



Data Sheet

RISH PI-102



Measure



Control



Record



Analyze

Application

The purpose of the RISH PI-102 is to electrically isolate input, outputs and power supply. The isolator fulfills all requirements and regulation concerning electromagnetic compatibility EMC and safety (IEC61326-1 and IEC 61010-1:2010). The device has one input and provides two independent outputs in an extremely small space.

Product Features

Electric Isolation

- Two electrically isolated analog outputs prevent interference voltage and current. Solves grounding problem in meshed signal networks.
- High electric isolation between input and outputs – 2.3 kV, and power supply versus all other circuits – 3.0 kV.

Function

Simple dc isolator serves to electrically isolate programmable input dc signal to programmable dc output signal.

Features

- All input signal range and output signal range are user programmable.
- Electric isolation between input, outputs and power supply
- Prevents false measurement due to spurious potentials
- Processes live zero signals, provision for signal conversion
- Red LED signals indicates device in operating condition
- Electrical insulation between power supply versus all other circuits
- 3.0 kV, and between input and outputs -2.3 kV

Technical Specifications

Measuring inputs :

| | |
|----------------------------|---|
| DC current standard ranges | <ul style="list-style-type: none"> • 0...20mA • 0...10mA • 4...20mA • 0...24mA |
| Input resistance | ≤15.5Ω |
| DC voltage standard ranges | <ul style="list-style-type: none"> • 0...12V • 0...10V • 0...5V • 1...5V } ≥100 kΩ • 0...12V } ≥60 kΩ • 0...10V } ≥60 kΩ • 0...5V } ≥60 kΩ • 1...5V |
| Input resistance | <ul style="list-style-type: none"> • 0...12V } ≥100 kΩ • 0...10V } ≥60 kΩ • 0...5V } ≥60 kΩ • 1...5V |

Measuring output1 and output2:

| | |
|----------------------------|--|
| DC current standard ranges | <ul style="list-style-type: none"> • 2...10mA • 4...20mA • 0...10mA • 0...20mA |
| Burden voltage | 15V |
| External Resistance | $R_{ext\ max.} [\Omega] = 15V / I_{AN} [mA]$ I_{AN} =Output circuit full scale value |

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| | |
|---------------------------------------|--|
| DC voltage standard ranges | <ul style="list-style-type: none"> • 0...05V • 1...05V • 0...10V • 2...10V |
| Burden | $R_{ext\ min.} [k\ \Omega] = U_{AN} [V] / 5\ mA$ U_{AN} =Output circuit full scale value < 42mA for voltage output < 20 V for current output < 0.4% p.p. < 50 ms 100V 2 |
| Current limiter at $R_{ext} = 0$ | < 42mA for voltage output |
| Voltage limiter at $R_{ext} = \infty$ | < 20 V for current output |
| Residual ripple in Output | < 0.4% p.p. |
| Response time | < 50 ms |
| Common mode voltage | 100V |
| Pollution degree | 2 |
| Power supply | |
| Rated operating voltage | 60 ... 230... 300 V DC/AC OR 20 ... 24...40 VAC/20...30...60 VDC |
| Rated operating frequency | 45 ... 50-60 ... 65 Hz |
| Power input | ≤ 5 VA |

Accuracy data (Acc to IEC 60688)

| | |
|----------------|---|
| Basic Accuracy | Limit error < ± 0.2 % including linearity and reproducibility errors. |
|----------------|---|

Reference conditions

| | |
|--------------------------------------|--|
| Ambient temperature | 23°C ± 2°C |
| Output burden | Current: 0.5 * $R_{ext\ max.}$ Voltage: 2 * $R_{ext\ min.}$ |
| Nominal value of Aux Supply voltage: | 230V 50Hz or 60 Hz AC/DC 30V 50Hz or 60 Hz AC/DC |

influence factors

| | |
|------------------|--|
| Temperature | ± 0.01% per °C |
| Burden influence | < ± 0.1 % for current output < ± 0.1 % for voltage output |
| Switch-on drift | < ± 0.2% |
| Longtime drift | < ± 0.3% / 12 months |
| Magnetic field | < ± 0.2 % (400 A/T) |

Regulations

| | |
|--|--|
| Electromagnetic Compatibility Protection | Acc. to IEC 61326 - 1 For Housing : IP40 Terminals : IP20 |
| Electrical standards | Acc. to IEC 61010 -1 / EN 61 010 -1 |
| Pollution degree | 2 |
| Over voltage category | III for power supply II for measuring input and measuring output. |



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Test Voltage

Power supply versus :

- All 3.7 kV, 50 Hz 1 min (Leakage current 5mA)

Measuring inputs versus :

- Measuring outputs 2.3 kV, 50 Hz 1min & O/P1 to O/P 2: 500 V, 50 Hz, 1 min
- All circuits versus case: 3.7kV, 50 Hz ,1min

Environmental condition

Climatic rating

Climate class 3 acc. to VDI /VDE 3540

Operating Temperature

-10 ...23... 55 °C

Storage temperature

-40 °C to 70 °C

Annual mean relative humidity

< 75% standard Climatic rating

Installation Data

Mounting position

Rail mounting

Weight

Approx. 0.25kg

Connection Terminal

Connection Element

Conventional Screw type

Permissible cross section of the connection lead

4.0mm² single wire or 2 x 2.5mm² Fine wire

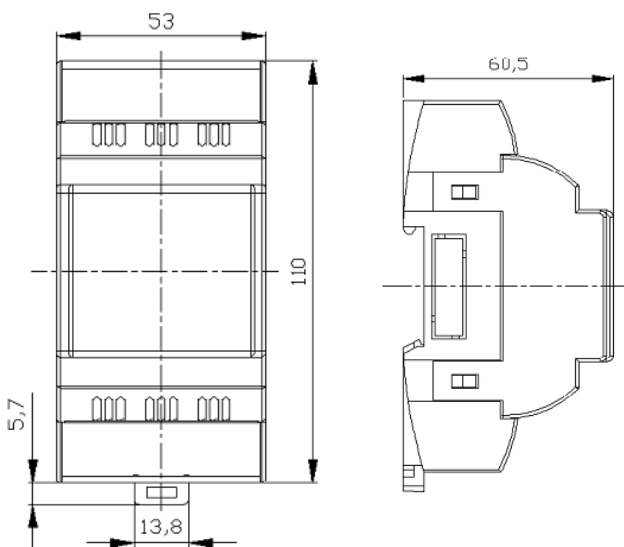
Permissible Vibrations

2 g acc. to EN 60 068-2-6

Shocks

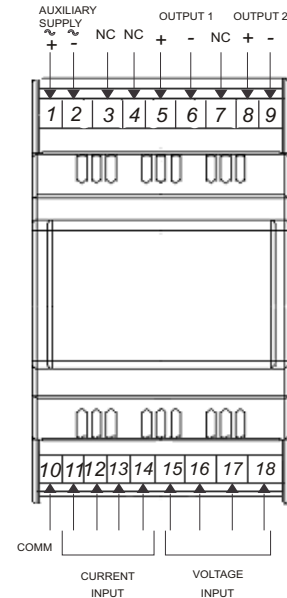
3 x 50 g 2 shocks each in 6 directions
Acc. to EN 60 068-2-27

Dimensions



Note : All Dimensions are in mm

Electrical Connections



| Connection | Terminal details | |
|-------------------------|------------------|----|
| Measuring Current input | + | - |
| • 0...24mA | 11 | 10 |
| • 4...20mA | 12 | 10 |
| • 0...20mA | 13 | 10 |
| • 0...10mA | 14 | 10 |
| Measuring Voltage input | | |
| • 1...05V | 15 | 10 |
| • 0...05V | 16 | 10 |
| • 0...12V | 17 | 10 |
| • 0...10V | 18 | 10 |
| Measuring output 1 | 5 | 6 |
| Measuring output 2 | 8 | 9 |
| Auxiliary supply | 1 | 2 |



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Configuration

RISH PI-102 inputs and outputs can be configured using slide switches. Table A and B contains the switch position information for the configuration of input and output1/output2 respectively. When ever configuration is changed output1 and output 2 fine adjustment must be accomplished using “Z” (Zero) and “S” (Span) potentiometers provided on front panel separately for both the outputs i.e. output1 and output2.

FIGURE: FRONT PANEL OF RISH PI-102

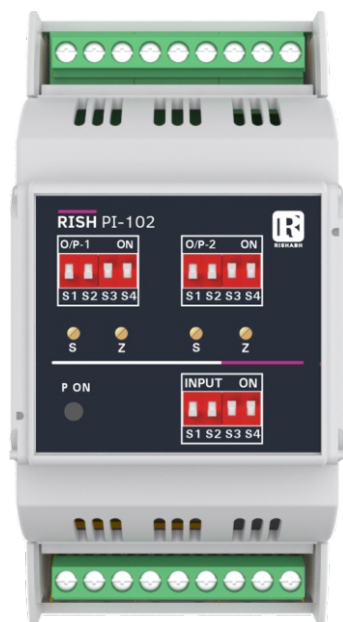


TABLE A: INPUT RANGE SELECTION

| Input | S1 | S2 | S3 | S4 |
|----------|-----|-----|-----|-----|
| 0...20mA | OFF | OFF | OFF | OFF |
| 0...10mA | OFF | OFF | OFF | ON |
| 0...24mA | OFF | OFF | ON | OFF |
| 4...20mA | OFF | OFF | ON | ON |
| 0...10V | OFF | ON | OFF | OFF |
| 0...12V | OFF | ON | OFF | ON |
| 0...5V | OFF | ON | ON | OFF |
| 1...5V | OFF | ON | ON | ON |

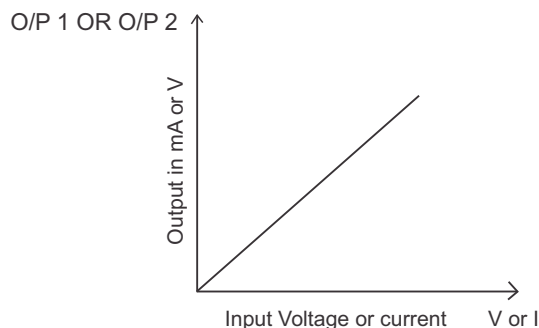
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TABLE B: O/P1 & O/P2 RANGE SELECTION

| Output | S1 & S2 | S3 | S4 |
|----------|---------|-----|-----|
| 0...10mA | OFF | OFF | OFF |
| 0...20mA | OFF | OFF | ON |
| 2...10mA | OFF | ON | OFF |
| 4...20mA | OFF | ON | ON |
| 0...5V | ON | OFF | OFF |
| 0...10V | ON | OFF | ON |
| 1...5V | ON | ON | OFF |
| 2...10V | ON | ON | ON |

Output characteristics



Ordering Information

PI02-L000000000000 : Programmable Isolator,
Power Supply
20-40V AC/20-60V DC

PI02-H000000000000 : Programmable Isolator,
Power Supply
60-300V AC/DC



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