



Data Sheet

RISH PI-101

Programmable Single output DC Isolator



Measure



Control



Record



Analyze

Application :

The purpose of the RISH PI-101 is to electrically isolate input, output 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 one independent output in an extremely small space.

Product Features

Electric Isolation

- 1) One electrically isolated analog output prevent interference voltage and current. Solves grounding problem in meshed signal networks.
- 2) High electric isolation between input and output – 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, output 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 output -2.3 kV.

Technical Specifications

Measuring inputs :

| | | |
|----------------------------|---|--|
| DC current standard ranges | 1) 0...20mA 2) 0...10mA 3) 4...20mA 4) 0...24mA | |
| Input resistance | ≤ 15.5 Ω | |
| DC voltage standard ranges | 1) 0...12V 2) 0...10V 3) 0...5V 4) 1...5V | |
| Input resistance | 0...12V } ≥ 100 kΩ 0...10V } 0...5V } ≥ 60 kΩ 1...5V } | |

Measuring output1 :

| | |
|----------------------------|---|
| DC current standard ranges | 1) 2...10mA 2) 4...20mA 3) 0...10mA 4) 0...20mA |
| Burden voltage | 15V |
| External Resistance | $R_{ext\ max.} [\Omega] = 15V / I_{AN} [mA]$ I_{AN} =Output circuit full scale value |

| | |
|---------------------------------------|--|
| DC voltage standard ranges | 1) 0...05V 2) 1...05V 3) 0...10V 4) 2...10V □ |
| Burden | $R_{ext\ min.} [k \Omega] = U_{AN} [V] / 5\ mA$ U_{AN} =Output circuit full scale value |
| 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.

Test Voltage

Power supply versus :
-All 3.7 kV, 50 Hz 1 min (Leakage current 5mA)
Measuring inputs versus :
-Measuring output 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



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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 |

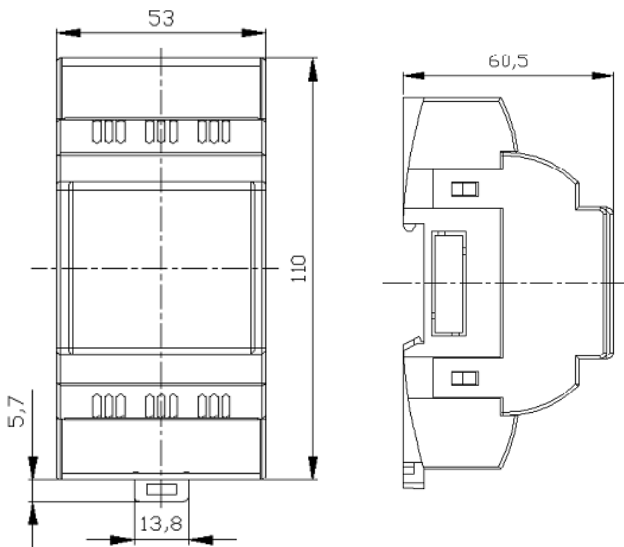
Permissible cross section of the connection lead

4.0mm² single wire or
2 x 2.5mm² Fine wire.

Permissible Vibrations Shocks

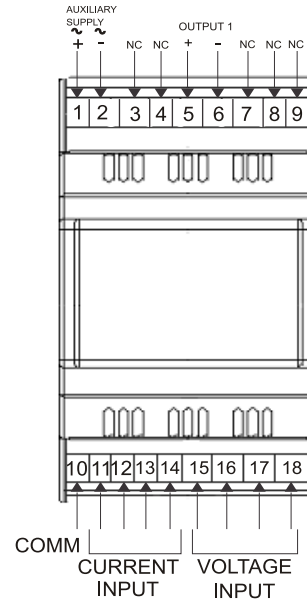
2 g acc. to EN 60 068-2-6
3 x 50 g 2 shocks each in 6 directions
Acc. to EN 60 068-2-27

Dimensions



Note : All Dimensions are in mm

Electrical Connections



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



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Configuration :

RISH PI-101 inputs and output can be configured using slide switches. Table A and B contains the switch position information for the configuration of input and output respectively. When ever configuration is changed output need adjustment must be accomplished using “Z” (Zero) and “S” (Span) potentiometers provided on front panel,

FIGURE: FRONT PANEL OF RISH PI-101

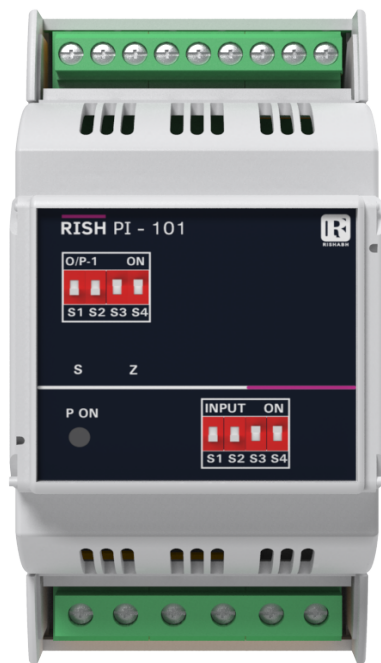


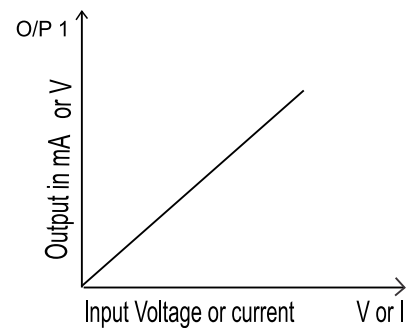
TABLE A: INPUT RANGE SELECTION

| 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 |

TABLE B: O/P 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



Variants:

| |
|-------------------|
| Auxillary Supply |
| 60-300 VAC/DC |
| 20-40VAC/20-60VDC |



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