USER MANUAL

Additional equipment
LPC-2.RC1S
Remote control

Version 1

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User Manual

Document Version: 1
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STANDARDS AND PROVISIONS: Standards, recommendations, regulations and provisions of the country in which the devices will operate, must be considered while planning and setting up electrical devices. Work on 100 .. 240 V AC network is allowed for authorized personnel only.

DANGER WARNINGS: Devices or modules must be protected from moisture, dirt and damage during transport, storing and operation.

WARRANTY CONDITIONS: For all modules LONGO LPC-2 – if no modifications are performed upon and are correctly connected by authorized personnel – in consideration of maximum allowed connecting power, warranty of 24 months is valid from the date of sale to the end buyer, but not more than 36 months after delivery from Smarteh. In case of claims within warranty time, which are based on material malfunctions the producer offers free replacement. The method of return of malfunctioned module, together with description, can be arranged with our authorized representative. Warranty does not include damage due to transport or because of unconsidered corresponding regulations of the country, where the module is installed.

This device must be connected properly by the provided connection scheme in this manual. Misconnections may result in device damage, fire or personal injury.
Hazardous voltage in the device can cause electric shock and may result in personal injury or death.
NEVER SERVICE THIS PRODUCT YOURSELF!
This device must not be installed in the systems critical for life (e.g. medical devices, aircrafts, etc.).

If the device is used in a manner not specified by the manufacturer, the degree of protection provided by the equipment may be impaired.

Waste electrical and electronic equipment (WEEE) must be collected separately!

LONGO LPC-2 complies to the following standards:

- EMC: EN 61000-6-3:2007 + A1:2011, EN 61000-6-1:2007, EN 61000-3-2:2006 + A1:2009 + A2: 2009, EN 61000-3-3:2013
- LVD: IEC 61010-1:2010 (3rd Ed.), IEC 61010-2-201:2013 (1st Ed.)

Smarteh d.o.o. operates a policy of continuous development. Therefore we reserve the right to make changes and improvements to any of the products described in this manual without any prior notice.

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Additional equipment LPC-2.RC1S

1 ABBREVIATIONS

Sorted by order of appearance in document:

IR	Infrared
RC	Remote control
SP	Set point
LED	Light emitting diode

2 DESCRIPTION

LPC-2.RC1S is an IR remote control which is designed to be used with all Smarteh intelligent peripherial modules that have an IR receive function, e.g. LPC-2.SM5, LPC-2.SM6, LPC-2.SM7, LPC-2.IR2V. LPC-2.RC1S transmits IR commands according to standard RC-5 protocol for remote controls. Print on the front side is conveniently chosen to be used in building automation.

LPC-2.RC1S is powered from the 4x AAA batteries.

3 FEATURES

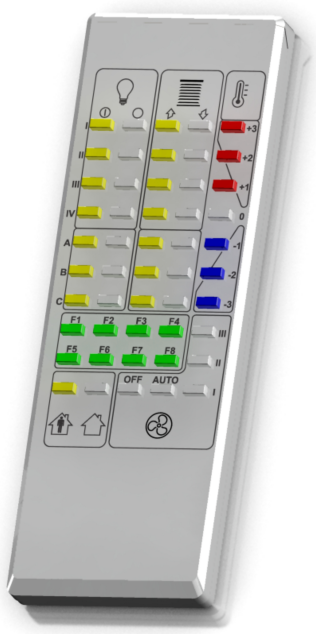


Figure 1: LPC-2.RC1S

Table 1: Features
IR command transmitter
Robust design
Designed for building automation

4 OPERATION

4.1 Buttons RC-5 data code

Figure 2: LPC-2.RC1S buttons layout

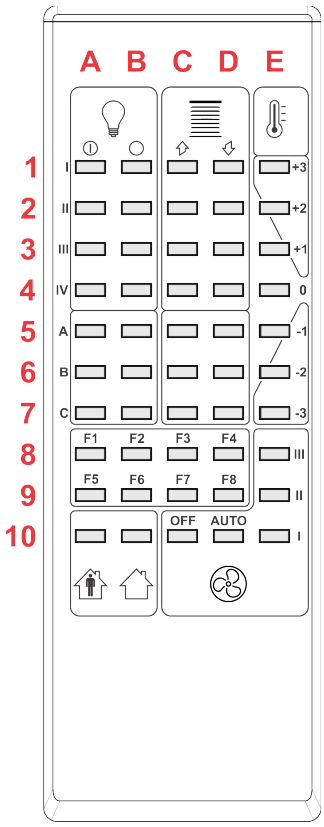
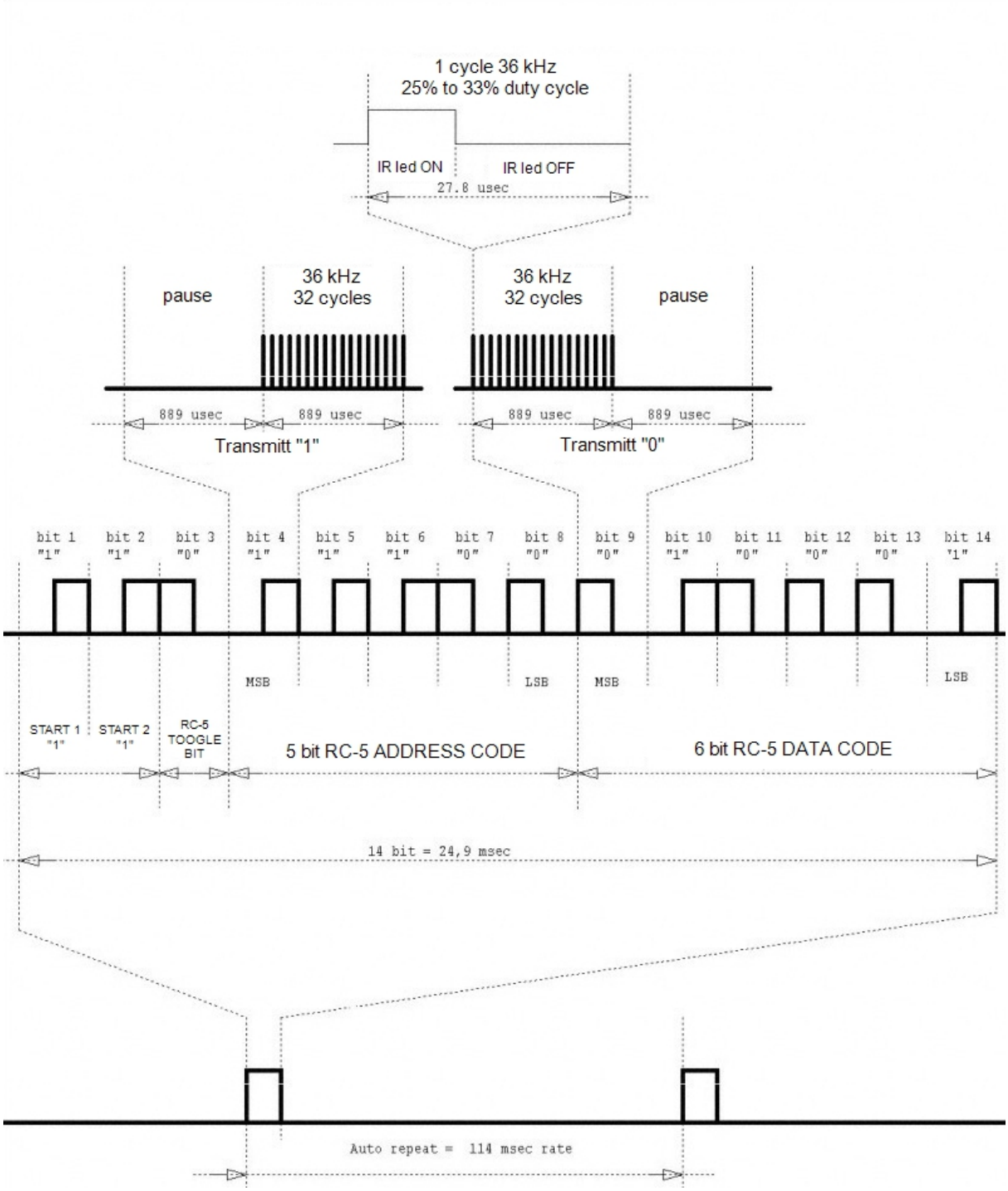


Table 2: Buttons RC-5 data code

	A	B	C	D	E
1	Light I: ON RC-5 DATA CODE: **001101**$_{(bin)}$	Light I: OFF RC-5 DATA CODE: **100000**$_{(bin)}$	Blinds I: UP RC-5 DATA CODE: **001111**$_{(bin)}$	Blinds I: DOWN RC-5 DATA CODE: **111000**$_{(bin)}$	Temp.: SP +3 °C RC-5 DATA CODE: **001100**$_{(bin)}$
2	Light II: ON RC-5 DATA CODE: **010001**$_{(bin)}$	Light II: OFF RC-5 DATA CODE: **111011**$_{(bin)}$	Blinds II: UP RC-5 DATA CODE: **010000**$_{(bin)}$	Blinds II: DOWN RC-5 DATA CODE: **010011**$_{(bin)}$	Temp.: SP +2 °C RC-5 DATA CODE: **010010**$_{(bin)}$
3	Light III: ON RC-5 DATA CODE: **001110**$_{(bin)}$	Light III: OFF RC-5 DATA CODE: **100001**$_{(bin)}$	Blinds III: UP RC-5 DATA CODE: **100110**$_{(bin)}$	Blinds III: DOWN RC-5 DATA CODE: **010101**$_{(bin)}$	Temp.: SP +1 °C RC-5 DATA CODE: **010100**$_{(bin)}$
4	Light IV: ON RC-5 DATA CODE: **000001**$_{(bin)}$	Light IV: OFF RC-5 DATA CODE: **000010**$_{(bin)}$	Blinds IV: UP RC-5 DATA CODE: **000011**$_{(bin)}$	Blinds IV: DOWN RC-5 DATA CODE: **011101**$_{(bin)}$	Temp.: SP RC-5 DATA CODE: **011100**$_{(bin)}$
5	Group A: ON RC-5 DATA CODE: **000100**$_{(bin)}$	Group A: OFF RC-5 DATA CODE: **000101**$_{(bin)}$	Group A: UP RC-5 DATA CODE: **000110**$_{(bin)}$	Group A: DOWN RC-5 DATA CODE: **011011**$_{(bin)}$	Temp.: SP -1 °C RC-5 DATA CODE: **011010**$_{(bin)}$
6	Group B: ON RC-5 DATA CODE: **000111**$_{(bin)}$	Group B: OFF RC-5 DATA CODE: **001000**$_{(bin)}$	Group B: UP RC-5 DATA CODE: **001001**$_{(bin)}$	Group B: DOWN RC-5 DATA CODE: **010110**$_{(bin)}$	Temp.: SP -2 °C RC-5 DATA CODE: **011000**$_{(bin)}$
7	Group C: ON RC-5 DATA CODE: **000000**$_{(bin)}$	Group C: OFF RC-5 DATA CODE: **001011**$_{(bin)}$	Group C: UP RC-5 DATA CODE: **001010**$_{(bin)}$	Group C: DOWN RC-5 DATA CODE: **011110**$_{(bin)}$	Temp.: SP -3 °C RC-5 DATA CODE: **100010**$_{(bin)}$
8	Function: F1 RC-5 DATA CODE: **111100**$_{(bin)}$	Function: F2 RC-5 DATA CODE: **111111**$_{(bin)}$	Function: F3 RC-5 DATA CODE: **100011**$_{(bin)}$	Function: F4 RC-5 DATA CODE: **101011**$_{(bin)}$	Fan: SPEED III RC-5 DATA CODE: **100100**$_{(bin)}$
9	Function: F5 RC-5 DATA CODE: **101010**$_{(bin)}$	Function: F6 RC-5 DATA CODE: **101001**$_{(bin)}$	Function: F7 RC-5 DATA CODE: **101110**$_{(bin)}$	Function: F8 RC-5 DATA CODE: **101100**$_{(bin)}$	Fan: SPEED II RC-5 DATA CODE: **110101**$_{(bin)}$
10	Occupancy: ON RC-5 DATA CODE: **101101**$_{(bin)}$	Occupancy: OFF RC-5 DATA CODE: **110111**$_{(bin)}$	Fan: OFF RC-5 DATA CODE: **110110**$_{(bin)}$	Fan: AUTO RC-5 DATA CODE: **110010**$_{(bin)}$	Fan: SPEED I RC-5 DATA CODE: **110100**$_{(bin)}$

4.2 RC-5 protocol

RC-5 protocol is a standard IR protocol for IR remote controls which was developed by Philips. Diagram below explains how the message frame is composed. Message frame starts with two start bits which is followed by a toogle bit. Toogle bit is toogled each time when new press on the button is made. After the toogle bit there is a 5 bit RC-5 address code and a 6 bit RC-5 data code.



4.3 How to change RC-5 address code

Default RC-5 address code is $29_{(dec)}$. In case of interference, default RC-5 address code must be changed with alternative RC-5 address code which is $30_{(dec)}$.

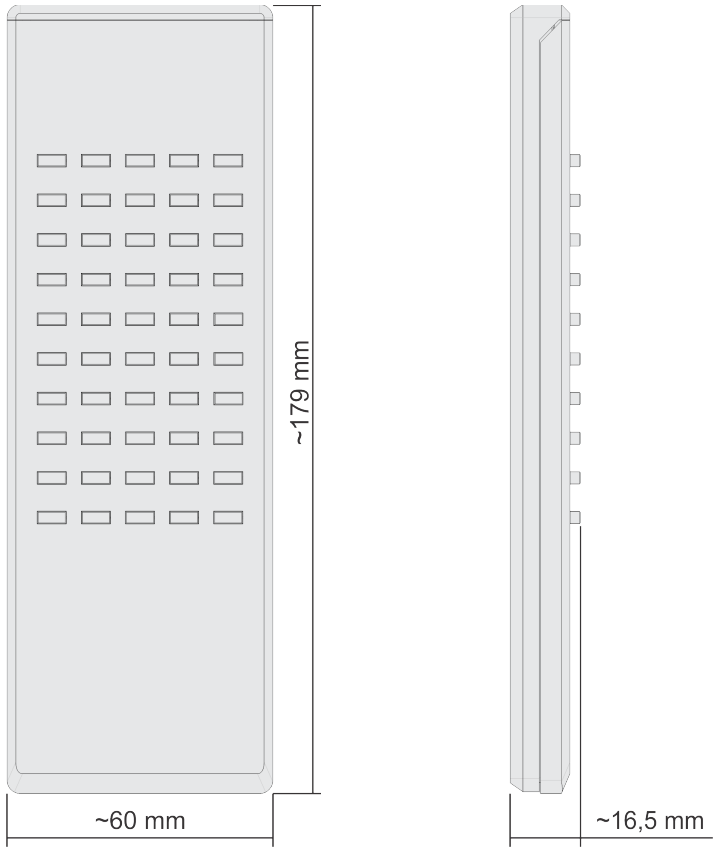
Changing RC-5 address code to alternative code can be done with following steps:

1. Remove battery cover so that red LED is visible.
2. Press buttons D1 and C3 simultaneously for 2 seconds. Red LED starts to blink. Release buttons.
3. Immediately after step 2 press button B4 for 2 seconds. At first red LED turns off for a short time and then turns on for as long as the button is pressed. Release button. RC-5 address code is now changed. To be sure, in 5 seconds period, press button B4 again - red LED should turn on and should stay on for as long as the button is pressed.

If red LED did not go on, an error has appeared. Repeat steps 2 and 3. In case user wants to change RC-5 address code back to default, repeat steps 2 and 3, the only difference is that instead of pressing button B4 in step 3, button A4 needs to be pressed.

4.4 Housing dimensions

Figure 3: Housing dimensions



Dimensions in milimeters.

4.5 Assembly instructions

Figure 4: Assembly instructions

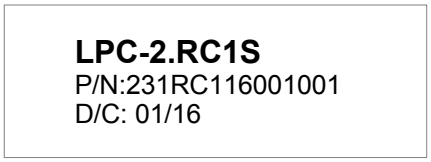
Install 4 AAA batteries as shown in figure above.[1]

1 Batteries are not supplied with LPC-2.RC1S.

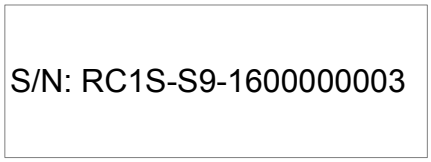
4.6 Module labeling

Figure 5: Labels

Label 1 (sample):



Label 2 (sample):



Label 1 descriptions:

1. **LPC-2.RC1S** is the full product name.
2. **P/N: 225RC116001001** is the part number.
   - **225** – general code for product family,
   - **RC1** – short product name,
   - **16001** – sequence code,
     - 16 – year of code opening,
     - 001 – derivation code,
   - **001** – version code (reserved for future HW and/or SW firmware upgrades).
3. **D/C: 01/16** is the date code.
   - **01** – week and
   - **16** – year of production.

Label 2 descriptions:

1. **S/N: RC1S-S9-1600000003** is the serial number.
   - **RC1S** – short product name,
   - **S9** – user code (test procedure, e.g. Smarteh person xxx),
   - **1600000003** – year and current stack code,
     - 16 – year (last two cyphers),
     - 00000003 – current stack number; previous module would have the stack number 00000002 and the next one 00000004.

5 TECHNICAL SPECIFICATIONS

Table 3: Technical specifications	
Power supply	4x AAA batteries[2]
Dimensions (W x H x D)	179 x 60 x 16.5 mm
Weight	80 g
Maximum altitude	2000 m
Ambient temperature	0 to 50 °C
Ambient humidity	max. 95 %, no condensation
Transport and storage temperature	-20 to 60 °C
Protection class	IP 20

2 Batteries are not supplied with LPC-2.RC1S.

6 SPARE PARTS

For ordering spare parts following Part Numbers should be used:

IR Remote Control	
LPC-2.RC1S	P/N: 225RC116001001

7 CHANGES

The following table describes all the changes to the document.

Date	V.	Description
15.01.17	1	The initial version, issued as *LPC-2.RC1S User Manual*.

8 NOTES