MH70I

Rugged Industrial PC with Intel Core i3 / i5 / i7

Modular Built-to-Order Embedded Computer for Industrial Automation

- » *Compact 40 HP application-ready system*
- » *Rack-mounted or wall-mounted*
- » *Fanless operation or forced-air cooling*
- » *Intel Core i7 or Celeron with standard HMI graphics*
- » *Up to 16 GB DDR3 DRAM soldered, ECC*
- » *Up to four SATA hard disks for a RAID*
- » *Single or redundant power supply (AC or DC)*
- » *2 CompactPCI slots for fieldbus functions, RS232, analog I/O, digital I/O, Ethernet*
- » *2 CompactPCI Serial slots for SATA RAIDs, Ethernet*
- » *2 PCI or PCI Express slots for half-length cards*
- » *Pre-configured operating system and drivers*

Modular, Built-to-Order Configuration

The MH70I is a modular application-ready industrial PC which meets the requirements of any industrial environment, e.g., control stations for industrial automation. The PC offers a multitude of configuration possibilities which are built to order resulting in a fast time-to-market. The system comes with complete software support.

The Intel Core i7-based system consists of a modular 40 HP CompactPCI system which can be wall or rack-mounted. The system can be cooled by natural convection or using an additional fan tray at the bottom of the system. Cooling is independent of the mounting position.

Redundant Power Supply

The pre-configured system offers two PSU slots to ensure reliability and redundancy. Normal operation is guaranteed if at least one external voltage is present. AC or DC power supplies can be implemented.

Large Range of Functions

Two CompactPCI peripheral slots and two CompactPCI Serial peripheral slots as well as 2 PCI or PCI Express slots can accommodate a large range of functions. If the 2 PCI or PCI Express slots are not required, two additional CompactPCI Serial peripheral slots are available.

Possible functions of the MH70I include binary and analog process I/O or motion counters as well as COMs and fieldbus functions such as CANopen, DeviceNet, Real-Time-Ethernet (EtherCAT, EtherNet/IP, Modbus, POWERLINK, PROFINET, SERCOS, Varan) and PROFIBUS (master and slave for all functions).

The system always offers 2 Gigabit Ethernet interfaces at the front of the CPU board. For extending the Ethernet functionality, there is the possibility to implement up to 8 additional standard RJ45 or fiber optics Ethernet interfaces in the Compact PCI Serial slots.

PCI Express Mini cards for wireless functions such as WLAN and UMTS can also be provided. A SATA RAID can be built using up to four CompactPCI Serial hard disk carrier boards.

The two PCI or PCI Express slots can be equipped with half-length cards for further customized extension of the system.

Data Sheet

CompactPCI
Slots

CompactPCI
Serial Slots

PSU Slots

System Slot

PCI Slots

Diagram
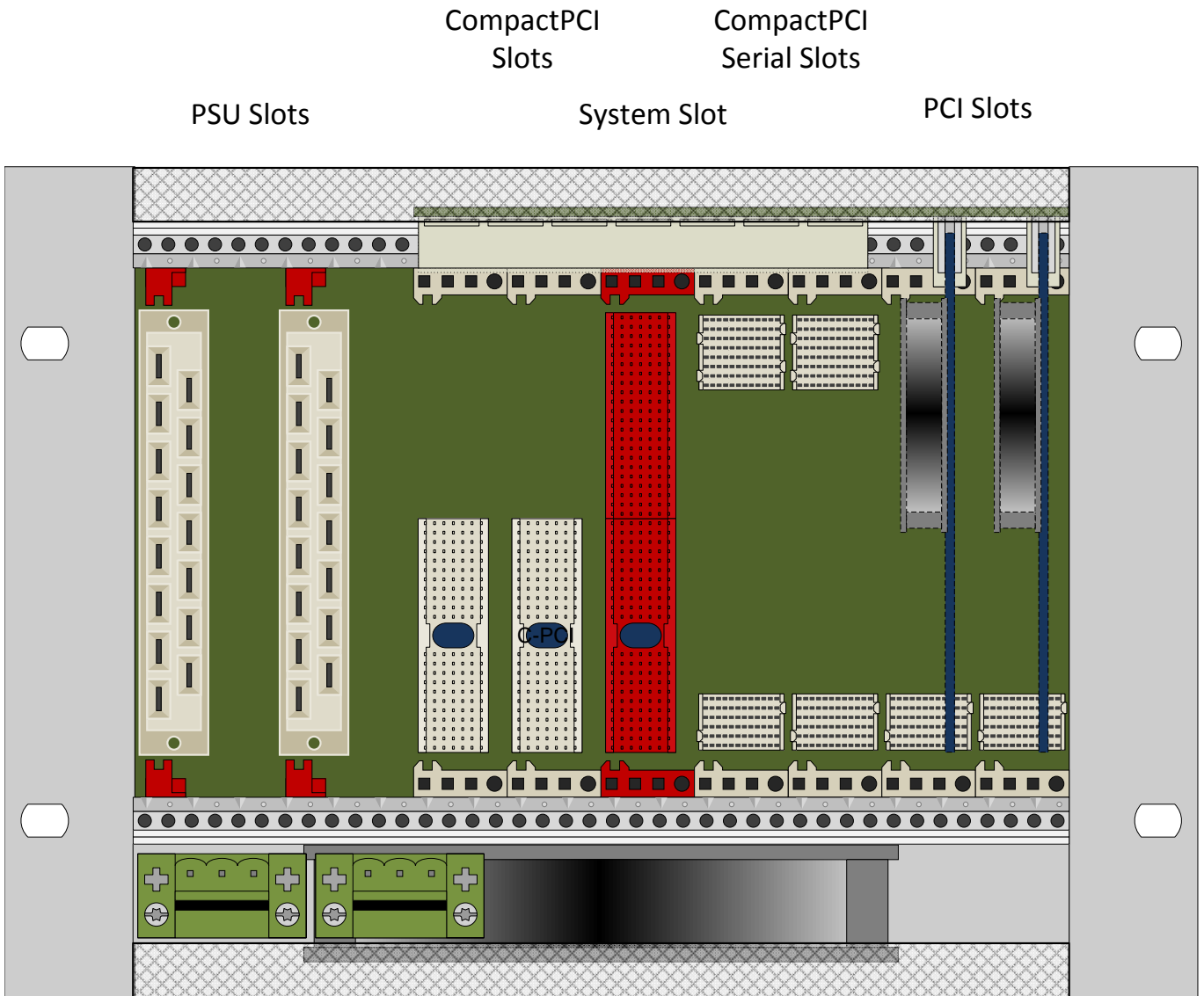
General System Characteristics	■ Modular design, built-to-order configuration
	■ Slot and backplane set-up of the system
	  □ 2 PSU slots
	  □ 1 CompactPCI PlusIO system slot
	  □ 2 CompactPCI peripheral slots
	  □ 4 CompactPCI Serial peripheral slots
	  □ 2 PCI/PCIe slots
	■ See the BTO configurator for component combination possibilities.
	■ Please contact MEN sales for more information.

CPU Board	■ CPCI 3U Board
	■ Configurable: yes
	■ Possible Configurations:
	  □ Intel Celeron 1047UE 1.4 GHz, 2 GB DDR3 DRAM with ECC, -40°C to+85°C screened
	  □ Intel Core i7-3615QE, 2.3 GHz, 4 GB DDR3 DRAM with ECC, 0°C to+45°C
	■ Mass Storage
	  □ SSD mSATA 3.x, 64 GB, MLC, -40°C to +85°C

Supervision and Control	■ Dedicated shelf controller monitors power, CPU status, temperature; controls fan; provides status LEDs and power button □ More information on AF2 Shelf Controller for CompactPCI and CompactPCI Serial Systems

Power Supply	■ PSU 3U
	■ Configurable: yes
	■ Possible Configurations:
	  □ 120 W, 3U 6 HP PSU, wide range input 24 to 110 V DC, 24 V DC nom., output 12 V / 5 V / 3.3 V DC, -40..+85°C, qualified, conformal coating
	  □ 120 W, 3U 6 HP PSU, wide range input 100 to 240 V AC, output 12 V / 5 V / 3.3 V DC, -40..+85°C, qualified, conformal coating
	■ Two separate power inlet connectors
	■ Normal operation if at least one external voltage is present

Wireless Functionality via PCI Express Mini Cards	■ CPCI 3U Board
	■ Configurable: yes
	■ Possible in CompactPCI peripheral slot: 3, 4
	■ 2 PCI Express Mini Card slots (USB), 4 SIM card sockets, 4 SMA connectors, -40..+85°C qualified (carrier only)
	  □ More information on F212 PCI Express Mini Card carrier
	■ Possible Configurations
	  □ MC7304 PCI Express MiniCard, full-size on USB: LTE, DC-HSPA+, HSPA+, HSDPA, HSUPA, WCDMA, GSM, GPRS, EDGE, and GNSS, -40 to +85°C

Serial I/O and CAN	■ CPCI 3U Board
	■ Configurable: yes
	■ Possible in CompactPCI peripheral slots: 3 to 4
	■ 8 HP FPGA-based universal interface for direct connection of 2x CAN (first slot), 2x UART (second slot), -40..+85°C qualified
	  □ More information on F215 Universal Interface Board
	■ Possible Configurations
	  □ RS232, not optically isolated, 0..+60°C
	  □ RS422/485, half duplex, optically isolated, 0..+60°C
	  □ RS422/485, full duplex, optically isolated, -40..+85°C screened
	  □ RS232, optically isolated, -40..+85°C screened
	  □ CAN bus ISO high-speed, optically isolated, -40..+85°C screened

Technical Data

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Serial I/O

- CPCI 3U Board
- Configurable: no
- Possible in CompactPCI peripheral slot: 3, 4
- 8 serial interfaces via 78-pin D-Sub, RS232/422/485 hardware-configurable, -40..+85°C qualified
  - More information on F216 PCI Express Mini Card carrier

Binary/Analog I/O and Motion Counters

- CPCI 3U Board
- Configurable: yes
- Possible in CompactPCI peripheral slot: 3, 4
- M-Module carrier board for 1 or 2 M-Modules, 0..+60°C
  - More information on F204 M-Module carrier board for 1 M-Module
  - More information on F205 M-Module carrier board for 2 M-Modules
- Possible Configurations
  - 16 analog voltage inputs, DC/DC converter, single-ended, -40..+85°C qualified
  - 8 analog voltage inputs, DC/DC converter, differential, -40..+85°C qualified
  - 16 analog current inputs, DC/DC converter, single-ended, -40..+85°C qualified
  - 8 analog current inputs, DC/DC converter, differential, -40..+85°C qualified
  - 4 analog current/voltage outputs, DC/DC converter, -40...+85°C qualified
  - 4 x 32-bit motion counter, 0..+60°C
  - 32 binary inputs and/or outputs, 0..+60°C

Industrial Field Bus by Hilscher

- CPCI 3U Board
- Configurable: yes
- Possible in CompactPCI peripheral slot: 3, 4
- Possible Configurations:
  - CANopen Slave interface, -20..+70°C screened
  - DeviceNet Slave interface, -20..+70°C screened
  - Real-Time-Ethernet Slave interface, supports Ethercat, Modbus, Powerlink, Profinet, Sercos, Varan, 0..+70°C screened
  - PROFIBUS DP Slave interface, -20..+70°C screened

Ethernet Interface Functionality

- CPCI Serial 3U Board
- Configurable: yes
- Possible in CompactPCI Serial peripheral slot: 6, 7
- Possible Configurations
  - 4 1000Base-T Ethernet interfaces, 4 RJ45 connectors at front, 0..+60°C
  - 4-channel 1000Base-SX Ethernet SerDes, 4 SFP slots, -40..+85°C screened

Mass Storage

- CPCI Serial 3U Board
- Configurable: yes
- Possible in CompactPCI Serial peripheral slot: 6, 7, 8, 9
- Possible Configurations
  - One 2.5" SATA HDD/SSD shuttle, hot swap, RAID 0, 1 support, -40..+85°C qualified (shuttle only)

2 PCI or PCI Express cards for customized functionality

- Half length PCI or PCI Express card
- Configurable: yes
- Possible in CompactPCI Serial peripheral slot: 8, 9
- Possible Configurations
  - Third-party PCI or PCI Express card

Technical Data

Mechanical Specifications
- Dimensions:
  - 210 x 175 x 225 mm max. without brackets
  - 4U, 40 HP
- Mounting Possibilities
  - Wall-mount
  - Rack-mount in 19" cabinet
  - Two systems side-by-side to build a single 19" chassis

Environmental Specifications
- Temperature range (operation): 0..+50°C according to EN 60068-2-1, EN 60068-2-2
- Temperature range (storage): -40..+85°C according to EN 60068-2-1, EN 60068-2-2
- Cooling concept
  - Air-cooled, forced convection with fan tray at system bottom
- Relative humidity (operation): according to EN 60068-2-30, non-condensing
- Relative humidity (storage): according to EN 60068-2-30
- Altitude: -300 m to +3000 m
- Shock: according to EN 61373 category 1 class B
- Vibration: according to EN 61373 category 1 class B
- International Protection Rating (IEC 60529): IP20

Safety
- Electrical Safety
  - EN 60950-1: Class I equipment
- Flammability (PCBs)
  - UL 94 V-0

EMC Conformity
- EN 55022 class B (radiated and conducted emissions)
- EN 55024 (immunity)

Software Support
- Windows Embedded Standard 7
- Linux
  - Ubuntu with current LTIB kernel

Technical Data

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