USER MANUAL

Longo programmable controller
LPC-2.WT1
Wireless Light Switch Control
panel

Version 4

Written by SMARTEH d.o.o.
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User Manual

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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.

MANUFACTURER:
SMARTEH d.o.o.
Poljubinj 114
5220 Tolmin
Slovenia

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Longo programmable controller LPC-2.WT1

1 ABBREVIATIONS

Sorted by order of appeareance in document:

PB   Push button

LCD   Liquid crystal display

DIP   Dual in-line package

SP   Set point

WM-BUS   Wireless M-Bus

2 DESCRIPTION

LPC-2.WT1 wireless light switch control panel is used to switch on/off four individual or group of lights. Panel is equipped with four push buttons (PB), temperature, humidity and light intensity sensor. Data are displayed on low power monochromatic LCD.

After PB1 pressing, light symbol next to PB1 on LCD will represent on status. This will be seen as a feedback to the main module. When PB1 is pressed next time, light symbol next to PB1 on LCD will change and show off status. Main module will receive light off feedback. From main module side, remote on and off switching of four individual or group of lights is also supported.

LPC-2.WT1 control panel offers few user customization options that can be defined before installation in the service mode. Users can enable or disable displaying of some LCD elements like battery sign and real time clock (HH:MM). Disabling LCD element in service mode will override the enabling LCD element command from the main module. Service mode must only be entered by a qualified technician.

All parameters on panel are accessible via wireless WM-Bus protocol. Communication between wireless panel and main module in done using wireless adapter (LPC-2.WA1) which is used as an access point for up to 4 different Smarteh wireless panels. Settings made on main module are updated and visible on wireless panels (e.g., LPC-2.WP1, LPC-2.WP2 and LPC-2.WT1) after regular data update period (approximately 15 minutes) or immediately after some of feedback parameters has changed (e.g., PB is pressed).

LPC-2.WT1 is powered from the two AA (LR6) battery.
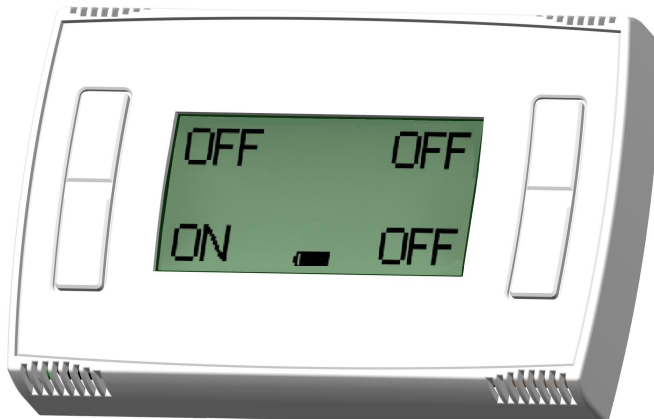
3 FEATURES

Figure 1: LPC-2.WT1 wireless panel.

Table 1: Features
Wireless temperature and humidity measurement
4 touch buttons to switch light on/off
4 light symbols to show lights on/off status
Light intensity measurement for smart LCD on/off regulation
Up to 30 meters indoor signal range[1]

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1 Depends of the RF output signal configuration.

4 OPERATION

Pre installation setting and configuration is done during the assembly process. Users can set only basic settings with the DIP switch.

4.1 Operational modes

Service
Service is enabled every time the wireless panel is turned on and connected through special cable to the wireless panel, thus allowing only to qualified technician to set parameters. LPC-2.WT1 will save the configuration parameters after service mode is exited via LPC Tester. This is done by setting Service mode to "0" in RAM2.

Service mode is enabled for 3 sec. after power up. If service mode is not triggered using Smarteh LPC Tester, then wireless panel will start in normal mode.

Normal
When exiting the service mode wireless panel goes into normal mode, trying to connect to the wireless adapter LPC-2.WA1. If connection is established the LCD should display data according to display setting. Using four push buttons users can turn on/off four lights. If the connection with the LPC-2.WA1 could not be established, the sign "NO RFLINK" will be displayed.

LPC-2.WT1 has a light intensity sensor turning on/off the LCD, and significantly reducing the power consumption. If the light is too low the LCD goes in off state. If light is increased or button is pressed, the LCD goes in on state.

Error
In case of wireless panel communication fault, "NO RF LINK" sign appear on LCD.

4.2 Parameters

If parameter is set to logical "1", is considered to be active, enabled or set. If parameter has logical value "0" is considered to be inactive, disabled, or cleared. Parameter can be feedback, command or both. When parameter is marked as feedback it means that panel is sending information to the main module. On the other hand, command represents request from the main module to the wireless panel. Raw data is the digital value used in programming logic, which corresponds to the engineering data, e.g. value in °C, value in %RH, Physical unit,... Note that raw data may be scaled to get engineering data, e.g. raw data 10000 corresponds to 100.00 °C. Commands and feedbacks can be set in Smarteh IDE.

Command:

> **Light 4_On (Off/On) [oLight4_On]:** Remote on/off command for light4. This command is enabled using *oLight4_rem* (Local/Remote) command.
> Type: BOOL
> Raw to engineering data: "0" → Light "OFF"
>   "1" → Light "ON"
>
> **Light 3_On (Off/On) [oLight3_On]:** Remote on/off command for light3. This command is enabled using *oLight3_rem* (Local/Remote) command.
> Type: BOOL
> Raw to engineering data: "0" → Light "OFF"
>   "1" → Light "ON"
>
> **Light 2_On (Off/On) [oLight2_On]:** Remote on/off command for light2. This command is

enabled using *oLight2_rem* (Local/Remote) command.
Type: BOOL
Raw to engineering data: "0" → Light "OFF"
                              "1" → Light "ON"

Light 1_On (Off/On) [oLight1_On]: Remote on/off command for light1. This command is enabled using *oLight1_rem* (Local/Remote) command.
Type: BOOL
Raw to engineering data: "0" → Light "OFF"
                              "1" → Light "ON"

Light4 (Local/Remote) [oLight4_rem]: Enables *oLight4_On* remote command.
Type: BOOL
Raw to engineering data: "0" → Light "OFF"
                              "1" → Light "ON"

Light3 (Local/Remote) [oLight3_rem]: Enables *oLight3_On* remote command.
Type: BOOL
Raw to engineering data: "0" → Light "OFF"
                              "1" → Light "ON"

Light2 (Local/Remote) [oLight2_rem]: Enables *oLight2_On* remote command.
Type: BOOL
Raw to engineering data: "0" → Light "OFF"
                              "1" → Light "ON"

Light1 (Local/Remote) [oLight1_rem]: Enables *oLight1_On* remote command.
Type: BOOL
Raw to engineering data: "0" → Light "OFF"
                              "1" → Light "ON"

Clock Display Enable [oClkEn]: Enabling or disabling clock element on the display.
Type: BOOL
Raw to engineering data: "0" → Disable clock display
                              "1" → Enable clock display

Clock Set Value [oRTCSet]: Real time clock (HH:MM) value by main module for display on WP panel. Real time clock is reported using BCD code which must be converted to decimal. For example, 09:00 is 0000100100000000 (BCD) which is 2304 decimal. Displaying is enabled with *oRTCEn* command bit.
Type: WORD

Feedback:

Light 4_On (Off/On) [iLight4_On]: When status is active, command for light 4 is requested and symbol "ON" is present on LCD screen.
Type: BOOL
Raw to engineering data: "0" → Light "OFF"
                              "1" → Light "ON"

Light 3_On (Off/On) [iLight3_On]: When status is active, command for light 3 is requested and symbol "ON" is present on LCD screen.
Type: BOOL
Raw to engineering data: "0" → Light "OFF"
                              "1" → Light "ON"

Light 2_On (Off/On) [iLight2_On]: When status is active, command for light 2 is requested and symbol "ON" is present on LCD screen.
Type: BOOL

Raw to engineering data: "0" → Light "OFF"

                 "1" → Light "ON"

Light 1_On (Off/On) *[iLight1_On]*: When status is active, command for light 1 is requested and symbol "ON" is present on LCD screen.
Type: BOOL
Raw to engineering data: "0" → Light "OFF"

                 "1" → Light "ON"

Light4 (Local/Remote) *[iLight4_rem]*: Active status reports that light 4 is controlled by the *oLight4_On command* from the main module.
Type: BOOL
Raw to engineering data: "0" → Light "OFF"

                 "1" → Light "ON"

Light3 (Local/Remote) *[iLight3_rem]*: Active status reports that light 3 is controlled by the *oLight3_On command* from the main module.
Type: BOOL
Raw to engineering data: "0" → Light "OFF"

                 "1" → Light "ON"

Light2 (Local/Remote) *[iLight2_rem]*: Active status reports that light 2 is controlled by the *oLight2_On command* from the main module.
Type: BOOL
Raw to engineering data: "0" → Light "OFF"

                 "1" → Light "ON"

Light1 (Local/Remote) *[iLight1_rem]*: Active status reports that light 1 is controlled by the *oLight1_On command* from the main module.

Type: BOOL
Raw to engineering data: "0" → Light "OFF"

                 "1" → Light "ON"

Low Battery status *[iLowBat]*: Indicated battery status.
Type: BOOL
Raw to engineering data: "1" → Low battery power

                 "0" → Battery OK

Communication status *[iComm]*: Indicated communication status.
Type: BOOL
Raw to engineering data: "0" → Communication fault

                 "1" → Communication OK

Actual temp. *[iActTemp]*: Actual room temperature measured by wireless panel.
Type: WORD
Raw to engineering data: 0 .. 10000 → 0.00 ˚C .. 100.00 ˚C

Act. Room RH *[iRHAct]*: Room humidity measured by wireless panel.
Type: WORD
Raw to engineering data: 0 .. 100 → 0 .. 100 %

Actual light *[iActLight]*: Actual light intensity measured by sensor.
Type: WORD
Raw to engineering data: 0 .. 10000 → dark .. bright

5 INSTALLATION

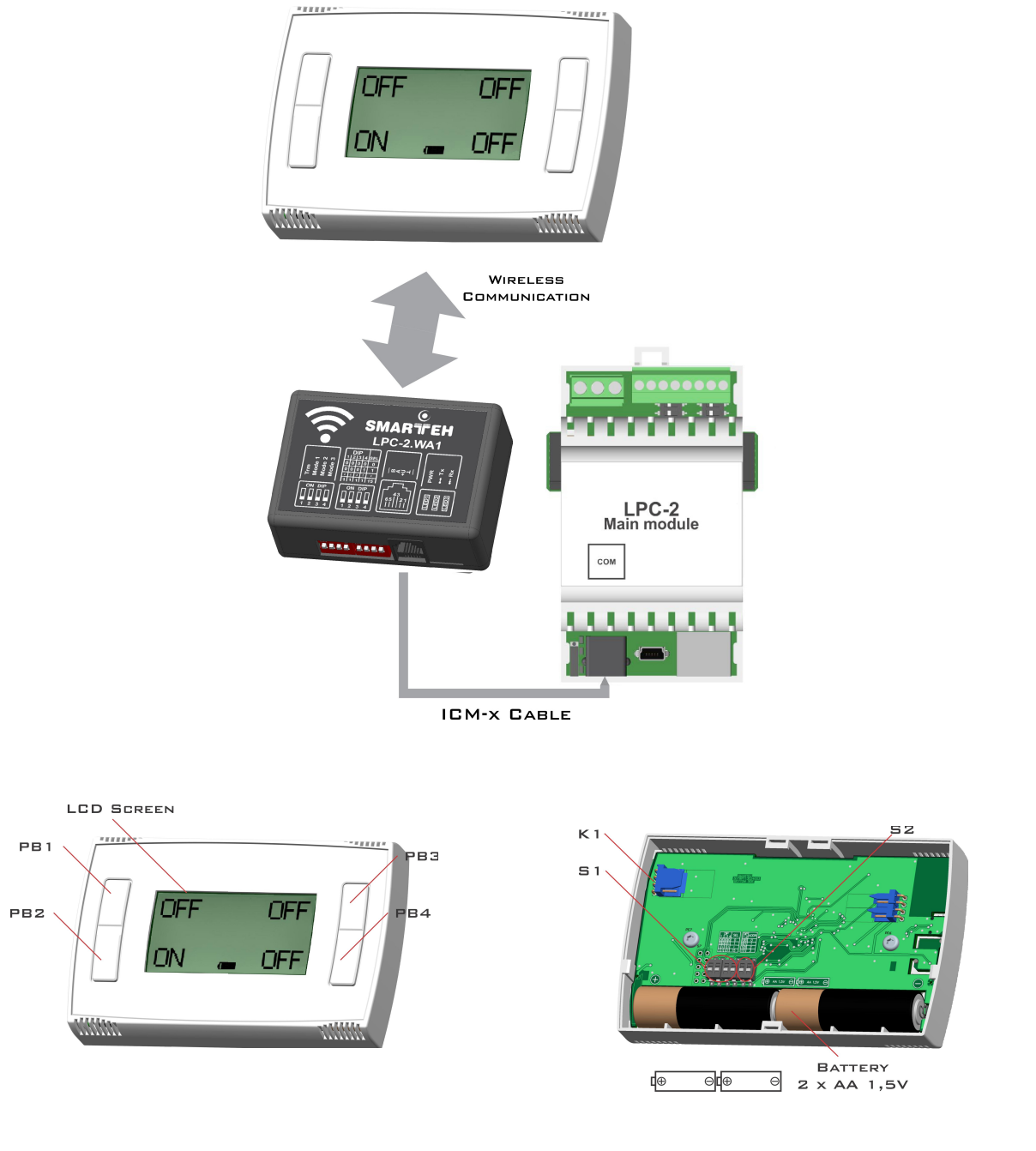## 5.1 Connection scheme

Figure 2: Connection scheme to main module

Table 2: K1

K1.1	GND	Ground
K1.2	7 .. 15 V DC	Power supply input
K1.3	RS-232 Rx	Data receive line
K1.4	RS-232 Tx	Data transmit line

Table 3: LCD screen symbols & buttons

PB1 (Up-left)	Button 1	Switch light 1 on/off, status is shown on LCD next to PB1
PB2 (Down-left)	Button 2	Switch light 2 on/off, status is shown on LCD next to PB2
PB3 (Up-right)	Button 3	Switch light 3 on/off, status is shown on LCD next to PB3
PB4 (Down-right)	Button 4	Switch light 4 on/off, status is shown on LCD next to PB4
Battery Icon		Indicate the battery status.
Clock		RTC displayed

Table 4: S1

Subnet	Switch 1	Switch 2	Switch 3	Switch 4
0	OFF	OFF	OFF	OFF
1	OFF	OFF	OFF	ON
..	..	..	..	..
..	..	..	..	..
14	ON	ON	ON	OFF
15	ON	ON	ON	ON

Table 5: S2

RS-485 ADDRESS	Switch 1	Switch 2
0	OFF	OFF
1	OFF	ON
2	ON	OFF
3	ON	ON

5.2 Service mode

In service mode LPC-2.WT1 is connected to PC via Smarteh LSA-2.USB adapter. Connection between LPC-2.WT1 and LSA-2.USB is made with SMB programming cable which is connected to K1 connector on LPC-2.WT1 and RS-232 port on LSA-2 USB adapter. Service mode must only be entered by a qualified technician.

5.3 Mounting frame selection

Wireless panel casing is designed to be used as remotely panel allowing users to move it or use it as a wall mounted panel on fixed place.

Wall mounting procedure:

- Cut off circular shape at the back of the case with the knife cutter,
- Use screws to mount on the mounting hole frame in the wall,
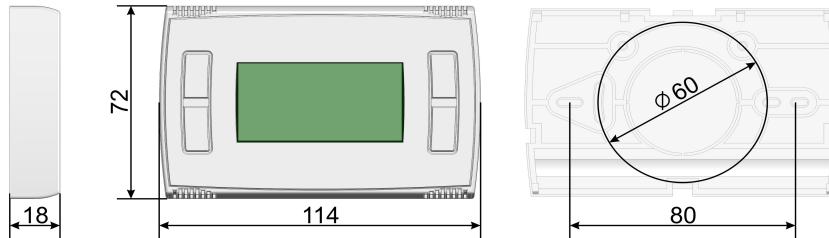- Assemble the front panel.

Panel housing has a groove in the back plate, which can be easily removed with knife cutter or pliers. This adaptation enables housing to be mounted and easy adjusted.

Figure 3: Mounting instructions
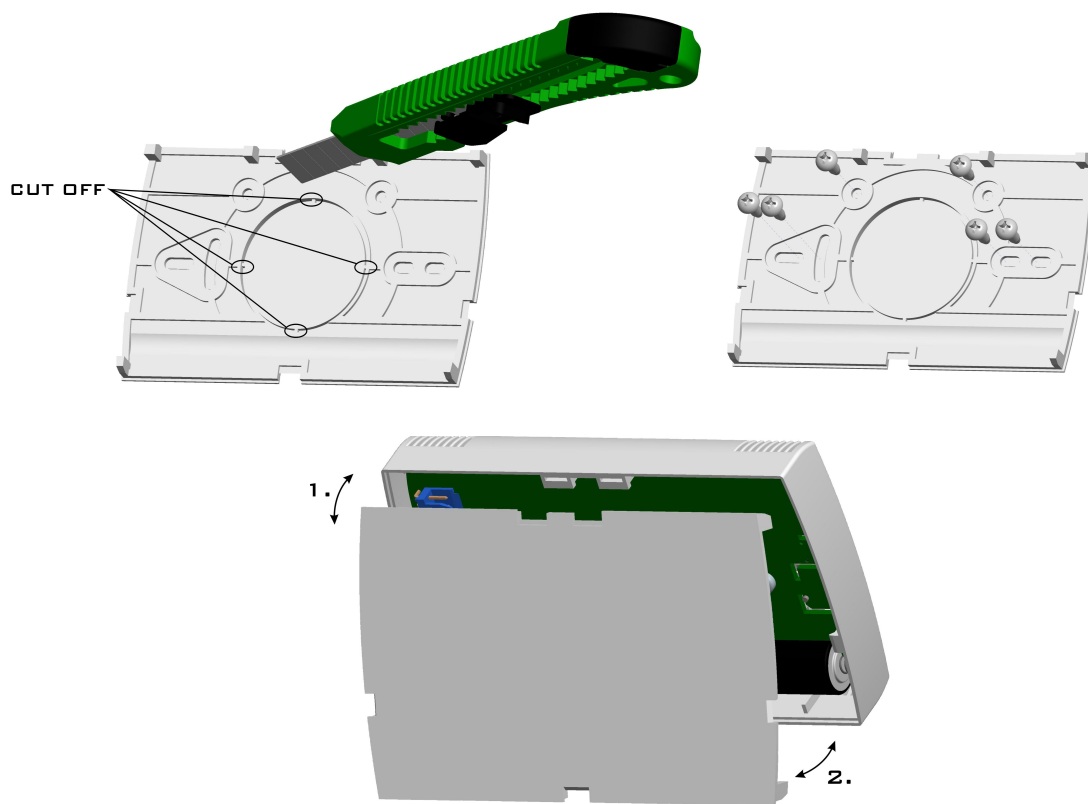
5.4 Mounting instructions

Figure 4: Housing dimension

Dimensions in milimeters.

⚠️ All connections, panel attachments and assembling must be done while panel is not powered.

Panel should be positioned in the wall inside of the room. Avoid direct sunlight or positioning near heating/cooling source object.

Panel is designed to be installed or placed vertically allowing air flow from bottom to top.

1. Set the correct subnet (S1 switch) and wireless panel address (S2 switch) inside LPC-2.WT1 (refer to the Table 4 and Table 5),
2. Mount the back plate in mounting frames (dose),
3. Insert 2 AA 1.5V battery,
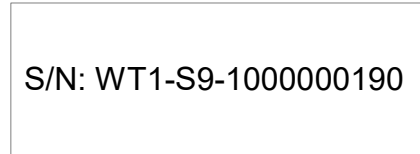4. Attach front part of LPC-2.WT1 to the mounted back plate.

5.5 Module labeling

Figure 5: Labels

Label 1 (sample):

> **LPC-2.WT1**
> P/N:225WT112001001
> D/C: 01/10

Label 2 (sample):

> S/N: WT1-S9-1000000190

Label 1 descriptions:

1. **LPC-2.WT1** is the full product name.
2. **P/N: 225WT112001001** is the part number.
   - **225** – general code for product family,
   - **WT1** – short product name,
   - **12001** – sequence code,
     - 12 – year of code opening,
     - 001 – derivation code,
   - **001** – version code (reserved for future HW and/or SW firmware upgrades).
3. **D/C:01/10** is the date code.
   - **01** – week and
   - **10** – year of production.

Label 2 descriptions:

1. **S/N: WT1-S9-1000000190** is the serial number.
   - **WT1** – short product name,
   - **S9** – user code (test procedure, e.g. Smarteh person xxx),
   - **1000000190** – year and current stack code,
     - 10 – year (last two cyphers),
     - 00000190 – current stack number; previous module would have the stack number 00000189 and the next one 00000191.

6 TECHNICAL SPECIFICATIONS

Table 6: Technical specifications	
Power supply	2pcs. AA (LR6) battery
Battery lifetime	Approximately 1.5 years
Operating frequency	868 Mhz
Wireless protocol	WM-Bus
WM-Bus UID	SMT
Power consumption	Less than 0.1 W
Dimensions (W x H x D)	75 × 49 × 29 mm
Weight	125 g
Maximum altitude	2000 m
Mounting position	horizontal
Ambient temperature	0 to 50 ˚C
Ambient humidity	max. 95 %, no condensation
Transport and storage temperature	-20 to 60 ˚C
Protection class	IP 20

7 SPARE PARTS

For ordering spare parts following Part Numbers should be used:

LPC-2.WT1 light switch panel, wireless	
LPC-2.WT1	P/N: 225WT112001001

Programming cable SMB	
SMB	P/N: 203SMB14001001

LPC-2.WA1 wireless adapter	
LPC-2.WA1	P/N: 225WA112001001

Interconnection cable	
ICM-x	P/N: 203ICMxxxxxxxx

8 CHANGES

The following table describes all the changes to the document.

Date	V.	Description
15.01.17	4	Technical data update.
30.08.16	3	General update.
01.12.14	2	The initial version, issued as *LPC-2.WT1 User Manual*.

9 NOTES