

HEC

General Operating, Maintenance and Installation Manual



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Edition November 2005
Version 3.2.2 K



DIN EN ISO 9001:2000

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1 Introduction

All technical information, specifications and illustrations contained in this Operating, Maintenance and Installation Manual remain our property and shall not be used otherwise than for operating this installation, 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 DIN-Rail Embedded PC (HEC) - also called as DIN-Rail Mounted PC - and observe the instructions.

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

Caution!

The HEC is a class A device. This device can cause radio disturbances in residential buildings. In this case the operator might be obliged to carry out appropriate measures and take responsibility.

At this point we want to draw your attention to the fact that any warranties with respect to the 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.

2 Device Presentation

2.1 Rail-mounted Embedded PC HEC

The rail-mounted PC HEC has been specially designed for industrial applications and serves as hardware platform for the protocol converter

The HEC basic version is fitted with a PC/104 CPU module and offers serial RS232 interfaces as well as an Ethernet adapter.

The rail-mounted PC contains no rotating components. Thanks to the low power requirements a cooling fan is not necessary. A Compact Flash memory card with an MTBF $\geq 1.000.000$ h serves as a storage medium.

Integrated LEDs support various diagnosis functions. Indicators for the input voltage, send and receive status of the RS232 interfaces and the network controller report the current operating status.

A CAN controller can be installed directly on the PC/104 CPU module. In addition, the rail-mounted PC can be upgraded with various PC/104 modules and thus integrated in various fieldbus systems.

2.2 Operating and Display Elements on the Device Front Panel

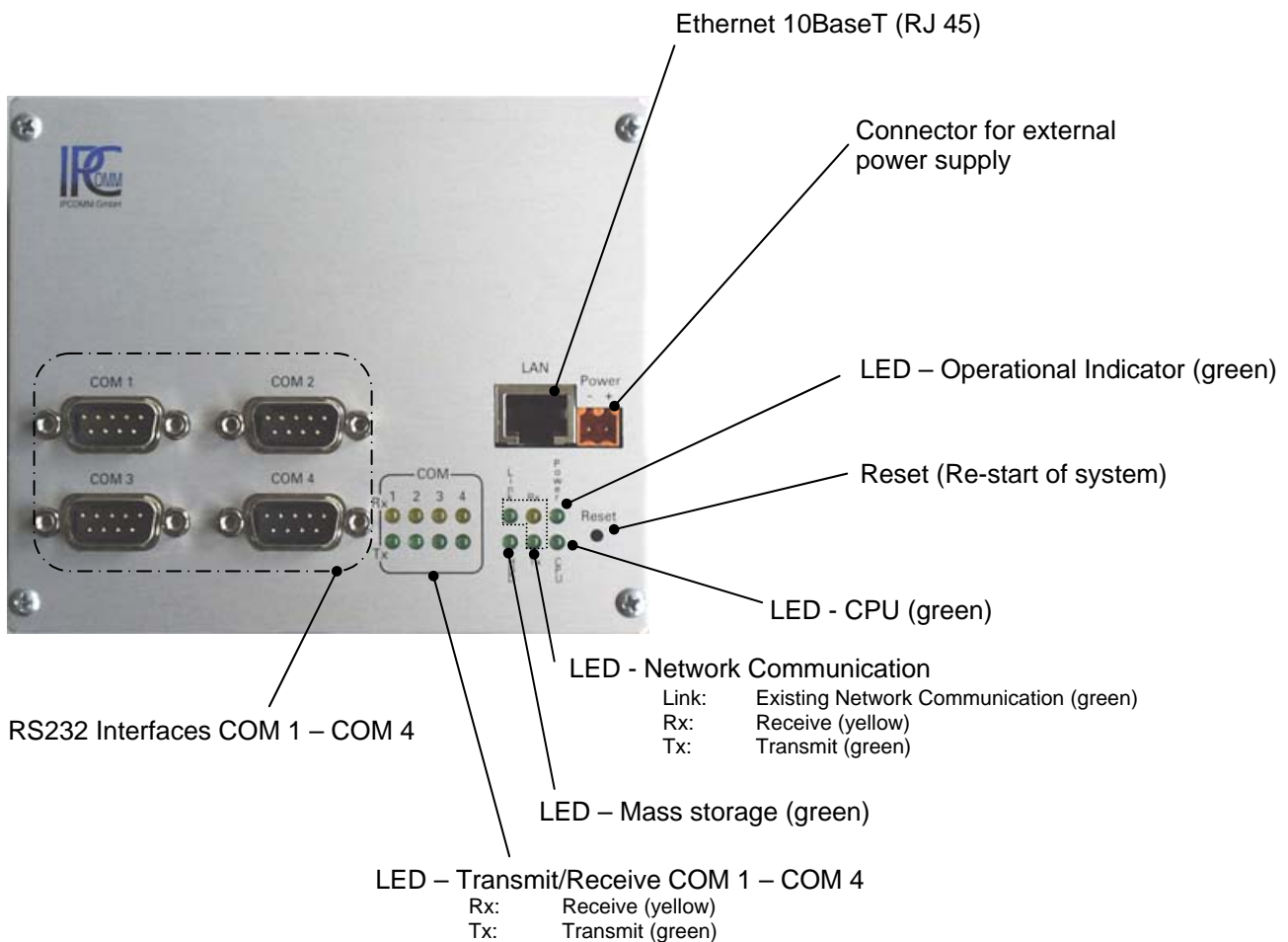


Figure 1. Nomenclature

2.3 RS232 Interfaces pin assignment

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

**SERIAL PORT
RS232 DTE
DB9 male connector**

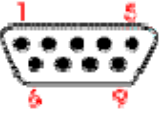


Figure 2. Pin Assignment of DB9 Interface

2.4 Operation

The HEC is designed for the assembling on a 35 mm DIN-Mounting Rail.

The HEC is normally supplied with 24 V DC. Optional 5 V- (Attention: Not protected against false polarity), 12 V-, 48 V-, 60 V- and other voltages are available.

Before connecting the HEC with the power supply it has to be made sure that the correct voltage is used. The operational voltage is stated onto the label sidewise of the HEC.

In order to maintain operation large temperature fluctuations must be avoided. The HEC mustn't be exposed solar radiation.

An air-conditioned environment is to be recommended for operating the HEC.

Interference sources like power inverters and power cables close to the HEC should be avoided.

The following operating conditions are to be observed for interference-free operation:

- Environmental temperature: 0°C – 55°C *
- Relative humidity: 5 % - 90 % **non-condensing**
- Installation site and environmental conditions should comply with the corresponding degree of protection (IP 40).
The housing isn't protected against the penetration of water!
- The supply voltage (see label) must correspond with the stated operational data.
It must be ensured that excessive voltage fluctuations in the power supply are avoided.
- Mounting on electro conductive and grounded DIN-Mounting Rail.

Note: Excessive voltages affecting the HEC directly via the supply voltage or indirectly via data lines, power line or flashovers might cause damage to the HEC. Interference of this kind must be prevented.

Important: If a external power supply is delivered by ipcas GmbH the instructions can be found in the enclosed operating manual.

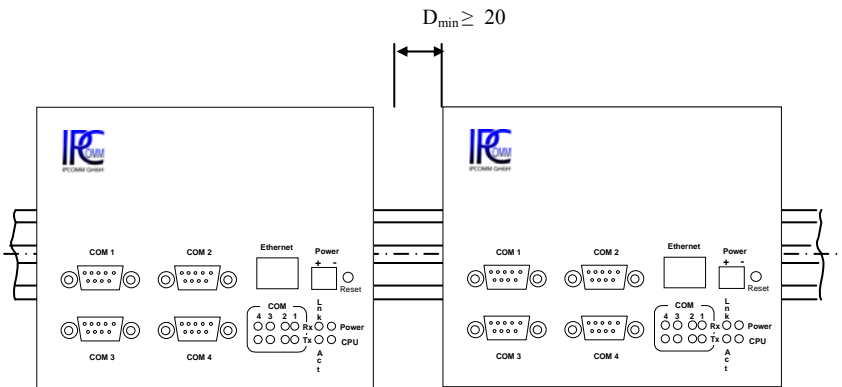
By using the 5 V-type the polarity mustn't be exchanged. The device can be damaged by false polarity.
All other types are protected against false polarity.

Further operating instructions depend on the kind and number of the installed components and on the operating system. The relevant information can be found in the project-specific or product-specific manual.

The operating and control elements are located on the front side, Figure 1.

* The stated environmental temperature is only valid for the shown standard HEC with up to 4 RS232 interfaces and 1 Ethernet-adapter. If the HEC is equipped with additional interfaces (e.g. further Ethernet-adapter, field bus interfaces etc.) the environmental temperature mustn't be exceed 30 °C, provided that anything else is not mentioned specifically.

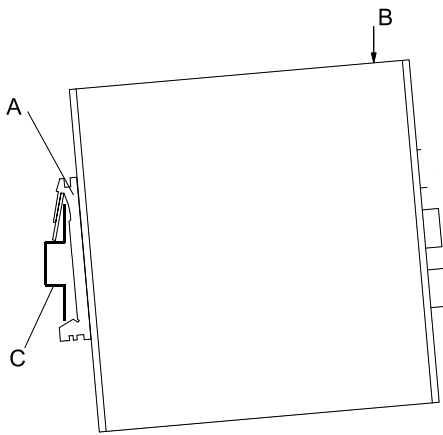
2.5 Mounting and Dismounting



A minimum distance D_{\min} need be observed if several HECs are to be installed in a row.

The assembling has to be occurred in accordance with Figure 3

Figure 3. Assembling



The HEC is mounted on a 35 mm DIN-Mounting Rail.

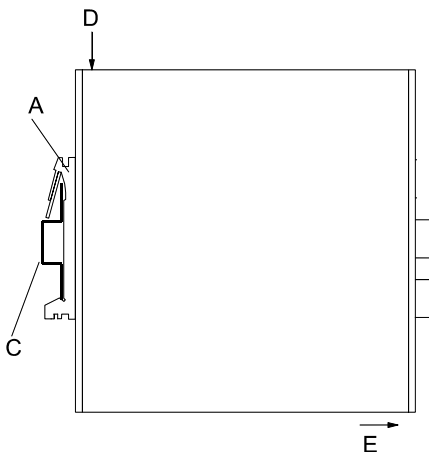
As per Figure 4 opposite, clip A is put on to the DIN-Mounting Rail C.

By pressing in the direction of the marked point B the HEC snap into place.

The ground connection is completed via clip A directly to the DIN-Mounting Rail.

It must be ensured that the DIN-Mounting Rail is electro conductive and grounded.

Figure 4. Mounting



For dismounting, press in the direction of the marked point D while pulling at the bottom of the HEC in direction E, Fig. 5.

Figure 5. Dismounting

2.6 Electrical Installation – Circuit Diagram

The HEC must be connected as per the following circuit diagram, Figure 6.

Dependent on the application the circuit may be different from the shown one.

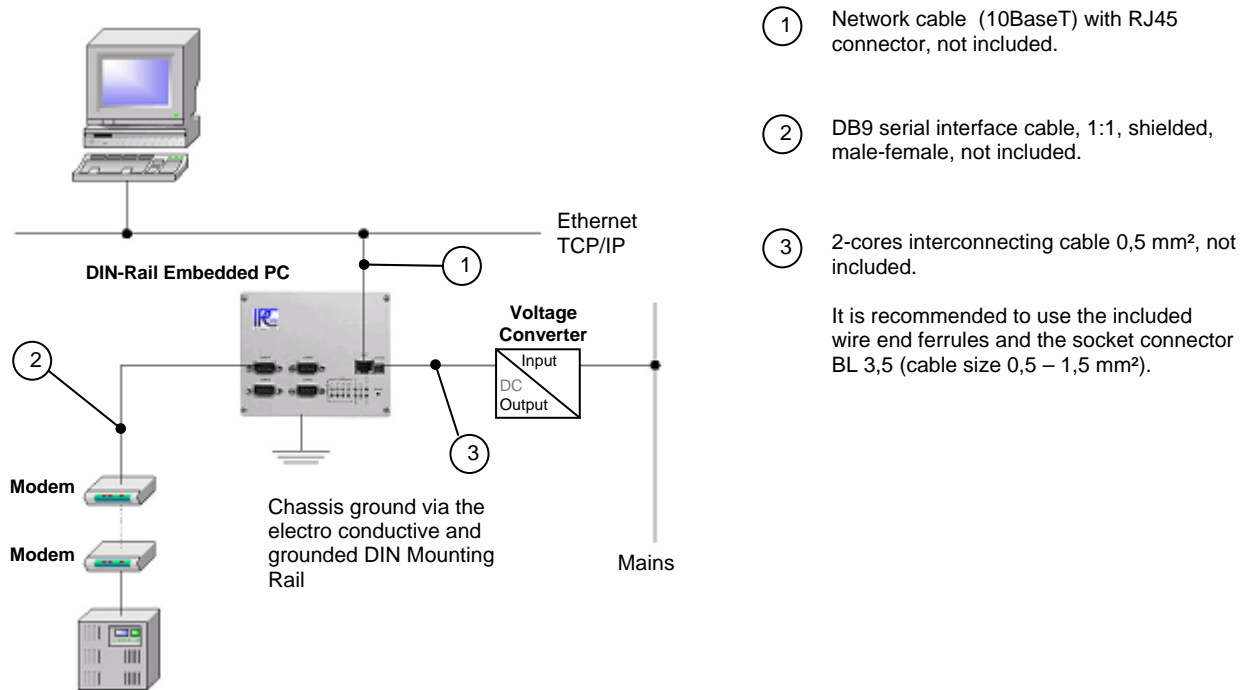


Figure 6. Electrical Installation – Circuit Diagram

Before connecting the HEC with the power supply it has to be made sure that the correct voltage is used. The operational voltage is stated onto the label sidewise of the HEC.

Important: In order to comply with the regulations on electromagnetic compatibility data lines and the power supply cord must be as short as possible.

2.7 Maintenance

Generally the HEC is maintenance-free.

Should it become necessary to exchange the CompactFlash or battery, proceed as follows.

Attention: Any transfer of charges to the printed circuit board (PCB) and components must be avoided.

1. Disconnect the HEC from the mains, detach the data lines.
After dismantling as per point 2.5 remove the 4 housing screws on the front panel of the HEC (Fig. 7 and 8).
2. As per Fig. 9 and 10 respectively the CompactFlash and the battery respectively can be changed, now.
 - The CompactFlash must be inserted true sided in the CompactFlash-holder (please observe the different slot width sidewise) over the pressure point until the CompactFlash is snapped in.
 - The correct polarity has to be observed before the new battery is inserted (positive pole up side).
3. Push the PCB-unit back into the housing and tighten the 4 screws on the front panel (Fig. 11 and 12).
Please, observe the correct position (the spring bracket on the back of the housing must be up side).
4. After proper installation the HEC can be put into operation again.

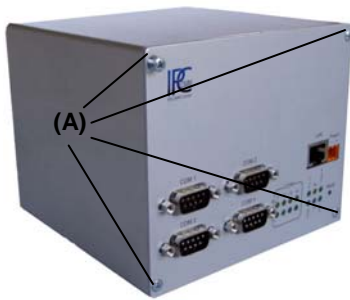


Figure 7.
Remove the front panel screws (A).

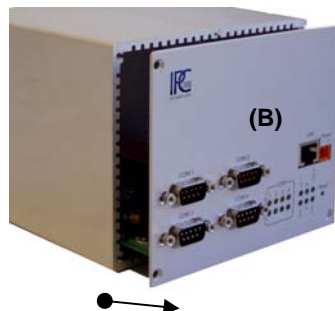


Figure 8.
Pull out front panel (B).

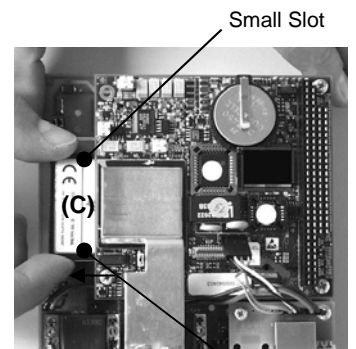


Figure 9.
Pull out the CompactFlash (C).

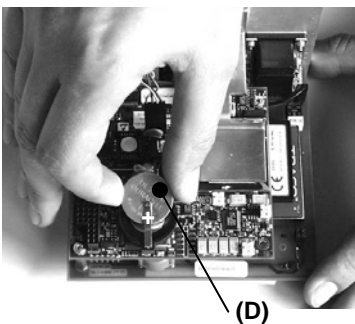


Figure 10.
Replace the battery (D).
Observe right polarity.

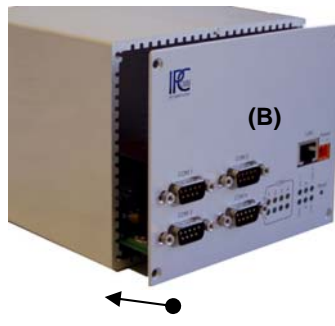


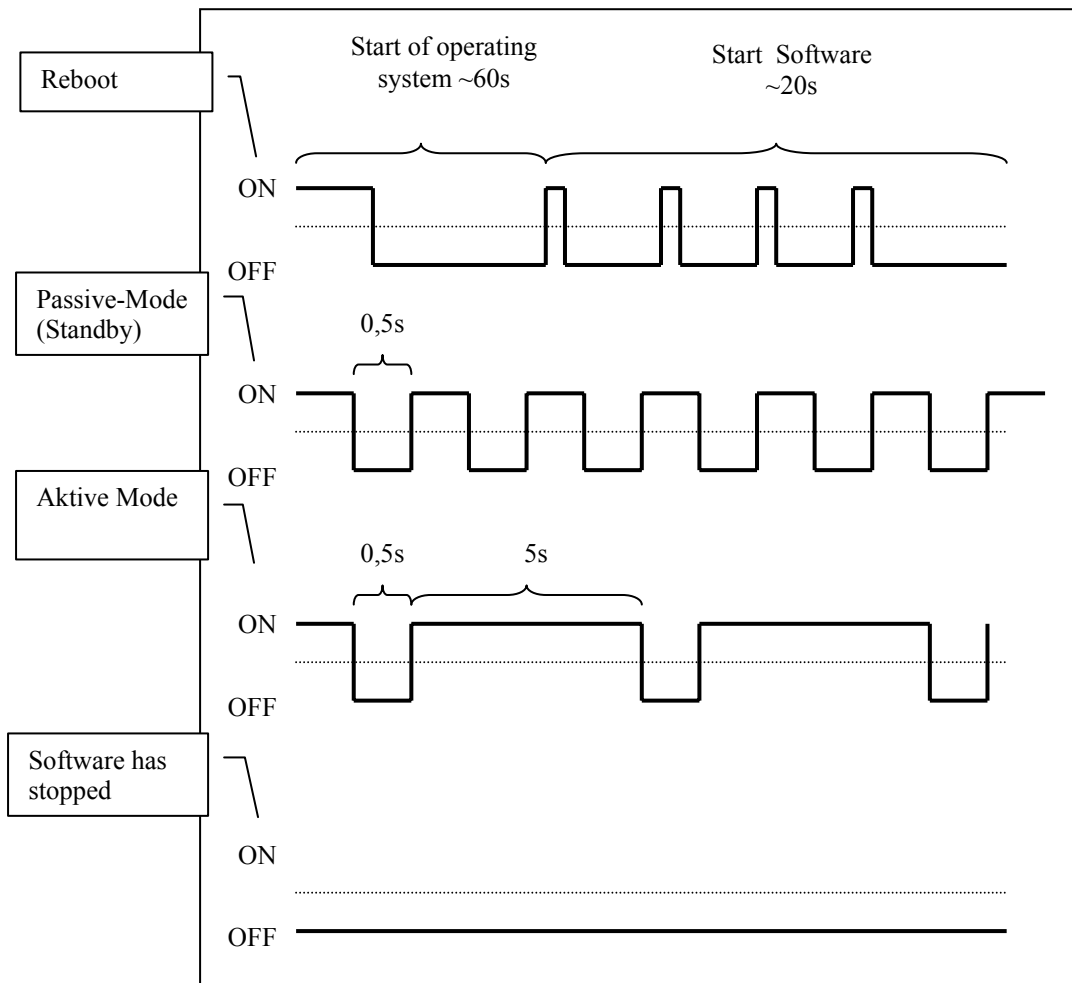
Figure 11.
Insert front panel (B) back into the housing.



Figure 12.
Tighten the front panel screws (A).

2.8 CPU-Status LED

The CPU LED is used by the software to show different software conditions. Following figure shows all possible indications:



2.9 Scope of Delivery

- DIN-Rail Embedded PC (HEC)
- Socket connector BL3,5 mm and wire end ferrules.

Optional:

External power supply (technical data see attached power supply instruction)

3 Appendix A – Technical Data Sheet

Technical Data Sheet

Processor

AMD ÉLAN SC520 133 MHz

Dynamic Memory

SDRAM max. 128 MByte, SO-DIMM non ECC

Interface

- 4 RS232 serial interface (COM 1 to COM 4) with surge protection
- 1 CAN-Bus, opto-isolated (optional)
- 1 Printer interface (LPT1) ¹⁾
- AT-IDE Hard-disk interface ¹⁾
- Compact Flash socket ¹⁾
- PC/104-Bus ¹⁾
- Floppy interface ¹⁾
- PS/2 mouse and keyboard interface ¹⁾
- 10BaseT-LAN interface

Diagnosis

- Power
- Software state LED (CPU-LED)
- Transmit/Receive Display Module for RS232 interfaces (COM 1 to COM 4)
- Display for network controller
- HDD

Mass storage

- Rugged CompactFlash, Industrial – Grade
- Removable flash card
- No Moving Parts
- max. 4 GB supported
- Vibration: 15 G peak to peak max.
- Shock: 1000 G max.
- MTBF >1.000.000 hours

Additional Functions

- Battery buffered real time clock (RTC)
- Timer
- Reset

Power consumption

- 24 V DC / 4 W ²⁾, optional 5, 12, 48, 60 V DC, other on request

Standards

- CE

Housing

- Aluminium chromated, including clip for mounting on a 35 mm DIN-Rail

Dimensions (without clip)

- Width: 125,4 mm
- Height: 105 mm
- Depth: 120 mm

Operating Environment

- Environmental temperature: 0°C – 55°C ³⁾
- Relative humidity: 5 % to 90 % non-condensing

¹⁾ Interfaces aren't conducted in the housing

²⁾ Voltage and power data depend on the used type

³⁾ Only valid for the standard HEC (up to 4 x RS232 interfaces and 1 x Ethernet-adapter)

Note: Differences to the delivered type are possible.

4 Appendix B – Declaration of EEC Compliance

Declaration of EEC Compliance

For the following product

DIN-Rail Mounted PC (HEC)

it is hereby confirmed that it complies with the main specifications laid down in the Council Guidelines on Harmonizing the Statutory Regulations of the Member States for Electromagnetic Compatibility (89/336/EEC).

Any changes to the said DIN-Rail Mounted PC (HEC) not authorized by this company invalidates this declaration.

The evaluation of this product for electromagnetic compatibility was carried out in accordance with the following standards

EN 55022/1998
EN 50082-2/1995

Place/Date/Manufacturer signature: Erlangen, 10.01.2005

Position of signatory: Managing Director, Artur Votteler