



**SMARTEH**<sup>®</sup>  
LIVING SYSTEMS

# USER MANUAL

- ▶ Longo programmable controller  
LSA-2.USB  
USB RS-232/RS-485 adapter

Version 4

Written by SMARTEH d.o.o.  
Copyright © 2016, SMARTEH d.o.o.

User Manual

Document Version: 4  
August, 2016



**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 230 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 LHC-2 - if no modifications are performed upon and are correctly connected by authorized personnel - in consideration of maximum allowed connecting power, we offer warranty for 24 months from date of sale to end buyer. 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!



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



# Index

## Longo programmable controller LSA-2.USB

---

- 1 DESCRIPTION.....1
- 2 FEATURES.....2
- 3 USB DRIVER INSTALLATION.....3
- 4 CABLES AND WIRING.....4
  - 4.1 Connectors description.....4
  - 4.2 Connecting instructions.....7
  - 4.3 Module labeling.....8
- 5 TECHNICAL SPECIFICATIONS.....9
- CHANGES .....10



## 1 DESCRIPTION

---

LSA-2.USB is an USB to RS-232 or RS-485 optically isolated converter supporting speeds up to 115kbps. It also provides isolated power supply from USB side. Device does not support hardware handshake signals (RTS, CTS,...).

LSA-2.USB can be used as optically isolated serial adapter between PC and different equipment (PLCs, sensors, actuators, instruments...) or between equipment it self. Only one RS-232 or RS-485 port can be used at the same time. RS-485 port is internally terminated with 120 Ohm resistor.

Driver can be downloaded from Smarteh home page.



## 2 FEATURES



Figure 1: LSA-2.USB USB to RS-232 / RS-485 adapter.

### Table 1: Technical data

Optically isolated RS-232 and RS-485 ports

Speeds up to 115 kbps

Galvanic isolated power supply

Diagnose LEDs

Small compact enclosure



### 3 USB DRIVER INSTALLATION

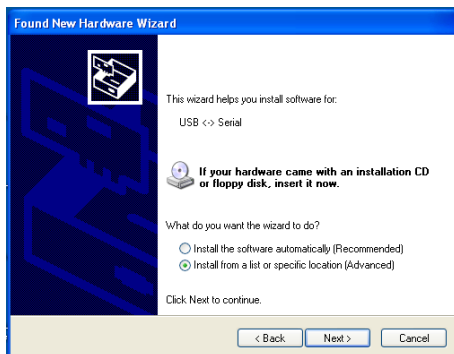
On Linux systems (*Ubuntu, Arch, Fedora, Suse*) Vista and Windows 7 operating systems device is already supported with corresponding drivers.

For other Windows OS's (*Win98, Win 2000, Win ME, XP*) please follow procedure described below to install drivers needed for communication with device through virtual COM port.

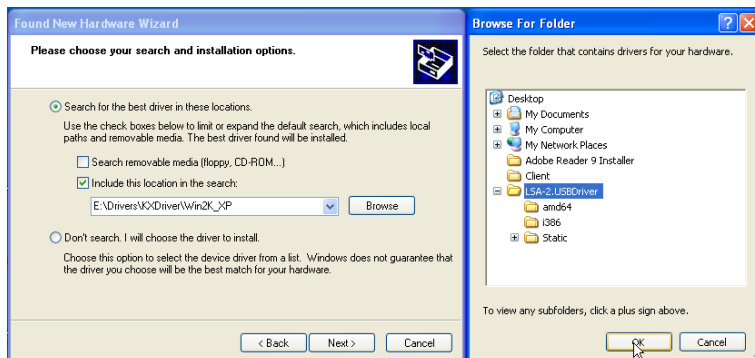
Start by downloading driver package LSA2USB\_driver.zip from [www.smarteh.si](http://www.smarteh.si) web page. Unzip package and connect device to the PC. Windows should start dialog window for hardware installation as shown below.



Choose option *Yes, this time only* and click on *Next*.



Click on *Advanced option* and click *Next* to continue.



Uncheck option *Search removable media* and check *Include this location in the search*. Browse to a location that you unzipped driver files in first step. Click *Ok* and *Next* to continue and *Finish* in last window.

Serial driver for LSA-2.USB is now installed.

OS will prompt you again for virtual COM port installation. Procedure is the same as the one described above.



## 4 CABLES AND WIRING

### 4.1 Connectors description

Figure 2: LSA-2.USB adapter

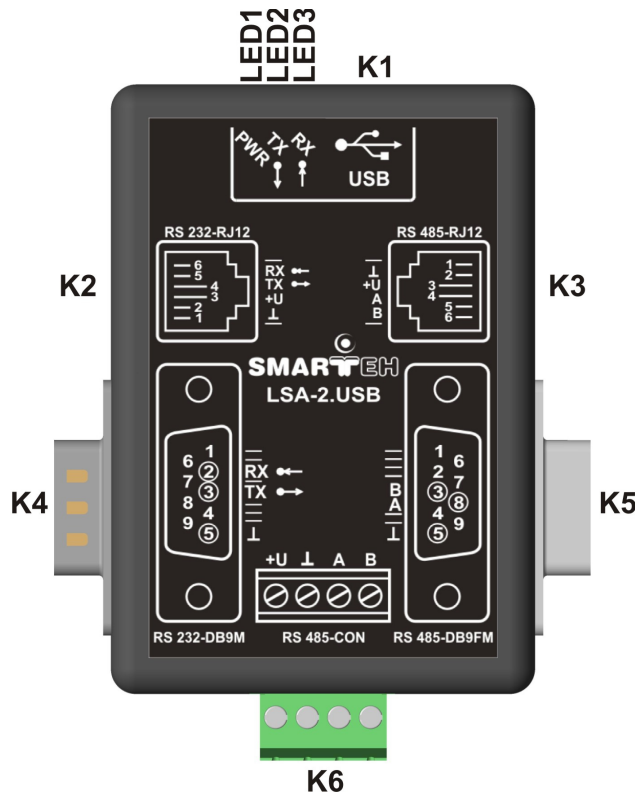


Table 2: K1

Mini USB connector	USB Data & DC power supply	USB connection to PC or other USB master device
--------------------	----------------------------	---

Table 3: K2

RS-232-RJ12.1	N.C.	Not connected
RS-232-RJ12.2	⊥	Ground
RS-232-RJ12.3	+U, 10 V DC / 75 mA	Power supply output
RS-232-RJ12.4	RS-232: Tx ●→	Data transmit output
RS-232-RJ12.5	RS-232: Rx ●←	Data receive input
RS-232-RJ12.6	N.C.	Not connected





**Table 4: K4**

RS-232-DB9M.1	N.C.	Not connected
RS-232-DB9M.2	RS-232: Rx ●←	Data receive input
RS-232-DB9M.3	RS-232: Tx ●→	Data transmit output
RS-232-DB9M.4	N.C.	Not connected
RS-232-DB9M.5	⊥	Ground
RS-232-DB9M.6	N.C.	Not connected
RS-232-DB9M.7	N.C.	Not connected
RS-232-DB9M.8	N.C.	Not connected
RS-232-DB9M.9	N.C.	Not connected

**Table 5: K3**

RS-485-RJ12.1	N.C.	Not connected
RS-485-RJ12.2	⊥	Ground
RS-485-RJ12.3	+U, 10 V DC / 75 mA	Power supply output
RS-485-RJ12.4	RS-485: A	Data line A
RS-485-RJ12.5	RS-485: B	Data line B
RS-485-RJ12.6	N.C.	Not connected

**Table 6: K5**

RS-485-DB9FM.1	N.C.	Not connected
RS-485-DB9FM.2	N.C.	Not connected
RS-485-DB9FM.3	RS-485: B	Data line B
RS-485-DB9FM.4	N.C.	Not connected
RS-485-DB9FM.5	⊥	Ground
RS-485-DB9FM.6	N.C.	Not connected
RS-485-DB9FM.7	N.C.	Not connected
RS-485-DB9FM.8	RS-485: A	Data line A
RS-485-DB9FM.9	N.C.	Not connected

**Table 7: K6**

CON.1	+U, 10 V DC / 75 mA	Power supply output
CON.2	⊥	Ground
CON.3	RS-485: A	Data line A
CON.4	RS-485: B	Data line B



**Table 8: LEDs**

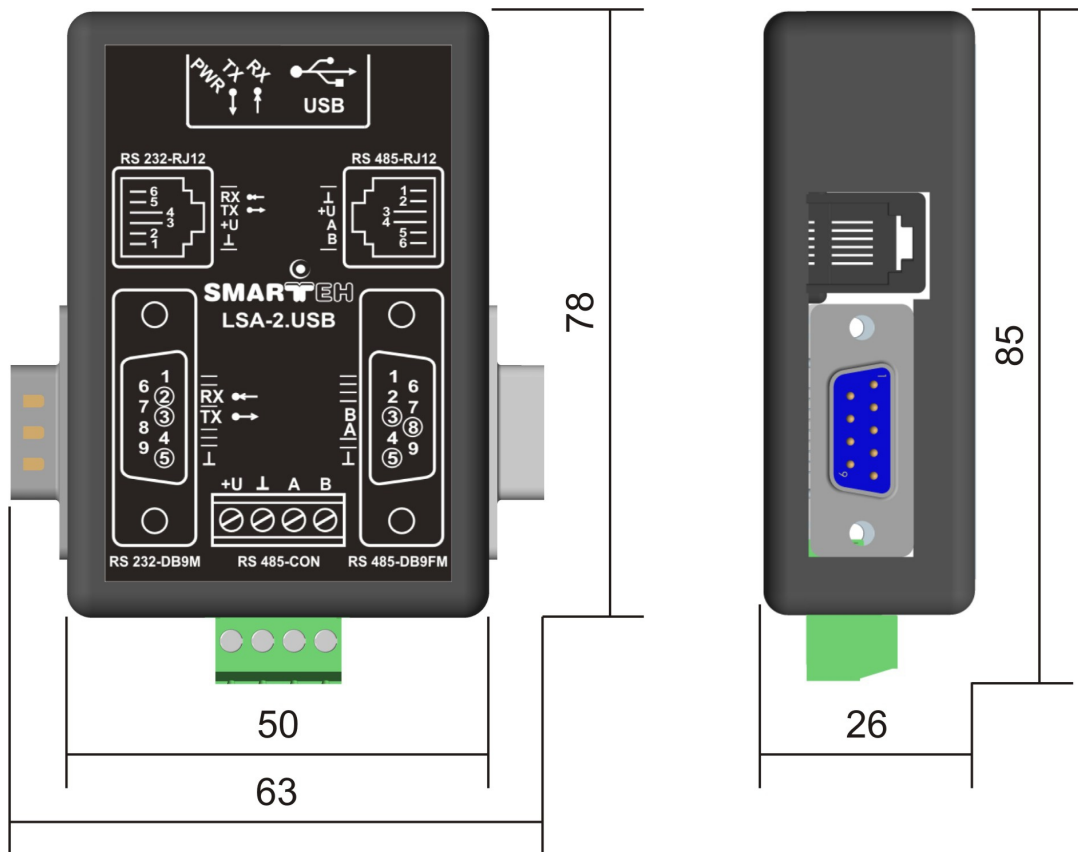
LED1.PWR	Blue, LSA-2.USB status	OFF: No power supply ON: Power supply present
LED2.Tx ●→	Red, Tx status	OFF: Not transmitting packets ON: Transmitting packets
LED3.Rx ●←	Red, Rx status	OFF: No receiving packets ON: Receiving packets

For wiring to connector K6 use standard wire up to 0.75 mm<sup>2</sup>



## 4.2 Connecting instructions

Figure 3: Housing dimensions



Dimensions in millimeters

### Connecting instructions:

1. Install USB driver on your PC or master USB device.
2. Connect USB cable to LSA-2.USB adapter and then to PC or other USB master device. Blue LED should switch on.
3. Connect one RS-232/RS-485 port on LSA-2.USB adapter with device you want to communicate with, using corresponding cable. Refer to Table 3 - 7 for proper connection.
4. Inside SW, chosen for your application, select corresponding COM port dedicated to LSA-2.USB adapter. While transmitting red LED and while receiving green LED should blink.



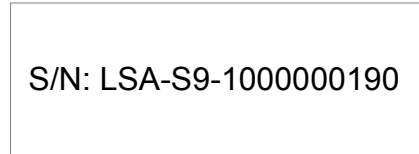
### 4.3 Module labeling

**Figure 4: Labels on housing**

Label 1( LSA-2.USB label sample):



Label 2( LSA-2.USB label sample):



**Label 1 description:**

1. **LSA-2.USB** is the full product name.
2. **P/N:206LSA10002001** is the part number.
  - **206** - general code
  - **LSA** - short product name,
  - **10001** - sequence code,
    - **10** - year of code opening
    - **001** - derivation code
  - **001** - version code (reserved for future HW and/or SW firmware upgrades).
3. **D/C:31/10** is the date code.
  - **31** - week and
  - **10** - year of production.

**Label 2 description:**

1. **S/N:LSA-S9-1000000190** is the serial number.
  - **LSA** - 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**.



## 5 TECHNICAL SPECIFICATIONS

**Table 5: Technical specifications**

Power supply	from USB
Max. power consumption without load	0.25 W
Power supply output	10 V DC / 75 mA
Number of RS-232	1
RS-232 port speed	up to 115 kbps
Number of RS-485 ports	1
RS-485 port speed	up to 115 kbps
RS-485 internal line termination	120 Ω
Dimensions (L x W x H)	80 x 64 x 26 mm
Weight	150 g
Ambient temperature	0 to 50 °C
Ambient humidity	max. 95 %, no condensation
Transport and storage temperature	-20 to 60 °C
Protection class	IP 30



## CHANGES

---

The following table describes all the changes to the document.

Date	V.	Description
15.08.16	4	General update.
01.07.12	3	CGP General update.
07.04.11	2	Added note about HW handshake not supported.
05.08.10	1	The initial version, issued as LSA-2.USB serial adapter <i>UserManual</i> .

