10000070 – Phase-shift control device with ramp function

Technical data

Type 10000070

Phase-shift control with ramp function
in housing for DIN rail mounting

This device is designed for the operation of resistive-inductive loads with variable operating voltage.
It is used in particular for the operation of vibrators but also for voltage control of various electrical appliances for AC or DC voltage - for example universal motors or light bulbs.

The phase angle control is suitable for operating loads with both variable AC and variable DC voltage via an integrated half-wave rectifier. The regulated output voltage can be set with the internal (externally adjustable) potentiometer, an external potentiometer or via a potential-separated 4 - 20 mA current (PLC-compatible) or 2 - 10 V voltage input. The output voltage can be switched on with 24 V and switched off with <2 V via the isolated input when operating with an internal or external potentiometer. The output voltage always changes via a ramp function (soft start/stop), which can be set separately between 80 ms and 1.2 s. The vibration amplitude of the vibrators can be changed during operation using the various control options. In addition, it is possible to operate electrical devices such as universal motors or light bulbs on 230 V (50/60 Hz) AC networks with a reduced operating voltage or to adapt devices with a lower operating voltage to these networks. The device is protected against overload by an internal miniature fuse. An LED indicates the operating status.
The space-saving plastic housing allows installation in the control cabinet on top-hat rails. Plug-in screw terminals allow easy installation.

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

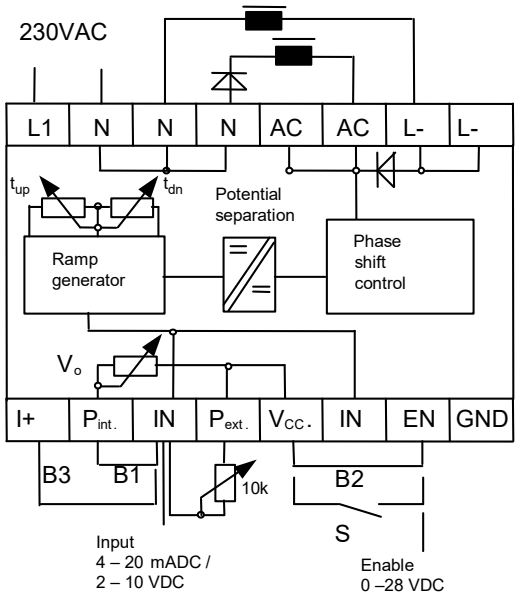
The above mentioned products comply with the requirements of the **directives 2002/95/EG, 2011/65/EU** and of the **delegated directive 2015/863/EU** for change of **attachment II of directive 2011/65/EU (RoHS III)**.

Subject to design modifications without notice.
Please observe ordering data!

Technische Daten

Input voltage V_I:	230 VAC ±10%
Frequency:	40 – 60 Hz
Adjustable output voltage (at 50 Hz):	
V_{OAC}:	0.2 – 0.95 x V_I
V_{ODC}:	0.2 – 0.42 x V_I
Output current max.:	3 AAC / 2,5 ADC
Fuse:	fine wire fuse 5x20, M3.15E As per DIN 41571
External Potentiometer:	10 kOhm / 1 W
Control Input:	4-20 mADC / 2-10 VDC
Enable Input:	max. 28 VDC
Adjustable soft ramp up and down:	80 ms – 1,2 s
Standard setting:	80 ms
Ambient temperature range:	-15...50°C
Connection:	two 8-pole screw terminals
Cross section:	max. 2.5 mm² fine wire
Installation:	on 35 mm monting rail as per EN 50022
Protection degree:	IP00 as per EN60529

Block diagram



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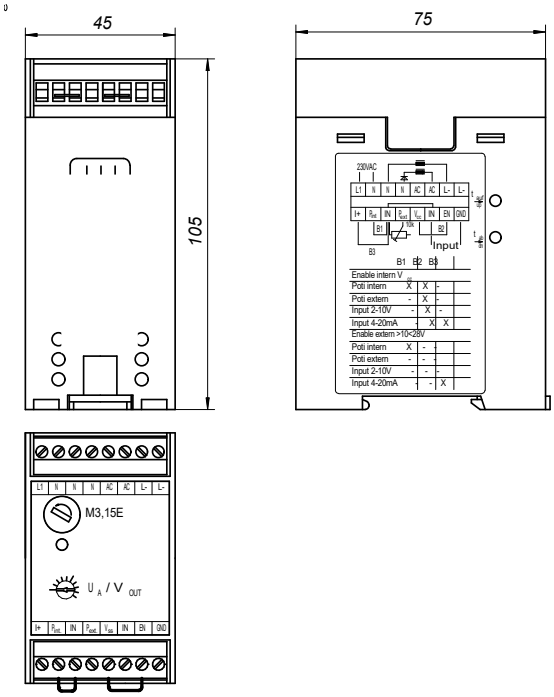
Dimensions



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.

Mounting and connection
The device must be mounted on a DIN EN mounting rail using the universal base included in the scope of delivery.
The supply voltage (230VAC, 50/60Hz) must be connected to the L1 and N terminals.
The load must be connected to terminals N-AC / N-L- depending on the connection example.
For operation with an external potentiometer, the potentiometer must be connected to Pext.-In.
For operation with external on/off switching, the external control signal (24V) must be connected to terminal EN - GND. A potential-free switching input has to be connected to Vcc - EN.
External setpoint voltage or current - See connection examples.

Setting instructions
A screwdriver (blade width approx. 2mm) and an ammeter (5A~/5A-) or a suitable current clamp are required. Alternatively, when operating vibrators, the setting can also be made according to the vibration amplitude.
The ammeter must be connected in series with the load.
Before switching on the mains voltage, turn the setting potentiometer (internal or external) to the left stop (minimum). Then switch on the mains voltage.
When operating with external control, the control signal (24V) must be applied.
The output voltage/oscillation amplitude can now be set by varying the internal/external potentiometer/external setpoint signal.
The soft start/stop time can be set via 2 trimmers on the housing side.
If it is necessary to set the min/max values, there are 2 trimmers under the circuit diagram, which must be pierced for setting.

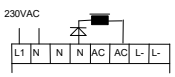
Caution!
The load current can still drop when the load heats up.

Connection examples

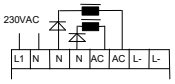
Connection of vibrators:
(vibration frequency = mains frequency)

Correct

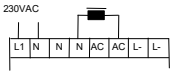
Device with integrated diode



Several devices in parallel

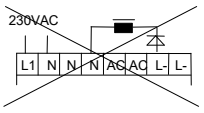


Device without diode

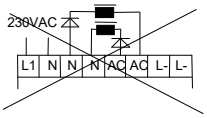


Wrong

Device does not vibrate

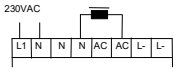


Phase shift between devices

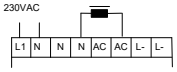


Connection of other devices

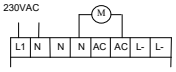
Device with permanent magnetic bias



Device for vibration with double mains frequency

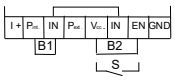


Universal motor or lighting

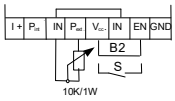


Connection of setpoint inputs

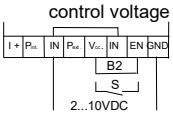
with internal potentiometer



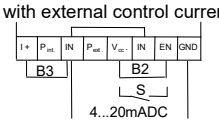
with external potentiometer



with external control voltage



with external control current



Presetting:

Type 100000__	U_{OACmin} (VAC) at U_{Soll} = 2V	U_{OACmax} (VAC) at U_{Soll} = 10V	Soft ramp up (ms)	Soft ramp down (ms)
70	35-45	205-210	80	80
XX	Auf Anfrage kundenspezifisch			

Troubleshooting
- *No current is flowing:*
  Check the miniature fuse in the housing! (3.15/ 3A/MT).
  Check the connections.
  Has the polarity of the control signal been reversed, has it not been switched on or is S2 not short-circuited?
  Is supply voltage present?
  Is the setting potentiometer set to minimum?
  Is a setpoint greater than 2V/4mA present?
  Is the load defective?
- *The maximum load current is too low:*
  Is the rated voltage of the load too high?
- *The maximum load current is too high. The fuse blows:*
  Does the load have a too high rated power?
  A maximum of 690 VA is permissible.
  Have too many loads been connected in parallel?
  The sum of the loads must not exceed 6900 VA.
  Is the rated voltage of the load too low?
  Check the load and the cables for short circuits.

Order example:

Phase-shift controller with ramp function	10000070
Phase-shift controller with ramp function with customer specific presetting	100000xx