Compax3M Short Description

Multi-axis devices

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DOC-0012-03

192-120148N14
2021-06

Release as from R09-63

Non-warranty clause

We checked the contents of this publication for compliance with the associated hard and software. We can, however, not exclude discrepancies and do therefore not accept any liability for the exact compliance. The information in this publication is regularly checked, necessary corrections will be part of the subsequent publications.
German Master created.

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1. Notes on the Documents Supplied

Compax 3 - short reference guide

This short reference guide does contain only the basic information; for more detailed information please refer to the Help-files of the individual Compax3 device types.

Compax3 - Download page: http://solutions.parker.com/c3_Support

Here you find the Compax3 ServoManager, Firmware, Field Bus Files, Targets and Application examples.

Online help system

After the installation of the ServoManager you can copy the desired Online help system with the "C3 ServoManager Help Installer" (you can select the C3 device type as well as the desired language) to your PC. The help system can be called up directly from the ServoManager. You will find the complete description of the selected device type in these online help files.
Please note that the help files are associated with defined device and software versions.

NOTICE ***Status of the Manuals:***

Help and PDFs are updated simultaneously. In case of doubt the HTML help shows the actual state in comparison to PDF edition.
For additional HTLM help please refer to our website.

1.1 C3 ServoManager

PC requirements

Minimum requirements:

Operating system:	MS Windows XP SP3 / MS Vista (32 Bit) / Windows 7 (32 Bit / 64 Bit)
Browser:	MS Internet Explorer 8.x or higher
Processor:	Intel / AMD Multi core processor >=2GHz
User :	>= 1024MB
Hard disk:	>= 20GB available memory
Monitor:	Resolution 1024x768 or higher
Graphics card:	on onboard graphics (for performance reasons)
Interface:	USB 2.0

Note:

- For the installation of the software you need administrator authorization on the target computer.

Connection PC-PSUP

Your PC is connected to the PSUP (mains module) connector X3 via an USB cable (SSK33/03).
Start the Compax3 servo manager and make the setting for the assigned interface in the menu"**Options: Communication settings RS232/RS485...**".
The interface is marked as "USB Serial Port (COMx)" in the windows device manager. The no. of the COM port "x" may vary. You can find it in the PC under system control, system, hardware, device manager, connections.

Device Selection

In the menu tree under device selection you can read the device type of the connected device (Online Device Identification) or select a device type (Device Selection Wizard).

Configuration

Then you can double click on "Configuration" to start the configuration wizard. The wizard will lead you through all input windows of the configuration.

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2. Introduction

In this chapter you can read about:

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2.1 Device assignment

This manual is valid for the following devices:

- Compax3M050D6 + supplement
- Compax3M100D6 + supplement
- Compax3M150D6 + supplement
- Compax3M300D6 + supplement

- PSUP10D6 (mains module)
- PSUP20D6 (mains module)
- PSUP30D6 (mains module)

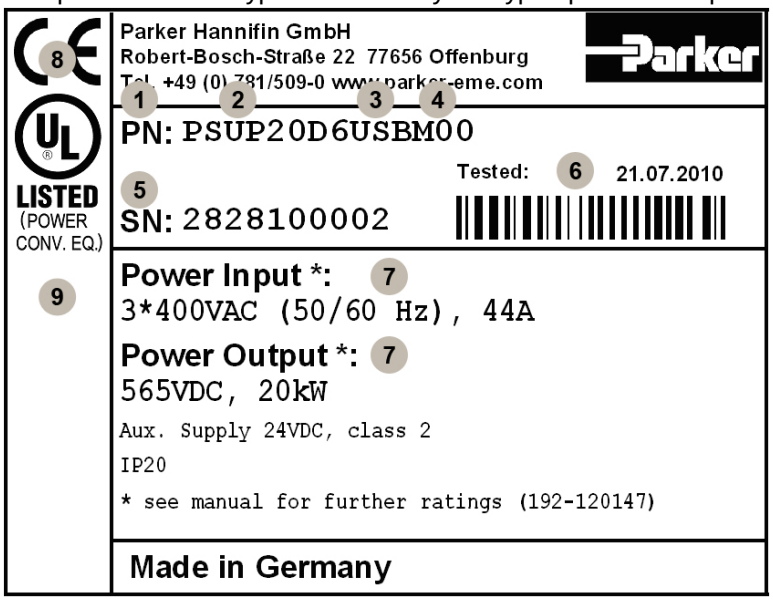
2.2 Scope of delivery

- Device accessories
  Device accessories for Compax3M
  - Cable clamps in different sizes for large area shielding of the motor cable, the screw for the cable clamp as well as
  - the matching plug for the Compax3M connectors X14, X15, X43
  - a toroidal core ferrite for a cable of the motor holding brake
  - an interface cable (SSK28/23) for communication within the axis combination
  - With safety option S3: Mating plugs X28 and connection cable X26 / X27

2.3 Type specification plate

The present device type is defined by the type specification plate (on the housing):

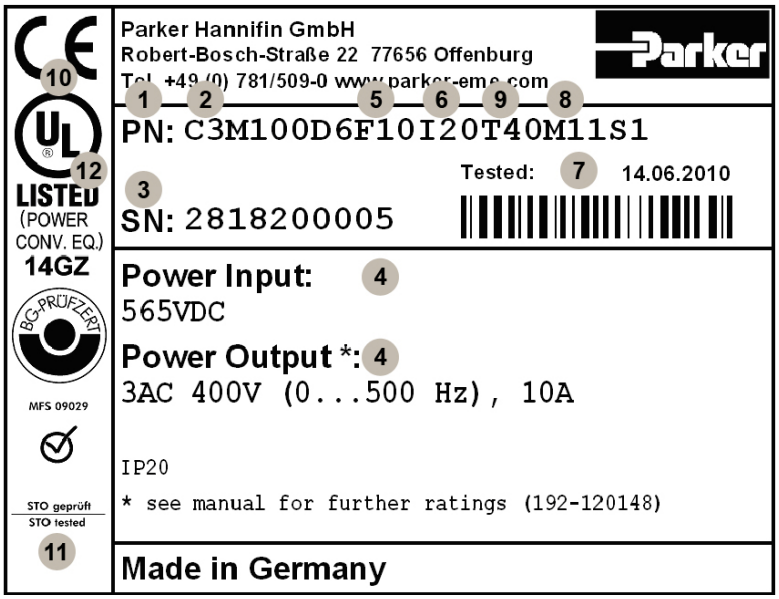
Type specification plate: PSUP (example)



Explanation:

1	Type designation: The complete order designation of the device (2 - 4).
2	**PSUPx0:**Mains module 3AC 230...480V, nominal power in 1kW (10=10kW)
	D6: Designation nominal supply
3	Configuration and parameterization interface: **USB:**USB connection
4	Options: **Mxx:** I/O extension
5	Unique number of the particular device
6	Date of factory test
7	Nominal supply voltage: Power Input: Input supply data / Power Output: Output data
8	CE compliance
9	UL certified (corresponding to the logo displayed on the device)

Compax3 - Type specification plate (example):



Explanation:

1	Type designation: / The complete order designation of the device (2, 5, 6, 9, 8).
2	**C3:** Abbreviation for Compax3 **S025:** Single axis device, nominal device current in 100mA (025=2.5A) **M050:** Multi-axis device, nominal device current in 100mA (050=5A) **H050:** High power device, nominal device current in 1A (050=50A)
	D6: Designation nominal supply **V2:** Mains supply voltage (2=230VAC/240VAC, 4=400VAC/480VAC)
3	Unique number of the particular device
4	Nominal supply voltage Power Input: Input supply data / Power Output: Output data
5	Designation of the feedback system **F10:** Resolver / **F11:** SinCos© / Single- or Multiturn **F12:** Feedback module for direct drives
6	Device interface **I10:** Analog, step/direction and encoder input **I11 / I12:** Digital Inputs / Outputs and RS232 / RS485 **I20:** Profibus DP / **I21:** CANopen / **I22:** DeviceNet / **I30:** Ethernet Powerlink / **I31:** EtherCAT / **I32:** Profinet **C20:** integrated controller C3 *power*PL*m*C, Linux & Web server
7	Date of factory test
8	Options: **Mxx:** I/O extension, HEDA / **Sx:** optional safety technology on C3M
9	Technology function **T10:** Servo controller / **T11:** Positioning / **T20:** Pressure / Volume flow rate **T30:** Motion control in accordance with IEC61131-3 / **T40:** Electronic cam
10	CE compliance
11	Certified safety technology (corresponding to the logo displayed)
12	UL certified (corresponding to the logo displayed)

2.4 Packaging, transport, storage

Packaging material and transport

⚠CAUTION **Caution!**

The packaging material is inflammable, if it is disposed of improperly by burning, lethal fumes may develop.

The packaging material must be kept and reused in the case of a return shipment. Improper or faulty packaging may lead to transport damages.

Make sure to transport the drive always in a safe manner and with the aid of suitable lifting equipment (**Weight** (see on page 18)). Do never use the electric connections for lifting. Before the transport, a clean, level surface should be prepared to place the device on. The electric connections may not be damaged when placing the device.

First device checkup

- Check the device for signs of transport damages.
- Please verify, if the indications on the **Type identification plate** (see on page 5) correspond to your requirements.
- Check if the consignment is complete.

Disposal

This product contains materials that fall under the special disposal regulation from 2010, which corresponds to the EC directory 2008/98/EC for dangerous disposal material. We recommend to dispose of the respective materials in accordance with the respectively valid environmental laws. The following table states the materials suitable for recycling and the materials which have to be disposed of separately.

Material	suitable for recycling	Disposal
Metal	yes	no
Plastic materials	yes	no
Circuit boards	no	yes

Please dispose of the circuit boards according to one of the following methods:

- Burning at high temperatures (at least 1200°C) in an incineration plant licensed in accordance with part A or B of the environmental protection act.
- Disposal via a technical waste dump which is allowed to take on electrolytic aluminum condensers. Do under no circumstances dump the circuit boards at a place near a normal waste dump.

Storage

If you do not wish to mount and install the device immediately, make sure to store it in a dry and clean environment. Make sure that the device is not stored near strong heat sources and that no metal chippings can get into the device.

Please note in the event of storage >1 year:

Forming the capacitors

Forming the capacitors only required with 400 VAC axis controllers and mains module PSUP

If the device was stored longer than one year, the intermediate capacitors must be re-formed!

Forming sequence:

- Remove all electric connections
- Supply the device with 230VAC single phase for 30 minutes
  - via the L1 and L2 terminals on the device or
  - with multi axis devices via L1 and L2 on the mains module PSUP.

2.5 Safety instructions

2.5.1. General hazards

General Hazards on Non-Compliance with the Safety Instructions
The device described in this manual is designed in accordance with the latest technology and is safe in operation. Nevertheless, the device can entail certain hazards if used improperly or for purposes other than those explicitly intended.
Electronic, moving and rotating components can

- cause danger for life and limb of the operator and
- material damage

Designated use

The device is designed for operation in electric power drive systems (VDE0160). Motion sequences can be automated with this device. Several motion sequences can be can combined by interconnecting several of these devices. Mutual interlocking functions must be incorporated for this purpose.

2.5.2. Working safely / qualification

This device may be operated only by qualified personnel.
Qualified personnel in the sense of these operating instructions consists of:

- Persons who, by virtue to their training, experience and instruction, and their knowledge of pertinent norms, specifications, accident prevention regulations and operational relationships, have been authorized by the officer responsible for the safety of the system to perform the required task and in the process are capable of recognizing potential hazards and avoiding them (definition of technical personnel according to VDE105 or IEC364),
- who have a knowledge of first-aid techniques and the local emergency rescue services,
- who have read and will observe the safety instructions,
- who have read and observe the manual or help (or the sections pertinent to the work to be carried out).

This applies to all work relating to setting up, commissioning, configuring, programming, modifying the conditions of utilization and operating modes, and to maintenance work.
This manual and the help information must be available close to the device during the performance of all tasks.

2.5.3. Special dangers

Danger!

Due to movable machine parts and high voltages, the device can pose a lethal danger. Danger of electric shock in the case of non-respect of the following instructions. The device corresponds to DIN EN 61800-3, i.e. it is subject to limited sale. The device can emit disturbances in certain local environments. In this case, the user is liable to take suitable measures.

- Check that all live terminals are secured against contact. Perilous voltage levels of up to 850V occur.
- Do not bypass power direct current.

Caution - Risk of Electric Shock!

Always switch off devices before wiring them!
Dangerous voltages are still present until 10 min. after switching off the power supply.

- The device must be permanently grounded due to high earth leakage currents.
- The drive motor must be grounded with a suitable protective lead.
- The devices are equipped with high voltage DC condensers. Before removing the protective cover, the discharging time must be awaited. After switching off the supply voltage, it may take up to 10 minutes (with additional capacity modules it may take up to 30 minutes) to discharge the capacitors.
  Danger of electric shock in case of non respect.

- Before you can work on the device, the supply voltage must be switched off at the L1, L2 and L3 clamps. Wait at least 10 minutes so that the power direct current may sink to a secure value (<50V). Check with the aid of a voltmeter, if the voltage at the DC+ and DC- clamps has fallen to a value below 50V.
  Danger of electric shock in case of non respect.
- Do never perform resistance tests with elevated voltages (over 690V) on the wiring without separating the circuit to be tested from the drive.
- Please exchange devices only in currentless state and, in an axis system, only in a defined original state.
- If the axis controller is replaced, it is absolutely necessary to transfer the configuration determining the correct operation of the drive to the device, before the device is put into operation. Depending on the operation mode, a machine zero run will be necessary.
- The device contains electrostatically sensitive components. Please heed the electrostatic protection measures while working at/with the device as well as during installation and maintenance.

2.6 Warranty conditions

- The device must not be opened.
- Do not make any modifications to the device, except for those described in the manual.
- Make connections to the inputs, outputs and interfaces only in the manner described in the manual.
- Fix the devices according to the **mounting instructions.** (see on page 17)
  We cannot provide any guarantee for other mounting methods.

Note on exchange of options

Device options must be exchanged in the factory to ensure hardware and software compatibility.

- When installing the device, make sure the heat dissipators of the device receive sufficient air and respect the recommended mounting distances of the devices with integrated ventilator fans in order to ensure free circulation of the cooling air.
- Make sure that the mounting plate is not exposed to external temperature influences.

2.7 Conditions of utilization

2.7.1. Conditions of utilization for CE-conform operation

- Industry and trade -

The EC guidelines for electromagnetic compatibility 2014/30/EU and for electrical operating devices for utilization within certain voltage limits 2014/35/EU are fulfilled when the following boundary conditions are observed:

Operation of devices only in the state in which they are delivered.

In order to ensure contact protection, all mating plugs must be present on the device connections even if they are not wired.
Please respect the specifications of the manual resp. of the help function, especially the technical characteristics (mains connection, circuit breakers, output data, ambient conditions,...).

2.7.1.1 Conditions of utilization mains filter

Mains filter: A mains filter is required in the mains input line if the motor cable exceeds a certain length. Filtering can be provided centrally at the system mains input or separately for jeden Achsverbund.

Use of the devices in a commercial and residential area (limit value class in accordance with EN 61800-3)

The following mains filters are available for independent utilization:

Use of the devices in the industrial area (limit values class C3 in accordance with EN 61800-3)

The following mains filters are available for independent utilization:

Device: PSU	Limit value class	Reference: Axis system with motor cable	Mains filter Order No.:
P10	C3	< 6 x 10 m	NFI03/01
P10	C3	< 6 x 50 m	NFI03/02
P20	C3	< 6 x 50 m	NFI03/03
P30	C3	< 6 x 50 m	NFI03/03

Connection length: Connection between mains filter and device:

unshielded: < 0.5 m
shielded < 5 (fully shielded on ground - e.g. ground of control cabinet)

2.7.1.2 Conditions of utilization for cables / motor filter

Motor and Feedback cable: Operation of the devices only with motor and feedback cables whose plugs contain a special full surface area screening.

Compax3M motor cable

<80m per axis (the cable must not be rolled up!)
The entire length of the motor cable per axis combination may not exceed 300m.
A motor output filter is required for motor cables >20 m:
- ECM-0001-04 (max. 6.3 A nominal motor current)
- ECM-0001-01 (max. 16 A nominal motor current)

Shielding connection of the motor cable The cable must be fully-screened and connected to the device housing. Use the cable clamps/shield connecting terminals furnished with the device.
The shield of the cable must also be connected with the motor housing. The fixing (via plug or screw in the terminal box) depends on the motor type.

Compax3M encoder cable: < 80m

Cable Corresponding to the specifications of the terminal clamp with a temperature range of up to 60°C.

Cable installation:
- Signal lines and power lines should be installed as far apart as possible.
- Signal lines should never pass close to excessive sources of interference (motors, transformers, contactors etc.).
- Do not place mains filter output cable parallel to the load cable.

2.7.1.3 Additional conditions of utilization

Motors: Operation with standard motors.

Control: Use only with aligned controller (to avoid control loop oscillation).

Grounding: Connect the filter housing and the device to the cabinet frame, making sure that the contact area is adequate and that the connection has low resistance and low inductance.
Never mount the filter housing and the device on paint-coated surfaces!

Accessories: Make sure to use only the accessories recommended by Parker.

Connect all cable shields at both ends, ensuring large contact areas!

NOTICE This is restricted operation category product according to EN 61800-3. This product can cause high-frequency disturbance in domestic areas. Users are asked to take suitable action if this proves to be the case.

2.7.2. Conditions of utilization for UL approval Compax3M

UL approval for Compax3M

Conform to UL:	◆ in accordance with UL508C
Certified	◆ E-File_No.: E142140

The UL approval is documented by a "UL" logo on the device (type specification plate).

Conditions of utilization

- The devices are only to be installed in a degree of contamination 2 environment (maximum).
- The devices must be appropriately protected (e.g. by a switching cabinet).
- Tightening torque of the field wiring terminals (green Phoenix plugs)

Device	X43: Motor connector	X15: Temperature monitoring
C3M050-150	0.5Nm (4.43Lb.in)	0.22Nm (1.95Lb.in)
C3M300	1.2Nm (10.62Lb.in)	0.22Nm (1.95Lb.in)

- Temperature rating of field installed conductors shall be at least 60°C. Use copper lines only
  Please use the cables described in the accessories chapter, they feature a temperature rating of at least 60°C.
- Maximum Surrounding Air Temperature: 40°C.
- Control voltage supply (24VDC) only permissible with "class 2" power supply.
- Compax3M may only be operated with a mains module of the PSUP series.
- Motor Over Temperature sensing is not provided by the drive unless the external temperature sensor is connected.

Caution!

Risk of electric shock.
Discharge time of the bus capacitor is 10 minutes.
The drive provides internal motor overload protection.
This must be set so that 200% of the motor nominal current are not exceeded.

- Cable cross-sections
  - Mains input: corresponding to the recommended fuses.
  - Motor cable: corresponding to the Nominal output currents
- Maximum cross-section limited by the terminals mm^2 / AWG

Line cross-sections of the power connections (on the device bottoms)

Compax3 device:	Cross-section: Minimum... Maximum [with conductor sleeve]
M050, M100, M150	0.25 ... 4 mm^2 (AWG: 23 ... 11)
M300	0.5 ... 6 mm^2 (AWG: 20 ... 10)

2.7.3. Conditions of utilization for UL approval PSUP

UL approval for mains modules PSUP

Conform to UL:	◆ in accordance with UL508C
Certified	◆ E-File_No.: E142140

The UL approval is documented by a "UL" logo on the device (type specification plate).

UL approval PSUP30 in preparation!

Conditions of utilization

- The devices are only to be installed in a degree of contamination 2 environment (maximum).
- The devices must be appropriately protected (e.g. by a switching cabinet).
- Tightening torque of the field wiring terminals (green Phoenix plugs)

Device	X40: Ballast resistor	X41: Mains connector	X9: 24VDC
PSUP10	0.5 Nm (4.43Lb.in)	1.2 Nm (10.62Lb.in)	1.2 Nm (10.62Lb.in)
PSUP20	0.5 Nm (4.43Lb.in)	1.7 Nm (15Lb.in)	1.2 Nm (10.62Lb.in)
PSUP30	UL approval in preparation		

- Temperature rating of field installed conductors shall be at least 60°C. Use copper lines only
  Please use the cables described in the accessories chapter, they feature a temperature rating of at least 60°C.
- Maximum Surrounding Air Temperature: 40°C.
- Control voltage supply (24VDC) only permissible with "class 2" power supply.
- Suitable for use on a circuit capable of delivering not more than 5000 rms symmetrical amperes and 480 volts maximum and protected by (see below).
- The devices need a "branch circuit protection".

PSUP10D6

Maximum fuse rating per device	Measure for line and device protection: MCB miniature circuit breaker (K characteristic) 25A in accordance with UL category DIVQ (ABB) S203UP-K25 (480VAC)

PSUP20D6

Maximum fuse rating per device **2 special purpose fuses in line are required**	**Cable protection measure:** MCB (K characteristic) with a rating of 50A / 4xxVAC (depending on the input voltage). (ABB) S203U-K50 (440VAC) **Device protection measure:** Fuses 80A / 700VAC per supply leg in accordance with UL category JFHR2: Bussmann 170M1366 or 170M1566D

Caution!

Risk of electric shock.
Discharge time of the bus capacitor is 10 minutes.

2.7.4. Current on the mains PE (leakage current)

⚠WARNING This product can cause a direct current in the protective lead. If a residual current device (RCD) is used for protection in the event of direct or indirect contact, only a type B (all current sensitive) RCD is permitted on the current supply side of this product . Otherwise, a different protective measure must be taken, such as separation from the environment by doubled or enforced insulation or separation from the mains power supply by means of a transformer. Respect the supplier's instructions.

Mains filters do have high leakage currents due to their internal capacity. An internal mains filter is usually integrated into the servo controllers. Additional discharge currents are caused by the capacities of the motor cable and the motor winding. Due to the high clock frequency of the power output stage, the leakage currents do have high-frequency components. Please check if the FI protection switch is suitable for the individual application.
If an external mains filter is used, an additional leakage current will be produced.
The figure of the leakage current depends on the following factors:

- Length and properties of the motor cable
- Switching frequency
- Operation with or without external mains filter
- Motor cable with or without shield network
- Motor housing grounding (how and where)

Remark:

- The leakage current is important with respect to the handling and usage safety of the device.
- A pulsing leakage current occurs if the supply voltage is switched on.

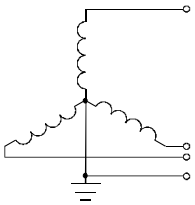
Please note:

The device must be operated with effective grounding connection, which must comply with the local regulations for high leakage currents (>3.5 mA).
Due to the high leakage currents it is not advisable to operate the servo drive with an earth leakage circuit breaker.

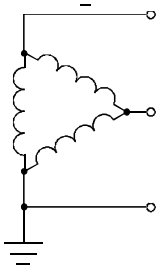
2.7.5. Supply networks

This product is designed for fixed connection to TN networks (TN-C, TN-C-S or TN-S). Please note that the line-earth voltage may not exceed 300VAC.

- When grounding the neutral conductor, mains voltages of up to 480VAC are permitted.



- When grounding an external conductor (delta mains, two-phase mains), mains voltages (external conductor voltages) of up to 240VAC are permitted.



Devices which are to be connected to an IT network must be provided with a separating transformer. Then the devices are operated locally as in a TN network. The secondary sided center of the separating transformer must be grounded and connected to the PE connector of the device.

2.8 EC declaration of conformity Compax3M

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EU KONFORMITÄTSERKLÄRUNG
EU DECLARATION OF CONFORMITY

Dokumenten Nr. / *Declaration No.*: **DoC003-R 6.0**

Der Hersteller / *The Manufacturer*: **Parker Hannifin Manufacturing Germany GmbH & Co. KG**

Anschrift / *Address*: **Robert-Bosch-Straße 22**
77656 Offenburg
Deutschland

erklärt in alleiniger Verantwortung die Konformität der folgenden Produktreihe
declares under sole responsibility the conformity of the following product series

Produkt / *Product*: **Antrieb** / ***Drive***

Produktname / *Product name*: **Compax3 Serie – C3M (Mehrachsfamilie)** / ***Compax3 series – C3M (Multi axis family)***

Angewandte harmonisierte Normen / *Applied harmonized standards:*

Norm / *Standard*	Titel / *Title*
EN 61800-5-1:2007	Elektrische Leistungsantriebssysteme mit einstellbarer Drehzahl Teil 5-1: Anforderungen an die Sicherheit – Elektrische, thermische und energetische Anforderungen *Adjustable speed electrical power drive systems* *Part 5-1: Safety requirements - Electrical, thermal and energy*
EN 61800-5-2:2007*	Elektrische Leistungsantriebssysteme mit einstellbarer Drehzahl Teil 5-2: Anforderungen an die Sicherheit – Funktionale Sicherheit *Adjustable speed electrical power drive systems* *Part 5-2: Safety requirements - Functional*
EN ISO 13849-1:2015*	Sicherheit von Maschinen – Sicherheitsbezogene Teile von Steuerungen - Teil 1: Allgemeine Gestaltungsleitsätze *Safety of machinery – Safety-related parts of control systems -* *Part 1: General principles for design*
EN 61800-3:2004 + A1:2012	Drehzahlveränderbare elektrische Antriebe Teil 3: EMV-Anforderungen einschließlich spezieller Prüfverfahren *Adjustable speed electrical power drive systems* *Part 3: EMC product standard including specific test methods.*
EN50581:2012	Technische Dokumentation zur Beurteilung von Elektro- und Elektronikgeräten hinsichtlich der Beschränkung gefährlicher Stoffe *Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances*

Die Produkte entsprechen den Anforderungen der Niederspannungs-Richtlinie 2014/35/EU, der EMV-Richtlinie 2014/30/EU, der RoHS Richtlinie 2011/65/EU und als Sicherheitsbauteil* der Maschinenrichtlinie 2006/42/EG (Anhang IV).
The products are in accordance with the Low Voltage Directive 2014/35/EU, the EMC Directive 2014/30/EU, RoHS Directive 2011/65/EU and as safety component the Machinery Directive 2006/42/EC (Appendix IV).*
*gilt nicht für C3MxxxD6FxxIxxTxxMxxS3; *not valid for C3MxxxD6FxxIxxTxxMxxS3*

Bemerkungen/*Notes*:
Den im Produkthandbuch beschriebenen Sicherheits-, Installations- und Bedienungshinweisen muss Folge geleistet werden.
These products must be installed and operated with reference to the instructions in the product manual.
All instructions, warnings and safety information of the product manual must be adhered to.

Die Produkte sind für den Einbau in eine Maschine bestimmt. Die Inbetriebnahme ist solange untersagt, bis die Konformität des Endproduktes gemäß der Maschinen-Richtlinie 2006/42/EG festgestellt ist.
The products are components to be incorporated into machinery and may not be operated alone. The complete machinery or installation may only be put into service when the safety considerations of the Machinery Directive 2006/42/EC are fully adhered to.

Offenburg, 2017-07-21

Jürgen Killius, *Operations Manager* _____

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2.9 EC declaration of conformity PSUP

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EU KONFORMITÄTSERKLÄRUNG
EU DECLARATION OF CONFORMITY

Dokumenten Nr. / *Declaration No.*: **DoC004-R 7.0**

Der Hersteller / *The Manufacturer*: **Parker Hannifin Manufacturing Germany GmbH & Co. KG**

Anschrift / *Address*: **Robert-Bosch-Straße 22**
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erklärt in alleiniger Verantwortung die Konformität der folgenden Produktreihe
declares under sole responsibility the conformity of the following product series

Produkt / *Product*: **Netzversorgungs-Einheit**
PSU – Power Supply Unit

Produktname / *Product name*: **Mehrachsfamilien**
Multi axis families

Angewandte harmonisierte Normen / *Applied harmonized standards:*

Norm / *Standard*	Titel / *Title*
EN 61800-5-1:2007	Elektrische Leistungsantriebssysteme mit einstellbarer Drehzahl Teil 5-1: Anforderungen an die Sicherheit – Elektrische, thermische und energetische Anforderungen *Adjustable speed electrical power drive systems* *Part 5-1: Safety requirements - Electrical, thermal and energy*
EN 61800-3:2004 + A1:2012	Drehzahlveränderbare elektrische Antriebe Teil 3: EMV-Anforderungen einschließlich spezieller Prüfverfahren *Adjustable speed electrical power drive systems* *Part 3: EMC product standard including specific test methods.*
EN50581:2012	Technische Dokumentation zur Beurteilung von Elektro- und Elektronikgeräten hinsichtlich der Beschränkung gefährlicher Stoffe *Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances*

Die Produkte entsprechen den Anforderungen der Niederspannungs-Richtlinie 2014/35/EU, der EMV-Richtlinie 2014/30/EU und der RoHS Richtlinie 2011/65/EU
The products are in accordance with the Low Voltage Directive 2014/35/EU, EMC Directive 2014/30/EU and the RoHS directive 2011/65/EU

Bemerkungen/*Notes*:
Den im Produkthandbuch beschriebenen Sicherheits-, Installations- und Bedienungshinweisen muss Folge geleistet werden.
These products must be installed and operated with reference to the instructions in the product manual.
All instructions, warnings and safety information of the product manual must be adhered to.

Die Produkte sind für den Einbau in eine andere Maschine bestimmt. Die Inbetriebnahme ist solange untersagt, bis die Konformität des Endproduktes gemäß der Maschinen-Richtlinie 2006/42/EG festgestellt ist.
The products are components to be incorporated into machinery and may not be operated alone. The complete machinery or installation may only be put into service when the safety considerations of the Machinery Directive 2006/42/EC are fully adhered to.

Offenburg, 2017-07-21
Jürgen Killius, *Operations Manager* ppa.

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3. Device description

3.1 Installation instructions Compax3M

General introductory notes

- Operation of the Compax3M multi-axis combination is only possible in connection with a PSUP (mains module).
- Axis controllers are aligned at the right of the mains module.
- Arrangement within the multi-axis combination sorted by power (with the same device types according to device utilization), the axis controller with the highest power is placed directly at the right of the mains module.
  e.g. first the device type with high utilization, at the right of this, the same device type with a lower utilization.
- Max. 15 Compax3M (axis controllers) per PSUP (mains module) are permitted (please respect the total capacity of max. 2400µF for PSUP10, max. 5000µF for PSUP20).
- The continuation of the current rail connection outside the axis combination is not permitted and will lead to a loss of the CE and UL approbation.
- External components **may not** be connected to the rail system.

Required tools:

- Allen key M5 for fixing the devices in the control cabinet.
- Crosstip screwdriver M4 for connection rails of the DC rail modules.
- Crosstip screwdriver M5 for grounding screw of the device.
- Flat-bladed screwdriver 0.4x2.5 / 0.6x3.5 / 1.0x4.0 for wiring and mounting of the phoenix clamps.

Order of installation

- Fixing the devices in the control cabinet.
  - Predrilling the mounting plate in the control cabinet according to the specifications. **Dimensions** (see on page 17). Fit M5 screws loosely in the bores.
  - Fit device on the upper screws and place on lower screw. Tighten screws of all devices. The tightening torque depends on the screw type (e.g. 5.9Nm for M5 screw DIN 912 8.8).
- Connection of the internal supply voltage.
  The Compax3M axis controllers are connected to the supply voltages via the rail modules. Details.
  - Deblocking the yellow protective cover with a flat-bladed screwdriver on the upper surface (click mechanism). Remove the closing devices (contact protection) that are not required from between the devices.
  - Connecting the rail modules, beginning with the mains module.
    For this, loosen crosshead screws (5 screws at the right in the mains module, all 10 screws in the next axis controller), push the rails one after the other against to the left and tighten screws. Proceed accordingly for all adjacent axis controllers in the combination.
    Max. tightening torque: 1.5Nm.
  - Close all protective covers. The protective covers must latch audibly.

Please note:
Insufficiently fixed screw connections of the DC power voltage rails may lead to the destruction of the devices.

Protective seals

Caution - Risk of Electric Shock!

In order to secure the contact protection against the alive rails, it is absolutely necessary to respect the following:

- Insert the yellow plastic comb at the left or right of the rails.
  Make sure that the yellow plastic combs are placed at the left of the first device and at the right of the last device in the system and have not been removed.
- Setup of the devices only with closed protective covers.

- Connect protective earth to mains module (M5 crosshead screw on front of device bottom).
- Connecting the internal communication. Details.
- Connecting the signal and fieldbus connectors. Details.
- Connection of mains power supply Details ballast resistor details and motor details.
- Connecting the configuration interface to the PC. Details.

3.2 Mounting and dimensions

⚠CAUTION **Ventilation:**

- During operation, the device radiates heat (heat dissipation). Please provide for a sufficient mounting distance below and above the device in order to ensure free circulation of the cooling air.
- Please do also respect the recommended distances of other devices.
- Make sure that the mounting plate is not exhibited to other temperature influences than that of the devices mounted on this very plate.
- The devices must be mounted vertically on a level surface. Make sure that all devices are sufficiently fixed.

3.2.1. Mounting and dimensions PSUP10/C3M050D6, C3M100D6, C3M150D6

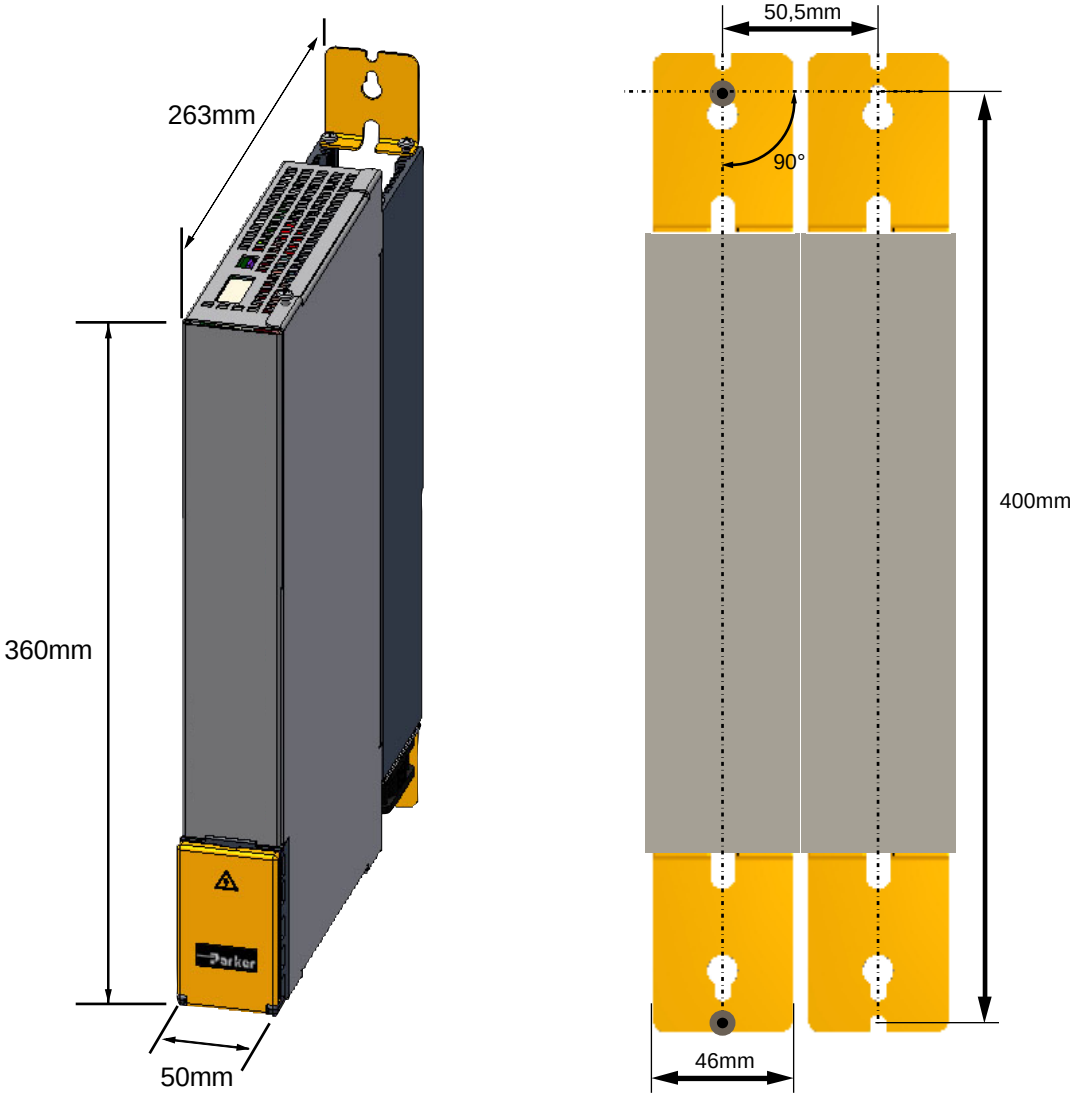
The devices are force-ventilated via a ventilator fan fixed to the lower part of the heat dissipator!

Mounting spacing: At the top and below: at least 100mm

Information on PSUP10D6/C3M050D6, C3M100D6, C3M150D6

Mounting:

2 socket head screws M5



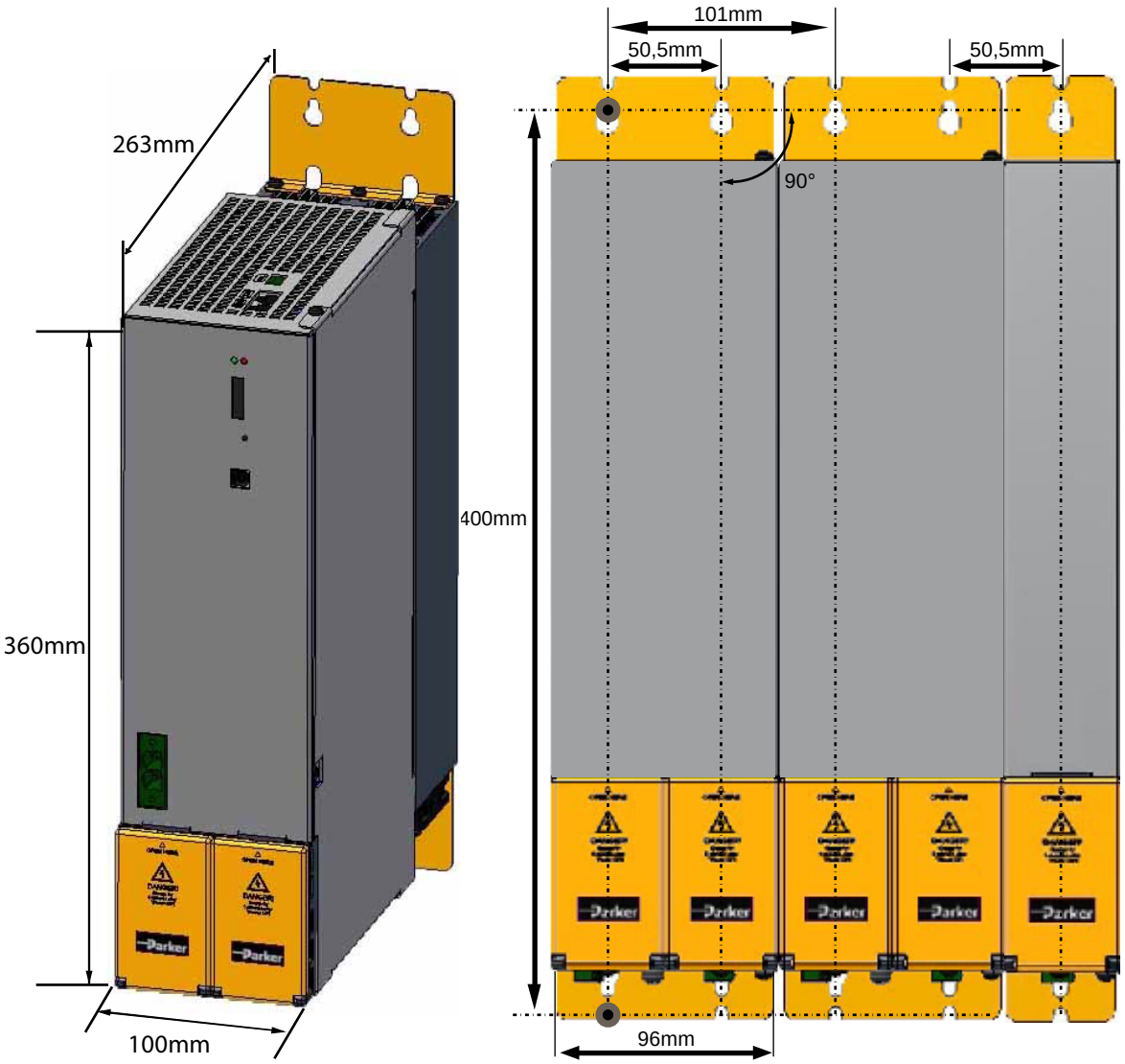
Tolerances: DIN ISO 2768-f

3.2.2. Mounting and dimensions PSUP20/PSUP30/C3M300D6

Information on PSUP20/PSUP30/C3M300D6

Mounting:

4 socket head screws M5



Tolerances: DIN ISO 2768-f

4. Technical Data

Mains connection PSUP10D6

Device type PSUP10	230V	400V	480V
Supply voltage	230VAC ±10% 50-60Hz	400VAC ±10% 50-60Hz	480VAC ±10% 50-60Hz
Rated voltage	3AC 230V	3AC 400V	3AC 480V
Input current	22Arms	22Arms	18Arms
Output Voltage	325VDC ±10%	565VDC ±10%	680VDC ±10%
Output power	6kW	10 kW	10 kW
Pulse power (<5s)	12kW	20kW	20kW
Heat dissipation	60W	60W	60W
Maximum fuse rating per device	Measure for line and device protection: MCB miniature circuit breaker (K characteristic) 25A in accordance with UL category DIVQ Recommendation: (ABB) S203UP-K25 (480VAC)		

Mains connection PSUP20D6

Device type PSUP20	230V	400V	480V
Supply voltage	230VAC ±10% 50-60Hz	400VAC ±10% 50-60Hz	480VAC ±10% 50-60Hz
Rated voltage	3AC 230V	3AC 400V	3AC 480V
Input current	44Arms	44Arms	35Arms
Output Voltage	325VDC ±10%	565VDC ±10%	680VDC ±10%
Output power	12kW	20kW	20kW
Pulse power (<5s)	24kW	40kW	40kW
Heat dissipation	120W	120W	120W
Maximum fuse rating per device **2 special purpose fuses in line are required**	**Cable protection measure:** MCB (K characteristic) with a rating of 50A / 4xxVAC (depending on the input voltage) Recommendation: (ABB) S203U-K50 (440VAC) **Device protection measure:** Circuit breakers 80A / 700VAC per supply leg in accordance with UL category JFHR2 Requirement: Bussmann 170M1366 or 170M1566D		

PSUP30D6 Mains connection

Device type PSUP30	230V	400V	480V
Supply voltage	230VAC ±10% 50-60Hz	400VAC ±10% 50-60Hz	480VAC ±10% 50-60Hz
Rated voltage	3AC 230V	3AC 400V	3AC 480V
Input current	50Arms	50Arms	42Arms
Output Voltage	325VDC ±10%	565VDC ±10%	680VDC ±10%
Output power	17kW	30kW	30kW
Pulse power (<5s)	34kW	60kW	60kW
Heat dissipation	140W	140W	140W
Maximum fuse rating per device **2 special purpose fuses in line are required**	**Cable protection measure:** MCB (K characteristic) with a rating of 63A / 4xxVAC (depending on the input voltage) Recommendation: (ABB) S203U-K63 (440VAC) **Device protection measure:** Circuit breakers 125A / 700VAC per supply leg in accordance with UL category JFHR2 Requirement: Bussmann 170M1368 or 170M1568D		

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