

Manufacturer's Declaration

This product is intended for installation in a machine or system, based on the machine directive 2006/42/EC. It is forbidden to start use of the product until the machine or system into which it should be built is operating in accordance with the EC directives. The product corresponds to the low voltage directive 2006/95/EC.

Safety Regulations



Danger!

To prevent injury or damage, only professionals and specialists should work on the devices, following the relevant standards and directives. Please read the Installation and Operational Instructions carefully before installation and initial operation of the device.

- Danger of death on touching voltage-carrying cables and components
- Danger of device failures caused by short circuits or earth contacts at the terminals
- Electronic devices cannot be guaranteed fail-safe



Warning:

Without a conformity inspection, this product is not suitable for use in areas where there is a high danger of explosion. This statement is based on directive 94/9 EC (ATEX directive).

Application

Phase demodulators are used to connect DC units to alternating voltage supplies. Due to automatic switching from the applied overexcitation voltage to the holding voltage, it is possible to energise brakes for shorter switching times with overexcitation and to reduce power dissipation after the armature disk has attracted.



Phase demodulators cannot be used in all applications. Using the phase demodulator is not possible when, for example, operating with damped brakes. Therefore, the usability is to be checked in advance.

Function

The phase demodulator is provided for operation of an input voltage of 230 VAC or 400 VAC. The coil is energised after the input voltage is switched on using overexcitation voltage. After the overexcitation time has passed, the unit switches automatically to the holding voltage.

Additionally, the phase demodulator has an integrated automatic DC-side switch-off. In contrast to the conventional DC-side switch-off, no further protective measures or external components are necessary. The DC-side switch-off is standard-activated (terminals 3 and 4 are not wired), leading to short electromagnetic consumer switching times.

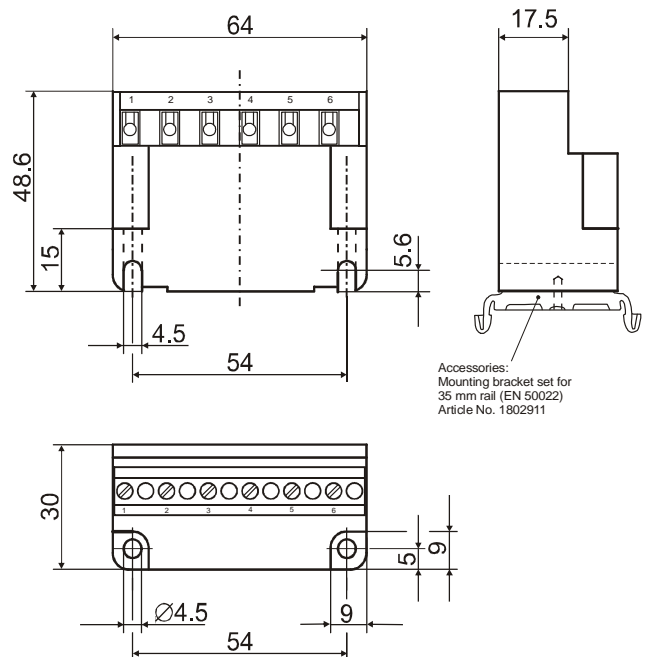
By fitting a jumper between terminals 3 and 4, the integrated automatic DC-side switch-off can be deactivated and coil de-excitation takes place via an internal free-wheeling diode. The advantages are soft braking and quiet switching noises. However, the switching times are lengthened (c. 6 to 10 x more than without the jumper).

Electrical Connection (Terminals)

- 1 + 2 Input voltage
- 3 + 4 Deactivation of integrated automatic DC-side switch-off
- 5 + 6 Output voltage



Dimensions (mm)



Installation and Operating Instructions for Phase Demodulator Type 012.00_.2

(B.01200+2.GB)

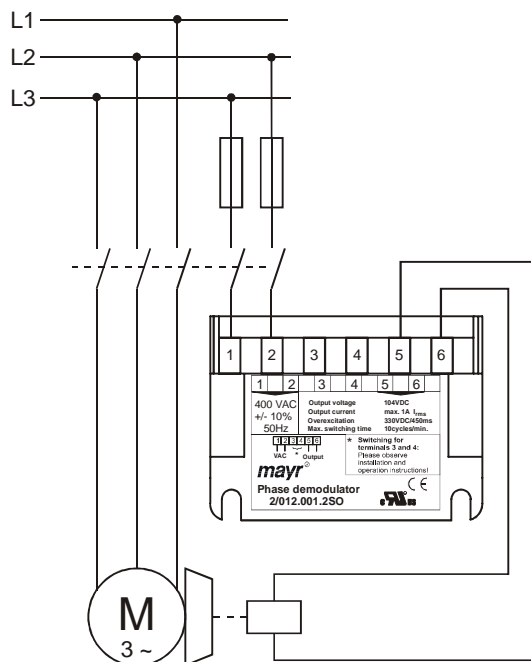
Technical Data

	Type 1/012.000.2	Type 1/012.001.2SO	Type 1/012.002.2SO	Type 1/012.003.2SO	Type 1/012.005.2SO	Type 2/012.001.2SO
Input voltage	230 VAC $\pm 10\%$, 50 Hz	230 VAC $\pm 10\%$, 50 Hz	230 VAC $\pm 10\%$, 50 Hz	230 VAC $\pm 10\%$, 50 Hz	230 VAC $\pm 10\%$, 50/60 Hz	400 VAC $\pm 10\%$, 50 Hz
Output voltage Holding voltage U_{hold}	52 VDC $\pm 35\%$	52 VDC $\pm 35\%$	52 VDC $\pm 35\%$	90 VDC $\pm 35\%$	63 VDC, 50Hz 38 VDC, 60 Hz $\pm 35\%$	104 VDC $\pm 35\%$
Output voltage Overexcitation voltage U_{over}	190 VDC	190 VDC	190 VDC	190 VDC	190 VDC	330 VDC
Overexcitation time t_{over}	150 ms $\pm 20\%$ plus ± 10 ms	450 ms $\pm 20\%$ plus ± 10 ms	700 ms $\pm 20\%$ plus ± 10 ms	30 ms $\pm 20\%$ plus ± 10 ms	450 ms $\pm 20\%$ plus ± 10 ms	450 ms $\pm 20\%$ plus ± 10 ms
Output current	1 A, $I_{RMS}/45^\circ\text{C}$	1 A, $I_{RMS}/45^\circ\text{C}$	1 A, $I_{RMS}/45^\circ\text{C}$	1 A, $I_{RMS}/45^\circ\text{C}$	1 A, $I_{RMS}/45^\circ\text{C}$	1 A, $I_{RMS}/45^\circ\text{C}$
Max. coil power	130 Watt	130 Watt	130 Watt	130 Watt	130 Watt	155 Watt
Max. switching frequency	2/s	10/min	10/min	2/s	10/min	10/min
Protection fuse	FF 5 A (H) 5 x 20 mm					FF 4 A (H) 6.3 x 32 mm
Protection	IP65 components, IP20 terminal					
Terminal	Nominal conductor size 1.5 mm ² (AWG 22-14), screws M3, max. tightening torque 0.5 Nm					
Ambient temperature	-25 °C - +85 °C					
Storage temperature	-40 °C - +105 °C					
Conformity Markings	UL, CE	UL, CE	UL, CE	CE	CE	UL, CE
Installation conditions	The installation position can be user-defined. Please ensure sufficient heat dissipation and air convection. Do not install near to sources of intense heat.					

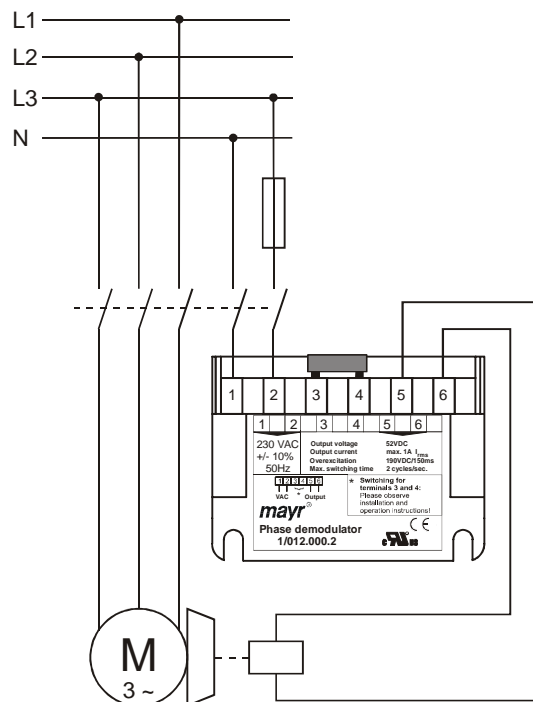


Special designs with other input and output voltages as well as overexcitation times are available on request!

Wiring Example (400 VAC, DC-side switching)



Wiring Example (230 VAC, AC-side switching)



Switch-on

Switch-on always takes place AC-side. Only then is the overexcitation actuated.

Switch-off

If short switching times are required, the device should be switched DC-side.

If a longer brake engagement time or a quiet switching noise is required, switching should be carried out AC-side. In this case, a jumper must be fitted between terminals 3 and 4.

Protection Fuse

For protection against damages caused by short circuits or ground short circuits, the mains supply cables are to be fitted with suitable fuses.

Short circuits or earth short circuits can lead to phase demodulator failure. After fuses have reacted, the phase demodulator must be checked for functional and operational safety (overexcitation voltage, switch-off voltage, switch-off time, holding voltage). The same applies after coil failure.

Overexcitation Time t_{over}

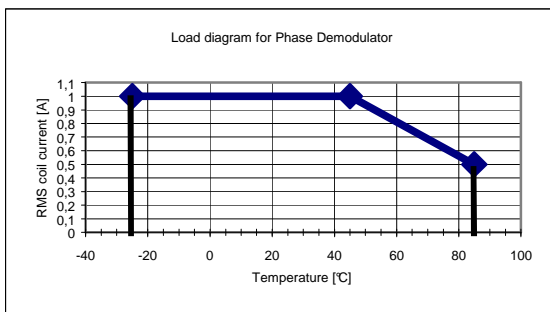
Increased wear (enlarged air gap) as well as coil heat lengthen the brake disconnection time t_2 . Therefore, when dimensioning the overexcitation time t_{over} , please select at least double the disconnection time t_2 on each brake Type and size (catalogue values).

Recovery Time 50 ms

The recovery time is the time which the phase demodulator requires in order to reach start position after switch-off. The input voltage may therefore be switched on again at the earliest after 50 ms.

During cycle operation, please take suitable steps to ensure that the recovery time of 50 ms is guaranteed.

Maximum Output Current



Maximum Coil Power P_{RMS}

$$P_{RMS} \leq P_{nom}$$

The coil power P_{RMS} must not be higher than P_{nom} and the nominal current I_{RMS} which flows through the phase demodulator must not be exceeded, as otherwise the coil and the phase demodulator can fail due to thermal overloads.

Formula:

P_{RMS} (W) RMS coil power depending on the switching frequency, overexcitation, power reduction and the switch-on period.

$$P_{RMS} = \frac{P_{over} \times t_{over} + P_{hold} \times t_{hold}}{t_{tot}}$$

P_{nom} (W) Coil nominal power (as indicated in the Catalogue or Type tag)

P_{over} (W) Coil power on overexcitation

$$P_{over} = \left(\frac{U_{over}}{U_{nom}}\right)^2 \times P_{nom}$$

P_{hold} (W) Coil power on power reduction

$$P_{hold} = \left(\frac{U_{hold}}{U_{nom}}\right)^2 \times P_{nom}$$

t_{over} (s) Overexcitation time

t_{hold} (s) Operating time with power reduction

t_{off} (s) Time without voltage

t_{tot} (s) Total time ($t_{over} + t_{hold} + t_{off}$)

U_{over} (V) Overexcitation voltage

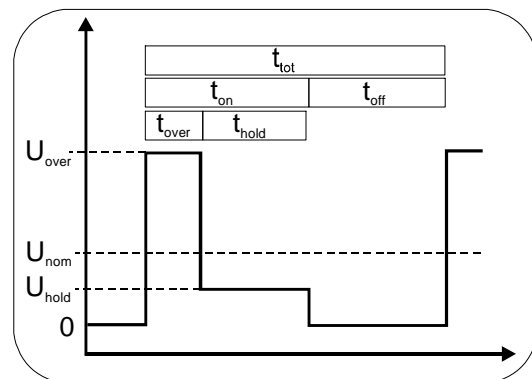
U_{hold} (V) Holding voltage

U_{nom} (V) Coil nominal voltage

I_{RMS} (A) RMS current depending on the switching frequency, overexcitation time and the switch-on period.

$$I_{RMS} = \sqrt{\frac{P_{RMS} \times P_{nom}}{U_{nom}^2}}$$

Time Diagram

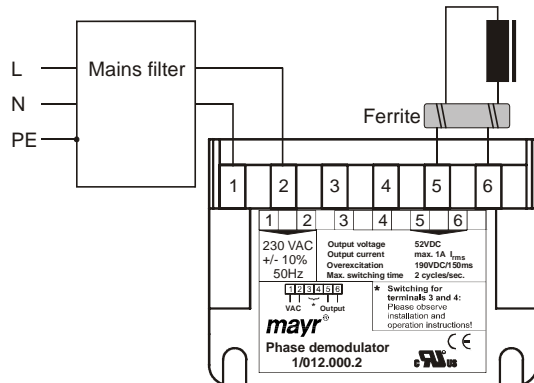


Installation and Operating Instructions for Phase Demodulator Type 012.00_2

(B.01200+2.GB)

EMC-compatible Installation

The measures described for compliance with the EMC directive are examined under laboratory conditions. They cannot be transferred obligatorily to the condition of a machine or equipment due to deviations. The inspection tests the individual components *mayr*[®]-phase demodulator and the *mayr*[®]-brake and is applicable for an input voltage of 230 VAC.



Standards

DIN EN 61000-6-2:2006-03 Electromagnetic immunity
DIN EN 61000-6-4:2002-08 Electromagnetic emissions
VDE 0160 / DIN EN 50178:1998-04 Electronic equipment for use in high voltage plants with electrical production facilities

Insulation co-ordination acc. to VDE 0110 / DIN EN 60664:2003-11
Overvoltage category III
Pollution degree 1
Rated insulation voltage 400 V_{RMS}

Appointed use according to
DIN EN 50178:1998-04

Measures

- Installation of a mains filter in the mains supply line (e. g. Epcos B84112-B-B30)
- Installation of a clamp ferrite (e. g. Würth 74271221) or of a ferrite sleeve (e.g. Würth 74270090) with a three line cable feedthrough in the brake cable.

Warning!

- The mains filter, clamp ferrite or ferrite sleeve must be installed directly onto the phase demodulator!
- Keep the supply cables as short as possible: do not form ring or bow shapes with the cables, avoid antennae effects!
- Mount good bonding connections onto the metal body of the magnetic coil!
- Noise-affected power lines (e. g. from frequency converters or current converters etc). are to be laid separately from control cables and phase demodulator cables!
- When operating with a frequency converter, please ensure an EMC-compatible installation of the frequency converter!
- The holding voltage of the phase demodulator must be checked during operation of system components!