

The set consists of four channel radio transmitter and dedicated superheterodyne type receiver designed for wireless transmission of 4 transmitter inputs state to the receiver. In advantageous, obstacle free environment (trees, buildings, constructions, etc.), operating range may reach up to 500 meters. The set and its components are designed for use in alarm, security and remote control applications.

The receiver is 12VDC powered. The transmitter may be either 12VDC or/and 3V (2 x AA type) alkaline type battery powered.

**Transmitter Operating Modes are selected by the use of jumpers on pins 1..10.**

**IMPORTANT!** Every time a new operating mode is selected with jumpers 1-4 and 5-6, the transmitter must be programmed (learned) to the receiver to validate the new settings. Change of jumpers on pins 7-8 and 9-10 does not require new learning of the transmitter to the receiver.

	<p><b>Mode 1 (Continuous).</b> Any D1..D4 input/s activation in the transmitter triggers radio transmission and setting on corresponding output/s in the receiver. Also, any input state change during the transmission results in the receiver output state change correspondingly. The transmission is terminated on all inputs return to inactive state. The receiver outputs remain set on for a programmed period of time. If transmitter inputs remain active for longer than 15 or 40 seconds (*), it automatically switches to 1 second transmission every 1 minute break interval.</p>
	<p><b>Mode 2 (Prolonged).</b> Activation of any input in the transmitter triggers transmission setting corresponding outputs in the receiver. It lasts 15 or 40 seconds (*) even if the activation is terminated earlier. If any other input is activated in the mean time, the transmission is prolonged and will convey information on activation of both inputs. If transmitter inputs remain active for longer than 15 or 40 seconds (*), it automatically switches to 1 second transmission every 1 minute break interval. Receiver outputs remain set on for programmed period of time since end of last transmission.</p> <p>This operating mode is recommended for use in multi transmitter system, because if any transmitter sets on output D1 of the receiver and it is followed by signal from second transmitter with active input D2, both receiver's outputs D1 and D2 will be set on as the transmission from second transmitter does not reset output set on by earlier transmitter signal.</p>
	<p><b>Mode 3 (Radio relay).</b> Every D1..D4 input state change in the transmitter (activation or deactivation) triggers radio transmission lasting 15 or 40 seconds (*). Corresponding outputs in the receiver are set on until new transmitted settings are received.</p> <p>In this operating mode receiver's outputs state is the actual representation of transmitter's inputs state.</p>
	<p><b>Mode 4 (Relay+cyclic).</b> Operating mode similar to mode 4 except that every 80 seconds transmitter triggers 1 second lasting "receiver's outputs state" refreshing transmission. Meaning of this refreshing transmissions may be of importance in the risk of power supply failure or radio interference problems.</p>

(\*) Transmission duration lasts 15 or 40 seconds in 1 second transmission cycle every 2 seconds break, as selected by jumper 7-8: on - 40 seconds, off - 15 seconds.

**Transmitter Inputs.** The transmitter features 4 control inputs that can be NC – normally closed type (jumper 9-10 on) or NO – normally open type (jumper off). If inputs are NC type, they are shorted to ground (- VDC) when inactive and active if disconnected from ground. In NO mode, operation is reversed.

**The Receiver.** It features 4 galvanic separated relay outputs that can be jumper set to NC or NO type in inactive mode. Outputs type jumpers are placed close to the relays. Receiver LED changes light from red to green on any receiver output set on while signal output S generates 1 second lasting pulses (shorting to receiver ground - VDC) every 1 second break.

**Receiver Operation with Many Transmitters.** In operation mode 2 up to 60 transmitters may be programmed to a receiver while in modes 1, 3 and 4 multi transmitter operation is not recommended. This is due to the fact that in modes 1, 3, 4 every new transmission received resets receiver outputs to a new state. In consequence, outputs set by one transmitter would be reset by another. Only in mode 2 once set outputs will remain for programmed time period and during that time other transmitter signals would not reset them.

**Transmitter Operation with other Elmes Electronic Receivers.** There may be many RP501 transmitters operating in different modes with receivers types CH4H, CH8H or CH20H. Example: to output 1 of CH4H receiver may be programmed input 1 of RP501 while to output 2 of the receiver input 1 of other RP501 transmitter can be programmed. In this mode, every output of the CH4H receiver is controlled by only one transmitter and other transmitters do not influence operation of the output. **IMPORTANT:** In operation of RP501 transmitter with other than dedicated RP501 receiver, the radio communication link testing feature cannot be used.

**Additional Features of the RP501 set:**

**Tamper Protection.** Both the transmitter and the receiver of the RP501 set have sabotage (TAMPER) protection switches. In the transmitter, the TAMPER switch is connected in series with control input D4. To activate the TAMPER function in transmitter ZT marked wire jumper must be cut. Transmitter box opening will trigger the same action as activation of control input D4.

**Low Battery Warning in Transmitter.** If the RP501 transmitter is battery powered only, its voltage drop to 2,7 Volts would set on a warning feature by green LED pulsing in the receiver. Battery replacement ceases the warning feature. Low battery warning transmissions are send to the receiver every 4 minutes.

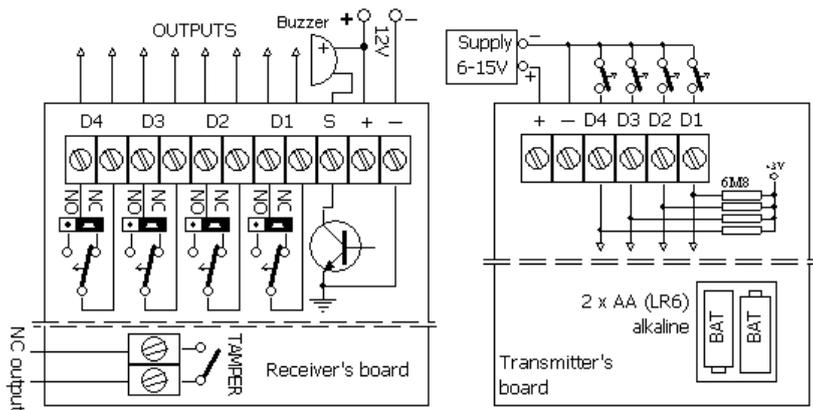
**Radio Communication Link Testing.** This function allows detection of radio link failure between transmitter and receiver. It is activated by setting off jumper 5-6 in the transmitter (new learning of the transmitter to the receiver must be remembered). When activated, every ca 35 seconds the function triggers radio link testing transmission. If the receiver would not receive test transmission within 90 seconds due to e.g. interference or transmitter failure, a warning alarm will be set on by pulsing red of the receiver LED and warning pulses at the signalling output S with 0,5 second pulse every 1,5 second break (if jumper JP1 is on) or, permanent S output shorting to ground (if jumper JP1 is off).

Radio link warning alarm will last till new transmission is received by the receiver.

**IMPORTANT!** Only one transmitter in the system may operate with radio link testing feature set on.

**Installation.** Practical operating range of the RP501 set depends on local radio waves propagation conditions that are buildings, trees, constructions, etc. It is strongly recommended that every new installation must be operating range tested before firm fitting with transmitter and receiver not to be installed on the edge of tested operating range. Not used control inputs of the transmitter should be left inactive, that is shorted to ground if jumper 9-10 is on or, left open if jumper 9-10 is off. Antenna wire must not be glued to wall.

**WARNING!** The RP501 transmitter operates in public band of 434 MHz therefore, it should not be installed in places where frequent transmissions could interfere with other equipment using this radio band, e.g. car alarms, causing malfunction or improper functioning. Permanent occupation of this radio band is forbidden by law.



The RP501 transmitter may be either powered by 12VDC supply screwed to +/- connectors or, by 3V (2x AA) battery or, by both power sources simultaneously.

The transmitter's control inputs D1..D4 are internally coupled to +3V by 6M Ohm resistors. It allows very low current draw in inactive mode (less than 15 uA). There is a possibility to reduce the resistance to ca 10 kOhm allowing better resistance to interference and failures when long and very long wires are connected to the control inputs. To reduce the coupling resistance jumper joints Z1..Z4 at the bottom of the pcb should be soldered. Reduced coupling resistance will cause current draw increased to 1,2 mA in inactive state of the transmitter.

### PROGRAMMING PROCEDURES

**Prior to programming make sure the receiver's LED lights green, otherwise shortly disconnect power supply.**

#### 1. Programming - learning transmitter/s (maximum 60) to receiver's memory:

- press the receiver's **PRG** switch (LED lights red) for less than 2 seconds. Releasing the switch LED continues to light red,
- activate one of control inputs of the transmitter. Red blinking LED in the receiver confirms end of the procedure and the transmitter is in the receiver's memory.

#### 2. Programming the receiver outputs reset time:

- press the receiver's **PRG** switch (LED lights red) for more than 2 and less than 8 seconds. Releasing the switch LED light changes to green,
- press shortly PRG switch in the receiver to start time-lapse count. Receiver LED lights red. After desired time has lapsed (1s up to 6 hours) press the PRG switch shortly again.
- The receiver's LED changes to green and after 2 seconds starts blinking confirming end of the procedure.

NOTE: By triple pressing PRG switch with intervals shorter than 2 seconds, in point b) above, the receiver's outputs are set to latched (on/off) mode of operation. In that case, the only way to reset receiver's relay outputs in 1 and 2 of transmitter operating modes is to disconnect power supply.

#### 3. Deleting all transmitters from the receiver's memory:

Press the receiver's **PRG** switch (LED lights red) for more than 8 seconds, until the receiver LED starts blinking confirming end of the procedure. Memory of the receiver is cleared. Programming new transmitter/s to the receiver can be made as in point 1 above.

### RP501 SET SPECIFICATION:

#### Transmitter:

power supply 6-15 VDC or 2 x AA 1,5V alkaline type battery;  
Transmission current 15mA, standby current 15uA,  
Transmission 64 bits; code combinations 16777216;  
f = 433,92 MHz ( $\leq 10\text{dBm}$ ),  
Operation temperature range -20 to +50°C,

#### Receiver:

superheterodyne type, p. supply 10-15VDC;  
Current draw: 20mA + 20mA/relay set;  
Relay outputs: (1A/125VAC, 1A/30VDC);  
Output S type OC: 1A/60V;  
Maximal number of transmitters 60;  
Operating temperature range: - 20 to +50°



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**Manufacturer's limited warranty.** Elmes Electronic products carry manufacturer's one year limited warranty as from date of purchase. The warranty is limited to the replacement of faulty original parts or repair defects of improper manufacture. Damage, faulty use or improper handling by the user or installer as well as any changes in product's hardware or software caused by the user or any other unauthorised person viods the warranty and all due repair costs will be charged. In all cases, the customer pays costs of delivery to and from the manufacturer of the products to be serviced. Elmes Electronic shall not bear liability for any personal or material damage resulting from its any product direct, indirect or partial failure to operate properly.