ENG www.phytron.eu/MSX

MSX

Stepper motor power stage for bipolar control

The MSX is a power stage for bipolar control of 2 phase stepper motors. The power stage is available in three power ranges with 5, 10 or 15 A_{PEAK} maximum phase current.

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

The setting switch provides several phase current profile settings:

- full step (conventional)
- half step
  - without / with torque compensation
  - without / with Current Shaping
- 1/4 - 1/20 step
  - without / with Current Shaping
  - with Current Shaping and BLOW UP.

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

The MSX is suitable to replace the well-tried older phytron power stages MSO, MSO and SMD.

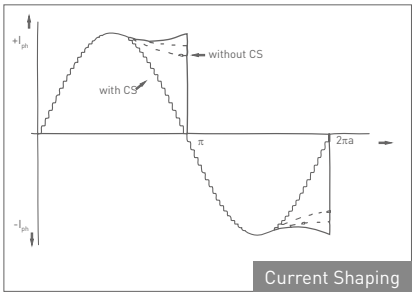
Application

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

Highlights

Current Shaping

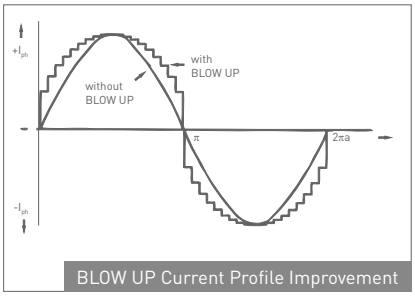
The CS (Curent Shaping) function allows adapting the actual current shape to the selected current curve over a wide frequency range.



Current Shaping

BLOW UP

Improvement of run and acceleration behaviour can be achieved - dependent on the motor type - by the current shape optimising BLOW UP function.



BLOW UP Current Profile Improvement

In Focus

El. Isolated

- Stepper motor power stage for bipolar control of 2 phase stepper motors
- 3 power ranges: 5 / 10 / 15 A_{PEAK}
- Supply voltage 60 to 120 V_{DC} (permissible range 40 to 160 V_{DC})
- DIP switches for Overdrive and Boost functions, Activation and Preferential Motor Direction
- Step resolution from full step to 1/20 step

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phytron
Beyond Steppers

Control

Specification

Mechanical

Dimensions (W x H x D)	70.8 (14HP) x 128.4 (3U) x 188 mm
Weight	Approx. 970 g
Mounting	Designed for installation into 19"/3U sub-racks, 32 pin connector acc. to DIN 41612, version D

Features

Stepper motors	Suitable for the control of 2 phase stepper motors with 4, (6) or 8 lead wiring
Power range, Phase currents	MSX 52-120: max. 5.1 A_{PEAK} MSX 102-120: max. 10.3 A_{PEAK} MSX 152-120: max. 15.4 A_{PEAK}
Supply voltage	60 to 120 V_{DC} (permissible range 40 to 160 V_{DC})
Adjustable step resolution	Full step, half step, 1/4, 1/10, 1/20 of a full step, with and without torque balance
Cable length	Motor : shielded: 50 m max. Signal: shielded: 100 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 isulated from the motor voltage, type Open-Collector Darlington; I_{max} = 20 mA, U_{max} = 45 V, UCE_{sat} at 20 mA < 0.6 V $\overline{\text{Basic position}}$, Error
Inputs	All inputs include an optocoupler with series resistors for 5 V or 24 V supply voltage: $\overline{\text{Control pulse}}$, Motor direction, $\overline{\text{Boost}}$, $\overline{\text{Activation}}$, $\overline{\text{Reset}}$ (can be enabled by a jumper)

Communication and Programming

Rotary switches	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

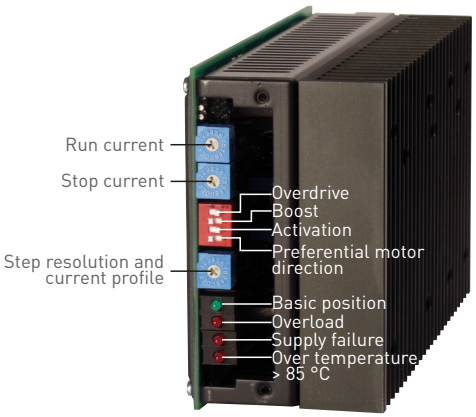
Operating Conditions

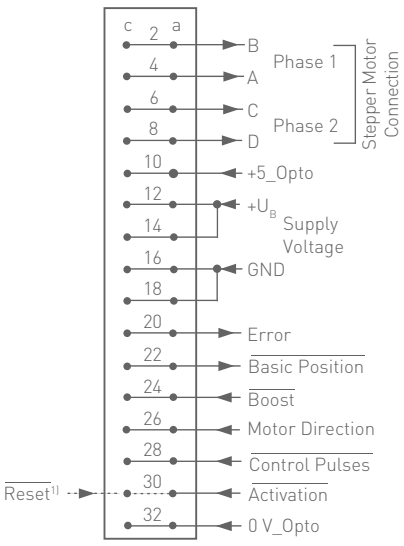
Temperature	Operation: +4 to +40 °C (we suggest additional cooling with higher operating temperatures) Storage: –25 to +55 °C Transport: –25 to +85 °C
Degree of pollution	Level 2 acc. to EN 50178
Relative humidity	5 – 85 %. class 3K3 non condensing
Protection class	IP 20
EMC immunity / EMC emission	Acc. to EN 50178: high-voltage current Acc. to EN 61000-6-1, 2, 3, 4: EMC and RFI immunity
Approval	CE

Design: plug-in board for 19" sub-rack
Euro-size 100 x 160 mm

Dimensions in mm

Front View





[1] **Standard version MSX (5 V)**
Activation signal: pin 30a and c

Version MSX (5 V-Reset) with Reset input
Activation: pin 30a / Reset: pin 30c

Pin Assignment

Power Supply Unit SLS-MSX

phytron also delivers fully assembled 19"rack plug-in units with integrated power supply and optional cooling fan tray.

Up to 4 MSX power stages are possible.

Control

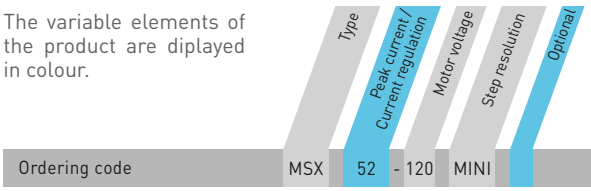
Design Versions

The MSX (120 V type) is available with different phase currents and replaces the following well-tried phytron power stages:

MSX 52 (5 V) MSX 102 (5 V) MSX 152 (5 V)	Standard, replacement for MSO and MSOMINI
MSX 52 (24 V) MSX 102 (24 V) MSX 152 (24 V)	Replacement for SMD
MSX 52 (5 V Reset) MSX 102 (5 V Reset) MSX 152 (5 V Reset)	Additional Reset input (jumper plugged)

Ordering Code

The variable elements of the product are diplayed in colour.



Options		
Peak current / Current regulation	52 102 152	Peak current 5.1 A with SYNCHROCHOP current regulation Peak current 10.3 A with SYNCHROCHOP current regulation Peak current 15.4 A with SYNCHROCHOP current regulation
Optional	 Reset 24 V	Standard MSX (5 V): without additional designation Reset input activated, 5 V input level 24 V input level

Optional Accessories

- Front panel (14 HP) with handle
- Mating connector with 32 pin connector
- G-MSX adapter board for easy mounting the MSX, with connectors for motor cable, signal leads and supply voltage
- Damping SB 234 module for 90 V
- Damping SB 234 module for 120 V

Any questions? Please contact us.

Morskate Aandrijvingen BV
Oosterveldsingel 47A
7558 PJ Hengelo (Ov)
The Netherlands

NL
T +31 (0)74 - 760 11 11
info@morskateaandrijvingen.nl
www.morskateaandrijvingen.nl

DE
T +49 692 - 222 34 95
info@morskateantriebstechnik.de
www.morskateantriebstechnik.de

EN
T +31 (0)74 - 760 11 11
info@morskatedrivetechnology.com
www.morskatedrivetechnology.com