CONTROL

MCD+

Compact Stepper Motor Power Stage with ServiceBus

The MCD+ is a bipolar power stage for driving 2 phase stepper motors. All operation parameters - phase currents, step resolution and preferential motor direction - are programmable by rotary switches or in the ServiceBus mode.

The MCD+ is designed for power supplies from 24 to 70 V_{DC}.

The control pulse, motor direction, boost, activation and reset inputs are compatible with push-pull or open collector signals. The control inputs are electrically insulated from the supply and motor voltage.

A special feature of the MCD+ offers 3 terminals for each signal input. Thus separate input terminals for 5 V and 24 V are available.

Application

The MCD+ is suitable for up to 450 Watts of shaft power that is ideal for controlling spindle and toothed belt drive systems for mechanical handling or assembly applications. The high step resolution makes the MCD+ the best solution for applications that have especially high demands on precision, smoothness and durability.

Highlights

Rotary switch mode

The run and the stop current can be changed between two ranges by the current range switch. These phase currents can be set in 15 increments up to 9 A_{PEAK}. In this operating mode the step resolution can be adjusted from full step up to 1/20 step.

Compact design

The complete device plus wall mounting brackets measures only 127 x 38 x 110 mm.

ServiceBus instructions

Online parameterisation even during operation via USB, RS485...

ServiceBus mode

All settings are entered at the PC, which is easy to do with the free phytron software ServiceBus-Comm® for Windows®.

In the ServiceBus mode the phase currents can be programmed in 100 mA increments, the step resolution from full step to 1/512 step and the current delay time from 1 to 1000 ms.

In Focus

- Stepper motor power stage for bipolar control of 2 phase stepper motors
- Up to 9 A_{PEAK} at 24 tp 70 V_{DC}
- Up to 1/512 step resolution
- Online power stage parameterisation and diagnostic via ServiceBus
- Inputs and outputs are electrically separated
- Option: mounted USB-RS 485 converter

Control

Specification

Mechanical

Dimensions (W x H x D)	38 x 127 x 110 mm incl. connectors at the back plane
Weight	650 g
Mounting	DIN rail and wall, vertically inside a cabinet is recommended

Features

Stepper motors	Suitable for the bipolar control of 2 phase stepper motors with 4, (6) or 8 lead wiring
Supply voltage	24 to 70 V_{DC}
Phase currents	up to 9 A_{PEAK} **Rotary switch mode:** Current range selectable by rotary switch: Rotary switch position: **I:** 0.4 to 3 A_{PEAK} ,**II:** 1.1 to 9 A_{PEAK} **ServiceBus mode:** Programmable values: 0.1 to 9 A_{PEAK}
Step resolution	**Rotary switch mode:** 1/1, 1/2, 1/4, 1/8, 1/10, 1/20 of a full step **ServiceBus mode:** 1/1, 1/2, 1/4, 1/8, 1/10, 1/16, 1/20, 1/32, 1/64, 1/128, 1/256, 1/512 of a full step
Cable length	Motor : shielded: 50 m max. Signal: shielded: 100 m max
Operating modes	Rotary switch mode and ServicBus mode (optional)
Diagnosable errors	Under-/overvoltage (< 20 V_{DC} or > 85 V_{DC}), overtemperature (T > 85 °C), overcurrent, short circuit

Interfaces

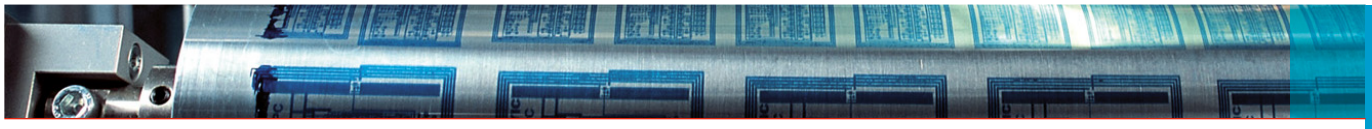
Analogue outputs	A, B, C, D for a 2 phase stepper motor
Digital outputs	Optically insulated from the motor voltage, type Open-Collector I_{max} = 20 mA, U_{max} = 30 V, P_{total} = 300 mW, $U_{CE\ sat}$ at 20 mA < 1 V Error: short circuit, overvoltage, overtemperature, undervoltage, overcurrent
Connection	ServiceBus: RS 485, optional USB-RS 485 converter
Inputs	Optically isulated from the motor voltage; control via push-pull driver or Open Collector; input level 5 V or 24 V: Control pulses, Motor direction, Boost, Activation, Reset

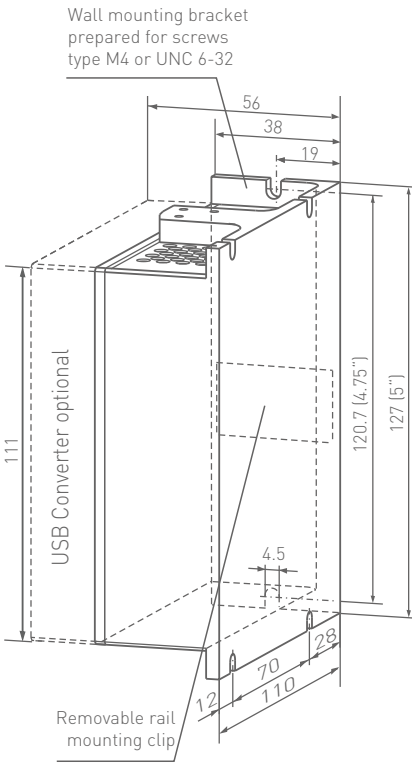
Communication and Programming

Rotary switch mode	Setting of run and stop current, step resolution and current shape
DIP switches	Setting of overdrive and boost function, activation and preferential motor direction
Diagnostic by LED	Basic position, overload, supply failure, overtemperature

Operating Conditions

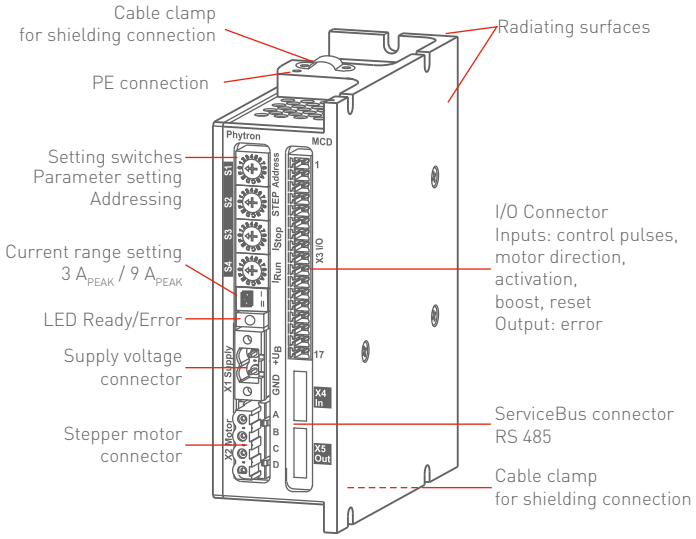
Temperature	Operation: +4 to +40 °C, storage: –25 to +55 °C, transport: –25 to +85 °C
Degree of pollution	Level 2
Relative humidity	5 – 85 %. class 3K3 non condensing
Protection class	IP 20
EMC immunity / EMC emission	Acc. to EN 61000-3-2: EMC Acc. to EN 61000-6-1, 2, 3, 4: EMC and RFI immunity
Approval	CE



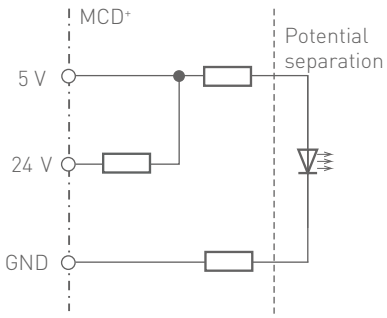


Dimensions in mm (inch)

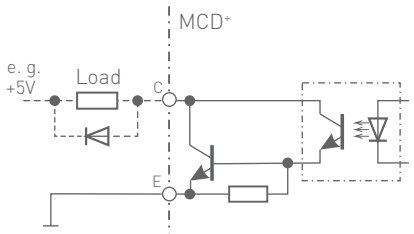
Front View



Input Wiring



Output Wiring



In case of connection of highly inductive equipment (e. g. relay, motor brake), a protective diode must be wired to each output.

Control

Ordering Code

The variable elements of the product are displayed in colour.

	Type	Peak current / Current regulation		Motor voltage		Step resolution		Mounting		Optional
Ordering code	MCD+	93	-	70		MINI	-	W	-	USB

Options

Mounting	W H	Wall mounting With attached DIN rail mounting clip
Optional	USB	Standard stepper motor power stage with ServiceBus Stepper motor power stage with USB-RS 485 converter

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ServiceBus-Comm® is a trade mark of Phytron-Elektronik GmbH.

Extent of Supply

- Connector set
- A CD-ROM with ServiceBus-Comm software and USB driver

Optional Accessories

- Rail mounting assembly set with rail mounting clip attached to the housing
- ServiceBus cable
- USB cable
- Mini USB-RS 485 converter
- Power supply PS 5-48 or 10-24 for wall- or rail mounting

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