USER MANUAL

Longo Modbus Products
LMP-1.CA1M
Card Access module

Version 1

Written by SMARTEH d.o.o.
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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 LMP-1 – 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 LMP-1 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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Longo Modbus Products LMP-1.CA1M

1 DESCRIPTION

LMP-1.CA1M RFID reader is intended to be used as an identity verification device at room entrance. Module also provides display for four different messages and requests, usually activated from other module inside the room. This messages are convenient to notify personnel (e.g. occupied, do not disturb, SOS, room service).

When RFID tag (key-card) is approached to the reader, the green LED blinks and a short beep is generated if code is successfully read out. In case key-card for correspondent room is valid, the green LED blinks again and a short beep is generated. Other devices can be activated at this event like door lock opening, turning light on... If the ID card number is not valid, the red LED blinks and a longer beep is generated.

In case other (magnet or contact–chip) card system is used for door unlock, LMP-1.CA1M module can be used only to show messages.

LMP-1.CA1M module can be modified on customer request: custom front label, touch buttons added, LEDs added, housing colour. Please contact manufacturer for more information.

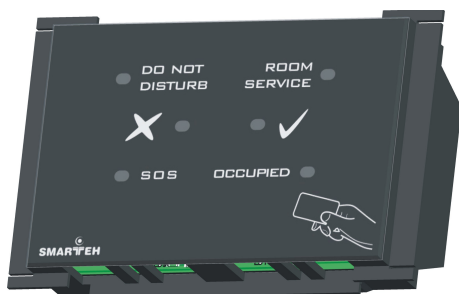LMP-1.CA1M reads unique ID (UID) from standard ISO/IEC 14443 A/MIFARE.

2 FEATURES

Figure 1: LMP-1.CA1M module.

Table 1: Features
RFID reader
LEDs for showing activated messages & requests: occupied, do not disturb, room service, SOS
OK " ✓ " LED
FAULT " X " LED
Power LED
Internal fault LED
Internal built-in buzzer

3 OPERATION

Operation of the CA1M module is also dependent on parameters received on Modbus RTU communication channel.

Reader RFID field is active always when module is powered up. If tag is put inside RFID field, reader tries to resolve RFID tag code. If code is read successfully, module activates status *iIDNew*, generates a short beep, OK LED4 blinks and code is transmitted in *iIDW1 - iIDW4* status fields. In main module application this code can be read out and authenticated. If code has appropriate rights, main module should activate *idCodeOK* command. If code is not authorized, main module application should activate *idCodeFault* command. Regarding command received, following action are triggered on module:

idCodeOK   ==>   OK LED4 blink, short beep.
idCodeFault   ==>   FAULT LED3 blink, long beep.

Either command is received or not from main module application within 10 seconds, module clears *iIDNew* status and waits for next RFID tag. While CA1M module is waiting for authorization response, new RFID tags can not be read.

To check if communication is running, master toggles *oCommToggleBit* and then reads if *iCommToggleBit* was toggled.

3.1 Modbus RTU variables

Do not use poll times smaller than 200 ms and greater than 4 s.

Table 2: 4xxxx, Holding registers

Reg.	Name	Description	Raw → Engineering data
90	oSaveModbusSettings	Save EEPROM settings; change the value from 0 to 12345 to save settings	0, 12345
98	mbSlaveAddressMem	Modbus Slave Address	1 .. 247 → 1 ..247
99	mbBaudrateMem	Modbus Baudrate	1 → 600 bps 2 → 1200 bps 3 → 2400 bps 4 → 4800 bps 5 → 9600 bps 6 → 14400 bps 7 → 19200 bps 8 → 38400 bps 9 → 56000 bps 10 → 57600 bps 11 → 115200 bps other → 19200 bps (default)
100	mbParityMem	Modbus Parity	0 → none 1 → even (default) 2 → odd other → none

Table 3: 3xxxx, Input registers

Reg.	Name	Description	Raw → Engineering data
1	iIDW1	RFID ID received word 1	0 .. 65535 → 0 .. 65535
2	iIDW2	RFID ID received word 2	0 .. 65535 → 0 .. 65535
3	iIDW3	RFID ID received word 3	0 .. 65535 → 0 .. 65535
4	iIDW4	RFID ID received word 4	0 .. 65535 → 0 .. 65535
6	iIDLength	Lenght of ID code	0 → ID code not received 4 → 4 bytes 7 → 7 bytes
98	iFWver	Software version	0 .. 65535 → 0 .. 65535
99	iHWver1	Hardware version 1	0 .. 65535 → 0 .. 65535
100	iHWver2	Hardware version 1	0 .. 65535 → 0 .. 65535

Table 4: 0xxxx, Coils

Reg.	Name	Description	Raw → Engineering data
1	oIDNewBeepDis	Disable beep when new ID is detected	0 → Enabled 1 → Disabled
2	oBuzz	Set/Reset Buzzer	0 → Reset 1 → Set
3	oIDCodeFault	ID code Fault confirm	0 → Fault not confirmed 1 → Fault confirmed
4	oIDCodeOK	ID code OK confirm	0 → OK not confirmed 1 → OK confirmed
5	oIDFaultLedCmd	Set/Reset Fault LED	0 → Reset 1 → Set
6	oIDOKLedCmd	Set/Reset OK LED	0 → Reset 1 → Set
7	oLedOccupied	Set/Reset Occupied LED	0 → Reset 1 → Set
8	oLedDoNotDisturb	Set/Reset Do not disturb LED	0 → Reset 1 → Set
9	oLedRoomService	Set/Reset Room service LED	0 → Reset 1 → Set
10	oLedSOS	Set/Reset SOS LED	0 → Reset 1 → Set
11	oCommToggleBit	Communication toggle bit loop	0, 1

Table 5: 1xxxx; Discrete inputs

Reg.	Name	Description	Raw → Engineering data
1	iCommToggleBit	Communication toggle bit loop indicator	0, 1
2	iIDNew	New ID detected	0 → New ID not detected 1 → New ID detected

4 INSTALLATION

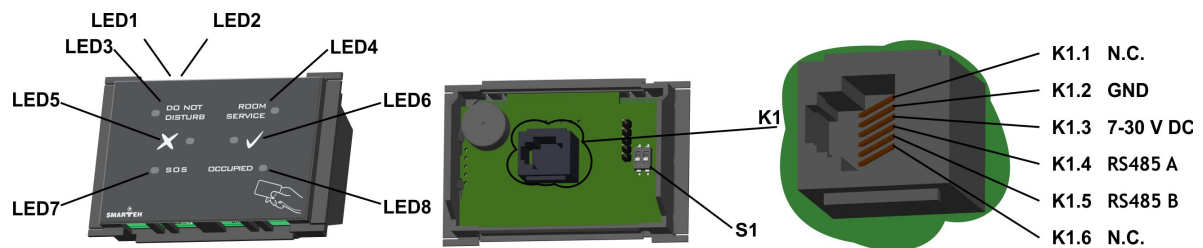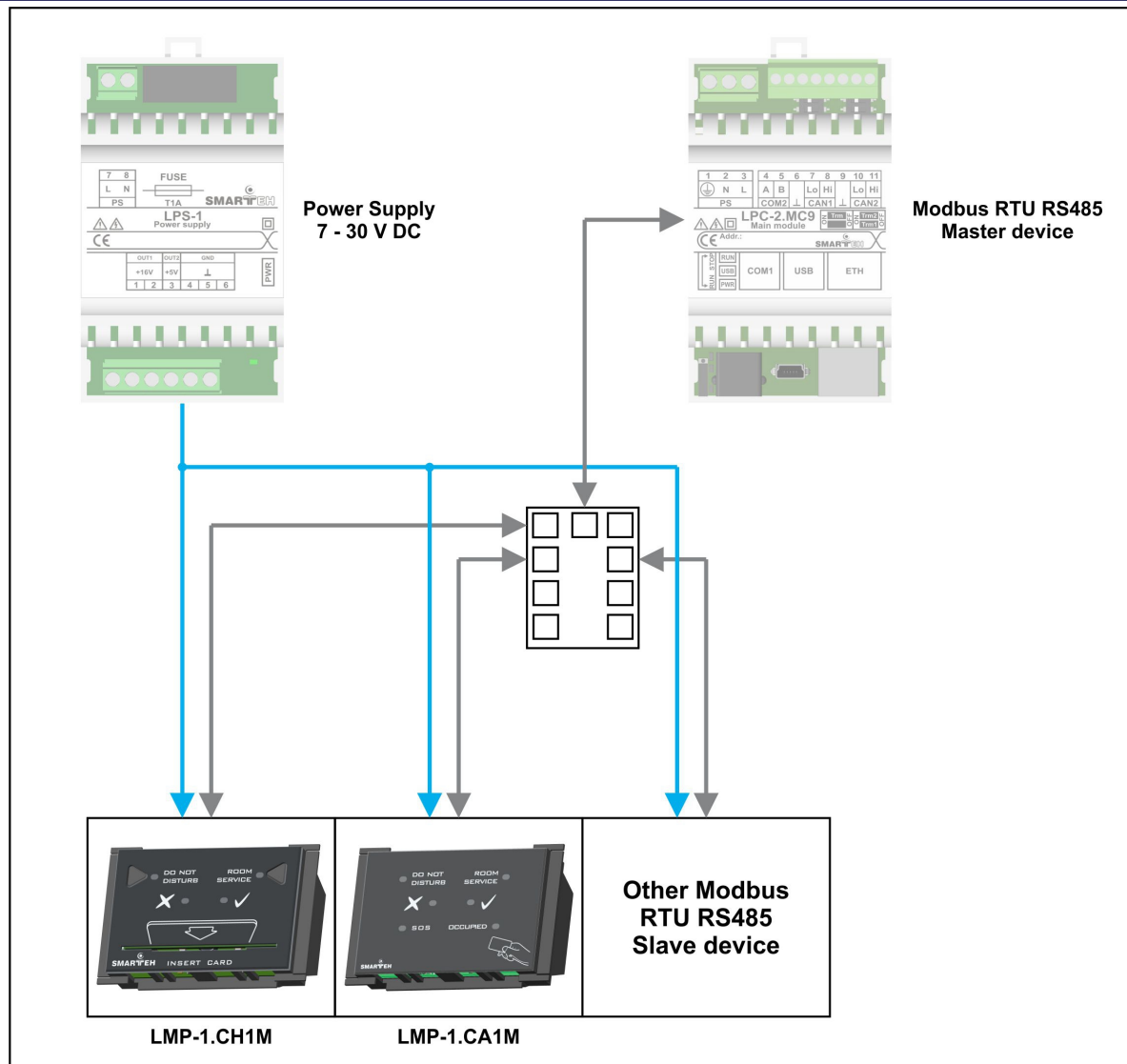## 4.1 Connection scheme

Figure 2: Connection scheme

Power Supply
7 - 30 V DC

Modbus RTU RS485
Master device

Other Modbus
RTU RS485
Slave device

LMP-1.CH1M   LMP-1.CA1M

LED1   LED2
LED3
LED4
LED5   LED6
LED7   LED8

K1
S1

K1.1   N.C.
K1.2   GND
K1.3   7-30 V DC
K1.4   RS485 A
K1.5   RS485 B
K1.6   N.C.

Table 6: K1

K1.1	N.C.	Not connected
K1.2	GND	Ground
K1.3	7 .. 30 V DC	Power supply input
K1.4	Standard RS-485 A	Data receive/send line A
K1.5	Standard RS-485 B	Data receive/send line B
K1.6	N.C.	Not connected

Table 7: LEDs & Buttons

LED1: red	Communication	On: RS-485 communication fault Off: RS-485 communication OK
LED2: green	Power supply	On: power supply OK Off: power supply missing or power off
LED3: blue	Do not disturb	On: request active Off: no request
LED4: blue	Room service	On: request active Off: no request
LED5: red	FAULT " X "	On: RFID key standard NOK or ID card number wrong Off: No tag in proximity
LED6: green	OK " ∫ "	On: RFID key standard OK and ID card number valid Off: No tag in proximity
LED7: blue	SOS	On: request active Off: no request
LED8: blue	Occupied	On: request active Off: no request

Table 8: S1

SELECTOR	Switch 1	Switch 2
User settings, from Modbus RTU registers	OFF	OFF
Not used	OFF	ON
Not used	ON	OFF
Default factory settings active, 19200bps/8 data bits/1 stop bit/EVEN	ON	ON

4.2 Mounting frame selection

Frame, suitable for CA1M module insertion, should be modular one at least 3 gang wide. Be careful to have corresponding flush-mounting box provided on the place where module will be positioned.

Smarteh has verified following lines to be compatible with LMP-1.CA1 module:

- Bticino – Living, Light
- Gewiss – Playbus, System
- Vimar – Plana, Idea
- Tem – Modul Soft, Modul Line
- Master

Frames of other vendors most probably suits as well, but they were not verified by Smarteh. Before installation verify compatibility of non listed frames.

Module housing has a fin on each side, which can be easily removed with knife cutter or pliers. This adaptation enables housing to be build in various frame formats with two different depths. With regard to frame used you may remove fin for housing to fit in. RFID module should not be positioned close to conductive areas (e.g.: metal frames and metal cover plate).
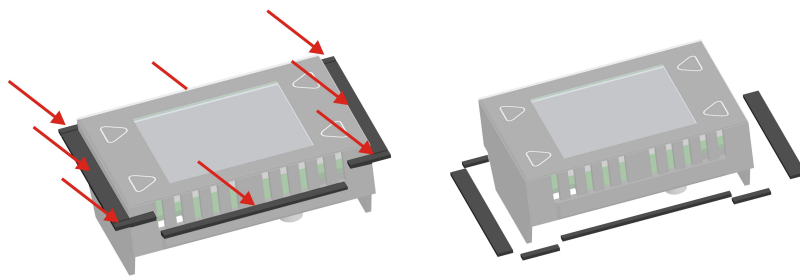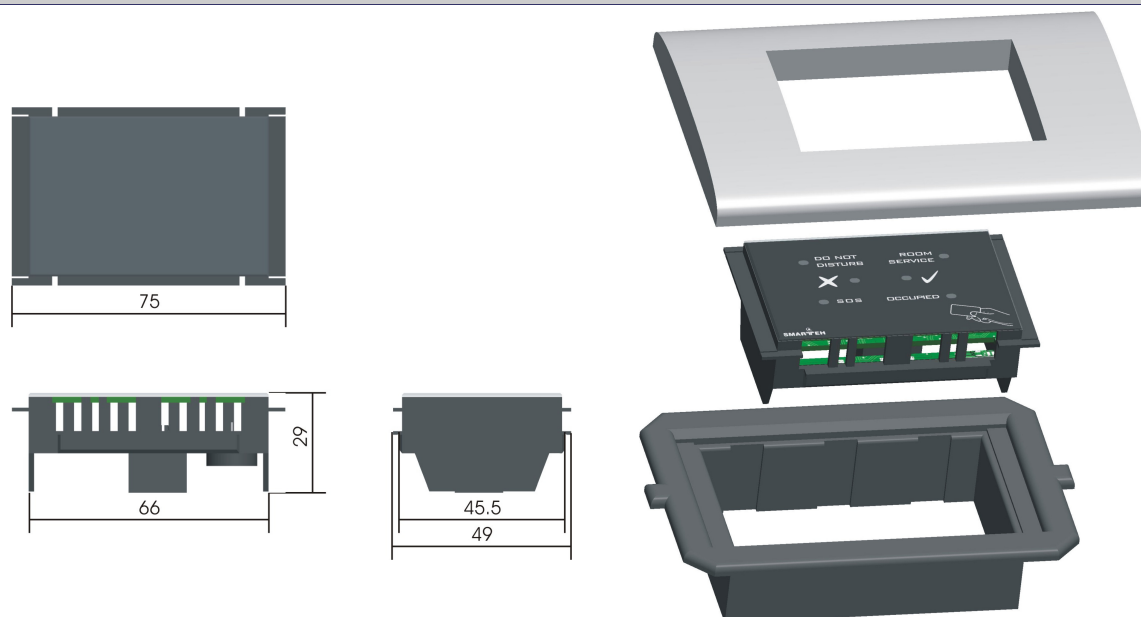

Figure 3: Module with removable fin.

4.3 Mounting instructions

Figure 4: Housing dimensions

Dimensions in millimeters.

All connections, module attachments and assembling must be done while module is not connected to the main power supply.

Module should not be mounted outdoors.

Several RFID panels should not be mounted close to each other. Minimum distance to next panel is at least 30 cm. This restriction also applies in case of mounting panels on both sides of the same wall. Adequate shielding material and provisions could be used to avoid interference between panels.

RFID panel should not be positioned close to conductive areas (e.g.: metal frames and metal cover plate).

Mounting instructions:

1. Set the correct LMP-1.CA1M settings (refer to the Table 2 and Table 8).

2. Connect LMP-1.CA1M with appropriate cable to the connector K1, Modbus RTU Master equipment and power supply source (refer to Table 6). Max. allowed tensile force is 30 N.

3. Put the LMP-1.CA1M in mounting frames.

4. Cover LMP-1.CA1M with cover plate.

Modbus RTU settings source is set with DIP switch on the back of the LMP-1.MP1 module (Table 8).

NOTE: Signal wires must be installed separately from power and high voltage wires in accordance with general industry electrical installation standard.

4.4 Module labeling

Figure 5: Label

Label (sample):

XXX-N.ZZZ
P/N: AAABBBCCDDDEEE
S/N: SSS-RR-YYXXXXXXXXX
D/C: WW/YY

Label description:

1. **XXX-N.ZZZ** - full product name.
   - **XXX-N** - Product family
   - **ZZZ** - product

2. **P/N: AAABBBCCDDDEEE -** part number.
   - **AAA** - general code for product family,
   - **BBB** - short product name,
   - **CCDDD** - sequence code,
     - **CC** - year of code opening,
     - **DDD** - derivation code,
   - **EEE** – version code (reserved for future HW and/or SW firmware upgrades).

3. **S/N: SSS-RR-YYXXXXXXXXX -** serial number.
   - **SSS** – short product name,
   - **RR** – user code (test procedure, e.g. Smarteh person xxx),
   - **YY** – year,
   - **XXXXXXXX**– current stack number.

4. **D/C: WW/YY -** date code.
   - **WW** – week and
   - **YY** – year of production.

Optional

1. *MAC*
2. *Symbols*
3. *WAMP*
4. *Other*

5 TECHNICAL SPECIFICATIONS

Table 9: Technical specifications	
Power supply	from main module
Interconnection connector type	RJ-12 6/6, 4/6
Power consumption	1 W
RFID type	ISO/IEC 14443 A/MIFARE
Max. reading distance	4 cm
Dimensions (W x H x D)	75 x 49 x 29 mm
Weight	40 g
Ambient temperature	0 to 50 ˚C
Ambient humidity	max. 95 %, no condensation
Maximum altitude	2000 m
Mounting position	horizontal
Transport and storage temperature	-20 to 60 ˚C
Protection class	IP 20

6 CHANGES

The following table describes all the changes to the document.

Date	V.	Description
10.01.2020	1	The initial version, issued as *LMP-1.CA1M module UserManual*.

7 NOTES