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PRECISION INSTRUMENTATION

TRANSUCERS & ISOLATORS
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DATASHEET

Issue 1



Multifunction Meters
Transducers & Isolators
Temperature Controllers
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Power Supplies
Test & Measurement

THETA PI-102 PROGRAMMABLE DUAL OUTPUT DC ISOLATOR

SUBJECT TO CHANGE WITHOUT NOTICE

This datasheet superseded all previous versions – please keep for future reference

Product 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

THETA PI-102

Programmable Dual output DC Isolator



Application

The purpose of the Sifam Tinsley 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

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

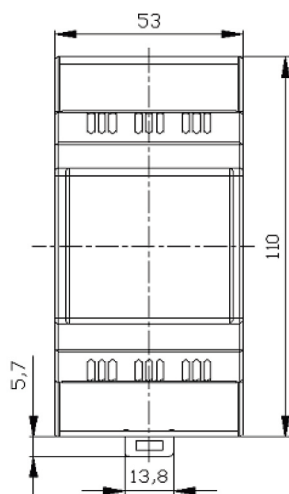
Function

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

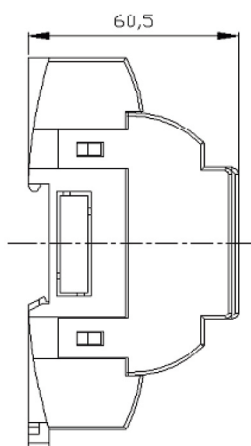
Technical Specifications

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
TPS Output (Optional)	Transmitter Power Supply 24VDC(+/- 15%)
	Max current Limit: 26mA Electronic
Input resistance	0...12V 0...10V } > 100 k Ω 0...5V } > 60 k Ω
Measuring output1 and output2:	
DC current standard ranges	1) 2...10mA 2) 4...20mA 3) 0...10mA 4) 0...20mA
External Resistance	R _{ext} max. [Ω] = 15V/ I _{AN} [mA] I _{AN} =Output circuit full scale value
Burden voltage	15V
DC voltage standard ranges	1) 0...05V 2) 0...10V 3) 2...10V
Burden	R _{ext} min. [k Ω] = 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} = ∞	< 20 V for current output
Residual ripple in Output	< 1.2 % 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 < $\pm$ 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

Dimensions



Note : All Dimensions are in mm



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)
Environmental condition	
Climatic rating	Climate class 3 acc. to VDI /VDE 3540
Operating Temperature	$-10 \dots 23 \dots 55^{\circ}\text{C}$
Storage temperature	-40°C to 70°C
Annual mean relative humidity	75% standard Climatic rating.
Regulations	
Electromagnetic Compatibility	Acc. to IEC 61326 - 1
Protection	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 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
Installation Data	
Mounting position	Rail mounting
Weight	Approx. 0.25kg
Connection Terminal	
Connection Element	Conventional Screw type
Permissible cross section of the connection lead	4.0mm ² single wire or 2 x 2.5mm 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

Electrical Connections

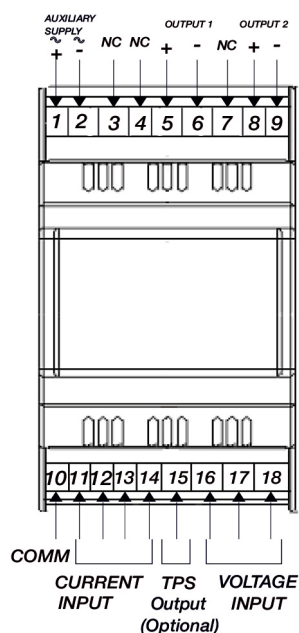


FIGURE: FRONT PANEL OF Sifam Tinseley PI-102



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
TPS Output (Optional)	15	11/12/13/14 (As per sensor full scale value)
Measuring Voltage input		
A) 0....05V	16	10
B) 0....12V	17	10
C) 0....10V	18	10
Measuring output 1	5	6
Measuring output 2	8	9
Auxiliary supply	1	2

Configuration: :

Sifam Tinseley 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.

Output characteristics

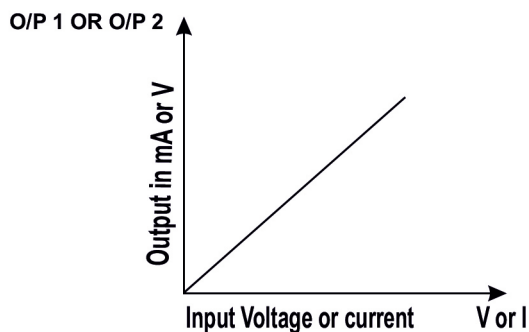


TABLE A: INPUT RANGE SELECTION

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

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

Ordering Information

PRODUCT CODE	P102 - X - 0 - X - 00 - 0 - 0 - 0 - 0000
PI-102 PROGRAMMABLE DUAL OUTPUT DC ISOLATOR	
Aux Supply H: 60-300V AC/DC L: 20-40VAC/20-60VDC	
0: Standard. 1: TPS Output	

Order Code Example:

PI02-L000000000000

PI-102 PROGRAMMABLE DUAL OUTPUT DC ISOLATOR Auxiliary Supply 20-40VAC/20-60VDC

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