

LIN-K

BD920000

Programming manual



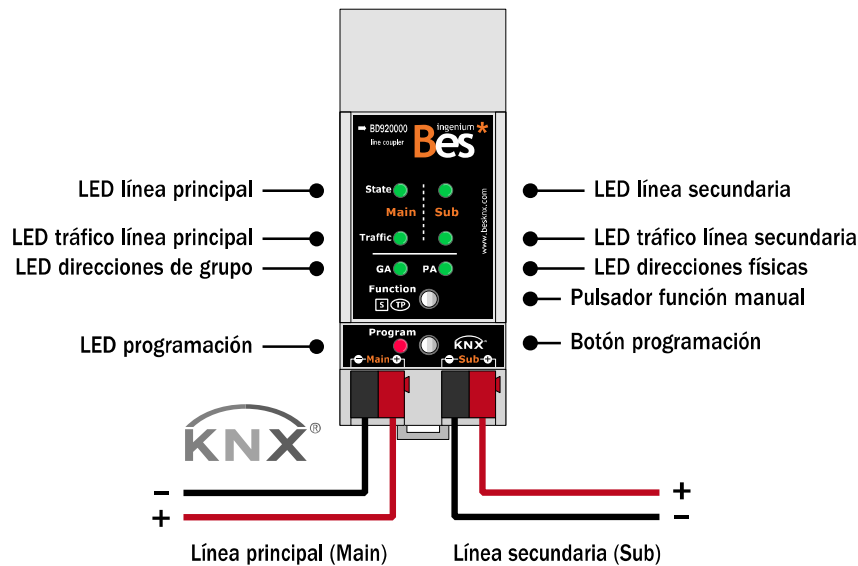
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1 General description

Can be used as a line/backbone coupler or as a line repeater in any KNX network. Galvanic isolated data connection between two separate KNX bus lines (for both coupler and repeater function).



General characteristics:

- Can be used as a line/backbone coupler or as a line repeater in any KNX network
- Galvanic isolated data connection between two separate KNX bus lines (for both coupler and repeater function)
- Temporarily disable message filtering by button press
- Temporary access to other lines is possible without an additional download from the ETS
- Bus status (traffic, errors, routing) on each line are accurately shown by six duo LEDs
- Diagnostic functions
- Functions like filtering, tracing, blocking, ... available

2 Technical information

Power supply	- 29 Vdc from KNX BUS
Current consumption	- 5 mA from KNX BUS
Connections	- KNX Bus connection
Mounting/Size	- DIN rail / 2 modules
Environment temperature range	- Operation: -10°C to 55°C - Storage: -30°C to 60°C - Transportation: -30°C to 60°C
Regulation	- According to the directives of electromagnetic compatibility and low voltage. EN 50090-2-2 / UNEEN 61000-6-3:2007 / UNE-EN 61000-6-1:2007 / UNE-EN 61010- 1

3 Programming

3.1 Information of the ETS catalogue

Catalogue: Ingenium / BES-KNX Line Coupler/ Bes-KNX Line repeater.

Catalogue version: v1.0

Maximum number of communication objects: 0.

Maximum number of assignments: 0.

Minimum version of the ETS: 4.1.8.

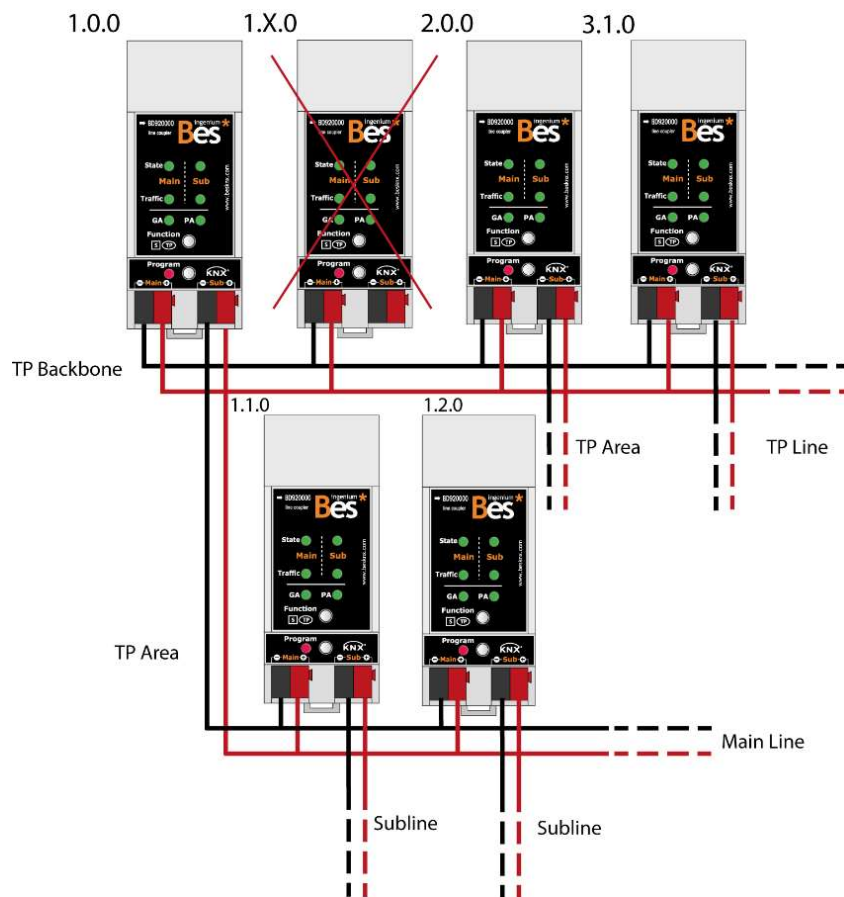
3.2 Physical Address Assignment

The device is supplied with the individual physical address 15.15.0. It has a programming button, which is placed in the front of the device, to establish the individual KNX direction.

A red LED close to the programming button illuminates when it is manually pressed or when the device is remotely forced to programming mode. The LED switches off immediately if ETS has assigned correctly an individual direction, if programming button is pressed manually again or if it is directly switched off by diagnostic functions.

For the line coupler functionality, a correct physical address of the form must be used: X.Y.0 with $X, Y \geq 1$ & $X, Y \leq 15$. They can be defined in the ETS up to 255 addresses (from 1.1.0 to 15.15.0). As an area coupler, it must have a physical address of the form X.0.0 ($1 \leq X \leq 15$), so that 15 areas would be available.

If in the same installation it is used for both purposes, it is necessary to take into account that the coupler used as a line coupler must have a physical address of a free area (see the following scheme)



Example: if there is an area coupler with address 1.0.0 on the main line, there can't be any line coupler with address 1.X.0 ($1 \leq X \leq 15$). Even though no line coupler with address 1.1.0 exists in the subline of the 1.0.0 area coupler. Conversely, if a line coupler with address 1.1.0 already exists in the installation, no area coupler with address 1.0.0 can be added.

3.2.1 Topology

Through an area / line coupler, up to 15 lines can be connected in the main line called area. It is possible to have up to 64 devices in one line. With the use of line repeaters, a line can theoretically be extended up to 255 bus devices. This means that there can be up to 4 line segments forming a single KNX TP line.

- Using repeaters in the main line is not allowed.
- Interconnections are not allowed.

3.2.2 Special functions

The "Function" Button activates MECtp's special functions. Manual Function and Factory Reset can be activated. It depends on time the Function Button is being pressed.

3.2.2.1 Manual function

By pressing for approx. 3 seconds the "Function" button you can activate and deactivate the manual function. When this function is activated, both physical telegrams and all group telegrams pass without filtering. After exceeding the shutdown time, the device automatically returns to normal operation. To configure the manual mode and the shutdown time, the general parameters of the tab shown in the following section must be used.

3.2.2.2 Factory Reset

A long press (≈ 15 sec) of the “Function” Button soon followed by a short press (≈ 3 sec) executes the Factory Reset. After the first press, the LED display shows the lights from the top. After the second press, all parameters will be set to factory default (incl. physical address). Subsequently, LEDs show the normal operation display again.

4 Line Coupler parameters

Parameterization of the device is done from the ETS. The description of each parameter is shown in this chapter.

4.1.1 General

--- BES KNX-Line coupler > General

General	Manual Function:	pass all telegrams
Main line	Switch-off time for Manual Function	1 hour
Subline		

Name	Manual function
Values	Disabled / Pass all telegrams / Pass all Physical telegrams / Pass all Group telegrams
Description	Configuration setting for telegram routing when the Manual Function is active.
Name	Switch-off time for Manual Function
Values	10 min / 1 hour / 4 hours / 8 hours
Description	After expiry of this time period the Manual Function is switched off automatically.

4.1.2 Main line

For Group Telegrams and Physical Telegrams, the setting “transmit all” is intended only for testing purposes. Please do not use for normal operation.

--- BES KNX-Line coupler > Main line

General	Telegram routing	configure
Main line	Group telegrams: Main group 0...13	filter
Subline	Group telegrams: Main group 14...31	filter
	Physical telegrams	filter
	Physical telegrams: Repetition if errors on main line	up to 3 repetitions
	Group telegrams: Repetition if errors on main line	up to 3 repetitions
	Telegram confirmation on main line	<input checked="" type="radio"/> if routed <input type="radio"/> always
	Send confirmation on own telegrams	<input type="radio"/> yes <input checked="" type="radio"/> no

Name	Telegram routing
Values	Group: filter, Physical: block / Group and Physical: filter / Group: route, Physical: filter / Group and Physical: route configure
Description	<ul style="list-style-type: none"> - Block: No telegrams are routed. - Filter: telegrams entered in the filter table are routed. - Route: all telegrams are routed - Configure: the following parameters must be set manually.
Name	Group telegrams: Main group 0...13
Values	Transmit all (not recommended) / Block / Filter
Description	<ul style="list-style-type: none"> - Transmit all: Group telegrams (main group 0...13) are all routed. - Block: Group telegrams (main group 0...13) are all blocked. - Filter: Group telegrams (main group 0...13) are routed if entered in the filter table
Name	Group telegrams: Main group 14...31
Values	Transmit all (not recommended) / Block / Filter
Description	<ul style="list-style-type: none"> - Transmit all: Group telegrams (main group 14...31) are all routed. - Block: Group telegrams (main group 14...31) are all blocked. - Filter: Group telegrams (main group 14...31) are routed if entered in the filter table
Name	Physical telegrams
Values	Transmit all (not recommended) / Block / Filter
Description	<ul style="list-style-type: none"> - Transmit all: Physical telegrams are all routed. It is used only for tests, it shouldn't be used for normal operations. - Block: Physical telegrams are all blocked. - Filter: Depending on the physical address Physical telegrams are routed..
Name	Physical/Group telegrams: Repetition if errors on main line
Values	No / Up to 3 repetitions / Only one repetition
Description	<p>After main line transmission error (e.g. due to missing receiver) Physical telegrams</p> <ul style="list-style-type: none"> - No: Are not repeated - Up to 3 repetitions: Are repeated max. 3 times - Only one repetition: Are repeated once
Name	Telegram confirmation on main line
Values	If routed / always
Description	<p>It establishes when the line coupler must confirm the reception of telegrams (by sending ACK or IACK).</p> <ul style="list-style-type: none"> - If routed: Routed telegrams to the subline are confirmed by an ACK on the main line. - Always: Each telegram on the mainline is confirmed by an ACK.

Name	Send confirmation on own telegrams
Values	Yes / No
Description	Allows the sending or not of the self-confirmation of telegrams

4.1.3 Subline

For Group Telegrams and Physical Telegrams, the setting “transmit all” is intended only for testing purposes. Please do not use for normal operation.

--- BES KNX-Line coupler > Subline

General	Telegram routing	configure
Main line	Group telegrams: Main group 0...13	filter
	Group telegrams: Main group 14...31	filter
Subline	Physical telegrams	filter
	Physical telegrams: Repetition if errors on subline	up to 3 repetitions
	Group telegrams: Repetition if errors on subline	up to 3 repetitions
	Telegram confirmation on subline	<input checked="" type="radio"/> if routed <input type="radio"/> always
	Send confirmation on own telegrams	<input type="radio"/> yes <input checked="" type="radio"/> no
	Configuration from subline	<input checked="" type="radio"/> allow <input type="radio"/> block

Name	Telegram routing
Values	Group: filter, Physical: block / Group and Physical: filter / Group: route, Physical: filter / Group and Physical: route configure
Description	<ul style="list-style-type: none"> - Block: No telegrams are routed. - Filter: telegrams entered in the filter table are routed. - Route: all telegrams are routed. - Configure: the following parameters must be set manually.

Name	Group telegrams: Main group 0...13
Values	Transmit all (not recommended) / Block / Filter
Description	<ul style="list-style-type: none"> - Transmit all: Group telegrams (main group 0...13) are all routed. - Block: Group telegrams (main group 0...13) are all blocked. - Filter: Group telegrams (main group 0...13) are routed if entered in the filter table

Name	Group telegrams: Main group 14...31
Values	Transmit all (not recommended) / Block / Filter
Description	<ul style="list-style-type: none"> - Transmit all: Group telegrams (main group 14...31) are all routed. - Block: Group telegrams (main group 14...31) are all blocked. - Filter: Group telegrams (main group 14...31) are routed if entered in the filter table

Name	Physical telegrams
Values	Transmit all (not recommended) / Block / Filter
Description	<ul style="list-style-type: none"> - Transmit all: Physical telegrams are all routed. - Block: Physical telegrams are all blocked. - Filter: Depending on the physical address Physical telegrams are routed..
Name	Physical/Group telegrams: Repetition if errors on subline
Values	No / Up to 3 repetitions / Only one repetition
Description	<p>After subline transmission error (e.g. due to missing receiver) Physical telegrams:</p> <ul style="list-style-type: none"> - No: Are not repeated - Up to 3 repetitions: Are repeated max. 3 times - Only one repetition: Are repeated once
Name	Telegram confirmation on subline
Values	If routed / always
Description	<p>It establishes when the line coupler (by sending ACK or IACK) must confirm the telegram reception</p> <ul style="list-style-type: none"> - If routed: Routed telegrams to main line are confirmed by an ACK on the subline. - Always: Each telegram on the subline is confirmed by an ACK.
Name	Send confirmation on own telegrams
Values	Yes / No
Description	Allows the sending or not of the self-confirmation of telegrams
Name	Configuration from subline
Values	Allow / block
Description	If blocked an ETS download to the MECtp can occur only via main line.

5 Repeater mode parameters

Parameterization of the device is done from the ETS. The description of each parameter is shown in this chapter.

5.1.1 General

--- BES KNX-Line coupler > General

General	Manual Function:	pass all telegrams
Main line	Switch-off time for Manual Function	1 hour
Subline		

Name	Manual function
Values	Disabled / Pass all telegrams / Pass all Physical telegrams / Pass all Group telegrams
Description	Configuration setting for telegram routing when the Manual Function is active.
Name	Switch-off time for Manual Function
Values	10 min / 1 hour / 4 hours / 8 hours
Description	After expiry of this time period the Manual Function is switched off automatically.

5.1.2 Main line

For Group Telegrams and Physical Telegrams, the setting “transmit all” is intended only for testing purposes. Please do not use for normal operation.

1.1.0 BES KNX-Line coupler > Main line

General	Telegram routing	<input type="radio"/> Group and Physical: route <input checked="" type="radio"/> configure
Main line	Physical telegrams	<input checked="" type="radio"/> transmit all <input type="radio"/> block
Subline	Physical telegrams: Repetition if errors on main line	only one repetition
	Group telegrams: Repetition if errors on main line	only one repetition
	Telegram confirmation on main line	<input type="radio"/> if routed <input checked="" type="radio"/> always
	Send confirmation on own telegrams	<input checked="" type="radio"/> yes <input type="radio"/> no

Name	Telegram routing
Values	Group and Physical: route / Configure
Description	<ul style="list-style-type: none"> - Route: all telegrams are routed - Configure: the following parameters must be set manually.

Name	Physical telegrams
Values	Transmit all (not recommended) / Block
Description	<ul style="list-style-type: none"> - Transmit all: Physical telegrams are all routed. It is used only for tests, it shouldn't be used for normal operations. - Block: Physical telegrams are all blocked.
Name	Physical/Group telegrams: Repetition if errors on main line
Values	No / Up to 3 repetitions / Only one repetition
Description	<p>After main line transmission error (e.g. due to missing receiver) Physical telegrams</p> <ul style="list-style-type: none"> - No: Are not repeated - Up to 3 repetitions: Are repeated max. 3 times - Only one repetition: Are repeated once
Name	Telegram confirmation on main line
Values	If routed / always
Description	<p>It establishes when the line coupler must confirm the reception of telegrams (by sending ACK or IACK).</p> <ul style="list-style-type: none"> - If routed: Routed telegrams to the subline are confirmed by an ACK on the main line. - Always: Each telegram on the mainline is confirmed by an ACK.
Name	Send confirmation on own telegrams
Values	Yes / No
Description	Allows the sending or not of the self-confirmation of telegrams

5.1.3 Subline

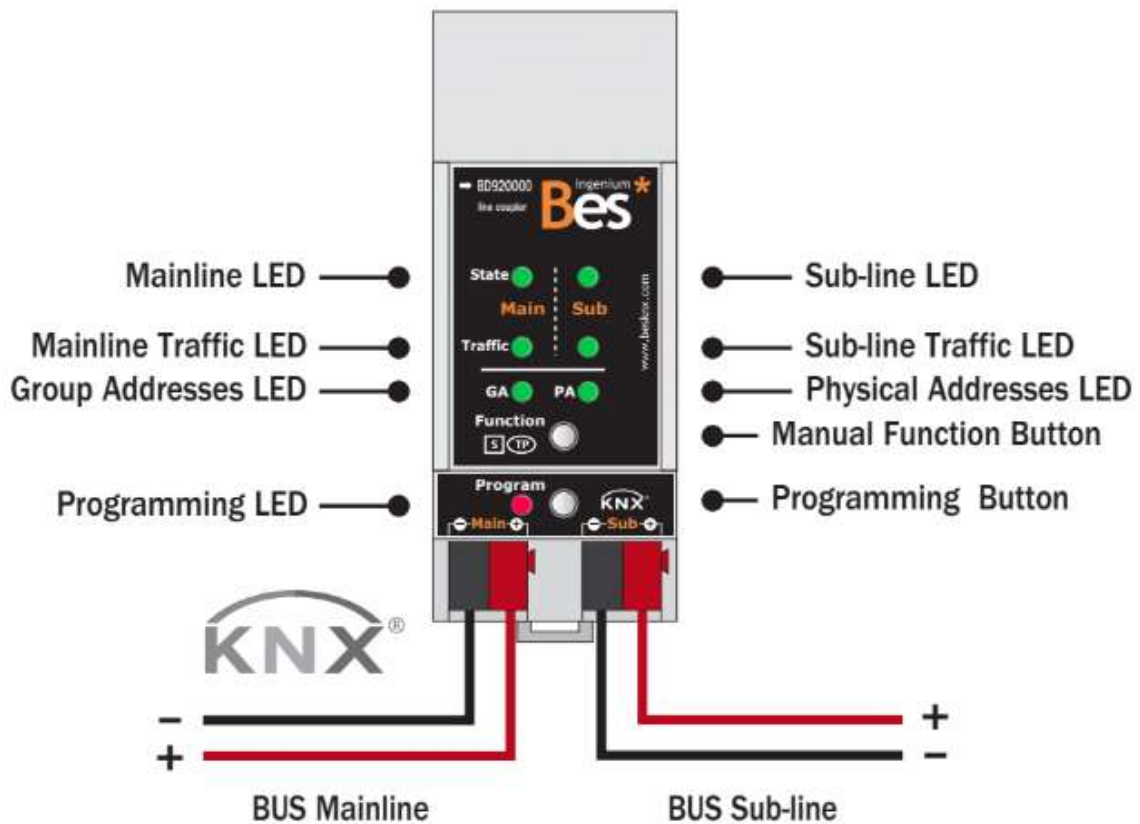
For Group Telegrams and Physical Telegrams, the setting "transmit all" is intended only for testing purposes. Please do not use for normal operation.

1.1.0 BES KNX-Line coupler > Subline

General	Telegram routing	<input type="radio"/> Group and Physical: route <input checked="" type="radio"/> configure
Main line	Physical telegrams	<input checked="" type="radio"/> transmit all <input type="radio"/> block
Subline	Physical telegrams: Repetition if errors on subline	only one repetition ▼
	Group telegrams: Repetition if errors on subline	only one repetition ▼
	Telegram confirmation on subline	<input type="radio"/> if routed <input checked="" type="radio"/> always
	Send confirmation on own telegrams	<input checked="" type="radio"/> yes <input type="radio"/> no

Name	Telegram routing
Values	Group and Physical: route / configure
Description	<ul style="list-style-type: none"> - Route: all telegrams are routed. - Configure: the following parameters must be set manually.
Name	Physical telegrams
Values	Transmit all (not recommended) / Block / Filter
Description	<ul style="list-style-type: none"> - Transmit all: Physical telegrams are all routed. - Block: Physical telegrams are all blocked.
Name	Physical/Group telegrams: Repetition if errors on subline
Values	No / Up to 3 repetitions / Only one repetition
Description	<p>After subline transmission error (e.g. due to missing receiver) Physical telegrams:</p> <ul style="list-style-type: none"> - No: Are not repeated - Up to 3 repetitions: Are repeated max. 3 times - Only one repetition: Are repeated once
Name	Telegram confirmation on subline
Values	If routed / always
Description	<p>It establishes when the line coupler (by sending ACK or IACK) must confirm the telegram reception</p> <ul style="list-style-type: none"> - If routed: Routed telegrams to main line are confirmed by an ACK on the subline. - Always: Each telegram on the subline is confirmed by an ACK.
Name	Send confirmation on own telegrams
Values	Yes / No
Description	Allows the sending or not of the self-confirmation of telegrams

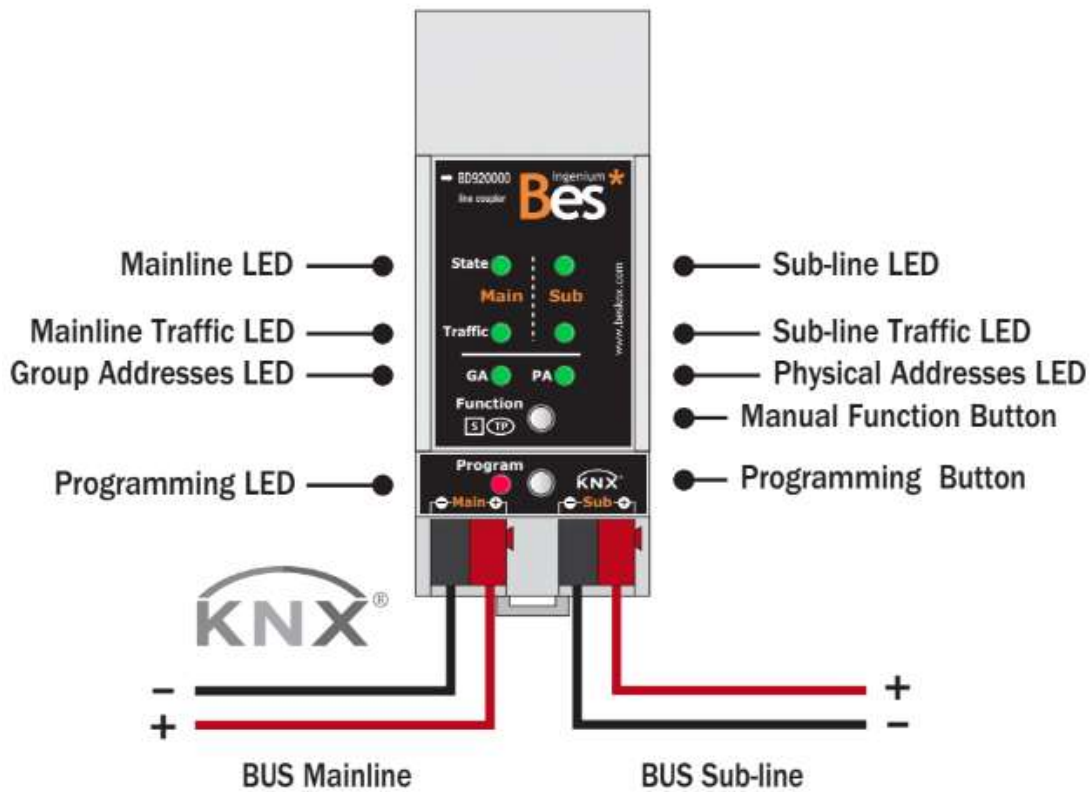
6 LED status



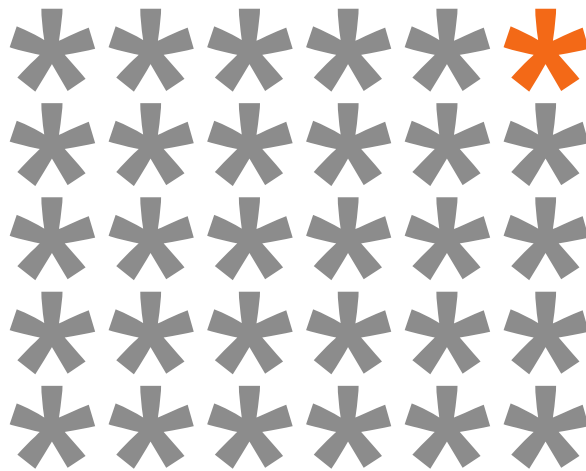
- Main line Led: shows the bus status of the main line.
 - Off: main line disconnected or not powered
 - Green: Main line correct.
 - Orange: Manual function activated
- Sub-line LED: shows the bus status of the subline.
 - Off: sub-line not connected.
 - Green: Sub-line correct.
- Main line traffic LED: shows the traffic status on the primary bus.
 - Blinking in green: traffic
 - Blinking in red: transmission error
 - Off: no traffic.
- Sub-line traffic LED: shows the traffic status on the secondary bus.
 - Blinking in green: traffic
 - Blinking in red: transmission error
 - Off: no traffic.
- Status group address (GA) LED: shows the current configuration of the group address routing:
 - Off: the routing of group telegrams is different on the main line and the subline.
 - Green: filtering.
 - Orange: all routed.
 - Red: routing blocked.
- Status physical addresses (PA) LED: shows the current configuration of the physical addresses routing:
 - Off: the routing of group telegrams is different on the main line and the subline.

- Green: filtering.
- Orange: all routed.
- Red: routing blocked.

7 Installation



Feed low voltage lines (BUS and inputs) in ducts separate from the main power supply (230V) and outputs to ensure there is enough insulation and to avoid interference. Do not connect mains voltage (230V) or any other external voltage at any point on the bus or inputs.



KNX products by ingenium



Ingenium, Ingeniería y Domótica S.L.

Parque Tecnológico de Asturias, Parcela 50

33428 Llanera, Asturias, España

T (+34) 985 757 195

tec@besknx.com

www.besknx.com

www.ingeniumsl.com

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