

9761p01

DESIGO™ INTEGRAL Migration

## Adapter for INTEGRAL PXC-NRUD NK modules

Integrates existing INTEGRAL periphery into DESIGO

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This adapter, combined with an automation station PXC64-U / PXC128-U and a P bus interface module TXB1.PBUS, serves as a replacement for the modular automation stations NRUA/A, NRUB/A, NRUC/A and NRUD/A.

From DESIGO V4.1, the adapter can also be used with a PXC100.D / PXC100-E.D automation station and a TXS1.12F10 power supply module.

- Same housing, adapter can be plugged into existing NHGB housing.
- Same periphery interface (plug compatible).
- Existing periphery can be assumed without a change.
- Use existing panel wiring.

TX-I/O modules are used for plant expansions.

## Functions

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Existing INTEGRAL module supports NTIM / NTOM / NTOMS can be connected using the same plug to the adapter PXC NRUD.

The adapter converts signals from INTEGRAL NK module to island bus signals.

The PXC64-U or PXC128-U serve as the automation station with a pre-switched bus interface module TXB1.PBUS.

**From DESIGO V4.1**, the PXC100.D / PXC100-E.D serve as the automation station, together with a TXS1.12F10 power supply module.

## Type summary

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Device	Type	Data point mix		
		DI	DO	UI / UO
Adapter for 48 physical data points.	PXC NRUD	8	8	32

## Equipment combinations

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- Integration in DESIGO: PXC64-U / PXC128-U automation station, together with a TXB1.PBUS bus interface module .
- Integration in DESIGO: PXC100.D / PXC100-E.D automation station, together with a TXS1.12F10 power supply module .
- Field level: INTEGRAL NK module in module support NTIM, NTOM, NTOMS.
- Expansion: with TX-I/O modules

**Note: The TXS1.EF10 bus connection module only works in conjunction with a TXS1.12F10 power supply module.**

## Technical design

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The device essentially includes

- 6 sockets, for connecting the NK module and the supply voltage AC 24 V
- A 3-pole plug with screw terminal block for the island bus.
- The modified electronics for 6 TX-I/O modules.
- LED displays.
- Two rotary switches to set the start address for the first TX-I/O module.
- Internal island bus connector for forwarding the island bus to neighboring adapters.
- DIP switch to switch on the island bus connection (to establish I/O islands).
- DC 15 V supply voltage for the NK modules.

## Design

### Mechanical setup

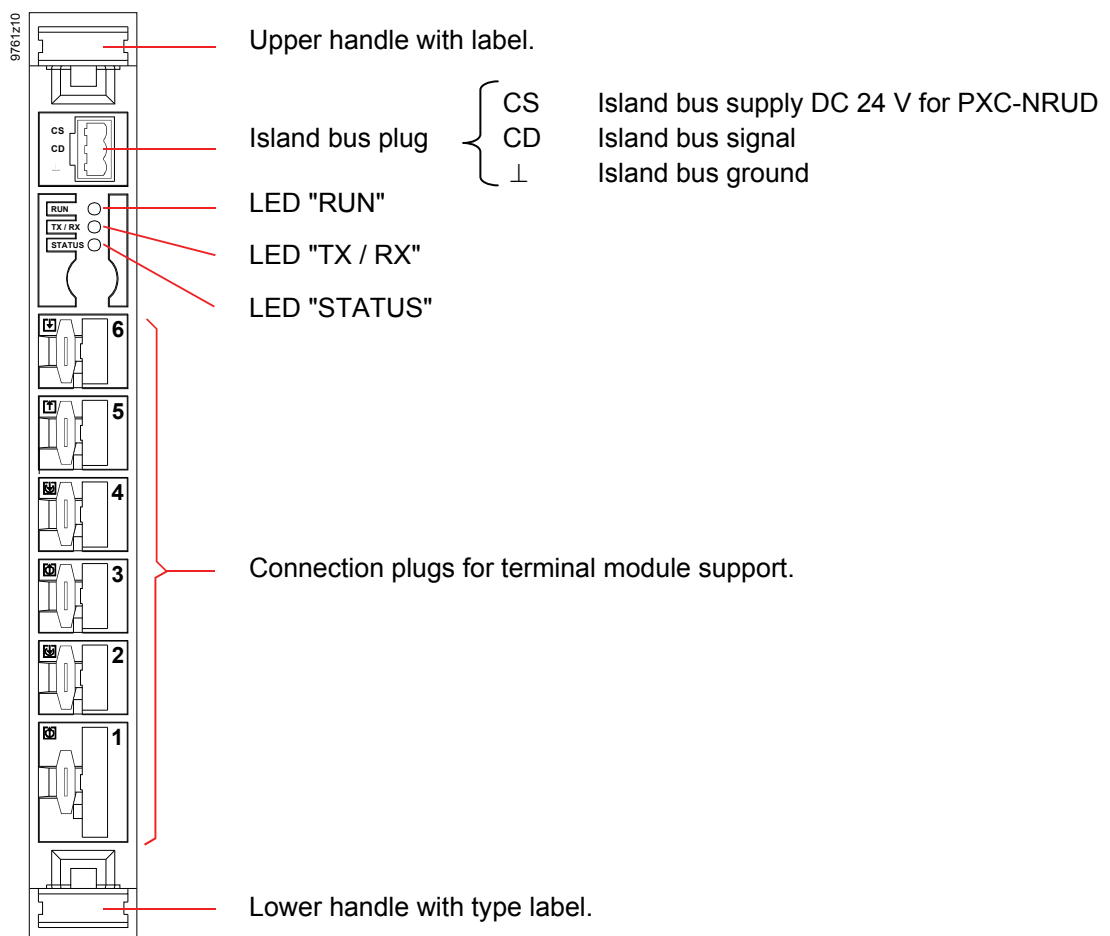
The adapter consists of a plug-in circuit board with front plate. It is inserted into an existing card housing NHGB.

### Connections

A ribbon cable with a maximum length of 2 meters is used to connect the module supports NTIM / NTOM / NTOMS; plugged into the socket. A module support NTIM / NTOM / NTOMS can hold up to eight plug-in terminal modules. The module support NTOMS also serves as the power connection AC 24 V for the adapter.

### Front plate

The front plate is attached to the circuit board. It includes the following elements:



## LED displays

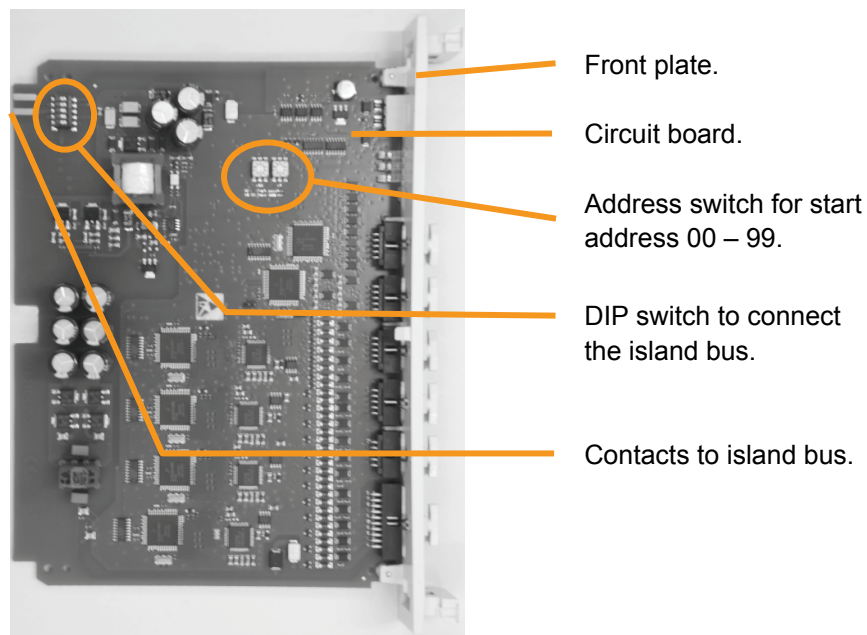
<b>LED 1 (green)</b> "RUN"	ON	AC 24 V power supply for terminal module support NTOMS OK.
	OFF	AC 24 V power supply for terminal module support NTOMS not OK.
<b>LED 2 (yellow)</b> "TX / RX"	Flickering	Activity on the island bus
	ON	Island bus signal = "Logical 1".
	OFF	Island bus signal = "Logical 0".
<b>LED 3 (green/red)</b> "STATUS"	Green	Island bus power supply OK (DC 24 V available).
	Red	Island bus power supply not OK (island bus ground $\perp$ missing).
	OFF	No AC 24 V supply voltage on the terminal module support.

## Input / output, supply voltage

Plugs	Assignment	
6	8 digital inputs.	DI
5	8 digital outputs.	DO
4	8 universal inputs.	UI
3	8 universal outputs.	UO
2	8 universal inputs.	UI
1	8 universal outputs + supply voltage AC 24 V.	UO

Plugs are mechanically secured by a rotary knob.

## Circuit board



The adapter can be inserted or pulled out on two handles.  
The front plate locks in place in the housing frame when inserted.



## Caution!

**Do not touch circuit board! Electrostatic discharge may damage electronic components.**

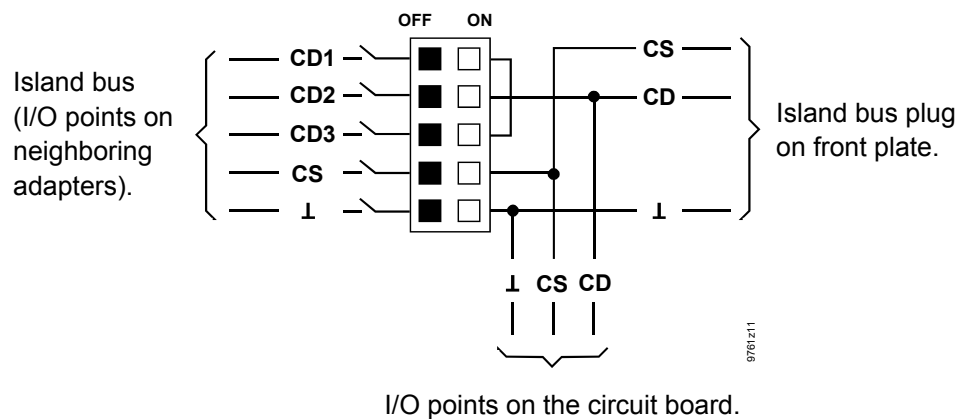
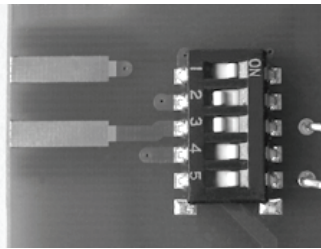
## Address switches

The island bus address for the first of 6 internal I/O modules can be set using two rotary switches (tens and ones) in a range from 00 to 99.

## Island bus connection

The bus contacts connect one adapter to a neighboring adapter. The connection can be switched on using DIP switches on the circuit board, allowing the formation of up to 3 separate islands.

Additional islands can be established by connecting the island bus with plugs to the front plate (refer to installation).



The factory setting of the 5 DIP switches is OFF.  
The switches are protected by an adhesive strip.

We recommend to always migrate a complete rack of 16 INTEGRAL NRU... to DESIGO.  
INTEGRAL NRU../A and PXC-NRUD adapters can also be run in neighboring NHGB housings, but in this case the island bus of the PXC-NRUD adapters must be connected in the front, and the DIP switches must remain OFF.

## Housing

The adapters are supplied without housing.  
The cards are plugged into the *existing* NHGB housings.

## Disposal



The device contains electrical and electronic components and may not be disposed of in standard household garbage. Printed circuit boards and housing must be sent separately to the appropriate waste disposal collection center.

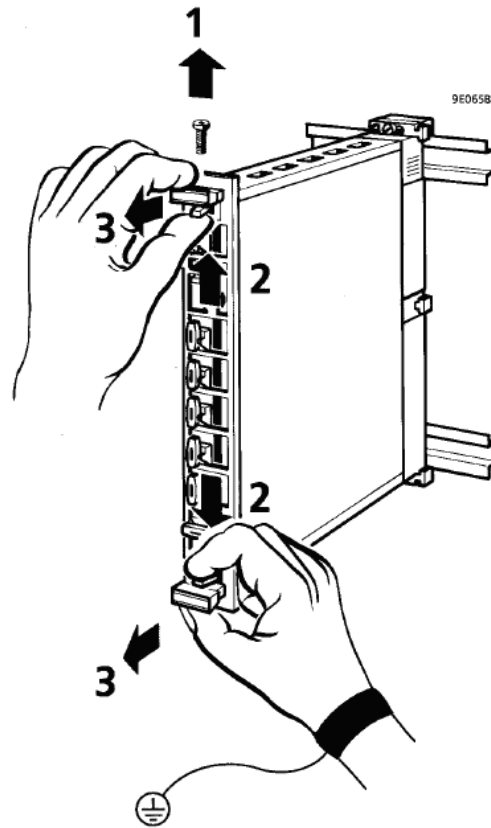
**Observe all local and applicable laws.**

## Mounting

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- The adapters are plugged into the existing NHGB housing.  
The housing can be installed as follows in the panel:
- Screwing the housing directly to the panel's base plate.
  - Install on two standard rails.
  - Installation in a set or hinged 19" standard rack.

### Working with printed circuit boards



**Remove:**  
Hold the front plate on both holders and press both locking levers.  
Carefully pull out the circuit board.

**Insert:**  
Hold the front plate on both handles.  
Insert the printed circuit board in the guide on the right side of the housing and carefully push it in until the locking levers lock in place.



### Caution!

Conduct all activities at protected workspaces (wrist band with grounding wire, conductive surfaces) to prevent damage to printed circuit boards caused by electrostatic discharges.  
Never remove or insert printed circuit boards connected to power!

## Installation

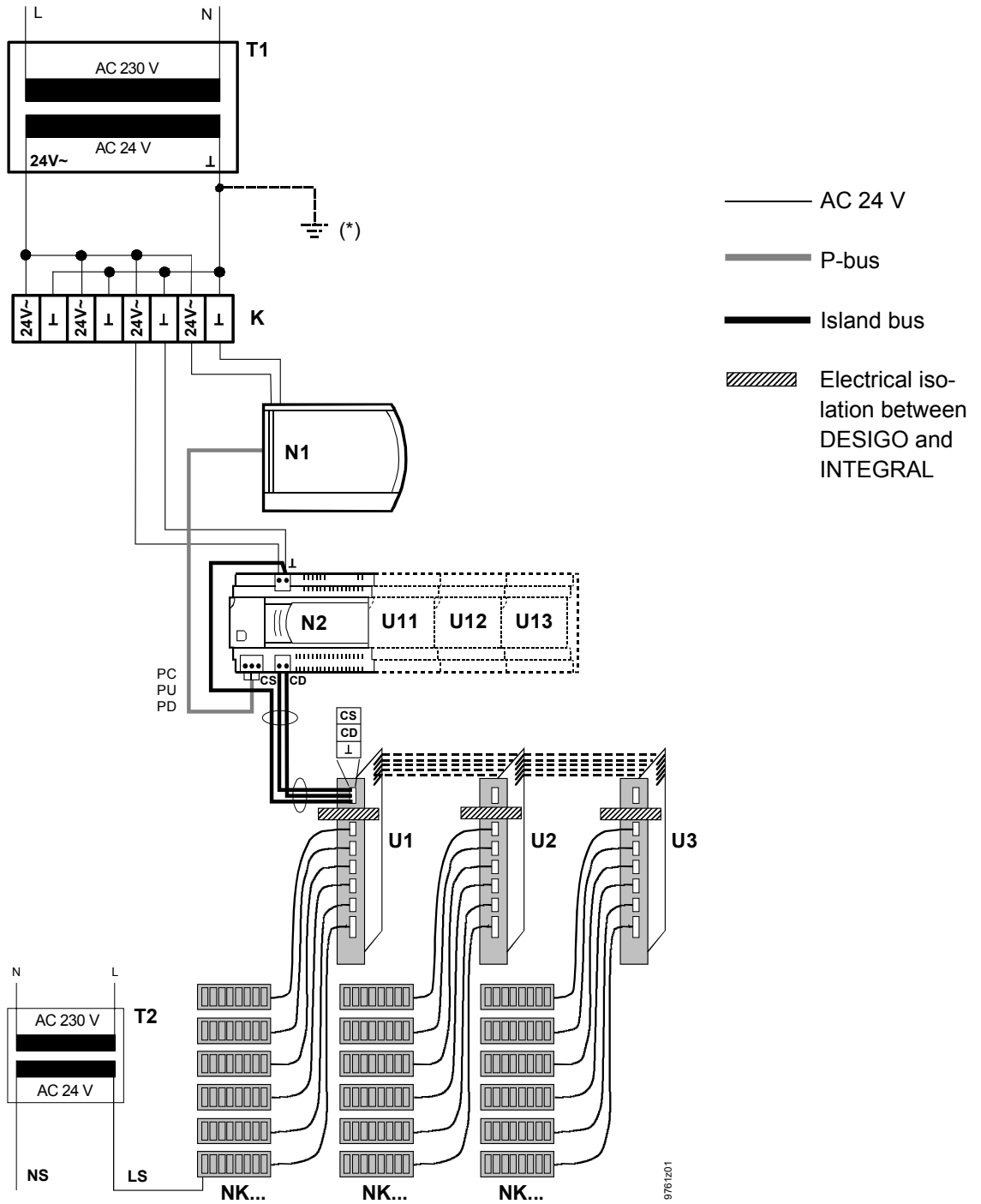
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**Binding documentation** The electrical diagram for the specific project is binding for executing the given panel wiring.

**Basic implementation** The diagram below illustrates the wiring for power and bus line based on a example.

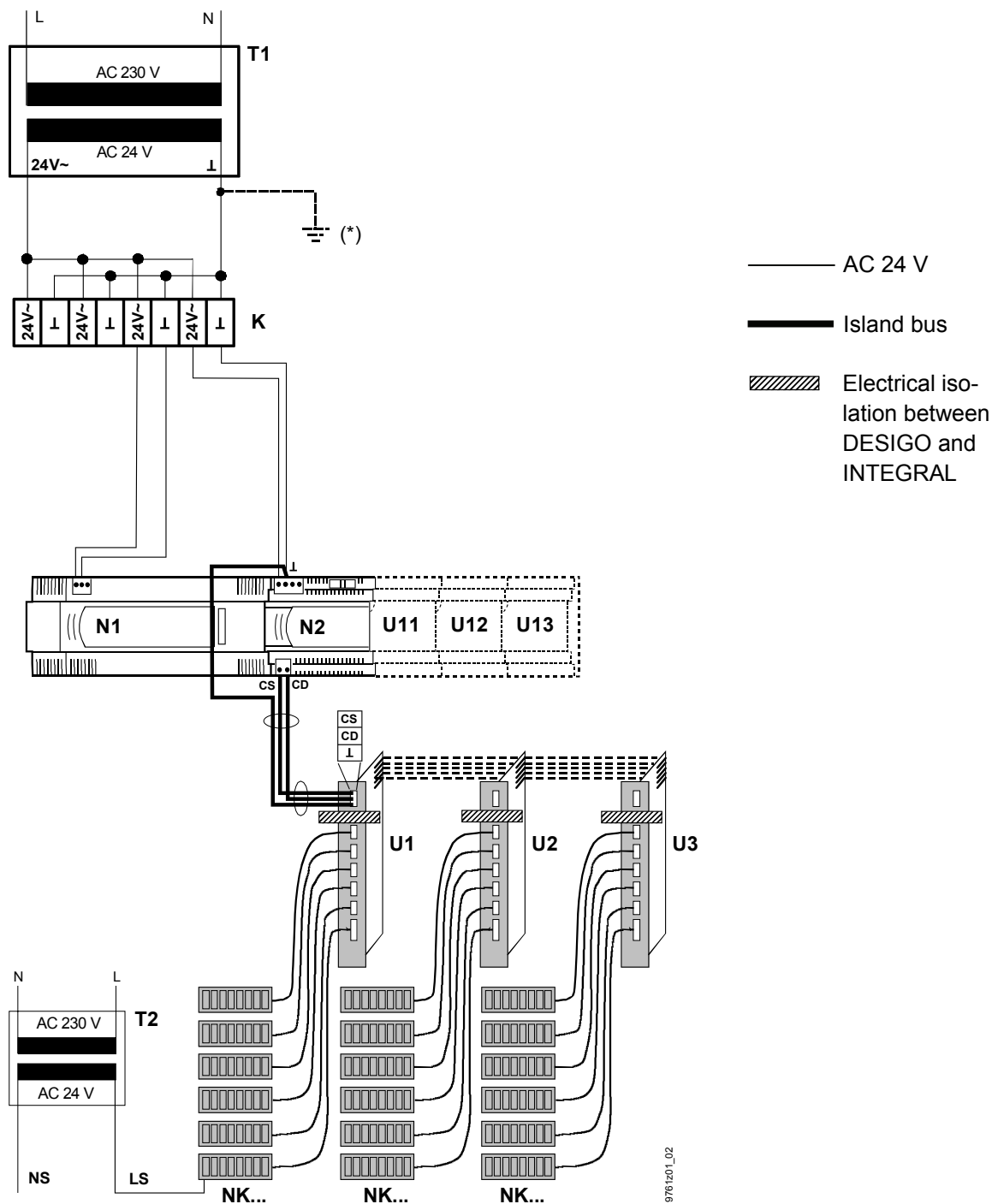
**Note** The AC 230 V wiring is not described in detail.

# Wiring example for PXC64-U / PXC128-U automation stations



- |     |            |   |
|-----|------------|---|
| Key | T1         | Transformer on the DESIGO side<br>→ Powers PXC..U, TXB1.PBUS bus interface module and island bus. |
|     | T2         | Transformer INTEGRAL side (electrically isolated)<br>→ Powers NK module and PXC NRUD adapters.    |
|     | K          | Terminal block for star distribution of AC 24 V and ⊥.  |
|     | N1         | Automation station PXC64-U or PXC128-U.   |
|     | N2         | TXB1.PBUS bus interface module with built-in power supply and optional TX-I/O modules U11 .. U13  |
|     | U1 .. U3   | Adapters PXC NRUD   |
|     | U11 .. U13 | Extension with TX-I/O-Modules   |
|     | NK...      | INTEGRAL NK modules   |
|     | (*)        | Earthing according to local regulations   |

## Wiring example for PXC100.D / PXC100-E.D automation station (DESIGO V4.1 or later)



Key	T1	Transformer on the DESIGO side → Powers PXC...D, TXS1.12F10 power supply module and island bus.
	T2	Transformer INTEGRAL side (electrically isolated) → Powers NK module and PXC NRUD adapters.
	K	Terminal block for star distribution of AC 24 V and ⊥.
	N1	PXC100.D or PXC100-E.D automation station.
	N2	TXS1.12F10 power supply modules and optional TX-I/O modules U11 .. U13
	U1 .. U3	Adapters PXC NRUD
	U11 .. U13	Extension with TX-I/O-Modules
	NK...	INTEGRAL NK modules
	(*)	Earthing according to local regulations



## Transformer rules

- The P-bus interface module N2 supplies only the island bus driver on the printed circuit board (electrically separated).  
The I/O electronics on the printed circuit board and the field devices are supplied by T2 via the NTOMS terminal module support.
- For the automation station PXC... and the P-bus interface module N2, the existing transformer T2 for the INTEGRAL plant or a separate transformer T1 may be used.
- A separate transformer T1 is recommended when TX-I/O modules are used for system expansions.
- Earthing according to local regulations.

## Multiple I/O islands

The data points that are connected to a 19" rack are distributed to several automation stations (max. 200 DPs per pro PXC64-U / PXC100.D / PXC100-E.D). The I/Os connected to one automation station form an "I/O island", that means they are connected to the same island bus.

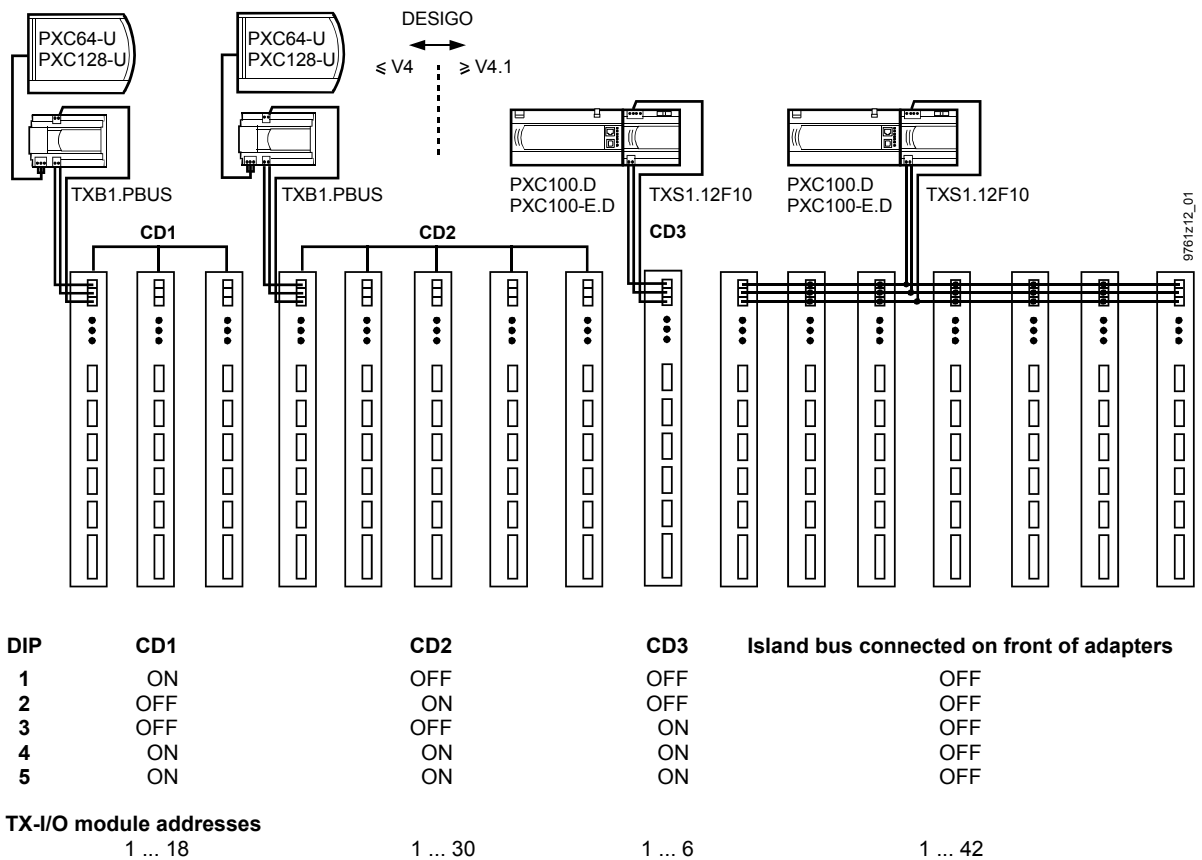
The connection of several adapters to form one I/O island is done with

- the island bus contacts, connected by the DIP switches (max three different I/O islands)
- the island bus connectors on the front plate of the adapters (from the fourth I/O island).

### Example: 4 I/O islands

The example below, 4 I/O islands are formed from 16 adapters in a 19" rack:

- Adapters 1 ... 3 are connected via island bus CD1.
- Adapters 4 ... 8 are connected via island bus CD2.
- Adapter 9 is connected via island bus CD3.
- Adapters 10 ... 16 are connected via the island bus plug on the front plate.



## Installation rules for the island bus

See TX-I/O engineering and installation manual: CM110562

## Technical data

Adapter power supply (Via socket 1 from NTOMS)	Operating voltage	AC 24 V $\pm$ 20%.
	Safety extra low voltage SELV or protective extra low-voltage PELV per HD384	
Island bus driver power supply (via island bus plug).	Max. power consumption.	18 VA
	Operating voltage	DC 22.5 ... 26 V.
	Safety extra low voltage SELV or protective extra low-voltage PELV per HD384	electrical isolation of the INTEGRAL system from the adapter electronics.
DC output for power supply to the NK modules and their periphery.	Max. power consumption	1.5 W.
	Output voltage	DC 15 V $\pm$ 10%. Electronically separated from AC 24 V.
Fuses Protection.	Output current	Max. 500 mA.
	All connections for the NK modules	Various NTC. Against short circuit and incorrect wiring using AC/DC 24 V.
Inputs / outputs	Digital	8 DI, 8 DO.
	Universal	32 UI / UO.
Communication to DESIGO.	Island bus (CS, CD, $\perp$ )	Proprietary, short-circuit-proof, electrical isolation.
	Wiring	See TX-I/O engineering and installation manual: CM110562.
	Plug-in screw terminals	Solid or stranded wire 0.25 ... 2.5 mm <sup>2</sup> or 2 x 1.5 mm <sup>2</sup> .
Connection for NK modules.	Ribbon cable.	10 or 20 pin.
	Length	Max. 2 m.
Classifications per EN 60730	Automatic action	Type 1
	Pollution degree	2
	Protection class	III
		(Device also suitable for use in protection class II equipment)
Housing type.	Protection as per EN 60529	IP 20 (when built in NHGB housing).
Ambient conditions	Operation	Class 3K5 as per IEC 60721.
	Temperature	0 ... 50 °C.
	Humidity	< 95 % r.h. (no condensation)
	Transportation	Class 2K3 per IEC 60721.
	Temperature	- 25 ... 70 °C.
	Humidity	< 95 % r.h. (no condensation)

Standards, directives and approvals.

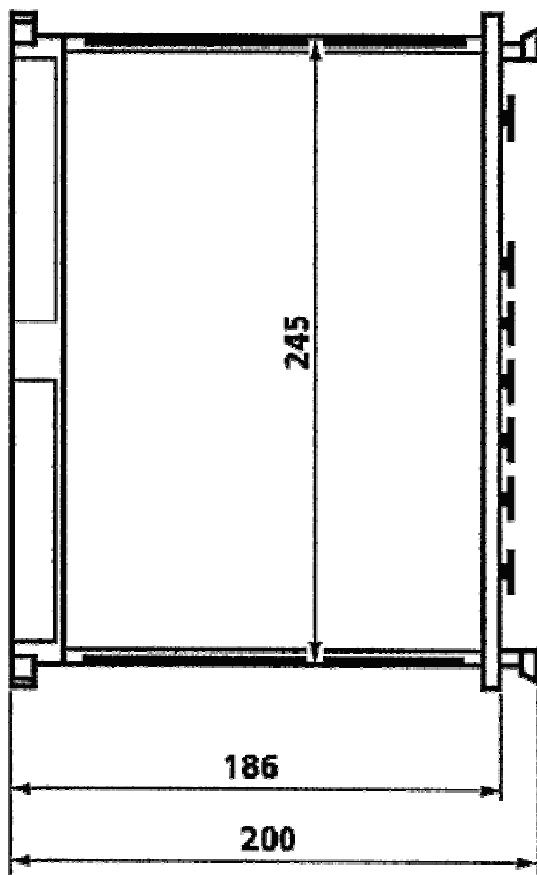
Product standard	Automatic electrical controls devices for household and similar use	EN 60730-1
Electromagnetic compatibility	Immunity	EN 61000-6-2 (industry)
	Emissions	EN 61000-6-3 (residential)
CE conformity	Electromagnetic compatibility	2004/108/EC
C-Tick compliance per Australian EMC Framework Radio Emission Standard		Radio Communications Act 1992AS/NZS 2064

Dimensions  
Weight

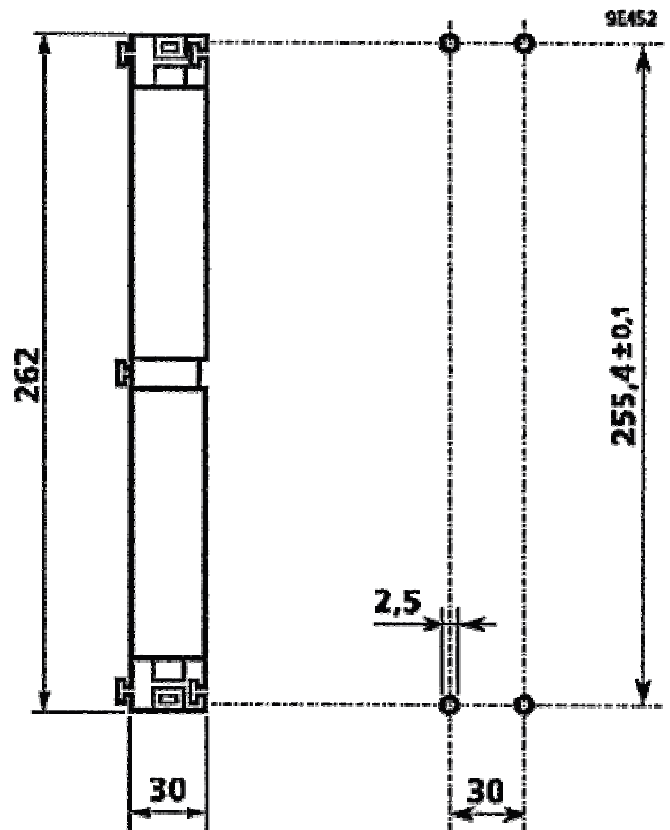
Refer to dimensions	
Unpackaged / packaged	292 / 410 g

### Dimensions

All dimensions in mm



Device dimensions



Drilling diagram for attaching screws.

