

## Notes

## Operating Instructions Isolating amplifier Rish*Ducer* TV 808



12.02


# Operating Instructions


## Isolating amplifier RishDucer TV 808

### Contents

1. Read first and then .....	2
2. Scope of supply .....	2
3. Ordering Information .....	2
4. Brief description .....	2
5. Overview of the parts .....	2
6. Technical data .....	3
7. Exchanging front plates .....	4
8. Withdrawing and inserting the device .....	4
9. Mounting .....	4
10. Electrical connections .....	5
11. Configuration .....	6
12. Commissioning .....	7
13. Maintenance .....	7
14. Releasing the isolating amplifier .....	7
15. Dimensional drawings .....	7

### 1. Read first and then

 The proper and safe operation of the device assumes that the Operating Instructions are **read** and the **safety** warnings given in the various sections

 9. Mounting  
10. Electrical Connections  
11. Commissioning

**are observed.**

The device should only be handled by appropriately trained personnel who are familiar within and authorised to work in electrical installations.

### 2. Scope of supply (Fig. 1)

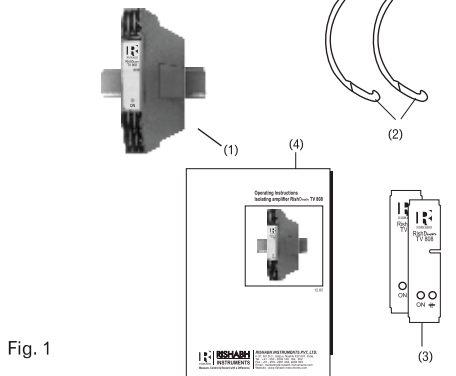


Fig. 1

- 1. Isolating amplifier (1)
- 2. Withdrawing handle (2) (for withdrawing the device from its housing)
- 2. Front plates (3) (for notes)
- 1. Operating Instructions (4)

### 3. Ordering Information

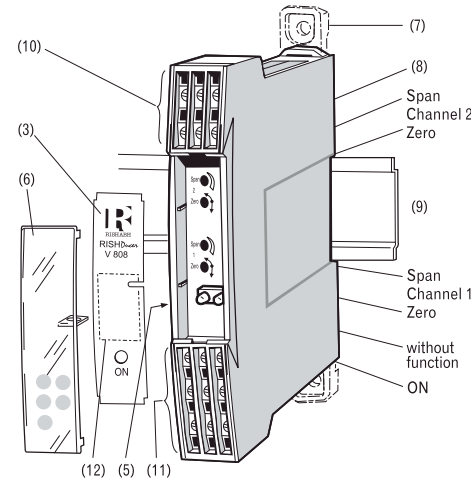
DESCRIPTION	MARKING
<b>1. Mechanical design</b> Housing S17	808 - 1
<b>2. Number of channels</b> 2 channels	2
<b>3. Version / Power supply</b> $\rightarrow \bigcirc$ Standard, 24 ... 60 V DC/AC Standard, 85 ... 230 V DC/AC	1 2
<b>4. Function</b> 2 inputs, 2 electrically insulated outputs 1 input, 2 electrically insulated outputs	2 3
<b>5. Input signal, input 1</b> $\rightarrow \ominus$ input [V] <input type="text"/> acc. to type label input [mA] <input type="text"/> acc. to type label	9 Z
<b>6. Output signal, output 1</b> $\rightarrow \oplus$ output [V] <input type="text"/> acc. to type label output [mA] <input type="text"/> acc. to type label	9 Z
<b>7. Input signal, input 2</b> $\rightarrow \ominus$ Without input 2 input [V] <input type="text"/> acc. to type label input [mA] <input type="text"/> acc. to type label	0 9 Z
<b>8. Output signal, output 2</b> $\rightarrow \oplus$ output [V] <input type="text"/> acc. to type label output [mA] <input type="text"/> acc. to type label	9 Z

### 4. Brief description

The purpose of the isolating amplifier RISH Ducer TV 808 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.

### 5. Overview of the parts

Figure 2 shows those parts of the device of consequence for mounting, electrical connections and other operations described in the Operating instructions.



- (3) Front plate
- (5) Type label
- (6) Transparent cover
- (7) Fixing bracket
- (8) Opening for withdrawing clip (for opening the housing)
- (9) Top-hat rail 35 x 15 mm or 35 x 7.5 mm (EN 50 022)
- (10) Terminals
- (11) Terminals
- (12) Space for notes
- ON Green LED for indicating device standing by

### 6. Technical Data

#### Measuring Input $\rightarrow \ominus$

DC Current : Limit values  
0...0.1 to 0...40 mA  
also live-zero,  
start value >0 to ≤50% final value  
-0.1...0...+0.1 to  
-20...0...+20mA  
also bipolar asymmetrical  
max. span : ≤40 mA  
 $R_i = 15\Omega$

DC Voltage : Limit values  
0...0.06 to 0...40 mA  
also live-zero,  
start value >0 to ≤50% final value  
(-0.06...0...+0.06 to  
-20...0...+20 V)  
max. span : ≤40 V  
 $R_i = 100K\Omega$

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

#### Measuring Outputs $\rightarrow \oplus$

DC Current : Standard ranges  
0...20mA, 4...20mA, ±20mA  
Limit values  
0...1 to 0...20 mA  
0.2...1 to 4...20mA  
-1...0...+1 to -20...0...+20mA

Burden Voltage : 12 V

External resistance :  $R_{ext, max.} (K\Omega) = \frac{12V}{I_{AN} (mA)}$   
 $I_{AN}$  = output circuit full-scale value

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

Burden :  $R_{ext, min.} (K\Omega) \geq \frac{U_{AN} [V]}{5mA}$   
 $U_{AN}$  = output circuit full-scale value

Current limiter at  $R_{ext, max.}$  : Approx. 1.1 x  $I_{AN}$  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 $\rightarrow \bigcirc$

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

Table 1 : Nominal voltages and tolerances

Nominal voltage $U_N$	Tolerance
24... 60 V DC / AC	DC - 15... + 33 % AC ±15%
85... 230 V <sup>1</sup> DC / AC	AC ±15%

<sup>1</sup> For power supplies > 125 V, the auxiliary circuit should include an external fuse with a rating ≤ 20 A D.C.

Power input : ≤ 1.2 W resp. ≤ 3VA

#### Accuracy data (acc. to DIN/IEC 770)

Basic accuracy : Limit error ≤ ± 0.2%  
Including linearity and reproducibility errors

## Installation data

Terminals :	DIN/VDE 0609 Screw terminals with wire guards, for light PVC wiring and max. 2 x 0.75 mm <sup>2</sup> or 1 x 2.5 mm <sup>2</sup> Screw M2.5 torque is 0.4 N-m
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 insulation :** All circuits (measuring inputs/  
measuring outputs / power  
supply) are electrically insulated

## Regulation

Hosing protection (acc. to IEC 529 resp. EN 60529) :	IP 40
Terminals :	IP 20

Electrical standards: Acc. to IEC 1010 resp. EN 61 010

Test voltage :	Power supply versus : - all 3.7 kV, 50 Hz, 1 min.
----------------	--

Measuring inputs versus :  
- measuring outputs 2.3 kV,  
50 Hz, 1 min.

Measuring inputs 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.

## 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 Temp. :	-40 to +70°C
Annual mean Relative humidity :	≤ 75 %

## 7. Exchanging front plates

Apply gentle pressure to the transparent cover as  
shown in Fig. 3 until pops out on the opposite side. The  
label in the cover can be replaced and used for notes.  
After replacing the label in the transparent cover, the  
transparent cover can be snapped into the front of the  
device again. This is done by inserting it behind the edge  
at the bottom and pressing it gently down and to  
the rear with the finger until it snaps into place (right side  
of Fig. 3)

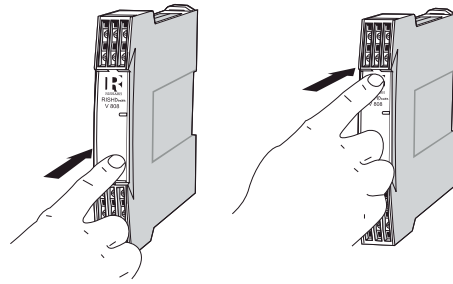


Fig. 3 Left : Removing the transparent cover  
Right : Inserting the transparent cover.

## 8. Withdrawing and inserting the device

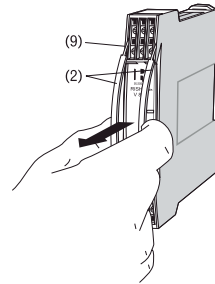
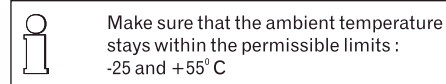


Fig. 4

Insert the withdrawing handles (2) into the openings  
(9) until they snap into place. Withdraw the front part  
together with the main PCB out of the housing.  
To reassemble the unit, insert the front part together  
with the main PCB the housing until the swallow-  
tailed sections engage in each other.

## 9. Mounting

The RISH *Ducer* TV 808 can be mounted either on a top-  
hat rail or directly onto a wall or mounting plate.



## 9.1 Top-hat rail mounting

Simply clip the device onto the top-hat rail (EN 50 022)  
(see Fig. 5).

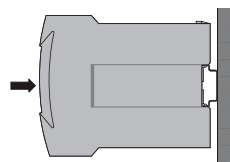


Fig. 5. Mounting on  
top-hat rail 35 x 15  
or 35 x 7.5 mm.

## 9.2 Wall mounting

While pressing the latch (4) in the base of the device  
(Fig. 6, left) pull out the isolating amplifier securing  
brackets(1). To return the brackets to their original  
positions, the latch (5) in the base of the device has  
to be depressed before applying pressure to the  
securing brackets (1) (see Fig. 6, right)

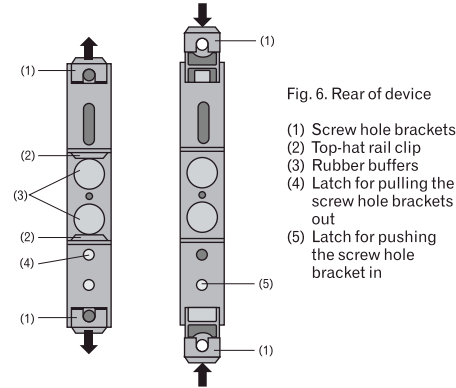


Fig. 6. Rear of device

- (1) Screw hole brackets
- (2) Top-hat rail clip
- (3) Rubber buffers
- (4) Latch for pulling the  
screw hole brackets  
out
- (5) Latch for pushing  
the screw hole  
bracket in

Drill 2 holes in the wall or panel as shown in the  
drilling pattern (Fig. 7). Now secure the power pack  
to the wall or panel using two 4 mm diameter screws.

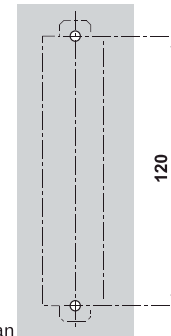
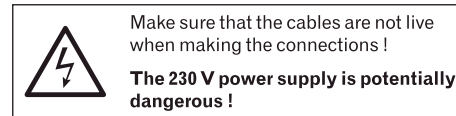


Fig. 7. Drilling plan

## 10. Electrical connections

The electrical connections are made to screw terminals  
which are easily accessible from the front of the power  
pack and can accommodate wire gauges up to max.  
2.5 mm<sup>2</sup>.



**Note that, ...**

- ... the data required to perform the electrical  
insulation task agree with the data on the  
nameplate of the RISH *Ducer* TV 808  
(-⊖ input E, ⊕ output A and →⊖ power  
supply H !)
- ... the total loop resistance connected to the  
output (receiver plus leads) **does not**  
exceed the maximum permissible value  
R<sub>ext</sub> max. See "Measuring Output" in sec.  
"6. Technical data" for the maximum values  
of R<sub>ext</sub> !
- ... the input and output cables should be  
twisted pairs and run as far as possible  
away from heavy current cables !

In all other respects, observe all local  
regulations when selecting the type of

Front

Without transparent cover      With transparent cover

● ON  
Green LED for  
device standing by

1	6	11	2	7	12	4	9	3	8	5	10
-	I1+	U1+	-	I2+	U2+	-	+	-	+	-	+
⊖			⊖			⊕		⊕		→⊖	
E1			E2			A1		A2		H	

E1 = Input 1      E2 = Input 2  
A1 = Output 1

## Notes

### 10.1 Connecting the measuring input leads

Measurement/Application	Input 1	Input 2
DC Current measurement	1 (-), 6 (I1+)	2 (-), 7 (I2+)
DC Voltage measurement	1 (-), 11 (U1+)	2 (-), 12 (U2+)

### 10.2 Connecting the measuring output leads

Connect the measuring output leads A1 to terminals 4(-) and 9(+), the leads A2 to terminals 3(-) and 8(+).

Note : Take care that the amplifier's maximum permissible external burden  $R_{ext}$  is not exceeded (see section "6. Technical data").

### 10.3 Connecting the Power supply leads

Connect the power supply leads to terminals 5(≐) and 10(±)

A two-pole switch must be included in the supply connection where facility for switching RISHD<sub>user</sub> TV 808 off is desired.

**Note :** An external supply fuse with a reptime capacity  $\leq 20$  A must be provided for DC supply voltage  $> 125$  V.

## 11. Configuration

The RISHD<sub>user</sub> TV 808 unit has to be opened before it can be configured (see section "8. Withdrawing and inserting the device").

### 11.1 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...20mA. Jumpers 1,5,6 and 11 must be inserted for this range.

- The corresponding jumpers for channel 1 are B101, B105, B106 and B111.

- The corresponding jumpers for channel 2 are B201, B205, B206 and B211.

Current [mA]	Soldered jumpers	
0 ... 0.1	1,3	7, 10, 11
0 ... 0.2	1,3	8, 11
0 ... 0.5	1,4	9, 10, 11
0 ... 1	1,4	7, 10, 11
0 ... 2	1,4	8, 11
0 ... 5	1,5	6, 7, 8, 10, 11
0 ... 10	1,5	10, 11
0 ... 20	1,5	6, 11
0.2 ... 1	1,4	8, 10, 11
1 ... 5	1,4	6, 9
2 ... 10	1,5	6, 7, 10, 11
4 ... 20	1,5	6, 7, 8, 11
- 0.1 ... 0 ... + 0.1	1,3	8, 11
- 0.2 ... 0 ... + 0.2	1,3	7, 9
- 0.5 ... 0 ... + 0.5	1,4	7, 10, 11
- 1 ... 0 ... + 1	1,4	8, 11
- 2 ... 0 ... + 2	1,4	6, 9
- 5 ... 0 ... + 5	1,5	10, 11
- 10 ... 0 ... + 10	1,5	6, 11
- 20 ... 0 ... + 20	1,5	6, 7
- 0.1 ... 0 ... + 0.1	1,3	8, 11
- 0.2 ... 0 ... + 0.2	1,3	7, 9
- 0.5 ... 0 ... + 0.5	1,4	7, 10, 11
- 1 ... 0 ... + 1	1,4	8, 11
- 2 ... 0 ... + 2	1,4	6, 9
- 5 ... 0 ... + 5	1,5	10, 11
- 10 ... 0 ... + 10	1,5	6, 11
- 20 ... 0 ... + 20	1,5	6, 7

Voltage [V]	Soldered jumpers	
0 ... 0.06		6, 9, 10, 11
0 ... 0.1		7, 8, 10, 11
0 ... 0.2		6, 8, 9, 11
0 ... 0.5		6, 7, 8, 9, 10
0 ... 1	2	6, 7, 8, 10, 11
0 ... 2	2	7, 8, 9, 11
0 ... 5	2	8, 10
0 ... 10	1	10, 11
0 ... 20	1	6, 11
0 ... 40	1	8
0.2 ... 1	2	9, 10, 11
1 ... 5	2	6, 8, 9, 10
2 ... 10	1	6, 7, 10, 11
4 ... 20	1	6, 7, 8, 11
- 0.1 ... 0 ... + 0.1		6, 8, 9, 11
- 0.2 ... 0 ... + 0.2		6, 7, 9, 10
- 0.5 ... 0 ... + 0.5	2	7, 8, 10, 11
- 1 ... 0 ... + 1	2	7, 8, 9, 11
- 2 ... 0 ... + 2	2	6, 8, 9, 10
- 5 ... 0 ... + 5	1	10, 11
- 10 ... 0 ... + 10	1	6, 11
- 20 ... 0 ... + 20	1	8

### 11.2 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".

Current [mA]	Soldered jumpers		Voltage [V]	Soldered jumpers	
	Channel 1	Channel 2		Channel 1	Channel 2
0 ... 20	B120	B220	0 ... 10	B120 B122 B123	B220 B222 B223
4 ... 20	B121	B221	2 ... 10	B121 B122 B123	B221 B222 B223
± 20	—	—	± 10	B122 B123	B222 B223

## 11.3 Specific user output ranges

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

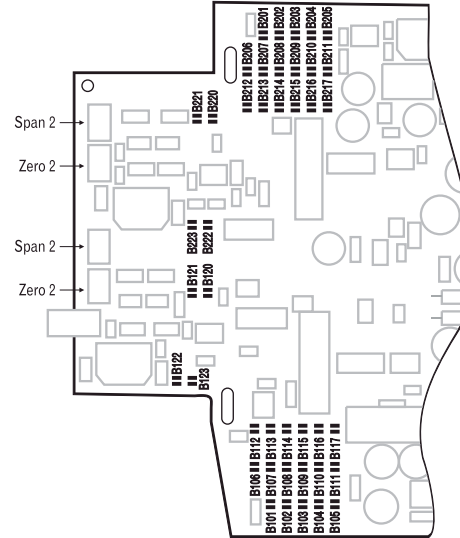


Fig. 8. Position of the soldered jumpers B..., Potentiometer "Zero" and "Span".

## 12. Commissioning

Switch on the measuring inputs and the power supply. The green LED lights continuously after switching on.

The power supply unit must be capable of supplying a brief current surge when switching on. The instrument presents a low impedance at the instant of switching which requires a current  $I_{start}$  of ...

....  $I_{start} \geq 160$  mA for the version with a power supply range of 24 - 60 V DC/AC or

....  $I_{start} \geq 35$  mA for the version with a power supply range of 85 - 230 V DC/AC

## 13. Maintenance

No maintenance is required.

## 14. Releasing the isolating amplifier

Release the isolating amplifier from a top-hat rail as shown in Fig. 9.

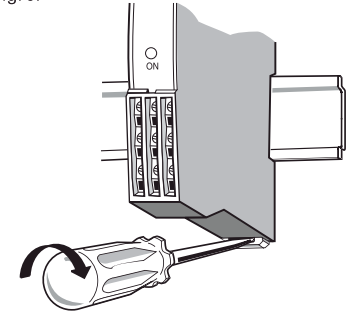


Fig. 9.

## 15. Dimensional drawings

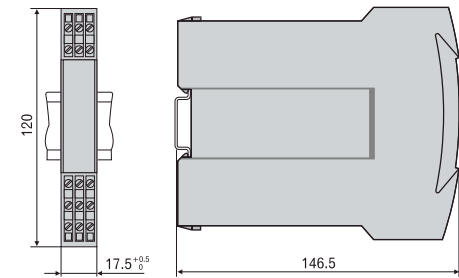


Fig. 10. RISHD<sub>user</sub> TV 808 in housing S17 clipped onto a top-hat rail (35 x 15 mm or 35 x 7.5 mm, acc. To EN 50 022).

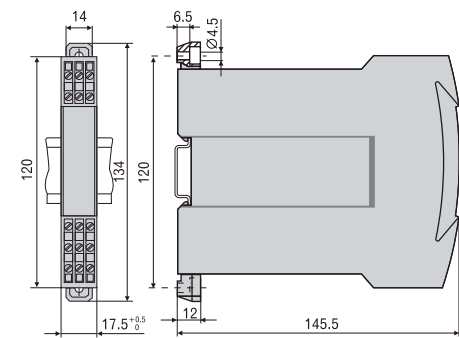


Fig. 11. RISHD<sub>user</sub> TV 808 in housing S17, screw hole mounting brackets pulled out.