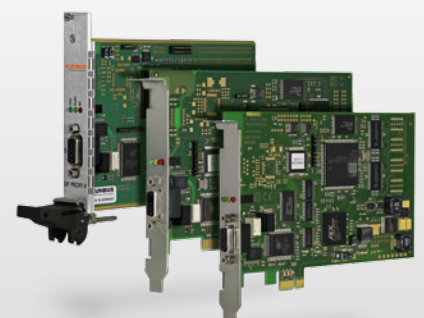


PRODUCT CATALOG

KUNBUS
industrial communication



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INDUSTRIAL PCs

Revolution Pi	4
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EMBEDDED SOLUTIONS

Communication modules KUNBUS-IC	6
Custom design communication modules	8
Evaluation boards for communication modules	9
Protocolscripter	10

REPEATER

PROFIBUS repeater	11
-------------------	----

PC-CARDS

DF PROFINET IO	12
DF PROFI II	14

ANALYSIS TOOLS

TAP CURIOUS	16
TAP 2100	16
NetTEST II	18

SWITCHES

PROFIBUS redundancy switch	20
----------------------------	----

GATEWAYS

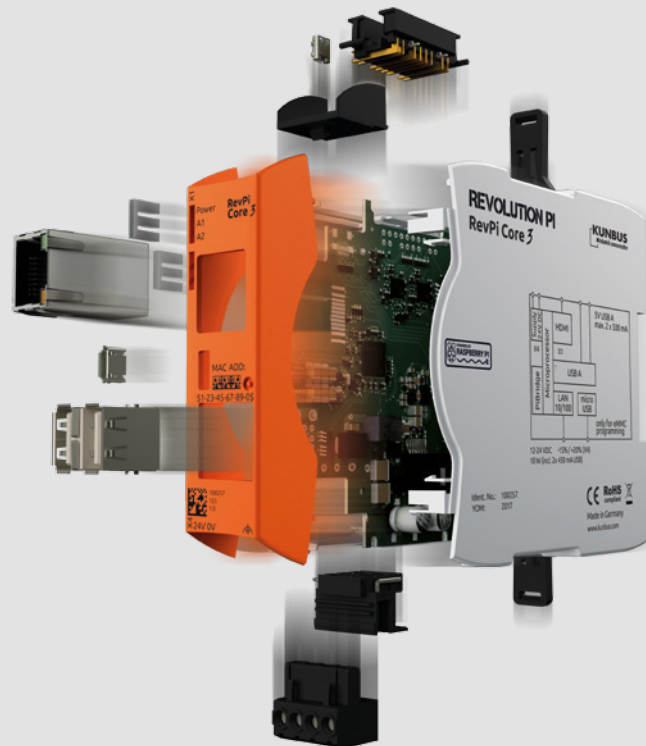
Modular gateways	22
FNL gateway	24
Proxy	36
XPS-E PROFIBUS DP gateway	27

COMPANY

About us	28
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INDUSTRIAL PC

REVOLUTION PI - OPEN SOURCE IPC



Revolution Pi is an open, modular and inexpensive industrial PC based on the established Raspberry Pi. Equipped with Raspberry Pi Compute Module, the base modules can, depending on requirements, be expanded seamlessly using appropriate I/O modules and fieldbus gateways.

Two versions of the base module are available: The RevPi Core 3 called high-end version is equipped with a quad-core processor with 1.2 GHz and 1 GByte RAM. The entry-level version is equipped with a single core processor with 700 MHz and 500 MByte RAM. Both versions already have USB, Ethernet and HDMI connections. The base modules and expansion modules are supplied with 24 volts.

In addition to revealing the circuit diagrams, the open-source concept within the software is rigorously pursuing. The established Raspbian operating system from Raspberry Pi, including the drivers for the expansion modules, are preinstalled. Using Raspbian ensures that basically any software or application running on Raspberry Pi will also run on Revolution Pi. Full root access allows obstacle-free programming and implementation of customised programs.

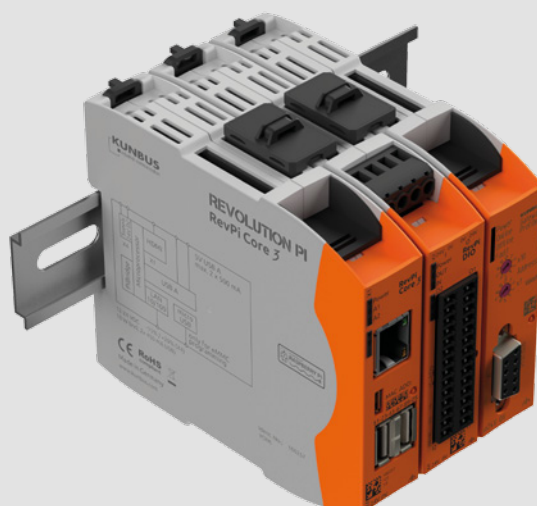
By cooperating with various software manufacturers, inexpensive and powerful control and SCADA software for users preferring off-the-peg software solutions are provided. As a result, Revolution Pi can be developed into an industrially viable small control system.

KEY FEATURES

- › Open Source IPC based on Raspberry Pi Compute Module
- › Modular design
- › Fitting I/O modules & gateway modules available
- › Compliance with industrial standard EN 61131-2
- › DIN rail mount

One aim is to provide a tool with Revolution Pi enabling companies to offer new sales opportunities, such as for example cloud services. Revolution Pi enables the development of business models and services that open up new markets. Value added chains of companies using Revolution Pi can be shifted significantly.

An online forum networks Revolution Pi developers and users from all over the world. Problems, solutions and suggestions for improvements can therefore be exchanged quickly, openly and easily.



SPECIFICATIONS REVPI CORE 3

Processor	Broadcom BCM2837
Number of cores	4
Clock rate	1.2 GHz
RAM	1 GByte
eMMC flash memory	4 GByte

SPECIFICATIONS REVPI CORE

Processor	Broadcom BCM2835
Number of cores	1
Clock rate	700 MHz
RAM	500 MByte
eMMC flash memory	4 GByte

FURTHER SPECIFICATIONS (VALID FOR BOTH VERSIONS)

Power supply	min. 10.7 V - max. 28.8 V	Protection class	IP20
Max. power consumption	10 Watt	ESD protection	4 kV/8 kV (according to EN 61131-2 & IEC 61000-6-2)
Communication connections	2 x USB 2.0 A 1 x micro USB 1 x micro HDMI 1 x RJ45	EMI tests	Passed (according to EN 61131-2 & IEC 61000-6-2)
Size (L x W x H)	approx. 110.5 x 22.5 x 96 mm	Surge / Burst tests	Passed (according to EN 61131-2 & IEC 61000-6-2 using power supply, Ethernet line & IO lines)
Operating temperature	-40 °C to 55 °C		
Storage temperature	-40 °C to 85 °C		
Humidity (40 °C)	93 % (non-condensing)		

For more information and technical details, visit revolution.kunbus.com

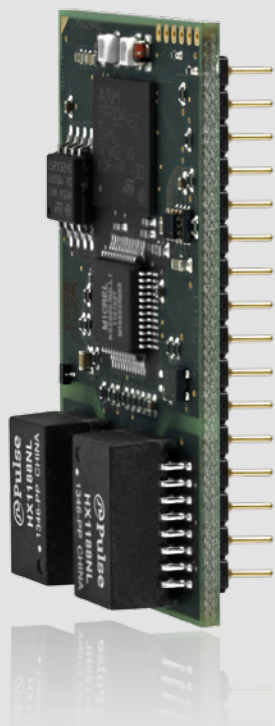
ARTICLE

ARTICLE NO.

RevPi Core 3	100257
RevPi Core	100102
RevPi DIO (digital I/O module with 14 inputs & 14 outputs)	100197
RevPi DI (digital input module with 16 inputs)	100195
RevPi DO (digital output module with 16 outputs)	100196
RevPi AIO (analog I/O module with 4 inputs, 2 outputs and 2 RTD channels)	100250

EMBEDDED SOLUTIONS

DIL-32 MODULE KUNBUS-IC



SPECIFICATIONS

Power supply	3.3 V
Application connector	DIL-32
Application interface	SSC shift register SPI slave mode UART (Modbus RTU)
Debug interface (CDI)	UART
Size (L x W x H)	approx. 25 x 45 x 15 mm
Weight	approx. 10 g
Mechanical shock load	15 G
Permanent mechanical stress	5 G
Operating temperature	0 °C to 60 °C optional: -25 °C to 65 °C
Storage temperature	-30 °C to 85 °C
Humidity (40 °C)	up to 95 % (non-condensing)
Galvanic isolation	up to 1.5 kV

KEY FEATURES

- › Certified slave modules
- › Low power consumption
- › Interchangeable interfaces supporting all major industrial networks
- › Freely configurable via a terminal and Modbus RTU
- › Customized versions available
- › RoHS compliance
- › Optional: Protocolscriter
- › 5 Volt version upon request

The use of KUNBUS-IC modules makes it possible to connect your device quickly and easily to an industrial network. Thanks to its compact size, the KUNBUS-IC is perfectly suitable especially for small devices or for devices with little space for the communication interface.

The KUNBUS-IC modules allow your device to be integrated into a corresponding network without major development effort. This saves money and especially time when introducing the product.

In addition to the fieldbus or industrial Ethernet interface, the KUNBUS-IC modules also include a plug-in connector as an interface to your controller.

Thanks to a universal pin assignment, any of the fieldbuses we offer can be replaced simply and quickly.

Our KUNBUS-IC modules contain all components required, such as bus drivers, optocouplers, transducers, microcontrollers as well as the required memory and bus chips.

Our KUNBUS-IC modules are certified, 100% tested and have already proven their reliability even in the safety field.

The microcontroller is the core element around which the interface to the fieldbus, the connection to the controller, the power supply and the optocoupler for the galvanic isolation are grouped.

The KUNBUS-IC module will be connected to your controller's processor via a UART interface. The shift register interface is used for devices without processors. Up to 32 byte output and input signals can be processed. The signals can be arbitrarily distributed across the input and output register (e.g. 5 x input and 27 x output).

A second serial interface allows the connection of a terminal and serves, for example, as a configuration and debug interface. As can be seen in the graphic, the interfaces to the controller and the fieldbus area are galvanically isolated from one another up to 1.5 kV.

The KUNBUS-IC modules work completely independently from the controller and therefore do not burden its processor.

PRODUCT OVERVIEW KUNBUS-IC SLAVE

PROTOCOL	POWER SUPPLY	PORTS	OTHER	ARTICLE NO.
PROFINET IRT	3.3 V	2	without transmitter	100048
EtherNet/IP	3.3 V	2	with transmitter	100061
EtherNet/IP	3.3 V	2	without transmitter	100081
EtherCAT	3.3 V	2	with transmitter	100035
EtherCAT	3.3 V	2	without transmitter	100084
Modbus TCP	3.3 V	2	with transmitter	100060
Modbus TCP	3.3 V	2	without transmitter	100080
PROFIBUS	3.3 V	1	with transmitter	100037
DeviceNet	3.3 V	1	with transmitter	100059
CC-Link	3.3 V	1	with transmitter	100082
CANopen	3.3 V	1	with transmitter	100058
Modbus RTU / Serial	3.3 V	1	with transmitter	100057

AVAILABLE VERSIONS



EMBEDDED SOLUTIONS

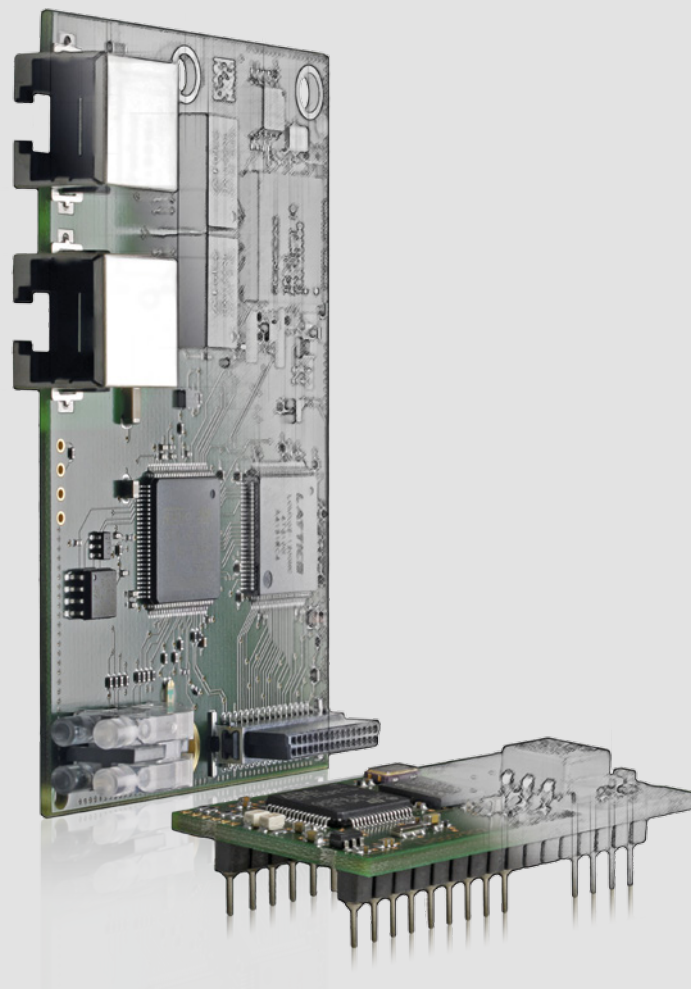
CUSTOM DESIGN

TAILOR-MADE SOLUTIONS

One of our core competencies is the development and production of customized communication modules. We develop tailor-made communication modules for you that are customized to your needs, for example in terms of form factor or communication interfaces..

OUR SERVICES AT A GLANCE

- › Complete circuit development
- › Layout of the communication module
- › Integration of our bus systems into your controller/design
- › Customer-specific interface to the controller
- › Integration of the desired fieldbus or Ethernet module
- › Certification
- › Development of software and hardware
- › Purchase and procurement of components and housings
- › Production of the complete assembly
- › Customer-specific box-building
- › Test field (EMC)
- › Labels, identifiers, laser inscriptions
- › Complete logistics and storage



AVAILABLE VERSIONS



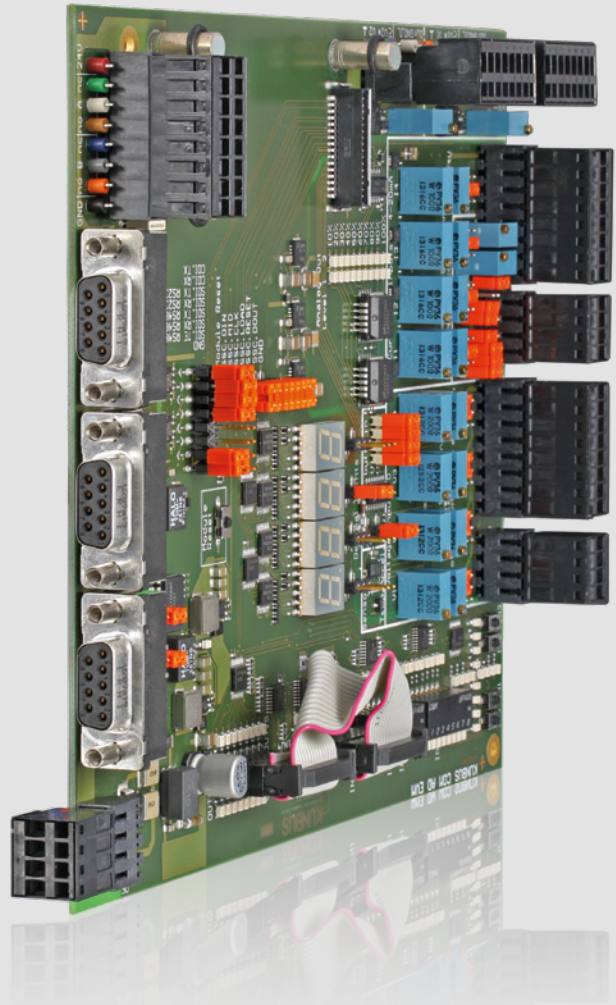
EMBEDDED SOLUTIONS

EVALUATION BOARDS

Our developer kits ensure a simple introduction to the integration of our modules. This allows our embedded modules to be tested perfectly with your controller and development environment. All interfaces required are integrated on the evaluation boards.

The connection with the individual bus modules is established by simple placement on a zero-force socket.

Of course we are happy to advise and support you personally in the selection and implementation of our embedded modules and during deployment of subsequent versions of our development kit.



ARTICLE

ARTICLE NO.

Evalboard for all Ethernet-KUNBUS-IC modules

100079

Evalboard for all fieldbus KUNBUS-IC modules except Modbus RTU / Serial

100078

Evalboard for KUNBUS-IC modules Modbus RTU / Serial

100064

With the KUNBUS-Scripter we created a convenient configuration tool for all KUNBUS-IC and KUNBUS-COM modules. The scripter consists of two part blocks:

SCRIPT-INTERPRETER

The script-interpreter enables the simple exchange of useful data via a serial interface in any protocol. The script commands allow data to be read from the fieldbus registers and assembled into a protocol-specific telegram. These telegrams can then be used by the sensor or actuator. Special commands allow checksums to be calculated and attached as data telegrams. The data is extracted from the response telegrams, stored in the corresponding registers and transferred to the fieldbus.

PROTOCOLBUILDER

The protocolbuilder allows straightforward issuing of a script which consists of the following main software modules:

PROTOCOLBUILDER SCRIPT WIZARD

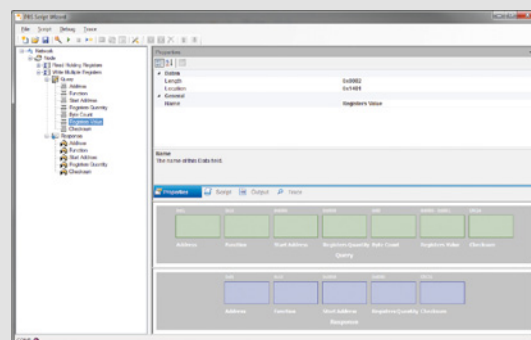
In the Script Wizard, communication sequences can be created using tables, without programming knowledge. We make predefined templates available for Query-Response sequences for various protocols. You can also create your own templates. It is easy to generate the script from the templates and load it into the module. The graphical representation of the trace function (error log) makes it convenient to check whether the script functions as expected.

PROTOCOLBUILDER EDITOR

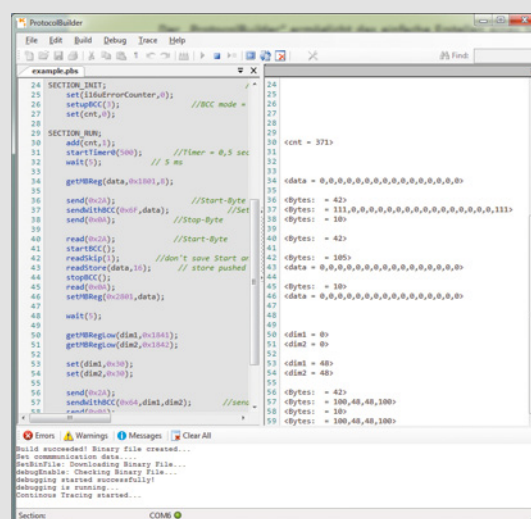
The editor is a text editor with syntax highlighting and auto-completion. The entire available command set can be used here. With the integrated compiler the script is translated at the press of a button and transferred to the module.

PROTOCOLBUILDER TRACE

The KUNBUS-Scripter has an additional trace mode for error search. In this mode the variable values are continuously loaded from the module and shown in a second column alongside the script source. This allows the script execution sequence to be tracked in order to find errors.



Screenshot ProtocolBuilder Script Wizard



Screenshot ProtocolBuilder Editor

REPEATER

PROFIBUS 4-PORT RS-485 REPEATER



The PROFIBUS Repeater is 100% plug and play and can be used in every RS-485 based PROFIBUS network (FMS, MPI or DP). The Repeater is suitable for DIN rail mounting and supports all common transmission speeds from 9.6 Kbit/s up to 12 Mbit/s.

The brand new signal regeneration concept no longer requires DIP switches and error LEDs, normally a must in combination with conventional repeater concepts for a safe operation. The PROFIBUS Repeater is immediately operational after switching on the power supply and requires no baud rate detecting synchronisation phase.

SPECIFICATIONS

Power supply	24 VDC
Transmission speed	9.6 Kbit/s to 12 Mbit/s
PROFIBUS segments	4
Interfaces	4 x 9 pole SUB-D
Indicators	LED (green)

HIGHLIGHTS

- › Works in every RS-485 based PROFIBUS network (FMS, MPI or DP)
- › Implementation of PROFIBUS segments in star-shaped design
- › Trouble-free bus extension in combination with every baud rate
- › Trouble-free implementation of branches
- › Transparent, delay free PROFIBUS communication
- › No baud rate detection
- › Plug-and-play operation without configuration
- › Green LED to indicate PROFIBUS activity

ARTICLE

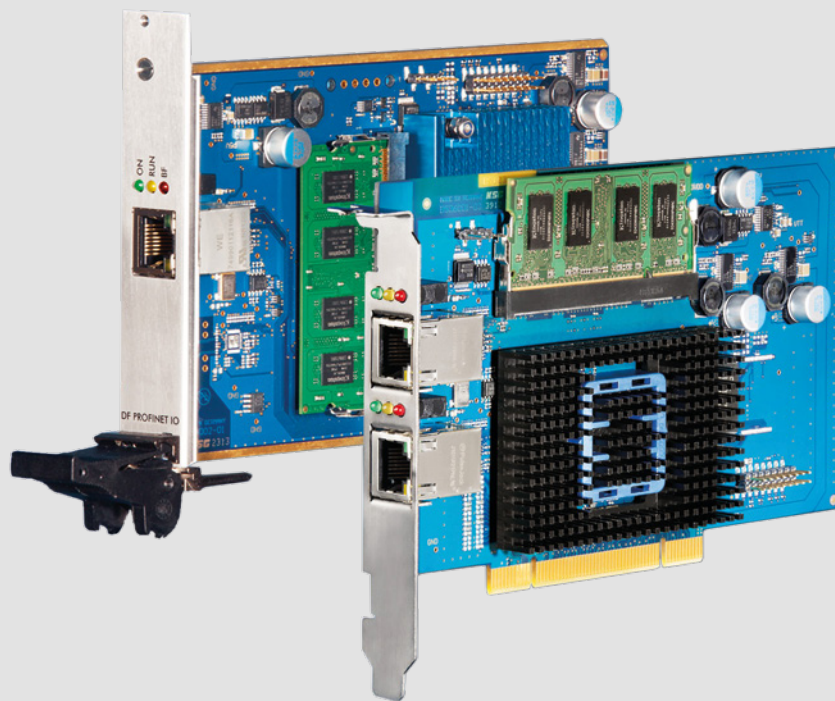
PROFIBUS Repeater

ARTICLE NO.

100193

PC-CARDS

DF PROFINET IO



HIGHLIGHTS

- › 8 Kbyte input and 8 Kbyte output data
- › Failsafe flash type memory
- › Supports PROFINET supervisor functionality
- › Comfortable and full graphical configuration tool
- › Drivers for all current operating systems available
- › Add-on software: LabVIEW PROFINET VISA driver, OPC UA server is planned for a later release date

PROFINET is the industrial Ethernet standard from PI (PROFIBUS & PROFINET International) which has become the market-leading standard over the last five years. Excellent plant-wide networking, fast data communication and long-term availability are just a few of the many benefits.

DF PROFINET IO, the newest in our company's line of pc-cards, is a high performance PN IO controller/device board in PCI, CompactPCI and PCI-Express format. With this new improvement it is now possible, for the first time, to operate large networks without any performance restriction.

SPECIFICATIONS

Available types	PCI, CPCI PCIe (coming soon)
Operation mode	PN IO controller PN IO device
Performance class	Class B (≥ 1 ms)
Ethernet interface	RJ45 100 BASE-TX

The DF PROFINET IO board operates as a PN IO controller and/or as PROFINET IO device. Because its efficiency is so huge the new board achieves as PN IO controller operations of 64 PROFINET devices per millisecond in the performance class RT. A second independent Ethernet interface is optionally available, so the board can therefore operate as PROFINET IO device at the same time. A stand-alone operation, such as PN IO device is also possible. In PN IO controller mode, among the cyclic data traffic, all acyclic

read/write/diagnosis and alarm functions are supported and of course compatible to the PN IO standard of PROFIBUS & PROFINET International. The size of the process image of the card's I/O data is 16 Kbyte (8 Kbyte input and 8 Kbyte output data). The PROFINET configuration data is stored in a failsafe flash type memory. The controller board also supports PROFINET supervisor functionality, making it possible to scan the network as well as to control the names and IP addresses of various PROFINET devices. The CONFIGURATOR III is available for compilation and download of the PROFINET configuration. The comfortable and fully graphical tool minimises the configuration effort, while extensive download, analysis and control functions permit an efficient checkup of the configured PROFINET IO network.

In PN IO device mode the min. cycle time is 1 millisecond with a max. IO data size of 1440 bytes. The board does not need to be configured but instead receives the IO configuration directly from the PN IO controller, which significantly simplifies putting it into service. A special feature supported by the

board is the PN IO shared device mode, which allows multiple PN IO controllers (up to 20) to access allocated IO buffers within the device simultaneously. This allows a very flexible integration also into large and complex PN IO networks. The operation modes PN IO controller and PN IO device can be run simultaneously.

Drivers for all current operating systems are also available and an OPC UA server is planned for a later release date. A LabVIEW PROFINET VISA driver is already available.

LabVIEW PROFINET VISA Driver

The LabVIEW PROFINET VISA driver equips National Instruments' LabVIEW with a real-time PROFINET IO connection. The installation in a classical PC system under LabVIEW for Windows is just as likely as in a real-time PXI system under LabVIEW RT, for example as a high performance PAC system for time-critical test applications or industrial automation applications.

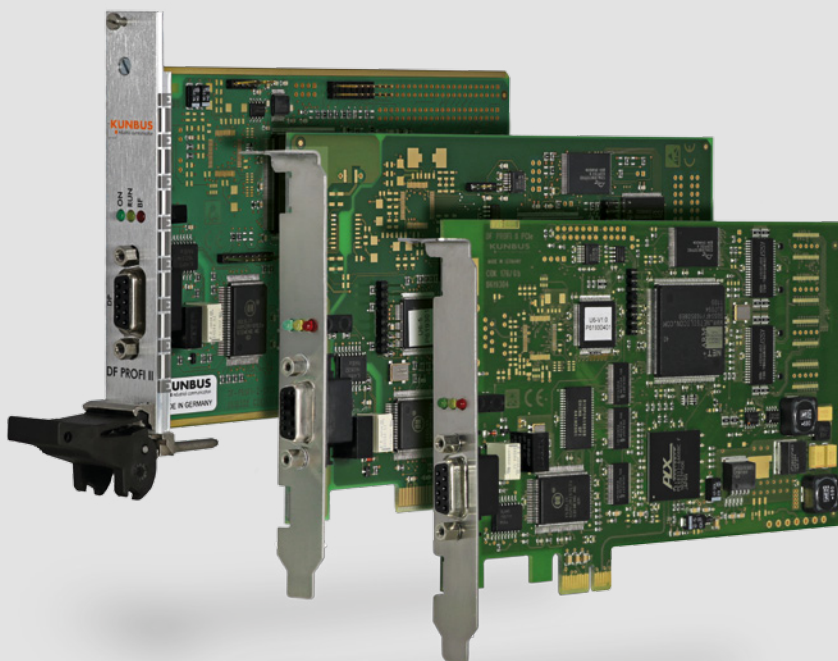
ARTICLE

ARTICLE NO.

DF PROFINET IO PCI with Windows XP/7 driver	100187
DF PROFINET IO PCI with Linux driver	100188
DF PROFINET IO PCI with LabVIEW PROFINET VISA driver for Windows XP/7 and LabVIEW RT	100189
DF PROFINET IO CPCI with Windows XP/7 driver	100190
DF PROFINET IO CPCI with Linux driver	100191
DF PROFINET IO CPCI with LabVIEW PROFINET VISA driver for Windows XP/7 and LabVIEW RT	100192

PC-CARDS

DF PROFI II



SPECIFICATIONS

Available types	PCIe, PCI, CPCI
Operation mode	DPV0 Master Class 1 DPV1 Master Class 2 & DPV0 Slave
Interfaces	RJ45 (optional) PROFIBUS RS485 (DB9)
Baud rates	Ethernet: max. 100 Mbit/s PB RS485: max. 12 Mbit/s
Hardware	Host-CPU: NET+ARM 40 (33 MHz) PB-Chip: ASPC 2 (48 MHz) RAM: Static 2 Mbyte; Flash Memory 1 Mbyte PCI-Interface: PLX, PCI-X - compa- tible (for 5 V and 3.3 V PCI-Slots)
Layer 2 services	Live List
DP services	DPV0 Master Class 1 DP-Slave
DP/DPV1 services	DPV1 Master Class 2 MSAC2_initiate, MSAC2_read, MSAC2_write, MSAC2_data_trans- port, MSAC2_abort
Size of process image	Max. 8 Kbytes

DF PROFI II operates as DP Master or DP Slave. Additionally to the standard PROFIBUS DP/DPV1 services the board provides a watchdog function with physical PROFIBUS line disconnection for Master class 1 redundancy concepts. If the operational PC system fails, a seamless switch over to a redundant standby system is possible.

The process data image additionally provides a millisecond based relative time stamp value. The PROFIBUS configuration data is stored in a failsafe Flash Type Memory.

The CONFIGURATOR II is available for compilation and download of the PROFIBUS configuration. The comfortable and full graphical tool minimises the configuration effort. Extensive download, analysis and control functions permit an efficient check up of the configured PROFIBUS DP network. The compiled configuration is stored in XML format. This allows an easy integration into third party applications.

Drivers for all current operating systems are available for the DF PROFI II board. Additional packages, such as OPC server, LabVIEW PROFIBUS VISA driver or FDT 1.2 COM DTM significantly extend the board's field of application

ARTICLE	ARTICLE NO.
DF PROFI II PCI with DP/DPV1 protocol driver & Linux driver	100116
DF PROFI II PCI with DP/DPV1 protocol driver & Win XP/7 driver	100117
DF PROFI II PCI with DP/DPV1 protocol driver & LabVIEW PROFIBUS VISA driver for Win XP/7 and LabVIEW RT	100118
DF PROFI II PCIe with DP/DPV1 protocol driver & Linux driver	100120
DF PROFI II PCIe with DP/DPV1 protocol driver & Win XP/7 driver	100121
DF PROFI II PCIe with DP/DPV1 protocol driver & LabVIEW PROFIBUS VISA driver for Win XP/7 and LabVIEW RT	100122
DF PROFI II CPCI with DP/DPV1 protocol driver & Linux driver	100109
DF PROFI II CPCI with DP/DPV1 protocol driver & Win XP/7 driver	100110
DF PROFI II CPCI with DP/DPV1 protocol driver & LabVIEW PROFIBUS VISA driver for Win XP/7 and LabVIEW RT	100111

ADDITIONAL PACKAGES	ARTICLE NO.
PROFIBUS DP/DPV1 OPC server redundant for Win XP/7, configurator and client	100208
FDT-1.2 Communication DTM	100234

ANALYSIS TOOLS

TAP CURIOUS & TAP 2100



AREA OF USE

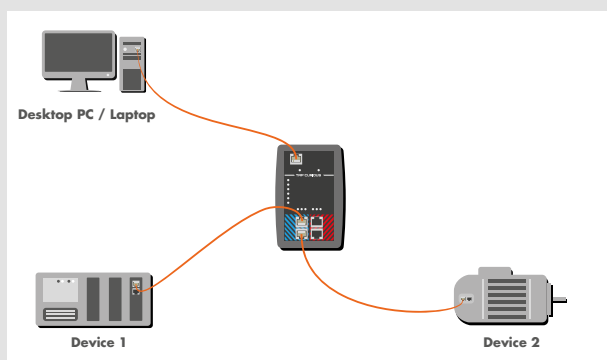
- › Test Access Point
- › Analysis of CRC errors
- › Comparison of In and Out frames
- › Measurement of Jitter and Delay

TAP 2100 and TAP CURIOUS are mobile devices designed to analyse all popular real time ethernet networks to the market. The devices can monitor up to two independent ethernet channels simultaneously in full duplex operation. Thanks to the completely passive listening operation, there are zero delays and data communication in the network is not influenced.

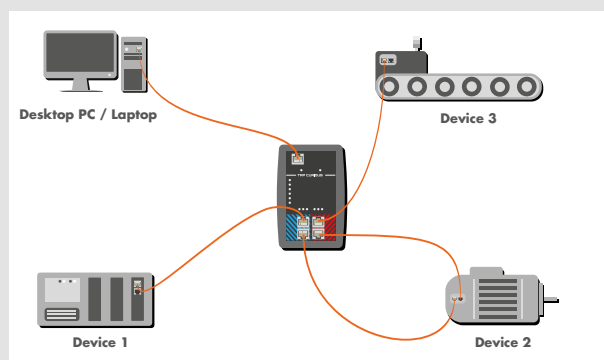
The tapped data from the network is furnished with a 20-byte long trailer (including the time-stamp) and relayed via the existent uplink port to a PC or laptop for further analysis. The reading and evaluation of the measured package data is done via the freely available Wireshark software. A plugin is available for a trouble-free software integration.

As a result of their compact and durable plastic housing, the devices are not only suitable for work in laboratories but also for daily use in the field.

In addition to the recording of faulty telegrams in the network by which TAPs are installed between two devices (see Example A), TAPs can also be used to specifically analyse data streams of a device to be found in the network (see Example B). In doing so, TAPs record the frames directly before and directly after the device to be analysed. This enables the measurement of, amongst other things, the delay and jitter of the device and whether, for example, the device swallows or falsifies respectively telegrams.



Application example A



Application example B

EXCLUSIVE FEATURES TAP CURIOUS

TAP CURIOUS comes with following additional features:

Filter functions

TAP CURIOUS comes equipped with a wide range of filter functions that assist the specific search for specific values and therefore significantly reduce the amount of data to be analysed. Faults occurring in the network can thus be found quicker and eliminated. TAP CURIOUS filter functions can be configured easily and quickly via the graphic, browser-based user-interface of the TAP CURIOUS.

Trigger functions

By means of the available digital in and output, it is possible to trigger particular network conditions; ideal for specifically narrowing down sporadically appearing faults and then

finding and rectifying them. In addition to the digital output, there are also five freely configurable LEDs available to indicate optically, for example, the occurrence of a faulty transmission on the device. The digital input for example ensures that recording can be started at any point in time.

100 Mbit/s and 10 Mbit/s mode

TAP CURIOUS can be operated in 100 Mbit/s and 10 Mbit/s mode. The mode can easily be switched via the configuration menu.

SPECIFICATIONS (VALID FOR BOTH VERSIONS)

Number of ports/channels	4/2
Probe-Ports	100 / 10 Mbit/s
Uplink-Port	1 Gbit/s
Delay	0 μ s (zero delay)
Resolution timestamp	1 ns
Power supply	24 VDC / 230 VAC

Size	approx. 92 x 140 x 28 mm (TAP CURIOUS) approx. 100 x 150 x 40 mm (TAP 2100)
Weight	approx. 150 g
Protection class	IP20
CE certified	Yes
EMV-compatible	Yes

ARTICLE

ARTICLE NO.

TAP CURIOUS	100240
TAP 2100 (100 Mbit/s version)	100020
TAP 2010 (10 Mbit/s version)	100055

ANALYSIS TOOLS

NETTEST II - TESTTOOL FOR PROFIBUS DP



SPECIFICATIONS

Power supply	Battery pack 4.8 V / 1.500 mAh
Connections	PBRS485 (DB9 socket connector) RS232 (DB9 socket connector)
Size (LxWxH)	approx. 230 x 98 x 53 mm

NetTEST II is an essential must-have analysis and test tool for the successful operation, maintenance and service of any PROFIBUS DP network.

Already the basic system for detecting installation errors sets a new standard in the field of analysis and test tools. With the DP Master functionality NetTEST II becomes an outstanding tool for the mobile commissioning of DP Slaves. The entire PROFIBUS network can be lined up without using a PLC. Equipped with the online functionality NetTEST II also detects sporadic errors in running systems.

The automatic generation and filing of detailed test records fulfills all requirements of state-of-the-art quality management systems.

HIGHLIGHTS

- › Easy-to-use hand-held tool
- › Detection of installation errors, short circuits, line or shielding interruptions (even on the very end of the cable)
- › Measurement of cycle time, signal levels, telegram repetitions and error telegrams, automatic baud rate scan, generation of bus statistics, detection of sporadically failing DP Slaves
- › Detailed test record (up to 20 test reports can be stored and printed on a standard PC without any additional software)
- › Generation of a check sum to control if the test report is manipulated
- › DP Mono Master functionality: The I/O data of the connected DP Slaves can be visualised and modified without PLC
- › Online functionality: live list, signal level measurement, Cycle time of the DP network, level display of each DP Slave, event triggering in the DP network

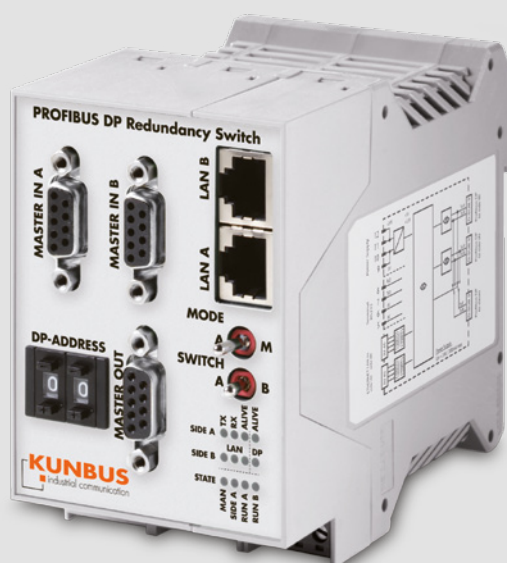
ARTICLE	ARTICLE NO.
NetTEST II Complete Package NetTEST II Basic System + DP-Mono-Master + Online Functionality in service case, incl. 2 batteries, international battery charger, power supply adapter, RS232-cable, PROFIBUS stub line, PROFIBUS T-connector, bus disconnecter, 3 gender changers, PROFIBUS configurator, user manual	100140
NetTEST II DB-Mono-Master Option Upgrade for existing devices*	100231
NetTEST II Online Option Upgrade for existing devices*	100232
NetTEST II DB-Mono-Master & Online Option Upgrade for existing devices*	100233

**Upgrade up to hardware revision 03 on request.*

ADDITIONAL EQUIPMENT / SERVICES	ARTICLE NO.
PROFIBUS T-connector type A	100144
Line termination cable type A	100145
PROFIBUS stub line (0,15 m) type A	100146
RS232-cable for NetTEST II	100150
Gender changer DB 9, male-male 1:1	100213
Gender changer DB 9, female-female 1:1	100214
Gender changer DB 9, male-female 1:1	100215
PROFIBUS bus disconnecter	100147
Power supply adapter	100142
Battery charger shell	100135
Plug for battery charger	100136
Extra battery for NetTEST II	100125
Branch line for terminal clamp	100159
NetTEST II calibration	100216
NetTEST II software / firmware update (V3.20)	100217

MASTER REDUNDANCY SWITCH

KUNBUS-PRS



In times of just in time production as well as increased safety requirements plants have to imply redundancy. In case of failure of the operational system the complete control function must be taken over by a stand-by system. The optimal solution is PRS - PROFIBUS Redundancy Switch.

The solution for a safe PROFIBUS DP Master redundancy concept, it provides switching over of the PROFIBUS line between two identical DP Masters. This avoids any galvanic contact between the DP Masters, they can therefore be configured with identical PROFIBUS addresses, making Multi Master mode unnecessary and excludes double address conflict.

PRS is a compact 24 V DIN rail module containing the switching logic as well as an intelligent double DP Slave.

The device allows the connection of two DP Masters and the PROFIBUS connection to the DP Slaves. The switch controls the status of the operational DP Master system on the PROFIBUS protocol and application level. In case of failure of the operational Master the device physically switches over to the stand-by Master, which seamlessly takes over the DP Slaves.

SPECIFICATIONS

Baud rates	Ethernet: max. 100 Mbit/s PB RS485: max. 12 Mbit/s RS232: 57.6 Kbit/s
Interfaces	Ethernet: 2 x 10/100 BaseT PROFIBUS: 3 x RS485 (DB9) Serial: RS232 (screw terminal)
PROFIBUS protocols	DPV0, DP-Slave

HIGHLIGHTS

- › A double address conflict cannot occur, even if the failed DP Master is still active on the PROFIBUS level
- › Realisation of very complex redundancy systems, i.e. in connection with PROFIBUS OPC servers or overlying Ethernet based cell networks
- › PRS can be controlled via both integrated Ethernet connections if direct control via the PROFIBUS is not possible
- › There is no single point of failure with the PRS as the Master to Slave communication would continue without interruption if the device does develop a fault

In contrast to the established Flying Master principle a double address conflict cannot occur with PRS, even if the failed DP Master is still active on the PROFIBUS level.

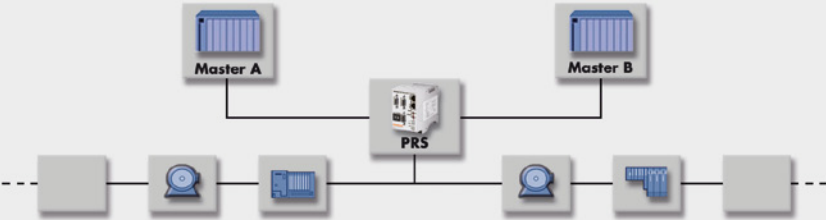
Furthermore, many DP Master implementations on the market do not support the Flying Master principle. As both DP Masters are prevented from being connected to the bus at the same time, the device avoids all disadvantages of current redundancy concepts.

PRS provides the DP Master systems with important information about the redundancy operation, i.e. the alive state of the complementary system. It also allows the execution of a switch-over command.

The device can be used in very complex redundancy systems, i.e. in connection with PROFIBUS OPC servers or overlying Ethernet based cell networks.

Furthermore, PRS can be controlled via both integrated Ethernet connections if direct control via the PROFIBUS is not possible.

There is no single point of failure with PRS because if the device does develop a fault the Master to Slave communication would continue without interrupted.



Schematic diagram of a common PRS network installation

ARTICLE

PRS - PROFIBUS Redundancy Switch

ARTICLE NO.

100149

ADDITIONAL EQUIPMENT

ARTICLE NO.

Serial cable set	100151
Ethernet cross-over cable	100126
Power supply 24 V / 1.3 A with 100 - 240 V power boost for up to 2 SNL2-E / FNL / PRS	100161
Power supply 24 V / 2 A with 100 - 240 V power boost for up to 5 SNL2-E / FNL / PRS	100160

GATEWAYS

MODULAR GATEWAYS



The KUNBUS-GW gateways allow different industrial networks to be interconnected quickly and inexpensively.

The KUNBUS-GW gateways consist of two modules each, which contain the respective protocol and are fitted with a common interface for the data exchange. Each module is integrated into the respective network as a slave. The data is exchanged via a jumper that connects both modules.

The compact plastic housing of the modules have IP20 protection class and are installed next to each other on a DIN rail (EN50022). The modules are supplied with an operating voltage of 24 Volt whereby the power consumption is less than 3 Watt.

The modular design enables the KUNBUS-GW gateway to be used highly flexibly. Whereas conventional gateways have to be replaced completely in the event of a technical malfunction, with the KUNBUS-GW gateways it is sufficient to replace the defective module only.

Apart from the resultant cost benefit from the module design, this approach offers another key benefit: The decision for or against a certain network only has to be made just before delivery. Consequently, it is possible to react better to any special and recent changes in requirements which have occurred.

SPECIFICATIONS

Power supply	24 VDC (-15/+20%)
Max. power	< 3 Watt
Current consumption	100 mA
Cycle time between modules	1.2 ms
Size (W x H x D)	approx. 22 x 101 x 115 mm
Weight	approx. 90 g
Protection class	IP20
Operating temperature	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C
Humidity (40 °C)	up to 95 % (non-condensing)
Casing material	Polycarbonate
Galvanic isolation	Yes
Mounting	DIN rail (EN50022)

PRODUCT OVERVIEW KUNBUS-GW

PROTOCOL	VERSION	BUS CONNECTOR	MAX. BAUD RATE	I/O DATA	ARTICLE NO.
PROFINET IRT	Slave	2 x RJ45	100 Mbit/s	512 Byte IN/OUT	100074
EtherNet/IP	Slave	2 x RJ45	100 Mbit/s	max. 480 Bytes IN/OUT	100066
POWERLINK	Slave	2 x RJ45	100 Mbit/s	512 Byte IN/OUT	100076
EtherCAT	Slave	2 x RJ45	100 Mbit/s	512 Bytes IN/OUT	100073
SERCOS III	Slave	2 x RJ45	100 Mbit/s	250 Bytes IN/OUT	100075
Modbus TCP	Slave	2 x RJ45	10/100 Mbit/s	480 Bytes IN/OUT	100088
PROFIBUS	Slave	D-SUB 9F	up to 12 Mbit/s	max. 488 Bytes (244 IN & 244 OUT)	100069
DeviceNet	Slave	Connector 5 pole; pitch 5.08	up to 500 Kbit/s	512 Bytes IN/OUT	100071
CANopen	Slave	D-SUB 9M	up to 1 Mbit/s	512 Bytes IN/OUT	100070
Modbus RTU	Slave	Connector 8 pole; pitch 3.50	up to 115,2 Kbit/s	512 Byte IN/OUT	100090
Serial	Slave	Connector 8 pole; pitch 3.50	up to 115,2 Kbit/s	512 Byte IN/OUT	100068
DMX	Master/ Slave	Connector 8 pole; pitch 3.50	250 Kbit/s	512 Byte IN/OUT	100237

AVAILABLE VERSIONS

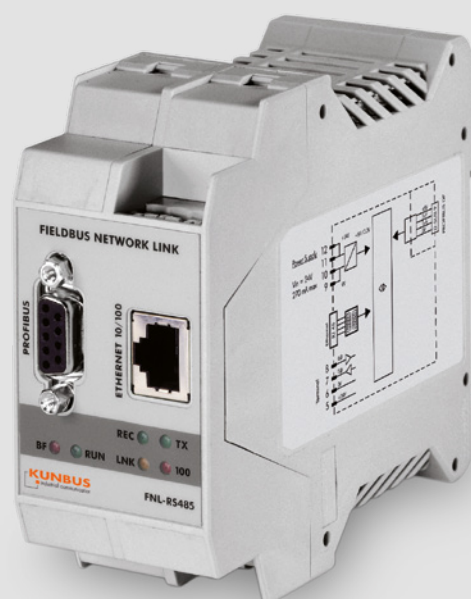


GATEWAYS

FNL GATEWAY PROFIBUS & ETHERNET

The compact 24 Volt DIN rail module allows the connection to all PROFIBUS DP networks based on RS485 (up to 12 Mbit/s) and supports DP Master class 1 and 2 on the basis of DP and DPV1 services as well as DP Slave. The access to FNL is carried out through a TCP/IP socket interface. The interface is independent of operating system, completely unfolded and convincing because of its quickness.

The Ethernet based operation mode as Modbus TCP/IP Slave provides easy integration of FNL as PROFIBUS DP Master into a large number of visualisation and control systems. The PROFIBUS DP based diagnostic and IO data are dynamically compiled into the Modbus TCP/IP structure and do not have to be configured separately.



HIGHLIGHTS

- › Network Configurator (CNC) for the integration of FNL in your network
- › PROFIBUS configuration tool CONFIGURATOR II with extensive download, analysis and control functions
- › Programming interface: The TCP/IP socket interface provides transparent exchange of the DP Slaves' process and diagnostic data as well as all DP/DPV1 Master class 1/2 and DP Slave services
- › No more hardware/driver installation with its typical related problems
- › Access to the respective fieldbus from any arbitrary network PC
- › Up-to-date technologies, like internet, e-mail etc. can be used in the process control level
- › Add-on software: OPC Server, FDT 1.2 Communication DTM, LabVIEW Driver for FNL

SPECIFICATIONS

Power supply	24 VDC
Interfaces	Ethernet: 10/100 BaseT PROFIBUS: RS485 (DB9) Service Interface: RS232
Baud rates	Ethernet: max. 100 Mbit/s PB RS485: max. 12 Mbit/s RS232: 57.6 Kbit/s
PB protocol versions	DP/DPV1 Master Class 1/2 & DP-Slave
Ethernet protocol versions	TCP/IP Socket Modbus TCP/IP Slave

ARTICLE	ARTICLE NO.
FNL Hardware with Firmware	
PROFIBUS DP/DPV1 Master Ethernet/Modbus TCP, max. 12 Mbit/s	100130
PROFIBUS DP/DPV1 Master Ethernet/Modbus TCP, incl. FDT-1.2 communication DTM	100128
PC-Software Interfaces for FNL	
PROFIBUS DP/DPV1 OPC server for Win XP/7 (incl. KUNBUS Network Configurator & Configurator II)	100207
LabVIEW driver for FNL	100224
FDT-1.2 communication DTM for FNL	100235

ADDITIONAL EQUIPMENT	ARTICLE NO.
T-connector cable type A	100144
Line termination type A	100145
Serial cable set for FNL	100151
Ethernet cross-over cable	100126
Power supply 24 V / 1.3 A with 100 - 240 V power boost for up to 2 SNL2-E / FNL / PRS	100161
Power supply 24 V / 2 A with 100 - 240 V power boost for up to 5 SNL2-E / FNL / PRS	100160

GATEWAYS

PROXY - INTEGRATION OF PROFIBUS INTO PROFINET



The FNL Proxy PN/PB simplifies integration of PROFIBUS DP systems into PROFINET IO networks. Investments already made by manufacturers or consumers can therefore be protected. Installed and commissioned systems are preserved and the variety of 5000 different PROFIBUS devices is still available in the PROFINET IO world. FNL Proxy PN/PB acts as a PROFINET IO device and a PROFIBUS DP Master compliant to the specification of the PROFIBUS Trade Organisation.

The 24 Volt DIN rail module contains one PROFIBUS DP interface, four PROFINET IO RT interfaces as well as one RS232 service interface for commissioning and diagnostics.

The proxy integrates both existing and new PROFIBUS DP devices without any modification or adaptation into a PROFINET IO network. The PROFIBUS DP interface supports baud rates from 9.6 Kbit/s to 12 Mbit/s.

The FNL Proxy PN/PB implements a plenty of PROFIBUS diagnostic functions as well as additional features, such as the configurable behaviour of the PROFIBUS DP Master in case of a break down of the PROFINET IO network or the detailed indication of error codes. Of course, it is also possible to combine several proxies.

HIGHLIGHTS

- › Conforms to the specification of the PROFIBUS User Group according to the modular mapping procedure
- › Full graphical PROFIBUS configuration tool
- › SNMP diagnostics
- › TFTP based firmware update

SPECIFICATIONS

Power supply	24 VDC
Supported protocol versions	PROFIBUS DP/DPV1
Interfaces	4 x Ethernet PROFINET IO 1 x PROFIBUS DP
Baud rates	10/100 Mbit/s Ethernet 12 Mbit/s PROFIBUS DP
Operation mode	PROFINET IO Device PROFIBUS DP Master

ARTICLE

FNL Proxy PN/PB

ARTICLE NO.

100133

GATEWAYS

XPS-E PROFIBUS DP GATEWAY



There are still a lot of serial end devices in diverse plants which are not compatible with PROFIBUS. It is important to integrate these devices to allow communication and data exchange and overcome the system limitations.

XPS-E can be easily installed and is distinguished by its user friendliness. External devices, such as a serial configuration tool on a PC, are not required to carry out the configuration. All connections are by D-SUB connectors or spring clip terminals which can all be connected and removed easily. The PROFIBUS station address is set via coding switches. The gateway is designed for DIN rail installation.

All send and receive sequences of the serial devices are depicted 1:1 on the PROFIBUS. XPS-E can be easily integrated as a PROFIBUS DP Slave via the generic station description file (GSD) into existing configurations. Thus these devices can be quickly connected to PROFIBUS networks. Furthermore, it is possible to integrate devices with Modbus ASCII/RTU interface.

XPS-E offers a wide variety of possibilities for the synchronisation of the serial send and receive data with the PROFIBUS. Our drivers, which can be customised to your special requirements, allow the pre-processing of the data in the gateway.

HIGHLIGHTS

- › External devices are not required to carry out the configuration
- › All connections are by D-SUB connectors or spring clip terminals which can all be connected and removed easily
- › All send and receive sequences of the serial devices are depicted 1:1 on the PROFIBUS
- › XPS-E has been established in the market for many years and has demonstrated its reliability in countless installations

SPECIFICATIONS

Power supply	24 VDC
Interfaces	Serial: RS232/422/485/Modbus ASCII/RTU PROFIBUS: RS485 (isolated)
Baud rates serial	max. 38.4 Kbit/s asynchronous (adjustable via PROFIBUS)
Baud rates PROFIBUS DP	9.6/19.2/93,75/187.5/500 Kbit/s and 1.5/3/6/12 Mbit/s
DP protocol versions	DP-Slave (modular 4-240 Bytes)

ARTICLE

XPS-E Gateway

ARTICLE NO.

100205

ABOUT US

KUNBUS GMBH



KUNBUS was founded in 2008 with the aim of providing innovative and economical products to the steadily growing market of industrial communication. By now KUNBUS has more than 120 employees. The headquarters including the development department & production facility is located near Stuttgart, Germany. In 2016, KUNBUS acquired the PROFIBUS & PROFINET specialist COMSOFT-ICP, that led to a new subsidiary in Ettlingen, near Karlsruhe.

Our core competence is the development and production of communication modules, such as embedded modules and gateways. Furthermore, KUNBUS is specialized in developing & providing customized communication solutions.

Our know-how is the guarantee of our success. For this reason 30% of our well-trained employees work in development and product management. Quality is generated as early as the development stage and guarantees our customers receive a decisive competitive advantage in tightly fought markets. Development activities include hardware and software and cover everything from completely new developments to standardized products.

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