


Type 1000050
Phase-shift controller

For installation on mounting rails

This phase-shift control device is designed for ohmic/inductive loads supplied with variable operating voltage. It is highly recommended for use in connection with vibrators and further for voltage dimming of AC and DC loads – for example universal motors or lamps.

This phase-shift control device is suitable for the control of loads with variable AC or DC voltage by means of an integrated half-wave rectifier. The controlled output voltage can be adjusted either with the internal potentiometer (which can be controlled from the outside) or with an external potentiometer. To provide an optimal potentiometer controlling it is possible to adjust the control region for the vibrators with an integrated trim potentiometer. The potential-separated enable input allows the output voltage to be switched on at 24 VDC. This input is suitable as emergency switch. Overload protection is provided by the integrated fine-wire fuse. The phase-shift control devices are also suitable for electric units connected to 110/230 V (50/60 Hz) AC mains voltage systems with reduced operating voltage and can be employed to adjust units with lower operating voltage to these voltage systems. The phase-shift control device is integrated into a compact plastic enclosure and thus suitable for installation on top hat rails in switch cabinets.

CE
EMC Directive 2004/108/EEC:

Compliance with the following standards is confirmed:

- EN 50081-2 (Emission):
- EN 55011 (VDE 0875, part 11, 1992)
- Group 1, Class A conducted interference
- Group 1, Class B radiated interference
- EN 61000-6-2 (Immunity):
- EN 61000-4-3 (1997) severity level 3
- EN 61000-4-4 (1996) severity level 3
- EN 61000-4-5 (1996) severity level 3

Low Voltage Directive 2006/95/EEC:

Compliance with the following standards is confirmed:
 HD 625.1S1 (1996), (VDE 0110) insulation coordination, EN 60529 (1991) IP 54 external mounting

Machinery Directive 2006/42/EC:

These products are considered components in the sense of Machinery Directive 2006/42/EC and must not be put into service until the machinery in which they are incorporated has been declared in conformity with the provisions of the EC Directives.

ROHS

The above mentioned products comply with the requirements of the directives **2002/95/EG**, **2011/65/EU** and of the **delegated directive 2015/863/EU** for change of **attachment II of directive 2011/65/EU (RoHS III)**.

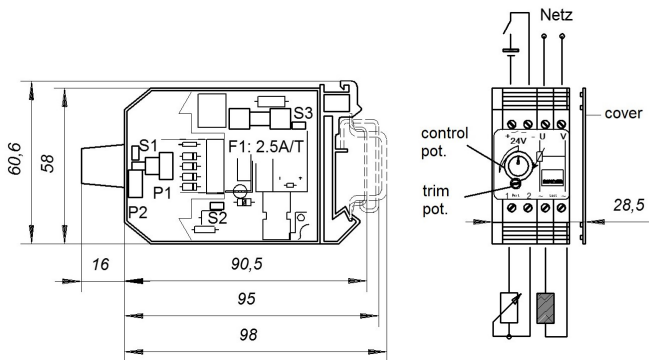
Technical specifications

Input voltage V_I :	110 – 240 VAC $\pm 10\%$
Frequency:	40 – 60 Hz
Adjustable output voltage (at 50 Hz):	
V_{OAC} :	0.2 – 0.95 x V_I
V_{ODC} (with internal rectifier):	0.2 – 0.45 x V_I
Output current max.:	2 AAC / 2 ADC
Protection:	fine wire fuse 5x20 T2.5E as per DIN 41571
External potentiometer:	500 kOhm / 0.5 W linear
External enable:	
Enable input voltage	24 VDC $\pm 10\%$
max. input current	15 mA
Potential separation	up to 2000 V
Protection	against reverse polarity
Ambient temperature range:	0...50°C
Connection:	8-pole screw terminals
Cross section:	max. 1.5 mm ² fine wire
Installation:	On 35 mm mounting rail as per EN 50022
Protection degree:	IP00 as per EN60529
Jumpers:	
DC output	S2 open
Enable input	S3 open
External potentiometer	S1 open
Factory setting	all jumpers closed

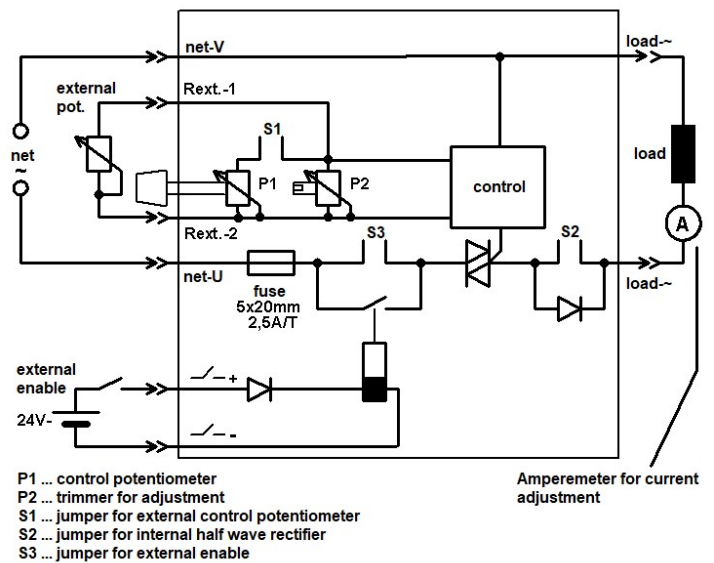
Subject to design modifications without notice.

Please observe ordering data.

Dimensions (mm)



Block diagram



Operating Instructions

Attention!

All work must only be carried out by suitably qualified personnel. Make sure that no voltage is applied during connection. The specifications on the rating plate and the information provided in the circuit diagram or in the datasheet must be strictly observed.

General hints

The device is shipped with open cover and 3 jumpers.

Jumper settings

S1:

operation with external potentiometer: open
operation with internal potentiometer: closed

S2:

operation with internal half-wave rectifier: open
operation without rectifier: closed

S3:

operation with external enable input: open
operation without external enable input: closed

Mounting and connection

After setting the jumpers the cover has to be closed. The device should be mounted on a 35mm mounting rail for switch cabinets with the universal mounting clip. The supply terminals "U" and "V" must be connected to the AC-supply (110...230 VAC 50/60 HZ).

The load must be connected with the load terminals "~". If operation with external potentiometer is provided, connect the external potentiometer to terminals "R_{ext}-1" and "R_{ext}-2". For external enable connect the external control-signal (24 VDC) to "Switch+" and "Switch-". No enabling is possible if a reverse polarity failure occurs. The device is protected against damage.

Operation and adjustment

Take a screw-driver (2 mm) and an ammeter (2AAC/2ADC). An ammeter isn't necessary if the adjustment is possible with a scale on a vibrator or in another way. The ammeter has to be connected as shown in the block diagram. Before first operation the control potentiometer and the trimmer should be turned to the left end (minimum). After turning power on and if used enabling the device turn the trimmer to the right until the current will begin to increase or the vibrators have the wished minimal wave-amplitude.

Attention!

The current can be lower if the load has normal operating temperature. To prevent later variation adjust the vibrators at operating temperature. Then check if the expected maximal current flows (max. 2 A) or the vibrators have their maximal amplitude by turning the control potentiometer to the right end.

Troubleshooting:

- **No current flows:**
Check the integrated fuse (2.5 A/T) by opening the cover.
Attention! Disconnect the power supply before. Check the correct connection of signals and power supply.
Check the polarity and function of the control signal.
Check the jumper setting.
If vibrators with internal diode are used, then close jumper S3.
Check the power supply, the load and the position of the control potentiometer and the trimmer.
- **The maximal current is too low/the maximal amplitude of vibrators will not be obtained.**
Check the correct adjustment.
Check the nominal voltage of the load. It should be lower or equal to the power supply.
- **The maximal current is too high. The fuse breaks down if potentiometer is turned to maximum.**
Is the nominal load power higher than 460 VA?
It is allowed to switch more than one load in parallel, but the total power has to be lower than 460 VA.
Look for a short cut.

Ordering data:

Phase-shift controller in DIN-rail housing

10000050