

## Stepper Motor Power Stage with Plain Text Display

### The CCD<sup>+</sup> Power Stage

CCD<sup>+</sup> 93-70 is a stepper motor power stage with plain text display, designed for driving 2-phase stepper motors up to 9 A<sub>PEAK</sub>. The step resolution is entered by menu or ServiceBus: From full step to 1/20 step (200 to 4000 steps per revolution with a 200-step type motor).

phytron power stages with the addendum + are particularly service-friendly by the **ServiceBus** which enables configuring, operating and monitoring the power stage via PC. For easy use of all setting options, the free ServiceBus-Comm<sup>®</sup> for Windows<sup>®</sup> software is included in delivery.

CCD<sup>+</sup> can be connected to a DC or AC supply voltage: 70 V<sub>DC</sub> or 50 V<sub>AC</sub>.

The push-pull inputs are compatible to the RS422 standard: control pulse, motor direction, boost, deselect, reset, deactivation. All inputs and the potential-free open-collector outputs – ready and error – are electrically separated from the power stage supply voltage.

A mounting kit for DIN rail or wall mounting in a switching cabinet is included.

### Menu Control and Plain Text Display



Fig. 1

The CCD<sup>+</sup> can be operated by the front side menu buttons or by the ServiceBus via PC.

In the SETUP menu the parameters step resolution, run, stop and boost current are programmed and can be changed at any time.

The TEST menu allows to drive the motor for test with the programmed parameters, to set the outputs and to display the input states.

Active parameters are displayed during motor running: phase current, voltage or power stage temperature (optional).

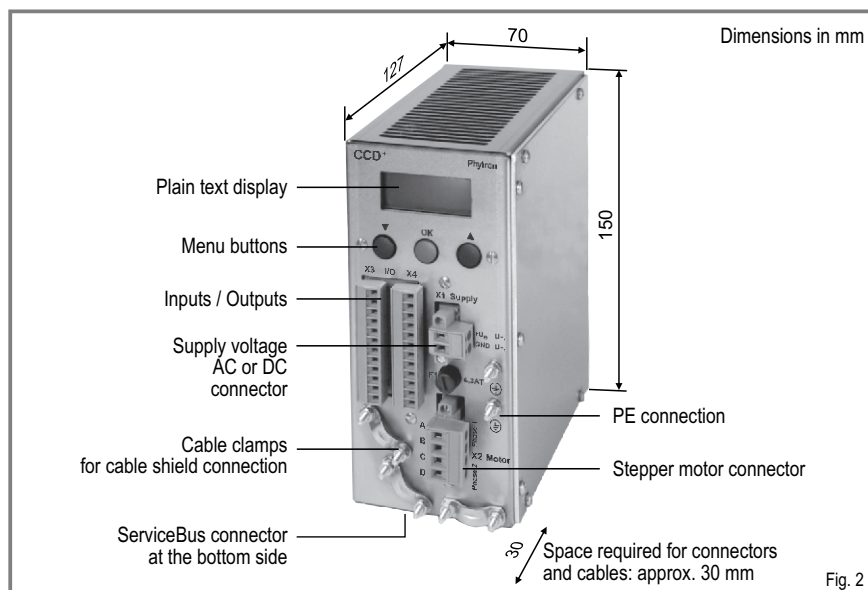
The plain text display changes in case of an error: short circuit, undervoltage or over-temperature.



### Technical Information

- Stepper motor power stage
- Bipolar control of 2-phase stepper motors
- Phase currents from 0.14 to 9 A<sub>PEAK</sub>
- Supply voltage: 50 V<sub>AC</sub> or 70 V<sub>DC</sub>  
Acceptable Ranges:  
17 to 50 V<sub>AC</sub> or 24 to 70 V<sub>DC</sub>
- Step resolution up to 1/20 step
- ServiceBus interface: USB point-to-point
- ServiceBus-Comm<sup>®</sup> configuration and operation software for Windows<sup>®</sup>
- Inputs compatible to RS422 for safe operation
- Input logic 5 V or 24 V
- Menu-driven operation parameter input
- Plain text display 2 x 6 digits
- Compact design 70 x 150 x 127 mm
- Userfriendly screw connectors
- Fully EMC compliant metal housing
- Integrated EMC filter for supply voltage
- DIN rail or wall mounting
- Prepared for mounting an external 24 V fan
- ServiceBus-Comm communication software included in delivery

### Front View / Dimensions



## Inputs

The signal inputs are electrically insulated from the supply voltage. The signals are active, when current flows through the optocoupler.

### Push-Pull or Open-Collector control mode

Input level: 5 V or 24 V

**Control pulse:** Maximum step frequency 250 kHz,  
minimum pulse width 2  $\mu$ s

**Direction:** The motor rotates in the reverse preferential direction.

**Boost:** The current is increased by the preselected value.

**Deselect:** Pulse inhibit. When the input is not connected, the power stage is ready for operation.

**Reset:** All error messages are reset, the monitoring circuits are initialised.

## Outputs

Optically insulated Open-Collector outputs

 $I_{\max} = 20 \text{ mA}$ ,  $U_{\max} = 30 \text{ V}$ ,  $U_{CE \text{ sat at } 20 \text{ mA}} < 1 \text{ V}$ 

**Ready:** Power stage is ready for operation.

**Error:** Short circuit, undervoltage, overtemperature

## Accessories

- Connector set included in delivery
- Fan 24 V<sub>DC</sub>
- Mains transformer 230/115 V<sub>AC</sub>
- Power supply unit PS 5-48
- Power supply unit PS 10-24

## ServiceBus-Comm® Software

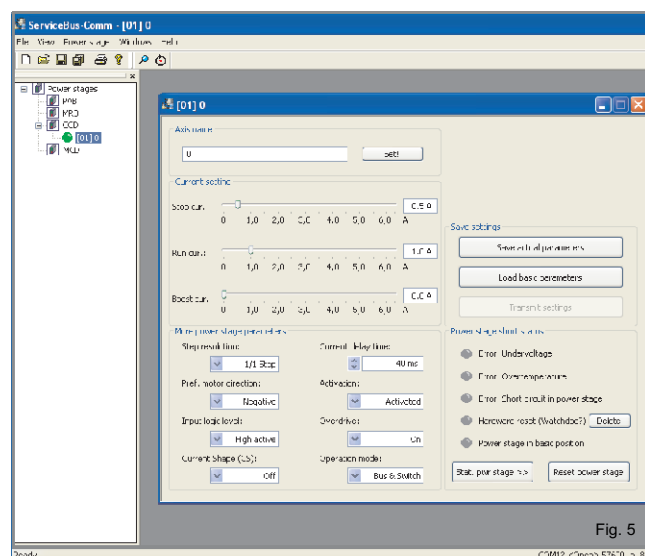


Fig. 5

### Input Wiring Diagram

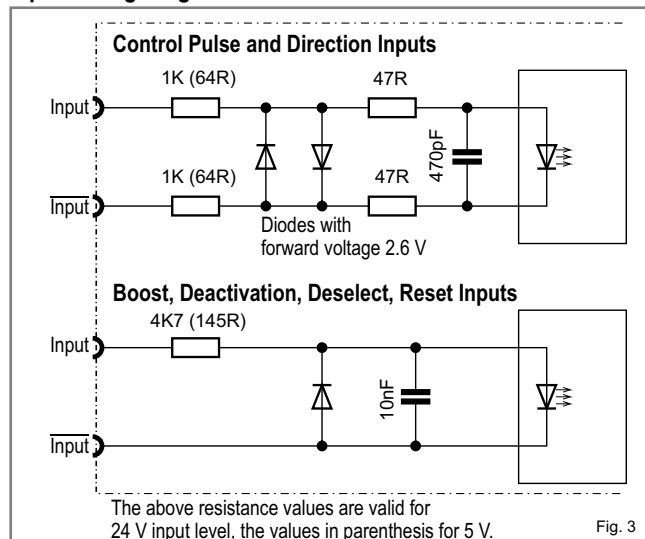


Fig. 3

### Output Wiring Diagram

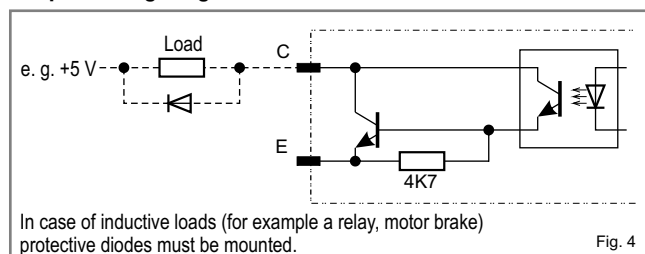


Fig. 4

### Ordering Code

	CCD <sup>+</sup>	93-70	MINI	H	5
Type	CCD <sup>+</sup> = Stepper motor power stage				
Peak current	9 = 9 A				
Current regulation	3 = 4-Quadrant-chopper current control				
Motor voltage	70 = 70 V				
Step resolution	MINI = Step resolution 1/1 to 1/20 step				
Mounting kit	H = DIN rail mounting kit W = Wall mounting kit				
Input level	5 = 5 V 24 = 24 V				