Operating Instructions
RATIO® Radio Bus System
UP-Repeater 1-Level 2DI UPR230/02

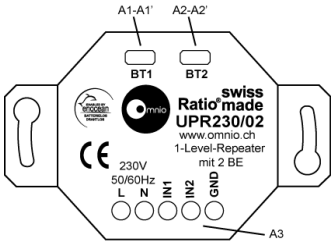
General Information:
The Ratio® switch actuators/receivers are controlled via radio signals of the Ratio® radio transmitters. Every transmitter can control an unlimited number of actuators/receivers. The Ratio® radio transmitters have a fixed address and must be learned in for Ratio® actuators / receivers.

Product description:
The Ratio® repeater UPR230/02 serves for the amplification of the radio telegram between Ratio® radio senders and Ratio® radio receivers. The Ratio® repeater is used in case of range difficulties between Ratio® radio senders and Ratio® radio receivers. All originally and valid received enocean-telegramms between sensors an receivers/actuator will be amplified.

The repeater needs only being connected to the mains supply. It is not necessary to learn in sensors.

The repater has additionally two binary Inputs for two potential free contacts.

Position and function of the display and operating elements



A1: Button BT1 for selecting the operationmode.
A1': LED BT1 indicating the operationmode

A2: Button BT2 for selecting the operationmode.
A2': LED BT2 indicating the operationmode

A3: Screw-type terminals 4mm2 for connection of the supply voltage and the load circuit

Technical data

Connection voltage: 230VAC

Installation instructions

The device may only be used for fixed installation indoors, in dry rooms and for installation in plastic sockets, taking into consideration the technical data.

Warning:

- 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 insulations 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.
- The technical data of the device, in particular the data of the switch contact, have to be observed.
- Do not open the device. A defective device has to be returned to the trader or the Omnio AG agency in charge.

Assembly and Wiring

The Ratio® UP repeater can be used in plastic sockets, for flush or surface mounting or in devices.

The position and the ranges depend on the materials used in a building. Do not install the Ratio® UP actuator 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.

Connecting control and load circuits:

- The connections consists of screw-type terminals 4mm^2.
- Strip the wires approx. 9..10mm, insert them into the terminal and tighten the screws using a screwdriver size 1.
- Max. two wires with 1.5mm^2 cross-section may be connected.

Range between transmitter and receiver

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:

Material	Typical range	Material	Typical range
Brickwork	20m, through max. 3 walls	Plaster boards / wood	30m, through max. 5 walls
Reinforced concrete	10m, through max. 1 wall / ceiling	Heat-insulating windows	5m, through max. 1 window

Limitation of the range of the radio signals due to:

- Installation 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.
- Installation of the receivers on the floor (floor outlet) or close to the floor
- Humidity in materials

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.

Learning in and unlearning of radio transmitters

It is not neede to learn in sensors.

Commissioning and operation modes for the binary inputs

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.

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Selection of the operation mode when applying power (return of power supply)				
Button BT1	Not pushed	Pushed	Not pushed	Pushed
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:

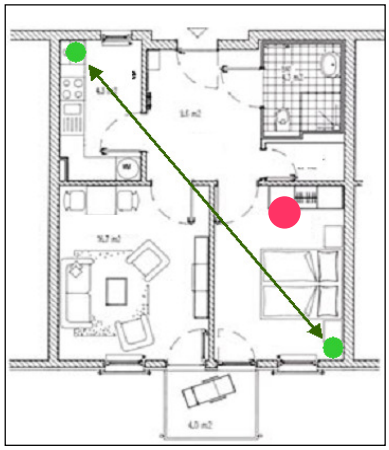
Operation mode **Basis function**		**1** **2-channel switch**		**2** **2-channel push button**		**3** **Mixed** **Switches / Push button**	
Description		Command	Value DB3	Command	Value DB3	Command	Value DB3
Input IN1	Contact closed	***Betätigen (AI)*** *170ms Pause* *Auto-Loslassen (AI)*	10h 00h	***Betätigen (AI)***	10h	***Betätigen (AI)*** *170ms Pause* *Auto-Loslassen (AI)*	10h 00h
	Contact open	***Betätigen (AO)*** *170ms Pause* *Auto-Loslassen (AO)*	30h 00h	***Loslassen (AI)***	00h	***Betätigen (AO)*** *170ms Pause* *Auto-Loslassen (BO)*	30h 00h
	Function	Switche On/Off		Push button On		Switche On/Off	
Input IN2	Contact closed	***Betätigen (BI)*** *170ms Pause* *Auto-Loslassen (BI)*	50h 00h	***Betätigen (A0)***	30h	***Betätigen (BI)***	50h
	Contact open	***Betätigen (BO)*** *170ms Pause* *Auto-Loslassen (BO)*	70h 00h	***Loslassen (A0)***	00h	***Loslassen (BI)***	00h
	Function	Switche On/Off		Push button Off		Push button 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.

Assembly

Basically Ratio® 1-level repeater are used in case of range difficulties between Ratio® radio senders and Ratio® radio receivers. That range-problem should be solved by placing a repeater between sender and receiver. Does the problem still exist, a second repeater in operation mode 2-level (UPS230/03) can be considered.

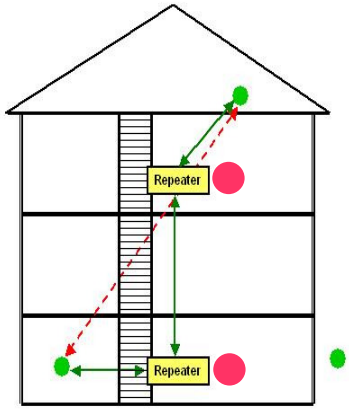
Example Flat::



Sender oder Empfänger

Repeater in 1-Level operation mode

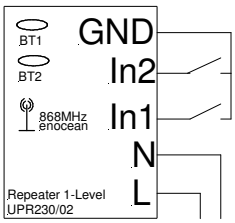
Example Residenc with 3 floors



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 off as electronic waste. The case is made of reusable plastic material.

Wiring diagram	**Designation**	**Type**	**Article number**
	Ratio®-UP-repeater 1-Level, Supply 230VAC	**UPR230/02**	**9003000**