

RISH PI-101

Programmable Single output DC Isolator

Data sheet

Isolating Amplifier



- ▼ On site programmable Inputs and output ▼ One independently configurable output.
- ▼ Electrically isolated input ,output and power supply ▼ Wide range of Auxillary Power supply



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RISH PI-101

Programmable Single output DC Isolator

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 IEC61010-1:2010). 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	$\leq 15.5 \Omega$
DC voltage standard ranges	1) 0...12V 2) 0...10V 3) 0...5V 4) 1...5V
Input resistance	$0...12V \left. \vphantom{0...12V} \right\} \geq 100 \text{ k}\Omega$ $0...10V \left. \vphantom{0...10V} \right\}$ $0...5V \left. \vphantom{0...5V} \right\} \geq 60 \text{ k}\Omega$ $1...5V \left. \vphantom{1...5V} \right\}$

Measuring output1 :

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

DC voltage standard ranges	1) 0...05V 2) 1...05V 3) 0...10V 4) 2...10V
Burden	$R_{ext} \text{ min. } [k \Omega] = U_{AN} [V] / 5 \text{ mA}$ $U_{AN} = \text{Output circuit full scale value}$
Current limiter at $R_{ext} = 0$	$< 42 \text{ mA}$ for voltage output
Voltage limiter at $R_{ext} = \infty$	$< 20 \text{ V}$ for current output
Residual ripple in Output	$< 0.4\%$ p.p.
Response time	$< 50 \text{ ms}$
Common mode voltage	100V
Pollution degree	2
Power supply :	
Rated operating voltage	60 ... <u>230</u> ... 300 V DC/AC OR 20 ... <u>24</u> ...40 VAC/20... <u>30</u> ...60 VDC
Rated operating frequency	45 ... 50-60 ... 65 Hz
Power input	$\leq 5 \text{ VA}$

Accuracy data (Acc to IEC 60688)

Basic Accuracy	Limit error $< \pm 0.2\%$ including linearity and reproducibility errors.
Reference conditions	
Ambient temperature	$23^\circ\text{C} \pm 2^\circ\text{C}$
Output burden	Current: $0.5 * R_{ext} \text{ max.}$ Voltage: $2 * R_{ext} \text{ min.}$
Nominal value of Aux Supply voltage:	230V 50Hz or 60 Hz AC/DC 30V 50Hz or 60 Hz AC/DC
Influence factors	
Temperature	$\pm 0.01\%$ per $^\circ\text{C}$
Burden influence	$< \pm 0.1\%$ for current output $< \pm 0.1\%$ for voltage output
Switch-on drift	$< \pm 0.2\%$
Longtime drift	$< \pm 0.3\%$ / 12 months
Magnetic field	$< \pm 0.2\%$ (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

Over voltage category	2 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 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

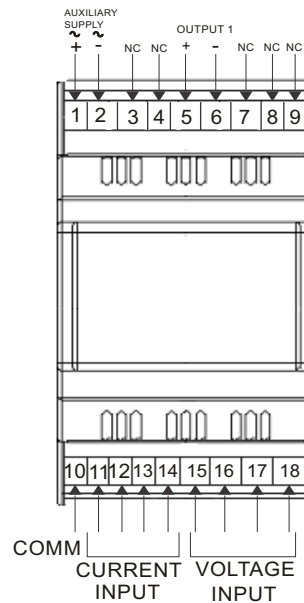
Permissible cross section of the connection lead

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

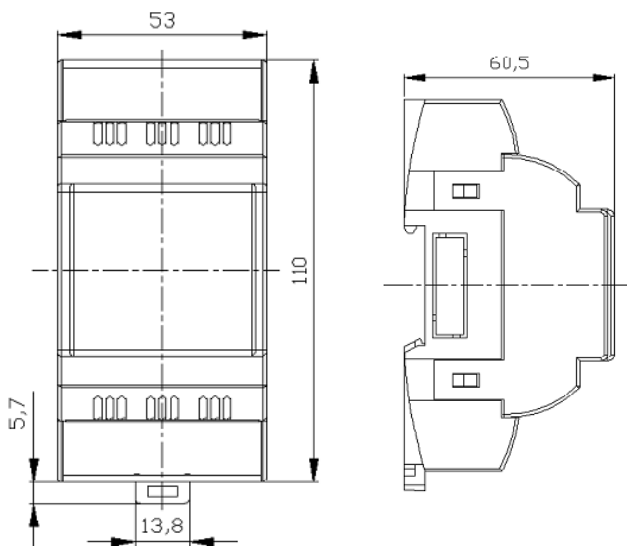
Permissible Vibrations

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

Electrical Connections



Dimensions



Note : All Dimensions are in mm

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

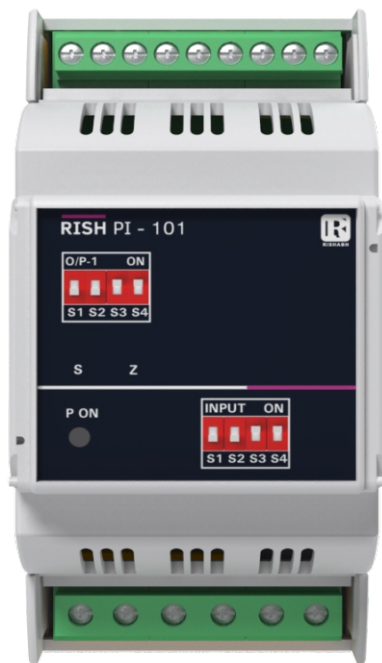


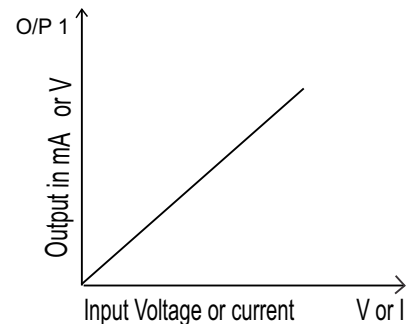
TABLE A: INPUT RANGE SELECTION

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