

A 32-48 MINI

phytron

Plug-in Stepper Motor Power Stage in Minirack Size

The A 32-48 MINI Power Stage

A 32-48 MINI is a stepper motor power stage for bipolar control of 2-phase stepper motors up to 3.5 A_{PEAK} phase current.

The precision current control of the A 32-48 MINI according to the patented SYNCHRO-CHOP principle effects optimum running performance of the stepper motor.

The phase current and step resolution setting switches are placed above the connectors for wiring the stepper motor and I/O signals.

Via RS 485 connection, the power stages can be configured by PC in the ServiceBus mode. ServiceBus is active when all setting switches of all power stages in a minirack are set to 0.

The 24 to 48 V_{DC} supply voltage and a 5 V_{DC} logic supply voltage have to be connected to the rear 48-pole connector.

Connections to the ServiceBus and address leads for defining the device address during bus operation are also placed on the 48-pole connector.

ServiceBus Mode

The ServiceBus was designed for communication with the power stage via RS 485¹ port or USB port (when operating the A 32-48 MINI power stage in a MR 8 minirack).

All settings are done by PC with the phytron ServiceBus-Comm software. Alternatively, the instructions can be implemented into the customer's own environment: ASCII strings in readable characters – e. g. with LabVIEW, HyperTerminal or in C. This way, parameters can be easily transmitted to the power stage during initialising or exchanging components; status information can be evaluated.

In the ServiceBus mode, run, stop and boost current are programmable in 10 mA increments independently of each other.

The step resolution – full step up to 1/20 step – can be set to values up to 1/512 step in the ServiceBus mode in order to improve the motor run behavior. The step accuracy is maximum 1/20 step.

The current delay time is set to 40 ms in the setting switch mode. This value can be changed in the ServiceBus mode.

¹The PC is bus master and requires a type RS 422 or RS 485/4-wire port.



Technical Information

- Plug-in stepper motor power stage
- For bipolar control of 2-phase stepper motors
- Step resolution up to 1/512 mini step
- 5 V push-pull inputs, electrically separated by optocoupler: control pulses, direction, boost, activation
- Electronic monitoring of overtemperature, short circuit and low voltage
- Status LED
- Reset button
- Motor current up to 3.5 A_{PEAK}
- Supply voltage 24 to 48 V_{DC}
- Operation parameter programming by setting switches or at the PC via ServiceBus
- Run current setting switch: 15 increments
- Step resolution and preferred motor direction setting switch: full step to 1/20 step
- ServiceBus for configuration by PC software (included in delivery) ServiceBus-Comm for Windows®
- Size 60 x 116 x 20 mm
- Adapted for mounting in a type MR 8 minirack

Controls and Connections

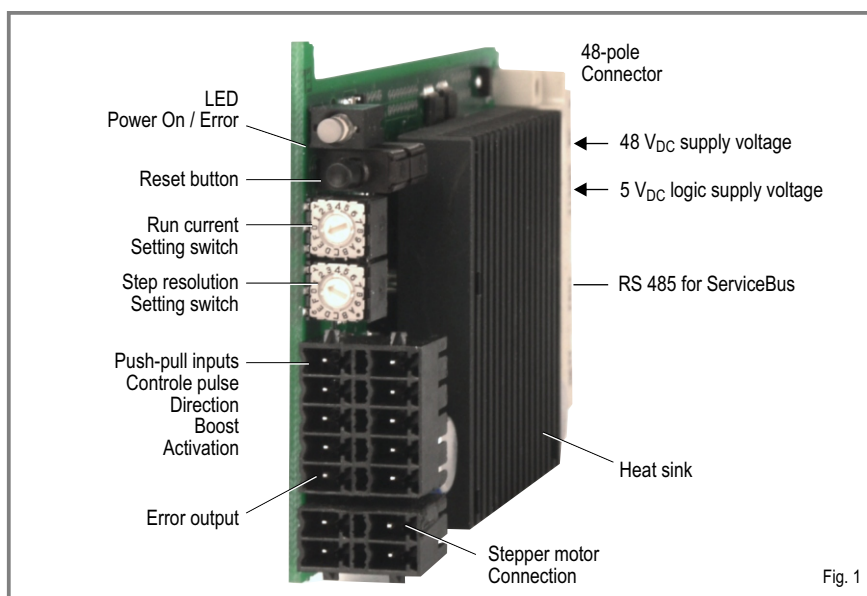
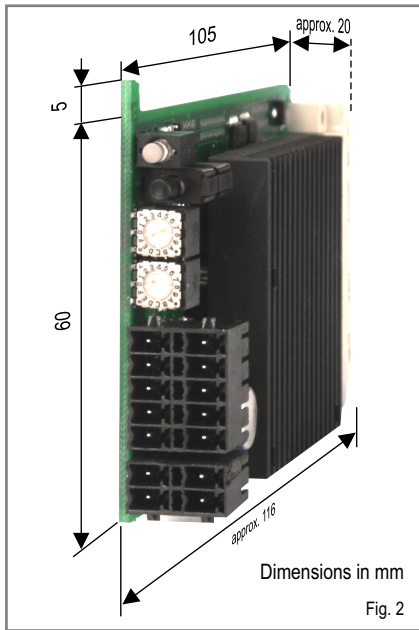


Fig. 1

Dimensions



Status LED

The bicolor LED indicates the status of the power stage:

●	<p>Ready</p> <p>Power stage is ready for operation and activated.</p> <p>Power stage is ready for operation and is in the ServiceBus mode.</p> <p>Setting switch positions are disregarded.</p>
●	<p>RED Power stage error</p> <p>shining Overcurrent/short circuit</p> <p>blinking Overtemperature</p> <p>fast</p> <p>blinking Low voltage</p> <p>slowly or voltage off</p>
●	<p>ORANGE Power Stage deactivated</p> <p>shining Power stage is deactivated</p> <p>blinking Power stage is deactivated, ServiceBus mode is on. Setting switch positions are disregarded.</p>

Ordering Code: A32-48 MINI

I/O

The signal inputs and outputs are wired to the upper pins of both 7-pole connectors.

The input signals control pulses, direction, boost and activation are active when the optocoupler is powered.

Controlling via push-pull driver ensures high immunity against disturbances due to permanent current flow. This control mode should be preferred, especially when long leads are required.

Logic input level: 5 V

Control Pulse Input

Maximum pulse frequency: 500 kHz

Minimum impulse width: 1 μs

The power stage automatically changes to stop current (50% of run current), when 40 ms delay time have elapsed after the last arriving control pulse.

Delay time and stop current are editable in the ServiceBus mode.

Direction Input

The motor rotates contrary to the selected preferential direction when the optocoupler is powered.

Boost Input

The boost current is the actual motor current (run or stop current), increased by 30%. Boost is active when the optocoupler is powered. The boost current can be programmed in the ServiceBus mode.

Activation Input

The motor can be activated or deactivated by external signal. Motor current is switched on when the optocoupler is powered.

Error Output

The optically insulated type open-collector Darlington error output opens in case of overvoltage or short circuit, low voltage or overtemperature. At the same time the drive is deactivated in order to avoid damage.

An error message can be reset by pressing the reset button after clearing the fault or cooling down the power stage.

The status LED shows the detailed failure cause by different blinking intervals.

Stepper Motor

- 2-phase stepper motors with 4, 6 or 8 leads
- Maximum phase current: 3.5 A_{PEAK}
- Minimum inductance per motor phase: 0.5 mH

Supply Voltage

- Unregulated, filtered DC voltage: 24 to 48 V_{DC}, maximum 52 V_{DC}
- Power requirement depending on the stepper motor: up to 2.5 A

ServiceBus-Comm®

- Communication software for stepper motor power stages with ServiceBus
- Programming power stage parameters
- Online diagnostics
- Parameter memory for data backup by PC
- Installation CD included in delivery
- ServiceBus-Comm® is a registered trademark of the Phytron-Elektronik GmbH.

The MR 8 Minirack



The MR 8 minirack is a module rack for wall mounting. One MR 8 contains up to eight A 32-48 MINI plug-in power stages.

Cable clamps for attaching the cable shielding and strain relief are mounted at the bottom of the housing.

A fold-away locking bar fixes the plug-in boards.

The supply voltage 24 to 48 V_{DC} / 2.5 A per power stage and the ServiceBus interface are placed on the plug-in Power and ServiceBus module.

Power and ServiceBus modules are available for connection to PC with USB port or to PC with RS 422 or RS 485/4-wire port.

Address switches make it possible to operate up to 4 miniracks with maximum 32 power stages at the ServiceBus.