

RISH Ducer TV 808, 2 channels Isolating amplifier unipolar bipolar

For electrically insulating, amplifying and converting DC signals

Application

The purpose of the isolating amplifier *RISH*Ducer TV 808 (Fig.1) is to electrically insulate input and output signals, respectively to amplify and/or change the signal level or type (current or voltage) of the input signals.

The amplifier fulfils all the important requirements and regulations concerning electromagnetic compatibility EMC and Safety (IEC 1010 resp. EN 61 010). It was developed and is manufactured and tested in strict accordance with the quality assurance standard ISO 9001.

The device has two channels and provides two independent isolating amplifiers in an extremely small space. The user has a wide choice of input and output ranges and can set the desired one with the aid of soldered jumpers and potentiometers.

A version with one input and two outputs is available that enables two electrically insulated outputs to be obtained from a single input signal.

Variants

- 252 standard input and output combinations selected by soldered jumpers
- User-specific input and/or output ranges
- Isolating amplifier with one input and two electrically insulated outputs
- Power supply 24...60 V DC/AC or 85...230 V DC/AC Please request our data sheet TV 808-11 Le for single-channel versions.

Features / Benefits

- Electric insulation between inputs, outputs (2.3 kV) and power supply (3.7 kV) / Prevents measurement errors due to potential leakage
- Flexibility provided by more than 250 different input and output combinations selected by simply positioning soldered jumpers / Reduced stocking
- Non-standard user-specific ranges available
- AC/DC power supply / Universal
- Provision for either snapping the isolating amplifier onto top-hat rails or securing it with screws to a wall or panel
- Housing only 17.5 mm (size S17 housing) / Low space requirement

Standard versions

Inputs and outputs set to 0...20 mA. Any of the standard ranges given in the Section "Technical data, measuring inputs" are simply selected by positioning soldered jumpers. The fine adjustment is accomplished using the potentiometers "Zero" and "Span".

Table 1: Standard version with 2 inputs and 2 outputs

Standard range		Power supply	Order No.
Inputs 1 and 2	Outputs 1 and 2		
0...20 mA	0...20 mA	24... 60 V DC/AC	128 802
		85...230 V DC/AC	128 810

Table 1: Standard version with 1 inputs and 2 outputs

Standard range		Power supply	Order No.
Inputs 1 and 2	Outputs 1 and 2		
0...20 mA	0...20 mA	24... 60 V DC/AC	128 828
		85...230 V DC/AC	128 836

Please complete the Order Code 808-12....according to "Table 4: Ordering information" for versions with user-specific input and/or output ranges.

Measuring outputs $\ominus \rightarrow$

DC currents: Standard ranges
 0...20 mA, 4...20 mA, \pm 20 mA
 Limit values
 0...1 to 0...20 mA
 0.2...1 to 4...20 mA
 -1...0...+1 to -20...0...+20 mA
 12 V

Burden voltage:
 External resistance: $R_{ext} \max. [k \Omega] = \frac{12 V}{I_{AN} [mA]}$
 I_{AN} = Output circuit full-scale value



Fig. 1. Isolating amplifier *RISH*Ducer TV 808 in housing S17 clipped onto a top-hat rail or screw hole mounting brackets pulled out.

Technical data

Measuring inputs $\ominus \rightarrow$

DC current:
 Standard ranges

0 ... 0.1 mA	0.2 ... 1 mA	- 0.1 ... + 0.1 mA
0 ... 0.2 mA	1 ... 5 mA	- 0.2 ... + 0.2 mA
0 ... 0.5 mA	2 ... 10 mA	- 0.5 ... + 0.5 mA
0 ... 1 mA	4 ... 20 mA	- 1 ... + 1 mA
0 ... 2 mA		- 2 ... + 2 mA
0 ... 5 mA		- 5 ... + 5 mA
0 ... 10 mA		- 10 ... + 10 mA
0 ... 20 mA		- 20 ... + 20 mA

Limit values
 0...0.1 to 0...40 mA
 also live-zero,
 start value > 0 to \leq 50% final value
 or span 0.1 to 40 mA
 between - 40 and 40 mA
 also bipolar asymmetrical
 $R_i = 15 \Omega$

DC voltage:

Standard ranges

0 ... 0.06V	0.2 ... 1 V	- 0.1 ... + 0.1 V
0 ... 0.1 V	1 ... 5 V	- 0.2 ... + 0.2 V
0 ... 0.2 V	2 ... 10 V	- 0.5 ... + 0.5 V
0 ... 0.5 V	4 ... 20 V	- 1 ... + 1 V
0 ... 1 V		- 2 ... + 2 V
0 ... 2 V		- 5 ... + 5 V
0 ... 5 V		- 10 ... + 10 V
0 ... 10 V		- 20 ... + 20 V
0 ... 20 V		
0 ... 40 V		

Limit values
 0...0.06 to 0...40
 also live-zero,
 start value > 0 to \leq 50% final value
 or span 0.06 to 40 V
 between - 40 and 40 V
 also bipolar asymmetrical
 $R_i = 100 k \Omega$

Overload: DC current
 continuously 2-fold
 DC voltage
 continuously 2-fold

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DC voltage: Standard ranges
 0...10 V, 2...10 V, ± 10 V
 Limit values
 0...1 to 0...10 V
 0.2...1 to 2...10 V
 -1...0...+1 to -10...0...+10 V

Burden: $R_{ext} \text{ min. [k}\Omega\text{]} \frac{U_{AN} \text{ [V]}}{5 \text{ mA}}$
 U_{AN} = Output circuit full-scale value

Current limiter at
 $R_{ext} \text{ max.}$: Approx. $1.1 \times I_{AN}$ for current output

Voltage limiter at
 $R_{ext} = \infty$: Approx. 13 V

Residual ripple in
 output current: < 0.5% p.p.
 Response time: < 50 ms

Power supply H $\rightarrow \bigcirc$

AC/DC power pack (DC and 45...400 Hz)

Table 3: Nominal voltages and tolerances

Nominal voltage U_N	Tolerance
24 ... 60 V DC / AC	DC - 15 ... + 33%
85 ... 230 V ¹ DC / AC	AC $\pm 15\%$

Power input: ≤ 1.6 W resp. ≤ 3.4 VA

Accuracy data (acc. to DIN/IEC 770)

Basic accuracy: Limit error $\pm 0.2\%$
 Including linearity and reproducibility errors

Reference conditions:

Ambient temperature: $23^\circ\text{C} \pm 2$ K
 Power supply: 24 V DC $\pm 10\%$ and 230 V AC $\pm 10\%$
 Output burden: Current: $0.5 \cdot R_{ext} \text{ max.}$
 Voltage: $2 \cdot R_{ext} \text{ min.}$

Influencing factors:

Temperature: $< \pm 0.1\%$ per 10 K
 Burden influence: $< \pm 0.1\%$ for current output
 $< \pm 0.2\%$ for voltage output
 if $R_{ext} < 2 \cdot R_{ext} \text{ min.}$

¹ For power supplies > 125 V, the auxiliary circuit should include an external fuse with a rating ≤ 20 A DC

Longtime drift: $< \pm 0.3\%$ / 12 months
 Switch-on drift: $< \pm 0.2\%$
 Common and transverse mode influence: $< \pm 0.2\%$
 Output + or - connected to ground: $< \pm 0.2\%$

Environmental conditions

Climatic rating: Climate class 3Z acc. to VDI/VDE 3540

Commissioning temperature: -10 to +55 °C
 Operating temperature: -25 to +55 °C
 Storage temperature: -40 to +70 °C
 Annual mean relative humidity: $\leq 75\%$

Installation data

Housing: Housing S 17
 See section "Dimensional drawings" for dimensions

Material of housing: Lexan 940 (polycarbonate)
 flammability class V-0 acc. to UL 94, self-extinguishing, non-dripping, free of halogen

Montage: For snapping onto top-hat rail (35 x 15 mm or 35 x 7.5 mm) acc. to EN 50 022
 or directly onto a wall or panel using the pull-out screw hole brackets

Position of use: Any

Terminals: DIN/VDE 0609
 Screw terminals with wire guards, for light PVC wiring and max. 2 x 0.75 mm² or 1 x 2.5 mm²
 2 g acc. to EN 60 068-2-6
 3 x 50 g
 3 shocks each in 6 directions acc. to EN 60 068-2-27

Permissible vibrations: Shock: 2 g acc. to EN 60 068-2-6
 3 x 50 g
 3 shocks each in 6 directions acc. to EN 60 068-2-27

Weight: Approx. 0.2 kg

Electrical insulation:

Regulations

Electromagnetic compatibility: The standards DIN EN 50 081-2 and DIN EN 50 082-2 are observed

Protection (acc. to IEC 529 resp. EN 60 529):

Electrical standards: Housing IP 40
 Terminals IP 20
 Operating voltages: Acc. to IEC 1010 resp. EN 61 010
 Contamination level: < 300 V between all insulated circuits
 Overvoltage category: 2
 acc. to IEC 664:

Double insulation:

Test voltage:

III for power supply
 II for measuring input and measuring output
 - Power supply versus all other circuits
 - Measuring input versus measuring output
 Power supply versus:
 - all 3.7 kV, 50 Hz, 1 min.
 Measuring inputs versus:
 - measuring outputs 2.3 kV, 50 Hz, 1 min.
 Measuring input 1 versus:
 - measuring input 2 2.3 kV, 50 Hz, 1 min.
 Measuring output 1 versus:
 - measuring output 2 2.3 kV, 50 Hz, 1 min.

Configuration

1. Standard input ranges

Soldered jumpers are provided for the coarse setting of the input ranges and the fine adjustment is accomplished using the potentiometers "Zero" and "Span".

100 must be added to the designations of the soldered jumpers in the table for channel 1 and 200 for channel 2. (Example: Input range for input 1 and input 2 = 0...20 mA. Jumpers 1, 5, 6 and 11 must be inserted for this range.

-The corresponding jumpers for channel 2 are B 201, B 205, B 206 and B 111
 -The corresponding jumpers for channel 1 are B 201, B 205, B 206 and B 211)

2. Standard output ranges

Soldered jumpers are provided for the coarse setting of the output ranges and the fine adjustment is accomplished using the potentiometers "Zero" and "Span".

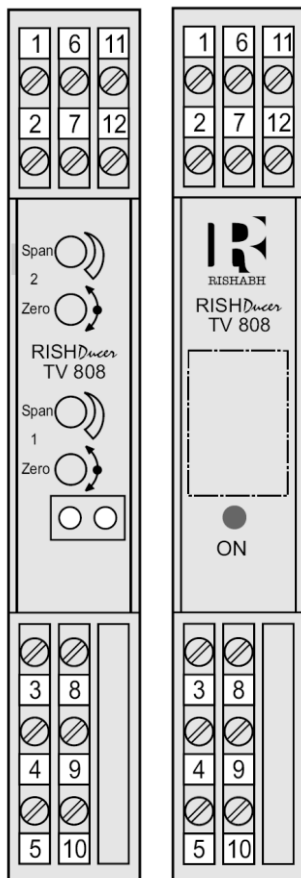
3. Specific user output ranges

Units that have been configured for a specific user output range cannot be subsequently reconfigured.

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Current [mA]		Soldered jumpers		Voltage [V]	Soldered jumpers		
				0 ... 0.06		6,9,10,11	
0...0.1	1,3	0.0.06		0.0.1		7,8,10,11	
0...0.2	1,3	8,11		0.0.2		6,8,9,11	
0...0.5	1,4	9,10,11		0.0.5		6,7,8,9,10	
0...1	1,4	7,10,11		0.1	2	6,7,8,9,10,11	
0...2	1,4	8,11		0.2	2	7,8,9,11	
0... 5	1,5	6, 7, 8, 10, 11		0.5	2	8,10	
0...10	1,5	10, 11		0.10	1	10,11	
0... 20	1,5	6, 11		0.20	1	6,11	
				0.40	1	8	
0.2...1	1,4	8,10,11	12,15	0.2..1	2	9,10,11	12,15
1...5	1,4	6,9	12,15	1.5	2	6,8,9,10	12,15
2...10	1,5	6,7,10,11	12,15	2..10	1	6,7,10,11	12,15
4...20	1,5	6,7,8,11	12,15	4..20	1	6,7,8,11	12,15
-0.1 0..+ 0.1	1,3	8,11	13,14,16	-0.1..0..+0.1		6,8,9,11	13,14,16
-0.2 0..+ 0.2	1,3	7,9	13,14,16	-0.2..0..+0.2		6,7,9,10	13,14,16
-0.5 0..+ 0.5	1,4	7,10,11	13,14,16	-0.5..0..+0.5	2	7,8,10,11	13,14,16
-1 0..+1	1,4	8,11	13,14,15	-1..0..+1	2	7,8,9,11	13,14,16
-2 0..+2	1,4	6,9	13,14,15	-2..0..+2	2	6,8,9,10	13,14,16
-5 0..+ 5	1,5	10,11	13,14,16	-5..0..+5	1	10,11	13,14,16
-10 0..+ 10	1,5	6,11	13,14,15	-10..0..+10	1	6,11	13,14,15
-20 0..+ 20	1,5	6,7	13,14,15	-20..0..+20	1	8	13,14,15

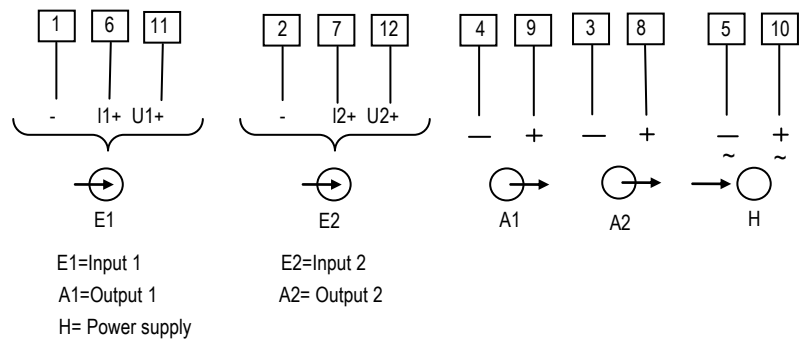
Electrical connections Front



Without transparent cover

Without transparent cover

• ON
Green LED for
Device standing by



Dimensional drawings

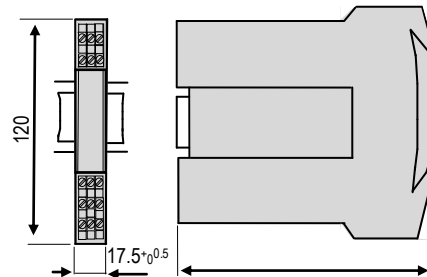


Fig 10. RISH Ducer TV 808 in housing S17
Clipped onto a top-hat rail (35x15 mm or 35x7.5 Mm, acc. To EN 50 022)

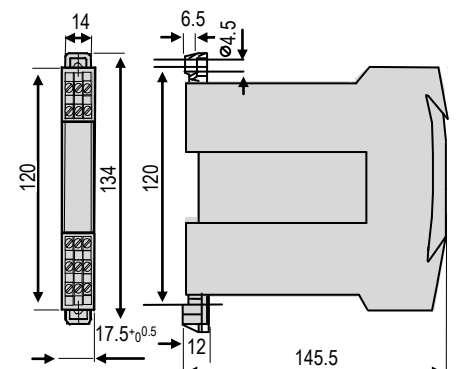


Fig 11. RISH Ducer TV 808 in housing 17 screw hole

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- I1+ U1+
