

PAC system MSX-Box for the PCI bus



- Open and transparent Programmable Automation Controller system
- With free development tools
- Live DVD based on open source programs
- Real-time measurement system

PAC systems

Programmable Automation Controller

PAC systems are mainly used for industrial measurement and control or regulation tasks as well as for motion control.

They execute several tasks simultaneously and in a deterministic way.

Core features of a PAC system:

- Compact and robust design
- Programmable
- Standard Ethernet (TCP/IP)
- CPU board as system controller
- Different I/O modules

Set course for freedom

Experience with the MSX-Box what freedom of decision-making really means:

- You select the components of your PAC system: The MSX-Box is based only on reliable standard technologies like for example PCI backplane. Freedom also means that you can use any of the numerous standard PCI I/O boards.
- You decide, whether and when to update your operating system: Using the real-time operating system Linux with RTAI extension, no need to take care of updates. Save time and money!
- You have free access to the software down to the kernel source code: You can make extensive system adaptations and realize your own optimized measurement system.

Boost your applications

Working with the MSX-Box that fits to your needs will boost your measurement and control applications. The MSX-Box is supplied with development tools: You can realize even very complex tasks quite easily.

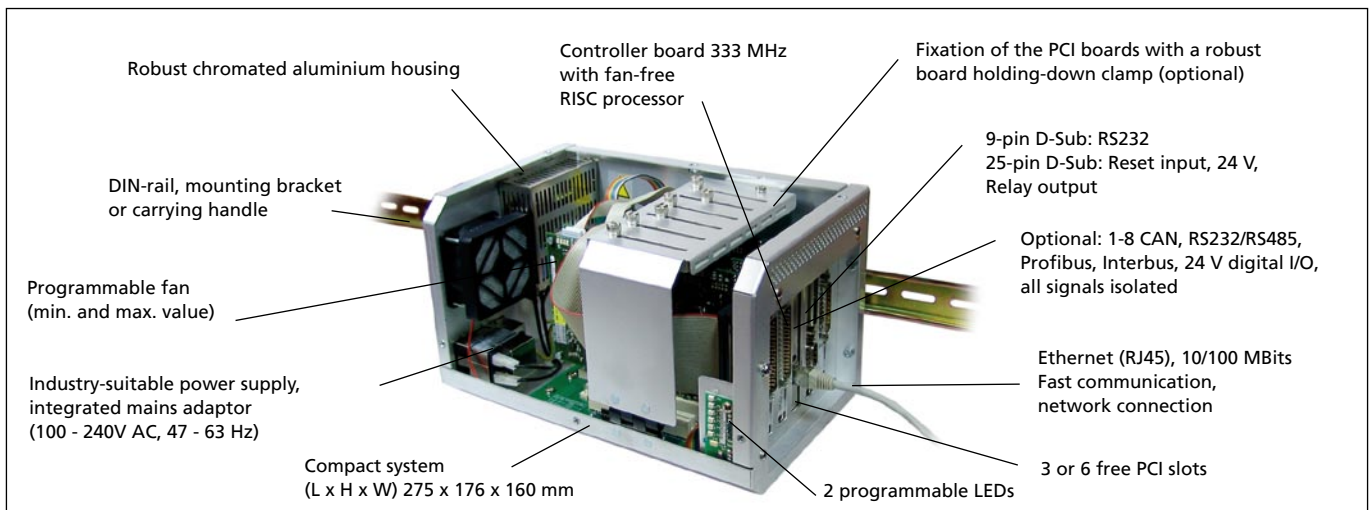
The most important advantage of a PAC system with such a transparent structure is that in case of emergency, you can react fast and efficiently.

Thanks to the long-term ADDI-DATA supply philosophy, you secure your investments for a long time.

Furthermore, the fact that the MSX-Box is supplied with free development tools limits the purchase price for serial equipment.

Experience today how to realize your applications of tomorrow:

www.msx-box.com



MSX-Box-500

PCI controller board

RISC processor:	64-bit MIPS, no fan
Clock:	333 MHz
Memory:	16 MB flash, 128 MB SDRAM, Option up to 256 MB
Installed OS:	Embedded RTAI Linux
Standard interfaces:	D-Sub 9-pin: 1 x RS232 D-Sub 25-pin: Reset input 24 V; „H“ active 1 x relay output, free prog., closing contact
Optional:	D-Sub 25-pin.: 1-8 CAN, Master/Slave, isolated 1 x RS232/RS485, isolated additional bracket: 1 x Profibus/Slave, isolated 2 x Interbus/Master, isolated 4 x dig. input, 24 V/10 mA, isolated 3 x dig. output, 24 V/200 mA, isolated
Dimensions:	PCI half-size board

Mains supply unit

Input voltage:	100 V - 240 V, AC, 47-63 Hz (other voltage on request)
Output voltage:	5 VDC-40 W (max. 6 A) (other voltage on request)
Protection against:	Short circuit; overload, overvoltage
Connection:	2 m power cable

ATX backplane with 5 PCI slots

PCI slots:	Total amount: 5 Reserved: 1 x PCI controller board 1 x PCI Ethernet board Free: for 3 additional PCI half-size boards
Compliance:	PCI specification PICMG rev. 2.1.

MSX-Box-800

Same as MSX-Box-500 with 8 PCI slots on the ATX backplane, incl. 6 free slots for PCI I/O boards

Mains supply unit

Input voltage:	100 V - 240 V, AC, 47-63 Hz (other voltage on request)
Output voltage:	5 VDC/12 VDC/60 W (max. 6A)
Protection against:	Short circuit; overload, overvoltage
Connection:	2 m power cable

ATX backplane with 8 PCI slots

PCI slots:	Total amount: 8 Reserved: 1 x PCI controller board 1 x PCI Ethernet board Free: for 6 additional PCI half-size boards
Compliance:	PCI specification PICMG rev. 2.1.

For MSX-Box-500 and MSX-Box-800

PCI Ethernet board (RJ45)

Data transfer rate: 10/100 MBits

Extensive software support

Free development tools (GNU Compiler, Cygwin, samples in source code), Knoppix Live DVD development environment

Housing

Material:	Chromated aluminium, colour RAL 5010 blue „Enzianblau“
Heat dissipation:	Through programmable fan
Temperature range:	0 - 50°C
Temperature monitoring:	Configuration at delivery 5 °C to 45 °C, min. and max. value programmable through software. The temperature value can be monitored. Resolution: 0.5 °C
Front openings:	For 5 PCI-boards and 1 bracket (MSX-Box-500) For 8 PCI-boards and 3 brackets (MSX-Box-800)
Housing dimensions (L x H x W):	278 x 170 x 165 mm (MSX-Box-500) 292 x 170 x 292 mm (MSX-Box-800)
Weight:	approx. 2 kg (standard MSX-Box system) MSX-Box-500 approx. 3 kg (standard MSX-Box system) MSX-Box-800
Status display:	5 LEDs, incl. 2 freely programmable

Optional accessories

Board fixation:	Board holding-down clamp
Mounting possibilities:	<ul style="list-style-type: none"> DIN rail Removable mounting bracket Carrying handle
Cable:	2 m Ethernet patch cable, shielded, RJ45 connector (PC ↔ MSX-Box)
Network card: MSX-ComboCard with additional functions:	<ul style="list-style-type: none"> 2 x PCI FireWire IEEE 1394, 1 x internal, 1 x ext. connection, data transfer rate up to 400 Mbps 2 x PCI USB 2.0, 2 external, 1 x internal connection, 1 x RJ-45 LAN, 10/100 Mbps connection 1 x 5-pin female connector, 12 V Network card PCI 10/100 Mbps, 10Base-T, 100Base-TX, IEEE802.3, 802.3 u protocol, recognition of data transfer rate 10 Mbps or 100 Mbps, data transfer rate 10 Mbps and 100 Mbps, Chipset Realtek RTL8139, 32-bit PCI system 5 V voltage
Colours:	Other housing colours (according to RAL scale) and inscriptions (on request)

Ordering information

MSX-Box: PAC system, incl. development tools (GNU compiler, Cygwin, source code samples, ...) and technical description

Versions

MSX-Box 500: 5 PCI slots (incl. 2 slots reserved for controller and Ethernet board; 3 free PCI slots for half-size boards)

MSX-Box 800: 8 PCI slots (incl. 2 slots reserved for controller and Ethernet board; 6 free PCI slots for half-size boards)

Options

MSX-256MB: Memory extension up to 256 MB

MSX-485/ MSX-232: 1-port serial interface, RS485 or RS232, optically isolated

MSX-Basis: Basic equipment for options MSX-CAN, MSX-Profibus, MSX-IBS and MSX-DIO-IO

MSX-CAN-x: 1/2/4/8 x CAN bus, master/slave, optically isolated

MSX-Profibus: 1 x Profibus, slave

MSX-IBS-x: 1/2 x Interbus-S, master

MSX-DIG-IO: 4 digital inputs and 3 digital outputs, 24 V.

All extensions are isolated and include a ribbon cable with a 9-pin D-Sub male connector with bracket

MSX-RTSYNC: for the synchronisation of several MSX-boxes (with time stamp)

Accessories

MSX-CLAMP-500/800: Board holding-down clamp for board fixation

MSX-SCREW: Wall mounting for MSX-Box-500

MSX-SCREW-800: Wall mounting for MSX-Box-800

MSX-RAILDIN: DIN rail mounting

MSX-GRIP: Carrying handle

MSX-COMBOCARD: Network card LAN / USB / Firewire connection

MSX-COMBOGIGA: Network card Giga LAN / USB / Firewire connection

MSX-500-PS-12V/-24V: Mains power supply unit 12 V DC or 24 V DC

ST ETH-2: Ethernet patch cable 2 m, shielded, RJ45, between PC and MSX-Box

MSX-CBLRS232: RS232 cable, 1.5 m – 9-pin.

On request: Other housing colour or inscriptions on the front side

PAC SYSTEMS MSX-BOX

Distributed data acquisition and control in real time

The MSX-Box is an open Programmable Automation Controller system (PAC). It has been specially developed for industrial measurement, control and automation applications in real time where processes have to be carried out within a defined time.



The concept

- Modular platform for distributed measurement, control and regulation applications in real time
- Based on established standard technologies like PCI backplane or CompactPCI backplane
- Non-proprietary system: I/O PCI boards or CompactPCI boards from other producers can be used.
- Low maintenance: Linux operating system with RTAI extension – no update obligations
- Reduced costs: no software licence costs
- No unnecessary multimedia features: Full machine time only for your application
- Optimise your system: Free access to the software down to the kernel source code for extensive adaptations of your measuring system
- Real-time development tools without additional costs
- Investment security: Long-term availability of the products thanks to the ADDI-DATA supply philosophy

PAC systems

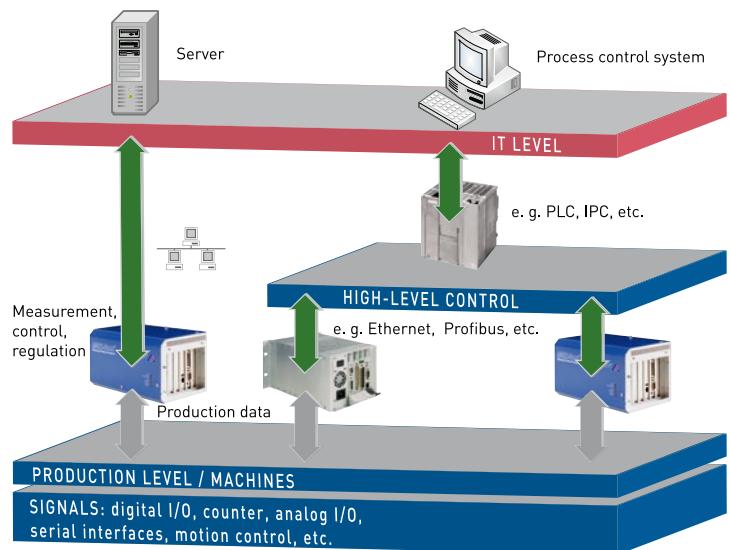
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Between the production and IT level

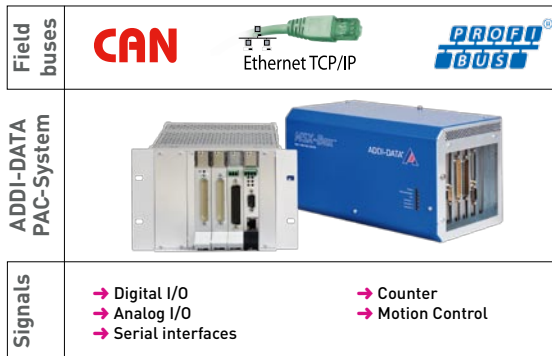
The MSX-Box acquires sensor and machine data, processes them, and controls or regulates the corresponding terminals.

The MSX-Box can be integrated into a higher-level control system via Ethernet or Profibus. By integrating the MSX-Box into the company network via Ethernet, data can be forwarded to software packages on the IT level for use in statistics or process optimisation.



Integrated into the field level

Measurement and control systems that monitor entire processes and interact with machines or hardware must be capable of working with data of different origins.



Field buses and signals

With the MSX-Box, you can acquire signals from different field buses: CAN, Profibus, Ethernet, or signals from serial lines such as ultrasound sensors or scales.

The PAC system can also process the following signals:

- Digital I/O
- Counter: Incremental, SSI etc.
- Analog I/O
- Serial interfaces
- Motion control
- etc.

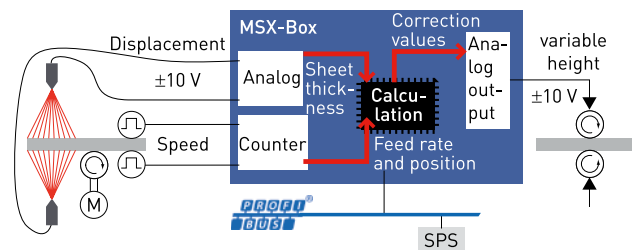
Good for retrofits, too

→ The MSX-Box is suitable both for setting up a new automation project and for optimising existing installations. That means you continue to benefit from your familiar hardware, while still equipping your installation with the latest technology for more efficiency where it counts.

Application examples

Example 1

In a steel plant, the MSX-Box is used to measure the thickness of sheets. Laser sensors (± 10 V) are used to measure the sheet thickness. Simultaneously with the thickness measurement, incremental counters are used to determine the position of the sheet and the feed rate. The deviation in sheet thickness is calculated in real time. The result of the calculation is used to control the position of the rollers in the next process step and thus to produce sheets of a uniform thickness. This information is then provided to higher-level control systems through a Profibus interface, e.g. for statistics, process analysis, or as specification values for downstream processes.



Example 2

During inspection of engines, different metrics are acquired based on different signal types: speeds, temperatures, pressures, exhaust gas values, etc. Using the integrated CAN interface, messages from the CAN bus can also be recorded. To obtain a meaningful measurement result, all metrics must be acquired at defined points in time. The value of all metrics is then measured at time t . To use the data for later evaluation, the MSX-Box stores the measured values in a database.

