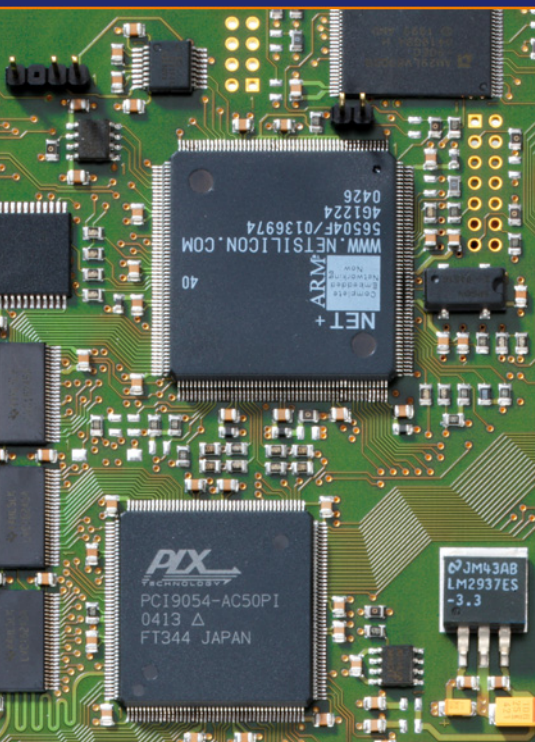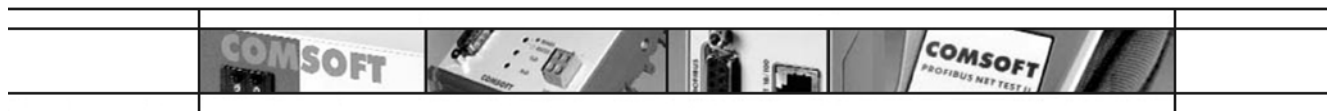# COMSOFT

**Distributor's
Product Catalogue**

Version 02/2014
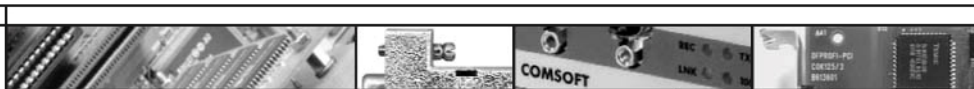
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Table of Contents

NetTEST II
PROFIBUS Analysis & Test Tool

☐ Description

No more nerve-racking and expensive search for installation errors in PROFIBUS segments!

NetTEST II represents the 2nd generation of hand-held PROFIBUS test tools developed by COMSOFT. It provides an immediate, extensive report, revealing errors of installation and fitting in PROFIBUS segments. NetTEST II's field of application is not restricted to diagnostics in running systems. One of the main purposes of NetTEST II is to allow the installer to check – directly after the installation – whether he has made any installation errors. Therefore, sporadic errors caused by incorrect bus physics can be excluded from the very beginning.

NetTEST II gives information on: short circuit, cable rupture or broken shield, mixed up cables, wrong number of terminations, not powered terminations, not terminated cables, tap lines, cable length, line impedance, inhomogeneous cables in the segment, PROFIBUS baud rate, PROFIBUS live list, participant selective RS485 signal level, reflections with peak-peak value

detection. NetTEST II is equipped with a data memory for storage of up to 20 detailed test reports in ASCII format according to the installation guideline of the PNO (PROFIBUS User Organization). If necessary, these can be printed out via a COTS PC.

NetTEST II is operated via a 6 x 4 keyboard and a fully graphical 128 x 64 Pixel LCD-Display with background illumination. The user is menu-guided through the different tests. It is also possible to select a certain test directly.

DP-Mono-Master Function
Another highlight is the optional DP-Mono-Master function of NetTEST II. The I/O Data of the connected DP Slaves can be visualised and modified without the use of the provided PLC. This facilitates a most efficient control of the connected sensors/actuators. The time consuming tests of functionality by use of PLC can be omitted. Further features are the detailed display of incoming diagnosis messages and the well-aimed execution of specific PROFIBUS services.

Online Function
Since the traffic on a PROFIBUS line must by no means be interrupted, active/ ongoing measuring methods on a continuously running unit are not an option for the detection of installation problems on PROFIBUS lines. In order to meet these requirements, the NetTEST II was enhanced with new and very efficient online measurement methods providing precise information about existing installation problems even on a running PROFIBUS network.

The NetTEST II in this case runs in a completely passive monitoring mode and performs a detailed analysis of the data traffic as well as the physical state of the PROFIBUS line.

NetTEST II comes with the following Online functionalities: Live List, measurement of the signal quality of each DP Slave, rotation time of the whole DP network, analysis of data traffic between DP Master and DP Slave, triggering upon communication status changes.
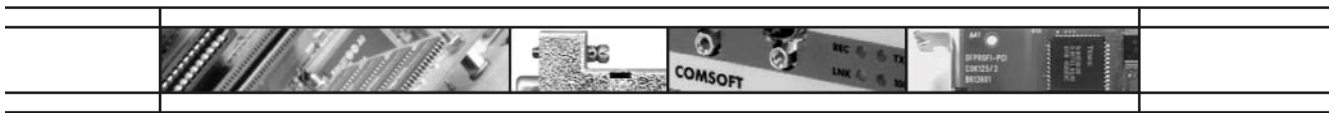
Simply high-tech in hand-held format!

NetTEST II service case

NetTEST II hand-held

☐ **Technical Data**

Power Supply	Battery pack 4,8 V/1.500 mAh NiMH
Connections	PROFIBUS RS485 (DB9 socket connector)
	RS232 (DB9 socket connector)
Dimensions	230 mm x 98 mm x 53 mm (L x W x H)

☐ **Order Numbers**

Order No.	Item
4000-7-0 6 C -H	**NetTEST II Basic System** in service case, including 2 batteries, international battery charger, power supply adapter, RS232-cable, PROFIBUS stub line, PROFIBUS T-connector, bus disconnector, 3 gender changers, PROFIBUS configurator, user manual
4000-7-0 6 C -M	**NetTEST II DP-Mono-Master Package** Basic System + DP-Mono-Master Functionality
4000-7-0 6 C -O	**NetTEST II Online Package** Basic System + Online Functionality
4000-7-0 6 C -K	**NetTEST II Over All Package** Basic System + DP-Mono-Master + Online Functionality
4000-7-0 6 C -J	**NetTEST II DP-Mono-Master Option** Upgrade for existing devices*
4000-7-0 6 C -L	**NetTEST II Online Option** Upgrade for existing devices*
4000-7-0 6 C -N	**NetTEST II DP-Mono-Master & Online Option** Upgrade for existing devices*
4000-7-0 0 ☐ -H	**Additional Equipment**
1	PROFIBUS T-connector type A
2	Line termination cable type A
4	PROFIBUS stub line (0,15 m) type A
5	RS232-cable for NetTEST II
6	Gender changer DB 9, male-male 1:1
7	Gender changer DB 9, female-female 1:1
8	Gender changer DB 9, male-female 1:1
A	PROFIBUS bus disconnector
D	Power supply adapter
4000-7-0 2 C -L	Battery charger shell
4000-7-0 2 C -S	Plug for battery charger
4000-7-0 3 C -H	Extra Battery for NetTEST II
4000-7-0 4 C -H	Branch line for terminal clamp
4000-7-0 7 C -K	**NetTEST II Calibration**
4000-7-0 7 C -U	**NetTEST II Software/Firmware Update (V 3.20)**

* Upgrade up to hardware revision 03 on request.

PB Diagnostic Plug

PROFIBUS mini diagnostic tool for permanent monitoring

☐ Description

The PB Diagnostic Plug can be connected to any PROFIBUS node continuously monitoring the complete running data traffic for typical communication errors.

Arising errors are directly indicated by integrated status LEDs and can be reported through the potential-free alarm contact to superordinate control systems.

Thus it is possible to reduce failures and to avoid unexpected plant shutdowns. Service and maintenance costs can be planned more proactively.

The baud rate is manually set via the integrated rotary switch and supports the complete range from 9600 Bit/s to 12000 Kbit/s. Automatic decoding of the baud rate is also possible.

An external power supply is not necessary because PB Diagnostic Plug is directly powered by the connected PROFIBUS node. The required power consumption is only about 40 mW, less than the PROFIBUS maximum default value of 50 mW.

PB Diagnostic Plug analyses the complete data traffic and triggers typical PROFIBUS-specific errors and messages, such as:

    Faulty telegrams
    Retransmissions
    Device-specific diagnostic
    messages

Red and green LEDs indicate its status or arising errors.
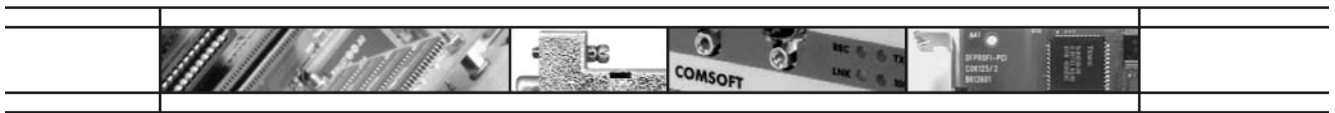
Permanent green:
Power consumption ok, no data traffic
Green – flashing at shorter intervals:
Power consumption ok, active data traffic

Permanent red:
Detection of faulty telegrams
Red – flashing at shorter intervals:
Detection of retransmissions
Red – flashing at longer intervals:
Detection of diagnostic messages

If PROFIBUS errors are detected, the potential-free alarm contact triggers a one-second impulse. Arising error messages can be quantified on a connected, superordinate control system by counting the generated impulses. It is possible to reset error messages at any time by pressing the integrated button.

PB Diagnostic Plug

☐ **Technical Data**

Indivators	Green LED, red LED
Control Elements	Rotary switch for baud rate setting Reset button
Interfaces	PROFIBUS RS485 (DB9) Potential-free alarm contact 24 Volt/100 mA
Baud Rates	9600 Bit/s – 12000 Kbit/s
Power Requirements	Approx. 8 mA at 5 Volt DC
Temperature Range	0 °C – +50 °C
Trouble-Shooting	Faulty telegrams Retransmissions Device-specific diagnostic messages

☐ **Order Numbers**

Order No.	Item
1012463	**PB Diagnostic Plug** Includes PROFIBUS DP Diagnostic Plug with Quick guide
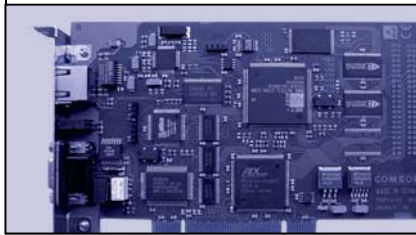
DF PROFI II PCI/PCIe/CPCI/PC104+
High Performance PROFIBUS DP/DPV1 Board

☐ **Description**

The DF PROFI II is a high performing PROFIBUS DP/DPV1 board of the newest generation and is available as PCI, PCIe, CPCI and PC104+ board. The DF PROFI II PCI interface supports 5V and 3.3V 32 Bit PCI slots, so it can be used in server PCs and workstations without problems. Beside the standard DP/DPV1 PROFIBUS services the board implements useful additional options.

The implemented hardware watchdog allows the electrical switch off of the PROFIBUS interface, that allows the board to be used in redundant DP Master concepts with two PC systems.

Apart from the I/O data and status information, the process image contains a relative time stamp with a resolution of a millisecond. With common I/O data sizes up to 3 Kbytes the DF PROFI II board needs only round about 1 ms for the data exchange of the process image. It stores the PROFIBUS configuration data in a failsafe flash memory.

For the compilation of the PROFIBUS configuration a very powerful and comfortable tool is available. The DF PROFI II board supports beside the popular operating systems Windows XP/7 and Linux (SUSE, Redhat, Fedora) real-time operating systems like LabVIEW RT.

COMSOFT PROFIBUS Configuration Tool CONFIGURATOR II
CONFIGURATOR II is a powerful PROFIBUS configuration tool. It does not charge the user with difficult PROFIBUS details and supports a full graphical GSD file based DP Slave configuration as well as the comfortable compilation of OPC Tags.

Powerful and extensive download, analysis and control functions permit an efficient start and check-up of the configured PROFIBUS DP network. The compiled PROFIBUS configuration is stored in XML format that allows an easy integration into third party tools.

COMSOFT Redundant OPC Server
The DF PROFI II Data Access OPC Server is implemented as free threading/ multithreading server for optimum performance and supports DPV0 Master class 1 and DPV1 Master class 2 services. For the use with safety critical applications the DF PROFI II OPC Server supports DPV0 Master class 1-redundancy with 2 pc systems. This feature guarantees a seamless takeover and an uninterrupted continuous processing of the connected DP Slaves by the standby system if the operational system fails. The DF PROFI II hardware design allows here the simultaneous connection of 2 DF PROFI II boards with identical bus addresses to the PROFIBUS network without problems.

COMSOFT
FDT 1.2 Communication DTM
The available FDT 1.2 Communication DTM allows the use of the DF PROFI II board within any FDT 1.2 capable container programs for DP Slave configuration. FDT container programs are included in many process control systems. They are also available as stand-alone solutions, e.g. Pactware of the Pactware Association.
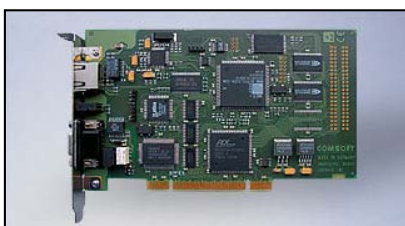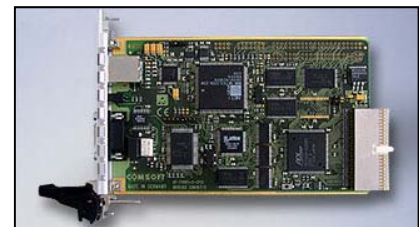
DF PROFI II PCI

DF PROFI II PCIe

DF PROFI II PC104+

☐ Technical Data

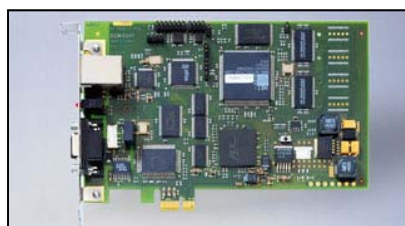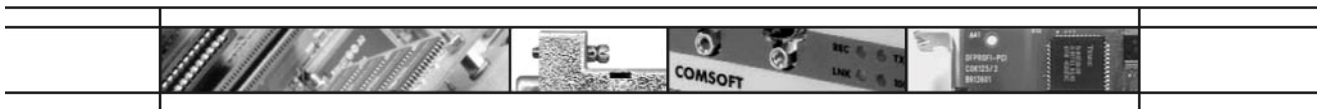|		
Available Types	PCI (3.3V and 5V), PCIe, CompactPCI, PC104+	
Interfaces	Ethernet	10/100BaseT (optional)
	PROFIBUS	RS485 (DB9)
Baud rates	Ethernet	max. 100 Mbit/s
	PROFIBUS RS485 max. 12 Mbit/s	
Supported PROFIBUS Versions	DP/DPV1	Master class 1/2, DP Slave
Hardware	Host CPU	NET+ARM 40 (33 MHz)
	PROFIBUS Chip	ASPC 2 (48 MHz)
	Ram	Static 2 Mbyte; Flash Memory 1 Mbyte
	PCI Interface	PLX – compatible (for 5V and 3.3V PCI slots)
Layer 2 Services	live list	
DP Services	DPV0 class 1 Master-Slave and DP Slave	
DP/DPV1 Services	DPV1 class 2 Master-Slave	
	MSAC2_initiate, MSAC2_read, MSAC2_write, MSAC2_data_transport, MSAC2_abort	
Data Size of Process Image	Max. 8 Kbytes	
Supported Operating Systems	Windows XP/7, Linux, LabVIEW PROFIBUS VISA Driver for Windows XP/7 & LabVIEW RT	
Add-on Software	Redundant OPC Server, FDT 1.2 Communication DTM	

☐ Order Numbers

Order No.	Item
4000-7-☐☐ 4 -3-*	**DF PROFI II PCI with**
3	DP/DPV1 protocol driver
D	LINUX driver
M	Windows XP/7 driver
L	LabVIEW PROFIBUS VISA Driver for Windows XP/7 and LabVIEW RT
4000-7-☐☐ 5 -3-*	**DF PROFI II CPCI with**
3	DP/DPV1 protocol driver
D	LINUX driver
M	Windows XP/7 driver
L	LabVIEW PROFIBUS VISA Driver for Windows XP/7 and LabVIEW RT
4000-7-☐☐ 6 -3-*	**DF PROFI II PC104+ with**
3	DP/DPV1 protocol driver
D	LINUX driver
M	Windows XP/7 driver
L	LabVIEW PROFIBUS VISA Driver for Windows XP/7 and LabVIEW RT
4000-7-☐☐ 7 -3-*	**DF PROFI II PCIe with**
3	DP/DPV1 protocol driver
D	LINUX driver
M	Windows XP/7 driver
L	LabVIEW PROFIBUS VISA Driver for Windows XP/7 and LabVIEW RT
4000-S-L M ☐ -3-*	**Additional Packages**
11	PROFIBUS DP/DPV1 OPC Server Redundant for Windows XP/7, Configurator and Client
3	PROFIBUS DP/DPV1 OPC Server for Windows XP/7
8	FDT 1.2 Communication DTM
12	FDT 1.2 Communication DTM, 30 day demo version

*   Please complete the order number either with E for a documentation in English or D for a documentation in German.
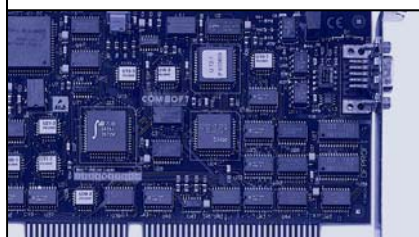
DF PROFI PCI

PROFIBUS Board for L2, DP/DPV1, FMS and
FMS/DP Combination Master

☐ Description

The DF PROFI family offers access to PROFIBUS via layers 2, 7 and DP as either Master, Slave or combination Master, according to EN50170 with data rates of up to 1.5 Mbit/s. Data exchange is realized via a device driver interface and all of the supported protocol variations are part of the loadable firmware. The board is as PCI board available. For PROFIBUS DP/ DPV1 the board is supported by the COMSOFT OPC Server and the FDT 1.2 Communication DTM.
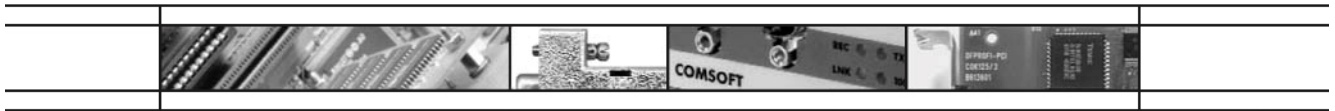
☐ Technical Data

Certificate	PNO-certificate for layer 2		
Available Types	PCI		
Protocol Versions	FMS	Master	
	DP/DPV1	Master or Slave	
	FMS/DP	Combi Master	
Baud Rates	9.6, 19.2, 45.45, 93.75, 187.5, 500 Kbit/s and 1.5 Mbit/s		
Layer 2 Services	SDA, SDN and (C)SRD, live list and L2-identification		
Layer 7 Services (FMS, PA)	initiate, abort, reject, status, unsolicited-status, identify, get-ov, read, write, event-notification, acknowledge-event- notification, event-notification-with-type, alter-event-notification-monitoring, information-report, information-report-with-type		
DP Services	Class 1 Master-Slave		
DP/DPV1 Services	Class 2 Master-Slave MSAC2_initiate, MSAC2_read, MSAC2_write, MSAC2_data_transport, MSAC2_abort		
Interrupts	5, 10, 11, 12 or 15		
Dual Port Ram	64 KB with freely adjustable address-offset		
I/O Addresses	2 consecutive in the range of 330h-33Dh and additionally 33Eh		

DF PROFI PCI

Tel: +49-721/9497-291 Fax: +49-721/9497-299 E-mail: infoicp@comsoft.de

☐ Order Numbers

Order No.	Item
4000-7-☐☐ 2 -3-*	**DF PROFI PCI with**
D	LINUX driver
2	FMS protocol driver
3	DP/DPV1 protocol driver
4	FMS/DP protocol driver
4000-7-☐☐ 2 -3-*	**DF PROFI PCI with**
M	Windows XP/7 driver
2	FMS protocol driver
3	DP/DPV1 protocol driver
4	FMS/DP protocol driver
4000-S-L M ☐ -3-*	**Additional Packages**
2	Configurator for PROFIBUS DP/DPV1 and Windows XP/7
11	PROFIBUS DP/DPV1 OPC Server Redundant for Windows XP/7, Configurator and Client
3	PROFIBUS DP/DPV1 OPC Server for Windows XP/7
8	FDT 1.2 Communication DTM
12	FDT 1.2 Communication DTM, 30 day demo version
1012490	Upgrade Windows 7 driver licence for DF PROFI PCI FMS/DP
1012502	Upgrade Windows 7 driver licence for DF PROFI PCI DP
1012523	Upgrade Windows 7 driver licence for DF PROFI PCI FMS

*   Please complete the order number either with E for a documentation in English or D for a documentation in German.

FNL – Fieldbus Network Link
Ethernet / PROFIBUS Gateway

Description

FNL – for an optimum connection of fieldbuses and Ethernet networks up to 100 Mbit/s.

FNL – for communication transparency in automatic hierarchies, offering access to fieldbus devices from any arbitrary work station via Ethernet, Intranet or Internet. FNL allows the connection to all PROFIBUS DP networks based on RS485 (up to 12 Mbit/s) and supports DP Master class 1/2 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 operating system independent, well documented and because of its quickness convincing.

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 diagnostics and IO data are dynamically compiled into the MODBUS TCP/IP structure and do not have to be configured additionally.

Various access options are offered on the network side:

CNC – COMSOFT Network Configurator
CNC is a full graphical tool for the integration of FNL in your network. CNC scans the network for available FNL Gateways and allows the calibration of all device-specific network parameters including the TCP/IP address.

COMSOFT PROFIBUS configuration tool CONFIGURATOR II
CONFIGURATOR II is a powerful PROFIBUS configuration tool. It does not charge the user with difficult PROFIBUS details and supports a full graphical GSD file based DP Slave configuration as well as the comfortable compilation of OPC Tags. Powerful and extensive download, analysis and control functions permit an efficient start-up and check-up of the configured PROFIBUS DP network. The compiled PROFIBUS configuration is stored in XML format which allows an easy integration into third party tools.

OPC-Server
The Server allows direct connection of FNL to all OPC-client-capable Windows applications. Today, OPC is supported by all common Scada, control, visualization, and process control systems. Some examples are WIN CC, Siemens; FIX, Intellution; LabVIEW/ BridgeVIEW from National Instruments or Intouch, Wonderware. Standard Windows applications like Visual Basic or Excel can easily be integrated via the "automation interface".

Programming Interface
The FNL TCP/IP socket interface provides the exchange of the DP Slaves' process and diagnostics data as well as all DP/DPV1 Master class 1/2 and DP Slave services. So FNL can be easily integrated in any operation system.
Compared to traditional solutions based on PC interfaces, FNL offers

totally new aspects in the PC connection to fieldbus systems:

- No more hardware/driver installation with its typical related problems.
- Access to the respective fieldbus from any arbitrary PC network.
- Trouble-free integration of lower automation levels into the control and design level.

FDT 1.2 Communication DTM
The FDT technology is based on Microsoft's COM technology. FDT allows the standardized configuration of fieldbus devices via different bus systems like HART-Bus, Foundation fieldbus, PROFIBUS DP or Ethernet.

By means of the communication DTM, DF PROFI or FNL – in combination with any FDT 1.2 capable container program – can be used for configuration of any PROFIBUS DP Slave. Container programs are included in many process control systems. They are also available as stand-alone solutions, e.g. Pactware of the Pactware Association.

LabVIEW Driver for FNL DP
The driver can be integrated in a simple manner into every LabVIEW version due to its standard TCP/IP socket interface. Ethernet and PROFIBUS DP configuration are generated via full graphical tools, included in the delivery. The package also includes LabVIEW sample VIs incl. source code for an easy integration.

FNL – DP

☐ **Technical Data**

Interfaces	Ethernet	10/100BaseT
	PROFIBUS	RS485 (DB9)
	Service Interface	RS232
Baud Rates	Ethernet	max. 100 Mbit/s
	PROFIBUS RS485	max. 12 Mbit/s
	RS232	57.6 Kbit/s
Supported PROFIBUS Protocol Versions	DP/DPV1	Master class 1/2 and DP Slave
Supported Ethernet Protocol Versions	TCP/IP Socket	
	Modbus TCP/IP Socket	

☐ **Order Numbers**

Order No.	Item
4000-7-G 0 ☐ -3-*	**FNL Hardware with Firmware**
4	PROFIBUS DP/DPV1 Master Ethernet/MODBUS TCP, max. 12 Mbit/s
6	PROFIBUS DP/DPV1 Master Ethernet/MODBUS TCP incl. FDT 1.2 Communication DTM
	PC-Software Interfaces for FNL
4000-S-L M 6 -3-*	PROFIBUS DP/DPV1 OPC Server for Windows XP/7 (including CNC – COMSOFT Network Configurator and COMSOFT CONFIGURATOR II)
4000-S-L T 9 -3-*	LabVIEW Driver for FNL
1011079	FDT 1.2 Communication DTM for FNL
4000-S-L M 9 -3-*	DF PROFI compatible driver interface
	Additional Equipment
4000-7-0 0 1 -H	T-connector cable type A
4000-7-0 0 2 -H	Line termination type A
4000-7-0 0 4 -F	Serial cable set for FNL
4000-7-0 0 5 -F	Ethernet cross-over cable
4000-7-0 0 S -H	Power supply 24 V / 1,3 A with 100 – 240 V power boost for up to 2 SNL2-E/FNL/PRS
4000-7-0 1 S -H	Power supply 24 V / 2 A with 100 – 240 V power boost for up to 5 SNL2-E/FNL/PRS

* Please complete the order number either with E for a documentation in English or D for a documentation in German.

XPS-E
Intelligent PROFIBUS DP - RS232 / RS422 / RS485 / MODBUS ASCII/RTU Gateway

Description

This gateway allows you to integrate serial as well as MODBUS-ASCII and -RTU devices quickly, easily and reliably into a PROFIBUS DP network.

All connected serial devices will work as usual, as our gateway depicts all send and receive sequences 1:1. The data can be accessed swiftly and exactly.

Moreover, our drivers facilitate a pre-processing of data within the gateway. Of course, our drivers can be customized according to your requirements.

XPS-E is foreseen for top-hat rail mounting.

Technical Data

Interfaces	Serial	RS232 / 422 / 485 / MODBUS ASCII / RTU
	PROFIBUS	RS485 (isolated)
Baud Rate Serial	Max. 38.400 Bit/s asynchronous (adjustable via PROFIBUS)	
Baud Rates PROFIBUS DP	9.6, 19.2, 45.45, 93.75, 187.5, 500 Kbit/s and 1.5, 3,6, 12 Mbit/s (automatic baud rate detection)	
DP-Protocol Version	DP Slave (modular 4 - 240 Bytes)	
Power Supply	24 VDC	

XPS-E
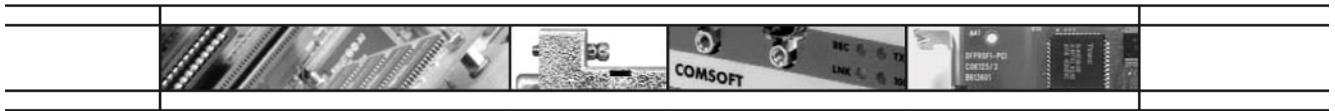
Order Numbers

Order No.	Item
4000-7-G 0 1 -H-*	XPS-E for top-hat rail with Universal Driver

*   Please complete the order number either with E for a documentation in English or D for a documentation in German.

PRS – PROFIBUS DP Redundancy Switch

Switch for PROFIBUS DP Master Redundancy

Description

PRS – the optimal solution for the realisation of redundant DP Master systems.

PRS is a compact 24 Volt hat rail module for the connection of two DP Masters as input and one PROFIBUS network connected to the DP Slaves as output.

The device avoids all disadvantages of present redundancy concepts because PRS generally prevents the DP Masters from simultaneously connecting to the PROFIBUS.

Present PROFIBUS DP Master redundancy concepts are software based DP multi Master solutions, where the operational and the redundant DP Master exchange live information via the PROFIBUS line. In case of failure of the operational DP Master the redundant DP Master assumes the hitchless communication with the DP Slaves. The redundant DP

Master also has to be parameterised to the PROFIBUS address of the faulty operational DP Master. This concept is called the Flying Master Algorithm. This principle goes along with several risks: If the faulty DP Master does not disable its PROFIBUS bus traffic, a double address conflict occurs and the whole network will stop. A further disadvantage is the fact that many DP Master implementations on the market do not support the Flying Master Algorithm.

However PRS works with every standard PROFIBUS DP Master and also allows the simple upgrade of an existing plant for redundancy operation. The device automatically detects the state of the two DP masters. In case of failure of the operational DP Master, the device switches the PROFIBUS line over to the redundant DP Master within milliseconds. Both DP Masters can be configured identically, that simplifies

the exchange of a defect system. A failure of PRS does not cause a total breakdown because the current state is guaranteed even if the power supply is disconnected.

PRS is a double DP Slave that can be easily added to the DP Master's PROFIBUS configuration via its GSD file.

The device provides important information for the redundancy operation, such as:

    The alive state of the complementary system
    A manual switch-over command on the command level

PRS also allows the realization of very complex redundancy systems, i.e. in connection with PROFIBUS OPC servers or overlying Ethernet based cell networks.

PRS – PROFIBUS DP Redundancy Switch

Technical Data

Interfaces	Ethernet	2*10/100BaseT
	PROFIBUS	3*RS485 (DB9)
	Serial	RS232 (screw terminal)
Baud Rates	Ethernet	max. 100 Mbit/s
	PROFIBUS RS485	max. 12 Mbit/s
	RS232	57.6 Kbit/s
Supported PROFIBUS Protocol Versions	DPV0	DP Slave

Order Number

Order No.	Item
4000-2-P 00 -3 -H -*	**PRS – PROFIBUS DP Redundancy Switch**
	Additional Equipment
4000-7-0 0 4 -P	Serial cable set
4000-7-0 0 5 -P	Ethernet cross-over cable
4000-7-0 0 S -H	Power supply 24 V / 1,3 A with 100 - 240 V power boost for up to 2 SNL2-E/FNL/PRS
4000-7-0 1 S -H	Power supply 24 V / 2 A with 100 - 240 V power boost for up to 5 SNL2-E/FNL/PRS

* Please complete the order number either with E for a documentation in English or D for a documentation in German.

PROFIBUS Repeater
4-port PROFIBUS RS-485 Repeater

Description

The PROFIBUS Repeater is 100 per cent plug and play and can be used in every RS-485 based PROFIBUS network FMS, MPI or DP). The Repeater is suitable for hat rail mounting and supports all common transmission speeds from 9.6 Kbit/s up to 12.000 Kbit/s.

The brand new signal regeneration concept no longer requires Dip switches and error LEDs, normally a must in combination with conventional PROFIBUS Repeater concepts for a safe operation.

The COMSOFT PROFIBUS Repeater is immediately operational after switching on the power supply and requires no baud rate detecting synchronisation phase.

So, typical problems such as not functioning baud rate detection, in combination with networks of poor transmission quality, or the usual delays are a thing of the past.

The PROFIBUS Repeater supports four PROFIBUS segments simultaneously. These can be operated as star, line or branch segments. The single PROFIBUS segments are galvanically isolated. To connect the segments standard PROFIBUS plugs can be used. The missing Dip switches generally avoid a faulty configuration of the Repeater.

Highlights

Works in every RS-485 based PROFIBUS network (FMS, MPI or DP)

9.6 Kbit/s - 12.000 Kbit/s

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

PROFIBUS Repeater

Tel: +49-721/9497-291 Fax: +49-721/9497-299 E-mail: infoicp@comsoft.de
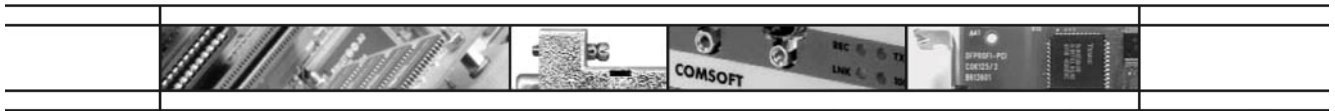
☐ Technical Data

PROFIBUS Segments	4
Transmission Speed	9.6 Kbit/s – 12.000 Kbit/s
Power Supply	24 V DC
Interfaces	4 * 9 pin SUB-D
Activity Display	LED green

☐ Order Number

Order No.	Item
1011096	PROFIBUS Repeater
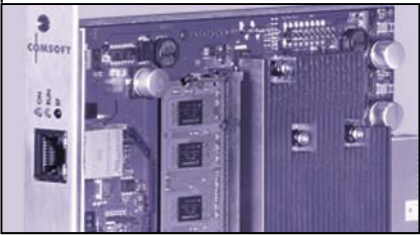
DF PROFINET IO
PROFINET IO Controller Board

☐ Description

The COMSOFT DF PROFINET IO board operates as a PN IO Controller. Because its efficiency is so huge, the new board achieves 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 two PROFINET networks at the same time. 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 umbrella organisation.

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. This means that it is possible to scan the network as well as to control the names and IP addresses of the various PROFINET devices.

COMSOFT's CONFIGURATOR III is available for compilation and download of the PROFINET configuration. The comfortable and full graphical tool minimises the configuration effort, while extensive download, analysis and control functions permit an efficient checkup of the configured PROFINET IO network. The compiled configuration is then stored in XML format, allowing an easy integration into third party applications. 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 possible as in a real-time PXI system under LabVIEW™ RT, e.g. as a high performance PAC system for time-critical test applications or industrial automation applications.

☐ Technical Data

Available Types	PCI and CPCI (PCI-Express is planned)
Operation Mode	PN IO Controller
PROFINET IO Performance Class	Class B (≥ 1 ms)
Ethernet Interface	RJ45 100 Base-T(X)

DF PROFINET IO PCI

DF PROFINET IO CPCI

Tel: +49-721/9497-291 Fax: +49-721/9497-299 E-mail: infoicp@comsoft.de

☐ **Order Numbers**

Order No.	Item
	DF PROFINET IO PCI with
1011075	Windows XP/7 driver
1011076	Linux driver
1011088	LabVIEW PROFINET VISA driver for Windows XP/7 and LabVIEW RT
	DF PROFINET IO CPCI with
1011089	Windows XP/7 driver
1011090	Linux driver
1011093	LabVIEW PROFINET VISA driver for Windows XP/7 and LabVIEW RT

The boards are expected to be available by the end of April 2014.

FNL Proxy PN/PB

Integration of PROFIBUS DP into PROFINET IO

Description

The 24 Volt hat 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 breakdown of the PROFINET IO network or the detailed indication of error codes. Of course, it is also possible to combine several proxies.

CONFIGURATOR II
COMSOFT's CONFIGURATOR II is available for compilation and download of the PROFIBUS configuration. The comfortable and full graphical tool compiles the PROFIBUS configuration via drag and drop mechanism. The integrated online mode allows direct commissioning and diagnostics of the connected PROFIBUS network via Ethernet. CONFIGURATOR II exports a GSDML file compliant to PROFINET IO which can be imported and processed by any PROFINET IO controller configuration tool.

The proxy implemented as PROFINET IO device and based on the Siemens ERTEC 400 PROFINET IO controller supports PROFINET IO according to the current specification 2.0 and uses the modular mapping procedure. Input and output data as well as diagnostic data of the single DP Slaves are depicted through device modules (slots and sub-slots). Diagnostics are reported by a PROFINET IO alarm.

Furthermore SNMP diagnostics are included and the TFTP server based firmware update is supported.

Technical Data

Supported PROFIBUS Protocol Versions	PROFIBUS DP/DPV1
Operation mode	PROFINET IO DEVICE
	PROFIBUS DP Master
Interfaces	4 x Ethernet PROFINET IO
	1 x PROFIBUS DP
Baud Rates	10/100 Mbit/s Ethernet
	12 Mbit/s PROFIBUS DP
Power Supply	24 VDC

FNL Proxy PN/PB

☐ Order Numbers

Order No.	Item
4000-7-G 1 2 -3-*	**FNL Proxy PN/PB**

* Please complete the order number either with E for a documentation in English or D for a documentation in German.

SNL2-E – Serial Network Link
SNL2-E Ethernet/RS232/RS485 Gateway

☐ **Description**

SNL2-E – the optimal solution for connection of serial interfaces and Ethernet networks of up to 100 Mbit/s.

SNL2-E allows the connection of two serial end devices. The serial interfaces can be configured via software as RS232- or RS422/RS485 interfaces. Also, a mixed operation mode is possible.

In addition, for operating the RS485 bus, terminating resistors can be switched on via software. Operation in TTY mode can be realized by means of an external adapter.

Both interfaces support full duplex DMA mode operation. In synchronous operation mode, rates of up to 1 Mbit/s can be reached.

The protocol firmware is loadable. The serial interfaces can be run completely independent from each other. On every serial interface a different protocol driver can be loaded and run.

The following protocols are supported:

    COMDRV (3964R, S5) RK 512
    UNIDRV (XON/XOFF/LAUF)
    SINEC-L1

DF-compatible driver interface
For Windows, as well as UNIX operating systems the DF-board compatible interface allows the replacement of an existing DF-board by an SNL2-E module without any changes in the application software. Compared to solutions based on conventional PC communication boards, SNL2-E offers completely new aspects for the connection of PC-based systems:

    Hardware/driver installation with its typical problems is bypassed.
    Access to the serial interface is possible from every PC in the network.
    Trouble-free integration of lower automation levels into the control and design level.

SNL2-E – Serial Network Link

☐ Technical Data

Interfaces	Ethernet	10/100 BaseT
	Serial	2 x RS232/RS485 (SUB-D 15 pole)
		1 x RS232 (screw terminal, configuration interface)
Baud Rates	Ethernet	max. 100 Mbit/s
	Serial RS232	1 Mbit/s synchronous , 38,4 Kbit/s asynchronous
	Serial RS485	1 Mbit/s synchronous , 38,4 Kbit/s asynchronous
	RS232 configuration interface	19,2 Kbit/s asynchronous
Supported Protocols	COMDRV (3964R, S5) RK 512, UNIDRV (XON/XOFF/LAUF), SINEC-L1	

The product is designed in a way that it can only be used as part of large scale stationary industrial tools or large scale fixed installations and can fulfil its function only as part of such equipment. The product, therefore, claims to fall under article 2, para. 4 (c) of the EC Directive 2011/65/EU.

☐ Order Numbers

Order No.	Item
4000-2-S 0 0 -H-*	**SNL2-E Hardware**
4000-2-S ☐☐ -3-*	**Board Driver / Protocol Driver**
D	LINUX board driver
A	COMDRV (3964R, S5) RK512 protocol driver
L	SINEC-L1 protocol driver
M	Windows 2000/XP board driver
A	COMDRV (3964R, S5) RK512 protocol driver
B	UNIDRV (XON/XOFF/LAUF) protocol driver
L	SINEC-L1 protocol driver
	Additional Equipment
4000-2-4 0 1 -H	RS232 adapter line from 15 to25 pins (0.2 m) in pairs
4000-2-4 0 3 -H	V11/TTY adapter
4000-7-0 0 4 -S	Serial cable set for SNL2-E
4000-7-0 0 5 -S	Ethernet cross-over cable
4000-7-0 0 S -H	Power supply 24 V / 1,3 A with 100 - 240 V power boost for up to 2 SNL2-E/FNL/PRS
4000-7-0 1 S -H	Power supply 24 V / 2 A with 100 - 240 V power boost for up to 5 SNL2-E/FNL/PRS

* Please complete the order number either with E for a documentation in English or D for a documentation in German.

SNL2-E – Serial Network Link with Socket Interface

SNL2-E SINEC-L1 Gateway

☐ Description

SNL2-E with Socket Interface is available with SINEC-L1 protocol. The protocol is not loadable compared to the standard SNL2-E but firmly implemented in the device.

SNL2-E SINEC-L1 – the optimal solution for connection of SINEC-L1 networks and Ethernet networks of up to 100 Mbit/s.

The SNL2-E SINEC-L1 Gateway supports SINEC-L1 Master operation with broadcast and interrupt processing. The data of the connected SINEC-L1 Slaves can be accessed in a simple manner via the TCP/IP Socket Interface.

Additional diagnosis details are available as well.

The Gateway stores the developed configuration (polling and alarm list) in the flash memory, which is automatically loaded during start up.

Access via TCP/IP Socket Interface

The Gateway can be directly accessed via Socket Interface by send and receive-calls. It can operate completely independently. On the PC or workstation, no driver needs to be installed, only a TCP/IP connection must be available.

Compared to solutions based on conventional PC communication boards, SNL2-E offers completely new aspects for the connection of PC-based systems:

Hardware/driver installation with its typical problems is bypassed.
Access to the SINEC-L1 interface is possible from every PC in the network.
Trouble-free integration of lower automation levels into the control and design level.

SNL2-E – Serial Network Link with Socket Interface

Tel: +49-721/9497-291   Fax: +49-721/9497-299   E-mail: infoicp@comsoft.de

Technical Data

| Interfaces	Ethernet	10/100 BaseT
	Serial	2 x RS232/RS485 (SUB-D 15 pole)
		1 x RS232 (screw terminal, configuration interface)
Baud Rates	Ethernet	max. 100 Mbit/s
	2 x serial RS485 as SINEC-L1 interface up to 9.600 Kbit/s	
	RS232	19,2 Kbit/s asynchronous
	(Configuration interface)	
Supported Protocols	SINEC-L1	

The product is designed in a way that it can only be used as part of large scale stationary industrial tools or large scale fixed installations and can fulfil its function only as part of such equipment. The product, therefore, claims to fall under article 2, para. 4 (c) of the EC Directive 2011/65/EU.

Order Numbers

Order No.	Item
4000-2-S 1 0 -3-*	**SNL2-E Socket Interface with SINEC-L1 protocol**
	Additional Equipment
4000-7-0 0 4 -S	Serial cable set for SNL2-E
4000-7-0 0 5 -S	Ethernet cross-over cable
4000-7-0 0 S -H	Power supply 24 V / 1,3 A with 100 - 240 V power boost for up to 2 SNL2-E/FNL/PRS
4000-7-0 1 S -H	Power supply 24 V / 2 A with 100 - 240 V power boost for up to 5 SNL2-E/FNL/PRS

*   Please complete the order number either with E for a documentation in English or D for a documentation in German.
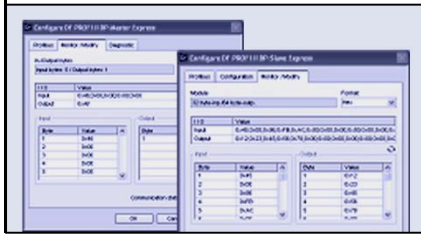
LabVIEW PROFIBUS VISA Driver
PROFIBUS DP for LabVIEW

☐ **Description**

LabVIEW by National Instruments is a widespread graphical test, measurement, control and automation system. It provides the user a multitude of functions for data programming, data analysis and visualization and allows the compilation of a complete test or control system on any platform.

The COMSOFT PROFIBUS VISA Driver equips National Instrument's LabVIEW with a real-time PROFIBUS DP connection.

The package including hardware and software is based on the COMSOFT DF PROFI II board, available in PCI, PCIe, CPCI and PC104+ format. These different formats as well as the real-time VISA Driver concept can be integrated in different LabVIEW systems and platform combinations.

An installation in a classical PC system under LabVIEW for Windows is just as possible as in a real-time PXI system under LabVIEW RT, e.g. as a high performance PAC system for time-critical test applications or industrial automation applications.

The COMSOFT PROFIBUS VISA Driver supports DP Master and DP Slave mode. This allows data exchange with any DP slaves as well as the integration of a complete LabVIEW system as DP Slave in an already existing PROFIBUS DP network.

☐ **Technical Data**

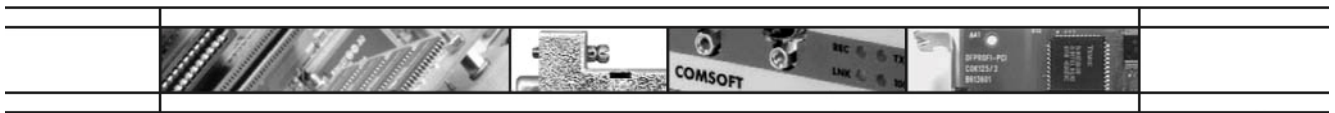| |
|---|
| VISA Driver for up to five DF PROFI II boards |
| Integrated PROFIBUS configuration tool CONFIGURATOR II |
| Hardware access only 1 ms |
| PROFIBUS DP Master and DP Slave up to 12 Mbit/s |
| Via virtual instruments (Standard and Express VIs) direct connection between LabVIEW and PROFIBUS |
| Easy access to process and diagnostic data |
| Detailed example VIs for handling process and diagnostic data as well as initialization |
| "Getting started manual" for installation and initialization |
| Detailed VI context help |

|	
System Prerequisites	LabVIEW 7.1 and higher

Tel: +49-721/9497-291 Fax: +49-721/9497-299 E-mail: infoicp@comsoft.de

Order Numbers

Order No.	Item
4000-7-3 ☐ 4 -3-* L	**DF PROFI II PCI with** LabVIEW PROFIBUS VISA Driver for Windows XP/7 and LabVIEW RT
4000-7-3 ☐ 5 -3-* L	**DF PROFI II CPCI with** LabVIEW PROFIBUS VISA Driver for Windows XP/7 and LabVIEW RT
4000-7-3 ☐ 6 -3-* L	**DF PROFI II PC104+ with** LabVIEW PROFIBUS VISA Driver for Windows XP/7 and LabVIEW RT
4000-7-3 ☐ 7 -3-* L	**DF PROFI II PCIe with** LabVIEW PROFIBUS VISA Driver for Windows XP/7 and LabVIEW RT

*   Please complete the order number either with E for a documentation in English or D for a documentation in German.
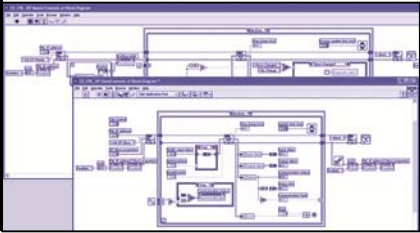
LabVIEW PROFINET VISA Driver
PROFINET IO for LabVIEW

☐ Description

LabVIEW by National Instruments is a widespread graphical test, measurement, control and automation system. It provides the user a multitude of functions for data programming, data analysis and visualization and allows the compilation of a complete test or control system on any platform.

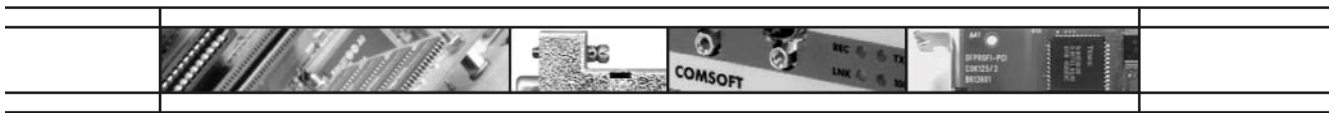The COMSOFT PROFINET VISA Driver equips National Instrument's LabVIEW with a real-time PROFINET IO connection.

The package including hardware and software is based on the COMSOFT DF PROFINET IO board, available in PCI and CPCI format. These different formats as well as the real-time VISA Driver concept can be integrated in different LabVIEW systems and platform combinations.

An installation in a classical PC system under LabVIEW for Windows is just as possible as in a real-time PXI system under LabVIEW RT, e.g. as a high performance PAC system for time-critical test applications or industrial automation applications.

☐ Technical Data

VISA Driver for up to five DF PROFINET IO boards
Integrated PROFINET configuration tool CONFIGURATOR III
PROFINET IO Performance Class B (RT)
Via virtual instruments direct PROFINET IO connection
Easy access to the cyclic process data exchange
Support of all acyclic diagnostic and alarm functions
Record data for the acyclic transfer of parameters
Detailed example VIs for handling process and diagnostic data as well as for the initialization
"Getting started manual" for installation and initialization
Detailed VI context help

System Prerequisites	LabVIEW 2012 and higher

☐ **Order Numbers**

Order No.	Item
1011088	**DF PROFINET IO PCI with** LabVIEW PROFINET VISA Driver for Windows XP/7 and LabVIEW RT
1011093	**DF PROFINET IO CPCI with** LabVIEW PROFINET VISA Driver for Windows XP/7 and LabVIEW RT

* Please complete the order number either with E for a documentation in English or D for a documentation in German.
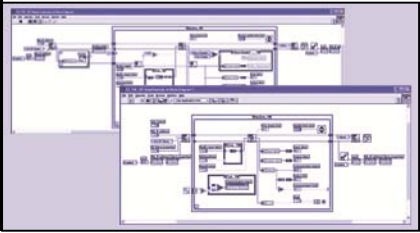
LabVIEW Driver for FNL
Ethernet based PROFIBUS DP connection for NI LabVIEW

☐ Description

The Ethernet/PROFIBUS Gateway FNL is available with a LabVIEW Driver – easy to integrate via TCP/IP socket interface.

FNL supports PROFIBUS DPV0 Master class 1, DPV1 Master class 2 and DP Slave. Ethernet and PROFIBUS DP configuration are generated via full

graphical tools, included in the delivery. The package also includes LabVIEW sample VIs incl. source code for an easy integration.

☐ Technical Data

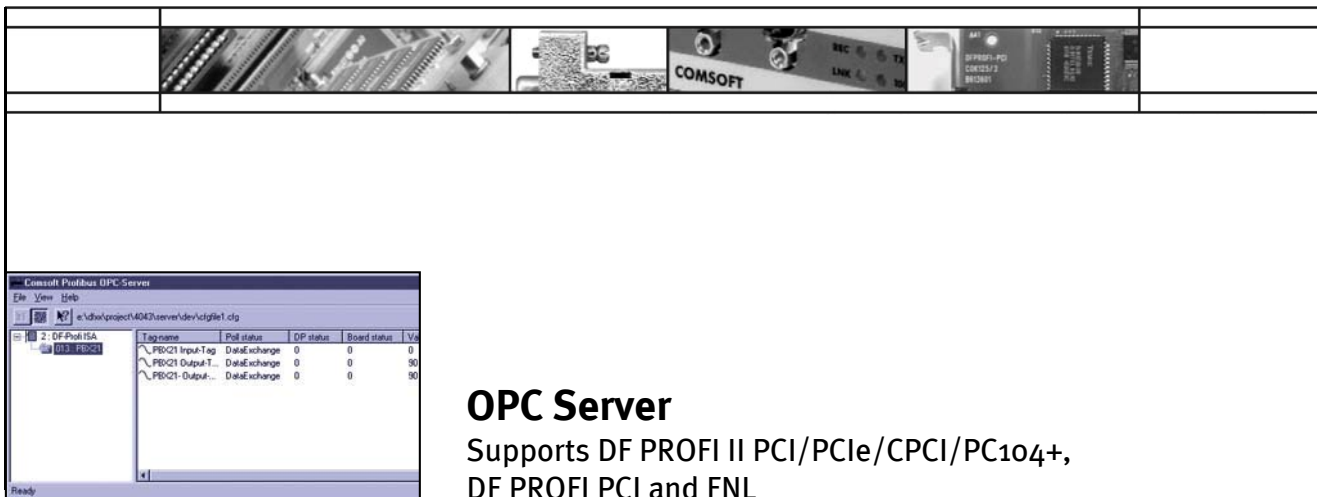|	
Integrated PROFIBUS DP configuration tool	
PROFIBUS DPV0 Master class 1, DPV1 Master class 2 and DP Slave	
System Prerequisites	LabVIEW 7.1 and higher

☐ Order Numbers

Order No.	Item
4000-S-L T 9 -3-*	LabVIEW Driver for FNL

*   Please complete the order number either with E for a documentation in English or D for a documentation in German.

OPC Server

Supports DF PROFI II PCI/PCIe/CPCI/PC104+,
DF PROFI PCI and FNL

☐ Description

OPC means "OLE for Process Control" and defines the communication between arbitrary Windows 2000/ XP applications on the basis of Microsoft DCOM, specialized for the requirements in the field of process automation.

The objective of OPC is the random combination of Windows standard products from the automation and process control area without customization, such as driver development or integration.

An OPC client accesses the data of an OPC Server via the server tags. With data, which is assigned to these server tags from the process periphery. This technology works network-wide.

Today almost all automation and visualization systems are equipped with an integrated OPC client interface, allowing easy connection to a process periphery with OPC Server technology.

This makes the development of special drivers or integration obsolete. Standard products can be combined arbitrarily.

The COMSOFT OPC Server is based on the DF boards and supports the protocols SINEC-L1 and PROFIBUS DP/DPV1.

The server was developed according to the latest specifications of the OPC foundation. It supports all interfaces of versions 1.0A and 2.0 and is implemented in the free threading / multi threading model, guaranteeing optimum performance.

A powerful configuration tool is included in the scope of delivery. It can be used for the setting in operation of the connected communication line and for definition of the required server tags.

The integrated test and diagnosis tools allow fast and efficient trouble shooting. Also included is an example of an OPC client application, in order to test the actual server configuration with regards to functionality.

For the use with safety critical applications the OPC Server supports PROFIBUS DPV0 Master class 1 redundancy with two pc systems. This feature guarantees a seamless take-over and an uninterrupted continuous processing of the connected DP Slaves by the standby pc system if the operational pc system fails. The DF PROFI/DF PROFI II hardware design allows here simultaneous connection of two DF PROFI/DF PROFI II boards with identical bus addresses to the PROFIBUS network without any problems.

Transmission Protocols
PROFIBUS DP/DPV1: (Master, Slave)

SINEC-L1: (Master, Slave)

OPC Configurator

Process Data Routing
The configuration tool allows an assignment of process data to communication objects (tags) of the OPC Servers. Since the assignment is realized on a bit level, all data formats are possible (Bit, Byte, Int, Long, Float, BCD etc.). Therefore, the effort on the OPC-Client level for the encoding of special process data is reduced to a minimum.

Functions: Test and Start-up
The configuration tools feature complete functions for parameter setting and start-up, as well as for the testing of the connected communication line. If PROFIBUS DP/DPV1 is used, the following additional functions are available:

Automatic recognition and configuration of the connected bus units
Interpretation of the respective GSD files, parameterization and configuration of the DP Slaves with the respective data
Extensive test tools for data exchange with the connected DP Slaves. All DP/DPV1 services are supported. All parameters can be edited separately.

□ **Order Numbers**

Order No.	Item
4000-S-L M 3 -3-*	**OPC Server for PROFIBUS DP/DPV1 for Windows XP/7** with OPC example client and configuration tool for COMSOFT PC boards
4000-S-L M 11 -3-*	**OPC Server Redundant for PROFIBUS DP/DPV1 for Windows XP/7** with OPC example client and configuration tool for COMSOFT PC boards
4000-S-L M 6 -3-*	**OPC Server for PROFIBUS DP/DPV1 for Windows XP/7** with OPC example client and configuration tool for FNL (Fieldbus Network Link)

* Please complete the order number either with E for a documentation in English or D for a documentation in German.

□ **OPC Foundation**

The OPC specification is developed and maintained by an independent organization, the OPC Foundation in Boca Raton, Florida. COMSOFT is a full member of the OPC foundation.
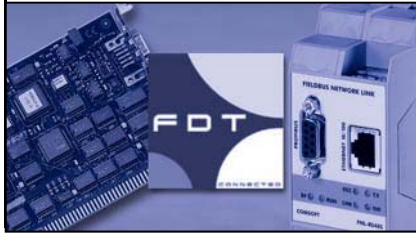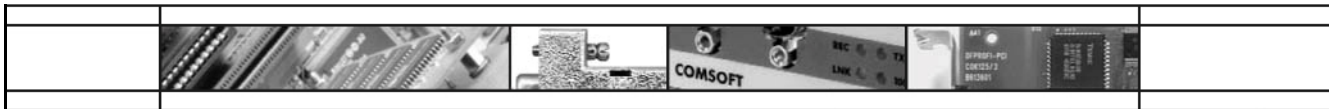
FDT 1.2 Communication DTM
Supports DF PROFI, DF PROFI II & FNL

☐ Description

FDT (Field Device Tool) technology standardizes the communication interface between field devices and systems. The key feature is its independence from the communication protocol and the software environment of either the device or the host system. FDT allows any device to be accessed from any host through any protocol.

FDT consists in principle of a Frame Application and various DTMs (Device Type Manager), which are loadable within this frame application. The DTMs encompass all Slave-specific functions for the configuration of a Slave and can be run during the frame application. Aside from the Slave-specific DTMs there exist channel or communication DTMs, which serve to control f. ex. PROFIBUS Master modules, Hart gateways or Ethernet components.

These communication DTMs can either already make part of the Frame Application or they can be integrated into each Frame application just as Slave-specific DTMs. Thus, every system manufacturer or manufacturer of communication system components is able to develop a DTM specifically suited for his system, which is loadable in the Frame Application.

The end user consequently receives a complete engineering tool for the system configuration, consisting of standard software and hardware components, without the use of system or manufacturer-specific configuration software. For the implementation of its PROFIBUS Master products (DF PROFI, DF PROFI II and FNL) in a FDT 1.2 compatible Frame Application COMSOFT thus offers a communication DTM, which supports DP Master class 2 in connection with DP/V1 services.

As a result, the stand-alone Frame application PACTWARE by Pactware Assoc. and FNL, f. ex., can be easily combined into a network-capable engineering station, such as for the integration of complex PROFIBUS PA equipment.

☐ **Order Numbers**

Order No.	Item
4000-S-L M 8 -3	**FDT 1.2 Communication DTM for** DF PROFI PCI and DF PROFI II PCI/PCIe/CPCI/PC104+
1011079	**FDT 1.2 Communication DTM for FNL**
4000-S-L M 12 -3	**FDT 1.2 Communication DTM, 30 day demo version for** DF PROFI PCI and DF PROFI II PCI/PCIe/CPCI/PC104+

Protocol Drivers

☐ Comdrv

COMDRV can communicate with any kind of serial device supporting the protocols 3964R, DK3964R, and RK512 (S5). During parameterization the desired procedure variant may be selected. Both, active and passive operation is supported.

COMDRV provides standard protocols for the serial connection of SIMATIC S5/S7 devices. In the S5 operating mode the driver is able to interrupt data traffic in favour of a S5-request. After terminating the data traffic initialized by S5, the interrupted sequence of telegrams is re-started.

☐ Parameters

Baud Rate	300 - 19.200 Bit/s
No. of Stop Bits	1, 2
No. of Data Bits	7, 8
Parity	even, odd, none
Modem Operation	No modem, leased line, dial/up line
Modem Watchdog	1 - 255 s
Operating Mode	3964R, DK3964R, RK512 (S5)

☐ Unidrv

UNIDRV is used for the connection of asynchronous serial devices, such as printers, plotters, bar code scanners or scales. It supports the Siemens LAUF protocol, as well as the XON/XOFF protocol.

UNIDRV allows defining simple protocols. Both, character-oriented and block-oriented transmission, are supported. By means of control characters in the data stream a switch-over between both operating modes is feasible. An emulation of the Siemens LAUF protocol is integrated in the UNIDRV and can be set during parameterization. UNIDRV supports multi-point operation in half-duplex mode. Thus, several devices may be addressed simultaneously in one single line.

For protocol definition, the following protocol elements are available: transmission request characters, start sequence, ready-to-receive state, stop sequence, end sequence, block check, acknowledgement, timeout mode, block size.

They are 1 to 2 characters long and can be parameterized and switched off separately.

☐ Parameters

Baud Rate	300 - 19.200 Bit/s
No. of Stop Bits	1, 2
No. of Data Bits	7, 8
Parity	even, odd, none
Modem operation	No modem, leased line, dial/up line
Board driver priority	high, low priority
Blocking	length of single blocks
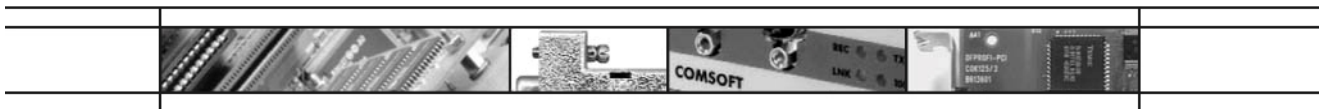
☐ SINEC-L1

SINEC-L1 is a local network for connection of up to 30 automation components, such as, for example, SIMATIC S5. SINEC-L1-bus is the first fieldbus protocol developed by Siemens. It is perfectly suited for non time-critical control transactions and works according to the Master-Slave principle. The driver has the following characteristics: support of up to 30 stations, emergency messages, broadcast, direct traffic from Slave to Slave, collective READ-function, arbitrarily configurable alarm and polling list, list of all failed Slaves available in Master operation mode, protocol timeouts may be parameterised arbitrarily, PG-operation possible.

☐ Parameters

Baud Rate	9.600 Bit/s
No. of Stop Bits	1, 2
No. of Data Bits	7, 8
Parity	even, odd, none
Operating Mode	SINEC-L1 Master and Slave

☐ **PROFIBUS**

As PROFIBUS supports various different protocol variants, it is ideal for fast, time-critical data transfer, as well as for extensive and complex communication tasks. The COMSOFT PROFIBUS protocol driver supports all PROFIBUS protocol variants (L2, FMS, DP and DPV1) up to a baud rate of 1.5 Mbit/s for the DF PROFI family. For the DF PROFI II family DPV0/DPV1 as Master class 1/2 and DPV0 as DP Slave is supported up to 12 Mbit/s. It can be operated as Master, Slave or combination Master. In the combination Master mode, the individual protocol variants can be run in parallel. The protocol driver comprises the application layer interface (ALI) for PROFIBUS, simplifying the structure of the user interface.

In operation as L2 or FMS Master, ALI takes over the administration of its own object list and answers the requests of other participants autonomously, thus taking load off the application. In the DP Master operation, ALI generates a cyclic process image of the attached bus participants, which can be read and modified by the application at any time.

Cyclic DP services and counter-cyclic DPV1 services (Master class 2) can be used simultaneously. In this way, an enhanced communication with complex units from the processing and automation area is realized.

In the DP Slave operation mode standard conformant DP Masters are supported. A GSD file for configuration of the master is included in the scope of delivery. The operating modes DP, DPV1 Master and DP Slave are also supported by the COMSOFT OPC-Server.

☐ **Parameters**

Certificate	PNO-certificate for layer 2	
Protocol Version	FMS	Master
	DP/DPV1	Master or Slave
	FMS/DP	Combination Master
Baud Rates	9.6,19.2,45.45,93.75,187.5, 500 Kbit/s 1.5Mbit/s (also 3, 6, 12 Mbit/s for DF PROFI II)	
Layer 2 Services	SDA, SDN and (C)SRD, live list and L2-identification	
Layer 7 Services	initiate, abort, reject, status, unsolicited-(FMS, PA) status, identify, get-ov, read, write, event-notification, acknowledge-event-notification, event-notification-with-type, alter-event-notification-monitoring, information-report, information-report-with-type	
DP Services	Class 1 Master-Slave	
DP/DPV1 Services	Class 2 Master-Slave MSAC2_initiate, SAC2_read, MSAC2_write, MSAC2_data_transport, MSAC2_abort	

Tel: +49-721/9497-291 Fax: +49-721/9497-299 E-mail: infoicp@comsoft.de
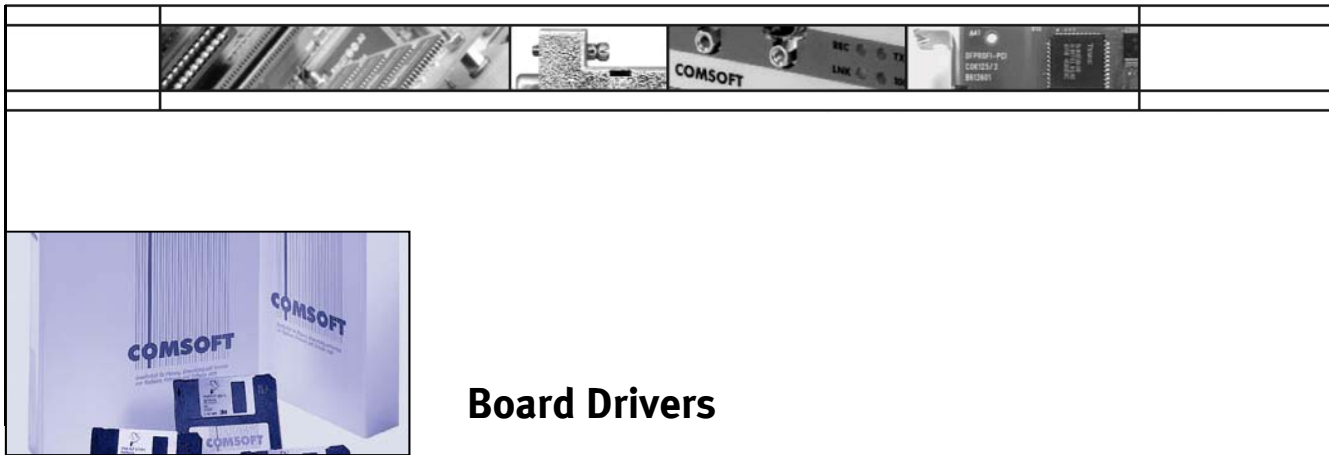
Board Drivers

Introduction

The board driver is an operating system specific device or kernel driver. It runs the communication between the application software and the board.

The driver software provides functions for initialisation and start-up of the hardware, such as software setting of I/O addresses and interrupts or the download mechanism for the firmware of the boards. The following operating systems are supported:

Windows

The board driver is implemented as Windows kernel device driver and is equipped with a protocol-independent device-interface (OPEN, READ, WRITE, CLOSE). For synchronization of the available driver commands, Windows standard mechanisms are supported, enabling a trouble-free integration of the driver into the Windows – multitasking / multithreading concept: Synchronous (waiting) driver commands can be executed in separate threads, as no CPU load is required in the waiting mode. Asynchronous (non waiting) driver commands use system event flags.

Therefore, they can be easily integrated into event controlled environments.

All intelligent COMSOFT PCI boards as well as the FNL and SNL2-E are supported.

Scope of delivery

Board Firmware: Real-time operating system and protocol driver
Fully graphical 32 Bit software tool for start-up and testing of the board
Executable 32 Bit DOS console programmes for testing of the board
Complete source code for all example and test programmes
DLL on demand

Linux

The CharacterDevice Driver was developed as a loadable module and is automatically loaded during the start up of the Linux operation. Following system calls are supported: open() / close() / read() / write() and ioctl(). Synchronous as well as asynchronous calls are possible. Asynchronous calls are acknowledged with SIGNAL mechanism. Synchronous calls can be executed in parallel through threads. Select() cannot be supported. The distributions of Novell (openSUSE, SUSE Linux) and RedHat (i.e. WS4 and Fedora) are supported; others on request.
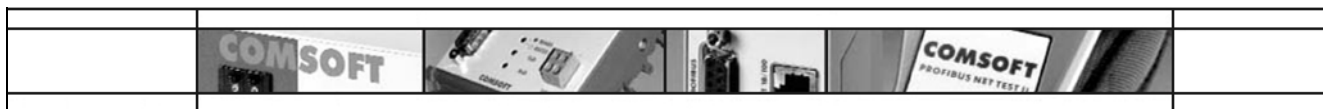
All intelligent COMSOFT PCI boards as well as the SNL2-E are supported.

Scope of delivery

Board Firmware: Real-time operating system and protocol driver
Software tools for loading of firmware onto the board
Software tools for parameter assignment of the protocol drivers
Executable test programs in C-Source Code

Service

Service partner

As your business partner our responsibility does not cease with delivery of our products. For us, service stands for competent and comprehensive care and includes setting into operation, maintenance and support.

Development support

From the very first moment we are at your disposal for assistance in planning, integration and implementation of your application. Together with you we develop the hard- and software concept for an optimum realization of your application. Already during the development phase our engineers take special care to creating an easily maintainable application.

Service hotline

If you have any questions our team of experts will be happy to answer them.

Please contact Ms. Margot Pfauch for quote requests and delivery information:

> Tel: +49 721 9497-291
> Fax: +49 721/9497-299
> E-mail: infoicp@comsoft.de

Mr. Wolfgang Weber is your contact for technical information and support.

You can reach him from Monday to Friday from 9 -12.00 am and 13 - 16.30 pm:

> Tel: +49 721 9497-2800
> Fax: +49 721/9497-299
> E-mail: support@comsoft.de
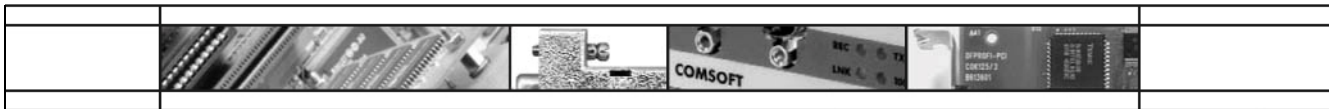
General Terms and Conditions for Sale Contracts

Status: December 2011

1. Parties

In this document, the terms "we", "us" and "our" refer to COMSOFT GmbH, 76627 Karlsruhe, Germany. The terms "you" and "your" refer to our clients.

2. General

(1) The terms and conditions set out below form part of any contracts concluded with us in respect of supplying you with goods or services (sales contract). These terms and conditions apply only if you are a German or foreign public legal entity or fund of if you are a "business client". For the purposes of these terms and conditions, a "business client" is a client (whether an individual, company or partnership vested with legal capacity) who enters into the relevant contract in the conduct of its business or its self-employed professional activity (Sec. 14 (1) of the German Civil Code (BGB)).

(2) In particular, these terms and conditions govern the sale and delivery of software and hardware products ("goods") used for navigation and air traffic management systems or for industrial communication products, and technical support or other services. They apply in accordance with the most recent version and to all subsequent transactions without any need of express reference thereto or agreement thereon at the conclusion of such transaction.

(3) These terms and conditions apply exclusively. Differing or contrary terms do not apply except if expressly agreed upon, even in case that we perform delivery despite our knowledge of differing or contrary terms.

(4) Any references to legal regulations and statutory laws are made for reasons of clarity and transparency only. Legal regulations and statutory laws generally apply without limitation except if and insofar as these terms and conditions expressly change or exclude them.

3. Offers, Orders

Our offers are not binding. By placing an order, you make a binding offer to purchase goods or services from us. We may accept your offer within two weeks. Your offer shall be deemed to be accepted by us either upon written acceptance of the order or by our dispatching the product.

4. Subject Matter of Contract

(1) All business relations between the parties shall be governed by the contents of the written contract only, including these terms and conditions. The written contract, including these terms and conditions, constitutes the complete and final agreement between the parties and supersedes all prior discussions or understandings between them except in the event that the latter were expressly declared to be binding.

(2) In general, any product specifications, technical drawings and images given by us are intended for informational purposes only. They are only binding if exact compliance with the product specifications is required for the goods to be usable for their intended purpose. Our goods are subject to variations recognized by trade practice. We may substitute parts of goods as long as the end product serves its intended purpose.

(3) These terms and conditions apply exclusively. Differing or contrary terms do not apply except if expressly agreed upon, even in case that we perform delivery despite our knowledge of differing or contrary terms.

5. Export and Import Licenses

(1) We will use our best efforts to obtain any export licenses required by law. However, we do not guarantee that the required export licenses will be granted. You are obliged to support us to obtain the required export licenses. You are obliged to state with binding effect if you use our goods for yourself exclusively or if our goods are intended to be passed on to third parties (e.g. to end user). In the event that our goods are intended to be passed on to end user, you are obliged to provide us with all documents or information (e.g. company profile, end-use certificate) which the authorities demand for the purpose of export licenses. If those documents or information cannot be provided even after a reasonable period of time has been set and finally expired, we are entitled to rescind the contract.

(2) You shall be responsible for obtaining any import licenses that might be required.

6. Prices and Payment

(1) Prices are calculated in EURO. Prices are CIP as defined by INCOTERMS 2010, i.e. they include carriage and insurance to the place of destination. Prices are exclusive of the respective statutory VAT and possible expenses. Any customs duties, levies, public fees and charges, including those charged for export licenses, shall be borne by you. If the place of destination is outside Germany, you shall also bear any taxes charged by the country of destination.

(2) If prices are based on our list prices and the delivery of goods is to be executed four months or later after the conclusion of the contract, prices are subject to change according to our then current price list. The changed prices will take into account any discounts previously agreed on.

(3) The purchase price is due and payable net within 30 days from the date of the invoice. Failure to pay within this time period shall be considered default. From the default date, default interest in the amount of 8 percentage points above the respective base interest rate p. a. shall accrue. If you are a corporation, limited liability company, commercial partnership or otherwise operate a commercial business (Kaufmann within the meaning of Sec. 1 (1) of the German Commercial Code (HGB)), the afore mentioned default interest shall accrue from the due date. We reserve all rights to claim further damages caused by your default.

(4) If, after conclusion of the contract, any incidents shall surface which give rise to doubts about your creditworthiness and which endanger your payments to us, we may at our option defer further shipments or services and demand prepayments or a security deposit prior to resuming our shipments or services.

If you do not comply with our demand of prepayment or of depositing a security within a reasonable period of time which shall be set by us, we shall be entitled to rescind the contract and claim damages for non-performance from you.

(5) Invoices are payable by bank transfer (wire transfer). We will not accept any other methods of payment unless otherwise explicitly agreed by us in writing.

(6) Without prejudice to s. 9 p. (4) of these terms and conditions, you shall have no right of set-off or retention, except to the extent that the counterclaim has not been disputed by us or been determined by a final and binding decision.

7. Place of Performance, Delivery, Risk of Loss

(1) Unless otherwise agreed, place of performance shall be Karlsruhe, Germany.

(2) Unless otherwise agreed, delivery shall be CIP as defined by INCOTERMS 2010. We may at our option select the mode of transportation, including the carrier, the method of shipping, and the packaging.

(3) The risk of loss or damage to the goods shall pass to you upon delivery at the latest. The goods shall be deemed delivered if you are in delay of acceptance. If delivery is CIP as defined
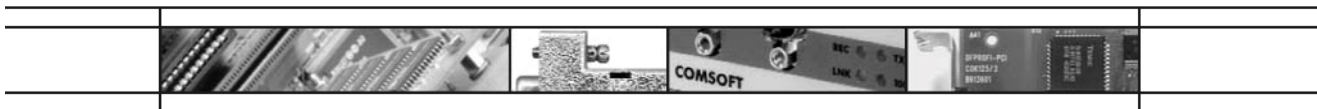
by INCOTERMS 2010, the risk of loss or damage to the goods and the risk of delay in delivery shall pass to you upon delivery to the first carrier. The same applies in case of partial delivery.

(4) If delivery is CIP as defined by INCOTERMS 2010, we will obtain an insurance that covers damages to the products caused by water, fire, breaking, or improper transportation, at our expense.

8. Time for Delivery, Delay

(1) The term to deliver the goods and the term for full performance of the contract (herein together referred to as "time for delivery) shall be expressly agreed or else determined by us at the time of acceptance of your order. The time for delivery shall not begin to run as long as we are not granted the required export licenses, and as long as you do not furnish us with all documents required to fulfil your order, such as governmental authorizations or clearances from your country. The same applies as long as you do not pay a deposit if payment of such deposit has been agreed. There shall be deemed no delay in delivery if we dispatch the goods or notify you that the goods are ready to dispatch within the agreed time for delivery.

(2) The time for delivery shall be extended for the period of delay in case of any delay for which we are not responsible according to the following rules.

(3) Our delivery shall be deemed delayed at the time determined by the applicable laws. In any case, our delivery shall not be deemed delayed until you give us overdue notice. We shall not be responsible for delays, failures or omissions under this contract due to any cause beyond our control, including labour disturbances, war, mobilization, political disturbances, governmental intervention of various kinds, including

any delay in issuance or denial of any required licenses, in particular export licenses, riots, fires, earthquakes, floods, storms, lightning, epidemics, shortage of power, interference with transport, extensive operational breakdowns, or by deficient or delayed performance on the part of our suppliers, except if such event is due to our own misconduct.

(4) If we are unable to perform within the agreed time for delivery due to causes for which we are not responsible (unavailability of delivery), we will give you prompt notice and inform you of the anticipated time for delivery. If by the latter time the delivery is still unavailable, we may rescind the contract in whole or in part. In this event, we will reimburse you any payments made to us for the delivery. In particular, the delivery shall be deemed unavailable if (1) our suppliers fail to perform in time and (2) the contract with our supplier to deliver its goods provides the same security for delivery in comparison with our contract with you (at least same goods and volume).

Our statutory rights to rescind the contract shall remain unaffected. In the event that our duty to perform is excluded, for example if performance is impossible or unreasonable, the statutory laws on the implementation or liquidation of the contract shall remain unaffected.

Your rights to rescind the contract pursuant to s. 9 of these terms and conditions shall also remain unaffected.

(5) In case of default in acceptance, other breach of duties to cooperate by you, or any other event that causes a delay in delivery for which you are responsible, we are entitled to claim any resulting damage including but not limited to additional expenses, in particular expenses for the storage of our goods. In compensation for these damages, we may charge you a fixed rate of 0,5 % of the invoice amount per month, starting one month after we have given you notice that the goods are ready to dispatch. Further damages are reserved; but any fixed rate payments shall be discounted. Our statutory rights remain unaffected, including our right to terminate the contract. You may provide evidence that we did not suffer any damages at all or that the damage suffered by us is significantly smaller than the fixed rate.

(6) Our delivery is conditioned upon timely and proper performance of all your contractual duties.

(7) We are entitled to partial deliveries only if (1) the goods can be used separately, and (2) the partial delivery does not cause you any additional costs or expenses (except if we have agreed to compensate you for these additional costs and expenses).

9. Warranty

(1) Warranty for defective goods shall be based primarily on the agreement of the condition of the goods. If the condition of the goods has not been agreed, it shall be determined in accordance with s. 434 p. 1 German Civil Code (BGB) whether our goods are defective or not.

(2) Precondition for any warranty claim is your full compliance with all requirements regarding inspection and objection established by s. 377 and 381 German Commercial Code (HGB).

You shall inspect the goods immediately upon delivery. Complaints regarding any defects or shortages in the goods, including wrong delivery, shall be promptly made in writing, specifying the nature and extent of the defect or shortage in reasonable detail. Complaints shall be considered made promptly if the complaint is sent within seven days after the goods have been delivered or, if a defect surfaces at a later time, within seven days after the defect has been detected.

If you fail to inspect the goods and notify us of defects or shortages in time, all your rights with respect to any claims against us arising from the defect or shortage shall be completely waived.

(3) In the event that there is a defect or shortage in our goods for which we are responsible and you have complained promptly, we shall, at our option, either remedy the defect (e.g. by repair or reprocessing) or, after your return of the defective goods to us, deliver new and conforming goods to you (replacement).

We shall not be held responsible for defects caused by negligence or mistreatment of the goods on your part, excessive wear and tear, or failure to observe our maintenance, servicing and cleaning instructions.

(4) We may suspend remedying the defect or replacing the goods until you pay the purchase price for these goods. However, you are entitled to retain a reasonable part of the purchase price, which shall be in proportion to the defects of the goods.

(5) If our goods are in fact defective, we shall pay any costs required to remedy the defect or replace the goods, including any costs of transportation for return and reshipment, labour and materials. You shall reimburse us, however, for all costs incurred by trying to remedy the alleged defect or replacing the goods if your complaint was unfounded.

(6) We are entitled to deliver the goods or to remedy the defect by replacing a subcomponent of our goods – which our supplier does not deliver or not deliver on time – with an adequate subcomponent of another supplier or manufacturer, which is considered equal or better in terms of quality.

(7) If remedying the defect or replacement has failed or not been made in time, you are entitled to reduce the purchase price or to rescind the contract at your option. You may not rescind the contract, however, if the defect is insignificant.

(8) Any claims for damages and reimbursement of expenses shall be excluded except as regulated by sec. 10 of these terms and conditions.

10. Liability

(1) We shall be liable for breach of contract and tort according to the statutory laws except if otherwise provided for in these terms and conditions.

(2) In case of intent or gross negligence on our part we shall be liable for any claims for damages, whether based on tort, warranty, contract or any other legal theory, according to the statutory laws. In all other cases, we shall be liable only for damage to life, body or health or in case of breach of fundamental contract obligations (i.e. obligations that are a prerequisite for proper performance; at the same time, the other party may rely on the debtor's compliance with them), but our liability shall be limited to the typically predictable damage.

(3) P. (2) shall not be applicable if we fraudulently conceal a defect of our goods or if we guarantee the condition of the goods. Also, our liability under the German Product Liability Act (ProdHG) shall remain unaffected by p. (2).

(4) Except in the event that our goods are defective, you may only rescind the contract if we culpably breached a duty. Other than that, the statutory laws shall apply.

(5) P. (1) to (4) of this section shall also apply to the liability of our workers, employees, agents or assistants in performance.
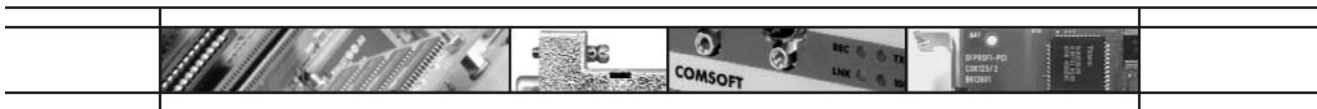
11. Period of prescription

(1) Warranty claims shall become time-barred 12 months after the delivery of the goods. However, s. 438 p. 1 No. 1, s. 438 p. 3 and s. 479 German Civil Code (BGB) shall remain unaffected.
(2) P. (1) shall apply to any claims for damages, whether based on tort, warranty, contract or any other legal theory, if the damage is caused by a defect of our goods, except if the period of prescription pursuant to s. 195, 198 German Civil Code (BGB) is shorter. If the damage is not caused by a defect of our goods, any claims for damages pursuant to s. 9 of these terms and conditions shall become time-barred according to statutory laws.
In any case, the period of prescription determined by the German Product Liability Act (ProdHG) shall remain unaffected.

12. Intellectual Property Rights

(1) We grant you the non-exclusive right to use any software delivered with the product for use in connection with the product.
(2) You may not make copies of the software, except for the purpose of the use of the software pursuant to p. (1) or for backup purposes.
(3) You may transfer the rights to the software to any third party only if we gave our explicit consent in advance and in writing.
(4) In no event shall we be required to make available the source code of the software.
(5) We reserve all rights in the documents we provide to you, in particular in cost estimates and technical drawings, and in the information contained therein. You may not improperly use, reproduce, or otherwise disclose such material to third parties.

13. Assignment

You may not assign any claims arising from transactions with us without our explicit consent in advance and in writing.

14. Retention of Title

(1) The following retention of title agreement shall secure all existing and future claims which we may have against you by virtue of any legal basis founded on the business relationship between the parties, including any balances from a current account relationship which is limited to this business relationship.
(2) We retain title to the goods until complete payment of all secured claims. The goods as well as all goods replacing the goods which are subject to the retention of title pursuant to this provision are referred to in the following as "goods subject to retention of title".
(3) You shall deposit the goods subject to retention of title on our behalf and without consideration.
(4) You may neither pledge the goods subject to retention of title nor create security interests unless we gave our explicit consent in advance and in writing. In the event of pledges, seizure or other disposals or interventions concerning the goods subject to retention of title by third parties, you must inform the third party of our property, and inform us thereof without delay. All costs and damages caused thereby shall be borne by you.
(5) If you do not comply with your contractual duties, we may rescind the contract and claim the goods subject to retention of title to be returned to us. In particular, a delay in payment will be regarded as non-compliance.
(6) You may process and sell the goods subject to retention of title in the course of normal business. In this event, the following supplementary terms and conditions apply:
(a) Processing or modifying the goods subject to retention of title shall always be accomplished on our behalf as producer within the meaning of s. 950 German Civil Code (BGB). An obligation on our side, however, shall not be created thereby. In the event that the goods subject to retention of title are processed, modified, connected to or mixed with other goods which do not
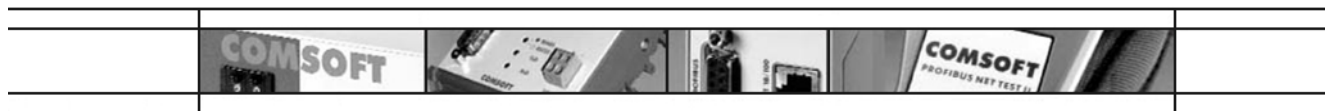
belong to us, it is hereby agreed that we will acquire co-ownership of the new goods based on the relation of the value of the goods subject to retention of title to the goods processed, modified, connected or mixed at the time of the processing, modification, connection or mixture.

(b) For security purposes, you hereby assign all receivables (including all balances from the current account) which result from the sale of the goods or from any other legal basis (insurance, tort law) with regard to the goods subject to retention of title to us. We agree to this assignment. Your duties outlined in p. (4) of this section also apply with respect to the receivables.

(c) We authorize you to collect the assigned receivables in your own name on our behalf. We may, however, revoke such authorization at any time if you do not properly fulfil your payment obligations. In this event, you must inform us of the receivables assigned, the respective debtors, and any other detail necessary for the collection of the receivables. You must also hand over the relevant documentation and inform the debtors of the assignment.

(d) Where our claims are secured through the assignment and retention by more than 120 %, we will, upon your demand, release any surplus of receivables or, at our option, any surplus of goods subject to retention of title.

15. Compliance

(1) You guarantee that - In the event that you pass on the goods to third parties -, you comply with all applicable laws, with laws concerning export control and with current embargos in particular.

(2) If you do not comply with such applicable laws, we are entitled to claim damages, rescind the contract and to terminate other existing contracts with immediate effect.

16. Applicable Law, Jurisdiction

(1) The laws of the Federal Republic of Germany shall exclusively apply to these terms and conditions and to any transactions concluded by you and us. International purchase laws do not apply. In particular, the UN Convention on the International Sale of Goods (CISG) does not apply.

(2) The courts in Karlsruhe, Germany, shall have exclusive jurisdiction in respect of all disputes arising out of or in connection with the relevant contract. However, we may also choose the courts that are competent at the place of your domicile.

17. Privacy

(1) We may save and process any data relating to you, to the extent necessary for the purpose of the execution and implementation of the contract and as long as we are required to keep such data in accordance with applicable law.

(2) We shall have the right to submit personal data relating to you to credit agencies, to the extent necessary for a credit check, subject, however, to your consent in each individual case. We shall neither make available any of your personal data to other third parties without your express consent, except to the extent that we are required to disclose any data pursuant to applicable law.

(3) We shall not be permitted to collect, submit to any third party or otherwise process your personal data for any purpose other than those set forth in this section.