



Ex m, t Solenoid Operator Type 0518/1218

PTB 03 ATEX 2086 X IECEx PTB 05.0005X

Operating Instructions



Dear Customer!

In order to guarantee the function and for your own safety, please read the enclosed operating instructions attentively before starting installation. Should there still arise any question or queries, please contact nass magnet GmbH.

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General Conditions

- We are not liable for any damage caused by non-observation of this information as well as in case of improper intervention regarding this device. Furthermore, warranty for the devices and accessories will become void. Our general terms and conditions apply.
- The EC-type-examination certificate exclusively covers solenoid operators with nass magnet armature assembly and with nass magnet solenoid coil; please consider the corresponding power levels.

Applied standards by the certification bodies:

| | |
|------------------|-----------------------------|
| EN 60079-0:2009 | IEC 60079-0:2007-10 (Ed. 5) |
| EN 60079-18:2009 | IEC 60079-18:2009 (Ed. 3) |
| EN 60079-31:2009 | IEC 60079-31:2008 (Ed. 1) |

- In its installed state the device is appropriate for potentially explosive gas atmospheres of Group IIC (protection type "m"). The Equipment Protection Level (EPL) is Gb for intended application in Zone 1, ATEX Category 2G. Alternatively the device is appropriate for potentially explosive dust atmospheres of Group IIIC (protection type „mb tb“). The according Equipment Protection Level is Db for intended application in Zone 21, ATEX Category 2D.
- Beyond recognized rules of sound engineering practice the EC type-examination certificate and these operating instructions refer to special conditions and further application conditions that must be observed in any case. However these operating instructions cannot consider all possible conditions and applications completely and do not replace the specifications valid in each case.

Installation

- At installation and maintenance it is essential to observe applicable standards for electrical safety and electrical installations in potentially explosive atmospheres, especially IEC/EN 60079-14.
- After removing the packing, make sure that dirt cannot penetrate into the system.
- Before mounting the valve system, check that there is no dirt in the piping or the valve housing.

- Make sure not to detach pipes and valves of pressurized systems.
- Take suitable measures to exclude unintentional activation or inadmissible impairment.
- Make sure not to damage O-rings and seals during assembly.
- If coils are used in a side by side manifold assembly, pay attention to the minimum distance according to the temperature class (see 'Technical Data').
- Mounting is admissible in any position. Preferably the solenoid coil points upwards.
- The solenoid coil can be locked when offset by 90°. Fastening torque of the mounting nut: 1.2 Nm.
- Electrical connection with the integral cable of the solenoid coil (wire ends suitable for screw terminals/clamps) in the hazardous area with approved explosion-protected equipment (e.g. terminal box with type of protection Increased Safety "e" according IEC/EN 60079-7).
- The cable is of type H05 V2V2-F 3G1,0 (PVC isolated) and is suitable for a temperature range of -30°C to +105°C in fixed installations. The minimum bending radius is 3xD (= 21mm). For other demands please enquire.
- Observe the properties of the cable in regards to respective requirements and ambient conditions at the point of wiring (see IEC/EN 60079-14).
- Prevent the cable and wires from being damaged and make sure that the conductor ends are properly inserted into the connection terminals.
- **Each particular solenoid operator has to be protected by a fuse.** Pay attention to the rating according to the technical data charts of the associated temperature class attached to these operating instructions (refer to 'Technical Data').
- For all DC voltage operated solenoids, the maximum permissible ripple is 20 %.
- At choice of the material of the valve bodies must be observed:
 - Metal: The maximum admissible weight percentage may not exceed the following limits for EPL Gb and Db: in total 7.5 % magnesium, titanium and zirconium.
 - Plastics: In order to avoid the build-up of electrostatic charges the requirements according to IEC/EN 60079-0 section 7.4 must be observed.
- Before operational start-up of the device in the European Union it must be ensured that the entire machine or system corresponds to the determinations of the applicable directives of the EU (e.g. the EMC Directive).

Operation

- **Caution! Risk of injury! The solenoid valve can get very hot during continuous operation.**
- The operating pressure of the device depends on the armature system used. The nass magnet standard armature system is suited for up to 12 bars (1200 kPa) and has no extra identification. For operating pressures greater than 12 bars further documents are available.
- Admissible media are gas and liquids that do not affect the system and the gasket material contained therein.
- Prevent the device's exterior surfaces from getting in contact with liquid or corrosive media.
- Do not strain the system by bending or torsion.
- Pay attention to the technical data ratings according to the charts of the according temperature class.

Troubleshooting

- At malfunctioning check the cable connections, operating voltage and pressure.
- If the problem persists the device must be put out of operation. Make sure to disconnect pressure and electrical power supply.
- Damaged or defective devices may not be repaired but must be replaced.

Technical Data – Temperature Class T4 / T130 °C

Solenoid operator

Ex mb IIC T4 Gb

Ex mb tb IIIC T130°C Db

Degree of protection provided by enclosure

IP65

| Type | 0518 00 ... 0518 29 | | | | 1218 00 ... 1218 29 | | | |
|------------------------------------|--|--------------------------------|---|-------------------------------|--|-------------------------------|---|-------------------------------|
| Electric supply | AC - voltage 50...60 Hz | | | | DC - voltage, max. 20 % ripple | | | |
| Supply voltage tolerance | +/- 10 % | | | | +/- 10 % | | | |
| Ambient Temperature | | | | | | | | |
| - Single assembly | -20 °C ... +50 °C | | | | -20 °C ... +50 °C | | | |
| - Manifold assembly | -20 °C ... +50 °C | | | | -20 °C ... +50 °C | | | |
| Max. permissible media temperature | 80 °C | | | | 80 °C | | | |
| Manifold assembly | yes | | | | yes | | | |
| Min. distance | 0 mm | | | | 0 mm | | | |
| Nominal Voltage U_N [V] | Nominal current I_N ¹⁾ [mA] | Nominal Power P_N [VA] | Limit Power P_G ²⁾ [W] | Fuse ³⁾ [mA] | Nominal current I_N ¹⁾ [mA] | Nominal Power P_N [W] | Limit Power P_G ²⁾ [W] | Fuse ³⁾ [mA] |
| 6 | - | - | - | - | 1580 | 9.5 | 7.7 | 3150 |
| 12 | 623 | 7.5 | 6.5 | 1600 | 822 | 9.9 | 8 | 1600 |
| 24 | 315 | 7.2 | 6.3 | 800 | 421 | 10.1 | 8.2 | 800 |
| 32 | - | - | - | - | 291 | 9.3 | 7.5 | 630 |
| 36 | 232 | 8.4 | 7 | 630 | - | - | - | - |
| 42 | 192 | 8.1 | 6.7 | 500 | - | - | - | - |
| 48 | - | - | - | - | 186 | 8.9 | 7.2 | 315 |
| 60 | - | - | - | - | 134 | 8.1 | 6.5 | 250 |
| 110 | 83 | 9.1 | 7.5 | 200 | 76 | 8.4 | 6.8 | 160 |
| 115 | 70 | 8.1 | 6.8 | 200 | - | - | - | - |
| 120 | 72 | 8.6 | 7.3 | 200 | - | - | - | - |
| 125 | - | - | - | - | 73 | 9.1 | 7.4 | 160 |
| 220 | 35 | 7.7 | 6.4 | 100 | 43 | 9.5 | 7.7 | 100 |
| 230 | 37 | 8.5 | 6.9 | 100 | - | - | - | - |
| 240 | 39 | 9.2 | 7.6 | 100 | - | - | - | - |

1) Rated current

2) Steady-state power, maximum power at the thermal load limit

3) Each solenoid operator has to be protected by a fuse according to the rated current (max. 3x rated current according to IEC 60127-2-1, the fuse ratings listed above are recommended) resp. motor protection switch with short-circuit and fast thermal tripping protection. The fuse can be accommodated in the associated device or must be added separately.

The rated fuse voltage has to be equal or higher than the nominal solenoid voltage. The short-circuit breaking capacity has to be equal or higher than the maximum assumed short-circuit current at the installation point (usually 1500 A).

Technical Data - Temperature Class T5 / T95 °C

Solenoid operator

Ex mb IIC T5 Gb

Ex mb tb IIIC T95°C Db

Degree of protection provided by enclosure

IP65

| Type | 0518 30 ... 0518 59 | | | | 1218 30 ... 1218 59 | | | |
|------------------------------------|--|--------------------------------|---|-------------------------------|--|-------------------------------|---|-------------------------------|
| Electric supply | AC - voltage 50...60 Hz | | | | DC - voltage, max. 20 % ripple | | | |
| Supply voltage tolerance | +/- 10 % | | | | +/- 10 % | | | |
| Ambient Temperature | | | | | | | | |
| - Single assembly | -20 °C ... +50 °C | | | | -20 °C ... +50 °C | | | |
| - Manifold assembly | -20 °C ... +50 °C | | | | -20 °C ... +50 °C | | | |
| Max. permissible media temperature | 80 °C | | | | 80 °C | | | |
| Manifold assembly | yes | | | | yes | | | |
| Min. distance | 0 mm | | | | 0 mm | | | |
| Nominal Voltage U_N [V] | Nominal current I_N ¹⁾ [mA] | Nominal Power P_N [VA] | Limit Power P_G ²⁾ [W] | Fuse ³⁾ [mA] | Nominal current I_N ¹⁾ [mA] | Nominal Power P_N [W] | Limit Power P_G ²⁾ [W] | Fuse ³⁾ [mA] |
| 6 | - | - | - | - | 845 | 5.1 | 4.5 | 2000 |
| 12 | 366 | 4.4 | 4.1 | 1000 | 427 | 5.1 | 4.5 | 1000 |
| 24 | 177 | 4.2 | 3.9 | 500 | 218 | 5.2 | 4.6 | 500 |
| 32 | - | - | - | - | 150 | 4.8 | 4.2 | 400 |
| 36 | 115 | 4.1 | 3.8 | 315 | - | - | - | - |
| 42 | 97 | 4.1 | 3.8 | 250 | - | - | - | - |
| 48 | - | - | - | - | 107 | 5.2 | 4.6 | 315 |
| 60 | - | - | - | - | 86 | 5.2 | 4.6 | 200 |
| 110 | 39 | 4.2 | 3.9 | 100 | 43 | 4.7 | 4.1 | 100 |
| 115 | 35 | 4.0 | 3.7 | 100 | - | - | - | - |
| 120 | 37 | 4.4 | 4.0 | 100 | - | - | - | - |
| 125 | - | - | - | - | 39 | 4.9 | 4.3 | 100 |
| 220 | 18 | 3.9 | 3.6 | 50 | 22 | 4.9 | 4.3 | 63 |
| 230 | 19 | 4.3 | 4.0 | 50 | - | - | - | - |
| 240 | 21 | 4.9 | 4.5 | 50 | - | - | - | - |

1) Rated current

2) Steady-state power, maximum power at the thermal load limit

3) Each solenoid operator has to be protected by a fuse according to the rated current (max. 3x rated current according to IEC 60127-2-1, the fuse ratings listed above are recommended) resp. motor protection switch with short-circuit and fast thermal tripping protection. The fuse can be accommodated in the associated device or must be added separately.

The rated fuse voltage has to be equal or higher than the nominal solenoid voltage. The short-circuit breaking capacity has to be equal or higher than the maximum assumed short-circuit current at the installation point (usually 1500 A).

Technical Data - Temperature Class T6 / T80 °C

Solenoid operator

Ex mb IIC T6 Gb

Ex mb tb IIIC T80°C Db

Degree of protection provided by enclosure

IP65

| Type | 0518 60 ... 0518 99 | | | | 1218 60 ... 1218 99 | | | |
|---|---------------------------------------|--------------------------------|----------------------------------|-------------------------|---------------------------------------|-------------------------------|----------------------------------|-------------------------|
| Electric supply | AC - voltage 50...60 Hz | | | | DC - voltage, max. 20 % ripple | | | |
| Supply voltage tolerance | +/- 10 % | | | | +/- 10 % | | | |
| Ambient Temperature - Single assembly - Manifold assembly | -20 °C ... +50 °C - | | | | -20 °C ... +40 °C - | | | |
| Max. permissible media temperature | 70 °C | | | | 70 °C | | | |
| Manifold assembly Min. distance | no - | | | | no - | | | |
| Nominal Voltage U_N [V] | Nominal current $I_N^{1)}$ [mA] | Nominal Power P_N [VA] | Limit Power $P_G^{2)}$ [W] | Fuse $^{3)}$ [mA] | Nominal current $I_N^{1)}$ [mA] | Nominal Power P_N [W] | Limit Power $P_G^{2)}$ [W] | Fuse $^{3)}$ [mA] |
| 6 | - | - | - | - | 845 | 5.1 | 4.8 | 2000 |
| 12 | 366 | 4.4 | 4.3 | 1000 | 427 | 5.1 | 4.8 | 1000 |
| 24 | 177 | 4.2 | 4.1 | 500 | 218 | 5.2 | 4.9 | 500 |
| 32 | - | - | - | - | 150 | 4.8 | 4.5 | 400 |
| 36 | 115 | 4.1 | 4.0 | 315 | - | - | - | - |
| 42 | 97 | 4.1 | 4.0 | 250 | - | - | - | - |
| 48 | - | - | - | - | 107 | 5.2 | 4.8 | 315 |
| 60 | - | - | - | - | 86 | 5.2 | 4.8 | 200 |
| 110 | 39 | 4.2 | 4.1 | 100 | 43 | 4.7 | 4.4 | 100 |
| 115 | 35 | 4.0 | 3.9 | 100 | - | - | - | - |
| 120 | 37 | 4.4 | 4.3 | 100 | - | - | - | - |
| 125 | - | - | - | - | 39 | 4.9 | 4.6 | 100 |
| 220 | 18 | 3.9 | 3.8 | 50 | 22 | 4.9 | 4.6 | 63 |
| 230 | 19 | 4.3 | 4.2 | 50 | - | - | - | - |
| 240 | 21 | 4.9 | 4.8 | 50 | - | - | - | - |

1) Rated current

2) Steady-state power, maximum power at the thermal load limit

3) Each solenoid operator has to be protected by a fuse according to the rated current (max. 3x rated current according to IEC 60127-2-1, the fuse ratings listed above are recommended) resp. motor protection switch with short-circuit and fast thermal tripping protection. The fuse can be accommodated in the associated device or must be added separately.

The rated fuse voltage has to be equal or higher than the nominal solenoid voltage. The short-circuit breaking capacity has to be equal or higher than the maximum assumed short-circuit current at the installation point (usually 1500 A).

EU Declaration of Conformity

This declaration of conformity is issued under the sole responsibility of the manufacturer:

nass magnet GmbH
Eckenerstrasse 4-6
30179 Hannover, Germany

Product, Type-number / Object of the declaration:

Solenoid Operator Type 0518 00 to 0518 99 and 1218 00 to 1218 99

The object of the declaration described above is in conformity with the relevant Community harmonisation legislation:

2014/34/EU

...relating to equipment and protective systems intended for use in potentially explosive atmospheres
(recast of 26 February 2014)

2011/65/EU

on the restriction of the use of hazardous substances in electrical and electronic equipment
(recast of 8 June 2011)

2014/68/EU

... relating to the making available on the market of pressure equipment
(recast of 15 Mai 2014)

Notified body (no.) that performed the EC-type examination and no. of the certificate:

Physikalisch Technische Bundesanstalt (No. 0102), PTB 03 ATEX 2086 X.

Relevant harmonised standards used and references to the specifications in relation to which conformity is declared. In case of newer editions as referenced in the certificate we confirm that the changed requirements are either not applicable or the products listed above comply with them:

EN 60079-0:2012+A11:2013

Explosive atmospheres - Part 0: Equipment - General requirements

EN 60079-18:2015

Explosive atmospheres - Part 18: Equipment protection by encapsulation "m"

EN 60079-31:2014

Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"

EN 60529:2000

Degrees of protection provided by enclosures (IP code)

DIN VDE 0580:2011

Electromagnetic devices and components - General specifications

Signed for and on behalf of

nass magnet GmbH, Hannover, 01 February 2018

Patrick Oelkers
General Manager

