

# Content

## **Networkable CAN CPUs**

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## Distributed controllers with two CAN interfaces

### Processor module CPU 723



#### Function

##### Processor module CPU 723

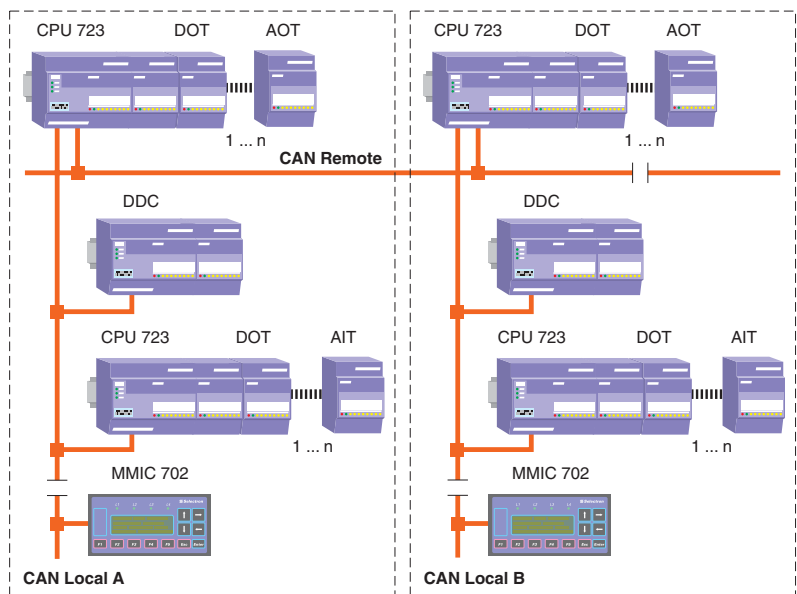
The CPU can easily be programmed with the projecting tool CAP 1131. The open interfaces offer various communication possibilities. Auxiliary systems with CAN interfaces as drives, terminals, encoders etc. can easily be included via the CAN interfaces. To serve the CAN interfaces tested function blocks exist either for CANopen as also for proprietary CAN protocols. The RS232 interface is open, e.g. to program with Modbus or Xon/Xoff. The processor module CPU 723-T is a perfect, 'intelligent', decentral programmable module. It can be snapped on a standard fixing rail and extension modules can be connected via expansion connectors.

#### Characteristics and benefits

- Freely programmable controller with field bus interfaces offers highest degree of flexibility.
- Linking of distributed intelligence with up to 64 x 64 modules in one network.
- Large area covering, scaling networkable with up to 64 decentral CAN nodes per string.
- Two open CAN interfaces allow the build-up of redundant or hierarchical networks.
- RS232 interface, switchable as programming or user interface to embed terminals, Modems etc.
- The programming according to IEC 61131-3 in FBD (function block diagram), IL (instruction list), LD (ladder diagram), SFC (sequence function chart) allows the user to select the best appropriate language. A special feature is the programming in high level language ANSI-C.

- Generous memory structure with RAM, Flash-EPROM and serial EEPROM.
- Optional flash cassette for memory extension, e.g. for memorisation of user programs, receipts or parameter sets, for program exchange etc.
- CAN protocols according to CANopen, SeleCAN and proprietary CAN (layer 2).
- CAN to CAN gateway, e.g. between CANopen and manufacturer specific CAN.
- Useable for build-up of CAN sub-systems for the transmission of fast process data and/or complex communication data.
- Covering of large transmission distances.
- Six digital inputs and four digital outputs are already on the controller.
- Flexibly extendable with max. 6 extension modules DDT / DIT / DOT / AOT or max. 4 AIT. Expansions can be intermixed.
- Reduction of the wiring expenses, easy and fast mounting.
- Selectable 1-wire, 2-wire, 3-wire or 4-wire technique.
- Easy exchange of the modules in case of service work, without necessity to disconnect every single wiring.
- Connection technology with integrated pluggable spring cage terminals. Spring terminal blocks are also available as an option.
- Fast mounting by snapping on a standard fixing rail.
- Small size version.

Redundant, hierarchic CAN, distributed intelligence



n = depending of type of extension modules

Technical data	Type CPU 723
Processor	80C167C
RAM-memory / for application	1 MB / 896 kByte
Backup FEPRM	1 MB
Serial EEPROM	2 kB
Module slot for flash cassette	yes
Li battery	yes
Real time clock	yes
Expandable	yes
Communication interface	1 (RS 232)
CAN interface	2 (CANopen, SeleCAN)
Supply voltage UC	24 Vdc
Power consumption	typ. 2,6 W

Digital inputs	6
Interrupt inputs	2
Display	Green LED
Input voltage US	24 Vdc (typ. 6 mA)

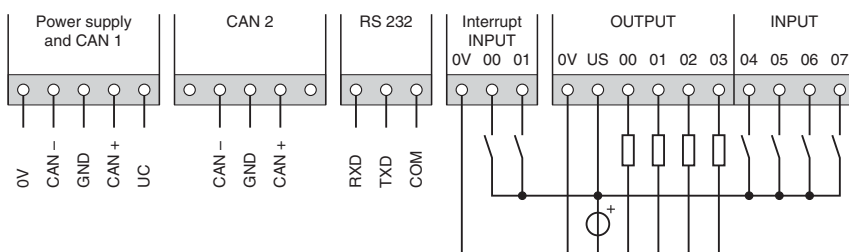
Digital outputs	4
Display	Orange LED
Output current	0,5 A (24 Vdc)
Protective circuit	Protection diode

General	
Ambient temperature (operation)	0 ... +55 °C
Connection technique	see chapter 9
Protection mode	IP 40
Dimensions (W x H x D)	155 x 85 x 58 mm
Weight	360 g

Ordering data	
Article number	44120073

Detailed information in system manual article number 43930129

## Connection



## Distributed controllers with one CAN interface

### Processor modules CPU 724 and CPU 726



#### Function

##### Processor modules CPU 724 and CPU 726

The CPUs can be programmed with the projecting tool CAP 1131. A multitude of function blocks is available in the extended libraries.

The RS 232 interface is to use in an open way, e.g. different protocols as Modbus, XON/XOFF etc. can easily be put into service by using software modules from the libraries.

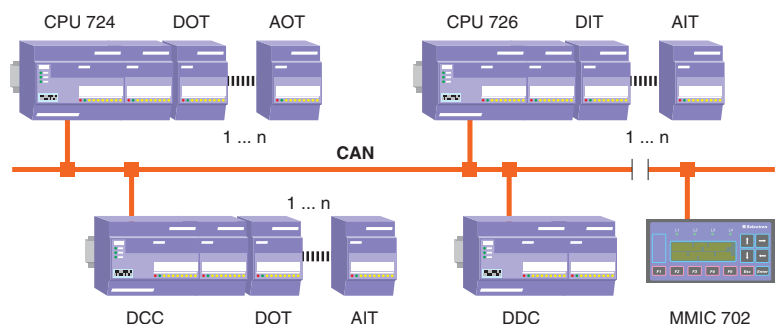
Auxiliary systems with CAN interfaces as drives, terminals, encoders etc. can easily be embedded via the CAN interfaces. To operate the CAN interfaces, tested function blocks are at the disposal for CANopen as well as for proprietary CAN protocols.

The unit can easily be snapped on a standard fixing rail and the extension modules will then be connected via expansion connectors.

#### Characteristics and benefits

- Self-sufficient or network able, freely programmable controller with 4 digital and 4 analog inputs and 4 digital and 2 analog outputs.
- A good value alternative for medium and small size projects, compared to CPU 723 equipped with only one CAN interface.
- Networkable with up to 63 decentral CAN nodes as e.g. the decentral modules DDC 7xx, PC CAN boards, terminals with CAN interface or additional processor modules (CPU 72x).
- RS232 interface, switchable as programming or user interface to embed terminals, Modem's etc.
- Programmable according to IEC 61131-3 in FBD (function block diagram), IL (instruction list), LD (ladder diagram), SFC (sequence function chart). A special feature is the programming in high level language ANSI-C.
- Optional flash cassette for the memorisation of user programs, parameter sets, for program exchange etc.
- CAN protocols according to CANopen, SeleCAN and proprietary CAN (layer 2).
- Useable for build-up of CAN systems for the transmission of fast process data and/or complex communication data on one network.
- Centrally extendable with max. 6 extension modules DDT / DIT / DOT / AOT or max. 4 analog extension modules AIT. The extensions can be mixed among themselves.
- Connecting selectable at place, e.g. directly at the sensor or actuator or in the switchboard cabinet.
- Reduction of wiring expenses, easy and fast mounting.
- Selectable 1-wire, 2-wire, 3-wire or 4-wire technique. Additional sliding of potential terminals; the traditional series terminals disappear.
- Connection technology with integrated pluggable spring cage terminals. Spring terminal blocks are also available as an option.
- Easy exchange of the modules, e.g. in case of service work, without necessity to disconnect every single wiring.
- Fast mounting by snapping on a standard fixing rail.
- Lettering label.
- Small size version.

CAN with distributed CPU's and decentralised periphery



n = depending of type of extension modules

Technical data	CPU 724	CPU 726
Processor	80C167C	80C167C
RAM memory / for applications	256 kB / 128 kB	1 MB / 896 kB
Backup FEPRM	512 kB	1 MB
Serial EEPROM	2 kB	2 kB
Module slot for flash cassette	yes	yes
Li battery	yes	yes
Real time clock	yes	yes
Expandable	yes	yes
Communication interface	1 (RS 232)	1 (RS 232)
CAN interface	1 (CANopen, SeleCAN)	1 (CANopen, SeleCAN)
Supply voltage UC	24 Vdc	24 Vdc
Power consumption typ.	2,6 W	2,6 W

Digital inputs	4	4
Display	Green LED	Green LED
Input voltage US	24 Vdc (typ. 6 mA)	24 Vdc (typ. 6 mA)

Digital outputs	4	4
Display	Orange LED	Orange LED
Output current	0,5 A (24 Vdc)	0,5 A (24 Vdc)
Protective circuit	Protection diode	Protection diode

Analog inputs	4	4
Signal ranges (DIP switch)	0...10 V 0...20 mA	0...10 V 0...20 mA
Resolution	10 Bit	10 Bit

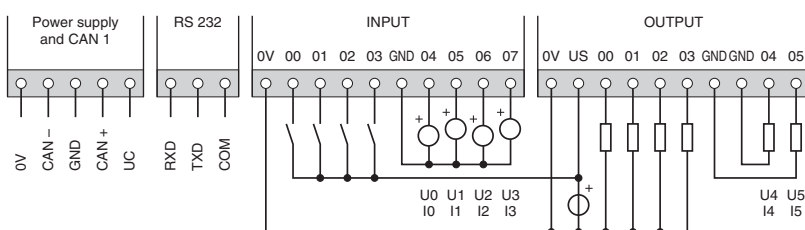
Analog outputs	2	2
Signal ranges (DIP switch)	0...10 V 0...20 mA	0...10 V 0...20 mA
Resolution	10 Bit	10 Bit

General		
Ambient temperature (operation)	0 ... +55 °C	0 ... +55 °C
Connection technique	see chapter 9	see chapter 9
Protection mode	IP 40	IP 40
Dimensions (W x H x D)	155 x 85 x 58 mm	155 x 85 x 58 mm
Weight	360 g	360 g

Ordering data		
Article number	44120074	44120076

Detailed information in system manual article number 43930129

## Connection



## Distributed controllers with one CAN interface

### Processor modules CPU 725 and CPU 727



#### Function

##### Processor modules CPU 725 and CPU 727

The CPUs can be programmed with the projecting tool CAP 1131. A multitude of function blocks is available in the extended libraries.

The RS 232 interface is to use in an open way, e.g. different protocols as Modbus, XON/XOFF etc. can easily be put into service by using software modules from the libraries.

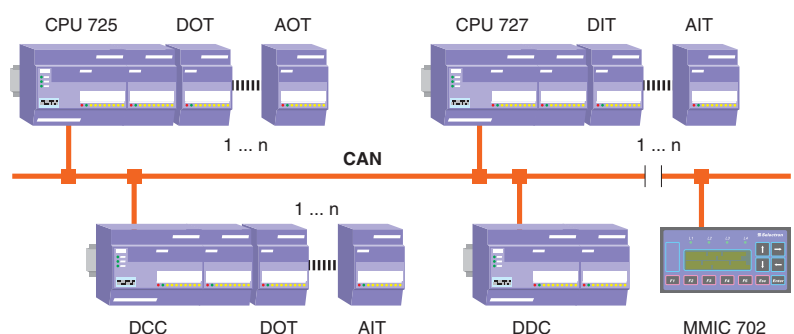
Foreign systems with CAN interface as drives, terminals, encoders etc. can easily be included by means of the CAN interface. For the operation of the CAN interfaces are either CANopen as also tested function blocks for proprietary CAN protocols available.

The unit can easily be snapped on a standard fixing rail and the extension modules will then be connected via expansion connectors.

#### Characteristics and benefits

- Self-sufficient or networkable, freely programmable controller with 8 digital inputs and 8 digital outputs. But without analog I/Os.
- A good value alternative for medium and small size projects, compared to CPU 723 equipped with only one CAN interface.
- Networkable with up to 63 decentral CAN nodes as e.g. the decentral modules DDC 7xx, PC CAN boards, terminals with CAN interface or additional processor modules (CPU 72x).
- RS232 interface, switchable as programming or user interface to embed terminals, Modem's etc.
- Programmable according to IEC 61131-3 in FBD (function block diagram), IL (instruction list), LD (ladder diagram), SFC (sequence function chart). A special feature is the programming in high level language ANSI-C.
- Partially with optional flash cassette for memorisation of user programs, parameter sentences, for program exchange etc.
- CAN protocols according to CANopen, SeleCAN and proprietary CAN (layer 2).
- Useable for build-up of CAN systems for the transmission of fast process data and/or complex communication data on one network.
- 8 digital inputs and 8 digital outputs are already on the controller.
- Centrally extendable with max. 6 extension modules DDT / DIT / DOT / AOT or max. 4 analog extension modules AIT. The extensions can be mixed among themselves.
- Connecting selectable at place, e.g. directly at the sensor or actuator or in the switchboard cabinet.
- Reduction of wiring expenses, easy and fast mounting.
- Selectable 1-wire, 2-wire, 3-wire or 4-wire technique. Additional sliding of potential terminals; the traditional series terminals disappear.
- Connection technology with integrated pluggable spring cage terminals. Spring terminal blocks are also available as an option.
- Easy exchange of the modules, e.g. in case of service work, without necessity to disconnect every single wiring.
- Fast mounting by snapping on a standard fixing rail.
- Lettering label.
- Small size version.

CAN with distributed CPU's and decentralised periphery



n = depending of type of extension modules

Technical data	Type CPU 725	Type CPU 727
Processor	80C167C	80C167C
RAM memory / for applications	256 kB / 128 kB	1 MB / 896 kB
Backup FEPRM	512 kB	1 MB
Serial EEPROM	2 kB	2 kByte
Module slot for flash cassette	yes	yes
Li battery	yes	yes
Real time clock	yes	yes
Expandable	yes	yes
Communication interface	1 (RS 232)	1 (RS 232)
CAN interface	1 (CANopen, SeleCAN)	1 (CANopen, SeleCAN)
Supply voltage UC	24 Vdc	24 Vdc
Power consumption typ.	2,6 W	2,6 W

Digital inputs	8	8
Display	Green LED	Green LED
Input voltage US	24 Vdc (typ. 6 mA)	24 Vdc (typ. 6 mA)

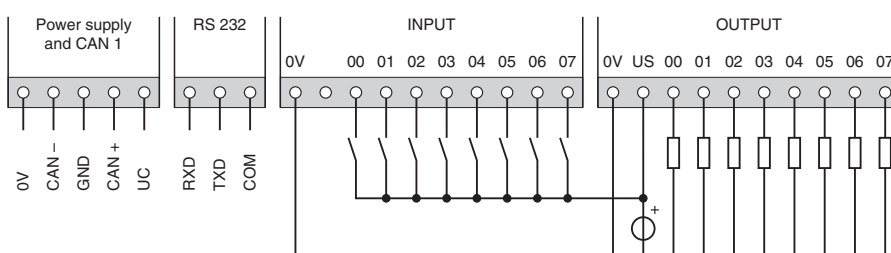
Digital outputs	8	8
Display	Orange LED	Orange LED
Output current	0,5 A (24 Vdc)	0,5 A (24 Vdc)
Protective circuit	Protection diode	Protection diode

General		
Ambient temperature (operation)	0 ... +55 °C	0 ... +55 °C
Connection technique	see chapter 9	see chapter 9
Protection mode	IP 40	IP 40
Dimensions (W x H x D)	155 x 85 x 58 mm	155 x 85 x 58 mm
Weight	360 g	360 g

Ordering data		
Article number	44120075	44120077

Detailed information in system manual article number 43930129

## Connection



## Controllers to drive and communicate

### Processor module CPU 762



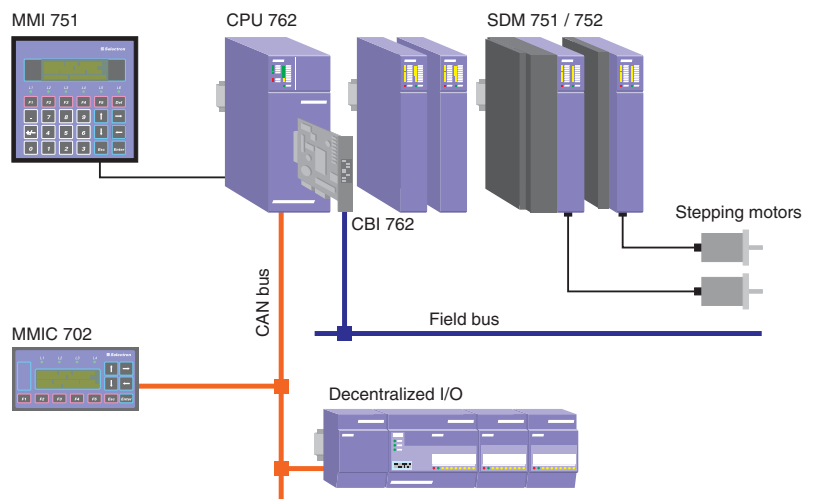
#### Function

#### Processor module CPU 762

The processor module contains the heart of the automation system SELECONTROL® MAS. They execute user programs, propose functions for programming and diagnosis and assure the communication via the available data channels. The CPU's 75x are easy to program with the projecting tool CAP 1131. Foreign systems with CAN interfaces as e.g. drives, terminals, encoders etc. can easily be included by means of the CAN interfaces. For the operation of the CAN interfaces there are tested function blocks available. Two RS 232 interfaces allow the transmission of programs and data. The modules are clipped on a standard support bar. The extensions as e.g. axes modules for positioning or I/O modules are connected via extension connectors.

#### Characteristics and benefits

- Control with central extension bus.
- Control with multiple interface options as CAN, RS 232 and Modbus.
- High calculator power for complex tasks.
- Expandable with axes modules for positioning and regulator tasks.
- Expandable with I/O modules.
- Two RS 232 interfaces; one as programming interface and the other as user interface for the connection of terminals, Modem, printer etc.
- Programmable according to IEC 61131-3 in FBD (function block diagram), IL (instruction list), LD (ladder diagram), SFC (sequence function chart). A special feature is the programming in high level language ANSI-C.
- Generous memory structure with RAM, Flash-EEPROM and serial EEPROM.
- Two free slots for interfaces let to the user the choice for an additional field bus and the connection of modules with the interfaces RS 232.
- 4 digital inputs and 2 digital outputs are already on the controller.
- Flexibly extendable with max. 15 central extension modules.
- Reduction of wiring expenses, easy and fast mounting.
- Fast mounting by snapping on a standard fixing rail.



Multiple external interfaces are at the disposal on the processor modules

Processor modules	CPU 762
Processor	80C167C
RAM memory / for applications	1 MB / 896 kB
Backup FEPRAM	1 MB
Module slot for flash cassette	yes
Li battery	yes
Real time clock	yes
Expandable	yes
Communications interfaces	2 (RS 232C)
CAN interface	1 (CANopen, SeleCAN)
Free slots for CPU interfaces	2
Supply voltage UC	24 Vdc
Power consumption min./max.	6 W/30 W
Number of central extension modules	max. 15

Digital inputs	4
Display	Green LED
Input voltage US	24 Vdc (typ. 6 mA)

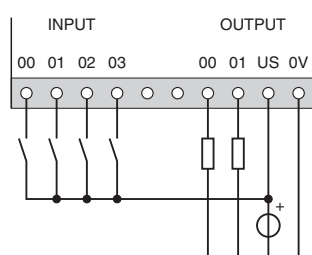
Digital outputs	2
Display	Orange LED
Output current	0,1 A (24 Vdc)
Protective circuit	Protection diode

General	
Ambient temperature (operation)	0 ... +55 °C
Connection technique	see chapter 9
Protection mode	IP 20
Dimensions (W x H x D)	70 x 181 x 132 mm
Weight	720 g

Ordering data	
Article number	44110003

Detailed information in system manual article number 43930129

## Connection



# Controllers to drive and communicate

## Processor modules CPU 852 and CPU 854



### Function

#### Processor modules CPU 852 and CPU 854

The processor modules contains the heart of the automation system SELECONTROL® MAS. They execute user programs, propose functions for programming and diagnosis and assure the communication via the available data channels. The CPU's 852 and CPU 854 are easy to program with the projecting tool CAP 1131. Foreign systems with CAN interfaces as e.g. drives, terminals, encoders etc. can easily be included by means of the CAN interfaces. For the operation of the CAN interfaces there are tested function blocks available. One Ethernet and two RS 232 interfaces allow the transmission of programs and data. The modules are clipped on a standard support bar. The extensions as e.g. axes modules for positioning or I/O modules are connected via extension connectors.

### Features and benefits

You only need a single programming interface to accomplish open and closed loop control and drive tasks.

You can operate stepper and servo axes in mixed mode, even with interpolation, which makes it possible to produce less expensive solutions.

You have access to more powerful axis functions for positioning and interpolating, so you can concentrate on solving the drive task.

You can use both incremental and absolute encoders (SSI), which gives you greater flexibility.

The decentralized system structure with CAN bus and Internet networking means you can expand your system at any time at no significant cost.

### Ethernet interface module

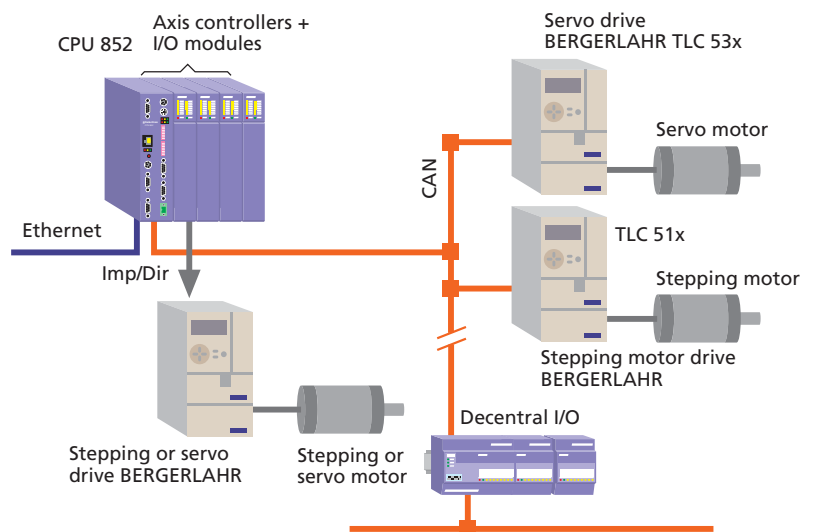
System communication (communication between the PC and the controller and between controllers) for monitoring, program download and the OPC server can take place using RS-232, CAN and Ethernet.

Ethernet permits rapid visualization of process data, rapid download of recipes from databases, etc.

Process data communication (TCP/IP, UDP/IP) and system archiving (FTP) are implemented.

### Internet

CPU 852 and CPU 854 controllers have an Internet web server. This means process data and parameters can be displayed and changed via Ethernet/Internet directly on a standard PC using a web browser. Optionally, an embedded web browser is available for the CPU 854. This runs directly on the controller. As a result, a display such as a VGA monitor, a VGA LCD or a VGA touchscreen can be connected directly to the controller's monitor output so the machine can be operated locally.



<b>Processor modules</b>	<b>CPU 852</b>	<b>CPU 854</b>
Processor	5ST86	5ST86
System speed	133 MHz	133 MHz
Execution times	in accordance with product-specific data sheet	
RAM memory (SDRAM)	8 MB	64 MB
ROM	16 MB	64 MB
NVRAM (Socket RAM)	32 kB	32 kB
Module slot for flash cassette	no	no
Li battery	yes	yes
Real time clock	yes	yes
Expandable	yes	yes
Communications interfaces	2 (RS 232C)	2 (RS 232C)
CAN interface	1 (CANopen, SeleCAN)	1 (CANopen, SeleCAN)
Ethernet interface	1 (10 BaseT)	1 (10 BaseT)
Keyboard-/mouse-interface	no	PS/2
graphics interface	no	yes, max. SVGA, 1024 x 768, 75 Hz
PC 104 Erweiterung	yes, on request	yes, on request
Speisespannung US	24 Vdc	24 Vdc
Power consumption min./max.	9 W/20 W	9 W/20 W
Number of central expansion modules	max. 15	max. 15

<b>General</b>		
Ambient temperature (operation)	0 ... +55 °C	0 ... +55 °C
Connection technique	see chapter 9	see chapter 9
Protection mode	IP 20	IP 20
Dimensions (W x H x D)	45 x 180 x 135 mm	45 x 180 x 135 mm
Weight	1100 g	1100 g

<b>Ordering data</b>		
Article number	44310001	44310003

Detailed information in system manual article number 43930129

## Potential separation

On the CPUs, the inputs/outputs, logic voltage, supply voltage and interfaces are electrically isolated.

See below for details.

### CPU 723

RS232 ↔ CAN1, CAN2, Ulogic, UC, US, digital I/O

CAN1 ↔ RS232, CAN2, UC, US, digital I/O

CAN2 ↔ RS232, CAN1, Ulogic, UC, US, digital I/O

Ulogic ↔ RS232, CAN2, UC, US, digital I/O

UC ↔ RS232, CAN1, CAN2, Ulogic, US, digital I/O

US ↔ RS232, CAN1, CAN2, Ulogic, UC

Digital I/O ↔ RS232, CAN1, CAN2, Ulogic, UC

### CPU 724/726

RS232 ↔ CAN, UC, US, digital I/O

CAN ↔ RS232, Ulogic, UC, US, digital I/O, analog I/O

Ulogic ↔ CAN, UC, US, digital I/O

UC ↔ RS232, CAN, Ulogic, US, digitale I/O, analog I/O

US ↔ RS232, CAN, Ulogic, UC, analog I/O

Digital I/O ↔ RS232, CAN, Ulogic, UC, analog I/O

Analog I/O ↔ CAN, UC, US, digital I/O

### CPU 725/727

RS232 ↔ CAN, Ulogic, UC, US, digital I/O

CAN ↔ RS232, UC, US, digital I/O

Ulogic ↔ RS232, UC, US, digital I/O

UC ↔ RS232, CAN, Ulogic, US, digital I/O

US ↔ RS232, CAN, Ulogic, UC

Digital I/O ↔ RS232, CAN, Ulogic, UC

### CPU 762

RS232 (1) ↔ CAN, Ulogic, US, digital I/O

RS232 (2) ↔ CAN, Ulogic, US, digital I/O

CAN ↔ RS232 (1), RS232 (2), US, digital I/O

Ulogic ↔ RS232 (1), RS232 (2), US, digitale E/A

US ↔ RS232 (1), RS232 (2), CAN, Ulogic

Digital I/O ↔ RS232 (1), RS232 (2), CAN, Ulogic

### CPU 85x

RS232 (1) ↔ UC

RS232 (2) ↔ UC

CAN ↔ UC

Ulogic ↔ UC

US ↔ RS232 (1), RS232 (2), CAN, Ulogic