Technical Manual

State 04/2026 - Version 1.0

KNX Line Coupler with Data Secure and proxy function

SCN-LK001.03S

Further documents:

Data sheets:

https://www.mdt-group.com/for-professionals/downloads/datasheets.html

Assembly and operating instructions:

https://www.mdt-group.com/for-professionals/downloads/assembly-and-operation-instructions.html

Solution proposals for MDT products:

https://www.mdt-group.com/for-professionals/tips-tricks.html

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2 Overview

2.1 Overview devices

This manual applies to the following devices (article number printed in **bold**).

- **SCN-LK001.03S** KNX Line Coupler with Data Secure and proxy function, 2 TE REG

2.2 Functions

Line coupler

The device is used to connect two KNX bus segments. Increased reliability due to electrical separation of the bus segments. The bus load can be reduced using a filter table.

Segment coupler functionality (as of ETS 6)

The device can alternatively be used as a segment coupler to extend an existing KNX TP line. In segment mode, the physical address range of the line is retained. To reduce the bus load, telegrams are only forwarded between line and segment if they are relevant for the segment, based on the filter table automatically generated by the ETS.

KNX Secure Proxy function (as of ETS 6)

The KNX Secure Proxy function translates communication between secured (KNX Secure) and unsecured lines or areas. KNX Secure features are added to or removed from telegrams, depending on which subnet they are forwarded to. This allows new KNX Secure lines to be combined with existing KNX lines.

Long frame support

The device supports "long frames" (longer telegrams). These contain more user data per telegram, which significantly shortens programming time.

2.3 Wiring diagram

The following image shows the exemplary wiring diagram:

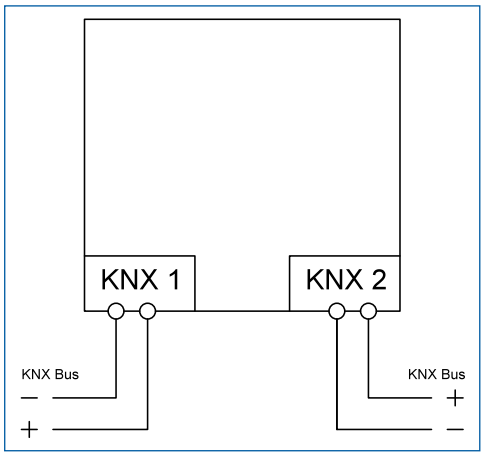

Figure 1: Wiring diagram

2.4 Structure and Handling

The following image shows the structure of the device:

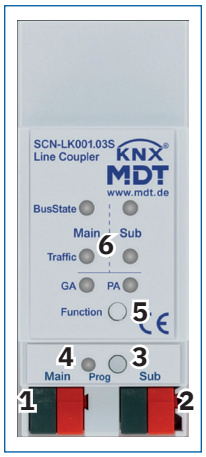

Figure 2: Structure and Handling

1 – KNX Bus connection terminal (main line) 2 – KNX Bus connection terminal (sub line)
3 – Programming button 4 – Programming LED
5 – Function button 6 – LED Indicators

2.4.1 Function button

Keypress - Duration	Function
> 3 seconds	Cancel routing manually, configuration via ETS
> 15 seconds	Start with reset to factory settings

Table 1: Functions – Function button

2.4.2 Function description: LED Indicators

LED	Colour / Function
Bus State Main	**Off:** Main line error **Green:** Main line OK **Red:** Manual override active
Bus State Sub	**Off:** Sub line error or not connected **Green:** Sub line OK
LED Traffic Main	**Off:** No transmissions on the main line **Green flashes:** Bus load on the main line **Red flashes:** Connection error on the main line
LED Traffic Sub	**Off:** No transmissions on the sub line **Green flashes:** Bus load on the sub line **Red flashes:** Connection error on the sub line
LED GA	**Off:** Main and sub line different **Green:** Filter table active **Green + Red:** Transmit all **Red:** Block
LED PA	**Off:** Main and sub line different **Green:** Filter table active **Green + Yellow:** Transmit all **Yellow:** Block

Table 2: Function description – LED Indicators

2.5 Commissioning

1. Connect the device according to the wiring diagram.
2. Connect the programming interface to the bus.
3. Switch on bus voltage.
4. Press the programming button on the device (red programming LED lights up continuously).
5. Set and program the individual address in the ETS (programming LED turns off).
6. Make and program settings in the application program.

2.6 Security

2.6.1 KNX Secure

Important: The use of **KNX Secure** functionality requires **ETS from version 5.7** onwards.

KNX Secure has two different ways: IP Secure and Data Secure.

KNX IP Secure enables secure transmission in IP networks by encrypting and authenticating transmitted messages. IP Secure ensures that KNX tunnelling or routing messages at IP level cannot be read or manipulated. KNX IP Secure forms an additional security layer that protects all KNXnet IP data traffic.

KNX Data Secure ensures that messages/telegrams sent by KNX devices (regardless of the KNX medium) are encrypted and/or authenticated, provided that both participants are KNX Data Secure-capable. If one of the participants does not support KNX Data Secure, communication will continue to be unencrypted.

Device certificate
For the secure commissioning of a KNX Secure device, the device certificate is used. The key contained in the certificate must be scanned or entered once in the ETS by the integrator/installer. The device certificate is no longer required for further transmissions, unless the device is reset via a master reset (see 2.7 Zurücksetzen auf Werkseinstellung). The certificates of all devices in a project should be detached from the device label after initial commissioning and stored in relation to the project.

Secure Mode
If a device is operated with security enabled, it works in "secured mode" (Secure Mode) and transmits the data encrypted. Recognisable by the blue shield symbol.

Unsecured mode - Plain Mode
If a device is operated without security enabled, this is referred to as "unsecured mode" (Plain Mode). The data is transmitted unencrypted.

2.6.2 Project password

Activated KNX Secure strictly requires an ETS project password. Without a project password, secure commissioning is not possible and the devices are loaded in unsecured mode.

2.6.3 Commissioning with activated KNX Secure

When importing the application program into the KNX project, a note appears regarding the need for a project password. **If the process is cancelled at this point, the device will be loaded without KNX Secure functions.** The device certificate is then entered (see chapter 2.6.1). If a webcam is connected, this can be done by scanning the QR code; alternatively, the certificate can be entered via the keyboard.

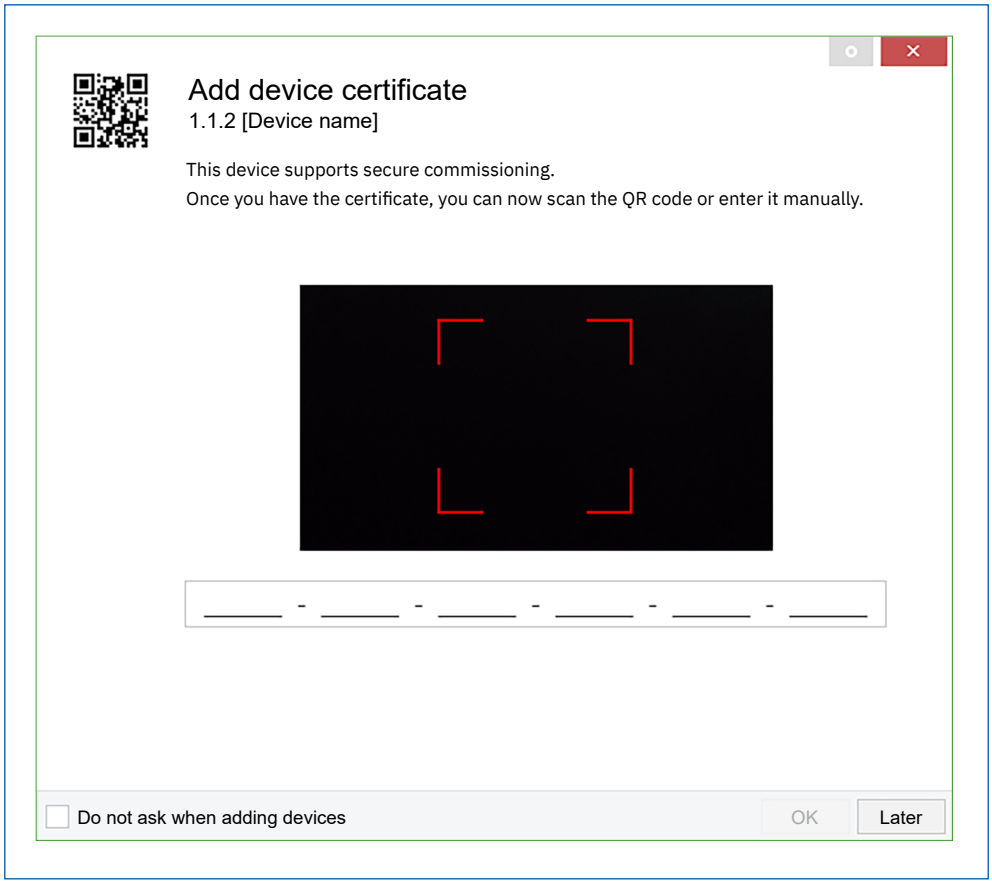

Figure 3: Commissioning with ETS – Security: Add device certificate

2.7 Reset to factory settings

1. Press and hold the function button for at least 15 seconds: The two LEDs for the bus state, the LEDs for the group addresses and the LED for the physical addresses light up red.
2. Briefly release the function button, then press and hold again for at least 5 seconds: The LEDs turn off.
3. The device will reset and reboot.

3 ETS Parameters

3.1 General

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Manual operation	■ not active ■ **pass all telegrams** ■ pass all Physical telegrams ■ pass all Group telegrams	Setting of telegram transmission in manual mode.
Fallback time for Manual operation	■ 10 min ■ **1 h** ■ 4 h ■ 8 h	Duration until automatic switch from manual operation back to normal operation.

Table 3: Settings – General

Pressing the function button on the device for 3 seconds triggers the set action. After the set fallback time has elapsed, the device returns to normal operation.

Note: The setting "pass all telegrams" is intended for test purposes only and is not recommended.

3.2 Main line

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Telegram routing	■ Groups: filter; Physical: block ■ **Groups and Physical: filter** ■ Groups: route; Physical: filter ■ Groups and Physical: route ■ individual setting	■ block: no telegram will be forwarded. ■ filter: Only telegrams from the filter table will be forwarded. ■ forward: All telegrams will be forwarded. ■ Individual setting: The following parameters can be set individually according to requirements.

ETS text	Value range **[Default value]**	Comment
Group telegrams: Main group 0 ... 13	■ route all (not recommended) ■ block ■ **filter**	■ All group telegrams (main group 0 ... 13) are forwarded. ■ No group telegram (main group 0 ... 13) is forwarded. ■ Only group telegrams (main group 0 ... 13) from the filter table are forwarded.
Group telegrams: Main group 14 ... 31	■ route all (not recommended) ■ block ■ **filter**	■ All group telegrams (main group 14 ... 31) are forwarded. ■ No group telegram (main group 14 ... 31) is forwarded. ■ Only group telegrams (main group 14 ... 31) from the filter table are forwarded.
Physical telegrams	■ route all (not recommended) ■ block ■ **filter**	■ All physical telegrams are forwarded. ■ All physical telegrams are blocked. ■ Only physical telegrams according to the filter table are forwarded.
Physical telegrams: Repetition for errors on Main line	■ not active ■ **up to 3 repetitions** ■ only one repetition	In case of transmission errors (e.g. due to missing receiver) on the main line, physical telegrams are ... ■ not retransmitted. ■ retransmitted up to three times. ■ retransmitted once.
Group telegrams: Repetition for errors on Main line	■ not active ■ **up to 3 repetitions** ■ only one repetition	In case of transmission errors (e.g. due to missing receiver) on the main line, group telegrams are... ■ not retransmitted. ■ retransmitted up to three times. ■ retransmitted once.
Confirm telegrams on Main line	■ **if routed** ■ always	■ Only forwarded telegrams are confirmed on the main line by an “ACK”. ■ Every telegram on the main line is confirmed by an “ACK”.
Confirm own telegrams	■ active ■ **not active**	■ Telegrams sent to the main line are confirmed by an additional “ACK”. ■ No confirmation by “ACK”.

Table 4: Settings – Main Line

Please note: The setting “**route all**” for group and physical telegrams is intended for test purposes only. This setting is not recommended for normal operation.

For more information on “group telegrams” and “physical telegrams”, see 4.2 Telegram routing

3.3 Line (Sub)

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Telegram routing	■ Groups: filter; Physical: block ■ **Groups and Physical: filter** ■ Groups: route; Physical: filter ■ Groups and Physical: route ■ individual setting	■ block: no telegram will be forwarded. ■ filter: Only telegrams from the filter table will be forwarded. ■ forward: All telegrams will be forwarded. ■ Individual setting: The following parameters can be set individually according to requirements.
Group telegrams: Main group 0 ... 13	■ route all (not recommended) ■ block ■ **filter**	■ All group telegrams (main group 0 ... 13) are forwarded. ■ No group telegram (main group 0 ... 13) is forwarded. ■ Only group telegrams (main group 0 ... 13) from the filter table are forwarded.
Group telegrams: Main group 14 ... 31	■ route all (not recommended) ■ block ■ **filter**	■ All group telegrams (main group 14 ... 31) are forwarded. ■ No group telegram (main group 14 ... 31) is forwarded. ■ Only group telegrams (main group 14 ... 31) from the filter table are forwarded.
Physical telegrams	■ route all (not recommended) ■ block ■ **filter**	■ All physical telegrams are forwarded. ■ All physical telegrams are blocked. ■ Only physical telegrams according to the filter table are forwarded.
Physical telegrams: Repetition for errors on line (Sub)	■ not active ■ **up to 3 repetitions** ■ only one repetition	In the event of transmission errors (e.g. due to missing receiver) on the sub-line, physical telegrams are ... ■ not retransmitted. ■ retransmitted up to three times. ■ retransmitted once.
Group telegrams: Repetition for errors on line (Sub)	■ not active ■ **up to 3 repetitions** ■ only one repetition	In the event of transmission errors (e.g. due to missing receiver) on the sub-line, group telegrams are ... ■ not retransmitted. ■ retransmitted up to three times. ■ retransmitted once.

ETS text	Value range **[Default value]**	Comment
Confirm telegrams on line (Sub)	■ **if routed** ■ always	■ Only forwarded telegrams are acknowledged on the sub-line by an “ACK”. ■ Every telegram on the sub-line is acknowledged by an “ACK”.
Confirm own telegrams	■ active ■ **not active**	■ Telegrams sent to the sub-line are confirmed by an additional “ACK”. ■ No confirmation by “ACK”.
Programming via line (Sub)	■ **allow** ■ lock	Setting whether programming of the device is also possible via the sub-line.

Table 5: Settings – Line (Sub)

Please note: The setting “**route all**” for group and physical telegrams is intended for test purposes only. This setting is not recommended for normal operation.

4 Further settings in the ETS

4.1 Setting up a project

Please note:

- There may only ever be one segment coupler in a segment.
- In ETS, it is not possible to create manual filter table entries for segments. As a result, no additional group addresses can be added to the automatically created filter tables for subordinate segments.

4.1.1 Topology as line coupler

as of ETS 5:
The project is set up identically to projects without a line coupler, except that each connection from main to sub-line is implemented via a line coupler.

The following image shows an example of a topology structure:

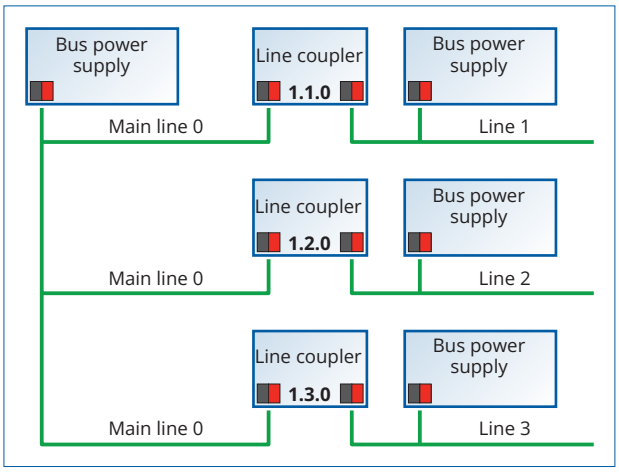

Figure 4: Example – Topology as line coupler

4.1.2 Topology as segment coupler

As of ETS 6:
With ETS 6 (as of version 6.0.5), the line coupler can be used as a segment coupler. This is a software-based extension that connects line segments independently of the media type. This means that a KNX line coupler can be integrated into a TP line without having to create a separate structure for it.

The following image shows an example of a topology structure:

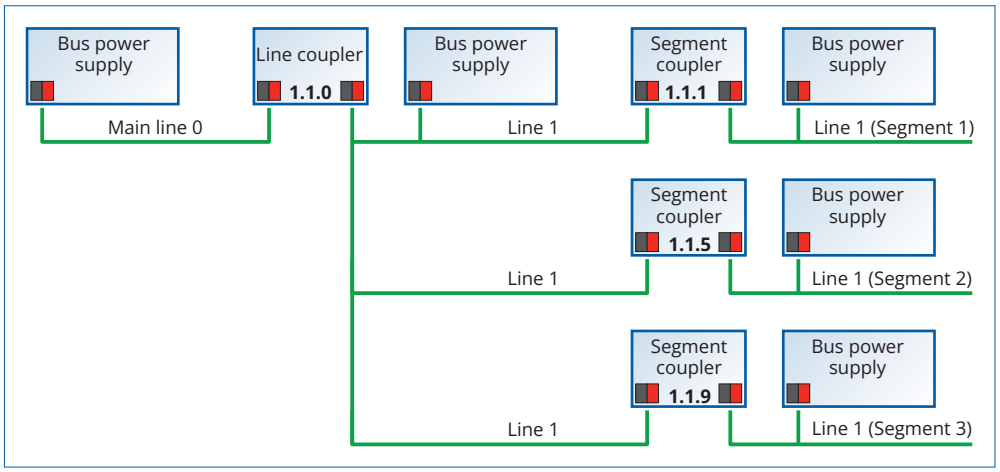

Figure 5: Example – Topology as segment coupler

4.1.3 Segment coupler for long cable lengths

If a project requires a distant section of a line that should have the same line number, a line coupler can be used as a line repeater.

The following image shows an example of a topology structure:

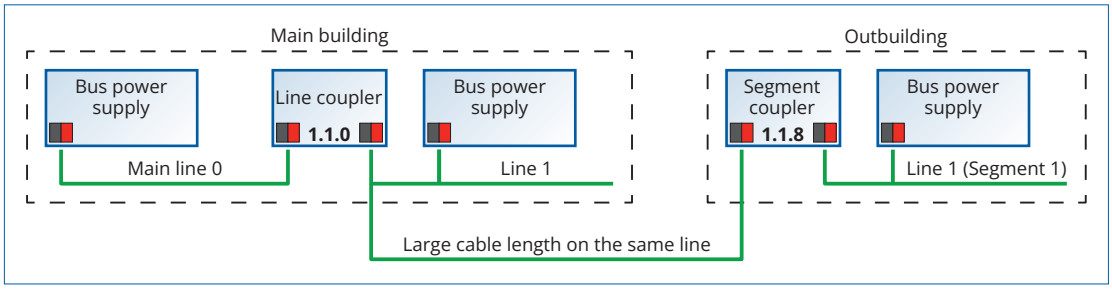

Figure 6: Example – Segment coupler for long cable lengths

4.2 Telegram routing

There are two types of telegrams:

- Telegrams with physical address
- Telegrams with group addresses

Addressing with physical addresses is used, for example, during programming, while addressing with group addresses is used for “normal” bus communication. The behaviour of the line coupler with **physical addresses** is relatively simple. If the destination address is in the line of the line coupler, the telegram is forwarded; otherwise, it is not. The behaviour with telegrams with **group addresses** is defined by the use of filter tables. The filter tables specify which group addresses are transferred by the line coupler from the main line to the sub-line and vice versa. The line coupler listens to all group telegrams on both the main line and the sub-line and compares the destination address of the telegram with the group addresses in the filter table. If the destination address is in the filter table, the telegram is transferred to the other line. If the destination address is not in the filter table, the line coupler does not forward the telegram.

4.3 Filter table

The filter table is created automatically by ETS. Nevertheless, there are exceptions where it may make sense to add group addresses to the filter table manually.

Every group address that contains communication objects from devices on the main line and devices on the sub-line is automatically added to the filter table by ETS. Thus, all group addresses required for smooth communication are already present in the filter table. However, as mentioned at the beginning of this chapter, it may sometimes make sense to add group addresses to the filter table manually, e.g. if a visualisation is to display the behaviour of certain group addresses or if group addresses are to be made visible for diagnosis in the group/bus monitor.

To add the group address manually, select the group address in the ETS and change the setting for “Pass through line coupler” from “No” to “Yes”:

However, when manually adding group addresses to the filter table, it should be noted that the group addresses can now pass through all line couplers, increasing the bus load on all lines. Therefore, only group addresses that are really needed should be added to the filter table.

4.4 Preview Filter Table

To do this, right-click on the respective line coupler. In the context menu that opens, you can now select the entry “Preview filter table”. The filter table shows all group addresses that are transferred from the main line to the sub-line – and vice versa.

4.5 Commissioning procedure

After all devices have been added according to the respective topology – see 4.1 Setting up a project – the devices can be configured as desired. During commissioning, the correct procedure is particularly important, as this is the only way to ensure data exchange between the main line and the sub-line:

- Programming the line coupler: Programming the line coupler loads the current settings into the device. In addition, the current filter table is loaded into the line coupler.
- Programming the devices in the sub-line: Programming the devices in the sub-line loads the parameter settings into the device as normal.

Important: Whenever the project is changed, the line coupler must be reprogrammed first (application program). Afterwards, all devices affected by the change must be reprogrammed.

If there are changes to the topology of the project, the line coupler must again be reprogrammed first, followed by all devices affected by the topology change.

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6 Appendix

6.1 Statutory requirements

The devices described above must not be used in conjunction with devices which directly or indirectly serve human, health, or life-safety purposes. Furthermore, the devices described must not be used if their use may cause danger to people, animals, or property. Do not leave the packaging material carelessly lying around. Plastic foils/ bags etc. can become a dangerous toy for children.

6.2 Disposal

Do not dispose of the old devices in the household waste. The device contains electrical components that must be disposed of as electronic waste. The housing is made of recyclable plastic.

6.3 Assembly

Danger to life from electric current!

All work on the device may only be carried out by qualified electricians. Country-specific regulations as well as the valid KNX guidelines must be observed.

The devices are approved for operation in the EU and bear the CE mark.

Use in the USA and Canada is prohibited!

6.4 History

V1.0	First version of the manual	DB V1.0 04/2026