e:bus
Introduction Manual

Read the e:bus Introduction Manual and the Safety Instructions carefully. Subject to modification without prior notice.
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Published by:
Traxon Technologies Europe GmbH
Karl-Schurz-Strasse 38
33100 Paderborn, Germany

Traxon Technologies Europe GmbH
Sales Operations
Karl-Schurz-Str. 38
33100 Paderborn, Germany
+49 5251 54648-0
support@ecue.com

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1 Introduction

This document gives a short introduction to the e:bus system. e:bus is a bus system developed by Traxon e:cue for secure, bi-directional and fast system link between e:bus enabled user terminals.

1.1 Advantages of the e:bus system

The e:bus networking platform offers several features for a simple installation and great reliability in real installations.

- e:bus is a self-organizing network. This simplifies configuration by a plug & play - like behaviour. The addressing happens automatically.
- Link power. User interfaces are directly powered over e:bus. Fewer wires make the hardware installation much easier.
- The connections are a very reliable and a stable communication basis with polarity-insensitive wiring.

At the end of this document (see page 06), you can find a short comparison of e:bus with DALI and DMX based communication.

1.2 General information

⚠ e:bus network communication cables should be seperated from high voltage power cables. Follow local electrical codes with regard to cable placement.

- Up to eight devices can be connected to the e:bus, organized by a signle master device.
- Free topology architecture allows the devices to be connected in combination of star, bus and tree structures.
- e:bus is designed for cable lengths of up to 400 meters, depending on cable type, topology and number of connected devices. A bus topology allows the largest cable length.
- The maximum stub length is 30 cm.
- Interfaces are powered via e:bus.
- Interfaces will be automatically registered and addressed.
- Defective units will not affect the communication between other devices.
- A maximum of eight e:bus devices, e.g. e:cue Glass Touches, is supported by one SYMPL e:bus Node.

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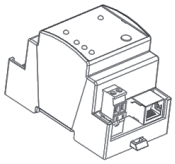
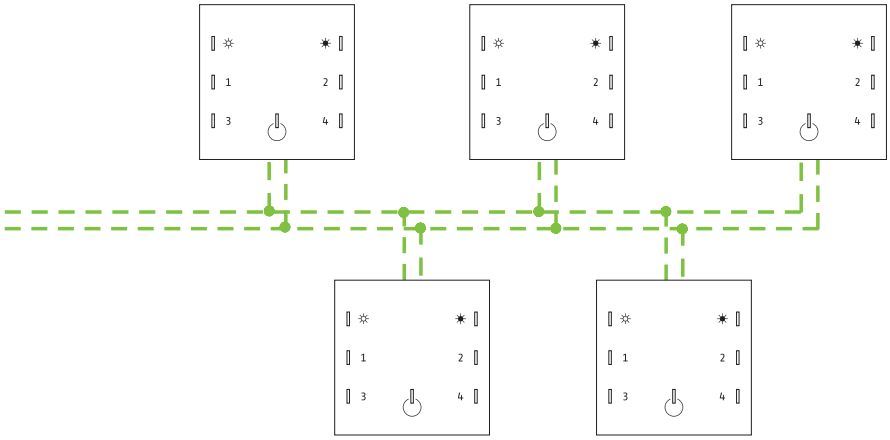
2 Topologies

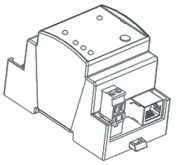
Bus topology



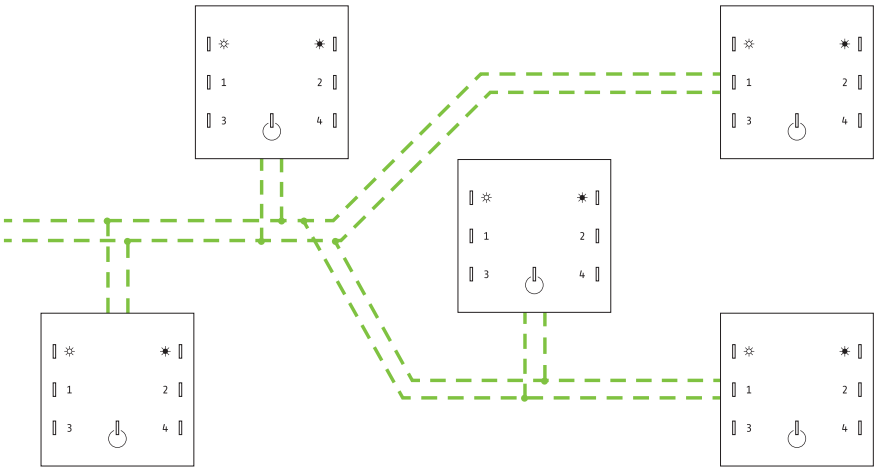
SYMPL e:bus Node



Free topology



SYMPL e:bus Node



2.1 Wiring

The e:bus is a 2-wire-bus system using screw terminal connectors to attach the wires safely and robust. The wiring between the devices is extremely flexible. In addition to the free topology design, you do not need to pay attention to polarities. As long as the two e:bus connectors of a user terminal are connected to the master unit's connectors, regardless if a cable goes from + to + or from + to -, everything will work fine. The two e:bus connectors of a user terminal can be connected to the master unit's connectors either way. The terminal devices will recognize the polarity on their own and configure themselves the proper way.

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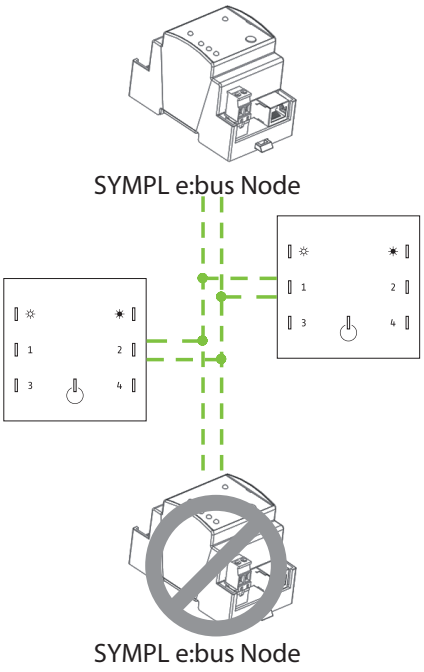
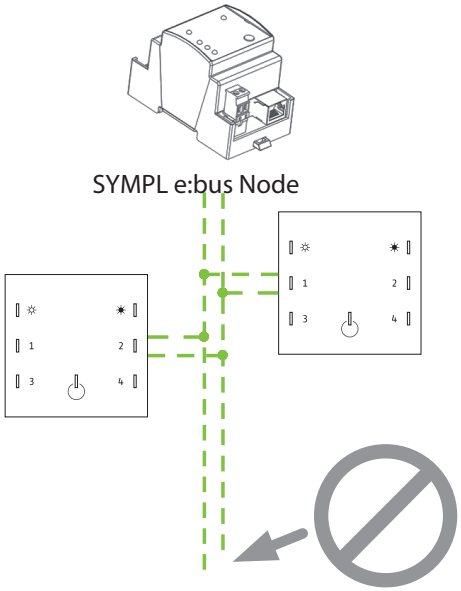
2.2 Invalid configurations

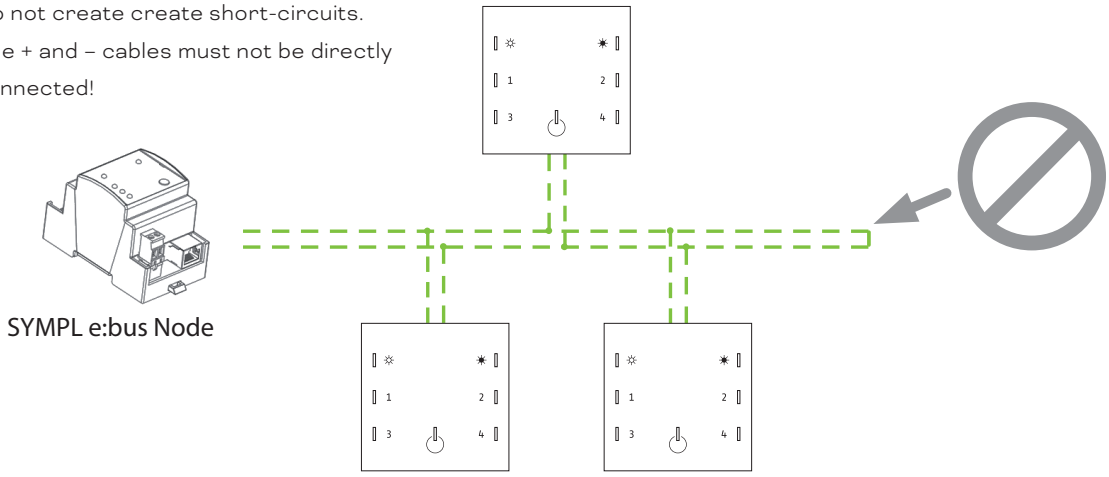
Do not add a second master to an e:bus network!



Do not leave any wires open! Open wires will cause signal reflections and therefore disrupt communication.



Do not create create short-circuits. The + and – cables must not be directly connected!



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3 Cable types and lengths

3.1 Cable types

The maximum cable length is greatly dependent on device count, topology and cable types as well. Approved cable types for e:bus are AWG 16 (1.5 sqmm) cables and AWG 24 (0.28 sqmm) Cat5 or J-Y(St)Y cables. The following table shows valuable key facts:

3.2 General run lengths

Device count	AWG 16 (1,5 sqmm)		AWG 24 (0,28 sqmm) Cat5 Cable or J-Y(St)Y	
	bus topology	free topology	bus topology	free topology
1	400 m / 1312 feet	100 m / 328 feet	400 m / 1312 feet	100 m / 328 feet
2	400 m / 1312 feet	100 m / 328 feet	268 m / 879 feet	100 m / 328 feet
4	400 m / 1312 feet	100 m / 328 feet	133 m / 436 feet	100 m / 328 feet
6	400 m / 1312 feet	100 m / 328 feet	88 m / 288 feet	82 m / 269 feet
8	400 m / 1312 feet	100 m / 328 feet	66 m / 216 feet	61 m / 200 feet

4 Special cabling conditions

4.1 Glass Touch

For the Glass Touch the values above are not valid. Instead, watch these requirements:

- Use 2 x 0.5 sqmm.
- Use a direct connection from SYMPL e:bus Node to Glass Touch, no branching.
- Maximum cable length is 100 m.

5 e:bus, DALI and DMX

5.1 DALI

Digital Addressable Lighting Interface (DALI) is a standard for control lighting in buildings. It was established as a successor for 0 ... 10 V lighting control systems, and as an open standard alternative to Digital Signal Interface (DSI), on which it is based. The DALI standard, which is specified in the IEC 60929 standard for fluorescent lamp ballasts, encompasses the communications protocol and electrical interface for lighting control networks.

5.2 DMX

DMX512 (Digital Multiplex) is a standard for digital communication networks to control stage lighting and effects such as fog machines and moving lights. DMX512 employs EIA-485 differential signaling at its physical layer, in conjunction with a variable-size, packet based communication protocol at 250 kBit/s. It is unidirectional and does not include automatic error checking and correction. DMX is the most used connection type in lighting control.

5.3 Comparison

Feature	e:bus	DALI	DMX
Includes protocol	✔	✔	✔
Self-organizing network	✔	-	-
Free topology wiring	✔	✔	-
Link power	✔	-	-
Polarity-insensitive	✔	-	-
High-Speed signaling	✔	-	✔

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