PSU

User's manual

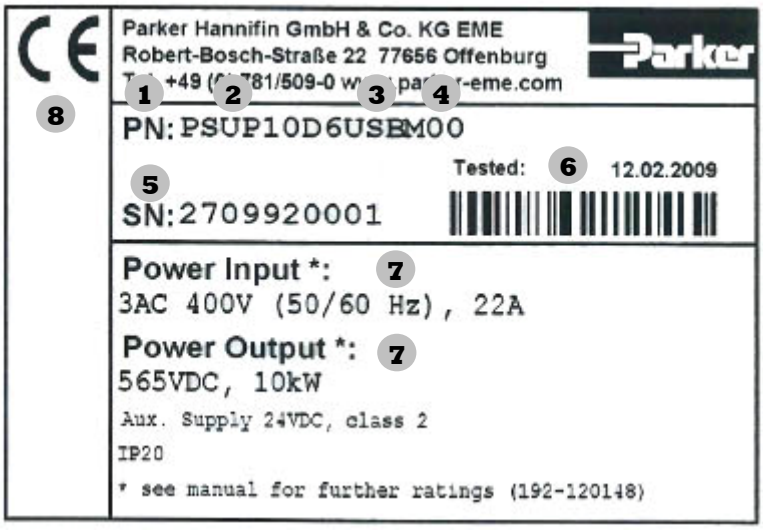
Rev. 0
… 2010

This user manual is for the standard version of the converter.

Cod 1007141600

1.Appendix: PSU (Power Supply Unit)

1.1. Identfication



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, 20=20kW)
	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

1.2. Condition of utilization

1.2.1. Filters

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 plant mains input or separately at the mains input to each axis combination.

The following mains filters are available for independent utilization:

PSU	Order No.	Condition
P10	NFI03/01	Reference axis combination 6x10m
P10	NFI03/02	Reference axis combination 6x50m
P20	NFI03/03	Reference axis combination 6x50m

1.2.2. Cable

PSU Model		**P10**	**P20**
24VDC **X9**	Section	4mm^2 (AWG8)	4mm^2 (AWG8)
	Tightening torque	1.2 Nm (M5)	1.2 Nm (M5)
Braking resistor **X40**	Section	0.25÷4mm^2 (AWG23÷11)	0.25÷4mm^2 (AWG23÷11)
	Tightening torque	0.5 Nm (M4)	0.5 Nm (M4)
Mains **X41**	Section	0.5÷6mm^2 (AWG20÷10)	0.5÷16mm^2 (AWG20÷6)
	Tightening torque	1.2 Nm (M5)	1.7 Nm (M5)
PE	Section	10mm^2 (AWG6)	

1.2.3. Grounding

Connect the filter housing and the PSU 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!

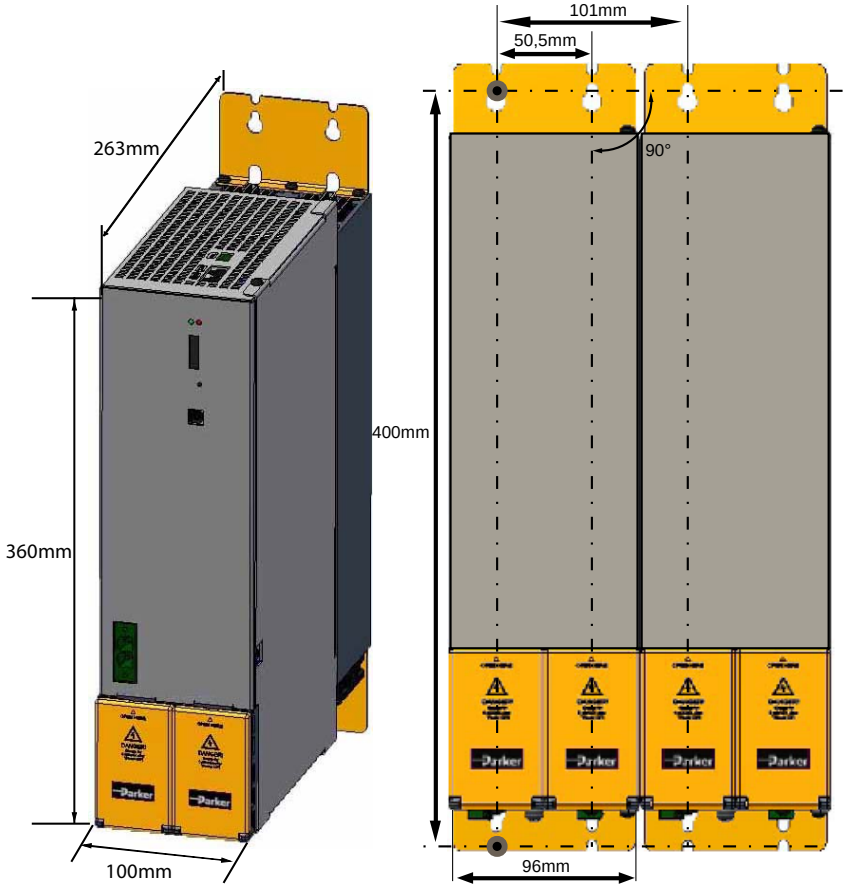
1.2.4. PSU protections

Mains connection		
	P10	**P20**
Fuse (short circuit)	25A MTP: S203UP-K 25(480VAC)	50A MTP: S203U-K 50(440VAC) 2 circuit breakers in line are required
Control voltage 24VDC		
Fuse	Delayed action fuse, due to capacitive load	
Short-circuit proof	conditional (internally protected with 3.15AT)	

1.2.5. Hardware PSU

Description	UdM	Value					
Models	-	**P10**			**P20**		
Supply voltage (3AC±10% _ 50-60Hz)	VAC	230	400	480	230	400	480
Rated input current	Arms	22	22	18	44	44	35
Rated output current	Arms	18	18	15	36	36	30
Peak output current (2 sec)	Arms	36	36	30	72	72	60
Power	kW	6	10	10	12	20	20
Internal capacitance	µF	550			1175		
Total capacity applicable	µF	2400			4000		
External braking resistor							
Minimum braking resistance	Ω	27			15		
Recomended nominal power	W	500 ÷ 1500			500 ÷ 3500		
Pulse power (1s)	kW	22			40		
Maximum permissibile peak current	A	13			15		
Control stage							
Supply voltage	V=	21…27VDC					
Max ripple	V_{pkpk}	0,5					
Current	A	0,2			0,3		
EMC Filter	-	(see filters table)					

2.Mounting

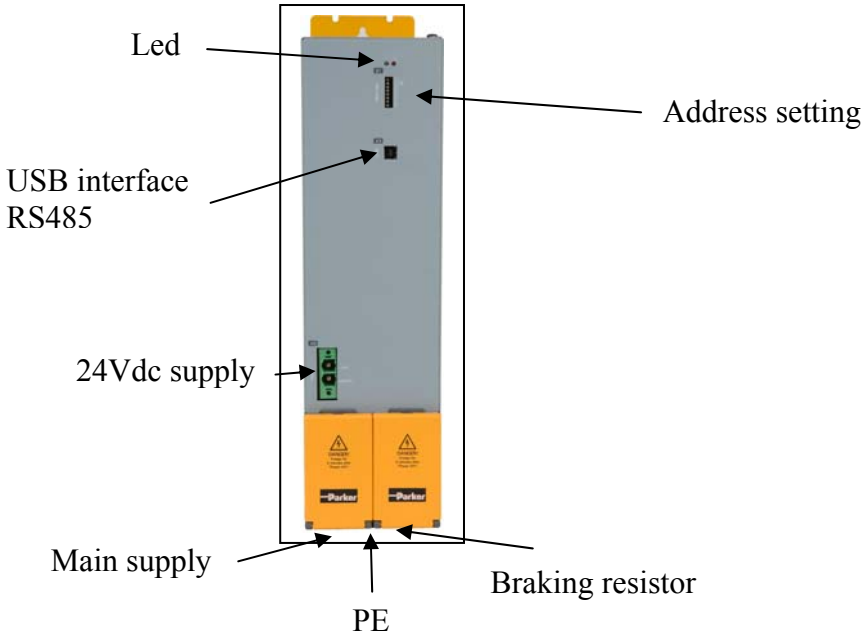


PSU Weight	
Size 1	3,95 kg
Size 2	6,5 kg

Dimensions			
Size	Lenght [mm]	Height [mm]	Depht (*) [mm]
1	50	360 (410**)	270
2	100		

(*) without connectors
(**) with clamps

2.1. Connectors layout



2.1.1. LED Status

STATUS	LED green	LED red
No 24Vdc	Off	Off
Error of main module	Off	On
Pow. Volt. is built up	-	Flashes quickly
Phase failure	On	Flashes slowly
Address CPU active	Flashes quickly	-
Address CPU completed	Flashes slowly	-
Ready	On	Off

2.1.2. Signal connectors

X41 Mains	
1	L1
2	L2
3	L3
4	PE

X40 Braking resistor		
+R	+ Braking resistor	No short-circuit protection
-R	- Braking resistor	
PE	PE	
T1R	Temperature switch (*)	
T2R	Temperature switch (*)	

X9 24VDC	
1	+24V
2	0Vdc

(*) If the external braking resistor hasn't the temperature sensor, connect T1R to T2R.

3.Module connections

3.1.1. Rail system

24Vdc

0Vdc

- DCbus

Earth

+ DCbus

<u>Protective covers</u>: the user is responsible for protective covers and/or additional safety measures in order to prevent damages to persons and electric accidents.

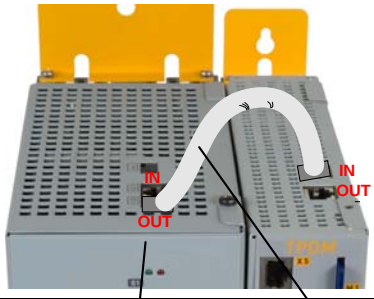
Use the dedicate fixing plates.
On the right side of the last module, and on the left side of the first module insert the closing protection:

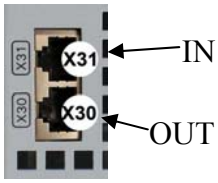
<u>Caution!</u> Risk of Electric Shock. Discharge time of the bus capacitor is approx. 5 minutes.

External components **may not** be connected to the rail system.

<u>Maximum no. of TPDM modules in a combination: 15 modules</u>

3.1.2. Communication connection





Address setting

Switch	Value upon ON
1	16
2	32
3	64

Range: 0,16,32,48,64,80,96,112
Settings: left: OFF
right: ON
1st **<u>Module</u>** address = basic address

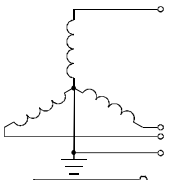
The communication in the axis combination is implemented via a SSK28 cable and double RJ45 sleeves on the device top. Beginning with the TPD (mains module) the connection is always made from X30 to X31 of the next device. On the first device (X31) and the last device (X30) in the multi-axis combination, a bus termination plug (BUS07/01) is required.

Serial connection of up to 32 axes (or 15 modules)

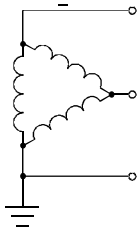
3.2. Mains supply

The PSU series 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 300VAC are permitted.



Servo controllers which are to be connected to an IT network must be provided with a separating transformer. Then the PSU device is operated locally like in a TN network. The secondary sided center of the separating transformer must be grounded and connected to the PE connector of the PSU.

4.Parameters set-up

N.B.: This operation must be executed only by the first axis connected to the PSU.

4.1.1. Voltage supply

The default status of the drive is configured to 400VAC (=560V DC). For all other cases, it's necessary to set the correct value of the voltage [3-phase VAC_{supply} * √2 = VDC_{bus}]:

230V AC 3-phase → Pr206 = 325
400V AC 3-phase → Pr206 = 565
480V AC 3-phase → Pr206 = 680

To activate the new configuration, it's necessary to save the parameter and restart the PSU unit.

5.PSU alarms

Malfunction error code		Alarm	Remedies
Pr23	**Pr24**		
24	b0	Power supply not 3-phases	Check the main supply
	b1	Undervoltage PSU	Check the main supply. Check the set up of the parameter Pr206 (by the first axis connected to the PSU).
	b2	Over voltage PSU	Check the main supply
	b3	Over temperature	Check the environment temperature. Check the cooling fans and for any restrictions to air flow.
	b4	Over load braking resistor	Check the cycle and if it's necessary use an external braking resistor.
	b5	Temperature switch	Check the connection of the temperature switch (X40). Short circuit on Braking control circuit.
	b6	Over load on DC-bus	The current required is more than the current that can be supplied
	b7	Over current on DC-bus	Check for any mechanical blockage and make sure the motor is the appropriate size for its current use. Check the motor connections and any phase-phase or phase-ground short-circuits. Check the length and type of the motor cable in use. Make sure a mains filter isn't connected to the motor!
	b14	AC supply configuration	Check the configuration (Pr206 of the first axis connected to the PSU) of the mains supply because it's not correct.
	b15	Time-out data exchange	Check the serial connection.

6.Revision history of the User Manual

- Rev 0 – … 2010
  - First edition

For other informations log into website www.sbcelettronica.com. *Arranges to the manual data can be made by the manufacturer without advance notice. The data shown in the manual correspond to the specifications relating to the revision date*

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