



SOMFY Digital Network Bus Wiring Guide



DOC114316/7 - 25/11/2022-

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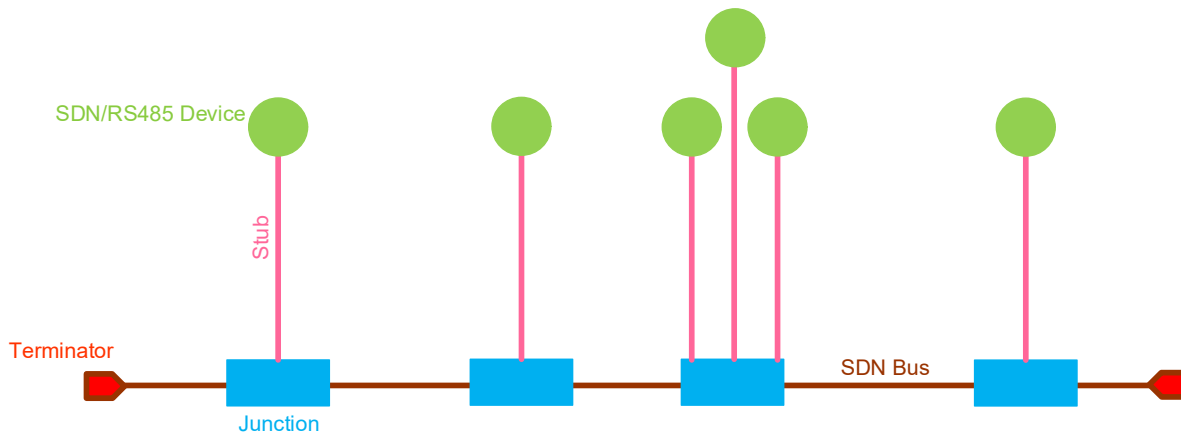
1 Purpose of the document

This document gives the general rules for wiring Somfy Digital Networks (SDN) in accordance with SDN/RS485 requirements.

In addition, we recommend carefully reading each installation guide for SDN/RS485 products, to consider the product specificities.

2 SDN Wiring Basics

2.1 What is SDN?



2.1.1 SDN bus:

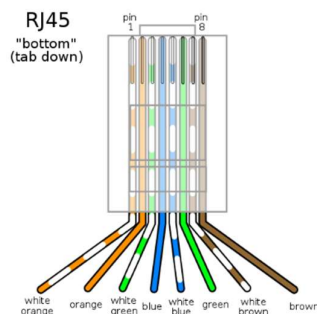
The SDN bus is the Somfy Digital network bus used by the SDN/RS485 devices to be interconnected and communicate with each other.

SDN bus cable:

Cable type: cat 5e type or higher, shielded F/UTP or better, with wire resistance $\leq 95\Omega/\text{km}$.

Connector: The RJ45 connector is wired to the cable using the TIA T586B standard:

- Pin 1 - SDN +
- Pin 2 - SDN -
- Pin 3 - Reserved
- Pin 4 - SDN Power +24V
- Pin 5 - SDN Power +24V
- Pin 6 - Reserved
- Pin 7 - SDN Power GND
- Pin 8 - SDN Power GND & SDN GND



If for any reason a direct RJ45 connection is not possible to the SDN/RS485 device, an adaptor should be provided.

Max. length; please refer to the “installation and limits” chapter.

Min. length; no minimum length is required for the SDN bus.

2.1.2 Stub:

The stub is used to connect the SDN devices to the SDN bus via the “junction”.

The connector must be chosen, and the cable wired according to the device and junction used.

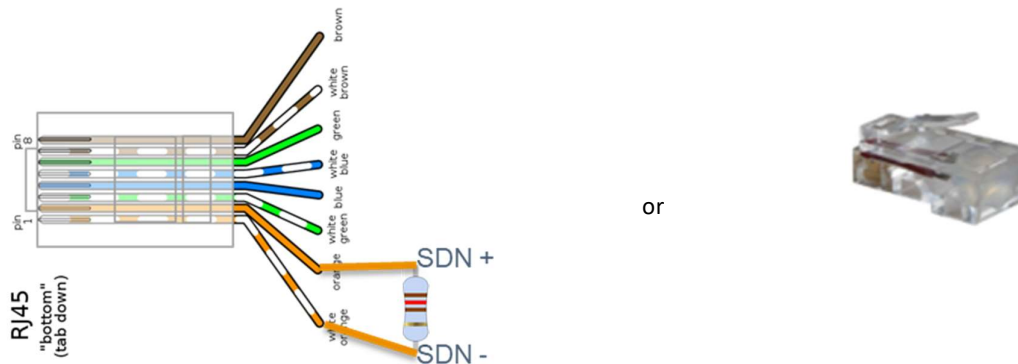
Refer to the product documentation.

Cable:

- Shielded: not required
- Max. length 10m with passive junction device, Max. length can be extended by using active junction device. Refer to product documentation
- No minimum length for the stub.

2.1.3 Terminator:

The terminator is a resistor (120Ω - 0,5W) for terminating the SDN bus at both ends.



2.1.4 SDN/RS485 devices

Device types	Description	Power via SDN bus (powered devices)	Node
RS485 keypads or switches	RS485 Local user interface used for manual control of the RS485 motors	Yes	1
RS485 radio receivers	RS485 radio receiver used for manual control of the RS485 motor via radio remote control.	Yes	1
RS485 motors	Somfy RS485 Motors	No	1
SDN/RS485 power supply	Provide the power supply to SDN Bus such Voltage : 24VDC ±10% Current: ≤ 1 A	No	0
Motor controllers	RS485 Motor controller	No	1
Gateways	Device that interfaces SDN Bus protocol to another protocol.	No	1
RS485 transmitters	RS485 radio transmitter that allows the control of Radio motors via SDN Bus	No	1
Generic controllers	Non-Somfy controller	No	1

Nota:

Some products can support several device types.
i.e.: an IP/SDN gateway is a gateway and SDN/RS485 power supply

2.1.5 Junction:

The active and passive junctions are used for connecting directly SDN/RS485 devices to the SDN bus.
The repeater junction is used for decoupling and connecting the device to the SDN bus.

Junction types	Power via SDN bus	Node
Active	Yes	1
Passive	No	0
Repeater	Yes	1

2.1.6 Node:

The node is a product connected to the SDN bus that has an RS485 transceiver (type 1/8 load).
Up to 255 nodes can be directly connected to the SDN bus.

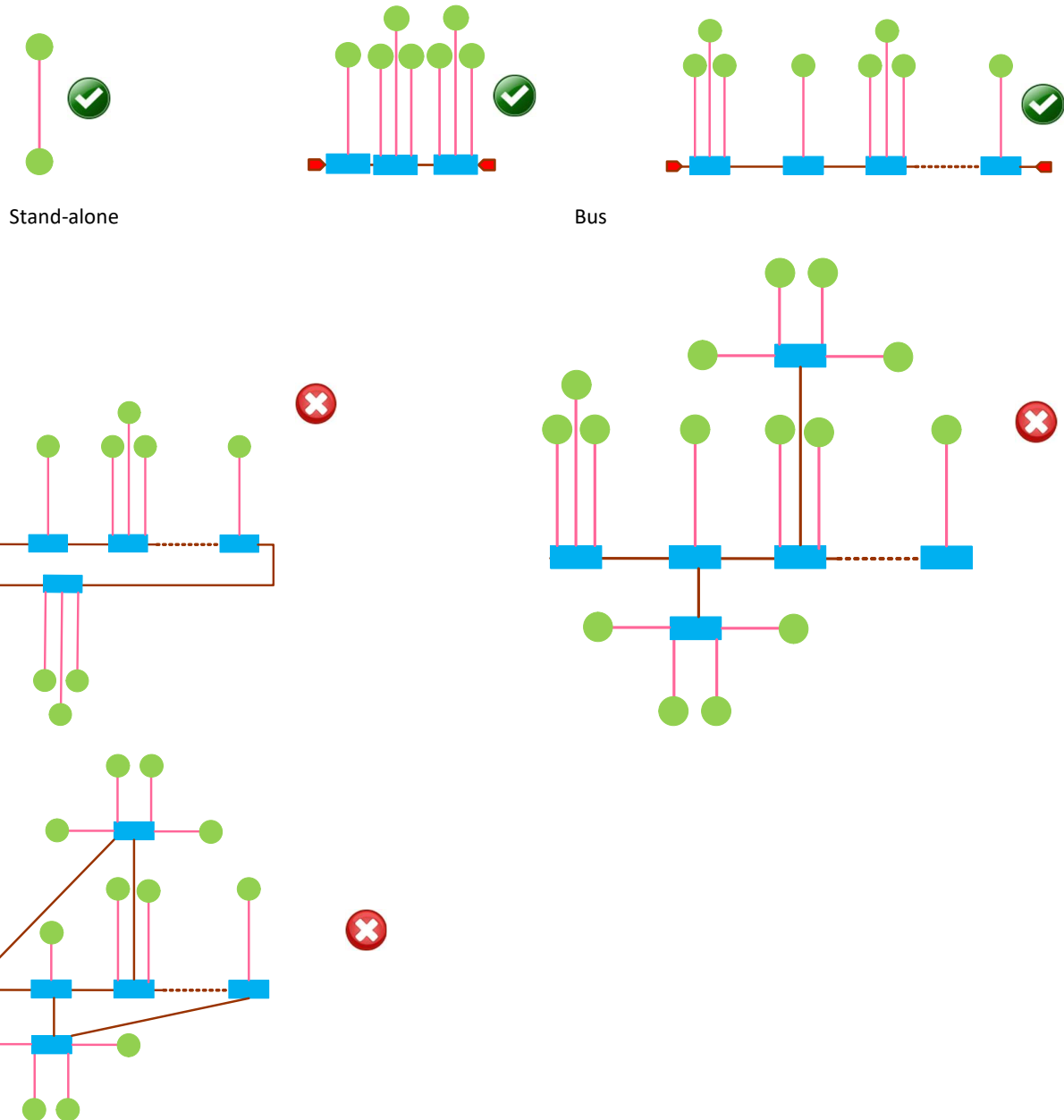
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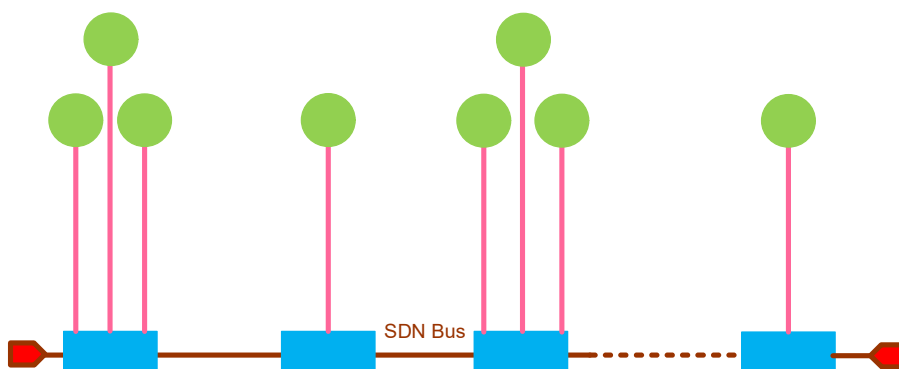
2.2 Wiring topology:

The SDN topology is a bus topology.



3 Installation and limits

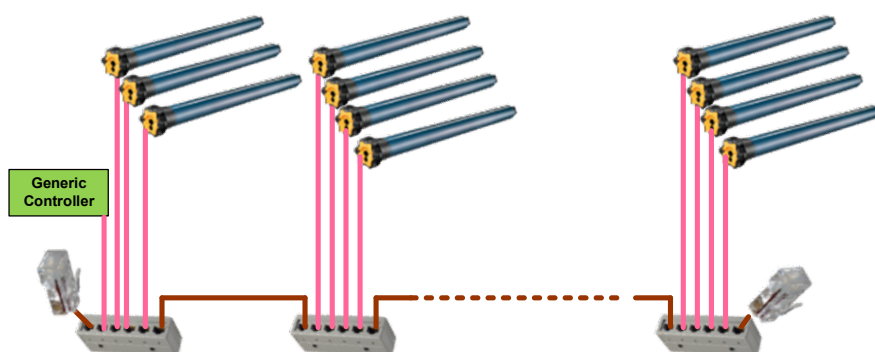
3.1 SDN installation without 24V SDN/RS485 Power Supply



SDN bus: The maximum length cannot exceed 1200 m / 4000 ft and refers to the controller documentation.

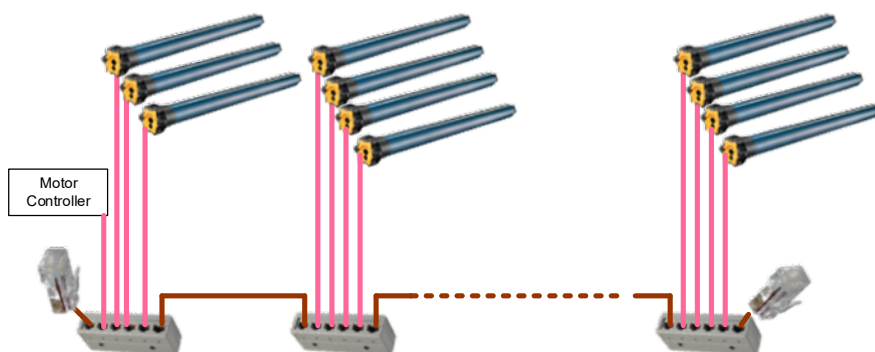
Junction: **passive** must be used.

3.1.1.1 Example 1: installation with a generic controller.



- SDN Bus: The maximum length of the SDN bus is 1200 m / 4000 ft.
- SDN/RS485 motors: A maximum of **254** motors

3.1.1.2 Example 2: Installation with KNX RS485 motor controller



According to the KNX Motor Controller installation guide:

- SDN Bus: The maximum length of the SDN bus is **200 m**.
- SDN/RS485 motors: A maximum of **18** motors

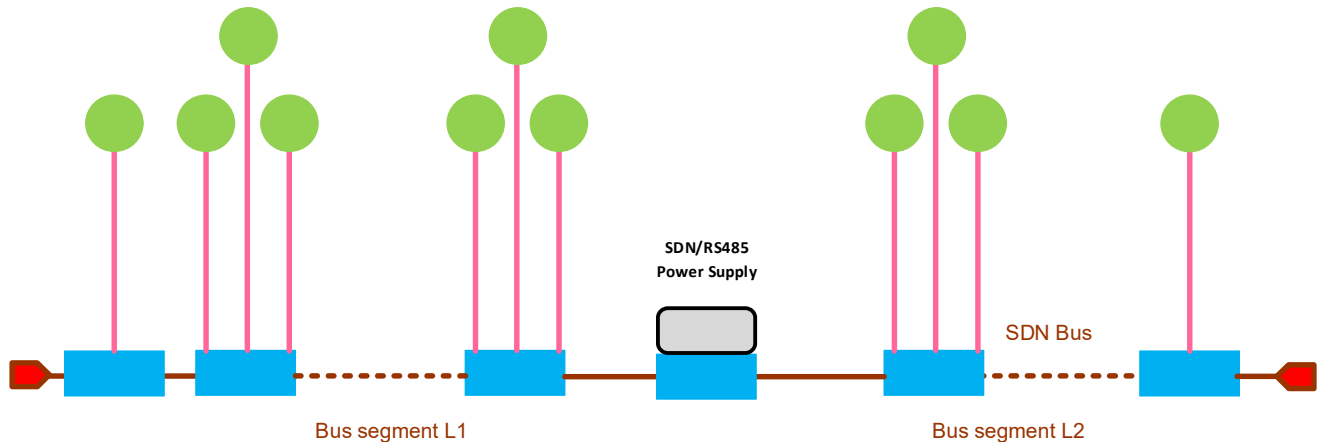
3.2 SDN installation with 24V SDN/RS485 Power Supply

3.2.1 Distributed devices installation:

The powered devices via SDN bus, and the non-powered devices, are distributed along the bus.

One power supply via SDN bus: Max. 24V DC +-10% 1A max.

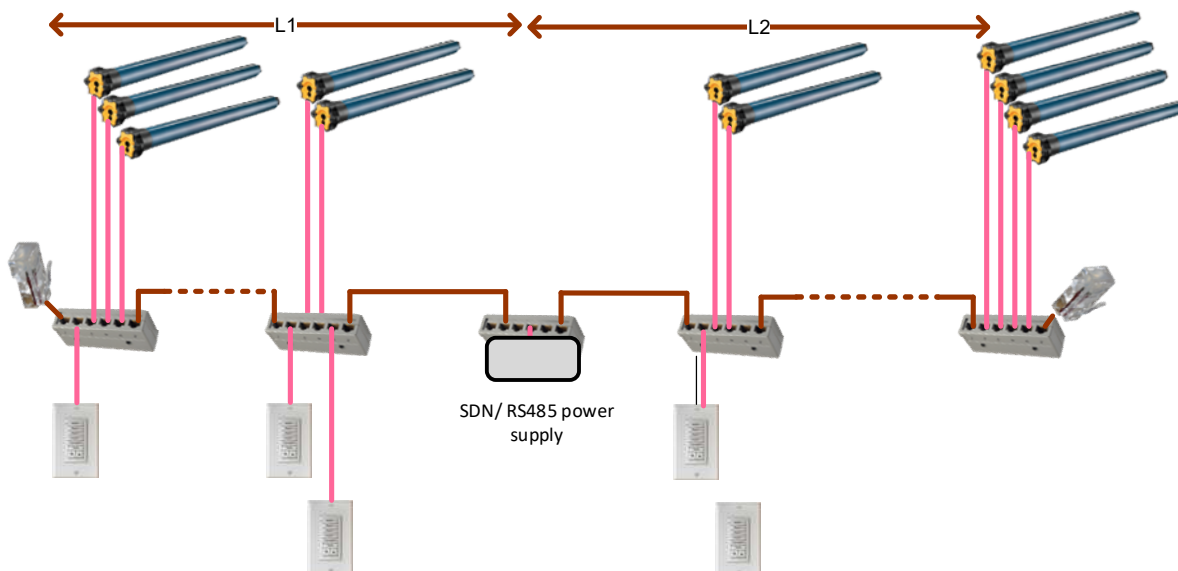
Minimum voltage on the powered devices: 9V DC



SDN bus length is determined such that:

- The bus segments L1, L2 are defined with the chart below (§3.2.3), by considering the total current needed on the segment by the powered devices. Select the **yellow curve** in the chart (DISTRIBUTED DEVICES)
- The maximum SDN bus length = L1 + L2, cannot exceed 1200 m / 4000 ft and refers to the product installation guide.

3.2.1.1 Example: Installation SDN / RS485 power supply, motors, keypads and passive junctions



L1: the current needed by powered devices is 240mA. Chart -> max. possible 500 m.

L2: the current needed by powered devices is 200mA. Chart -> max. possible 600 m

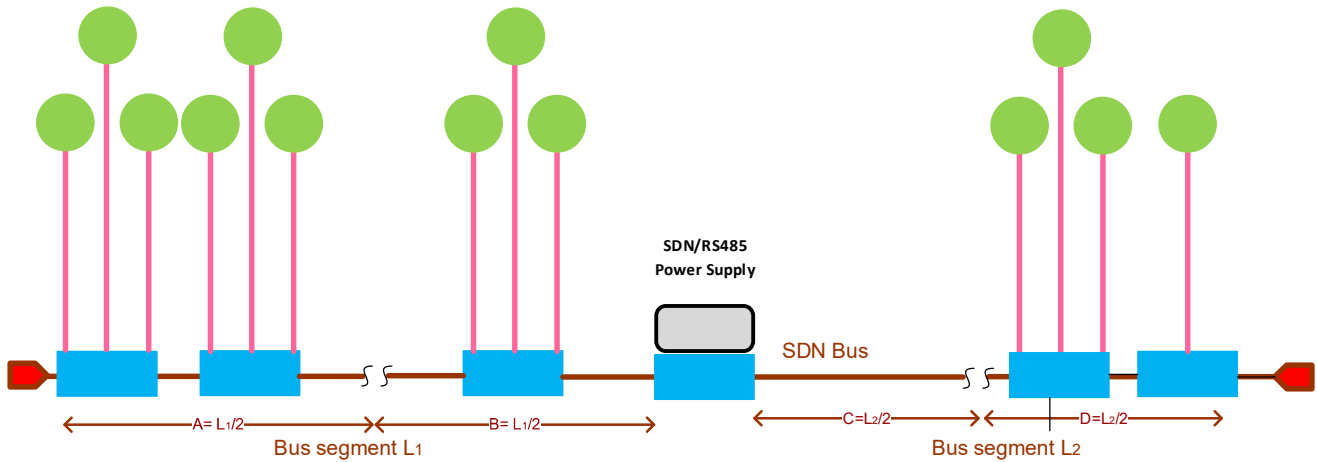
3.2.2 Non-distributed powered devices:

The powered devices via SDN Bus and the non-powered devices are not distributed along the SDN Bus.

- More powered devices and non-powered devices are connected on part A than on part B of segment L1.
- All powered devices and non-powered devices are connected on part D of segment L2.

One power supply via SDN bus: Max. 24V DC +/-10% 1A max.

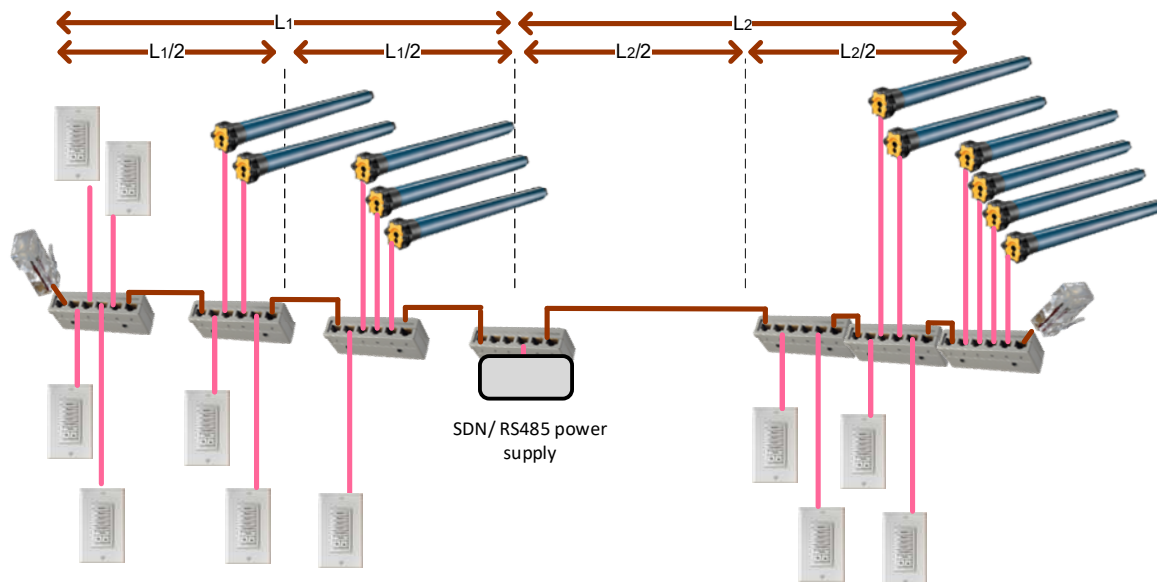
Minimum voltage on the powered devices: 9V DC



SDN bus length is determined such that:

- The bus segments L1, L2 are both non-distributed powered devices and are defined by:
 - The chart below (§3.2.3), by considering the total current needed on the segment by the powered devices.
 - Selecting the **red curve** in the chart (NON-DISTRIBUTED DEVICES)
- The maximum SDN bus length = L1 + L2, cannot exceed 1200 m / 4000 ft and refers to the product installation guide.

3.2.2.1 Example: Installation with SDN / RS485 power supply, motors, keypads and passive junctions.



L1: the current needed by powered devices is 250mA. Chart-> max. possible 320 m

L2: the current needed by powered devices is 200mA powered devices > max. possible 420 m

SDN bus max. length = L1 + L2 = 740 m.

3.2.3 Chart:

