10000020 / 40 Switchgear

Technical Specification

Type 10000020

Overexcitation switchgear
in DIN 43650-A connector

The specified overexcitation switchgear is designed to increase the **attraction force** and reduce the **attraction time** of electromagnetic devices. Depending on its specific characteristics, the switchgear can also be used as **power saver** circuit.

The 10000020 series of overexcitation switchgears has been designed to improve the capacity of electromagnetic devices. A temporary increase in the voltage applied to the electromagnetic device during switching on, followed by voltage reduction down to holding voltage provides the following functional benefits:

- increased attraction force when compared to standard circuits to allow smaller electromagnetic devices to be used;
- faster switching times when compared to normal operation;
- reduced energy consumption, less heating and longer service life, provided that the total power consumption is below the rated power.

The holding voltage can be selected by means of a potentiometer. An LED lights up when the electromagnetic device is powered.
The switchgear is provided with transient overvoltage and polarity reversal protection.
As the switchgear is fitted into a valve connector, it can be connected to all electromagnetic devices featuring DIN 43650-A connectors.

CE

These products meet the requirements of the **EMC Directive 2004/108/EEC**. Compliance with the following standards is confirmed: EN 55011 (VDE 0875, part 11, 1992)
Group 1, Class A conducted interference
Group 1, Class B conducted radiation

EN 61000-4-3 (1997) severity level 3
EN 61000-4-4 (1996) severity level 3
EN 61000-4-5 (1996) severity level 3
These products meet the requirements of the **Low Voltage Directive 2006/95/EEC**.
Compliance with the following standards is confirmed:
HD 625.1 S1 (1996)
EN 60529 (1991)
These products are considered components in the sense of the **Machinery Directive 2006/42/EEC** and must not be used until the machine in which they are incorporated is declared to conform to the requirements of the EC Directives.

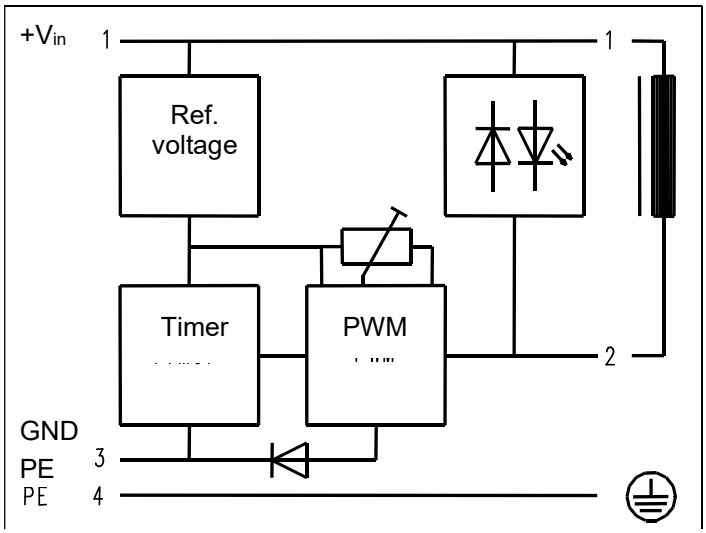
ROHS

These 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 data

Product type	10000020	10000040
Input voltage V_{in}	18...36 VDC	
Residual ripple	< 10%	
Output voltage		
Overexcitation voltage	V_{in} – 1.5 VDC	
Holding voltage, selectable	20...50 % of input voltage	
Output current max.		
in case of overexcitation	2 ADC	
in case of holding excitation	0.8 ADC	
Overexcitation time	100 ms ± 20 ms	550 ms ± 100 ms
Recovery time	>200 ms	
Temperature range	-20...+70 °C	
Housing according to	DIN 43650-A/ISO 4400	
Contact spacing	18 mm	
Conductor cross-section max.	1.5 mm²	
Cable gland	M20x1.5	
Cable diameter	8...10 mm	
Protection (mounted)	IP65 to EN 60529	
Housing material	PA(+G)	
Factory settings		
Holding voltage	40%	

Block diagram



Specification subject to change without notice.
Please observe ordering data!

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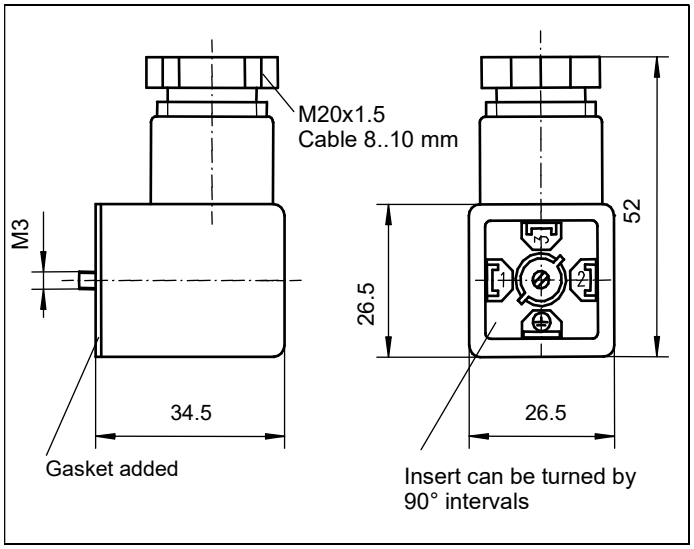
Dimensions



Ambient temperature range

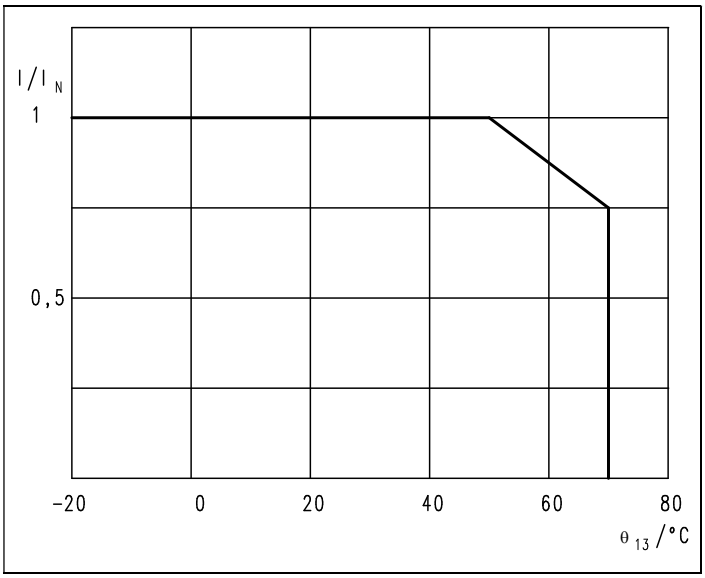


Diagram 1: Max. current loading at ambient temperature

Connection and operation

During the over excitation period, operating voltage (minus approx. 1.5 V) is applied to the electromagnetic device. After the over excitation time has elapsed, the voltage is cycled according to the selected holding voltage. The total power consumption must not exceed the rated power of the connected device.
The switchgear must not be separated from the electromagnetic device unless voltage has been removed.
In order to prevent overloading, it is crucial that the current loading limit values shown in diagram 1 are not exceeded.
Switching the switchgear off during the over excitation period may cause overloading and should be avoided.

Attention!
The switchgear must be set up and operated in such a way that the specified maximum over excitation current, maximum holding current and maximum switching frequency are not exceeded and that the recovery time does not fall below the specified minimum level.
If an earthed conductor is provided, it must be connected before the switchgear is switched on.

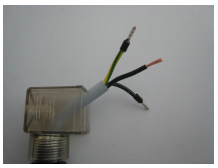
Settings:
The holding voltage must be selected by means of a screwdriver (2.5x0.5 mm blade).
The holding voltage can be measured between terminals 1 and 2 by means of a multimeter.

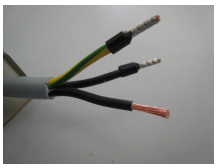
Recommended electromagnetic devices:

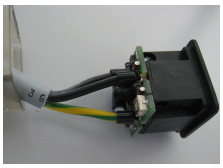
Rated voltage:	24 VDC
Rated power max.:	48 W
Rated resistance min.:	12 Ohm

Connection and wire harness:
Depending on protection class 2-pole cable or 3-pole cable with earth conductor with cross section of 0,5 to 1,5mm² (AWG20 – 16) and outer diameter from 8 to 10mm has to be used. If cables with smaller diameter shall be used, than the cable clamping screw has to be changed with a cable gland M20x1,5 that is specified for the cable diameter.
Examples:
- Control cable JZ 3G1,5 (AWG16) GnGb + No. Lapp Ölflex 191
- Multi norm cable H05VV-3G1,5 (AWG16) HAR wires colored + GnGb
- Cable gland for smaller diameters Hugro type WAZU 184.1706 for 2-6 mm ~1708 für 4-8 mm

Connection:
Setup and Startup has to be done by qualified personnel. Check before that mains is switched off.
- Dismount the cover with a screwdriver from bottom side.
- Release the cable gland / clamping screw.
- Put the cable through the cover. ver from bottom side.
- dismantle the cable 30 to 35mm for example with Jokari tool.
- Strip the 3 wires 9 to 9,5mm
- Press 3 wire end ferrules with isolation 1,5² (AWG16) N DIN 46228 T. 4 For example Z+F V3AE0048 or depending on the cross section with a wire end sleeve tool like Knipex 975308.
- Connect the wires to the bottom part of the housing. Use a screw driver slotted 3mm, 0,2 to 0,4Nm.
- Connect the bottom part to the load. Now switch mains on and set the holding voltage at the potentiometer with a screw driver 2,5mm. It can be measured at Pin 1 and 2 with a multimeter (Range Voltage DC).
- After that switch mains off and assemble the Cover to the bottom part of the housing by bending the cable and pulling it back through the cable gland. The housing parts must snap in.
- Pull the cable gland on until the cable is locked.
- Mount the device together with the gasked the load and screw it by use of the long screw.
- The device is now ready for operation.


Pull through, dismantle


strip, ferrules


connect with correct polarity


Pull back, snap in, Pull cable gland


alternative cable gland for other diameters

Ordering data:

Switchgear in DIN 43650-A connector 24V 100 ms	10000020
Switchgear in DIN 43650-A connector 24V 550 ms	10000040