GIRA

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Area/line coupler

Order No. 1023 00

Contents

1 Product definition

1.1 Product catalogue

Product name:	DRA area/line coupler
Use:	System device
Design:	RMD (rail-mounted device)
Order No.	1023 00

1.2 Function

The backbone/line coupler interconnects two KNX lines into a logical function area ensuring at the same the electrical separation between these lines. Each bus line of a KNX installation can thus be operated electrically independently from other bus lines.

The exact function of the device is determined by the selected parameterization and by the physical address. The device can be used as an backbone coupler, line coupler or line repeater for implementing line segments in existing new KNX installations.

Used as a line coupler (LC) (physical address: X.X.0):
Connection of a subordinate line (line) to a higher-order line (main line) optionally with and without filter function for group communication. The coupler is logically assigned to the subordinate line by way of its physical address. The coupler is supplied with power from the higher-level line (main line).

Used as a backbone coupler (BC) (physical address: X.0.0)
Connection of a subordinate line (main line) to a higher-order line (backbone bus) optionally with and without filter function for group communication. The coupler is logically assigned to the subordinate line by way of its physical address. The coupler is supplied with power from the higher-level line (backbone bus).

Used as a line repeater (LR) (physical address: X.X.X):
By using a line repeater, a line (64 devices max.) can be expanded by a further line segment (further 64 devices). With a maximum of 3 line repeaters in parallel per line, the highest maximum number of 256 devices in a line (including LRs) can then be realized. The line repeater has no filter tables so that all group telegrams will always be transmitted unfiltered.

Each line (backbone bus, main line, line) or each line segment requires a separate power supply.

There is a specific application program (coupler/repeater 901011) with extended functions for the ETS4 (from version 4.1). This supports the full address range (groups 0-31) for the filter function and includes additional parameters.

2 Installation, electrical connection and operation

2.1 Safety instructions

Electrical equipment may only be installed and fitted by electrically skilled persons. The applicable accident prevention regulations must be observed.

Failure to observe the instructions may cause damage to the device and result in fire and other hazards.

2.2 Device components

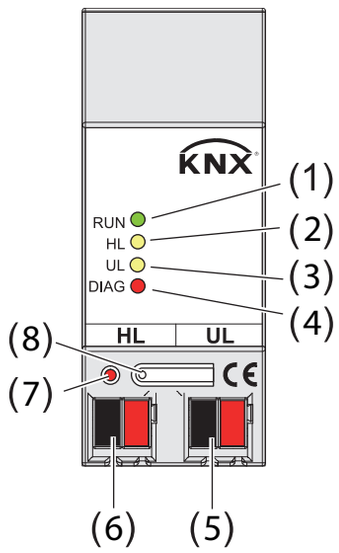


Figure 1: Device components

(1) LED "RUN" (green): signals the ready-for-operation state of the backbone / line coupler.
permanently OFF: device OFF, no power on higher-order line
permanently ON: device ON, power on both lines
flashing: device ON, no power on subordinate line

(2) LED "HL" (yellow): receiving data on higher-order line

(3) LED "UL" (yellow): receiving data on subordinate line

(4) LED "DIAG" (red): telegram transmission in group communication (groups 0-13). Signalling is parameter-dependent.

permanently OFF:
Application coupler/repeater 900F01
The parameters "Group telegrams main line -> Line" and "Group telegrams line -> Main line" are parameterized to "block" or "filter".

Application coupler/repeater 901011
The parameters "Group telegrams groups 0-13" for telegrams "Main line -> Line" and "Line -> Main line" are parameterized to "block" or "filter".
In these cases, group telegrams of the groups 0-13 are filtered or blocked completely according to the filter table loaded depending on the parameterization.

permanently ON:
Application coupler/repeater 900F01
The parameters "Group telegrams main line -> Line" or "Group telegrams line -> Main line" are parameterized to "transmit unfiltered" or the device works as a line repeater.

Application coupler/repeater 901011
The parameters "Group telegrams groups 0-13“ for telegrams "Main line -> Line“ or “Line -> Main line" are parameterized to "transmit unfiltered" or the device works as a line repeater.
In these cases, group telegrams of the groups 0-13 (or all group addresses for parameterization as repeater) are always forwarded.

(5) Bus connection terminal for subordinate line (UL)

(6) Bus connection terminal for higher-order line (HL)

(7) Programming LED (red)

(8) Programming button

The parameters "Group telegrams groups 14-31“ for telegrams “Main line -> Line" or "Line -> Main line" of the application “coupler/repeater 901011“ have no influence on the LED "DIAG".
After complete start-up of the KNX installation, it is recommended to set the telegram transmission parameter to "Filter" and to load filter tables.

2.3 Fitting and electrical connection

Fitting the device

Observe the temperature range and ensure sufficient cooling, if necessary.

- Mount device on DIN rail according to EN 60715 with the terminals facing downwards.

i A KNX data rail is not required.

Connecting the device

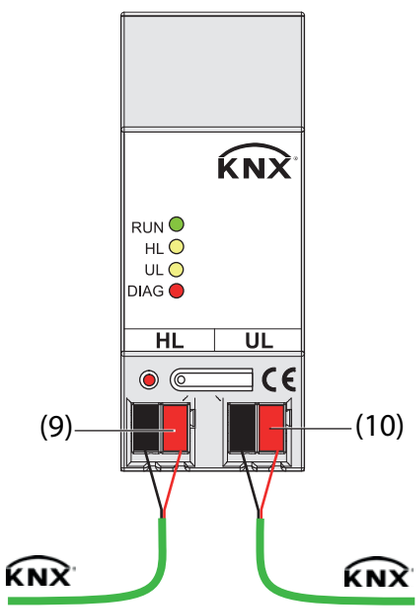


Figure 2: Connection diagram

(9) Connection higher-order line
(10) Connection subordinate line

- Connect the higher-order line to the left connection terminal **HL** (9).

i This terminal supplies power to the device electronics. So that it is possible to report a bus voltage failure of the subordinate via the higher-order line.

- Connect the subordinate line to the right connection terminal **UL** (10).

i Do not lever out the connecting terminals from below during the dismantling of the device. Risk of shorting the bus voltage which is not available during the short-circuit.

Assign physical address

- Press the programming button (8).
  The programming LED (7) lights up and goes out on taking over of the physical address.

Hardware information

- After switch-on or after applying the bus voltage from the higher-order line, an LED test is started. During this test, all LEDs are switched on briefly and then off again beginning with the uppermost LED ("RUN"). After this test, the device is ready for operation and the LEDs indicate the device status.
- The filter tables are stored in a non-volatile memory (flash). This means that the stored addresses are not lost after a bus voltage failure and that no internal backup battery is required.

3 Technical data

Mark of approval	KNX/EIB
Protection class	III
KNX	
Rated voltage KNX	DC 21 ... 32 V SELV
Current consumption	approx. 8 mA (Subordinate line)
Current consumption	approx. 6 mA
Connection mode KNX	Standard terminal
Ambient conditions	
Storage/transport temperature	-25 ... +70 °C
Ambient temperature	-5 ... +45 °C
Housing	
Fitting width	36 mm / 2 modules

4 Software description

4.1 Software specification

ETS search paths: System devices / Line coupler / DRA area/line coupler

Configuration: S-mode standard

Applications:

No.	Short description	Name	Version	from mask version
1	Line/backbone coupler	Coupler/repeater 900F01	0.1	912
2	Line/backbone coupler (only for ETS4 version 4.1 and onwards)	Coupler/repeater 901011	1.1	912

Using the application programs

The differences in the range of functions and the parameterization of the application programs "Coupler/Repeater 900F01" and "Coupler/Repeater 901011" (only for ETS4) are listed below. These differences should be noted when using and particularly when interchanging the applications among each other.

Application coupler/repeater 900F01

- The filter function (filter table) supports the groups 0-13. The groups >13 can be blocked or forwarded separately by a parameter.
- Physically addressed telegrams are always transmitted depending on the target and coupler address. The behaviour cannot be changed.
- Telegram repetitions in case of transmission errors for group telegrams and physically addressed telegrams must be activated (max. 3 repetitions) or deactivated separately. A separate setting for broadcast telegrams is not possible. Broadcast telegrams in case of transmission errors are handled like group telegrams.
- Telegram confirmations on a line for group telegrams and physically addressed telegrams ("always" or "only when forwarding") only mutually adjustable.

Application coupler/repeater 901011 (from ETS4.1)

- The filter function (filter table) supports the full address range (groups 0-31). The groups 0-13 and 14-31 are to be parameterized separately.
- Physically addressed telegrams can optionally be transmitted unfiltered, blocked or filtered depending on the target and coupler address. The behaviour for each transmission direction can be adjusted separately.
- Telegram repetitions in case of transmission errors for group telegrams, physically addressed telegrams and broadcast telegrams must be activated (max. 3 repetitions) or deactivated separately.
- Telegram confirmations on a line for group telegrams and physically addressed telegrams ("always" or "only when forwarding") separately adjustable.
  For physically addressed telegrams the telegram confirmation on one line (main line or line) can additionally be parameterized to "always reject (NACK)!". In this parameter setting physical access (parameterization/commissioning) from this line to the coupler and the other line is no longer possible (protection function).

i If the diagnostic function "Device info" is applied by the ETS2/ETS3 on a device that was previously commissioned with the ETS4 specific application “coupler/repeater 901011 " (from ETS 4.1), then the data read out is invalid and does not correspond to the current parameterization of the device. The correct data is only read out via the diagnostic function "Device info" of the ETS4.

4.2 Application basics

The device can be used as a backbone or a line coupler or alternatively as a line repeater. The type of function depends on the assignment of the physical address and on the parameterization of the device (parameter "Function as").

Device working as a backbone / line coupler

The backbone/line coupler interconnects two KNX lines into a logical function area ensuring at the same the electrical separation between these lines. Each bus line of a KNX installation can thus be operated electrically independently from other bus lines.
With a coupler a distinction is made as to whether it forwards telegrams with the addressing via physical addresses (e.g. telegrams that are transmitted from the ETS to a device during a commissioning as in the case of an application download) or group telegrams (communication by means of group addresses during ongoing operation of a KNX installation, e.g. light switching).
To forward physically addressed telegrams it is important that the coupler knows its own physical address and thus its 'line affiliation' is defined. The coupler compares the destination address of a received telegram with its own line address and transmits or does not transmit the telegram depending on the sending direction. This behaviour of the coupler is preset in the "coupler/repeater 900F01" application and cannot be changed. The behaviour is parameterizable in the specific ETS4 application "Coupler/Repeater 901011".

With regard to the group communication the behaviour of the coupler can be configured depending on the sending direction. Thus, it either forwards all group telegrams or blocks them. During ongoing operation of a system, a filter table can be loaded into the coupler particularly to reduce the bus load on the lines. In the course of this, the coupler only forwards the group telegrams whose group address is entered in the filter table.

The main groups "14" to "31" in the application “coupler/repeater 900F01“are an exception to this. All addresses belonging to these main groups longer fit in the filter table due to the limited address size of the ETS2 and ETS3 on the basis of older types of couplers. These addresses can be blocked or forwarded separately by the parameter "Main group 14/15". The main groups 16-31 are also supported in the configuration as from ETS4. In this case, telegrams of the upper main groups (14-31) in the application program “Coupler/Repeater 900F01“ are blocked or forwarded by the parameter “main group 14/15".
It is only possible for the upper main groups to also be entered in the filter table and optionally filtered when the ETS4 specific application program "coupler/repeater 901011" is used.

The filter table is generated by the ETS and programmed into the coupler during a download of the "application" or partial download of the "Group addresses".

The coupler always forwards broadcast telegrams (e.g. ETS Management telegrams - check whether devices are in the programming mode etc.).

Commissioning
During commissioning of a project with backbone / line couplers, the following sequence of operations should be observed:

- Project design of the KNX installation (physical addresses, group addresses, parameters)
- At first, the physical addresses of the couplers and their application programs must be programmed and then the physical addresses of the other KNX devices. Thereafter, the applications can be loaded into the KNX devices (actuators, sensors, etc.).
  For testing of a KNX installation, especially in the modification phase before project design completion, it is recommended to set the parameters "Group telegrams main line -> line" and "Group telegrams line -> main line" of all backbone / line couplers at first to "Transmit all". This means that any programmed filter tables are not yet taken into account in the testing phase.

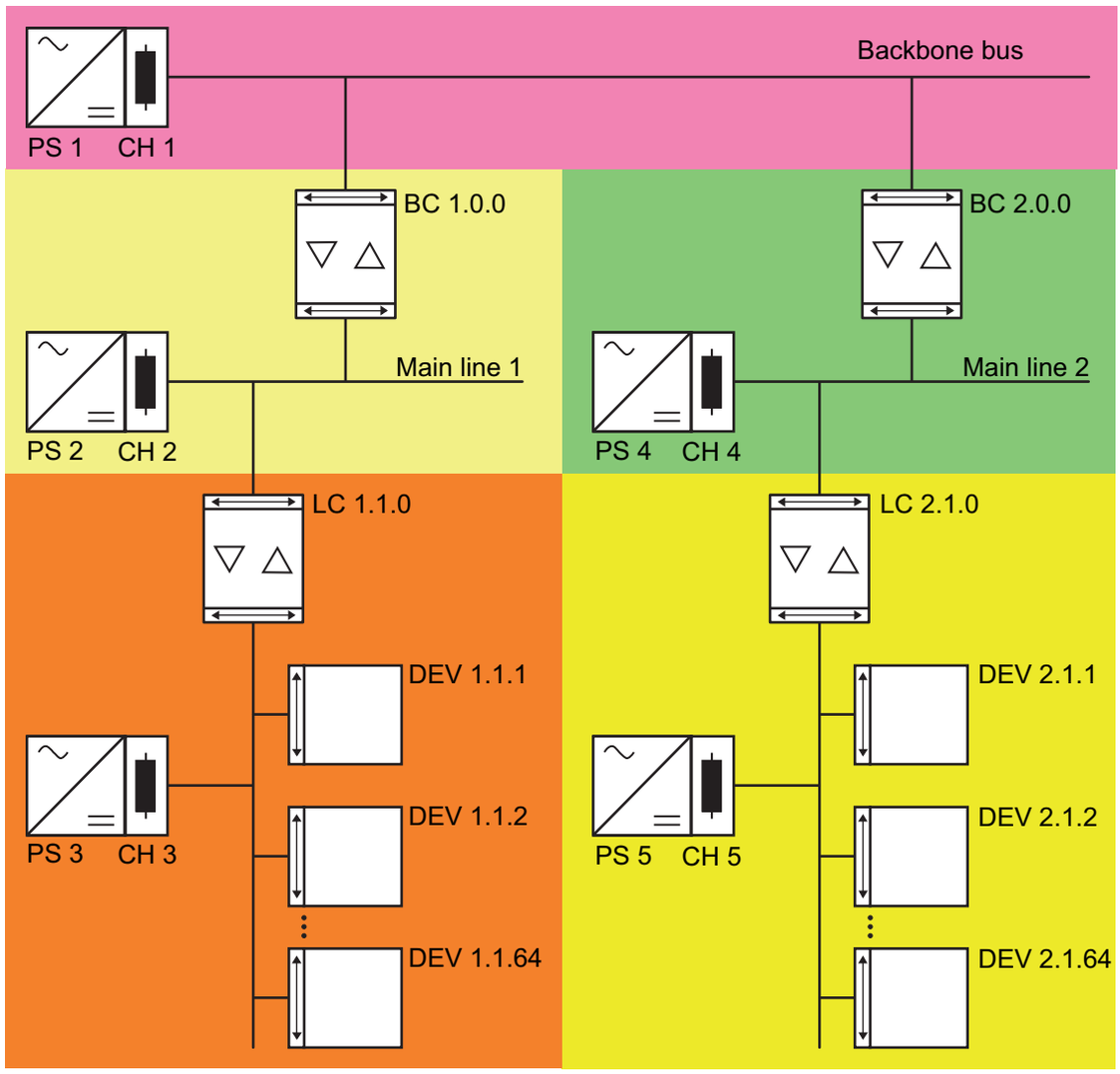
- The filter tables can then be generated on completion of project design and commissioning (in the ETS2 under menu item: Commissioning/Project design – generating filter tables / ETS3 generates them automatically).
- Finally, the filter tables should be programmed into the couplers. The filter tables are loaded automatically when the complete application is downloaded or also during partial programming of the "group addresses".

Topology

The backbone / line coupler transmits telegrams between a subordinate line and a higher-order line (line coupler: line - main line, backbone coupler: main line - backbone bus). In the project design phase, the function of the device is defined by the physical address as follows:

- Backbone coupler (BC) A.0.0 ($1 \leq A \leq 15$)
- Line coupler (LC) A.L.0 ($1 \leq A \leq 15$, $1 \leq L \leq 15$)

Each line has a power supply (PS) of its own and is electrically isolated from the bus. With line couplers, up to 15 lines can be grouped into an area. With backbone couplers (BC), up to 15 areas can be interconnected.
From a logical point of view, backbone / line couplers are assigned to the pertaining subordinate line. The hierarchy of line and backbone couplers in a KNX system is thus as follows (Figure 3).



BK = Backbone coupler
LC = Line coupler
CH = Choke

DEV = Bus device
PS = Power supply

Figure 3: The hierarchy of line and backbone couplers in a KNX system

ⓘ The coupler logics is supplied with electric power from the higher-order line.

Function as an repeater

The line repeater interconnects a KNX line with a line segment to form a logical functional area ensuring at the same the electrical separation between these partial areas. By using a line repeater, a line (64 devices max.) can be expanded by a further line segment (further 64 devices). With a maximum of 3 line repeaters in parallel per line, the highest maximum number of 256 devices in a line (including LRs) can then be realized. The line segments can be operated electrically independently of one another.

A line repeater either transmits telegrams using addressing by means of physical addresses (e. g. during start-up) or group telegrams (e.g. communication via group addresses during regular operation of a KNX installation).
The line repeater has no filter tables so that all group telegrams will always be transmitted unfiltered.
To forward physically addressed telegrams it is important that the coupler knows its own physical address and thus its 'line affiliation' is defined. The coupler compares the destination address of a received telegram with its own line address and transmits or does not transmit the

telegram depending on the sending direction. This behaviour of the coupler is part of its fixed program and cannot be changed.

A line repeater always forwards broadcast telegrams.

Connecting several line repeaters in series is not permitted.

Commissioning

During commissioning of a project with line repeaters, the following sequence of operations should be observed:

- Project design of the KNX installation (physical addresses, group addresses, parameters)
- As a first step, program the physical addresses of the backbone / line couplers, if any.
- Then, program the physical addresses of the line repeaters and their application programs.
- Transfer the application programs of the couplers.
- As a last step, program the physical addresses of the other KNX devices. Thereafter, the applications can be loaded into the KNX devices (actuators, sensors, etc.).

The line repeater can be programmed from the higher-order and also from the subordinate line.

Topology

To connect more than 64 devices to a line, line repeater (LR) can be used to create 4 line segments max. each of which can accommodate up to further 64 devices. Each line or each line segment has a power supply (PS) of its own and is electrically isolated from the other line segments. The line repeater transmits telegrams between the different line segments without filtering the group communication.

In the project design phase, the function of the device is defined by the physical address (A.L.D) as follows:

- $0 \leq A \leq 15$
- $0 \leq L \leq 15$
- $1 \leq D \leq 255$

Line repeaters must be connected in parallel since a telegram is routed due to the routing counter via 6 couplers max. (LR-LC-BC-BC-LC-LR). The hierarchy of a line with 4 line segments max. is thus as follows (Figure 4).

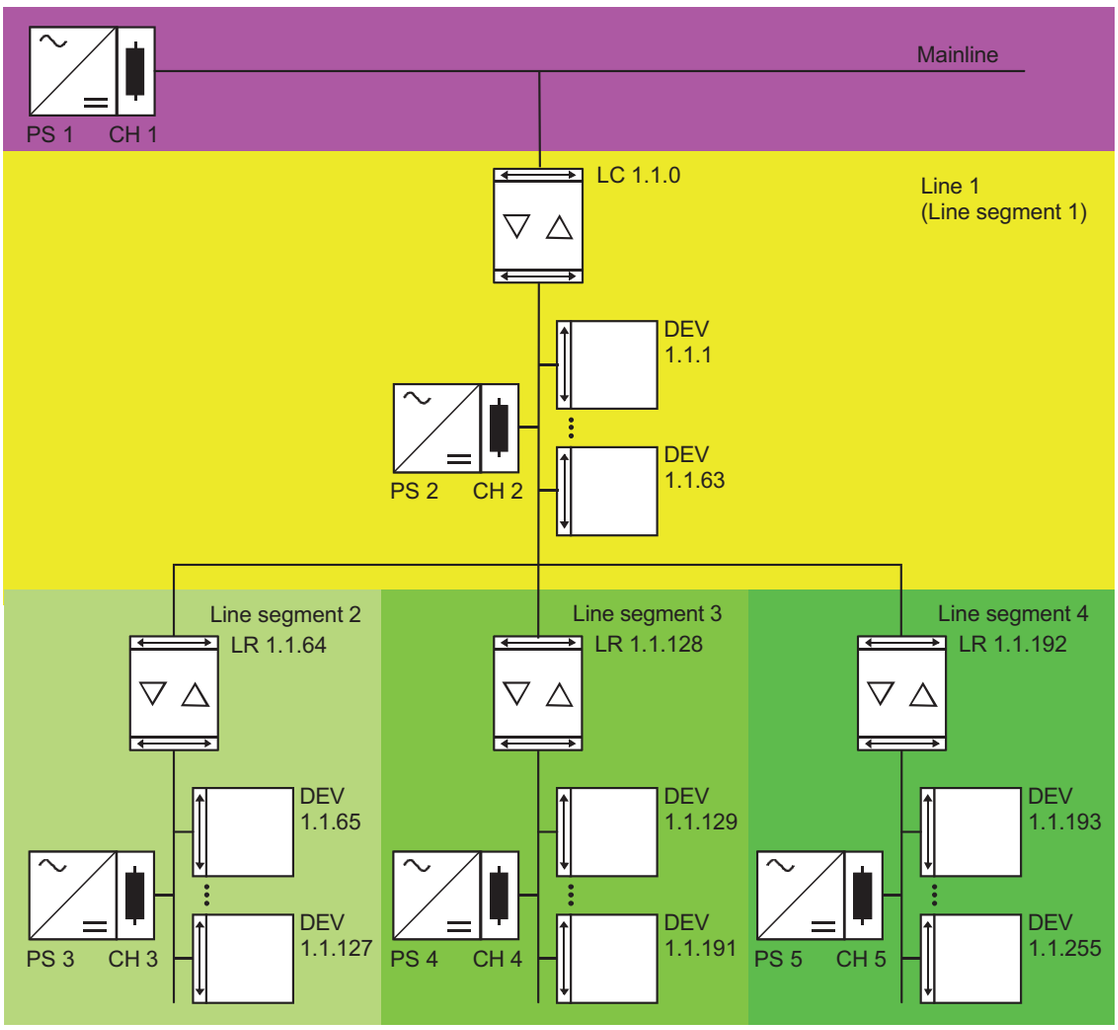


Figure 4: The hierarchy of a line with 4 line segments max.

The repeater logic is supplied with electric power from the higher-order line.

4.3 Software "Coupler/repeater 900F01"

4.3.1 Scope of functions

The device can be parameterized as a coupler or as an repeater.

Function as coupler:

- Depending on the physical address, use as line or area coupler
- Reduced bus load due to filter function (filter table) if used as a coupler
- Forwarding of group telegrams (Line -> Main Line, Main Line -> Line) parameterizable
- Telegram repetitions in case of transmission errors presettable
- Telegram confirmation parameterizable

Function as an repeater:

- Expansion of a line into a maximum of 4 line segments with up to 64 devices per segment
- Telegram repetitions in case of transmission errors presettable

4.3.2 Parameters

Description	Values	Comment
☐↵ Configuration		
Function as	**Area / Line coupler** Repeater	This parameter defines the functions of the device. In addition, it is important to assign a correct physical address corresponding to the functions of the device. (cf. functional description).
☐↵ Selection (for configuration as "Backbone / line coupler")		
Group telegrams main line -> line		Defines whether group telegrams from the higher-order line (main line) are transmitted to the subordinate line (line).
	block	All group telegrams will be blocked. No group telegram can pass the coupler.
	transmit unfiltered	All group telegrams will be transmitted. The filter table will be disregarded.
	filter	In accordance with the filter table generated and programmed in the ETS, group telegrams are either transmitted or blocked selectively. This parameter influences the behaviour of the red diagnosis LED. As soon as this parameter is set to "transmit unfiltered", the LED is lit up.
Group telegrams line -> main line		Defines whether group telegrams are transmitted from the subordinate line (line) to the higher-order line (main line).
	block	All group telegrams will be blocked. No group telegram can pass the coupler.
	transmit unfiltered	All group telegrams will be transmitted. The filter table will be disregarded.
	filter	In accordance with the filter table generated and programmed in the ETS, group telegrams are either transmitted or blocked selectively. This parameter influences the behaviour of the red diagnosis LED. As soon as this parameter is set to "transmit unfiltered", the LED is lit up.
Repetitions in case of transmission errors with group telegrams on higher-order line	No **Yes**	A group telegram transmitted by the coupler is checked for transmission errors. This parameter determines whether the telegram is to be repeated on reception of a BUSY or a NACK confirm signal or in the absence of the ACK confirm signal on the higher-order line (HL).

Repetitions in case of transmission errors with physical addressing on higher-order line	No **Yes**	A telegram with physical addressing transmitted by the coupler is checked for transmission errors. This parameter determines whether the telegram is to be repeated on reception of a BUSY or a NACK confirm signal or in the absence of the ACK confirm signal on the higher-order line (HL).
Repetitions in case of transmission errors with group telegrams on subordinate line	No **Yes**	A group telegram transmitted by the coupler is checked for transmission errors. This parameter determines whether the telegram is to be repeated on reception of a BUSY or a NACK confirm signal or in the absence of the ACK confirm signal on the subordinate line (SL).
Repetitions in case of transmission errors with physical addressing on subordinate line	No **Yes**	A telegram with physical addressing transmitted by the coupler is checked for transmission errors. This parameter determines whether the telegram is to be repeated on reception of a BUSY or a NACK confirm signal or in the absence of the ACK confirm signal on the subordinate line (SL).
Main group 14/15		All addresses belonging to the main groups 14 and 15 no longer fit into the filter table due to the limited address size of the ETS2 and ETS3 and the older types of couplers. Such addresses can be blocked or forwarded separately by this parameter. The main groups 16-31 are also supported in the configuration as from ETS4. In this case, telegrams of the upper main groups (14-31) are blocked or forwarded by this parameter.
	block	All group telegrams with the main group 14 to 31 are blocked.
	transmit all	All group telegrams with the main group 14 to 31 are forwarded. This parameter has no influence the behaviour of the red diagnosis LED.
Telegram confirmation on main line		This parameter defines the cases in which the device confirms the telegrams received on the main line / backbone bus.
	always	The coupler always confirms on the higher-order line every telegram received.
	only if transmitted	The coupler confirms on the higher-order line only the telegrams transmitted to the subordinate line.

Telegram confirmation on line		This parameter defines the cases in which the device confirms the telegrams received on the subordinate line.
	always	The coupler always confirms on the higher-order line every telegram received.
	only if transmitted	The coupler confirms on the higher-order line only the telegrams transmitted to the subordinate line.

□↵ Selection (for configuration as "Repeater")

Repetitions in case of transmission errors with group telegrams on higher-order line	No **Yes**	A group telegram transmitted by the coupler is checked for transmission errors. This parameter determines whether the telegram is to be repeated on reception of a BUSY or a NACK confirm signal or in the absence of the ACK confirm signal on the higher-order line (HL).
Repetitions in case of transmission errors with physical addressing on subordinate line	**No** Yes	A telegram with physical addressing transmitted by the coupler is checked for transmission errors. This parameter determines whether the telegram is to be repeated on reception of a BUSY or a NACK confirm signal or in the absence of the ACK confirm signal on the higher-order line (HL).
Repetitions in case of transmission errors with group telegrams on subordinate segment	No **Yes**	A group telegram transmitted by the coupler is checked for transmission errors. This parameter determines whether the telegram is to be repeated on reception of a BUSY or a NACK confirm signal or in the absence of the ACK confirm signal on the subordinate segment (UL).
Repetitions in case of transmission errors with physical addressing on subordinate segment	**No** Yes	A telegram with physical addressing transmitted by the coupler is checked for transmission errors. This parameter determines whether the telegram is to be repeated on reception of a BUSY or a NACK confirm signal or in the absence of the ACK confirm signal on the subordinate segment (UL).

4.4 Software "Coupler/repeater 901011" (only ETS4)

4.4.1 Scope of functions

The device can be parameterized as a coupler or as an repeater.

Function as coupler:

- Depending on the physical address, use as line or backbone coupler
- Reduced bus load due to filter function (filter table) if used as a coupler
- Support of the full address range (groups 0-31) for filter function
- Forwarding of group telegrams (Line -> Main Line, Main Line -> Line) parameterizable
- Forwarding of physically addressed telegrams (Line -> Main Line, Main Line -> Line) parameterizable
- Telegram repetitions in case of transmission errors for group, broadcast and physically addressed telegrams presettable separately
- Telegram confirmation for group and physically addressed telegrams separately parameterizable

Function as an repeater:

- Expansion of a line into a maximum of 4 line segments with up to 64 devices per segment
- Telegram repetitions in case of transmission errors for group, broadcast and physically addressed telegrams presettable separately

4.4.2 Parameters

Description	Values	Comment
☐↵ Configuration		
Function as	**Backbone / Line coupler** Repeater	This parameter defines the functions of the device. In addition, it is important to assign a correct physical address corresponding to the functions of the device. (cf. functional description).
☐↵ Selection (for configuration as "Backbone / line coupler")		
Telegrams Main line -> line group telegrams groups 0-13		Defines whether group telegrams of the groups 0-13 from the higher-order line (main line) are transmitted to the subordinate line (line).
	transmit unfiltered	All group telegrams of the groups 0-13 are transmitted. The filter table will be disregarded.
	block	All group telegrams of the groups 0-13 are blocked. No group telegram of the groups 0-13 can pass the coupler.
	filter	In accordance with the filter table generated and programmed in the ETS, group telegrams of the groups 0-13 are either transmitted or blocked selectively. This parameter influences the behaviour of the red diagnosis LED. As soon as this parameter is set to "transmit unfiltered", the LED is lit up.
Telegrams Main line -> line group telegrams groups 14-31		Defines whether group telegrams of the groups 14-31 from the higher-order line (main line) are transmitted to the subordinate line (line).
	transmit unfiltered	All group telegrams of the groups 14-31 are forwarded. The filter table will be disregarded.
	block	All group telegrams of the groups 14-31 are blocked. No group telegram of the groups 14-31 can pass the coupler.
	filter	In accordance with the filter table generated and programmed in the ETS, group telegrams of the groups 14-31 are either transmitted or blocked selectively. This parameter does not influence the behaviour of the red diagnosis LED.
Telegrams Main Line -> Line physically addressed telegrams		Defines whether physically addressed telegrams from the higher-order line (main line) are transmitted to the subordinate line (line).

	transmit unfiltered	All physically addressed telegrams are transmitted.
	block	All physically addressed telegrams are blocked. No physically addressed telegram can pass the coupler.
	filter (depending on target & coupler address)	Only physically addressed telegrams are transmitted whose target address matches the line address of the coupler. All other physically addressed telegrams are blocked.
Telegrams Line -> Main line group telegrams groups 0-13		Defines whether group telegrams of the groups 0-13 from the subordinate line (line) are transmitted to the the higher-order line (main line).
	transmit unfiltered	All group telegrams of the groups 0-13 are transmitted. The filter table will be disregarded.
	block	All group telegrams of the groups 0-13 are blocked. No group telegram of the groups 0-13 can pass the coupler.
	filter	In accordance with the filter table generated and programmed in the ETS, group telegrams of the groups 0-13 are either transmitted or blocked selectively. This parameter influences the behaviour of the red diagnosis LED. As soon as this parameter is set to "transmit unfiltered", the LED is lit up.
Telegrams Line -> Main line group telegrams groups 14-31		Defines whether group telegrams of the groups 14-31 from the higher-order line (main line) are transmitted to the subordinate line (line).
	transmit unfiltered	All group telegrams of the groups 14-31 are forwarded. The filter table will be disregarded.
	block	All group telegrams of the groups 14-31 are blocked. No group telegram of the groups 14-31 can pass the coupler.
	filter	In accordance with the filter table generated and programmed in the ETS, group telegrams of the groups 14-31 are either transmitted or blocked selectively. This parameter does not influence the behaviour of the red diagnosis LED.
Telegrams Line -> Main Line physically addressed telegrams		Defines whether physically addressed telegrams from the subordinate line (line) are transmitted to the higher-order line (main line).
	transmit unfiltered	All physically addressed telegrams are transmitted.

	block	All physically addressed telegrams are blocked. No physically addressed telegram can pass the coupler.
	filter (depending on target & coupler address)	Only physically addressed telegrams are transmitted whose target address does not match the line address of the coupler. Physically addressed telegrams whose target address match the coupler addres are blocked.
Repetitions in case of transmission errors with group telegrams on higher-order line	No **Yes**	A group telegram transmitted by the coupler is checked for transmission errors. This parameter determines whether the telegram is to be repeated on reception of a BUSY or a NACK confirm signal or in the absence of the ACK confirm signal on the higher-order line (HL).
Repetitions in case of transmission errors with broadcast telegrams on higher-order line	No **Yes**	A broadcast telegram transmitted by the coupler is checked for transmission errors. This parameter determines whether the telegram is to be repeated on reception of a BUSY or a NACK confirm signal or in the absence of the ACK confirm signal on the higher-order line (HL).
Repetitions in case of transmission errors with physically addressed telegrams on higher-order line	No **Yes**	A telegram with physical addressing transmitted by the coupler is checked for transmission errors. This parameter determines whether the telegram is to be repeated on reception of a BUSY or a NACK confirm signal or in the absence of the ACK confirm signal on the higher-order line (HL).
Repetitions in case of transmission errors with group telegrams on subordinate line	No **Yes**	A group telegram transmitted by the coupler is checked for transmission errors. This parameter determines whether the telegram is to be repeated on reception of a BUSY or a NACK confirm signal or in the absence of the ACK confirm signal on the subordinate line (SL).
Repetitions in case of transmission errors with broadcast telegrams on subordinate line	No **Yes**	A broadcast telegram transmitted by the coupler is checked for transmission errors. This parameter determines whether the telegram is to be repeated on reception of a BUSY or a NACK confirm signal or in the absence of the ACK confirm signal on the subordinate line (SL).
Repetitions in case of transmission errors with physically addressed	No **Yes**	A telegram with physical addressing transmitted by the coupler is checked for transmission errors. This parameter determines whether the

telegrams on subordinate line		telegram is to be repeated on reception of a BUSY or a NACK confirm signal or in the absence of the ACK confirm signal on the subordinate line (SL).
Telegram confirmation on main line Group telegrams		It is possible to define when the device confirms the group telegrams received on the higher-order main line / backbone bus.
	always	The coupler always confirms on the higher-order line every group telegram received.
	only if transmitted	The coupler confirms on the higher-order line only those group telegrams transmitted to the subordinate line.
Telegram confirmation on main line physically addressed telegrams		It is possible to define when the device confirms the physically addressed telegrams received on the higher-order main line / backbone bus.
	always	The coupler always confirms on the higher-order line every physically addressed telegram received.
	only if transmitted	The coupler confirms on the higher-order line only the physically addressed telegrams transmitted to the subordinate line.
	always reject (NACK) !	The coupler rejects on the higher-order line all physically addressed telegrams received and sends a NACK-Confirm. No physically addressed telegram can pass the coupler. The coupler cannot be physically addressed from the higher-order line (no download possible). Note: This setting cannot be parameterized on both lines.
Telegram confirmation on line Group telegrams		It is possible to define when the device confirms the group telegrams received on the subordinate line.
	always	The coupler always confirms on the subordinate line every group telegram received.
	only if transmitted	The coupler confirms on the subordinate line only the group telegrams transmitted to the higher-order line.
Telegram confirmation on line physically addressed telegrams		It is possible to define when the device confirms the physically addressed telegrams received on the subordinate line.
	always	The coupler always confirms on the subordinate line every physically addressed telegram received.
	only if transmitted	The coupler confirms on the subordinate line only the physically addressed

		telegrams transmitted to the higher-order line.
	always reject (NACK) !	The coupler rejects on the subordinate line all physically addressed telegrams received and sends a NACK-Confirm. No physically addressed telegram can pass the coupler. The coupler cannot be physically addressed from the subordinate line (no download possible). Note: This setting cannot be parameterized on both lines.

☐↵ Selection (for configuration as "Repeater")

Repetitions in case of transmission errors with group telegrams on higher-order line	No **Yes**	A group telegram transmitted by the coupler is checked for transmission errors. This parameter determines whether the telegram is to be repeated on reception of a BUSY or a NACK confirm signal or in the absence of the ACK confirm signal on the higher-order line (HL).
Repetitions in case of transmission errors with broadcast telegrams on higher-order line	No **Yes**	A broadcast telegram transmitted by the coupler is checked for transmission errors. This parameter determines whether the telegram is to be repeated on reception of a BUSY or a NACK confirm signal or in the absence of the ACK confirm signal on the higher-order line (HL).
Repetitions in case of transmission errors with physically addressed telegrams on higher-order line	**No** Yes	A telegram with physical addressing transmitted by the coupler is checked for transmission errors. This parameter determines whether the telegram is to be repeated on reception of a BUSY or a NACK confirm signal or in the absence of the ACK confirm signal on the higher-order line (HL).
Repetitions in case of transmission errors with group telegrams on subordinate line	No **Yes**	A group telegram transmitted by the coupler is checked for transmission errors. This parameter determines whether the telegram is to be repeated on reception of a BUSY or a NACK confirm signal or in the absence of the ACK confirm signal on the subordinate line (SL).
Repetitions in case of transmission errors with broadcast telegrams on subordinate line	No **Yes**	A broadcast telegram transmitted by the coupler is checked for transmission errors. This parameter determines whether the telegram is to be repeated on reception of a BUSY or a NACK confirm signal or in the absence of the ACK confirm signal on the subordinate line (SL).
Repetitions in case of transmission errors with physically addressed telegrams on subordinate line	**No** Yes	A telegram with physical addressing transmitted by the coupler is checked for transmission errors. This parameter determines whether the telegram is to be repeated on reception of a BUSY or a NACK confirm signal or

in the absence of the ACK confirm signal on the subordinate line (SL).

4.5 General notes

General remarks

- Deactivating the telegram repetition (repetition on reception of a BUSY or a NACK confirm signal or in the absence of the ACK confirm signal) of the device reduces the bus load but also reduces the transmission security.
- The device can be programmed via the higher-order line or subordinate line (phys. address, filter tables, etc.). In addition, commissioning is possible from each line of the KNX installation. It should be noted that the higher-order line (HL) must be connected to bus voltage in order to program.

Using old application programs and devices

- It is possible to program the device described in this documentation with the product applications of the old 4 TE wide device ("Coupler 900501" / "Repeater 900701").

  This might be necessary, for instance, when replacing an old coupler by a 2 TE wide coupler.
  In this case, the manufacturer-neutral dummy product database "LK_DUMMY.VD1" in the product management must first be imported in the ETS2 before commissioning the new coupler. Afterwards, the new device can be programmed with the physical address and old or existing filter table as well as with the existing parameters. An import of the dummy product database is not necessary in the ETS3.
- Furthermore, the device described in this documentation can be programmed with the product applications of the older 2 TE wide device ("Coupler 900A01" / "Repeater 900B01").

Notes:
The parameters "Repetitions in case of transmission errors on main line" and "Repetitions in case of transmission errors on line" in the applications "Coupler 900501" or "Repeater 900701" can be set to the values "none", "1", "2" or "3". In the new device (2 TE wide) this results in the following reaction:
Settings "none" and "1": no telegram repetition,
Settings "2" or "3": 3 telegram repetitions.

The parameters for the filter table check in the old application "Coupler 900501" show no reaction in the new coupler.

The ETS possibly displays a message on function problems if old devices are programmed with the application “Coupler/Repeater 900F01“. This message can be ignored taking into account the above characteristics.

The application program “Coupler/Repeater 901011“ can only be used as from ETS version 4.1 and it is not possible to program the older 2 TE and 4 TE wide devices with this application.

Behaviour after bus voltage failure

Higher-order line: The device is not functional. All LEDs are off.
Subordinate line: Functioning of the device on the higher-order line is not affected. Telegrams are evaluated, programming is possible, all LEDs are functional.

Behaviour after bus voltage return

After an initialization phase of ca. 1 s including the LED test, the device is ready to operate.

5 Appendix

5.1 Index

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