TECHNICAL DATA

ABB i-bus® KNX

LK/S 4.3

Line Coupler Secure

1 Device description

The devices are modular installation devices (MDRC) in pro*M* design. They are designed for installation in electrical distribution boards and small housings with a 35 mm mounting rail (according to EN 60715).

The devices are KNX-certified and can be used as products in a KNX system
→ EU declaration of conformity.

The devices are powered via the KNX bus connection of the main line (1 = Main Line) and require no additional auxiliary voltage.

The connection to the bus (ABB i-bus® KNX) is made via two KNX bus connection terminals on the front of the housing.

The software application Engineering Tool Software (ETS) is used for physical address assignment and parameterization.

2 Device functions

The LK/S 4.3 is used to provide a data connection and galvanic isolation between two KNX lines (main line and subline). The LK/S 4.3 complies with the KNX-Data-Secure-Standard KNX DATA Secure.

- The LK/S 4.3 acts as a coupler with or without a filter filter table. The filter table is created automatically by ETS.
- The Secure Proxy encrypts or decrypts the telegrams with group addresses in both directions between secure and non-secure communication.
- Unauthorized access to a device via the Secure Proxy is prevented.

The device function is determined by the physical address (Assignment of the physical address), the settings in the device application and how the device is used in ETS (KNX Plain/KNX Secure).

The device application for the LK/S 4.2. can be loaded onto the LK/S 4.3 so that its functionality (e.g. as a line repeater) is still guaranteed in ETS 4 or 5. The following tables provide an overview of which device functions can be implemented with the related device applications and ETS versions:

Device application LK/S 4.2	ETS 4	ETS 5	ETS 6
Line or area coupler	x	x	x
Line repeater	x	x	x
Segment coupler			
Secure Proxy			

Tab. 1: Device application LK/S 4.2 and ETS versions

Note
If an existing ETS 5 project with a line repeater is loaded into ETS 6, the function as a line repeater is retained in ETS 6.
If the device is assigned to a line in ETS 6 using the LK/S 4.2 device application, ETS automatically creates a segment. This segment has no function in this situation. If the device is parameterized as a line repeater, the device continues to operate as a line repeater.

Device application LK/S 4.3	ETS 4	ETS 5	ETS 6
Line or area coupler			x
Line repeater			
Segment coupler			x
Secure Proxy			x

Tab. 2: Device application LK/S 4.3 and ETS versions

Note
If the LK/S 4.3 is used as a line repeater in an ETS 4 or 5 project, the LK/S 4.2 device application must be used.
LK/S 4.3 supports both device applications. Before using the LK/S 4.2 device application, the device must be reset to factory settings to delete any existing secure settings and filter tables, Unloading device or resetting to factory settings (Master-Reset).

2.1 Line or area coupler

As an area coupler (address range x.0.0), the LK/S 4.3 connects the area line (terminal 1) to a main line (terminal 2). Area couplers are typically used in extensive KNX systems.

As a line coupler (address range x.x.0), the LK/S 4.3 connects the main line (terminal 1) to a subline (terminal 2).

As a line or area coupler, the LK/S 4.3 filters all telegrams on the bus (ABB i-bus® KNX) according to the settings in ETS. The filter tables are created automatically by ETS. The routing settings for different telegram types can be specified separately in the parameters.

If a telegram has a transmission error or the acknowledgment is not received, the behavior can be specified separately for both lines.

As a line or area coupler, the LK/S 4.3 can act as a Secure Proxy. The Secure Proxy translates the telegrams with group addresses in both directions between secure and non-secure communication. This means that KNX Plain and KNX Data Secure devices can be combined with each other while maintaining the maximum possible security.

Note
Each line and each line segment requires a dedicated power supply.

2.2 Segment coupler

As a segment coupler, the LK/S 4.3 connects the primary line segment (terminal 1) in a KNX line to a secondary line segment (terminal 2) to form a logical function area and ensures galvanic isolation between the two segments.

Segment couplers can be used to split an area line, main line or subline into segments. Segmenting the system makes it easier to expand and scale the KNX system without degrading performance. For example, a segment coupler could be installed in each hotel room. The number of segment couplers in a line is specified by ETS.

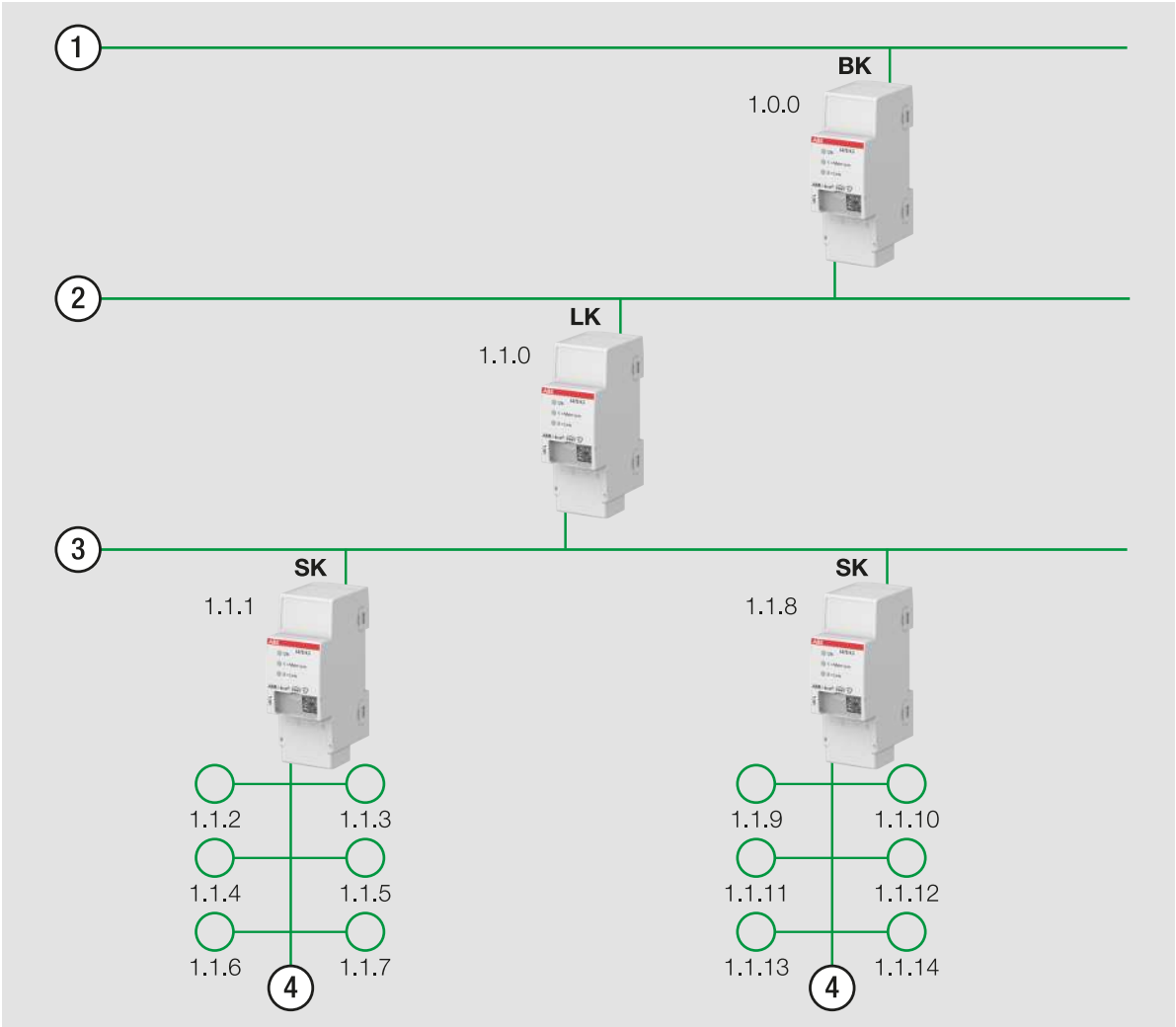

Fig. 1: Example project topology

1	KNX TP area line
2	KNX TP main line
3	KNX TP line
4	KNX TP segment
BK	Area coupler
LK	Line coupler
SK	Segment coupler

Tab. 3: Legend

For ETS to recognize a device as a segment coupler, segments must be specified in the ETS Topology view. The segment coupler must be assigned a physical address between x.x.1 and x.x.255 according to the topology in the KNX installation.

Fig. 2: Project topology in ETS

The device function is determined by the physical address (Assignment of the physical address), the settings in the device application and how the device is used in ETS (KNX Plain/KNX Secure).

Segment couplers use filter tables to control telegrams between different segments. The filter table is displayed in ETS after clicking the device using the right mouse button and selecting "Preview Filter Table" on the context menu. The filter tables are created automatically by ETS.

As a segment coupler, the LK/S 4.3 can act as a Secure Proxy. The Secure Proxy translates the telegrams with group addresses in both directions between secure and non-secure communication. This means that KNX Plain and KNX Secure devices can be combined with each other while maintaining the maximum possible security.

Note
Each line and each line segment requires a dedicated power supply.

2.3 Secure Proxy

The Secure Proxy is a coupler or IP router function specified in the KNX standard. A Secure Proxy permits the combination of KNX Plain and KNX Secure products while maintaining the maximum possible security.

The Secure Proxy can operate in the LK/S 4.3 in area, line or segment couplers. The Secure Proxy encrypts or decrypts the telegrams with group addresses in both directions between secure and non-secure communication. Depending on the topology, ETS ensures that telegrams remain encrypted for as long and as far as possible to guarantee maximum security.

The Secure Proxy is configured fully automatically via ETS. A Secure Proxy requires at least one KNX Secure device in the installation.

In ETS version 6.1.1 or later, the coupler must be commissioned using the Secure device certificate. ETS detects the suitability of the coupler as a Secure Proxy and enters the group addresses to be translated in the Secure Proxy table for the coupler. The devices in the ETS project must be placed topologically in the correct position.

The Secure Proxy table and the group address filter table are updated automatically while the coupler application is loaded. The Secure Proxy table is displayed in ETS after clicking the device using the right mouse button and selecting "Preview Filter Table" on the context menu.

More information → ABB documentation "KNX Secure"

3 Connections

The devices have the following connections:

- 2 KNX bus connections

3.1 Inputs

Note
This section is not relevant for these devices.

3.2 Outputs

Note
This section is not relevant for these devices.

4 Product family

The product family described in this document includes the following devices:

Device type	Name	Features
LK/S 4.3	Line coupler	MDRC

Tab. 4: Product family

4.1 Dimension drawing

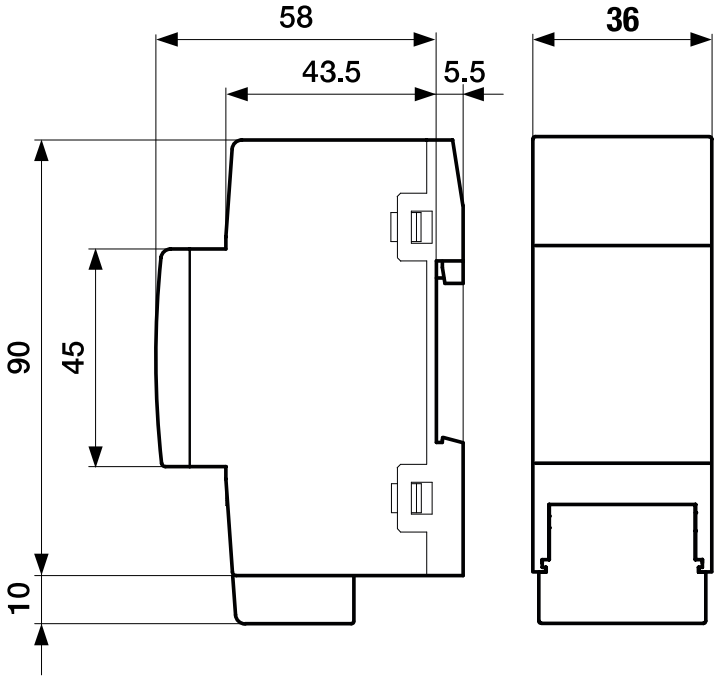

Fig. 3: Dimension drawing

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4.2 Connection diagram

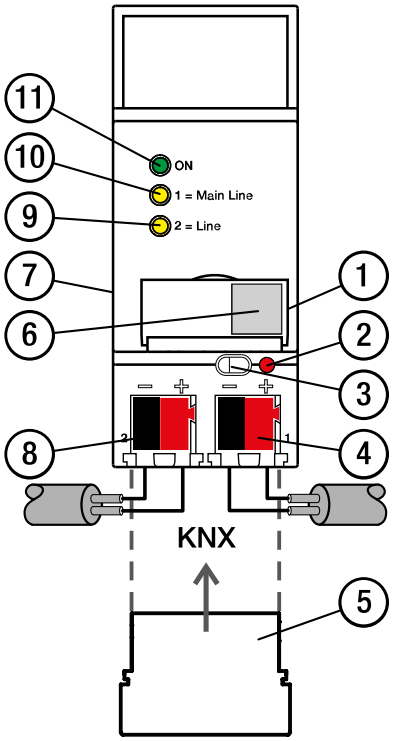

Fig. 4: LK/S 4.3 connection diagram

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Legend

1 label carrier
2 *Programming* LED
3 *Programming* button
4 KNX bus connection terminal, main line
5 Cover cap
6 2D code (below label carrier)
7 Device certificate/Identification label (on the side)
8 KNX bus connection terminal, subline
9 *Line* LED (subline)
10 *Main Line* LED (main line)
11 *ON* LED

4.3 Operating and display elements

Note
The operating and display elements are shown with variables in the following tables for illustrative purposes only. All elements of the same type function in exactly the same way.

Operating control/LED	Description/function	Display
Programming button/LED	Assignment of the physical address	LED on: Device in programming mode

Tab. 5: Operating and display elements

4.3.1 Manual mode

Note
This section is not relevant for these devices.

4.3.2 KNX operation

Operating control/LED	Description/function	Display
ON LED		LED on: Device ready for operation LED off: Device not ready for operation
Main Line LED		LED on: Main line connected LED off: Main line not connected or KNX voltage failure on main line LED flashing: Telegram traffic on main line
Line LED		LED on: Device ready for operation, main line and subline connected LED off: Main line and subline not connected LED flashing: Telegram traffic on subline

Tab. 6: Operating and display elements

4.4 Technical data

4.4.1 General technical data

		LK/S 4.3
Device	Dimensions	90 × 36 × 64.5 mm (H x W x D)
	Mounting width in space units	2 modules, 18.0 mm each
	Weight	0.074 kg
	Mounting position	Any
	Mounting variant	35 mm mounting rail
	Design	proM
	Degree of protection	IP 20
	Protection class	III
	Overvoltage category	III
	Overload protection	Yes
	Reverse voltage protection	Yes
	Short-circuit proof	Yes
	Pollution degree	2
Materials	Housing	Polycarbonate, Makrolon FR6002, halogen free
Material note	Fire classification	Flammability V-0
Electronics	Rated voltage, bus	30 V DC
	Voltage range, bus	21 … 31 V DC
	Current consumption, bus (main line)	< 5 mA
	Current consumption, bus (subline)	< 3 mA
	Power loss, device	≤ 0.25 W
	KNX safety extra low voltage	SELV
Connections	Connection type, KNX bus	Plug-in terminal
	Cable diameter, KNX bus	0.6 … 0.8 mm, solid
	Pitch	6.35 mm
	Stripping length for KNX terminal	6 mm
Certificates and declarations	CE declaration of conformity	→ 9AKK108469A3392
Ambient condition	Operation	−5 … +45 °C
	Transport	−25 … +70 °C
	Storage	−25 … +55 °C
	Humidity	≤ 95 %
	Condensation allowed	No
	Atmospheric pressure	≥ 80 kPa (corresponds to air pressure at 2,000 m above sea level)

5 Ordering details

Description	MB	Type	Order no.	Packaging unit [pcs.]	Weight (incl. packaging) [kg]
Line coupler	2	LK/S 4.3	2CDG110310R0011	1	0.10

Tab. 7: Ordering details

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