

IL CAN BK-TC(-XC)-PAC / IL CO BK(-XC)-PAC

Replacing an IL CAN BK-TC(-XC)-PAC
bus coupler with an IL CO BK(-XC)-PAC bus coupler



Application note
107651_en_01

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1 Description

The IL CAN BK-TC(-XC)-PAC bus coupler can be replaced with the new IL CO BK(-XC)-PAC bus coupler.

This document covers the aspects that need to be taken into consideration.



This document refers to the previous and new bus couplers.

Previous bus couplers:

- IL CAN BK-TC-PAC
- IL CAN BK-TC-XC-PAC

New bus couplers:

- IL CO BK-PAC
- IL CO BK-XC-PAC

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2 Ordering data

Bus couplers

Description	Type	Order No.	Pcs./ Pkt.
New bus couplers			
Inline, bus coupler, CANopen [®] , MINI COMBICON, 500 kbps/2 Mbps transmission speed in the local bus, IP20 protection, including network connector, Inline connector, and marking field	IL CO BK-PAC	2702230	1
Inline XC, bus coupler, CANopen [®] , MINI COMBICON, version for extreme conditions, 500 kbps/2 Mbps transmission speed in the local bus, IP20 protection, including network connector, Inline connector, and marking field	IL CO BK-XC-PAC	2702635	1
Previous bus couplers			
Inline, bus coupler, CANopen [®] , TWIN COMBICON, version for extreme conditions, 500 kbps transmission speed in the local bus, IP20 protection, including network connector, Inline connector, and marking field	IL CAN BK-TC-PAC	2718701	1
Inline, bus coupler, CANopen [®] , TWIN COMBICON, 500 kbps transmission speed in the local bus, IP20 protection, including network connector, Inline connector, and marking field	IL CAN BK-TC-XC-PAC	2702130	1

Accessories

Description	Type	Order No.	Pcs./ Pkt.
Connector as accessory (see “Network connector” on page 4)			
Plug, nominal current: 8 A, rated voltage (III/2): 160 V, number of positions: 5, pitch: 3.5 mm, connection method: Push-in spring connection, color: green, contact surface: tin	TFMC 1,5/ 5-STF-3,5	1772731	50
Boost terminals (see “Power supply at U_L” on page 6)			
Inline feed-in terminal or boost terminal, complete with accessories (connector and marking field), 24 V DC, without fuse	IB IL 24 PWR IN/R-PAC	2861674	
Inline feed-in terminal, complete with accessories (connector and marking field), 24 V DC, for system voltages U _M , U _S , U _L , U _{ANA}	IB IL 24 PWR IN/PS-PAC	2863135	
Inline boost terminal for the communications power U _L of 0.8 A, complete with accessories (connector and marking field)	IB IL 24 PWR IN/R/L-0.8A-PAC	2693020	
Inline feed-in terminal or boost terminal, version for extreme conditions, complete with accessories (connector and marking field), 24 V DC, without fuse	IB IL 24 PWR IN/R-XC-PAC	2701298	

Documentation

Description	Type	Order No.	Pcs./ Pkt.
Data sheet, English, Inline, bus coupler for CANopen [®] , bus interface, 5-pos. MINI COMBICON connector	DB EN IL CO BK-PAC	-	-
Data sheet, English, Inline XC, bus coupler for CANopen [®] , version for extreme conditions, bus interface, 5-pos. MINI COMBICON connector	DB EN IL CO BK-XC-PAC	-	-
User manual, English, IL CO BK(-XC)-PAC Inline bus coupler for CANopen [®]	UM EN IL CO BK(-XC)-PAC	-	-
Application note, English, firmware update for the IL CO BK-PAC/IL CO BK-XC-PAC Inline bus coupler for CANopen [®]	AH EN IL CO BK(-XC)-PAC - FW UPDATE	-	-

3 Comparison of the bus couplers

The table below shows the differences between the previous bus coupler and the new bus coupler.

	Previous bus coupler		New bus coupler		See
Type	IL CAN BK-TC -PAC	IL CAN BK-TC -XC-PAC	IL CO BK-PA C	IL CO BK-XC- PAC	
Order No.	2718701	2702130	2702230	2702635	
DIP switches					
Device address	7		7		
Transmission speed	3		2		"Autobaud" on page 4
Termination resistor	0		1		"Termination resistor" on page 5
Device profile (I/O modules)	CiA 401 V1.4		CiA 401 V3.0		
Communication profile	CiA 301 V3.0		CiA 301 V4.2		
Transmission speed	10 k, 20 k, 50 k, 125 k, 250 k, 500 k, 1 M		10 k, 20 k, 50 k, 125 k, 250 k, 500 k, 800 k , 1 M, Autobaud		"Autobaud" on page 4
Termination resistor	No		Yes		"Termination resistor" on page 5
Modular EDS file	No		Yes		"Modular EDS file" on page 5
Firmware update possible via network	No		Yes		AH EN IL CO BK(-XC)-PAC - FW UPDATE
SafetyBridge Technology V3 supported	No		Yes		
Transmission speed in the local bus	500 kbps		500 kbps, 2 Mbps (automatic detection)		
Network connector	Double connector		Single connector		"Network connector" on page 4
Diagnostics indicators for the local bus	Yes		Yes, D LED of the I/O modules		"Diagnostics indicators" on page 5
Power supply at U _L	2 A, maximum		0.9 A, maximum		"Power supply at U _L " on page 6
SDO timeout			1000 ms		"SDO timeout and objects that are stored retentively" on page 6
Number of devices with parameter channel (PCP)	8		16		"PCP modules" on page 6
Startup			5 s longer		"Bus coupler startup" on page 6

4 Network connector

The following network connectors can be used on the bus couplers:

Bus coupler	Network connector		
	Order No.	Type	Comment
IL CO BK-PAC	1966127	FMC 1,5/ 5-STF-3,5	Single connector (delivery state)
IL CO BK-XC-PAC	1772731	TFMC 1,5/ 5-STF-3,5	Double connector (accessory)
IL CAN BK-TC-PAC IL CAN BK-TC-XC-PAC	2862576	TMSTBP 2,5/ 5-STF-5,08 GNAU CP	Double connector (delivery state)

If you used IN and OUT on the previous bus coupler, please note:

The new bus coupler has a single connector.

You can only use IN and OUT here if a double connector is used. It is available to order as an accessory, see "Ordering data" on page 2.

5 Autobaud

Not all baud rates can be fixed on the new bus coupler. Instead you can use "Auto baud rate" mode in addition to the baud rates that can be fixed.

Please refer to the information that is also provided in the data sheet:



If "Auto baud rate" is set as the transmission speed for the bus coupler, it automatically detects the baud rate in the system.

Possible transmission speeds:

10 kbps, 20 kbps, 50 kbps, 125 kbps,
250 kbps, 500 kbps, 800 kbps, 1 Mbps.

The bus coupler can only automatically detect the baud rate in the system if it receives at least two valid CAN telegrams.

6 Termination resistor

On the new bus coupler, you can connect a termination resistor via the DIP switch.

If you also use the termination resistor from the previous bus coupler on the new bus coupler, disable the termination resistor on the new bus coupler.

If you also activate the termination resistor via the DIP switch for the external termination resistor, connection problems may occur.

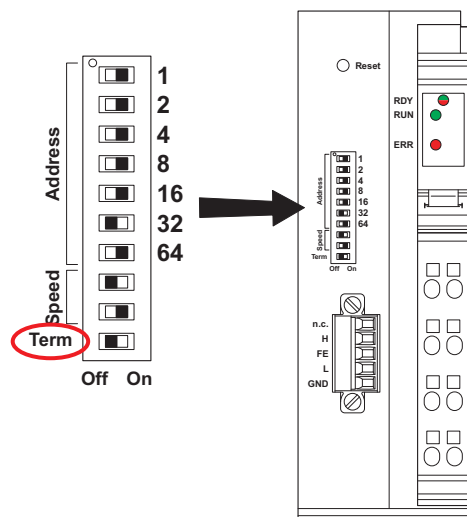


Figure 1 "Term" DIP switch for switching the termination resistor on or off

7 Diagnostics indicators

The new bus coupler does not have diagnostics LEDs for the local bus.

The diagnostics for the local bus are provided via the D diagnostics LEDs of the local bus modules and via the CANopen[®] alarm messages (emergency messages).

8 Modular EDS file

The new bus coupler can be operated with the following EDS files:

- Current EDS file for the previous bus coupler
- Modular EDS file for the new bus coupler

If using the modular EDS file, please note the following:

- The modular EDS file can only be used with CODESYS V3.
- Insert the connected modules, see Figure 2. The mapping is then created automatically.

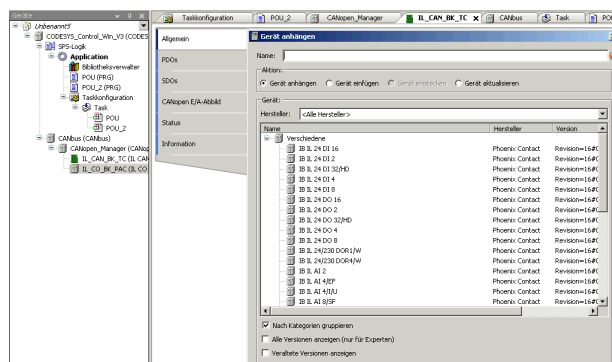


Figure 2 Inserting connected modules

9 Power supply at U_L

Bus coupler	Power supply at U_L
IL CO BK-PAC IL CO BK-XC-PAC	0.8 A, maximum
IL CAN BK-TC-PAC IL CAN BK-TC-XC-PAC	2 A, maximum

If replacing the previous bus coupler with a new bus coupler in an Inline station, observe the current consumption of the local bus devices at U_L . You may need to use boost terminals, see "Ordering data" on page 2.

10 SDO timeout and objects that are stored retentively

Set the SDO timeout parameter to at least 1000 ms.

For an overview of objects that are stored retentively, please refer to the UM EN IL CO BK(-XC)-PAC user manual.

The previous bus coupler stored retentive parameters in every state.

The following applies for the new bus coupler:

In the Pre-Operational state, the bus coupler immediately stores data retentively.

In the Operational state, the bus coupler stores the data non-retentively. The data is only stored retentively to the Flash when switching to a non-time-critical state (e.g., Pre-Operational).



If a voltage reset is performed in the Operational state, the parameters will be lost.

11 PCP modules

The new bus coupler supports more PCP devices than the previous bus coupler. This therefore does not have to be considered when replacing the bus coupler.

Bus coupler	Number of devices with parameter channel (PCP)
IL CO BK-PAC IL CO BK-XC-PAC	16
IL CAN BK-TC-PAC IL CAN BK-TC-XC-PAC	8

12 Bus coupler startup

Due to a new boot loader, the new bus coupler takes five seconds longer to start up.

Since the CANopen[®] controller usually waits for the Bootup message from the devices, no problems are anticipated here.



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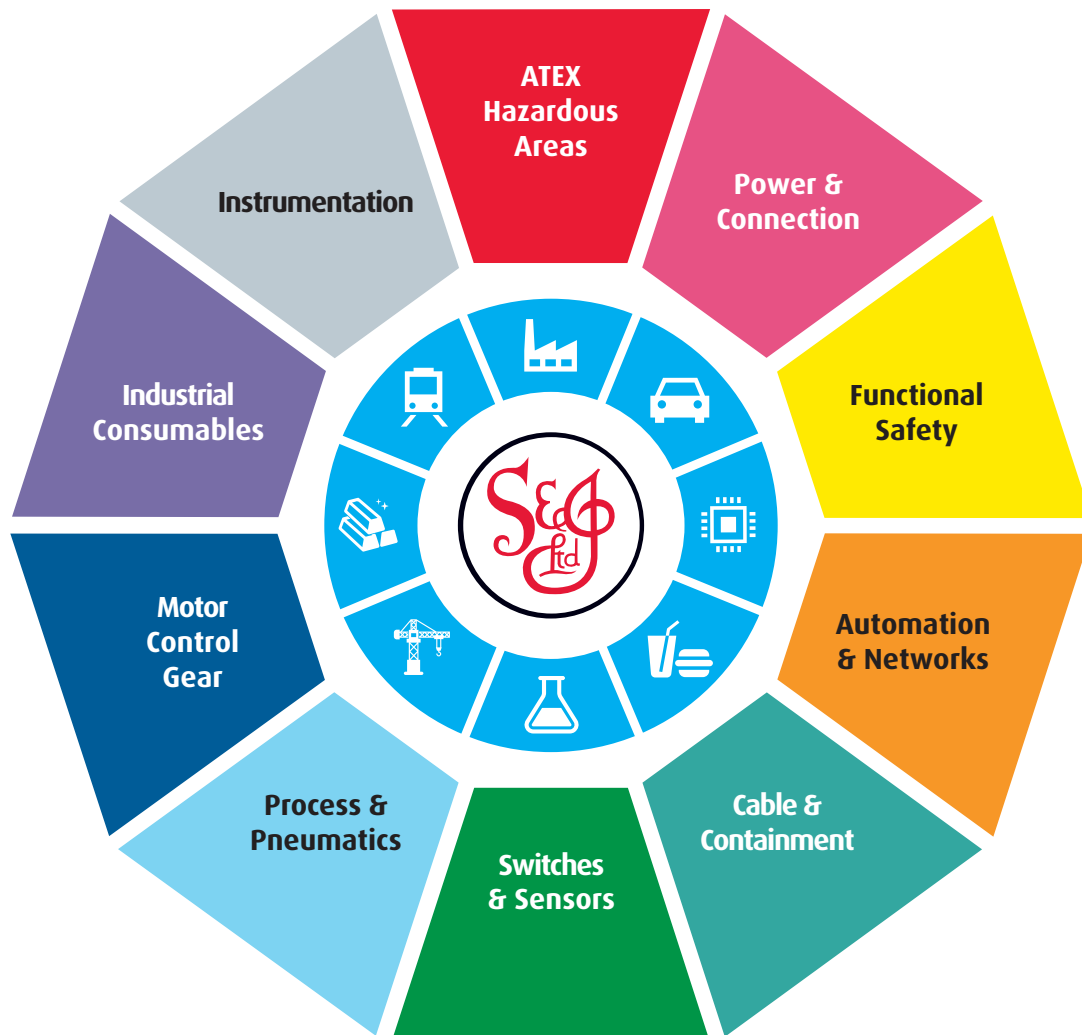
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