General
Operating, Maintenance and Installation Manual

Hardware Platform
Protocol Converter
- Windows Version -

"Industrial PC IPC191V2 WIN"

TÜV CERT

DIN EN ISO 9001:2000

Index

1   Introduction

All technical information, descriptions and illustrations contained in this Operating, Maintenance and Installation Manual remain our property and shall not be used otherwise than for operating this System, nor shall they be copied, reproduced or passed on to third parties or brought to their notice without our prior written consent.

The information represented in this manual is in keeping with current standards and is subject to later alterations.

This manual contains important instructions referring to safe installation, commissioning, operation and maintenance.
Read this manual carefully before starting up the protocol converter and observe the instructions.

In order to comply with the guidelines for electro-magnetic compatibility in industrial PCs (or other variants) only CE-certified components are used in compliance with project-specific requirements.

It is to be noted that the Protocol Converter (IPC191) has not been protected against lightning and the operator should, *if desired,* take appropriate protective precautions.

All trademarks and brand names contained in this user manual are for identification purposes only and can be owned by their respective holders.

Finally we want to draw your attention to the fact that any warranties with respect to delivered goods will be invalid in the event that:

- Operation, servicing and maintenance are not carried out accurately according to the instructions, repairs are not carried out by our personnel or without our prior written consent.

- Commissioning is not carried out by our personnel or we have not given our approval for the commissioning or the commissioning is carried out by untrained personnel.

- The unit is used inadequately, incorrectly, negligently or inappropriately or for a purpose other than that originally intended.

- The serial number is removed from the product.

For your protection, observe the following safety precautions when setting up your equipment:

- Follow all cautions and instructions marked on the equipment.

- Ensure that the voltage and frequency of your power source match the voltage and frequency inscribed on the equipment's electrical rating label.

- Never push objects of any kind through openings in the equipment. Dangerous voltages may be present. Conductive foreign objects could produce a short circuit that could cause fire, electric shock, or damage to your equipment.

    All in this Document used Trade marks are stated for identification purposes and may be the property of the various holders.

2 Hardware Description

2.1 General

As hardware platform for the protocol converter a 19" industrial PC is used. This solution offers a high degree on flexibility, performance and reliability.

Mounting and intensive tests of the industrial PC are done in our company. Before and after a 48 hour Burn-in Test each device must run through a complete function test

All components are cooled passively. Only if critical system temperatures have been reached two independent housing fans are switched on automatically. Important for the selection of our components are particularly items like quality, availability and a high durability.

The industrial PC consists of a 19" chassis (1U) with an integrated Dual PCI riser card for inserting the appropriate cards.
The mains power supply is 90 – 264 V AC, 127 – 373 V DC autorange, optional 10 – 30 V DC power supply (other on request).
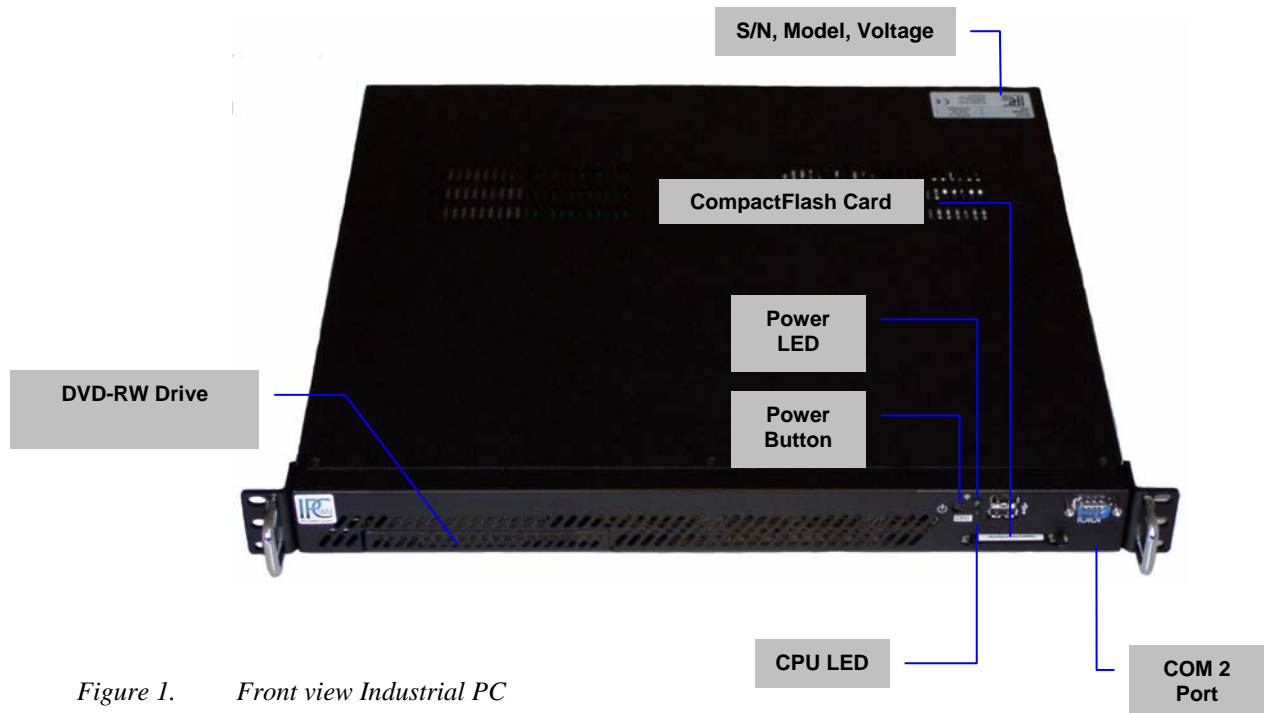
S/N, Model, Voltage

CompactFlash Card

Power LED

Power Button

DVD-RW Drive

CPU LED

COM 2 Port

Figure 1.   Front view Industrial PC

On the figure 2 you can see the reverse side of our Industrial PC. The pin assignments vary according to execution. Overview of the different models is to be found under 3. Interface Configuration.

| Monitor | LAN | LAN | PCI 2 | Main Power Supply input |

| Keyboard |
| COM 1 |
| PCI 1 e.g.: COM 4 – COM 11 |
| 8 Port DB 9 Male connector cable (Optional: DB25 (Male, Female)) |
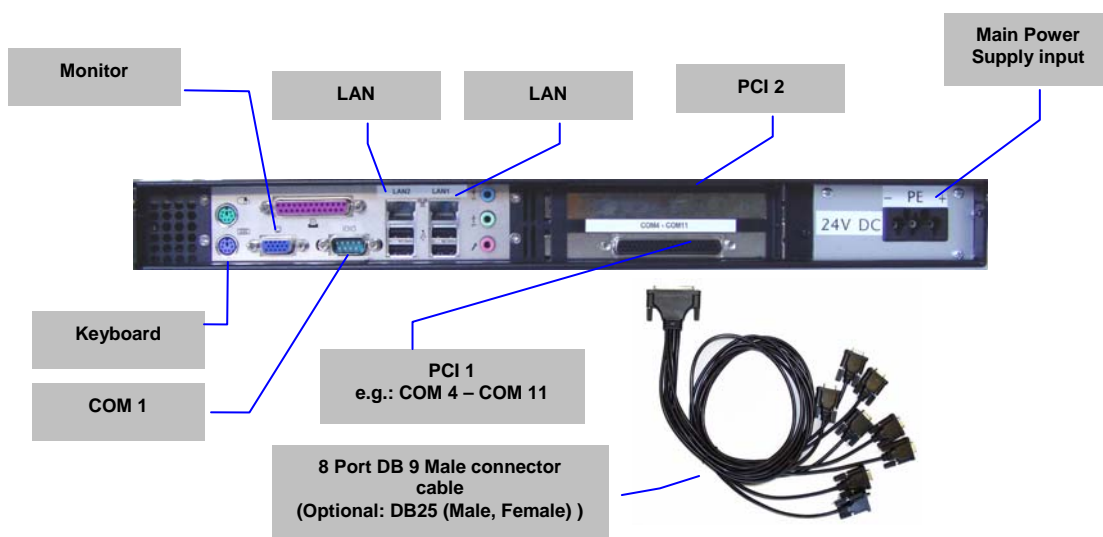
Figure 2.   Overview Interfaces

2.2 Hardware Components

2.2.1 Mainboard

The Mini-ITX Mainboard is an ultra compact x86 dual LAN platform with all the necessary interfaces. Its heart consists of a fanless highly efficient embedded VIA Eden processor. The mainboard provides one DIMM slot for DDR memory modules and supports up to 1GB system memory.

The following interfaces are provided by the CPU module:

- 2 x RS232 Interface (model-specific)
- 2 x RJ45 LAN Interface
- Bi-directional Parallel Port
- EIDE Interface
- VGA Interface
- Keyboard- / Mouse Port

2.2.2 CPU-Module RS232 Interfaces

The installed mainboard provides 3 serial interfaces. However, depending on the model these interfaces are completely or only partly available at the chassis. COM 2 – COM 3 do not possess an RI signal.
The signal level of the serial interfaces can be changed between 5 and 12 V by means of a jumper. COM3 interface is reserved for internal purpose and can not be used.

This interface type is used for COM 1
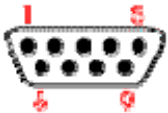
SERIAL PORT RS232 DTE DB9 male connector	Pin	Direction	Description
	1	INPUT	DCD Data Carrier Detect
	2	INPUT	RXD Receive Data
	3	OUTPUT	TXD Transmit Data
	4	OUTPUT	DTR Data Terminal Ready
	5		GND Ground
	6	INPUT	DSR Data Set Ready
	7	OUTPUT	RTS Request To Send
	8	INPUT	CTS Clear To Send
	9	INPUT	RI Ring Indicator

Figure 3.   Pin Assignment of DB9 Interface (Computer) COM1

This interface type is used for COM 2 – COM 4
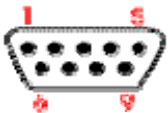
SERIAL PORT RS232 DTE DB9 male connector	Pin	Direction	Description
	1	INPUT	DCD Data Carrier Detect
	2	INPUT	RXD Receive Data
	3	OUTPUT	TXD Transmit Data
	4	OUTPUT	DTR Data Terminal Ready
	5		GND Ground
	6	INPUT	DSR Data Set Ready
	7	OUTPUT	RTS Request To Send
	8	INPUT	CTS Clear To Send
	9		

Figure 4.   Pin Assignment of DB9 Interface (Computer) COM2 – COM4

2.2.3 Hardlock Dongle

The hardlock dongle is a hardware protection for the software. It must be attached onto the parallel interface. Without hardlock dongle the software does not boot!

Figure 5.   Hardlock Dongle

2.2.4 8-Port RS232 Communication Board (RS232 Interfaces for remote communication)

Each IPC191 can be equipped with up to two serial interface cards.

**SERIAL PORT
RS232 DTE
DB9 male connector**

Pin	Direction	Description
1	INPUT	DCD Data Carrier Detect
2	INPUT	RXD Receive Data
3	OUTPUT	TXD Transmit Data
4	OUTPUT	DTR Data Terminal Ready
5		GND Ground
6	INPUT	DSR Data Set Ready
7	OUTPUT	RTS Request To Send
8	INPUT	CTS Clear To Send
9		

Figure 6.   Pin Assignment of DB9 interface (Communication Board)

2.2.5 Ethernet Interfaces

The industrial PC features up to two Ethernet Interfaces generally. The connection is set up via a 10/100 Mbps BaseT (RJ45) interface. Further Interfaces with 10/100 Mbps or 10/100/1000 Mbps BaseT are possible on request.

2.2.6 CompactFlash

The CompactFlash card serves as a mass storage device, i.e. for storing the operating system, the applications and configuration data. As a result the disadvantages involved with the use of a rotating harddisk are avoided, thus improving the reliability of the system substantially since a CompactFlash has an MTBF of at least 4,000,000 hours.
The CompactFlash adapter is simply connected to the IDE bus of the CPU module and treated just like a hard disk.
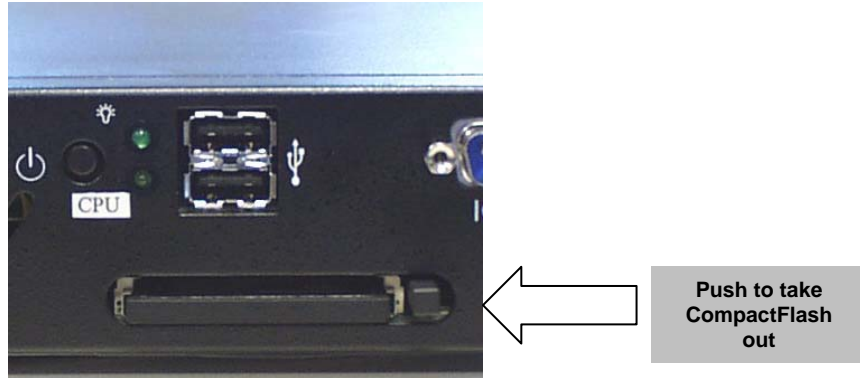

Push to take CompactFlash out

Figure 7.   *CompactFlash Adapter*

With the power supply switched off the CompactFlash card can simply be taken out or inserted enabling a quick change to different hardware.

2.2.7 CMOS Lithium Battery

The onboard CMOS RAM stores system configuration data and has an onboard battery power supply. The long-life Lithium battery has normally a lifetime of at least 5 years.

If the CMOS battery is empty and the CMOS information has been deleted, the CMOS-RAM is programmed by the BIOS with default settings.
The converter can be operated faultlessly even if the CMOS RAM is not provided by the battery. After the battery has been changed only time and date must be input.

For opening the case 3 screws on the top must be removed. The battery holder is soldered in the Mainboard and well visible. **Attention**: Open-frame power supplies are used. Because of this, the process should be carried out only by experienced electronic engineers. The device must be completely disconnected from any power supply. Before opening please push the power button (without electricity supply) several times to eliminate residual voltages of the power supply.

Battery replacement must be carried out by qualified specialists. **CAUTION!** Incorrect replacement might cause the danger of explosion. Replace the battery exclusively by the same type **(3 V DC, CR2032).** Used batteries are to be disposed absolutely in accordance with the manufacturer's instructions.

Please pay attention to the correct polarity!

2.2.8 CPU LED

The CPU LED shows the states of conversion software and operating system.

Following figure shows all possible indications:
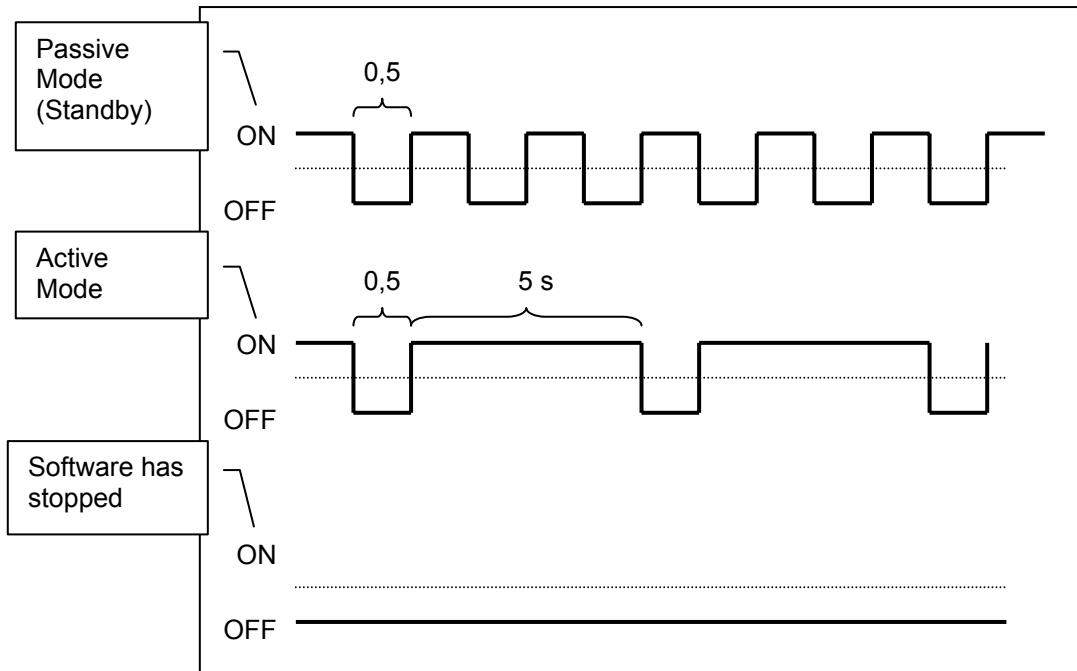
Figure 8.   *CPU-LED indications*

2.2.9 Power Supply

Power supplies with different input voltages can be used in the IPC191.
Please pay attention to the correct polarity and input voltage.

2.2.9.1 AC Power Supply

By using AC voltages a specific power supply cable (Fig. 8) is supplied.
Please use this cable exclusively.

Figure 9.   Power Cable

2.2.9.2 DC Power Supply

By using DC voltages only a male connector is supplied. This connector has
to be used. By connecting the cable with the male connector the correct
polarity must be kept. The wire cross-section must be at least 1,5 mm².

Figure 10.   DC Power Connection socket

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Gundstraße 15   Copyright © 2007 IPCOMM GmbH
D-91056 Erlangen   All rights reserved

3   Backup, Restore

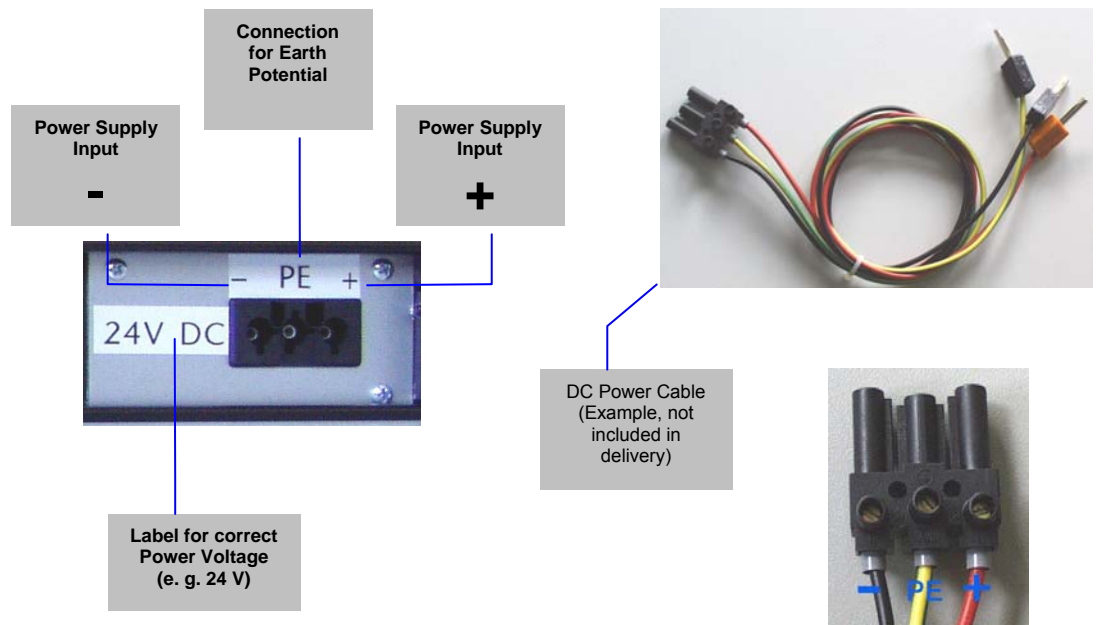The operating system Windows XP, the protocol conversion software ipConv and the backup software "Acronis True Image" are preinstalled at the IPC191. For saving space on the CompactFlash only necessary components have been installed. The access to the CompactFlash has been minimized by system optimizing.

3.1   Restoration / Reinstallation

If the origin state of the system shall be restored the provided CD / DVD created by "Acronis True Image" is necessary.
The CD / DVD was created before delivery and includes Windows XP, Acronis True Image and the ipConv software.

The following steps are necessary for the system restoration:

1. So far as possible, backup your configuration data and the software (if these are more current than the delivered one).
2. Insert Acronis True Image Backup CD / DVD in your CD / DVD drive.
3. Please, reboot the system. The System boots from CD / DVD drive and the True Image boot menu appears.
4. Please, select the option „One - Click Restore ".

Please, note that all data on the CompactFlash are erased with this process.

3.2   Backup

Backup of software and configuration is described in the "ipConv documentation".
For generating a backup of the entire system (CompactFlash) please use the preinstalled backup software "Acronis True Image". The image files can be stored on CD, DVD or USB mass storage devices..

Further information of the backup software is described in the attached documentation belonging to the Acronis True Image software.

4   Interface Configuration

The following tables represent the configuration of the individual interfaces of miscellaneous models. The setting is carried out either in the BIOS or via jumpers on the appropriate card depending on the unit. The allocation diagram of the link can be found in the documentation of the component.

4.1   Model A

Assembly	Device	I/O port	IRQ	Label	Connector
Mainboard	ser1	3F8	4	IOIOI (Chassis rear)	DB9ST
	ser2	2F8	3	IOIOI (Chassis front)	DB9ST
	ser3	3E8	5	CPU (Diagnose)	NOT Connected
	en1	PCI	PCI	LAN1	RJ45
	en2	PCI	PCI	LAN2	RJ45
UART 1	ser4	PCI	PCI	COM4	DB9ST
	ser5	PCI	PCI	COM5	DB9ST
	ser6	PCI	PCI	COM6	DB9ST
	ser7	PCI	PCI	COM7	DB9ST
	ser8	PCI	PCI	COM8	DB9ST
	ser9	PCI	PCI	COM9	DB9ST
	ser10	PCI	PCI	COM10	DB9ST
	ser11	PCI	PCI	COM11	DB9ST

4.2   Model B

Assembly	Device	I/O port	IRQ	Label	Connector
Mainboard	ser1	3F8	4	IOIOI (Chassis rear)	DB9ST
	ser2	2F8	3	IOIOI (Chassis front)	DB9ST
	ser3	3E8	5	CPU (Diagnose)	NOT Connected
	en1	PCI	PCI	LAN1	RJ45
	en2	PCI	PCI	LAN2	RJ45
UART 1	ser4	PCI	PCI	COM4	DB9ST
	ser5	PCI	PCI	COM5	DB9ST
	ser6	PCI	PCI	COM6	DB9ST
	ser7	PCI	PCI	COM7	DB9ST
	ser8	PCI	PCI	COM8	DB9ST
	ser9	PCI	PCI	COM9	DB9ST
	ser10	PCI	PCI	COM10	DB9ST
	ser11	PCI	PCI	COM11	DB9ST
UART 2	ser12	PCI	PCI	COM4	DB9ST
	ser13	PCI	PCI	COM5	DB9ST
	ser14	PCI	PCI	COM6	DB9ST
	ser15	PCI	PCI	COM7	DB9ST
	ser16	PCI	PCI	COM8	DB9ST
	ser17	PCI	PCI	COM9	DB9ST
	ser18	PCI	PCI	COM10	DB9ST
	ser19	PCI	PCI	COM11	DB9ST

4.3   Model C

Assembly	Device	I/O port	IRQ	Label	Connector
Mainboard	ser1	3F8	4	IOIOI (Chassis rear)	DB9ST
	ser2	2F8	3	IOIOI (Chassis front)	DB9ST
	ser3	3E8	5	CPU (Diagnose)	NOT Connected
	en1	PCI	PCI	LAN1	RJ45
	en2	PCI	PCI	LAN2	RJ45
Ethernet 10/100 BaseT	en3	PCI	PCI	LAN3	RJ45
UART 1	ser4	PCI	PCI	COM4	DB9ST
	ser5	PCI	PCI	COM5	DB9ST
	ser6	PCI	PCI	COM6	DB9ST
	ser7	PCI	PCI	COM7	DB9ST
	ser8	PCI	PCI	COM8	DB9ST
	ser9	PCI	PCI	COM9	DB9ST
	ser10	PCI	PCI	COM10	DB9ST
	ser11	PCI	PCI	COM11	DB9ST

4.4 Model D

Assembly	Device	I/O port	IRQ	Label	Connector
Mainboard	ser1	3F8	4	IOIOI (Chassis rear)	DB9ST
	ser2	2F8	3	IOIOI (Chassis front)	DB9ST
	ser3	3E8	5	CPU (Diagnose)	NOT Connected
	en1	PCI	PCI	LAN1	RJ45
	en2	PCI	PCI	LAN2	RJ45
USART 1	ser4	PCI	PCI	COM4	DB25ST

4.5 Model E

Assembly	Device	I/O port	IRQ	Label	Connector
Mainboard	ser1	3F8	4	IOIOI (Chassis rear)	DB9ST
	ser2	2F8	3	IOIOI (Chassis front)	DB9ST
	ser3	3E8	5	CPU (Diagnose)	NOT Connected
	en1	PCI	PCI	LAN1	RJ45
	en2	PCI	PCI	LAN2	RJ45
	en3	PCI	PCI	LAN3	RJ45
	en4	PCI	PCI	LAN4	RJ45

4.6 Model L

Assembly	Device	I/O port	IRQ	Label	Connector
Mainboard	ser1	3F8	4	IOIOI (Chassis rear)	DB9ST
	ser2	2F8	3	IOIOI (Chassis front)	DB9ST
	ser3	3E8	5	CPU (Diagnose)	NOT Connected
	en1	PCI	PCI	LAN1	RJ45
	en2	PCI	PCI	LAN2	RJ45

Subject to alterations

Version 1.0.1

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5   Technical Data

Chassis

- 19" rack mount chassis (1U)
- Dual PCI riser card
- Excellent air flow for maximum heat dissipation

Power Supply

- Fanless
- 90 – 264 V AC, 127 – 373 V DC autorange, optional 24 V DC, further voltages on request
- Power consumption: max. 50 W (depending on the used type)
- CE/TÜV certified

Mainboard

- VIA Eden processor 600 MHz CPU
- Max 1 GB DDR RAM
- EIDE hard disk and flash disk drive interface
- Digital I/O Interface
- 2 x high speed serial ports
- Bi-directional parallel port
- Real-time clock/calendar
- 2 x RJ45 10/100BaseT LAN interface onboard

Serial Cards

- Up to sixteen serial RS232 ports
- DB9 male connectors, optional DB25 (Male, Female)
- 50 bps to 921.6Kbps transmission speed
- 16KV ESD Protection

Mass Storage

- Rugged CompactFlash, Industrial – Grade
- Removable flash card
- No Moving Parts
- 64 MB, max. 4 GB supported
- Vibration: 15 G peak to peak max.
- Shock: 1000 G max.
- MTBF ≥ 4.000.000 hours

Video

- Standard VGA graphic adapter

General

- All components are CE certified
- Height: 1 U
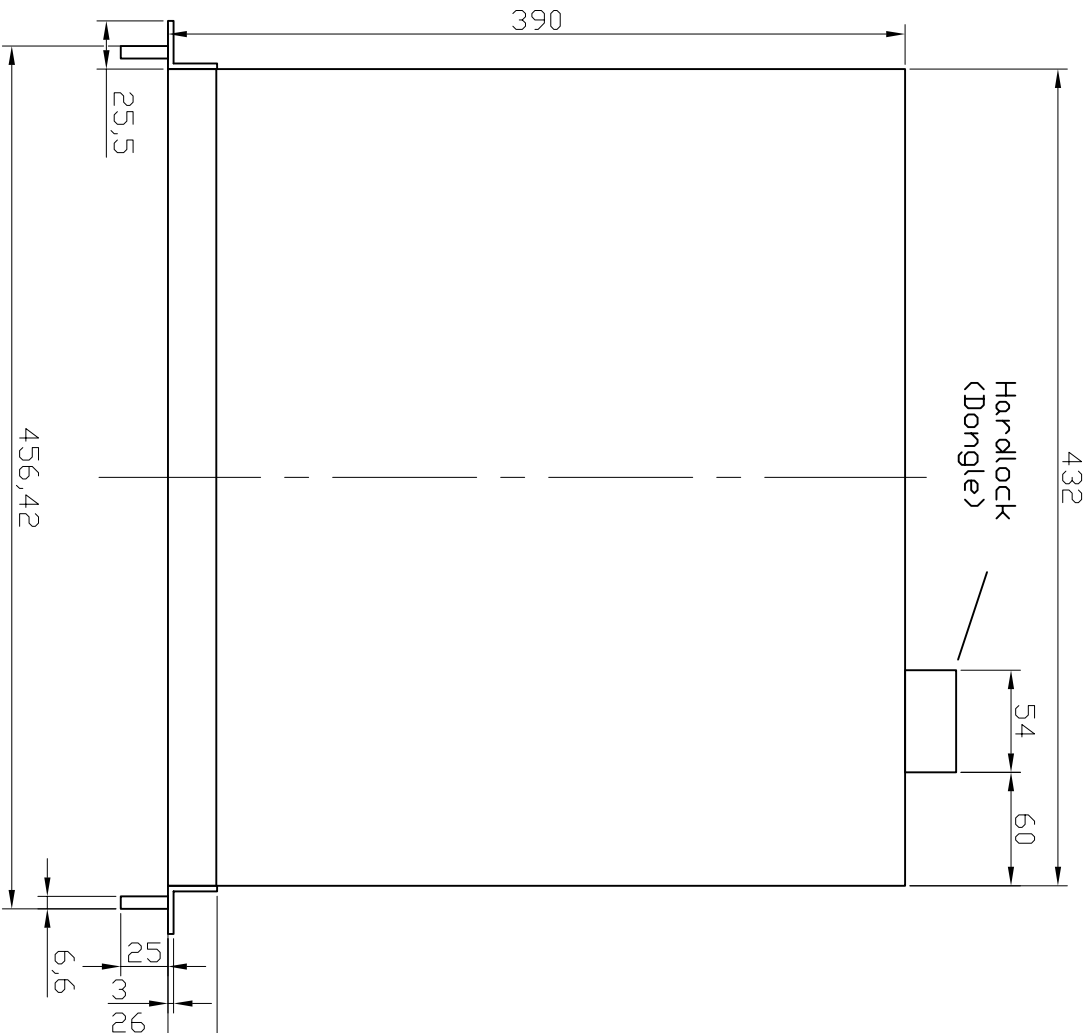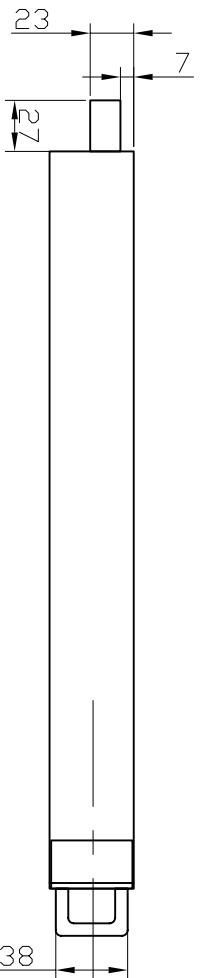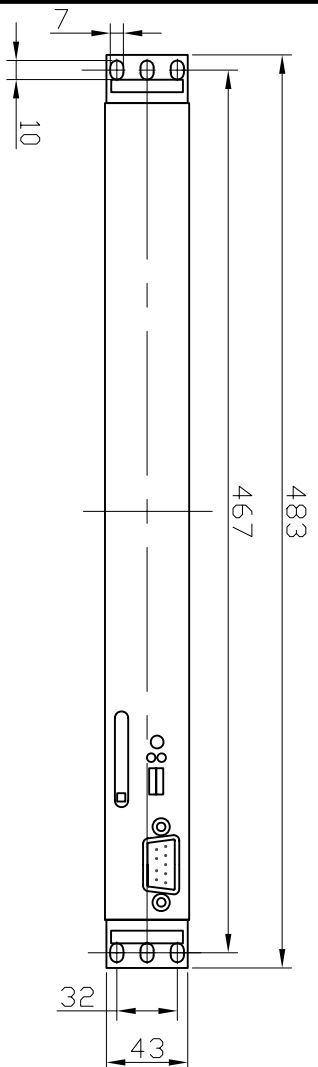- Dimension (W x H x D): 19" x 1.75" x 15" (482.6 mm x 44.45 mm x 381 mm)
- Weight: 5,80 kg

Operating Environment

- Operating Temperature: 0° C to 45° C
- Storage Temperature: 0° C to 60° C
- Relative Humidity (non condensing): 5 % to 90 %
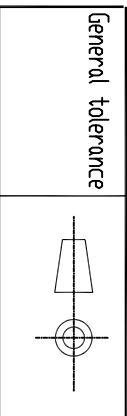
Assembled by IPCOMM GmbH/Germany

6   Appendix

Hardlock
(Dongle)

390
432
456,42
25,5
54
60
6,6
25
3
26

7
10
483
467
32
43

23
7
27
38

General tolerance				Scale: 1 : 4		Subject to change without prior notice
	Date	Name				
Designer	21.10.04	M. Ostapovski				
Checked				IPC191 19"		
Standard						

IPCOMM GmbH

V 1.0

Origin:

Repl. for:

Replaced through:

Page 1

Pg.