Solenoid coil MKY45/18x60
For explosion-hazard zones
Protection class IP65/66/67
Surface AISI 316L
Optional with integrated amplifier electronics

DESCRIPTION
For explosion-hazard zones
Solenoid coil in acc. with directive 2014/34/EU (ATEX) for explosion-hazard zones.
The flameproof enclosures (acc. to EN/IEC 60079-1/31) prevents an explosion in the interior from getting outside.
The design prevents a surface temperature capable of igniting.
The steel housing is AISI 316L
Optional with integrated amplifier electronics.

FUNCTION
In combination with an armature tube, the function of a switching solenoid or of a proportional solenoid results. Solenoid coils in AC - construction have an integrated rectifier. All cable threaded joints certified for this explosion protection class have a protection class of at least IP65 can be used. The optional amplifier electronics have an analogue interface and can be adjusted by means of push-buttons and 7 segment display or by means of the parameterisation software PASO.

APPLICATION
The solenoid coil is suitable for use in all explosion-hazard zones, open cast and also in mines.
This signifies, that the coils are certified for applications in zones with explosion-hazard gas, steam, vapour, air and dust mixtures of the zones 1/21 and 2/22.
Valves for explosion-hazard zones are utilised in:
– the shipping- and offshore industries
– the oil- and gas industries
– the chemical industry
– wood processing
– grain mills
– the mining application

CERTIFICATES

<table>
<thead>
<tr>
<th>Surface gas and dust</th>
<th>Mining</th>
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<tbody>
<tr>
<td>in accordance with</td>
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<tr>
<td>Standard -25°C to...</td>
<td>M224</td>
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<tr>
<td>-40°C to...</td>
<td>M238</td>
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<tr>
<td>-60°C to...</td>
<td>Amplifier M248</td>
</tr>
<tr>
<td>ATEX</td>
<td>x</td>
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<td>IECEx</td>
<td>x</td>
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<td>EAC (GOST Ex)</td>
<td>x</td>
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<td>CCC</td>
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The certificates can be found on www.wandfluh.com / Accompanying Ex-proof / MKY45/18-..-L..

TYPE CODE

Mobile execution, metal housing
Terminal box without cable
Explosion proof version Ex d
Housing width 45mm
Internal coil diameter 18mm
Coil length 60mm
Nominal voltage \( U_n \)
\[
\begin{array}{llll}
12 \text{ VDC} & \text{G12} & 115 \text{ VAC} & \text{R115} \\
24 \text{ VDC} & \text{G24} & 230 \text{ VAC} & \text{R230} \\
\end{array}
\]
Nominal power \( P_n \)
\[
\begin{array}{llll}
6 \text{ W} & \text{L6} & 9 \text{ W} & \text{L9} & 15 \text{ W} & \text{L15} & 21 \text{ W} & \text{L21} \\
\end{array}
\]
Surface
Temperature range
-25°C to...
-40°C to...
-60°C to...
Function
Amplifier
M248 only G12 or G24 / up to max. L15
not for M224 and M238
Freewheel diode
M256 do not use for proportional functions
Bipolar protecting diode
M264 only G24
Power reduction
M272 only L6

Design-Index (Subject to change)
CHARACTERISTICS

Coil winding isolation class H
Protection class acc. to EN 60529 IP65/66/67, with corresponding cable gland and correct installation
Relative duty factor 100 % DF, combined with armature tube and valve
Reference temperature
Execution L6 / L9:
-25…+40 °C (operation as T1…T6/T80 °C)
-25…+90 °C (operation as T1…T4/T130 °C)
Execution L15:
Temperature range -25° to ...
-25…+70 °C (operation as T1…T4/T130 °C)
-40…+70 °C (operation as T1…T4/T130 °C)
Temperature range -60° to ...
-60…+70 °C (operation as T1…T4/T130 °C)
Execution L 21:
-25…+60 °C (operation as T1…T4/T130 °C)
Housing Steel housing AISI 316L
Relative humidity factor max. 95 % (not dew-forming)
Corrosion protection Salt spray test in accordance with EN ISO 9227 > = 2000 hours
Maximum operating voltage Nominal voltage +10 %
Nominal frequency in acc. with name plate ±2 %
Standard
U_n  = 12 VDC
U_n  = 24 VDC
U_n  = 115 VAC
U_n  = 230 VAC
Other nominal voltages in the ranges of 12–230 VDC and 24–230 VAC on request

OPERATION SECURITY

The solenoid coil must only be put into operation, if the requirements of the operating instructions supplied are observed to their full extent.
In case of non-observance, no liability can be assumed.

A corresponding fuse in accordance with its design current has to be connected in series as short-circuit protection for every solenoid coil.

INSTALLATION

For stack assembly please observe the remarks in the operating instructions.

ACCESSORIES

- The operating instructions incl. the EC declaration of conformity for solenoid coils of the type MKY45/18x60 is supplied in German, English and French (download under www.wandfluh.com)
- Type test certifications (download under www.wandfluh.com)
- EC-declaration of conformity (download under www.wandfluh.com)
With amplifier electronics and with analogue interface

**ELECTRICAL SPECIFICATIONS**

- **Supply voltage**
  - G12: 12 V +10%, G24: 24 V +10%
- **Residual ripple**
  - < +/-5%
- **Fuse**
  - low
- **No-load current**
  - approx. 20 mA
- **Max. current consumption**
  - No-load current + limiting current of the solenoid
- **Analogue input**
  - 1 input non-differential voltage / current (switchable by means of parameter)
  - 0...+/- 10V or 0/4...20mA
- **Resolution**
  - 10-Bit
- **Input resistance**
  - Voltage input >100 kΩ (Input current < 5 mA)
  - Load for current input = 124 Ω
- **Stabilised output voltage**
  - 5 VDC max. load 20 mA
- **Solenoid current**:
  - Minimal current \( I_{\text{min}} \)
    - Adjustable 0... \( I_{\text{max}} \) mA
    - Factory setting 30 mA
  - Maximal current \( I_{\text{max}} \)
    - G24/L15 Adjustable \( I_{\text{max}} \)...510 mA
    - Factory setting 450 mA
    - G12/L15 Adjustable \( I_{\text{max}} \)...1020 mA
    - Factory setting 960 mA
    - G24/L9 Adjustable \( I_{\text{max}} \)...510 mA
    - Factory setting 300 mA
    - G12/L9 Adjustable \( I_{\text{max}} \)...685 mA
    - Factory setting 610 mA
    - Dither Frequency adjustable 4...500 Hz
    - Level adjustable 0...400 mA
    - Factory setting 150mA
    - Digital inputs
      - Switching threshold high 6...32 VDC
      - Switching threshold low 0...1 VDC
      - Usable as frequency input (frequency 5...5000 Hz) and as PWM input (automatic frequency recognition)
- **EMC**
  - Immunity EN 61 000-6-2
  - Emission EN 61 000-6-4

**DIMENSIONS**

with amplifier electronics

**CONNECTOR ASSIGNMENT (X1)**

1 = + VDC  
2 = Command value  
3 = Dig Inp  
4 = Stab out  
5 = GND

**GENERAL SPECIFICATIONS**

- **Execution**
- **Connections**
- **Screw terminal**
- **USB interface**

5-pole, max. 1.0 mm² via connection «Digital Input», requires an additional Wandfluh adapter PD2

**Data sheet no.**

**Revision**

**Gewicht**

**Format**

**Datum Name Änderungsbeschrieb**

**Ersetzt durch:**

**Ersatz für:**

**ART.-NR.**

**REV. ÄNDERUNGSR.

**ERSETZT DURCH**

**ERSETZT FÜR**

**Serie freigegeben**

**MKY45/18x60 K9M248 #4**

**Magnetspule komplett**

**A2 04 1.815 kg**

**DB 1.1-183**

**0158631**

**DB-Nummer DB 1.1-183**

**05.06.2018**

**02 MW Blatt DB 1.1-S183 ergänzt**

**08.03.2016**

**Blatt 2 von 2**

**C:\00_Wandfluh\Verkauf\Dokumentation\Reg1.1\DB 1.1-183\0158631**

**Modellreferenz: Doknr. 0236780 / Konfiguration 005**

**With amplifier electronics and with analogue interface**

- **Electronics integrated in solenoid housing**
- **For proportional or switching valves**
- **Screw terminals for simple assembly**
- **1 analogue input**
- **1 digital input**
- **Adjustable with push-buttons and display directly on the device or via PC**
**START-UP**

Information regarding installation and commissioning are contained in the information leaflet supplied with the amplifier electronics and in the operating instructions.

Additional information can be found on our website: [www.wandfluh.com](http://www.wandfluh.com)

Free-of-charge download:
- "PASO-PD2" Parameterisation software
- Operating instruction (*.pdf)

**ADDITIONAL INFORMATION**

Wandfluh documentation
- Proportional spool valve register 1.10
- Proportional pressure valves register 2.3
- Proportional flow control valves register 2.6

**ACCESSORIES**

USB adapter PD2
- Article no. 726.9900
- incl. USB cable, 1.8 m
  (for parameterisation via PASO)

**PARAMETER SETTINGS**

The MKY electronics have push-buttons and a display which enable setting the most important parameters. In addition, the digital input can be used as a communication interface, through which, by means of the parameterisation software "PASO-PD2", the complete parameterisation and diagnostics can be carried out. For this, the Wandfluh USB-PD2 adapter is required.

Attention: During the communication, the digital input cannot be used.

**FUNCTION DESCRIPTION**
Command value scaling
The command value can be applied as a voltage, current, digital, frequency or PWM signal. The scaling takes place via the parameter "interface". Furthermore, the command value can be monitored for a cable break. A dead band can also be set.

Fixed command value
There is 1 fixed command value available, which can be selected via the digital input. This function has to be configurated before in PASO.

Ramp generator
Two linear ramps for up and down are available which can be adjusted separately.

Valve type
Adjustment possibilities: switching solenoid or proportional solenoid.

Mode of operation „Command value unipolar/bipolar (1-Sol)
Dependent on a command value signal (voltage, current, digital, frequency or PWM), the solenoid is driven (e.g. 0….10V correspond to 0….100 % command value, 0….+100 % command value correspond to Imin….Imax solenoid driver)

Signal recording
Furthermore, the „PD2“ amplifier electronics have a signal recording function. This, by means of PASO, enables the recording of various system signals, such as command value, solenoid current, etc., which can be represented on a common time axis.

Solenoid driver
A Pulse-Width-Modulated current output is available. A dither signal is superimposed, whereby the dither frequency and the dither level are separately adjustable. The minimum (Imin) and maximum (Imax) current can be adjusted. The solenoid output can also be configurated as switching solenoid output. In this case, a power reduction can be adjusted.

Optimisation of characteristic curve
An adjustable characteristic curve „Command value input – solenoid current output“ enables an optimised (e.g. linearised) characteristic of the hydraulic system.

Channel enabling
The device is enabled as per factory setting. Via PASO or menu item, the digital input can be configurated for enabling.