

## Ex m Solenoid Operator Type 0518 / 1218



### Operating Instructions

Dear Customer!

In order to guarantee the function and for your own safety, please read this 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.
- Further to the valid generally accepted rules of technology the EC type-examination certificate and these operating instructions refer to **special conditions** and further application conditions that must be observed in any case.
- **The EC type-examination certificate exclusively covers solenoid operators with nass magnet armature assembly and with nass magnet solenoid coil.**
- Take suitable measures to exclude unintentional activation or inadmissible impairment.
- Make sure not to detach pipes and valves of pressurized systems.
- **Caution! Risk of injury! The solenoid's surface can get very hot during continuous operation.**

### Installation

- After removing the packing, make sure that dirt cannot penetrate into the system.
- Before mounting the system, check that there is no dirt in the piping or the valve housing.
- When inserting the system, make sure that the O-ring at the flange respectively the screw-in thread is not damaged.
- If coils are used in manifold assembly (directly side by side) pay attention to the minimum distance according to the temperature class (see technical data).
- Mounting is admissible in any position. Preferably the solenoid system has to point upwards.
- The solenoid coil can be locked when offset by 90 °.
- Tightening torque for fastening nut: 1.2 Nm.
- Electrical connection with the integrated 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 EN 60079-7).
- When connecting the flying leads make sure the wire ends of the leads are properly inserted into the electrical terminal.
- Prevent the connecting cables from being buckled and damaged in order to avoid short circuits and interruptions.

- Before initial operation of the device make sure that the overall equipment or unit respectively meets the requirements of the EMC directive.
- Please order spare parts completely by indicating the identification number provided on the units (imprint / type plate).
- At installation and maintenance it is essential to keep to the concerning Ex standards, especially EN 60079-14. The electrical installation has to be carried out by authorized personnel following additional relevant national regulations (in Germany VDE 0100).
- Each solenoid operator has to be protected by a fuse according to the rated current (max. 3x rated current accord. to IEC 60127-2-1) 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 fuse voltage has to be equal or higher than the Nominal solenoid voltage. The shutdown capability has to be equal or higher than the maximum assumed short-circuit current at the installation point (usually 1500 A). The maximum permissible ripple for all magnets of DC-design is 20 %.
- At choice of the material of the valve bodies must be observed:
  - Casting alloys:  
The maximum admissible percent by weight may, in total, not exceed 7.5 % magnesium and titanium, when, according to the ignition hazard assessment, a risk of ignition by friction, stroke or friction sparks exists.
  - Plastics:  
In order to avoid the build-up of electrostatic charges the requirements according to EN 60079-0 section 7.4 must be observed.

## Operation




- Admissible media are gas and liquids that do not affect the system and the sealing material contained therein.
- The outside surfaces of the solenoid should be free of contact with liquids or corrosives.
- The degree of protection (by enclosure) is IP65 according to EN 60529.
- The device's operating pressure depends on the armature system used. The mass magnet standard armature system is suited for up to 12 bars (1200 kPa) and does not have a special marking. For operating pressures greater than 12 bars other documents are available.
- Do not strain the system by bending or torsion.
- Prevent the connecting cables from being buckled and damaged in order to avoid short circuits and interruptions.

## Troubleshooting

- Check the cable connections, operating voltage and pressure.
- Should the problem persist, remove pressure and disconnect from power supply.
- Defective explosion-proof devices must not be repaired but must be replaced.

## Certificate of Conformity

nass magnet GmbH, Hanover, declares and bears sole responsibility for the following Ex products to be in compliance with the safety standards:

Solenoid operator 0518 00 to 0518 29		II 2 G Ex mb IIC T4	IEC Ex mb IIC T4
Solenoid operator 1218 00 to 1218 29		II 2 D Ex mb tb IIIC T130 °C	Ex mb tb IIIC T130 °C
Solenoid operator 0518 30 to 0518 59		II 2 G Ex mb IIC T5	IEC Ex mb IIC T5
Solenoid operator 1218 30 to 1218 59		II 2 D Ex mb tb IIIC T95 °C	Ex mb tb IIIC T95 °C
Solenoid operator 0518 60 to 0518 99		II 2 G Ex mb IIC T6	IEC Ex mb IIC T6
Solenoid operator 1218 60 to 1218 99		II 2 D Ex mb tb IIIC T80 °C	Ex mb tb IIIC T80 °C

The EC type-examination certificate with the number

**PTB 03 ATEX 2086 X and IECEx PTB 05.0005X**

issued by Physikalisch Technische Bundesanstalt (registration entity no. 0102) are applicable for the named Ex-products.

The solenoid operator is an encapsulated safe electrical apparatus of Group II, designed for application in atmospheres according to Category 2G and 2D, the EPL is Gb and Db (temperature class as per imprint). The degree of protection (by enclosure) is IP65.

The device, which is provided with the CE symbol, meets the following standards and directives:

EN 60079-0: 2009	Explosive atmospheres – Part 0: Equipment - General requirements
IEC 60079-0: 2007	Explosive atmospheres – Part 0: Equipment - General requirements
EN 60079-18: 2009	Explosive atmospheres – Part 18: Equipment protection by encapsulation "m"
IEC 60079-18: 2009	Explosive atmospheres – Part 18: Equipment protection by encapsulation "m"
EN 60079-31: 2009	Explosive atmospheres – Part 31: Equipment dust ignition protection by enclosure "t"
IEC 60079-31:2008+Cor.1	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: 2000	Electromagnetic devices and components - General specifications
Directive 94/9/EC	Equipment and protective systems intended for use in potentially explosive atmospheres

Hanover, June 01, 2012



Klaus Kirchheim  
General manager

## Technical Data – Temperature Class T4

Solenoid operator



IEC

II 2 G Ex mb IIC T4  
 II 2 D Ex mb tb IIIC T130 °C  
 Ex mb IIC T4  
 Ex mb tb IIIC T130 °C

Degree of protection (by enclosure): IP65

Supply voltage tolerance +/- 10 %

Type	0518 00 ... 0518 29				1218 00 ... 1218 29			
Current	AC-operation 50...60 Hz				DC-operation, max. 20 % ripple			
Ambient Temperature								
- Single assembly	-20 °C ... +50 °C				-20 °C ... +50 °C			
- Manifold assembly	-20 °C ... +50 °C				-20 °C ... +50 °C			
Max. media temperature	80 °C				80 °C			
Manifold assembly Min. distance	yes 0 mm				yes 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	8,0	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	7,0	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 shutdown capability 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

Solenoid operator



IEC

II 2 G Ex mb IIC T5  
 II 2 D Ex mb tb IIIC T95°C  
 Ex mb IIC T5  
 Ex mb tb IIIC T95°C

Degree of protection (by enclosure): IP65

Supply voltage tolerance +/- 10 %

Type	0518 30 ... 0518 59				1218 30 ... 1218 59			
Current	AC-operation 50...60 Hz				DC-operation, max. 20 % ripple			
Ambient Temperature								
- Single assembly	-20 °C ... +50 °C				-20 °C ... +50 °C			
- Manifold assembly	-20 °C ... +50 °C				-20 °C ... +50 °C			
Max. media temperature	80 °C				80 °C			
Manifold assembly Min. distance	yes 0 mm				yes 0 mm			
Nominal Voltage  U <sub>N</sub> [V]	Nominal current I <sub>N</sub> <sup>1)</sup> [mA]	Nominal Power P <sub>N</sub> [VA]	Limit Power P <sub>G</sub> <sup>2)</sup> [W]	Fuse  3) [mA]	Nominal current I <sub>N</sub> <sup>1)</sup> [mA]	Nominal Power P <sub>N</sub> [W]	Limit Power P <sub>G</sub> <sup>2)</sup> [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 shutdown capability 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

Solenoid operator



IEC

II 2 G Ex mb IIC T6  
 II 2 D Ex mb tb IIIC T80 °C  
 Ex mb IIC T6  
 Ex mb tb IIIC T80 °C

Degree of protection (by enclosure): IP65

Supply voltage tolerance +/- 10 %

Type	0518 60 ... 0518 99				1218 60 ... 1218 99			
Current	AC-operation 50...60 Hz				DC-operation, max. 20 % ripple			
Ambient Temperature - Single assembly - Manifold assembly	-20 °C ... +50 °C -				-20 °C ... +40 °C -			
Max. media temperature	70 °C				70 °C			
Manifold assembly Min. distance	no -				no -			
Nominal Voltage  U <sub>N</sub> [V]	Nominal current <sup>1)</sup> I <sub>N</sub> [mA]	Nominal Power P <sub>N</sub> [VA]	Limit Power P <sub>G</sub> <sup>2)</sup> [W]	Fuse  <sup>3)</sup> [mA]	Nominal current <sup>1)</sup> I <sub>N</sub> [mA]	Nominal Power P <sub>N</sub> [W]	Limit Power P <sub>G</sub> <sup>2)</sup> [W]	Fuse  <sup>3)</sup> [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 shutdown capability has to be equal or higher than the maximum assumed short-circuit current at the installation point (usually 1500 A).