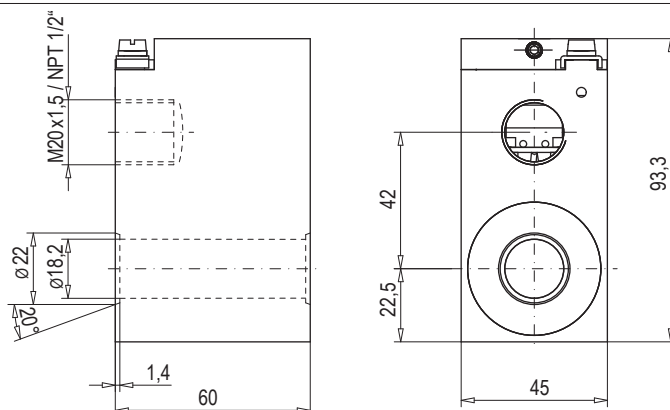




## DIMENSIONS

without amplifier electronics



## CHARACTERISTICS

Coil winding isolation class H

Protection class

acc. to EN 60529

IP65/IP66/IP67/IP68/IP69K, with corresponding cable gland with front side O-ring sealing to the housing and correct installation

Relative duty factor

100 % DF, combined with armature tube and valve

Reference temperature

L5 / L6

L5 / L6

L9

L9

**Execution L5 / L6 / L9:**

-25...+50 °C (operation as T1...T6/T80 °C)

-25...+100 °C (operation as T1...T4/T130 °C)

-25...+40 °C (operation as T1...T6/T80 °C)

-25...+90 °C (operation as T1...T4/T130 °C)

**Execution L15 / L12:**

Temperature range „-25° to ...“

-25...+70 °C (operation as T1...T4/T130 °C)

Temperature range „-40° to ...“

-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

Relative humidity factor

Corrosion protection

Steel housing, zinc-/nickel-coated

max. 95 % (not dew-forming)

Salt spray test in accordance with EN ISO 9227 > = 1000 hours

Maximum operating voltage

Nominal voltage +10 %

Nominal frequency

in acc. with name plate ±2 %

Standard

nominal voltages

$U_N = 12 \text{ VDC}$

$U_N = 24 \text{ VDC}$

$U_N = 115 \text{ VAC}$

$U_N = 230 \text{ VAC}$

Other nominal voltages in the ranges of 12–230 VDC and 24–230 VAC on request

Standard nominal powers

$P_N = 5 \text{ W}$   
 $P_N = 6 \text{ W}$   
 $P_N = 9 \text{ W}$   
 $P_N = 15 \text{ W}$   
 $P_N = 21 \text{ W}$ 
} with M272  $P_R = 3,8 \text{ W}$

	12 VDC				
Nominal power (W)	6	9	12	15	21
Nominal resistance (Ω)	24,75	18,5	13,5	9,9	7,1
Minimum resistance	24	18	12,5	9,6	6,9
Recommended rated current for fuse inserts (mA)	1000	1600	2000	2500	4000
Limiting current (mA)	400	610	720	960	1230
(Proportional function)					
	24 VDC				
Nominal power (W)	6	9	12	15	21
Nominal resistance (Ω)	98,5	65,7	49,25	39,4	29
Minimum resistance	96	64,1	48	38,5	28,2
Recommended rated current for fuse inserts (mA)	400	800	800	1250	2000
Limiting current (mA)	200	300	370	450	600
(Proportional function)					
	115 VAC				
Nominal power (W)	6	9	12	15	21
Nominal resistance (Ω)	1840	1390	1125	720	517
Minimum resistance	1800	1350	1095	702	502
Recommended rated current for fuse inserts (mA)	100	200	200	315	400
	230 VAC				
Nominal power (W)	6	9	12	15	21
Nominal resistance (Ω)	7280	4850	3650	2910	2080
Minimum resistance	7090	4725	3541	2840	2020
Recommended rated current for fuse inserts (mA)	100	100	100	160	200

For further details see installation and operating instructions no. 990.8001.

M272 reduces the nominal power ( $P_N$ ) after 500ms to a reduced power ( $P_R$ ). M272a after 160ms.  
Values are valid at 20 °C.

## 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](http://www.wandfluh.com))

– Type test certifications  
(download under [www.wandfluh.com](http://www.wandfluh.com))

– EC-declaration of conformity  
(download under [www.wandfluh.com](http://www.wandfluh.com))

– Recognition of production quality assurance  
QAN: SEV ATEX 4130, QAR: CH/SEV/QAR16.0001  
(download under [www.wandfluh.com](http://www.wandfluh.com))

## With amplifier electronics and with analogue interface

### Digital amplifier electronics to MKY...M248

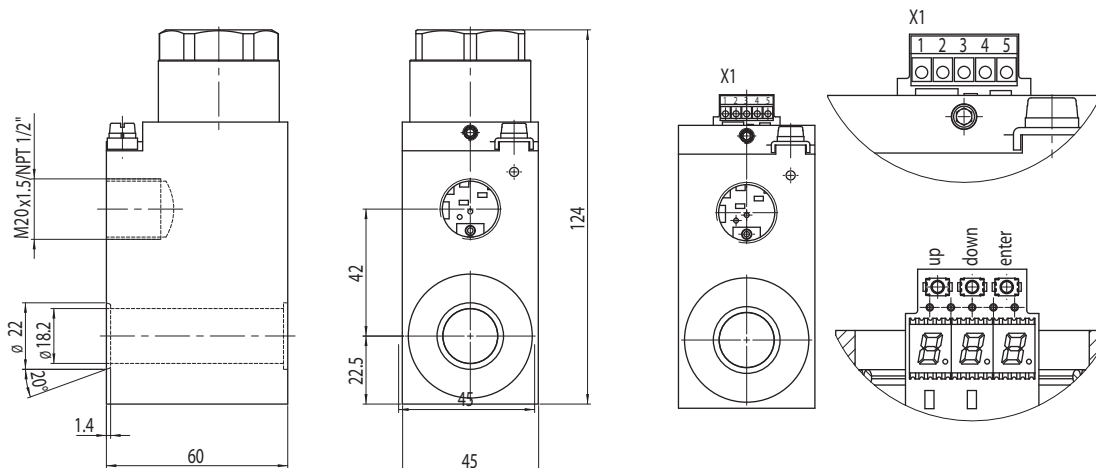
- Electronics integrated in solenoid housing
- For proportional or switching valves
- Screw terminals for simple assembly
- 1 analogue input
- 1 digital input
- Adjustable with push-buttons and display directly on the device or via PC

### ELECTRICAL SPECIFICATIONS

Supply voltage	G12: 12 V +10 %, G24: 24 V +10 %		G24/L9 Adjustable $I_{\min}$ ...510 mA
Residual ripple	< +/-5 %		Factory setting 600 mA
Fuse	low		G12/L9 Adjustable $I_{\min}$ ...685 mA
No-load current	approx. 20 mA		Factory setting 610 mA
Max. current consumption	No-load current + limiting current of the solenoid	Dither	Frequency adjustable 4...500 Hz
Analogue input	1 input non-differential Voltage / current (switchable by means of parameter) 0...+/- 10V or 0/4...20mA	Temperature drift	Factory setting 80 Hz
Resolution	10-Bit	Digital inputs	Level adjustable 0...400 mA
Input resistance	Voltage input >100 kΩ (Input current < 5 mA)		Factory setting 150 mA
Stabilised output voltage	5 VDC max. load 20 mA		<1 % at $\Delta T = 40^\circ C$
Solenoid current:		USB interface	1 input high-active, no pull-up/down
• Minimal current $I_{\min}$	Adjustable 0... $I_{\max}$ mA Factory setting 30 mA	EMC	Switching threshold high 6...32 VDC
• Maximal current $I_{\max}$	G24/L15 Adjustable $I_{\min}$ ...510 mA Factory setting 450 mA	Immunity	Switching threshold low 0...1 VDC
	G12/L15 Adjustable $I_{\min}$ ...1020 mA Factory setting 960 mA	Emission	Usable as frequency input (frequency 5...5000 Hz) and as PWM input (automatic frequency recognition)
			Via digital input
			Requires the Wandfluh USB adapter PD2

### DIMENSIONS

with amplifier electronics

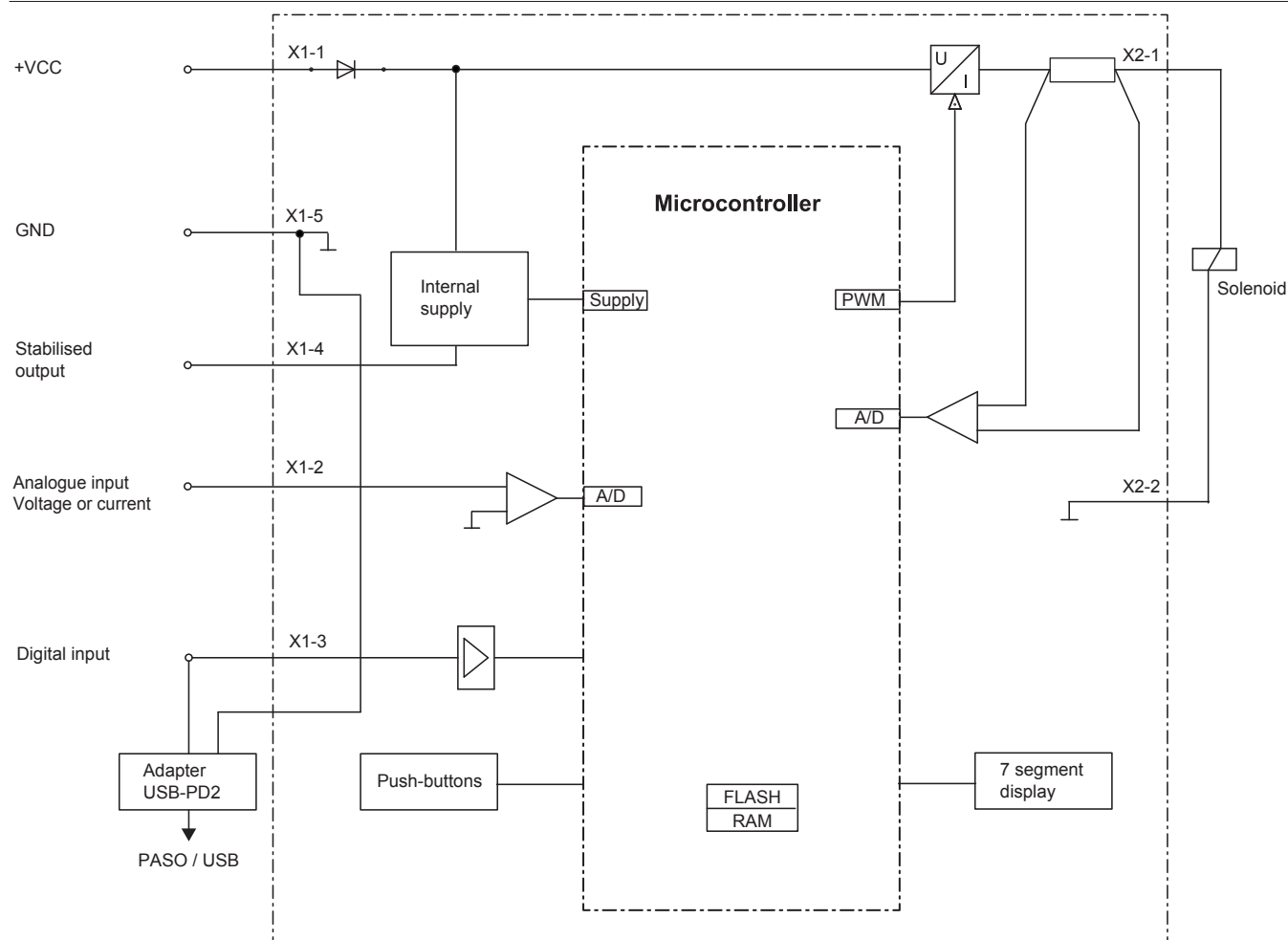


### CONNECTOR ASSIGNMENT (X1)

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

### GENERAL SPECIFICATIONS

Execution	Electronics board built-in directly in solenoid housing
Connections	
Screw terminal	5-pole, max 1,0 mm <sup>2</sup>
USB interface	via connection «Digital Input» requires an additional Wandfluh adapter PD2

**BLOCK DIAGRAM**

**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**

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

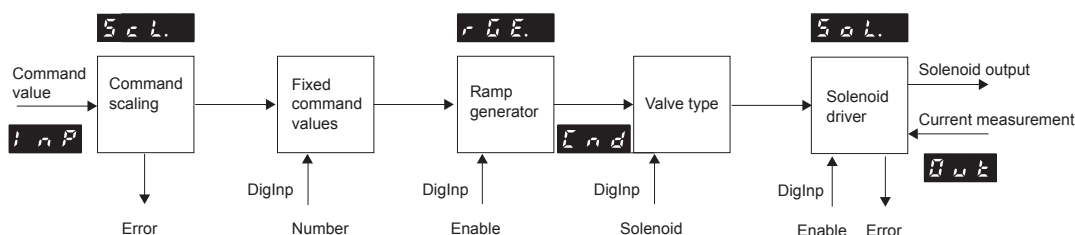
**ACCESSORIES**

USB adapter PD2	Article no. 726.9900
incl. USB cable type A-B, 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. (not included in the delivery)

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

**FUNCTION DESCRIPTION**


## AMPLIFIER WITH ANALOGUE INTERFACE

### 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 configured before in PASO.

### Ramp generator

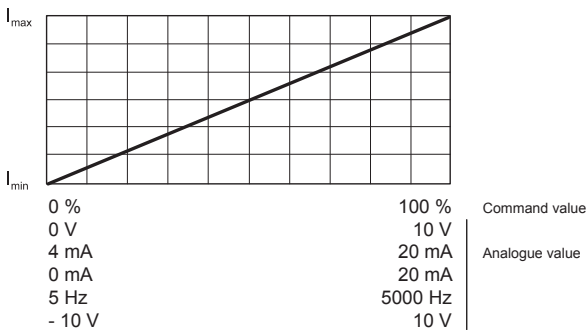
Two linear ramps for up and down are available which can be adjusted separately.

### 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 configured 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

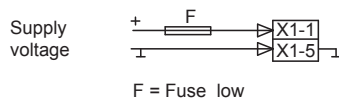
The device is enabled as per factory setting. Via PASO or menu item, the digital input can the enabling can be set „on“, „out“ or „external“ (digital input).

### Hints:

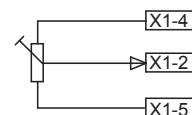
Digital input: if not wired, the state of the digital input is not defined  
Analogue input: if not wired, the voltage input will read 1.11 V constantly.

## CONNECTION EXAMPLES

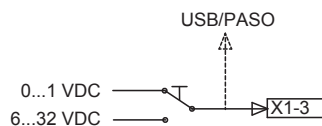
### Supply voltage



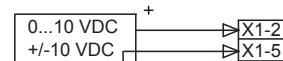
### Analogue input with potentiometer



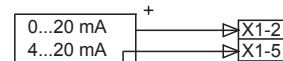
### Digital input as function input



### Analogue input voltage with external voltage source



### Analogue input current with external current source



### Digital input as USB interface

