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CONTROL YOUR LIVING SPACE

Application manual

Line/area coupler KNX
EK-BA1-TP

Contents

1. Document

This application manual refers to the release A1.0 of the ekinex® line/area coupler EK-BA1-TP. Application manual and application program for ETS are available for download at www.ekinex.com

Item	File name	Device release	Updating
Application manual	MAEKBA1TP_EN.pdf	A1.0	06 / 2013
Application program	APEKBA1TP01.vd4		

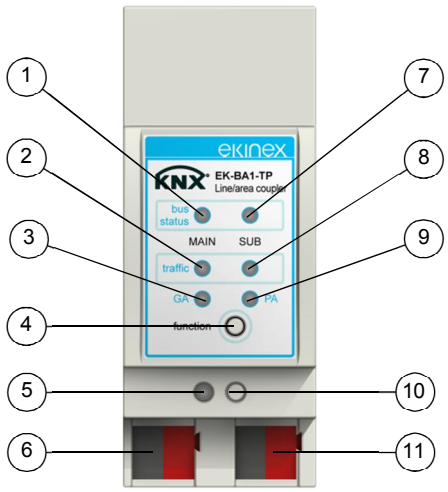
Other technical information on the device is available on the datasheet STEKBA1TP_EN.pdf.

2. Product description

The ekinex® EK-BA1-TP line/area coupler allows the coupling of a KNX bus mainline with a KNX bus sub line. The device provides the galvanic isolation between the two connected lines. Thanks to its flexibility, the coupler can be used as a line coupler to connect a line with a main line or a backbone coupler to connect a main line with a backbone line. The main task of the device is filtering the traffic according the installation place in the hierarchy or according to the built-in filter tables for group oriented communication. The device provides outstanding features, for example support for long messages (up to 250 byte) and a configurable pushbutton for the activation of special functions. These are helpful during installation, during run time and for troubleshooting. 6 LEDs display the bus status on each line. This helps identifying common communication problems due to bus load or retransmissions on both lines. The device is powered by the KNX bus line with SELV voltage 30 Vdc and does not require any auxiliary power supply.

3. Switching, display and connection elements

The line/area coupler is equipped with 6 LEDs and a function pushbutton located on the front of the device, 2 bus terminals for KNX bus lines and a programming LED and a programming pushbutton.



1) LED main line status (green/red)
2) LED traffic on main line (green/red)
3) LED status filter table group addresses (green/red)
4) Function pushbutton
5) Programming LED (red)
6) Bus connection terminal for main line
7) LED sub line status (green/red)
8) LED traffic on sub line (green/red)
9) LED status filter table physical addresses (green/yellow)
10) Programming pushbutton
11) Bus connection terminal for sub line

3.1 Normal mode

No.	Display element	Status	Meaning
1	LED Bus Status Main	Off On (green) On (red)	main line error main line ok manual overwrite active
7	LED Bus Status Sub	Off On (green)	sub line error or not connected sub line ok
2	LED Traffic Main	Blinking (green) Off Blinking (red)	bus traffic on main line no traffic on main line transmission error on main line
8	LED Traffic Sub	Blinking (green) Off Blinking (red)	bus traffic on sub line no traffic on sub line transmission error on sub line
3	LED Group Address *Routing of group telegrams*	Off On (green) On (green and red) On (red)	main and sub different filter table active route all block
9	LED Physical Address *Routing of physical addressed telegrams*	Off: On (green) On (green and yellow) On (yellow)	main and sub different filter table active route all block

3.2 Function pushbutton

Long press (3 seconds)
Switch to manual override.
Default function is set with main line und (sub) line parameter.
Manual override functionality is configured in “General parameters”.
LED Bus Stat Main red
On: manual override active
Off: default configuration active

Note
The latest downloaded settings (parameters) and filter table are still available after switching back from “Manual operation” to “Normal operation”.

Very long press (15 seconds)
LEDs: Bus Status Main, Bus Status Sub, Group Addr, Physical Addr are on red
- release button and press again for some seconds: resets all the parameter to factory default (incl. physical address).

3.3 Programming

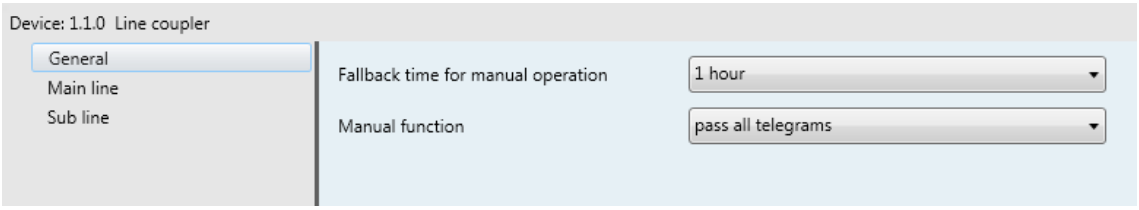
No.	Switching/display element	Status	Meaning	Note
6	Programming LED	Off On	normal operating mode programming mode	After receiving the physical address the line coupler automatically returns from addressing mode to the normal operating mode.
10	Programming pushbutton	-	-	Pushbutton for switching between normal operating mode and addressing mode for assigning the physical address.

4. Application

If the line/area coupler receives telegrams (for example during commissioning) which use a physical address as destination address, it compares the physical addresses of the receiver with its own physical address and then decides whether it must route the telegrams or not. The coupler reacts to telegrams with group addresses in accordance with its parameter settings. During normal operation (default setting), the coupler only routes those telegrams whose group addresses have been entered in its filter table. If the coupler routes a telegram and does not receive an acknowledgement, or if a bus device finds a transmission error, the coupler repeats the telegram three times. With the parameters “Repetitions if errors...”, this behaviour can be set separately for both lines. These parameters should be left in the default setting.

5. ETS parameters

5.1 General

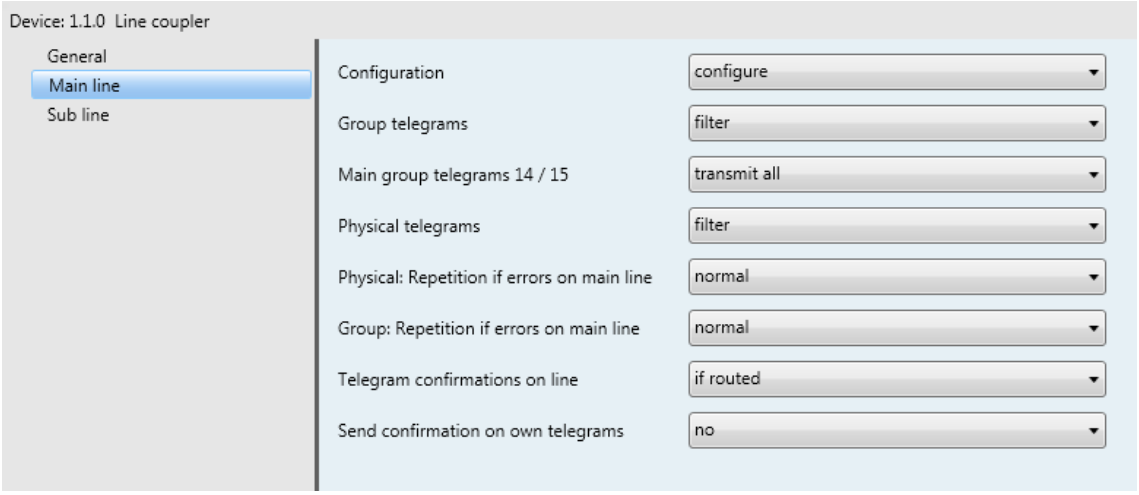


ETS-text	Range	Note
Fallback time for manual operation	10 min 1 hour 4 hours 8 hours **[1 hour]**	Time duration required to exit from “manual operation”
Manual function	Disabled Pass all telegrams Pass physical telegrams Pass group telegrams **[pass all telegrams]**	Telegram routing configuration for the manual function.

Table 1: parameter General

Note
Please note that the parameter “transmit all” for Group or Physical telegrams is intended only for testing purposes and it should not be set for normal operation.

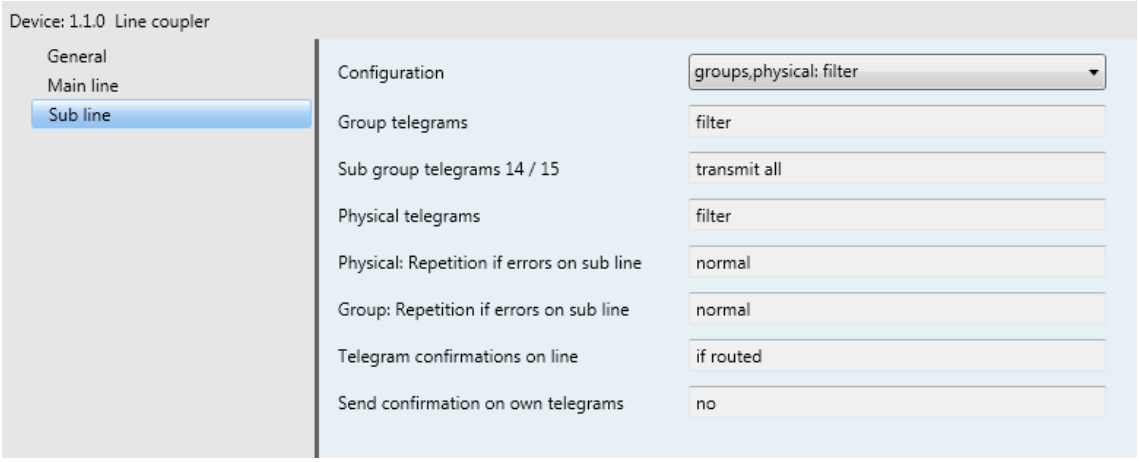
5.2 Main line



ETS-text	Range [Default value]	Note
Configuration	Configuration groups: filter, physical: block groups, physical: filter groups: route, physical: filter groups, physical: route configure **[groups, physical: filter]**	- Block: no telegram is routed. - Filter: Only telegrams are routed which are entered in the filter table. - Route: the telegrams are routed. - Configure: the following parameters can be set individually. This parameter has to be set depending on the planned configuration.
Group telegrams	1. transmit all 2. block **3. [filter]**	1. All group telegrams are transmitted. 2. No group telegram is transmitted. 3. Only group telegrams are routed which are entered in the filter table. The ETS 3/4 produces the filter table automatically.
Main group telegrams 14/15	1. block **2. [transmit all]**	1. Group telegrams with the main group 14 or 15 (e.g. 14/1) are not routed. 2. Group telegrams with the main group 14 or 15 (e.g. 14/1) are routed.
Physical telegrams	1. transmit all 2. block **3. [filter]**	1. All physical telegrams are transmitted. 2. No physical telegram is transmitted. 3. Only physical telegrams are routed based on physical address.
Physical: Repetition if errors on main line	1. no 2. reduced **3. [normal]**	If a transmission error (e.g. due to missing receiver) is found when sending a physical telegram on the main line: 1. The physical telegram is not repeated. 2. The physical telegram will be repeated only one time. 3. The physical telegram is repeated up to 3 times.
Group: Repetition if errors on main line	1. no 2. reduced **3. [normal]**	If a transmission error (e.g. due to missing receiver) is found when sending a group telegram on the main line: 1. The group telegram is not repeated. 2. The group telegram will be repeated only one time. 3. The group telegram is repeated up to 3 times.
Telegram confirmations on line	1. always **2. [if routed]**	1. Each telegram on the main line is confirmed (ACK). 2. Only telegrams which are to be routed are confirmed on the main line (ACK).
Send confirmation on own telegrams	1. yes **2. [no]**	1. Every telegram on the main line is confirmed with its own ACK (from the Line coupler). 2. No confirmation with own ACK

Table 2: parameter Main line

5.3 Sub line



ETS-text	Range [Default value]	Note
Configuration	groups: filter, physical: block groups, physical: filter groups: route, physical: filter groups, physical: route configure **[groups, physical: filter]**	- Block: no telegram is routed. - Filter: Only telegrams are routed which are entered in the filter table. - Route: the telegrams are routed. - Configure: the following parameters can be set individually. This parameter has to be set depending on the planned configuration.
Group telegrams	1. transmit all 2. block **3. [filter]**	1. All group telegrams are transmitted. 2. No group telegram is transmitted. 3. Only group telegrams are routed which are entered in the filter table. The ETS 3/4 produces the filter table automatically.
Sub group telegrams 14/15	1. block **2. [transmit all]**	1. Group telegrams with the sub group 14 or 15 (e.g. 14/1) are not routed. 2. Group telegrams with the sub group 14 or 15 (e.g. 14/1) are routed.
Physical telegrams	1. transmit all 2. block **3. [filter]**	1. All physical telegrams are transmitted. 2. No physical telegram is transmitted. 3. Only physical telegrams are routed based on physical address.
Physical: Repetition if errors on sub line	1. no 2. reduced **3. [normal]**	If a transmission error (e.g. due to missing receiver) is found when sending a physical telegram on the sub line: 1. The physical telegram is not repeated. 2. The physical telegram will be repeated only one time. 3. The physical telegram is repeated up to 3 times.
Group: Repetition if errors on sub line	1. no 2. reduced **3. [normal]**	If a transmission error (e.g. due to missing receiver) is found when sending a group telegram on the sub line: 1. The group telegram is not repeated. 2. The group telegram will be repeated only one time. 3. The group telegram is repeated up to 3 times.
Telegram confirmations on line	1. always **2. [if routed]**	1. Each telegram on the sub line is confirmed (ACK). 2. Only telegrams which are to be routed are confirmed on the sub line (ACK).
Send confirmation on own telegrams	1. yes **2. [no]**	1. Every telegram on the sub line is confirmed with its own ACK (from the Line coupler). 2. No confirmation with own ACK

Table 3: parameter Sub line