

# Room Temperature and Humidity Transmitter TSR24

**Taishio**

## FEATURES

Humidity: 0...100% r.H., Temperature: 0°C...+50°C  
Output: 0-10V or 4...20mA

## APPLICATION

It is used in non-aggressive, dust-free environments, in refrigeration, air conditioning and clean room technology, in interior rooms, such as living rooms, offices, hotels, engineering rooms, meeting and conference facilities. The measuring transducers are designed for exact detection of temperature and humidity. A digital, long-term stable sensor is used as a measuring element for humidity and temperature measurement. Fine adjustment by the user is possible.



## Technical Data

Power supply:	24 V AC ( $\pm 20\%$ ) and 15...36 V DC for U variant 15...36 V DC for I variant, depending on working resistance, residual ripple stabilised $\pm 0.3$ V
Working resistance:	$R_a$ (ohm) = $(U_b - 14 \text{ V}) / 0.02 \text{ A}$ for I variant
Load resistance:	$R_L > 5 \text{ k}\Omega$ for U variant
Power consumption:	$< 1.1 \text{ VA} / 24 \text{ V DC}$ ; $< 2.2 \text{ VA} / 24 \text{ V AC}$
Sensors:	digital humidity sensor with integrated temperature sensor, small hysteresis, high long-term stability

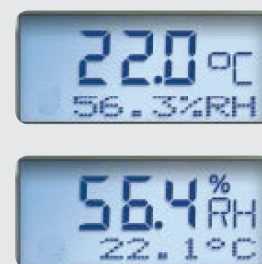
## HUMIDITY

Measuring range, humidity:	0...100 % r. H. (output corresponding to 0 -10 V or 4 ... 20 mA)
Operating range, humidity:	0 ... 95 % r. H. (non-precipitating air)
Deviation, humidity:	typically $\pm 2.0\%$ (20...80 % r. H.) at $+25\text{ }^\circ\text{C}$ , otherwise $\pm 3.0\%$
Output, humidity:	0 -10 V for U variant 4...20 mA for I variant, working resistance $< 800 \Omega$ , see load resistance diagram

## TEMPERATURE

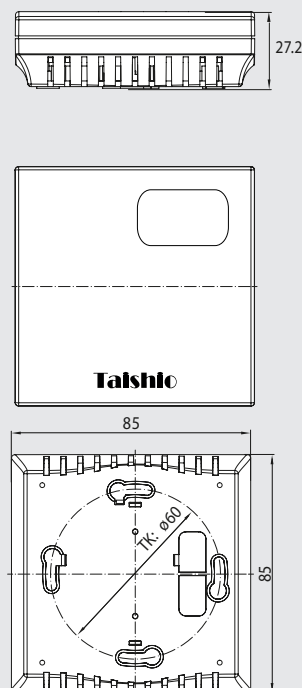
Measuring range, temperature:	0...+ 50 °C (output corresponding to 0 -10 V or 4... 20 mA or Ohm value) others upon request.
Operating range, temperature:	0...+ 50 °C
Deviation, temperature:	$\pm 0.2 \text{ K}$ at $+25\text{ }^\circ\text{C}$
Output, temperature:	0 -10 V or 4 ... 20 mA or Ohm value
Ambient temperature:	storage $-25\text{...}+50\text{ }^\circ\text{C}$ , operation $-5\text{...}+55\text{ }^\circ\text{C}$
Electrical connection:	3- or 4-wire connection (see connecting diagram) 0.14 -1.5 mm <sup>2</sup> via terminal screws on circuit board

Enclosure:	plastic, material ABS, colour pure white (similar to RAL 9010)
Enclosure dimensions:	85 x 85 x 27 mm (Baldur 1)
Installation:	wall mounting or on in-wall flush box, $\varnothing 55$ mm, base with 4-hole for mounting on vertically or horizontally installed in-wall flush boxes for cable entry from the back, with predetermined breaking point for on-wall cable entry from top/bottom in case of plain on-wall installation
Long-term stability:	$\pm 1\%$ per year
Protection class:	III (according to EN 60 730)
Protection type:	IP 30 (according to EN 60 529)
Standards:	CE conformity, according to EMC directive 2014/30/EU, according to EN 61326-1, according to EN 61326-2-3
Optional:	two-line display with illumination, 36 x15 mm (W x H), for displaying ACTUAL temperature and/or ACTUAL humidity



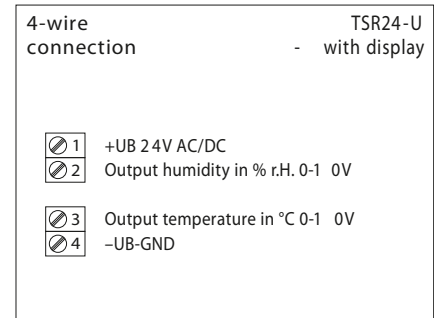
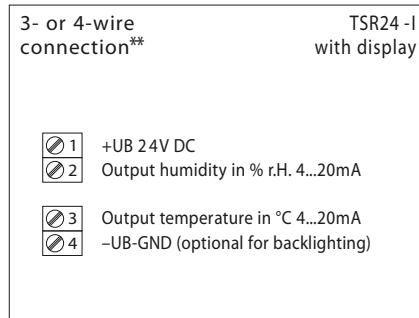
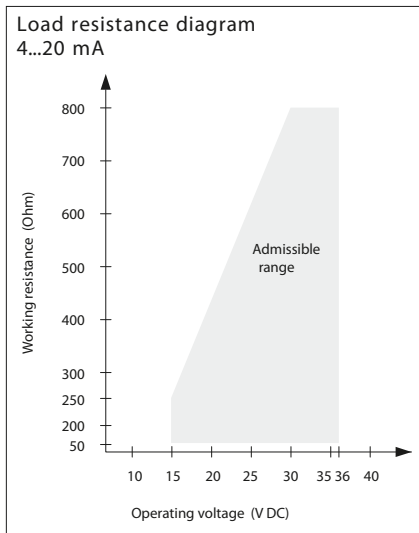
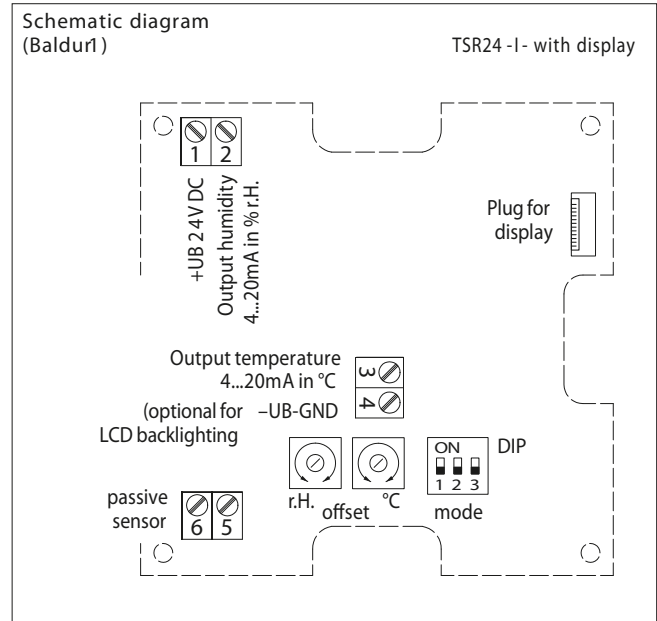
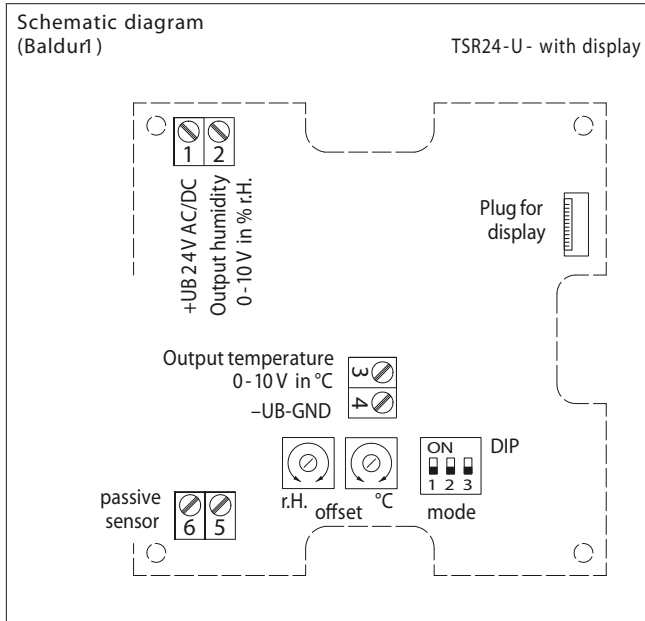
The two-line display readout switches between the ACTUAL humidity reading in % r. H. and the ACTUAL temperature reading in °C. Backlighting is installed for better instrument readability.

Dimensional drawing (Baldur1)



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Connection\*\*:

- 3-wire connection for devices with/without display (not illuminated)
- 4-wire connection for devices with illuminated display

At the I variant the humidity path must be connected!

Humidity table  
MR: 0 ...100% r.H.

% r.H.	U <sub>A</sub> in V	I <sub>A</sub> in mA
0	0	4.0
5	0.5	4.8
10	1.0	5.6
15	1.5	6.4
20	2.0	7.2
25	2.5	8.0
30	3.0	8.8
35	3.5	9.6
40	4.0	10.4
45	4.5	11.2
Continued at the right ...		

% r.H.	U <sub>A</sub> in V	I <sub>A</sub> in mA
50	5.0	12.0
55	5.5	12.8
60	6.0	13.6
65	6.5	14.4
70	7.0	15.2
75	7.5	16.0
80	8.0	16.8
85	8.5	17.6
90	9.0	18.4
95	9.5	19.2
100	10.0	20.0

Temperature table  
MR: 0 ...+50°C

°C	U <sub>A</sub> in V	I <sub>A</sub> in mA
0	0.0	4.0
5	1.0	5.6
10	2.0	7.2
15	3.0	8.8
20	4.0	10.4
25	5.0	12.0
30	6.0	13.6
35	7.0	15.2
40	8.0	16.8
45	9.0	18.4
50	10.0	20.0

## Ordering Guide

Model	Humidity Range	Temperature Range	Output
TSR24-I Display	0 to 100%RH	0 to +50°C	4 to 20 mA
TSR24-U Display	0 to 100%RH	0 to +50°C	0 to 10 V