MSD2+

Stepper motor power stage with power supply and ServiceBus

MSD2+ is a power stage for bipolar control of 2-phase stepper motors. It is available up to 15 A_{PEAK} maximum phase current.

Besides full and half step the MSD2+ provides a resolution up to 1/20 MINI Step.

Depending on the MSD2+ option (operating mode), the power stage parameters are set via the ServiceBus or with the rotary switches.

In addition, the MSD2+ enables the control of an attached (permanent magnet) motor brake.

The current regulation by the patented SYNCHROCHOP principle ensures a smooth operation of the stepper motor and the torque for optimum use as well as the Overdrive and Boost functions.

Optimum interference suppression between control and power circuit is obtained by optocouplers for electrical isolation of the pushpull inputs from the supply voltage.

Application

As a powerful stepper motor power stage the MSD2+ is suitable for up to 800 W shaft power, especially for the handling of discrete components and machine service tasks as well as for high-throughput sorting and assembly machinery.
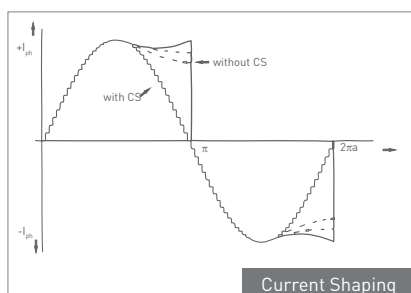
In Focus

| Integrated Driver | ServiceBus | El. Isolated |

- Stepper motor power stage for bipolar control of 2 phase stepper motors
- Integrated power supply with operating voltage from 115 to 230 V_{AC}
- up to 15 A_{PEAK} max. phase current
- Motor voltage 120 V_{DC}
- Step resolution 1/1 to 1/20 step
- Brake control
- ServiceBus: parameterising and diagnostics online with ServiceBus-Comm™
- Options:
  - ServiceBus mode
  - Rotary switch mode
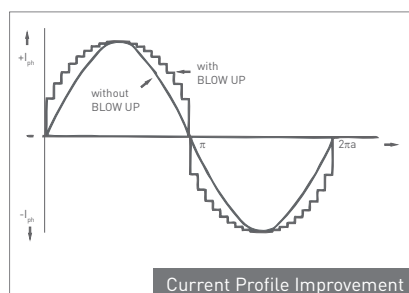 - Rack mounting
  - Wall mounting

Highlights

Current Shaping

The CS (Current Shaping) function allows adapting the actual current shape to the selected current curve over a wide frequency range.

Current Shaping

BLOW UP

viour can be achieved - dependent on the motor type - by the current shape optimising BLOW UP function.

Current Profile Improvement

phytron

Extreme. Precision. Positioning.

Industrial

Specification

Mechanical

Dimensions (W x H x D)	91,2 (14HP) x 280 (6U) x 230 mm
Weight	approx. 3 kg
Mounting	designed for installation into 19"/6U sub-rack or wall mounting

Features

Stepper motors	suitable for the control of 2 phase stepper motors with 4, (6) or 8 lead wiring
Power range, Phase currents	max. 15.4 A_{PEAK}
Supply voltage	120 V_{DC} (motor voltage) (mains) are generated internally from 115 to 250 V_{AC}
Adjustable step resolution	full step, half step, 1/4, 1/10, 1/20 of a full step
Cable length	motor : shielded: 50 m max. signal: shielded: 30 m max.
Diagnosable errors	over-/undervoltage (< 40 V_{DC} or > 160 V_{DC}), overtemperature (T > 85 °C), overcurrent, short circuit

Interfaces

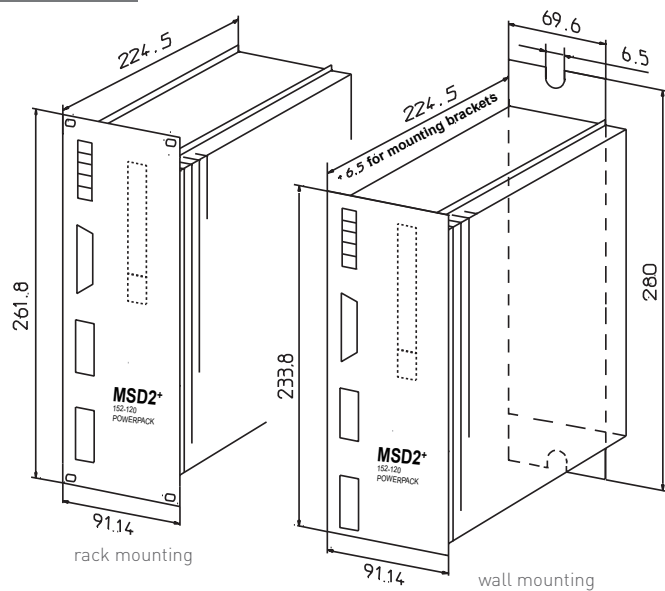|	
Analogue outputs	A, B, C, D for a 2 phase stepper motor
Digital outputs	optically insulated from the motor voltage, type Open-Collector Darlington; I_{max} = 50 mA, U_{max} = 24 V, UCE_{sat} at 50 mA < 0.3 V Error
Inputs	all inputs are designed for push-pull driver with 5 V level or Open-Collector : Control pulses, Motor direction, Boost, Deactivation, Reset, Brake

Communication and Programming

Parameterisation interface via ServiceBus	run-, stop-, Boost current, step resolution, current delay time,current shaping, pref. direction
Diagnostics interface via ServiceBus	current setting, power stage temperature, power stage status, error inquiry
Operating software	Phytron ServiceBus-Comm™ for Windows®

Operating Conditions

Temperature	operation: +4 to +40 °C (integrated fan) storage: –25 to +55 °C transport: –25 to +85 °C
Degree of pollution	level 2 acc. to EN 50178
Relative humidity	5 – 85 %. class 3K3 non condensing
Protection class	IP 20
EMC immunity / EMC emission	acc. to EN 50178: high-voltage current acc. to EN 61000-6-1, 2, 3, 4: EMC and RFI immunity
Approval	CE

Dimensions

224.5

261.8

233.8

MSD2+
152-120
POWERPACK

91.14

rack mounting

69.6

6.5

224.5

+ 6.5 for mounting brackets

280

MSD2+
152-120
POWERPACK

91.14

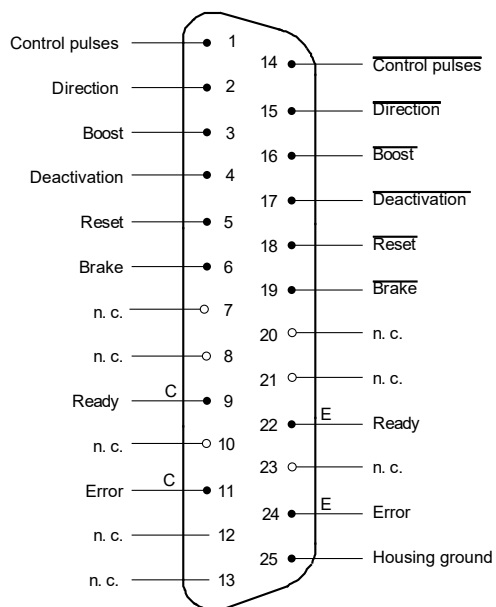wall mounting

Dimensions in mm

Brake Control

MSD2+ supports the operation of stepper motors with a 24 V / max. 1 A_{DC} permanent magnet motor brake.
The braking effect of the motor brake is controlled via the brake input (I/O-Signal). If this input „Brake" (connector) is activated the brake is supplied with current and the braking effect is suppressed.

If an error signal occurs or the „Deactivation" input is active, the brake supply is interrupted, i.e. the brake activated.
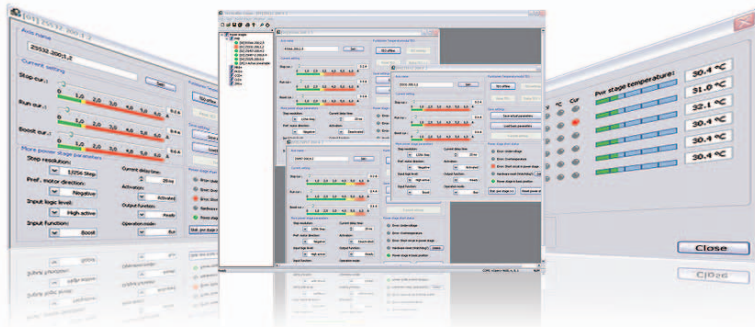
The brake has to be connected to the motor connector Brake.
The brake is supplied by the screw terminals U_{Br} and 0 V.

Control pulses	1
Direction	2
Boost	3
Deactivation	4
Reset	5
Brake	6
n. c.	7
n. c.	8
Ready C	9
n. c.	10
Error C	11
n. c.	12
n. c.	13

14	Control pulses
15	Direction
16	Boost
17	Deactivation
18	Reset
19	Brake
20	n. c.
21	n. c.
22 E	Ready
23	n. c.
24 E	Error
25	Housing ground

pin assignment

Industrial

Operating with ServiceBus-Comm™

USB-RS485 Converter

- dimensions (W x H x D): 55 x 30 x 24 cm (without connector)
- material: ABS, black
- RS485: 4-wire read-/write up to max. 32 bus participants, length up to 1200 m (with cable termination)
- data rate: up to 2.5 MBit/s
- power supply: 70 mA (via USB interface)

Extent of Supply (included):
- connector cable: Type USB A-A, 180 cm (connection RS485 to MSD2⁺)

10012295

Ordering Code

The variable elements of the product are displayed in colour.

| Ordering code | MSD2⁺ - | 152 - | 120 - | SB - | W |

Columns: Type | Peak current / Current regulation | Motor-voltage | Operating mode | Mounting

Options		
Operating mode	SB	MSD2⁺ with ServiceBus mode
	KS	MSD2⁺ with rotary switch mode
Mounting	W	MSD2⁺ for wall mounting
	R	MSD2⁺ for rack mounting

Windows® is a trade mark of Microsoft.
ServiceBus-Comm™ is a trade mark of Phytron GmbH.

Extent of Supply
- Connector set

Optional Accessories
- ServiceBus-Comm™ software and USB driver can be downloaded from the Phytron website
- ServiceBus cable
- USB cable
- USB-RS 485 converter #10012295
- Assembled cables on request