

fig. 7: Connections

Not used Inputs may stay open, there is no need to connect to an external potential

Specifications

Protection of the device

protection IP 00 (DIN 0530)
protection against shortcircuit, overtemperature and undervoltage

Weight

nominal current	1 A/Ph	4 A/Ph	6 A/Ph	8 A/Ph	12 A/Ph
weight	0,2 kg	0,52 kg	0,77 kg	1,1 kg	1,1 kg

Ambient conditions

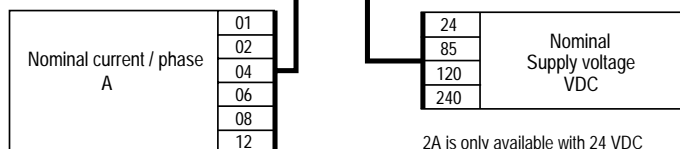
ambient temperature : 0°C to 50°C
maximum heatsink temperature : 85°C
forced draft : necessary for amplifier boards with nominal current of 8A and 12A

Noise radiation
in case of correct installation and shielding or/and filtering of the lines and signals according to EN55011 class B

Available types:

Example: SE P05.06.120

SE P05 .



2A is only available with 24 VDC
1A is only available with 85 VDC

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Stepping motor control amplifier board series SE P05

- Resolutions adjustable and extern switchable
- Excellent truth microstepping over the entire velocity range, especially by using Zebronics stepping motors
- Very smooth running and low of vibrations over the entire velocity range by using a high resolution
- Electrical and mechanical compatible to standard Zebronics amplifier boards (SE 11... , SE... , SE...V..)
- Shortcircuit protected
- Overtemperature protected
- Undervoltage protected
- Voltage range from 24 VDC to 240 VDC
- Current range from 0 A / Ph. to 12 A / Ph.
- Constant torques in all pre-selected resolutions
- Resolutions from 200 to 12800 steps per revolution

Dimensions

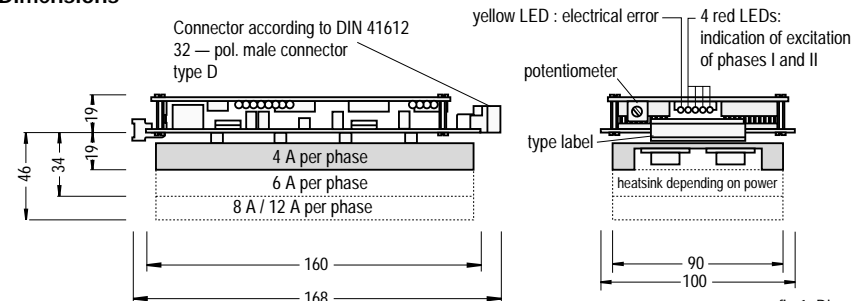


fig.1: Dimensions

Adjustments

All adjustments are made via solder bridges on the backside of the logic board.

Marker	Signification	Standard adjustment
R	Open: Automatical current reduction 50 % at standstill Closed: No current reduction	open
L	Open: HIGH - active Closed: Low - active	open
SPS	Open: "TTL"-Input level Closed: "SPS"-Input level see also fig. 6 (input signals)	open
S0	Intern function	
S1	Intern function	
C0 - C3	Selection of step angle (see table)	open
C4,C5	Intern function	

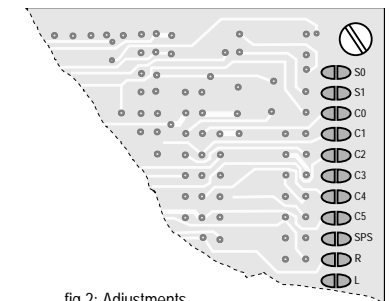


fig.2: Adjustments

HIGH - active (marking »L« open)

A signal is activated when a driving voltage is connected to the input of the signal (see fig. 6 for voltage levels). The rising edge of the pulse-signal is significant.

LOW - active (marking »L« closed)

A signal is activated when the input of the signal is connected to electrical GND (see fig. 6 for voltage levels). Low-active functions only with an open marker SPS - "TTL"-level for the input signals. The falling edge of the pulse-signal is significant.

Automatic current reduction (marking »R« open)

The total phase current - adjustable via potentiometer - is set for nominal operation. If marker "R" is open, then the phase current will be reduced by 50% at standstill of the motor. The first arriving pulse increases the phase current again to the adjusted nominal value. By activated Reset input, the current reduction will not be activated.

Step angle adjustment on the board

Using the marking C0, C1, C2 und C3 various step angles can be pre-selected. With the input signal "step angle" at Pin a2 the step angle can be switched externally between two values. During motion switching to any other selected stepping mode is possible within the motor start-stop - frequency.

Resolution extern switchable steps per revolution		Markings for selection of step angle			
PIN a2		X = Marking closed else = Marking open			
not active	active	C3	C2	C1	C0
2000	200	X	X	X	X
	400	X	X	X	
2500	500	X	X		X
3200	800	X	X		
4000	400	X		X	X
	800	X		X	
	1000	X			X
5000	500	X			
	1000		X	X	X
8000	800		X	X	
	2000		X		X
10000	400		X		
	1000			X	X
	2000			X	
12800	800				X
	1600				

Supply voltage

Maximum allowed supply voltage: Nominal voltage of power amplifier card plus 15% (mains fluctuations !)

The nominal output voltage of the power pack unit (= supply voltage of power amplifier card) may not be higher than the nominal supply voltage of the power amplifier card.

E.g.: Calculation of a power pack unit for a SE P05.06.120 :

Output voltage of power pack = 120 VDC (and **not (!)** 138 VDC = 120 VDC + 15%)

working range - supply voltage (see Ready signal fig.5)

(Nominal-) supply voltage power amplifier card [VDC]	U _B [VDC]	U _M [VDC]	U _B and U _M +/- 5%
24	18	16	
60	43	32	
85	43	32	
120	50	38	
240	120	100	

series SE P05

Current adjustment

Ex factory the amplifier board is set to the nominal current. The motor phase current may be changed. For changing the phase current the Reset-signal has to be set. Then LED "0" and LED "3" is active (see fig. 3) ! During active Reset-signal one phase is excited with full current and the other phase is excited with minimum current.

At measuring point A (phase with full current) against point GND there can be measured a voltage which is proportional to the phase current. 300 mV correspond to the nominal current of the amplifier board. Meaning that at a amplifier board type SE P05.04.60 the phase current is set to 4A/Ph., if the voltmeter shows 300mV. 225mV correspond to 3A/Ph. An exception are amplifier boards with a nominal current of 8A/Ph. - see table below. The phase current can be adjusted via the potentiometer on the board's frontside.

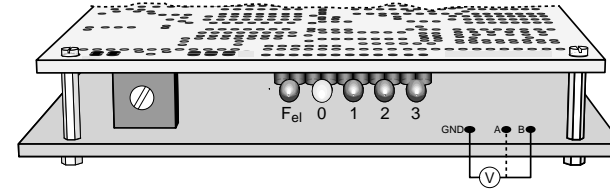


fig.: 3
current
adjustment
and condition
indication

nominal current	1 A/Ph. SE P05.02.24	4 A/Ph. SE P05.04.85	6 A/Ph. SE P05.06.85	12 A/Ph. SE P05.12.120	8A/Ph. SE P05.08.120			
measured voltage								
375 mV	125%	2,5	5	7,5	15	333 mV	125%	10
300 mV	100%	2	4	6	12	267 mV	100%	8
225 mV	75%	1,5	3	4,5	9	200 mV	75%	6
150 mV	50%	1	2	3	6	133 mV	50%	4
max. adjustable current in amperé / phase (+ 5%)	2.8	5.6	8.4	14.5				11.2

Output signal - Ready signal

An electrical error (undervoltage - see fig. 5 - , short circuit or overtemperature) deletes the signal. In non error condition the contact is closed.

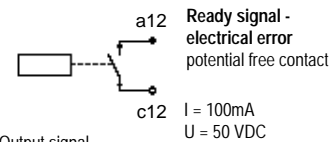


fig. 4: Output signal

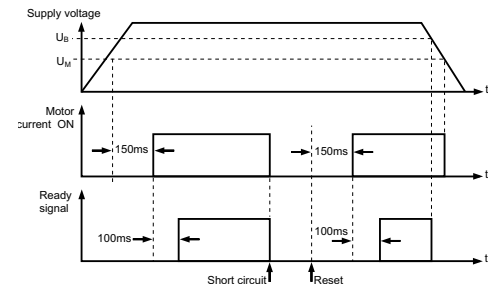
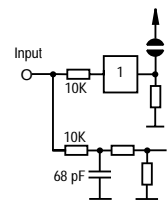


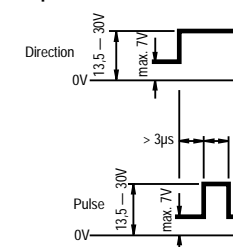
fig. 5: Timing
Ready signal

Input signals

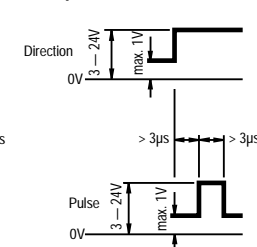
Input circuit
Example: HIGH - active



Inputs SPS-level



Inputs TTL-level



rising time max.: 1 µs , falling time max.: 1 µs , pulse frequency max.: 200 kHz

fig.6: circuits for
input signals

series SE P05