

Operating Instructions RATIO® Radio Bus System Push-button Interface 4-channel TST230/01



General Information:

The Ratio® switch actuators/receivers are controlled via radio signals of the Ratio® transmitters. Every transmitter can control an unlimited number of actuators/receivers. The Ratio® transmitters have a fixed address and must be learned in for Ratio® switch actuators / receivers.

Product description:

The Ratio® push-button interface TST230/01 is a device for the transmission of the states of two isolated NO contacts. It allows the remote control of Ratio® actuators. Depending on the selected operation mode, different radio telegrams will be sent, for closing and also for opening, which are received and evaluated by Ratio® actuators / receivers.

Position and function of the display and operating elements		Technical data													
		<p>With the Ratio® push-button interface you can send switch and key commands such as:</p> <ul style="list-style-type: none"> • Switching on / off • Dimming brighter / darker • Moving up / down • Adjusting slats • Short push • Long push 		<p>Power supply: Line voltage 230VAC</p> <p>Operating elements: 2 keys for operation mode selection</p> <p>Number of inputs: 2 isolated contacts, switches and/or push-buttons</p>											
Installation instructions															
<p>The device may only be used for fixed installation indoors, in dry rooms and for installation in plastic sockets.</p> <p>Warning:</p> <ul style="list-style-type: none"> • The device may be installed in flush-mounted sockets (230VAC) and may only be installed and taken into operation by a licensed specialist electrician. • Please make sure that the device can be enabled by means of a line safety switch. • For insulation tests, the connection line (outer and neutral wire) have to be connected with each other. • For wire insulation tests which, contrary to today's valid standard DIN VDE 0100 T.610, measure wire against wire, the device has to be disconnected; otherwise, it may be destroyed. • When planning and setting up electrical systems, the pertinent directives, rules and regulations applicable in each country have to be observed. • The applicable safety and accident prevention regulations have to be observed. • Do not open the device. A defective device has to be returned to the trader or the Omnia AG agency in charge. 															
Assembly and Wiring															
<p>The Ratio® push-button interface can be used in plastic sockets, for flush or surface mounting or in devices.</p> <p>The position and the ranges depend on the materials used in a building. Do not install the Ratio® push-button interface in a casing made of metal or in the immediate vicinity of large metal objects. Installation close to the floor or on the floor is not recommended. See the data sheet Range Planning under www.omnio.ch.</p> <p>Connecting control and load circuits:</p> <ul style="list-style-type: none"> • The connections consist of screw-type terminals 2.5mm². • Strip the wires approx. 9..10mm, insert them into the terminal and tighten the screws using a screwdriver size 1. • Max. two wires with 1.5mm² cross-section may be connected. 															
Range between transmitter and receiver															
<p>The signal strength of the radio signals decreases with rising distance between transmitter and receiver. If there is any visual contact, the range is approx. 30m in corridors and 100m in halls. In buildings the range of the radio signal is dependent on the construction materials used:</p>															
<table border="1"> <thead> <tr> <th>Material</th> <th>Typical range</th> </tr> </thead> <tbody> <tr> <td>Brickwork</td> <td>20m, through max. 3 walls</td> </tr> <tr> <td>Reinforced concrete</td> <td>10m, through max. 1 wall / ceiling</td> </tr> </tbody> </table>		Material	Typical range	Brickwork	20m, through max. 3 walls	Reinforced concrete	10m, through max. 1 wall / ceiling	<table border="1"> <thead> <tr> <th>Material</th> <th>Typical range</th> </tr> </thead> <tbody> <tr> <td>Plaster boards / wood</td> <td>30m, through max. 5 walls</td> </tr> <tr> <td>Heat-insulating windows</td> <td>5m, through max. 1 window</td> </tr> </tbody> </table>		Material	Typical range	Plaster boards / wood	30m, through max. 5 walls	Heat-insulating windows	5m, through max. 1 window
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<p>Limitation of the range of the radio signals due to:</p> <p>Assembly of the transmitters / receivers in the direct vicinity of materials with metal components or metal objects. A distance of at least 10cm should be observed.</p> <p>Assembly of the receivers on the floor (floor outlet) or close to the floor</p> <p>Humidity in materials</p> <p>Devices that also emit high-frequency signals, e.g. computers, audio and video systems or electronic ballast for illuminants. A minimum distance of 50cm should be observed.</p>															

Commissioning and operation modes

The push-button interface TST230/01 features three operation modes. In each operation mode, different functions or radio telegrams will be assigned to the two inputs. Upon return of the power supply, the keys BT1 and BT2 will be checked and the respective operation mode is selected. Upon delivery, operation mode 1 is selected.

Selection of the operation mode when applying power (return of power supply)				
Push-button BT1	Not pushed	Pushed	Not pushed	Pushed
Push-button BT2	Not pushed	Not pushed	Pushed	Pushed
Operation mode	No change	↓ 1	↓ 2	↓ 3

Example: Desired operation mode 3

Disconnect device from power supply. Keep the buttons BT1 and BT2 pushed and turn power on again. Now the operation mode is defined and the LED BT1 and BT2 light up for confirmation.

The following radio telegrams have been defined depending on operation mode and input:

SW Release BSW1.1

Operation mode		1		2		3 Mixed	
Basic function		2-channel switches		2-channel push-buttons		Switches / Push button	
Description		Command	Value DB3	Command	Value DB3	Command	Value DB3
Input IN1	Contact closed	<i>Push (AI)</i> <i>170ms Pause</i> <i>Auto-release (AI)</i>	10h 00h	<i>Push (AI)</i>	10h	<i>Push (AI)</i> <i>170ms Pause</i> <i>Auto-Loslassen (AI)</i>	10h 00h
	Contact open	<i>Push (AO)</i> <i>170ms Pause</i> <i>Auto-Loslassen (AO)</i>	30h 00h	<i>Release (AI)</i>	00h	<i>Release (AO)</i> <i>170ms Pause</i> <i>Auto-Loslassen (BO)</i>	30h 00h
	Function	Switches On/Off		Push-buttons On		Switches On/Off	
Input IN2	Contact closed	<i>Push (BI)</i> <i>170ms Pause</i> <i>Auto-Loslassen (BI)</i>	50h 00h	<i>Push (AO)</i>	30h	<i>Push (BI)</i>	50h
	Contact open	<i>Push (BO)</i> <i>170ms Pause</i> <i>Auto-Loslassen (BO)</i>	70h 00h	<i>Release (AO)</i>	00h	<i>Release (BI)</i>	00h
	Function	Switches On/Off		Push-buttons Off		Push-buttons On	

Remark on the above table:

- „Push (AI)“ in the function Switches On / Off corresponds to the pushing and immediate release of a rocker, for example, in a wall transmitter (PTM200)
- „Push (AI)“ in the function Push-buttons corresponds to the pushing of a rocker, for example, in a wall transmitter (PTM200)
- Blue commands or commands written in italics, such as „170ms Pause“ or „Release (AO)“ are automatically created by the push-button interface.

Legal requirements / old devices

The transmitters may not be used in connection with devices that are employed, directly or indirectly, for health- or life-saving purposes or if their operation may cause hazards to human beings, animals or property. Do not leave packaging material lying around carelessly. Plastic foils/bags, etc. may be hazardous toys for children.

These operating instructions are part of the device and part of our warranty terms. They have to be handed over to the customer. The technical specifications of the device may be changed without prior notice.

Do not throw old devices into the domestic garbage can. The device contains electrical components that have to be disposed of as electronic waste. The case is made of reusable plastic material.

Telegram structure

Byte	Symbol	Bedeutung	Wert	Byte	Symbol	Bedeutung	Wert
0	SYNC1	Synchronisation	A5h	1	SYNC2	Synchronisation	5Ah
2	HEADER		xxh	3	ORG	Sendertyp	05h
4	DATA3	Input IN0 Channel (AO) „Aus“ Input IN0 Channel (AI) „Ein“ Input IN1 Channel (BO) „Aus“ Input IN1 Channel (BI) „Ein“ Release	30h 10h 70h 50h 00h	5	DATA2	Normaly0	00h
6	DATA1	Normaly 0	00h	7	DATA0	Normaly 0	00h
8	ID3	ID-Number Part 1	xxh	9	ID2	ID-Number Part 2	xxh
10	ID1	ID-Number Part 3	xxh	11	ID0	ID-Number Part 4	xxh
12	STATUS	Statusbyte	xxh	13	CHK	Checksumme	xxh

Wiring diagram	Designation	Type	Article number
	Push-button interface 4-channel Power supply 230VAC	TST230/01	1501000
	Push-button interface 4-channel Power supply 12-24VAC/DC	TST24/01	1502000