Parker Motion Controller

PAC340

User Manual   88-035300-01A

Parker

ENGINEERING YOUR SUCCESS.

Disclaimer

The content of this document has been checked for conformity with the hardware and software described. It is, however, impossible to rule out all discrepancies. As a result, we cannot be held responsible if the content is not fully compliant. The information in this document is checked regularly and any necessary corrections are included in subsequent editions. Suggestions for improvement are always welcome. Subject to technical modifications.

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Notes about this handbook

This equipment handbook contains information which is specific to the product and valid at the time of printing.

This equipment handbook is only complete in conjunction with the product-related hardware and software manuals required for the specific application.

Table of contents

1. General information

This user handbook is intended for use by qualified personnel and contains information on the assembly, installation, start-up and maintenance of the device.

1.1. Notes about this handbook

This user handbook is a component of the product and applies to the following devices:

PAC340-CWB11-3X-00-01 and PAC340-MWB11-3X-00-01

It contains information on the following topics:

→   Areas of application
→   Safety
→   Mechanical design
→   Electrical design
→   Connections
→   Start-up
→   Servicing and maintenance
→   Decommissioning
→   Disposal

▶   Keep this user handbook available alongside the product at all times.

1.2. Symbols and visual depictions

The following symbols and visual depictions are used in this user handbook:

Symbol	Meaning
→ ...	List entry
▶ ...	Individual instruction or list of instructions which can be carried out in any order.
1. ... 2. ...	List of instructions which must be carried out in the order given.
i	Additional product information

Structure of the warnings:

⚠ WARNING

Optional:	**Type and source of the danger**
More symbols	Brief description and consequences
	▶ Preventive measures

1.3. Hazard categories and indications

The following indications are used for warning messages that must be observed to ensure your personal safety and avoid any damage to property.

The indications have the following meanings:

⚠ DANGER

Serious injury or death

Failure to observe the safety measures will result in death or serious injury.

▶ Take preventive measures.

⚠ WARNING

Possible serious injury or death

Failure to observe the safety measures may result in death or serious injury.

▶ Take preventive measures.

⚠ CAUTION

Possible minor injuries

Failure to observe the safety measures may result in minor injuries.

▶ Take preventive measures.

NOTICE

Possible damage to property

Failure to observe the safety measures may result in damage to property.

▶ Take preventive measures.

1.4. Qualified personnel

The installation, start-up and maintenance of the machine must be carried out by qualified personnel.
For the purposes of this documentation and the safety instructions contained therein, "qualified personnel" means trained staff with the authorisation to assemble, install, start up, earth and identify devices, systems and electrical circuits in accordance with the standards set in safety engineering and who are familiar with safety concepts in automation engineering.

1.5. Duty of care

The user or processor (OEM) must ensure the following:
→ The device must only be used for its intended purpose.
→ The device must only be used in a perfect, fully functional condition.
→ The user handbook must always be kept legible and fully available.
→ Only sufficiently qualified and authorised personnel carry out assembly, installation, start-up and maintenance of the device.
→ These authorised personnel must receive regular training in all relevant questions of occupational health and safety and environmental protection and must be familiar with the contents of this user handbook, particularly the sections containing safety instructions.
→ Any markings or identification labels and safety and warning signs on the device must not be removed and must be kept legible at all times.
→ The national and international regulations regarding the operation of machinery and installations where the device is being used must be observed.
→ The user must always be kept abreast of any current relevant information regarding the device and its use or operation.
→ The user is responsible for coordinating the use of the safety-related control components with the responsible authority and for adhering to its specifications.

1.6. Intended use

The device is a component of a modular automation system for industrial control applications in the medium to high performance range.

The automation system is designed for use in overvoltage category I (IEC 364-4-443) for the control and regulation of machinery and industrial processes in low-voltage installations in accordance with the following basic conditions.

Maximum rated supply voltage of 1,000 V AC (50/60 Hz) or 1,500 V DC
For use in an environment with max. category 2 level of pollution (EN 60950)
For use in a maximum altitude of 2,000 m a.s.l.
For indoor use in areas not exposed to direct UV radiation
Max. ambient temperature inside and outside the control cabinet according to the technical specifications (see "Technical data").

Correct and safe operation of the automation system requires qualified project planning, proper transport, storage, installation and use as well as careful maintenance.
The automation system may only be used within the scope of the information and applications specified in this documentation and associated user handbooks.

The automation system must only be used as follows:
→   As intended
→   In technically perfect condition
→   Without unauthorised modifications
→   By qualified users only

▶   Observe the rules of the employers' liability insurance association, the German Technical Inspection Association (TÜV), the Association of German Electrical Engineers (VDE) or relevant national regulations.

The device is intended for installation in control cabinets in industrial machines and systems in indoor areas.
▶   For operation, refer to the applicable ambient conditions
▶   Protect the device from condensation and moisture.

Operation
▶   If the device has been stored or transported in cold weather or under conditions of large fluctuations in temperature, do not start to operate it until it has acclimatised to room temperature for the place in which it is used.
▶   Wait at least 12 hours after it has reached room temperature before operating the device.

1.7. Transport and storage

The unit is sensitive to shocks, strong vibrations, humidity and extreme temperatures.

Transport and storage
Protect the unit from strong mechanical stresses during transport.
Always transport the unit in its original packaging.
Observe the environmental conditions applicable to storage.
Protect the unit from precipitation and moisture.

Operation
After storage or transport in cold weather or with strong temperature fluctuations, do not operate the unit until it has reached the room temperature of the place of use.
Wait at least 12 hours after dew has formed before operating the unit.

1.8. Unpacking

When receiving the unit, make sure that the delivery is undamaged and complete.

► Check the packaging for external damage.
► If there is serious damage to the packaging or if damage to the contents is apparent: Do not open the packaging any further and inform the carrier and your supplier immediately.
► Remove the packaging and keep it for re-transport.
► Check the contents for visible transport damage.
► Check the contents against the order for completeness and be sure to retain all documentation supplied. The documentation supplied contains important information about the unit and is part of the product.
► If you notice transport damage or discrepancies between the order and the delivered contents: Inform the supplier immediately.

2. Safety

2.1. Safety-related systems

The use of PLC controls in safety-related systems requires specific measures. If a PLC controller is to be used in a safety-related system, the user must be given comprehensive advice by the PLC manufacturer in addition to any available standards or guidelines regarding safety installations.

▶ Before starting work on the devices, switch off all power supplies, including those of connected peripherals.

▶ Keep all ventilation openings unobstructed.

The failure of certain components in an electronic control system may result in uncontrolled and/or unpredictable operational behaviour.

▶ All types of failure must be considered at the system level and the associated preventative measures identified.

▶ If necessary, request information from your automation system provider.

2.2. Safety instructions

The device may only be operated in a flawless condition. Exposed sharp edges pose a risk of injury.

Working on the device

Do not start work on the device until all necessary safety precautions have been taken. Take precautions to avoid unforeseeable functional events and movements of the system.

▶ Bring the system into a safe state.

▶ Switch the system and the device off.

▶ Secure the system against being switched on again.

▶ Disconnect the device from the system.

Do not open the device housing.

▶ If it is necessary to work on internal parts of the device, contact the manufacturer (see "Customer services / addresses").

2.3. Cyber Security

▶ Never place the controller on the Internet without further protection mechanisms, this embedded controller is not designed for this purpose.

▶ Change the default passwords given at delivery

▶ Always use a preceding external firewall, so that an external access is prevented

▶ Use the security mechanisms of VPN server portals (e.g. IXON) to which the controller can actively connect via VPN or comparable mechanisms.

▶ Use https instead of http

▶ Disable the services you do not need, such as (FTP/SSH/Webserver).

3. Product description

3.1. Overview
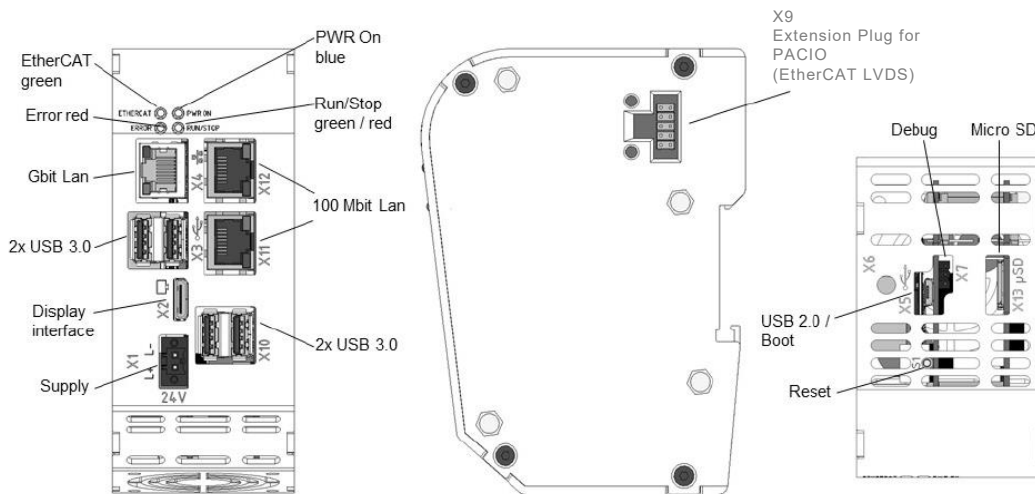
Fig.: 1 Overview of PAC340

Pos.	Description	Pos.	Description
X1	Power Supply	X9	EtherCAT LVDS
X2	Display Interface	X10	2 x USB 3.0
X3	2 x USB 3.0	X11	100 Mbit LAN
X4	Gbit LAN	X12	100 Mbit LAN
X5	USB 2.0 / Boot	X13	Micro SD
X7	Debug	S1	Reset

4.   Technical Data

Protection rating

4.1. PAC340

Description		
Order Number	PAC340-CWB11-3X-00-01 and PAC340-MWB11-3X-00-01	
Dimensions	53 x 122 x 89 (W x H x D[mm])	
Assembly	Din Rail NS 35/7,5 EN 50022	
Certification	CE (EN 61131-2)	
Development Tooling	CODESYS V3 (IEC61131-3)	
CPU	BCM2711, 1,5 GHz Quad Core	
RAM/Flash	1 GB RAM / 8 GB Flash 200 kB Retain	
Communication	1 x Ethernet 10/100/1000 Base, RJ45	
	1 x Ethernet 10/100 Base 2-Port Switch, RJ45	
	1 x EtherCAT, LVDS	
	WLAN / Bluetooth (Option)	
Protocol	Standard: EtherCAT Master Option: Modbus TCP, SNMP, OPCuA, EtherNet/IP, PROFINET, BACnet, KNX, NTP, FTP etc al	
Visualization	WebVisu (WebServer, HTML5) via Digital Display interface (integrated WebBrowser) or external Browser	
Additional Features	4 x Host USB 3.2 Gen 1 / USB-Plug Type A	
	1 x µSD (SDXC)	
	1 x Digital Display Interface	
	1 x Real Time Clock, 30 day buffer	
EtherCAT Expansion	PACIO EtherCAT expansion modules (DIO, AIO, Temperature, Counter, Relays, Communication)	
Power Supply	+24 V DC (-20% / +25%) SELV max. AC voltage component 5% Reverse polarity protection	
Power Consumption	Typ. 0.5A Max. 2A at 24VDC	
Operation Conditions Transport / Storage	Ambient operation temperature: Transport and Storage: Relative humidity:	0 °C to 40 °C -20 °C to +70 °C max. 85%, non-condensing
EMC Protection		
Emitted interference	EN 61000-6-4, industrial zone	

Resistance to interference	EN 61000-6-2, industrial areas
Protection class	III
Insulation resistance	SELV (Uw < 30 V) acc. to EN 61131-2
Protection rating	IP20

4.2. Scope of Delivery and Accessories

Scope of delivery

The scope of delivery PAC340 and the ordered accessories

Accessories

The following accessories is available on demand:

Plug kit:

plug kit with 1 x 2-pin plug for the power

4.3. Product features

The PAC340 Motion Controller is a PLC with a wide range of data interfaces. The PAC340 is a Raspberry Pi OS-based mini PC with expansion options for EtherCAT modules of the PACIO series.

Mounting
The PAC340 is designed for control cabinet installation on a DIN mounting rail in harsh industrial environments.

Processor
The basic version of the unit has a 1.5 GHz Broadcom BCM2711, Quad core Cortex-A72 (ARM v8) 64-bit SoC

Ethernet
An Ethernet interface with 10/100/1000 Mbit/s is available. The TCP/IP and UDP/IP protocols enable a very flexible connection to visualisation software, to higher-level control units or to the IT infrastructure.

EtherCAT
An EtherCAT extension interface with a 10-pole connection on the side is available. The interface is compatible with Parker PACIO modules.
USB
The USB 3.2 Gen 1 host interface is a widely used peripheral interface. This enables simple data exchange or expansion with compatible USB devices.

> ℹ️ USB sticks with FAT/FAT32/exFAT/ext3/ext4 formatting are supported.
> For support of other USB devices, please contact our technical support.

Real-time clock
A Goldcap buffered, maintenance-free real-time clock can be set to the current time via a software interface. The buffer time is 30d.

SD card
The PAC340 is equipped with 1 x µSD card slot, e.g. for data downloads.

Display interface
The display interface is compatible with the HDMI 2.0 standard. Picture transmissions up to 4Kp60 are possible here, if supported by the display. For connection, a mini-HDMI cable is required that supports at least the HDMI 1.4 standard, with a corresponding connection for the connected monitor.

Visualization
CODESYS web visualization is included with the PAC340. .

Performance features at a glance

→   1.5 GHz CPU BCM2711

→   User program and data memory (RAM): 1 GB on-board

→   User program memory (eMMC): 8 GB on-board

→   200 KB retain memory

→   1x Ethernet 10/100/1000 Base T interface

→   1x Ethernet 10/100 Base T, 2-port switch

→   4x USB host interface V3.2 Gen 1 (type A)

→   1 EtherCAT LVDS interface with up to 10 nodes on the LVDS bus (or max. 2 A load)

→   1x real-time clock (RTC), (buffer time 72h)

→   1x µSD card slot

→   1x display interface

5.   Assembly

5.1.   Installation

PAC 340 modules are intended for installation on mounting rails (according to DIN EN 60715, 35 x 7.5 mm).

→   Guide the device from below towards the mounting rail as shown in the image so that the metal spring snaps into place between the mounting rail and the mounting surface.
→   Press the module at the top against the mounting wall until it snaps into place.
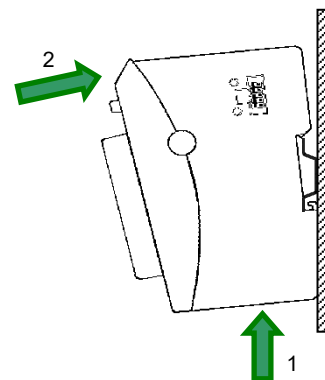
Fig.: 2 Installing the PAC340

NOTICE

There must be at least 100 mm clearance above and below the PAC340.

This guarantees the necessary convection cooling for the PAC340. The mounting plate must be made of metal to ensure heat conduction.

Connecting two modules
After snapping the first module onto the rail, snap on the second module about 1 cm away, to the right of the first module. Push the second module along the rail towards the first module until the release latch snaps into place.

Disconnecting two modules

Push down the release latch (see figure) of the module that you wish to disconnect from the module to the left of it. Push both modules away from one another until they are about 1 cm apart.

→ Push the module up and against the metal spring on the lower end of the rail guide. Press the module at the top against the mounting wall until it snaps into place.

→ Turn the module forwards away from the mounting rail as shown in the illustration.

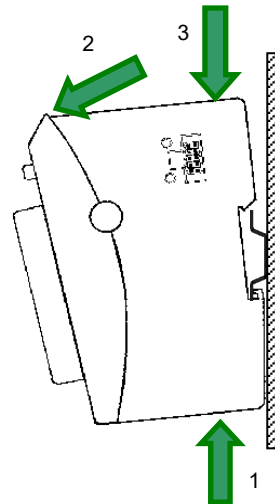→ Pull the module down off the mounting rail.

Fig.: 3 Disconnecting the PAC340

6. Connection

⚠ WARNING

Uncontrolled and unpredictable operational behaviour!

The failure of certain components in electronic control systems may result in uncontrolled and unpredictable operational behaviour.

▶ All types of failure and the associated fuse systems are to be taken into account at system level.

▶ Follow the automation system manufacturer's instructions.

6.1. Power supply

The device is powered by an external 24 V DC power supply.

▶ Before plugging in the device, make sure that the external power supply meets the required specifications (type K to DIN EN 61131-2).

External power supply (24 V DC)	
Supply voltage	+24 V DC SELV (-15% / +20%)
AC voltage component	Max. 5%; the DC voltage level must not fall below 20,4 V.

Internal power supply

A power supply for the system electronics for an input voltage of 24 V DC (-15% / +20%) is integrated into the device. The power supply unit has built-in reverse polarity protection and surge current protection.

The supply line and the power supply unit must be protected by an external short-circuit and overload protection with a tripping current of max. 5 A.

Installation

▶ All connections and lines must be executed so that no faults are caused by inductive and capacitive interference in the controller.

▶ The supply lines must be sufficiently resilient to current and voltage.

▶ Shielded lines must be used for communication. The shield must be connected to the module.

6.1.1. Connecting the power supply

⚠️ **CAUTION**

Live parts!

▶ Before starting any work on the device, switch off all power supplies, including those of connected peripherals.

▶ Connect the power supply to the plug according to the following table.

Power supply plug		
Connector	Pin	Function
	1	DI digital input 24 V DC (-20% / +25%)
	2	L+ external power supply 24 V DC (-15% / +20%)
	3	L- external power supply GND

The following counterparts have been tested for the SL-SMT 3.5 plug-in connector (Weidmül-ler), and may be used with the device:

→ Weidmuller part number   2459570000
→ Description   BLF 3.50/02/180F SN BK BX

6.2. Earthing

The PAC340 must be earthed. For this purpose, the metal housing must be connected to a functional earth.
The functional earth is used to dissipate HF currents and is of great importance to the immunity of the module. HF interference is diverted from the electronic circuit board to the metal housing. The metal housing now requires a suitable connection to a functional earth.

You must ensure that
→   the module housing has a good conductive connection to the top-hat rail,
→   the top-hat rail has a good conductive connection to the control cabinet,
→   the control cabinet has a good earthing.

In special cases, the earth wire may be attached straight to the module.

DIN mounting plate with
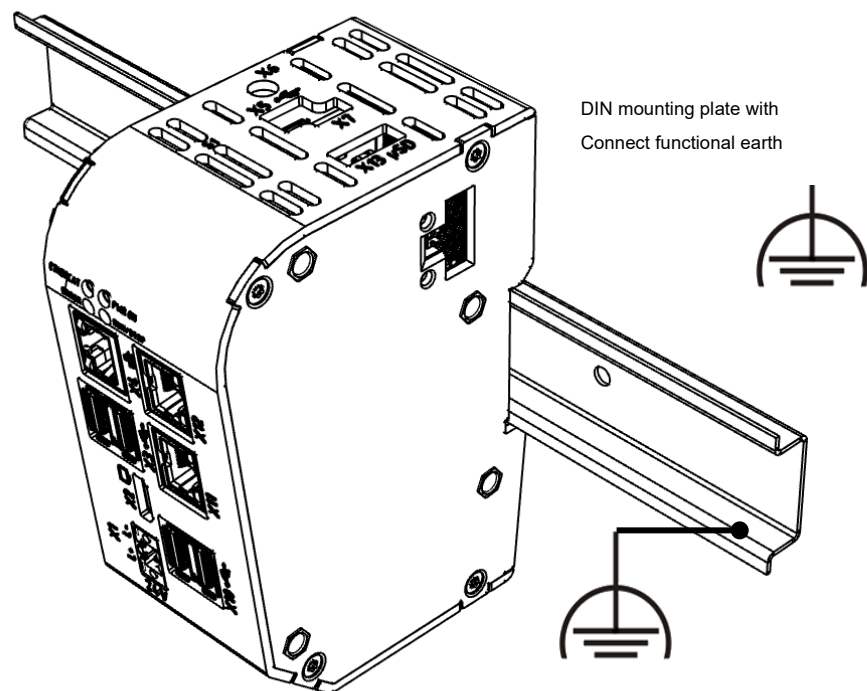Connect functional earth

Fig.: 4 Earthing

NOTICE

Earth wires should be short and have a large surface area (copper braiding).
        You can find information, for example, at http://de.wikipedia.org/wiki/Masse_(Electronics).

6.3. Data connections
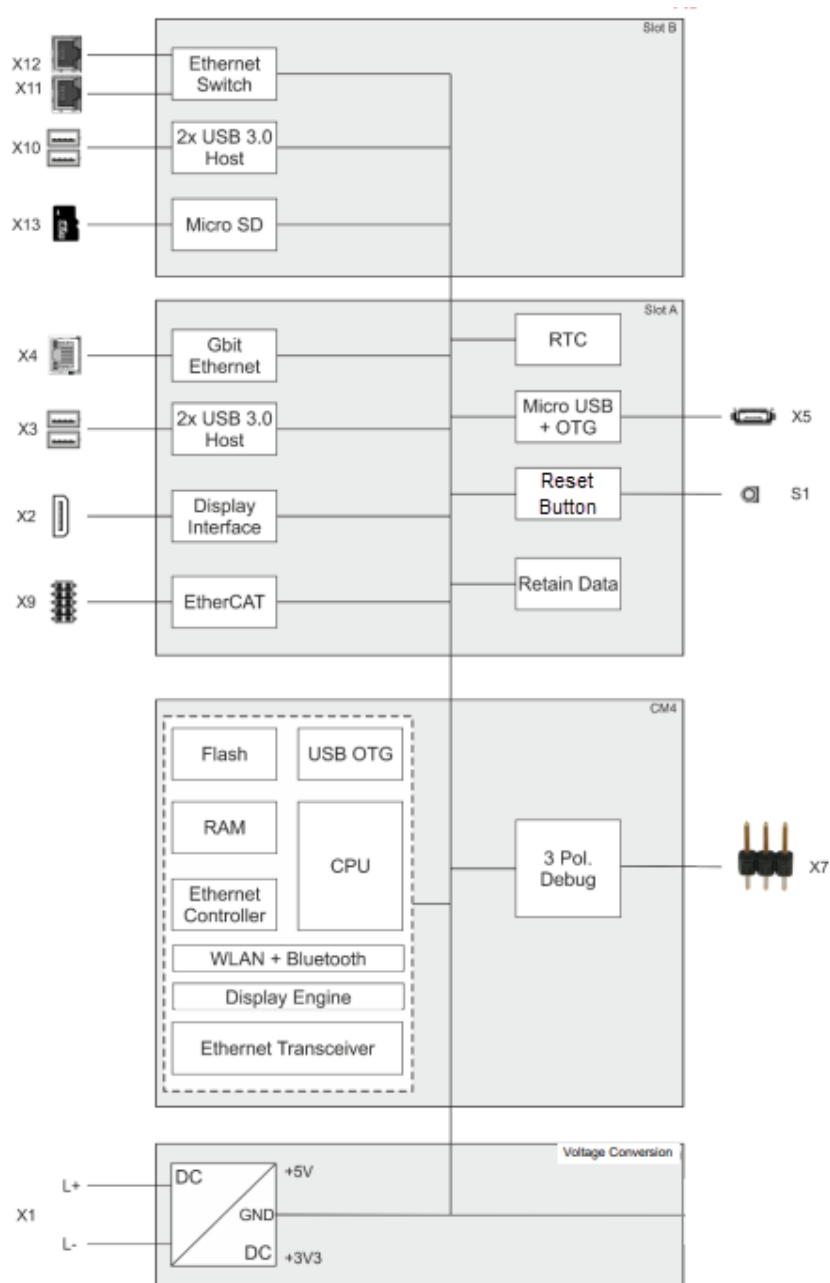
6.3.1. Block diagram

Fig.: 5 Block diagram of PAC340

6.3.2. 10/100/1000 Base-T network connection

The onboard gigabit adapter with RJ-45 connection enables the network connection.
The status LEDs "SPEED" and "LNK/RCV" provide information about a successful network connection according to IEEE 802.3 clause 40.

Pin assignment

LAN				
Plug	Pin	Function	Pin	Function
RJ45	1	D1+	5	D3-
	2	D1-	6	D2-
	3	D2+	7	D4+
	4	D3+	8	D4-

Status-LEDs

LEDs		
LED	Color	Meaning
LED „SPEED"	yellow	ON = 100 Mbit/s, 1000 Mbit/s Off = 10 Mbit/s
LED „LNK/RCV"	green	Link, Data Receive Blinking: connection is active, data transfer OFF: no connection

6.3.3. USB 3 interface

Devices with a USB interface can be connected to the USB host port (Rev. 2.0). Suitable USB device classes for CODESYS users are USB thumb drives only.

Pin assignment

B1 B2 B3 B4

USB		
Connnector	Pin	Function
USB	B1	VCC
	B2	D-
	B3	D+
	B4	GND

NOTICE

Damage to the USB thumb drive and malfunctions due to data loss!

Removing a USB thumb drive while it is still in use and data is being transferred can render the USB thumb drive unusable. Open files which cannot be accessed due to removal of the USB thumb drive can block the device.

▶ Therefore, ensure that all data operations are complete before removing the USB thumb drive.

NOTICE

Property damage and malfunctions due to data loss!

The USB interface is protected against overload (> 0.5 A). In the event of a short-circuit during operation, the controller can trigger a system reset.

This can result in considerable damage to property and damage to the USB device.

▶ Before using a USB device, check its power consumption.

NOTICE

Failures and malfunctions when connected directly to signal ground!

▶ Only use USB devices that do not have a direct connection between the signal ground and the housing.

USB thumb drives can be inserted and removed during operation. The inserted USB thumb drive is detected automatically and appears in the Linux directory/media/usbX. When the USB thumb drive is removed, the directory /media/usbX is again removed from the directory structure.
Either the first partition on the USB thumb drive, or, if the memory is not partitioned, the entire memory will be connected, i.e., the respective directory appears automatically.
The X represents a number from 1 (first USB device) to 8 (last/max. USB device).

ℹ The mechanical construction of the USB interface is designed for up to 1000 plugging cycles.

6.3.4. EtherCAT

The PAC340 can be extended with a system of EtherCAT I/O modules (PACIO). The PACIO modules, which are lined up laterally to the right, are designed for the connection of a wide range of process signals (see EtherCAT I/O manual).

The PAC340 simultaneously assume the function of the PLC control and that of an EtherCAT bus coupler. Therefore, the EtherCAT communication signals are already converted internally to the LVDS (E-bus) transmission physics. As EtherCAT master, the PAC340 sends EtherCAT telegrams for writing the output data and for reading the input data. The Ethernet EtherCAT protocol is maintained right down to the last individual I/O module. At the end of the modular device, the connection of the outward and return lines is closed automatically.

Furthermore, the system voltage of the connected I/O modules is generated in the PAC340. Although this simplifies the connection of the I/O modules, it must be taken into account with regard to the maximum number of connect-able I/O modules.

Additional EtherCAT slaves can be connected to the PAC340 with an extender module.

NOTICE

The number of connectable EtherCAT I/O modules is limited!

Each EtherCAT I/O module generates an "E-bus load". This refers to the current load required to supply the internal device electronics. The PAC340 provides a current of up to 2 A for this purpose. This means that one PAC340 can supply up to a maximum of 10 I/O modules.

LED status indicators

The EtherCAT LEDs indicates the status of the EtherCAT ASICs.

EtherCAT		
State	**LED, flash code**	**Meaning**
Init	Red, continuous light	Initialisation, no data exchange
Pre-Op	Red/green, 1:1	Pre-operational status, no data exchange
Safe-Op	Red/green, 3:1	Safe operational status, inputs can be read
Op	Green, continuous light	Operational status, full data exchange

7. Operation

7.1. Switching on and off

NOTICE

Damage or malfunction!

▶ Do not insert, connect, disconnect or touch any connections while the device is in operation.

▶ Before starting any work on the device, switch off all power supplies, including those to any connected peripherals (externally powered encoders, programming devices etc.).

NOTICE

Damage to property!

▶ Before connecting the power supply, ensure that all cabling and the polarity of all the connections are correct.

Switching on

The device does not have an on/off switch. The device starts automatically when the system is switched on or the power is connected.

Switching off

The device is switched off when the system is switched off or the power supply is disconnected.

7.2. Initial start-up of the network

Starting-up via the web interface

The device must be connected to the network with the correct settings before it can be used. Upon delivery, the IP-address and network mask are set to:

▶ IP address: 169.254.255.XX

XX corresponds to the last 2 digits of the device serial number. Exception: 00 becomes 100. See example below.

▶ Network mask: 255.255.255.0

This setting can be used for initial setup of the device in the IP network.

NOTICE

Damage to property!

▶ Before connecting the power supply, ensure that all cabling and the polarity of all the connections are correct.

1. Supply power to the device (24 V).
2. Connect the device to a programming computer using a network cable (X4) and network switch.
3. Open a web browser on the programming computer.
4. Enter the IP address of the device into the web browser.

The login window is displayed.

Fig.: 6 Login window

5. Log in with the following login information:

Name: admin
Password: LOGIN PWD from the serial number label,

The web configuration page will be displayed.

Configuration
Network
Real-Time-Clock
Display
FTP-Server
Users

System
Info
Update
Reboot
Format Filesys

PLC-Manager
Control
Application Info
Application Files
Font Files

Fig.: 7 List of web interface settings

6.   Click on the "Network" link.

The "Network Configuration" page will be displayed.

Network Configuration

COMMON

Hostname	BGH-IMX6
Default Gateway	0.0.0.0
DNS Server 1	0.0.0.0
DNS Server 2	0.0.0.0

ETH0

Mode:	static
IPAdress	169.254.255.100
NetMask	255.255.255.0

ETH1

Mode:	ethercat

Save

Fig.: 8 Network Configuration page

7.   Check the network settings and make any changes in the text boxes, if required.
8.   Save the settings by clicking on "Save".
9.   Additional settings can also be viewed and/or modified on the web configuration page (e.g. "System time", display resolution, TargetVisu).

In order to accept all of the modified settings, reboot the device:

Briefly disconnect the device from the power supply.

– or –

Click on "Reboot" in the web interface and then confirm on the next page by clicking on "Reboot Module".

The device is configured and ready for use.

7.3. Operation

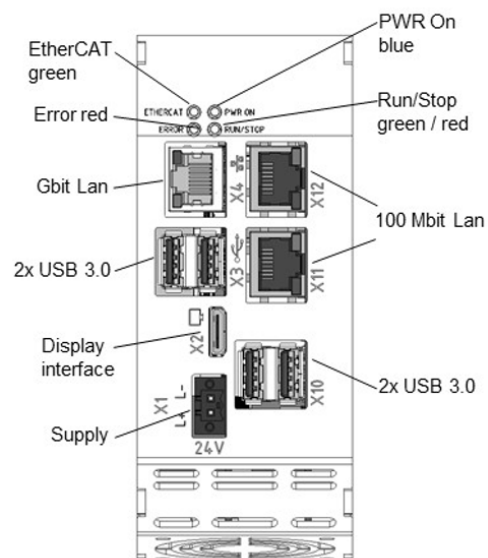### 7.3.1. Status indicators

Fig.: PAC340 status indicators

Power LED

4 operating status LEDs show the current status of the power supply, the module mode and any error messages.

LED		Logical status
1	PWR (green)	ON = power supply to the module electronics is correct.

RUN/STOP button

	Action	Command
Boot phase	Pressing the button	Change to maintenance mode
CODESYS SPS	Short press	Change between RUN and STOP mode of the PLC
	Long press	Stop the PLC with RESET of variables (cold reset)

LEDs: RUN/STOP ERROR - LED indication

2 LEDs are available to indicate the system status (RUN/STOP in two colours: red/green/(yellow); ERROR in red only). The LEDs indicate the following system statuses:

System status	LED RUN/STOP	LED ERROR
PPP configuration mode active	Yellow	Off
USB package update active	Flashing yellow	Off
System error	Off	Red
PLC status		
RUN	Green	Off
STOP	Red	Off
Error stop	Red	Red
Reset detected	Flashing red	Off
Applicative states		
Identification of ProfiNET device	Flashing yellow	Flashing

Basic procedure for error stop:
→   Determine the cause of the fault (by reading the web browser)
→   Correct the cause of the fault
→   Carry out a reset on the device, alternatively: Mode-selection switch / CODESYS/ web browser
→   Put the controller back into operation

Ethernet status LED

See section: 10/100 Base-T network connection (Ethernet).

7.3.2. Real-time clock with battery back-up

The PAC340 is equipped with a real-time clock.
The buffer time is 30 days.

Setting the date and time
The time can be set either via the web configuration page or via the CODESYS V3 library.

7.3.3. SD card

⚠ **WARNING**

Serious injury as a result of uncontrolled and unpredictable operational behaviour!

Inserting or removing the SD card can result in the device malfunctioning. The failure of electronic control systems may result in uncontrolled and unpredictable operational behaviour.

▶ Insert or remove an SD card only when the device is switched off.

Inserting an SD card

1. Switch the device off.
2. Insert the SD card into the SD card slot.
3. Switch the device on again.

The SD card is now ready for data transfer (read, write and copy).
Path: /media/sd

ℹ Max. possible storage capacity of an SD card: 2 TB.
The operating life of the gold-plated contacts is up to 10,000 plugging and unplugging cycles.
The SD card drive has a push-in/push-out insertion and ejection mechanism.
To avoid malfunction, the SD card may not be removed by pulling.

7.3.4. Start/Stop reset button

The Reset/Stop button is located on the front of the device below the status LEDs.
To prevent unintentional operation, the Stop/Reset button can only be operated with a thin
pointed object (pen, screwdriver).
The function depends on the controller's current operating status

CODESYS Stop – Start – Reset
A running CODESYS application is stopped by briefly pressing the button. The Run / Stop LED
changes from green to red. A second short press will start the CODESYS application. The Run /
Stop LED changes from red to green. If the button is pressed and held for more than 5 seconds,
a "Warm reset" is triggered. After the time has elapsed, the Run/Stop LED flashes quickly and
the button can be released. The controller is now in the reset state.

Service mode
The controller must be switched off to enter service mode. The S1 button is then held down and
the controller is switched on again. The button must be kept pressed until the Run/Stop LED
flashes yellow every two seconds.

7.4. Troubleshooting

7.4.1. No network connection

▶ Check the wiring/switch.
▶ Check whether an IP address has been assigned twice.
▶ Check the network settings on the PC: The subnet and subnet mask must match the settings in the controller.
▶ Check firewall/anti-virus programs on the PC.
▶ Check the Lifeguard setting.
▶ Check for an unknown IP address (see 7.4.3).

7.4.2. In error stop mode

▶ Log into device on web browser
▶ Establish cause of fault (Diagnostics > PLC Log/System Log).
▶ Correct the cause of the fault.
▶ Restart the device (press "Reset" on the device, also see 6.3.4).

Device is ready for use.

7.4.3. Unknown IP address

If the IP address of the device is unknown, a USB update can be carried out to reconfigure it.

1. Reboot the device while pressing and holding S1 until the Run/Stop LED flashes every 2 seconds.
   The device is now in maintenance mode and can be reached via the default IP address.
2. Connect to the device using the default IP address:
   IP address: 169.254.255.XX
   Net mask: 255.255.255.0
   XX corresponds to the last 2 digits of the device serial number. Exception: 00 becomes 100.
3. Correct the network settings and make a note of them.
4. Restart the device.
   Maintenance mode is turned off automatically.
   The device is configured and ready for use.

8. Servicing / Maintenance

Repairs and corrective maintenance may only be carried out by the manufacturer or its authorised customer service centres.

⚠ **WARNING**

Uncontrolled and unpredictable operational behaviour!

Failures or malfunctions may result in uncontrolled and unpredictable operational behaviour.

▶ Do not insert, connect, undo or touch any connections while the device is in operation.

▶ Before starting any work on the device, switch off all power supplies, including those to any connected peripherals (externally powered encoders, programming devices etc.).

If the device is used correct it should not require maintenance.

▶ Make sure all the ventilation openings are kept free of obstructions

▶ Do not open the device. If it is necessary to work in the device, contact the Service department.

9. Disassembly

1. Disconnect the device and associated peripherals from the power supply.
Unplug all plugs and cables.

NOTICE

Damage to the device!

If disassembly is performed carelessly the device can fall down from the top-hat rail or get damaged.

▶ Do not tilt the device.

▶ Secure the device to prevent it from falling, particularly when removing it from the control cabinet.

Push the module up and against the metal spring on the lower end of the rail guide. Press the module at the top against the mounting wall until it snaps into place. Turn the module forwards away from the mounting rail as shown in the illustration. Pull the module down off the mounting rail.
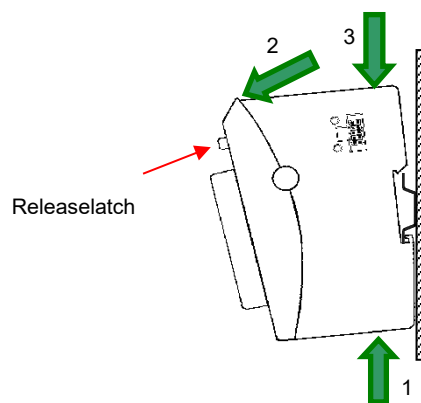
Releaselatch

Fig.: 9 Disassembling the PAC340

10. Disposal

The device contains the following components which need to be disposed of separately:
→ Metals
→ Electronic components

The respective national regulations for the disposal of electrical appliances in B2B business apply.

The following options are available for disposal of the device:

Disposal by the manufacturer
Unless otherwise agreed, devices can be returned for disposal.

Disposal in accordance with regional regulations
▶ Dismantle the device and disassemble it completely into its component parts.
▶ Send the metal parts for metal recycling.
▶ Sort the electronic parts (circuit boards, drives, etc.).
▶ Dispose of electronic scrap in accordance with the national laws and regulations.
▶ Make sure that the battery is completely discharged.
▶ Dispose of batteries at a recognised collection point in accordance with national laws and regulations.

11. Standards and certificates

11.1. Standards

Applicable directives

→ EMC Directive 2014/30/EU
→ RoHS Directive 2011/65/EU (and Delegated Directive 2015/863)

Applicable standards

→ Programmable Logic Controllers, part 1 General information
  EN 61131-1
→ Programmable Logic Controllers, part 2: Equipment requirements and tests EN 61131-2
→ Industrial Control Equipment 17. Edition / 1999-01-28
  UL 508
→ Technical documentation for the assessment of electrical and electronic products with re-
  spect to the restriction of hazardous substances
  EN 50581:2012

11.2. Declaration of Conformity

The declaration of conformity is available on our website

https://ph.parker.com/de/de/parker-motion-controller-pac-series

12. Adresses

Repairs and corrective maintenance may only be carried out by the manufacturer or its author-
ised customer service centres.

12.1. Division address

Parker Hannifin Corporation
Electronic Motion and Control Division
5500 Business Park Drive
Rohnert Park, CA 94928
email: emn.service@support.parker.com
Web: www.parker.com/emc

12.2. Addresses

CAN in Automation; international manufacturer and user organisation for CAN users in automa-
tion:
CAN in Automation e.V. (CiA)
Am Weichselgarten 26
91058 Erlangen, Germany
headquarters@can-cia.de
www.can-cia.de

EtherCAT Technology Group
ETG Headquarters
Ostendstraße 196
90482 Nürnberg, Germany
info@ethercat.org
www.ethercat.org

Beuth Verlag GmbH, 10772 Berlin, Germany
or
VDE-Verlag GmbH, 10625 Berlin, Germany

VDE Verlag GmbH, 10625 Berlin, Germany
or
Internet research: www.iec.ch