x 100 x 112 mm | 17,5 x 100 x 112 mm | 17,5 x 100 x 112 mm |
| **CONNECTIONS** | | Screw fit removable terminals | Screw fit removable terminals | Screw fit removable terminals | Screw fit removable terminals | Screw fit removable terminals |
| **WEIGHT** | | 200 g | 200 g | 200 g | 200 g | 200 g |
| **APPROVALS** | | CE | CE | CE cULus | CE cULus | CE |
| **NORMS** | | EN 55011, EN 61000-4-2, EN 61000-4-4, EN 50140 / 141 | EN 55011, EN 61000-4-2, EN 61000-4-4, EN 50140 / 141 | EN 55011, EN 61000-4-2, EN 61000-4-4, EN 50140 / 141 | EN 55011, EN 61000-4-2, EN 61000-4-4, EN 50140 / 141 | EN 61000-6-4, EN 61000-6-2, EN 61010-1, EN 60742, IEC 61131 |

| | T201 | Z201 • Z201-H | Z202 • Z202-H• Z202-LP | Z203 | S203T • S203TA |
|---|---|---|---|---|---|
| |  |  |  |  |  |
| | **Loop powered current transformer** | **AC current to DC isolator / converter** | **AC voltage to DC isolator / converter** | **AC single phase network analyzer** | **Advanced 3-phase network analyzer** |
| FUNCTIONAL DIAGRAM |  |  |  |  |  |
| ORDER CODE | **T201** | **Z201** (10..40 Vdc / 19..28 Vac)<br>**Z201-H** (85..265 Vac/dc) | **Z202** (10..40 Vdc / 19..28 Vac)<br>**Z202-H** (85..265 Vac/dc)<br>**Z202-LP** (5..28 Vdc loop powered) | **Z203** (10..40 Vdc / 19..28 Vac) | **S203T** (input 100 mA)<br>**S203TA** (input 5 Arms) |
| INPUT NR | 1 | 1 | 1 | 1 (6 measures) | 1 |
| INPUT TYPE | **AC Current (A)**<br>5, 10, 15, 20, 25, 30, 35, 40 A<br>Max current capacity: 800 A<br>Frequency: 20..1.000 Hz<br>Crest Factor: 2 | **AC Current (A)**<br>0...5 / 10 A | **AC Voltage (V)**<br>Alternate voltage 0..500 Vac, input impedance 2.000 Ω/V, frequency 10 Hz..1kHz | **AC Voltage (V)**<br>Alternate voltage 0..500 Vac max (50-60 Hz)<br>**AC Current (A)**<br>0..5 A (rms) | **AC Voltage (V)**<br>Up to 600 Vac<br>**AC Current (A)**<br>S203T: Nominal range 15 (25, 100) mA(rms)<br>S203TA: Nominal range defined by primary current |
| OUTPUT NR | 1 | 1 | 1 | 1 (6 measures) | 1 |
| OUTPUT TYPE | **Current (mA)**<br>4..20 mA (2 wires) | **Current (mA)**<br>2 scales: 0..10V, 2..10 V<br>Min load impedance 2,5 KΩ | **Voltage (V)**<br>4 scales: 0..5, 1..5, 0..10, 2..10 V<br>Min load impedance 2,5 KΩ<br>**Current (mA)**<br>Active or passive<br>2 scales: 0..20 or 4..20 mA<br>Max load impedance 600 Ω | **Voltage (V)**<br>4 scales: 0..5, 1..5, 0..10, 2..10 V<br>**Current (mA)**<br>2 scales: 0..20 or 4..20 mA<br>**Analog Retransmission**<br>I, V, W, Q, cosϕ | **Voltage (V)**<br>4 scales: 0..5, 0..10 V<br>Min load impedance 2 kΩ<br>**Current (mA)**<br>2 scales: 0..20, 4..20 mA<br>Max load impedance 500 Ω<br>**Analog Retransmission**<br>I, V, P, cosϕ |
| COMMUNICATION INTERFACES | | | | RS485, 2 wires, 1.200..115k bps<br>RS232, 2.400 bps<br>ModBUS RTU Slave protocol | RS485, 2 wires, 1.200..115k bps<br>ModBUS RTU Slave protocol |
| PRECISION CLASS | 0,1% | 0,3 % | 0,25 % | 0,5% | 0,2% (voltmeter, amperometer, wattmeter) |
| THERMAL DRIFT | 115 ppm/°K | 0,02 % f.s. / °C | 100 ppm/K | | |
| LINEARITY | | 0,3 % | 0,25 % | | |
| SETTINGS | DIP switch | DIP switch | DIP switch (input / output scale) | DIP switch<br>Software (Z-NET) | DIP switch<br>Software (Z-NET) |
| POWER SUPPLY | Loop powered (5..28 Vdc) | Z201: 19..40 Vdc / 19..28 Vac<br>Z201-H: 85..265 Vac/dc | Z202:19..40 Vdc / 19..28 Vac<br>Z202-H: 85..265 Vac/dc<br>Z202-LP: 5..28 Vdc | 10..40 Vdc<br>19..28 Vac (50..60 Hz) | 10..40 Vdc<br>19..28 Vac (50..60 Hz) |
| CONSUMPTION | | 2,5 W | < 1,5 W | 2,5 W | < 2,5 W |
| ISOLATION & PROTECTIONS | CAT III 300 Vac | 3.750 Vac | 1.500 Vac 3 way<br>400 W/ms impulsive over-voltages | 3.750 Vac from/to power<br>1.500 Vac other circuits | 3.750 Vac from/to measure input<br>1.500 Vac other circuits<br>4 kV (ESD) |
| FRONT LED | | Power supply | Power supply | PWR (power supply)<br>Fail<br>Tx (data transmission)<br>Rx (data receiving) | |
| RESPONSE TIME | < 100 ms | < 200 ms | 30 ms | < 10 ms | 400 ms |
| OPERATING TEMP. | -20..+65 °C | 0..+55° | 0..+60°C | 0..+55 °C | -10..+65 °C |
| CONNECTIONS | Faston clamp | Screw fit removable terminals | Screw fit removable terminals | Screw fit removable terminals<br>IDC10 back connector for DIN rail<br>Front jack RS232 | Screw terminals – step 5,08 mm |
| DIMENSIONS | 38 x 40 x 20 mm | 17,5 x 100 x 112 mm | 17,5 x 100 x 112 mm | 17,5 x 100 x 112 mm | 105 x 89 x 60 mm |
| WEIGHT | 50 g | 200 g | 140 g | 140 g | |
| APPROVALS | CE | CE | CE | CE cULus | CE |
| NORMS | EN 60668+A1+A2, EN 61000-6-4, EN 61000-6-2, EN 61010-1 | EN 55011, EN 61000-4-2, EN 61000-4-4, EN 50140 / 141 | EN50081-2, EN50082-2, EN61010-1, EN60742 | EN 61000-6-4/2002, EN 61000-6-2/2002, EN 61010-1 | EN 61000-6-4/2002, EN 61000-6-2/2002, EN 61010-1, EN 60742 |

| | | Z109PT2 | Z109TC | FlexTop | FlexTop ISO |
|---|---|---|---|---|---|
| | |  |  |  |  |
| | | **RTD to DC isolator / converter** | **Thermocouple to DC isolator / converter** | **PT100 transmitter (loop powered)** | **Universal temperature transmitter** |
| FUNCTIONAL DIAGRAM | |   |   |   |   |
| ORDER CODE | | **Z109PT2** | **Z109TC** | **FLEXTOP** (standard)<br>-**C** (programming)<br>-**EX** (EEX ia) | **FLEXTOP ISO** (standard)<br>-**C** (programming)<br>-**EX** (EEX ia) |
| INPUT | NR | 1 | 1 | 1 | 1 |
| | TYPE | **RTD**<br>Pt100, Pt500, Pt1000, Ni100, KTY81, KTY84, NTC<br>2, 3, 4 wires measurement<br>Energizing current 1 mA<br>Resolution 0,1°C | **Thermocouple**<br>Type: J, K, R, S, T, E, B, N<br>Resolution 5 µV<br>TC interruption automatic detection | **Pt100**<br>Thermoresistance: 2/3/4 wires measurement<br>IEC/DIN/EN 60 751-2<br>-200/+850 °C Min span 25 °C<br>Protection ± 35 Vdc | **RTD**<br>Pt25..Pt1000, Ni25..Ni1000, Cu25..Cu1000<br>2/3/4 wires measurement<br>**Thermocouple**<br>B,E,J,K,L,T,U,IEC 584, ASTM 988<br>**Voltage (mV, V)**<br>-10..70 mV, -0,1..1,1 V<br>**Ohm**<br>0..390 Ω, 0..2.200 Ω<br>Protection ± 35 Vdc |
| OUTPUT | NR | 1 | 1 | 1 | 1 |
| | TYPE | **Voltage (V)**<br>4 scales: 0..5, 0..10, 1..5, 2..10 V<br>Min load impedance 2 kΩ<br>Resolution: 2,5 µA / 1,25 mV<br>**Current (mA)**<br>2 scales: 0..20, 4..20 mA<br>Max load impedance 600 Ω<br>Resolution: 2,5 µA / 1,25 mV | **Voltage (V)**<br>4 scales: 0..5, 1..5, 0..10, 2..10 V<br>Min load impedance 2,5 KΩ<br>Resolution: 0,025%..0,032 %<br>**Current (mA)**<br>Active / passive connection<br>2 scales: 0..20, 4..20 mA<br>Max load impedence: 600 Ω<br>Resolution: 0,025%..0,032 % | **Current (mA)**<br>4..20 mA, 2-wire<br>Resolution 12 bit<br>Burn out positive / negative<br>Up/down limits 23 mA / 3,5 mA<br>Damping 0..30 s<br>Protection with polarity inversion | **Current (mA)**<br>4..20, 20..4 mA, 2 wires<br>Resolution 12 bit |
| PRECISION CLASS | | 0,1% (RTD)<br>0,3% (voltage output) | 0,2 % - input<br>0,1 % - output | < 0,1% | < 0,1% |
| THERMAL DRIFT | | 0,02 % f.s. / °C | 0,02 % f.s. / °C -input<br>0,01% f.s / °C - output | Max 0,01% f.s / °C, typical<br>0,003% f.s/°C | |
| LINEARITY | | 0,1 % | 1°C, 3 °C over 600 °C<br>0,1 % - output | 0,1 % | Max 0,01% f.s / °C, typical<br>0,003% f.s/°C |
| SETTINGS | | DIP Switch: range (f.s input f.s selection);output selection (range of scale) | DIP switch (type, zero and span of input thermocouples, output scale and polarity)<br>TC emulator | Flex Programmer (sw toolkit)<br>Programmable Damping<br>Technical units selection<br>Settable tag up to 15 characters | Flex Programmer (sw toolkit)<br>Programmable Damping |
| POWER SUPPLY | | 9..40 Vdc,<br>19..28 Vac (50..60 Hz) | 9..30 (opt.) - 19..40 Vdc<br>19..28 Vac (50..60 Hz) | 8..35 Vdc (loop powered) | 6,5..35 Vdc (loop powered) |
| CONSUMPTION | | 2,5 W | 2,5 W | | |
| ISOLATION & PROTECTION | | Power supply / Input / Output isolation: 1.500 Vac<br>Overvoltage protections: 400 W/ms | Power supply / Input / Output isolation: 1.500 Vac<br>Overvoltage protections: 400 W/ms | Box IP40, terminals IP00<br>Internal inductivity < 10 µF<br>Internal capacity 10 nF<br>Barrier: Umax 28 Vcc, Imax 0,1A, Pmax 0,7 W | Isolation: 3,75 KVac;<br>protection: IP55 box, IP10 terminals<br>Internal inductivity < 15 µF<br>Internal capacity < 2 nF<br>Barrier: Umax=30 Vdc, Imax=0,1 A, Pmax=0,75W |
| FRONT LED | | Power Supply<br>Setting Fault<br>Out scale | Power supply<br>Fault | Sensor fault | |
| RESPONSE TIME | | 35..140 ms | 330 ms | 0,7 s | |
| RESOLUTION | | 11bit+sign..15bit+sign | | 12 bit | 12 bit |
| OPERATING TEMP. | | -10..+60°C | 0..+50°C | -40..+85 °C | -40..+85 °C |
| CONNECTIONS | | Screw fit removable terminals | Screw fit removable terminals | Spring loaded system | Spring loaded system |
| DIMENSIONS | | 17,5 x 100 x 112 mm | 17,5 x 100 x 112 mm | ∅ 44 x 19 mm | ∅ 44 x 26,3 mm |
| WEIGHT | | 200 g | 200 g | | |
| APPROVALS | | CE | CE | CE, EEx ia IIC T5/T6 ATEX II 1G (EEx versions) | CE, Namur NE 21, Demko EEx ia IIC T5/T6 |
| NORMS | | EN 55011, EN 61000-4-2, EN 61000-4-4, EN 50140 / 141 | EN 55011, EN 61000-4-2, EN 61000-4-4, EN 50140 / 141 | EN50081-1, EN50081-2<br>EN50014, EN50020 | EN 61326 |

| | Z104 | Z111 | Z170 | Z190 |
|---|---|---|---|---|
| |  |  |  |  |
| | **DC to frequency converter / isolator** | **Frequency to DC converter / isolator** | **DC duplicator / isolator** | **DC adder – subtractor / isolator** |
| FUNCTIONAL DIAGRAM |  |  |  |  |
| ORDER CODE | **Z104** | **Z111** | **Z170** | **Z190** |
| INPUT NR | 1 | 1 | 1 | 2 |
| INPUT TYPE | **Voltage (V)**<br>4 scales: 0..1, 0..5, 0..10, 2..10 V<br>Input impedance 1 MΩ<br>**Current (mA)**<br>2 scales: 0/4..20 mA<br>Active connection: loop powered 15 Vdc not stabilized<br>Passive connection: input impedance 100 | **Pulses**<br>Contact / reed; 2/3 wires npn; 3 wires pnp with 24 Vdc power supply; namur; photoelectric; hall effect sensor; variable reluctance; 24 V; TTL<br>Max frequency: 10 kHz | **Voltage (V)**<br>4 scales: 0..1, 0..5, 0..10, 2..10 V<br>Input impedance 500 kΩ<br>**Current (mA)**<br>2 scales: 0/4..20 mA<br>Active connection: loop powered 20 Vdc not stabilized<br>Passive connection: input impedance 100 | **Voltage (V)**<br>4 scales: 0..1, 0..5, 0..10, 2..10 V<br>Input impedance 500 kΩ<br>**Current (mA)**<br>2 scales: 0/4..20 mA<br>Active connection: loop powered 20 Vdc not stabilized<br>Passive connection: input impedance 100 |
| OUTPUT NR | 1 | 1 | 2 (independent) | 1 |
| OUTPUT TYPE | **Pulses**<br>Transistor npn open collector, 30 Vcc, 300 mA<br>Reed relay, 30 Vdc-ac, 100 mA<br>Max frequency: 10 kHz | **Voltage (V)**<br>4 scales: 0..5, 0..10, 1..5, 2..10 V, min load resistance 2.500 Ω<br>**Current (mA)**<br>2 scales: 0/4..20 mA<br>Max load resistance 600 Ω | **Voltage (V)**<br>4 scales: 0..5, 0..10, 1..5, 2..10 V, min load resistance 2.500 Ω<br>**Current (mA)**<br>2 scales: 0/4..20 mA<br>Active connection: max loop impedance 600 Ω<br>Passive connection | **Voltage (V)**<br>4 scales: 0..5, 0..10, 1..5, 2..10 V, min load resistance 2.500 Ω<br>**Current (mA)**<br>2 scales: 0/4..20 mA<br>Active connection: max loop impedance 600 Ω<br>Passive connection |
| PRECISION CLASS | 0,2 % | 0,3% | 0,2 % | 0,2 % |
| THERMAL DRIFT | 0,02 % f.s. / °C | 0,01 % f.s. / °C | 0,02 % f.s. / °C | 0,02 % f.s. / °C |
| LINEARITY | 0,05 % | | 0,05 % | 0,05 % |
| SETTINGS | DIP switch: input type, output, top of the scale<br>Trimmer: rop of the scale regulation, setting constant | DIP switch: input type & frequency, filter, pulses average, output<br>Trimmer: top of the scale regulation (1 Hz..10 KHz) | DIP switch: I/O type & connections | DIP switch: I/O type & connections |
| POWER SUPPLY | 19..40 (9..30 opt.) Vdc;<br>19..28 Vac (50..60 Hz) | 19..40 (9..30 opt.) Vdc;<br>19..28 Vac (50..60 Hz) | 19..40 Vdc;<br>19..28 Vac (50..60 Hz) | 19..40 (9..30 opt.) Vdc;<br>19..28 Vac (50..60 Hz) |
| SENSORS SUPPLY | Active input 2 wires (min 20 Vdc) | Active input 2 wires (min 20 Vdc) | Active input 2 wires (min 20 Vdc) | Active input 2 wires (min 20 Vdc) |
| CONSUMPTION | 2,5 W | 2,5 W | 2,5 W | 2,5 W |
| ISOLATION & PROTECTIONS | 1.500 Vac (at 3 way)<br>Input: 100 mA<br>Pulses 400 W/ ms | 1.500 Vac (at 3 way) | 1.500 Vac (at 3 way)<br>Pulses output / power. 400 W/ ms | 1.500 Vac (at 4 way)<br>Pulses output / power 400 W/ ms |
| FRONT LED | Power supply<br>Output (attracted relay) | Power supply<br>Error | Power supply | Power supply |
| RESPONSE TIME | 350 ms | 250 ms | | |
| OPERATING TEMP. | 0..+50°C | 0..+50°C | 0..+50°C | 0..+50°C |
| CONNECTIONS | Screw fit removable terminals | Screw fit removable terminals | Screw fit removable terminals | Screw fit removable terminals |
| DIMENSIONS | 17,5 x 100 x 112 mm | 17,5 x 100 x 112 mm | 17,5 x 100 x 112 mm | 17,5 x 100 x 112 mm |
| WEIGHT | 200 g | 200 g | 200 g | 200 g |
| APPROVALS | CE | CE cULus | CE cULus | CE |
| NORMS | EN50081-1, EN50081-2, EN61010-1 | EN50081-1, EN50081-2, EN61010-1 | EN50081-1, EN50081-2, EN61010-1 | EN50081-1, EN50081-2, EN61010-1 |

| | | Z112 | Z113 | Z-TIMER |
|---|---|---|---|---|
| | |  |  |  |
| | | **On/Off sensors amplifier** | **DC current / voltage alarm trip module** | **Electronic timer** |
| FUNCTIONAL DIAGRAM | |  |  |  |
| ORDER CODE | | **Z112A** (single channel)<br>**Z112D** (double channel) | **Z113S** (1 relay output)<br>**Z113D** (2 relay output)<br>**Z113T** (3 relay output) | **Z-TIMER**<br>**Z-TIMER-D** (2 independent times,working time and pause time) |
| INPUT | NR | 1 / 2 | 1 | 1 |
| | TYPE | **Pulses**<br>Optoisolated from mechanical contact<br>Reed<br>2/3 wires npn - 12..24 Vdc<br>3 wires pnp with 24 Vdc power supply<br>NAMUR<br>Pulses 24 Vdc<br>Photoelectric sensor<br>HALL effect sensor<br>Max frequency 400 Hz | **Voltage (V)**<br>4 ranges: 0/1..5 Vdc, 0/2..10 Vdc<br>Input impedance 500 KΩ<br>**Current (mA)**<br>2 ranges: 0..20 mA; 4..20 mA<br>Active connections<br>Passive connection, input impedance:100 Ω | **Contacts**<br>START time switch<br>PAUSE time swith |
| OUTPUT | NR | 1 / 2 | 1 / 2 / 3 | 1 |
| | TYPE | **Relay**<br>Z112A: relay with SPDT changeover and capacity 1 A - 30 Vdc or 5 A – 250 Vac (resistive load)<br>Z112D: reed relays with SPST contact, max capacity 0,5 A - 100 Vdc-ac (10 VA on resistive load) | **Relay**<br>Z-113A: relay with SPDT changeover and capacity 1A - 30 Vdc or 5 A – 250 Vac (resistive load)<br>Z-113D/T: relais with SPST contact and max capacity 0,1 A - 30 Vdc-ac (10 VA on resistive load) | **Relay**<br>SPDT changeover and capacity 8 A – 250 Vac (resistive load) |
| THERMAL DRIFT | | | 0,02 % f.s. / °C | |
| LINEARITY | | | 0,05 % | |
| SETTINGS | | **DIP switch**<br>Input type, output repetition of input pulses, divisor circuit with programmable dividing factor between 1 and 256<br>**Trimmer**<br>Pulse duration (100..500 ms) | **DIP switch**<br>Input type<br>Functions (excitement/de-excitement relays, minimun/maximum alarms)<br>**Trimmer**<br>Alarm set-point (1..100% control signal)<br>Cut-in delay (0,3..30s)<br>Hysteresis (2..15% of cut-in value) | **DIP switch**<br>Nr 8 timer functions (delay upon excitement; delay upon de-excitement; blinker with non energized relay start; blinker with energized relay start; calibrator; opening timing with delay upon de-excitement; reopening timing with delay upon de-excitement)<br>Nr 8 scales of times (50ms..10h)<br>**Trimmer**<br>Timing regulation |
| POWER SUPPLY | | 19..40 (9..30 option) Vdc;<br>19..28 Vac; (50..60 Hz) | 19..40 (9..30 option) Vdc<br>19..28 Vac; (50..60 Hz) | 12..40 Vdc ± 10 %<br>12..40 Vac / 115..230 Vac ± 10 %<br>50..60 Hz |
| SENSORS SUPPLY | | Active input 2 wires (min 20 Vdc) | Active input 2 wires (min 20 Vdc) | Active input 2 wires (min 20 Vdc) |
| CONSUMPTION | | 2,5 W | 2,5 W | 2 W |
| ISOLATION & PROTECTIONS | | **Z112A**<br>1.500 Vac (power/input) and 4.000 Vac (input/power/output)<br>**Z112D**<br>1.500 Vac | **Z113S**<br>1.500 Vac (power./input)<br>4.000 Vac (input/power/output)<br>**Z113D, Z113T**<br>1.500 Vac<br>Impulsive over-voltages 400 W/ms | 1.500 Vac (power/input)<br>4.000 Vac (iinput/power/output) |
| FRONT LED | | Powered instrument<br>Energized relay | Power supply<br>Threshold overcoming | Power supply<br>Pause (energized relay)<br>Timer (time switch pause) |
| OPERATING TEMPERATURE | | 0..+50°C | 0..+50°C | -10..+60°C |
| CONNECTIONS | | Screw fit removable terminals | Screw fit removable terminals | Screw fit removable terminals) |
| DIMENSIONS | | 17,5 x 100 x 112 mm | 17,5 x 100 x 112 mm | 17,5 x 100 x 112 mm |
| WEIGHT | | 200 g | 200 g | 200 g |
| APPROVALS | | CE | CE | CE |
| NORMS | | EN 50081-1, EN 50082-2, EN 61010-1 | EN 50081-1, EN 50082-2, EN 61010-1 | EN 50081-1, EN 50082-2, EN 61010-1 |

## Z-SETUP

### Z109REG configuration software

**MAIN FEATURES**

On line help for DIP-switches configuration guide.
Download / Upload / Acquisition of the module configuration
Inversion of the scale
Positive or negative burn-out setting
Positioning of the digital filter
Extraction of the square-root
Free conversion scales

**ORDER CODES**

**Z-SETUP** Programming software Z109REG (free on the website www.seneca.it)

## Z-SETUP2

### Z109REG configuration software

**MAIN FEATURES**

Start / End scale, digital filter
Extraction of the square-root
Positive or negative burn-out setting
Analog output Start / End scale
Frequency rejection 50/60 Hz
Sample rate / resolution setting
Automatic alarm relay energizing in case of fault

**ORDER CODES**

**Z-SETUP2** Programming software Z109REG2 (free on the website www.seneca.it)

## S-TOOL

### Configuration toolkit with SENECA software collection

**MAIN FEATURES**

Setup software collection

**ORDER CODES**

**S-TOOL** Configuration toolkit including Z-PROG, Z-SETUP, Z-SETUP2, Z-4AI-D, Z-4TC-D libraries, Soft2000DOS/WIN, PM001600 cable

## TEST-3

### Hand held OLED multimeter and Z109REG2 configurator

**MAIN FEATURES**

Precision class 0,1%
Z109REG2 Alarms, scales, I/O parameters settings
Generation / measure of voltage (0-10 V) and current (0-20 mA) signals
OLED display 128 x 64
NiMh batteries, AA type 2.650 mAh (20 h)

**ORDER CODES**

**TEST-3** Hand held multimeter and Z109REG2 with OLED display
**/T** Calibration service (NIST traceable)
**TEST-3-PK** Precision lit with Z109REG2 programming cable

## Flex Programmer

### Programming toolkit FlexTop series

**MAIN FEATURES**

Working as a datalogger for measures recording
Saving and loading of the configuration sets
Printing facility for hard copy records
An interface converter with a 1,5 mt long cable with a 9 pole RS232C plug to PC
Multi-language software CD

**ORDER CODES**

**SOFT-FLEX** Programming toolkit for FlexTop 2201 and FlexTop ISO

## S117P

### RS232-TTL/USB asynchronous serial converter

**MAIN FEATURES**

Windows (Xp, Vista, Xp Embedded, CE .Net), Mac OS (8, 9, X), Linux (2.24.0) support
USB / RS232 isolation: 1.500 V
Loop powered by USB PC port
Dimensions: 90 x 50 x 25 mm
Standard USB 1.0, 1.1, 2.0

**ORDER CODES**

**S117P** RS232-TTL/USB asynchronous serial converter

## Z-POWER

### DIN rail mounting 19 Vac transformer

**ORDER CODES**

**Z-POWER 230-15VA** 19 Vac, 230-15 VA transformer
**Z-POWER 230-25VA** 19 Vac, 230-25 VA transformer
**Z-POWER 115-15VA** 19 Vac, 115-15 VA transformer

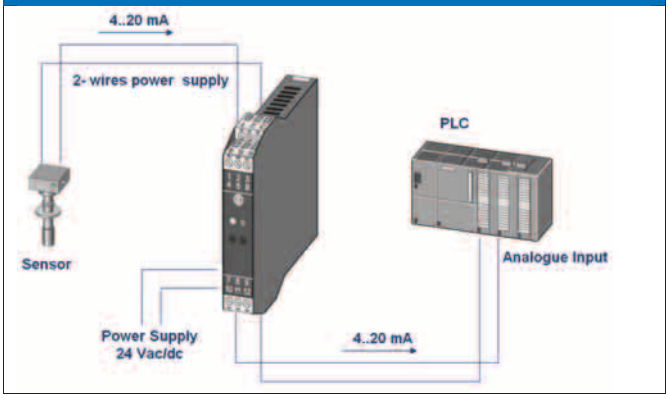
## Programming cables

### Programming cables

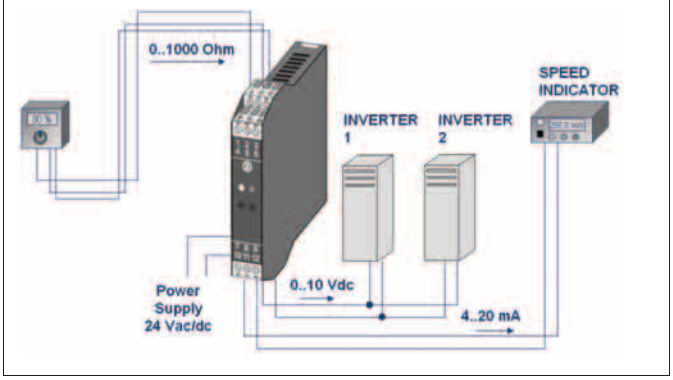
**ORDER CODES**

**PM001600** Programming serial cable (Z109REG, Z109REG2, Z203, Z-4AI-D, Z-4TC-D, Z-3AO, Z-8AI, Z-8TC) (jack / DB9F)
**PM001970** RS232 (K107B) serial cable (probes / DB9F)
**PM002240** Z109REGREG2 / TEST-2 programming cable (jack / jack)

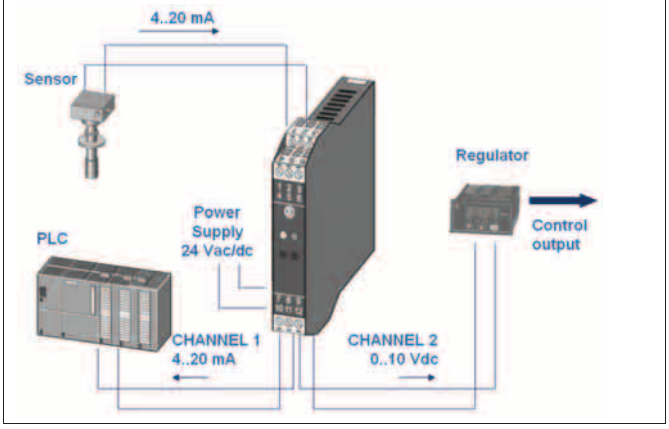
## Z109S – DC current converter



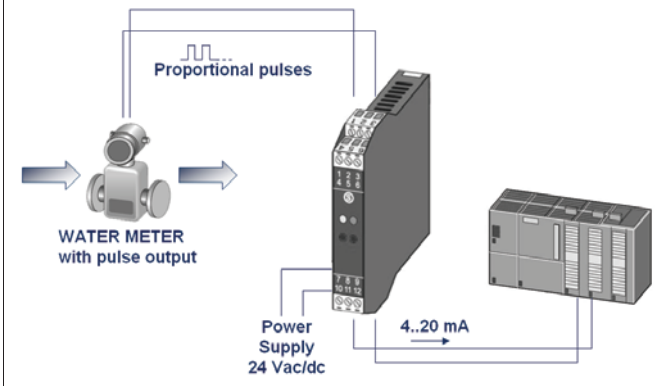

## Z102 – Potentiometric to DC converter / isolator



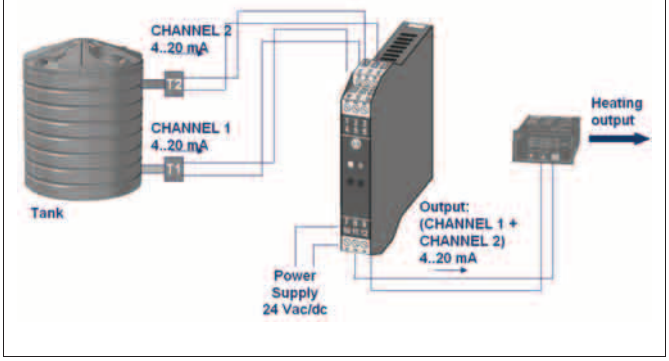

## Z170 – DC duplicator / isolator



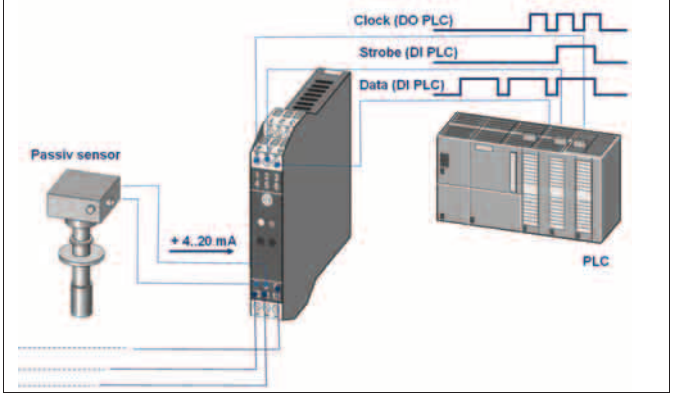

## Z111 – Frequency to DC converter / isolator



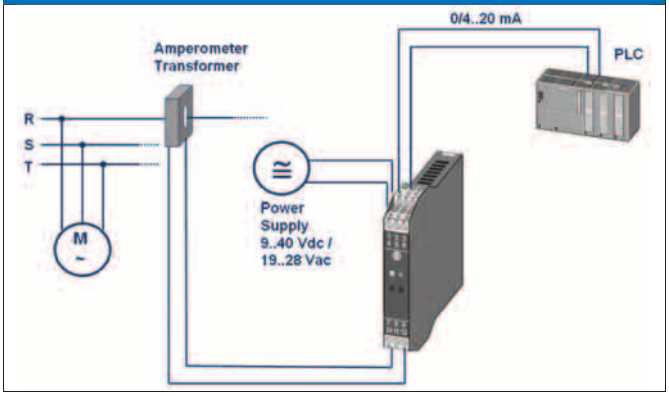

## Z190 – DC adder – subtractor / isolator



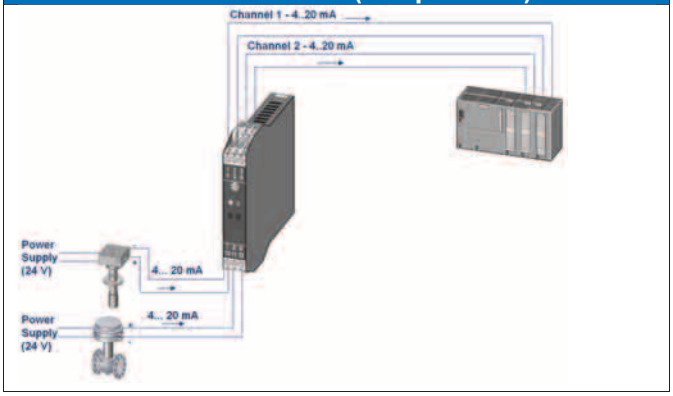

## Z-4AI-D DC current / voltage A/D converter




## Z201 – AC current to DC converter / isolator




## Z110 – DC current isolator (self-powered)

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