

## MPZ SERIE



### For control unit, switching programs

- ➡ Wire-wound potentiometer (2W)
- ➡ Resistance 100R ... 100K
- ➡ Adjustable limit switches
- ➡ Program channels (free settings) 1-4

### Product description

High class motorized potentiometer with fine draw potentiometer. Easy and fast programmable of each channel. Different cycle time are available for maximum use of potentiometer range. With the removable turning knob it will be easy to mount them to a front plate in control enclosure.

### Application

Any time controlled application which has to be controlled with micro switches. Usable in motors, locking and emergency backup generators.

### Technical Data

Cycle time	(see order code)
Cam	NK
Adjustable limit switches	NK4101/20°
Program channels (free setting)	NK4201/180°
Snap action switch	KS25B4
Mechanical life time	> 20 Mill.
Switching frequency	5 Hz
Contact chatter time	<4 ms
Actuating speed	>10 µm/s
Contact break	0,6 mm
Contact pressure	0,2 N
Temperature range	-40 °C +85 °C
MTBF (IEC 60050)	
Switch	ON/OFF 10 Mio cycle
Mechanical	200'000 hour
Shock resistance	2500m/s <sup>2</sup> , 6ms IEC 68-2-27
Vibrations resistance	200 m/s <sup>2</sup> , 10....2000 Hz IEC 68-2-6
Humidity	40% rh

**MPZ SERIE**



**Microswitch**



Type:	KS25B4
Function:	change over
Connection:	Cable shoe 2.8x0.55mm
Contact material:	Silver plated

**Cams**



Type:	NK4201.180 °
Function:	double cam
Adjustment range:	6 - 180° (free programmable)
Material:	Grilon T300

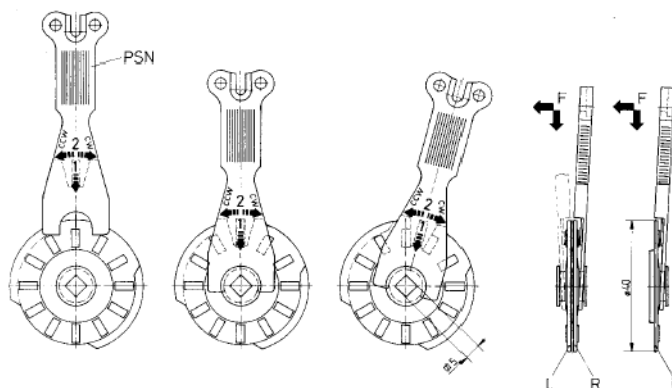
**Potentiometer**



Type:	DPZ
Resistance value:	See order key
Power:	2W
Rotation angle:	360 °

**Adjusting guideline of NK cams**

To adjust the NK cam use PSN programming Key which is included in the shipment. Put them to the NK cam and turn until you get the right switching point of your switch.



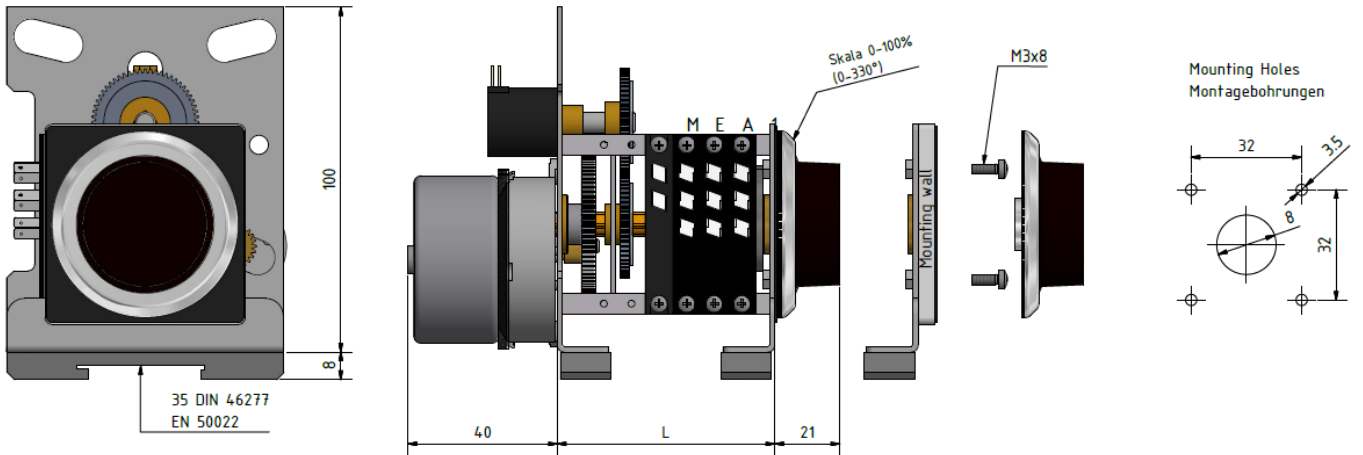
## MPZ SERIE



### Reference drawing in mm

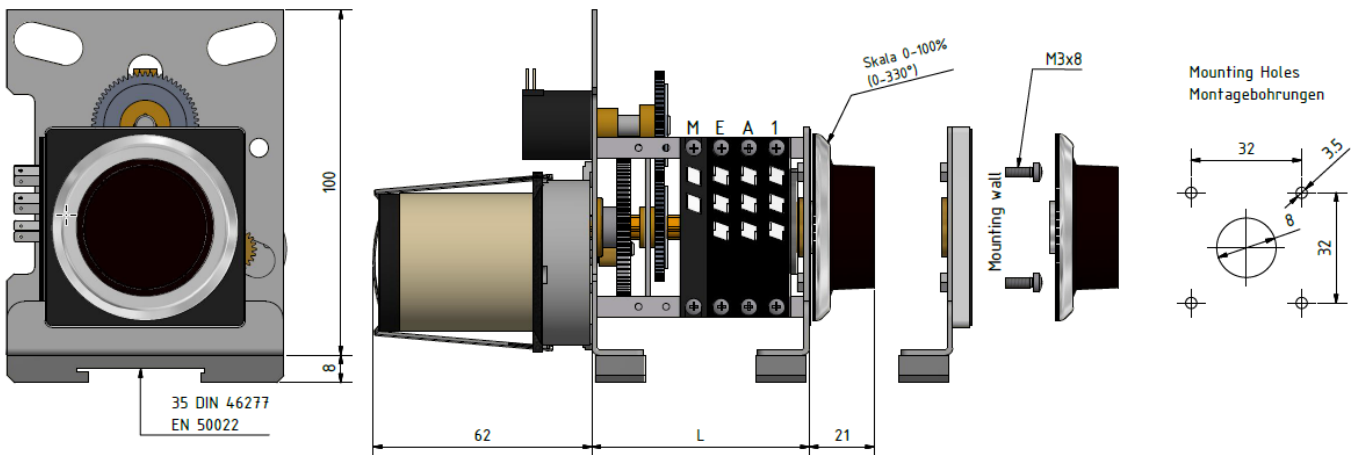
#### AC Motor

Version mit 1 Potentiometer  
Version with 1 Potentiometer



#### DC Motor

Version mit 1 Potentiometer  
Version with 1 Potentiometer



**MPZ SERIE**



Order code

**MPZ**

**911 x. x x. x x x**

911 MPZ

**SIZE**

- 0 Size 2 - 0 Switches
- 4 Size 4 - 2 switches (KS25B4), 55mm length, end position switch adjustable (NK4101/20°), no useful contact (NK4201) freely programmable, no programming key (PSN) required
- 5 Size 5 - 3 switches (KS25B4), 63mm length, 2 limit switches adjustable (NK4101/20°), 1 useful contact (NK4201) freely programmable, 1 programming key (PSN)
- 6 Size 6 - 4 switches (KS25B4), 71mm length, 2 limit switches adjustable (NK4101/20°), 2 useful contacts (NK4201) freely programmable, 1 programming key (PSN)
- 7 Size 7 - 5 switches (KS25B4), 79mm length, 2 limit switches adjustable (NK4101/20°), 3 useful contacts (NK4201) freely programmable, 1 programming key (PSN)
- 9 Size 9 - 6 Switches (KS25B4), 95mm Length, 2 limit switches adjustable (NK4101/20°), 4 useful contacts (NK4201) free programmable, 1 programming key (PSN)

**CYCLE TIME**

- 1 10 sec
- 2 15 sec
- 3 20 sec
- 4 30 sec
- 5 45 sec
- 6 60 sec
- 7 75 sec
- 8 90 sec
- 9 180 sec

**SYNCHROMOTOR (AC/DC) 50Hz**

- 1 C-Motor AC 24V CW
  - 2 C-Motor AC 48V CW / CCW
  - 3 C-Motor AC 110V CW / CCW
  - 4 C-Motor AC 220V CW / CCW
  - 5 G1-Motor DC 24V (+- 0.1) CW / CCW
  - 6 G2-Motor DC 12V (+- 0.1) CW / CCW
- 60Hz Frequency on request

**POTENTIOMETER 1 DPZ 2 Watt**

- 0 None
- 1 500Ohm
- 2 1KOhm
- 3 2KOhm
- 4 5kOhm
- 5 10kOhm
- 6 2.5kOhm
- 7 20kOhm
- 8 100kOhm
- 9 100 Ohm

**POTENTIOMETER 2 DPZ 2 Watt**

- 0 None
- 1 500Ohm
- 2 1KOhm
- 3 2KOhm
- 4 5kOhm
- 5 10kOhm
- 6 2.5kOhm
- 7 20kOhm
- 8 100kOhm
- 9 100Ohm

**STOP AND CONTROL UNIT FOR DC-MOTORS**

- 0 None
- 1 PRSG.2 Controller print stop and switch E and A
- 2 PSG.2 Stop unit for DC motors - two switches
- 3 PRSG.3 Controller print stop and switch E and A + 1
- 4 PSG.3 Stop unit for DC motors - three switches
- 5 MR265 4-20mA current interface 2 wire technology
- 6 MR265 4-20mA current interface 4 wires, GND supply, 2 sensor wires
- 7 MR267 4-20mA current input for control isolated
- 8 MR267 0-10V voltage interface for control isolated

# 10 Turn-Motorized potentiometer drive 10 Gang-Motorpotentiometerantrieb

## Serie MPZ

### Order key

MPZ41 04 1 C1 1 1 0

incl. 1 Potentiometer, each further costs additionally in accordance with price list accessories  
max. 3 Potentiometer

#### Size / Dimension (mm) / Number of switches:

4	-->Size
55 mm	-->Dimension (L)
<b>04</b>	= 2 Switches
2 Adjustable limit switches (NK4101/20°) + 0 Program channels free setting (NK4201)	
6	-->Size
71 mm	-->Dimension (L)
<b>06</b>	= 4 Switches
2 Adjustable limit switches (NK4101/20°) + 2 Program channels free setting (NK4201)	
1 Program key (PSN)	
9	-->Size
95 mm	-->Dimension (L)
<b>09</b>	= 6 Switches
2 Adjustable limit switches (NK4101/20°) + 4 Program channels free setting (NK4201)	
1 Program key (PSN)	

#### Cycle times (sec.):

1	= 20s	2	= 30s	3	= 45s
4	= 60s	5	= 90s	6	= 120s
		7	= 180s		

#### Synchronous motor: Power supply (AC / DC) Frequency 50Hz (60Hz)

		CW	CCW	
<b>C1</b>	= 24	/	24V	AC
<b>C2</b>	= 48	/	48...	50V AC
<b>C3</b>	= 110	/	110...	120V AC
<b>C4</b>	= 220	/	220...	240V AC
<b>G1</b>	= 24	/	24V ± 0.1	DC
<b>G2</b>	= 12	/	12V ± 0.1	DC

On request

#### 10-Turn-Precision wire wound potentiometer (Type DPZ, 2W): Resistance

1	= 100Ω	2	= 200Ω	3	= 500Ω	4	= 1KΩ
5	= 2KΩ	6	= 5KΩ	7	= 10KΩ		

#### 10-Turn-Precision wire wound potentiometer (Type DPZ, 2W): Resistance

8	= 2.5KΩ	9	= 20KΩ	10	= 50KΩ
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#### Wire-wound potentiometer: Resistance

0	= -
1	= PRSG.2
2	= PSG.2
3	= PRSG.3
4	= PSG.3

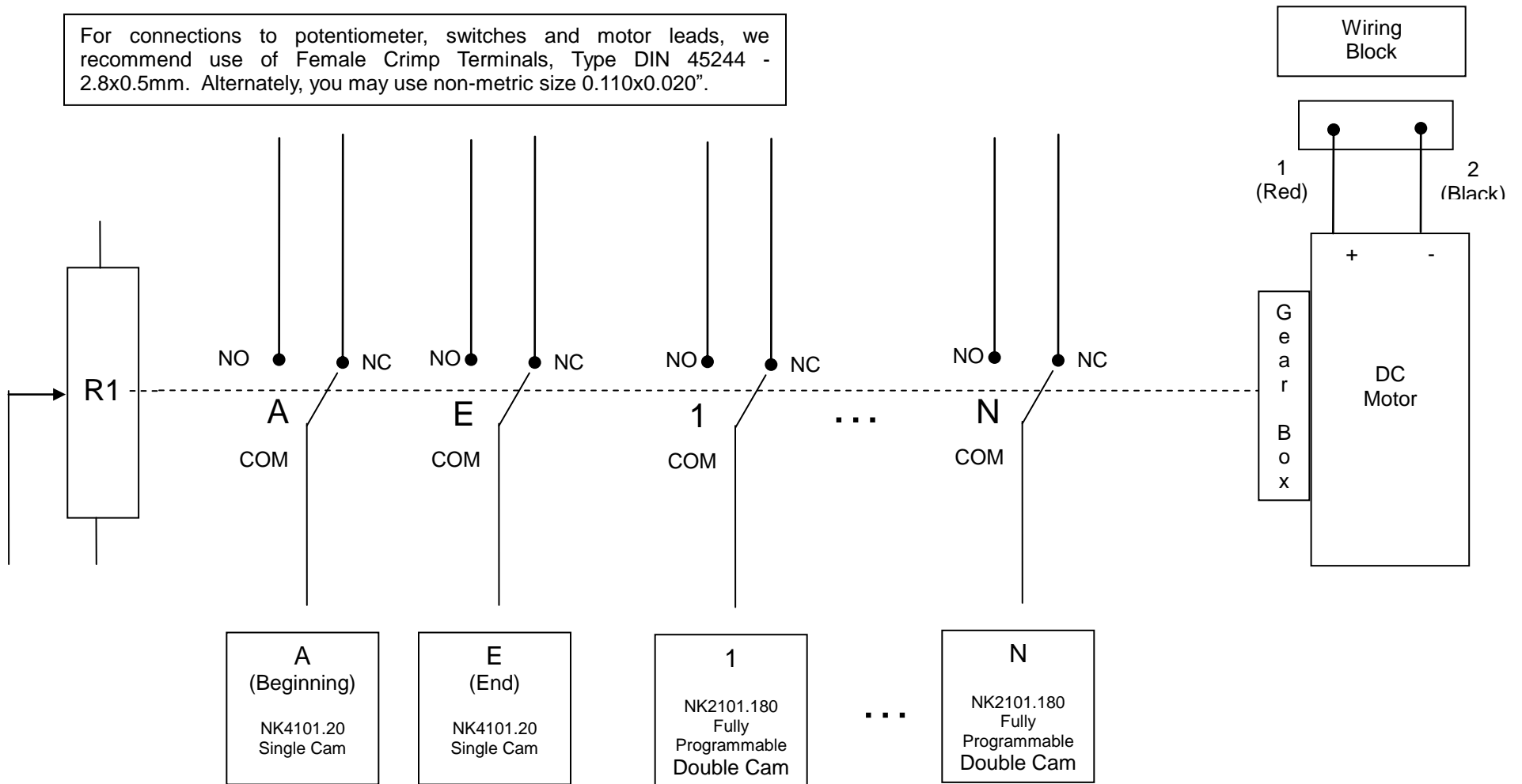
Ex.: MPZ4104-7-G2-1094

meant for the potentiometer choice:  
R1=50KΩ, R2=20KΩ, R3=1KΩ

Special products will be produced under a new article number.

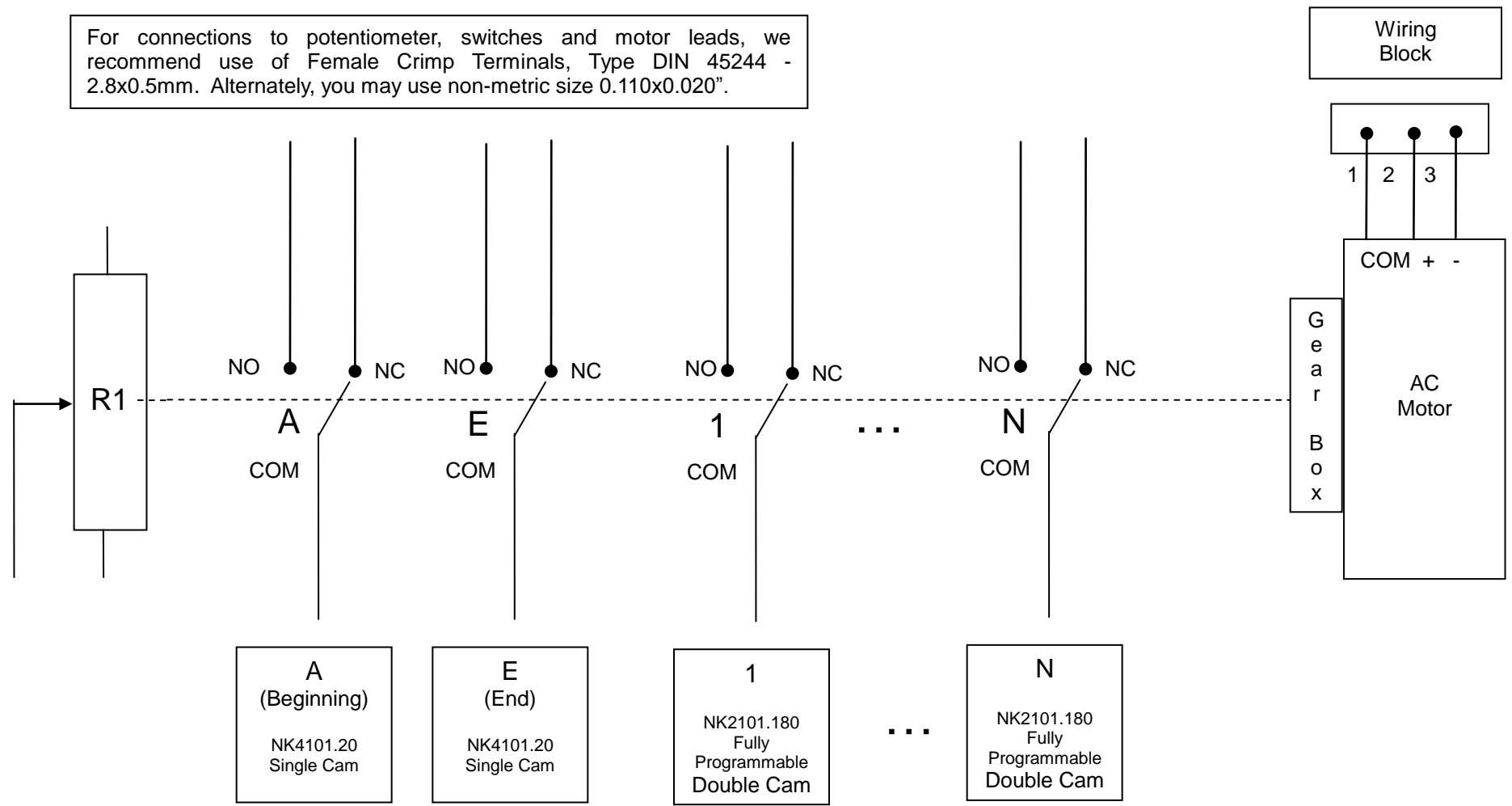
DC Direct Drive Motorized Potentiometer Electrical Diagram (All MP/MPF/MPP/MPR/etc. Series)

For connections to potentiometer, switches and motor leads, we recommend use of Female Crimp Terminals, Type DIN 45244 - 2.8x0.5mm. Alternately, you may use non-metric size 0.110x0.020".



AC Direct Drive Motorized Potentiometer Electrical Diagram (All MP/MPF/MPP/MPR/etc. Series)

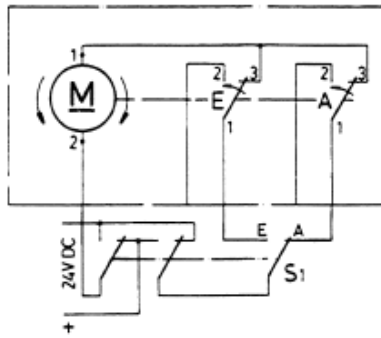
For connections to potentiometer, switches and motor leads, we recommend use of Female Crimp Terminals, Type DIN 45244 - 2.8x0.5mm. Alternately, you may use non-metric size 0.110x0.020".



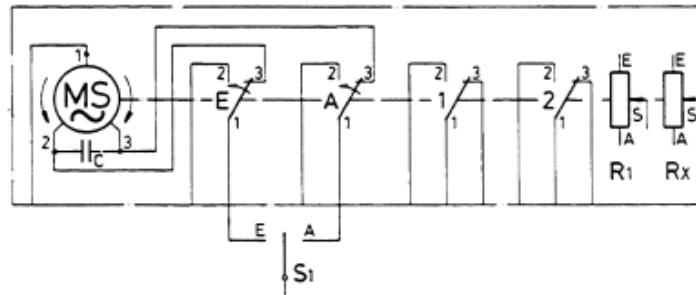
Typical MP Series Motorized Potentiometer Connections

The two primary single-cam switches are designated **A** (German "Anfang"=Beginning) and **E** (German "Ende"=End) which are typically set to the 0% and 100% limits, respectively, of the potentiometer. The A/E limit switches can also be set to any other region of the potentiometer that is specific to an application.

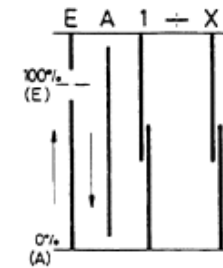
Motorpotentiometer



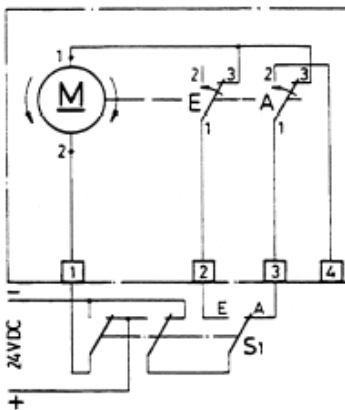
Motorized potentiometer



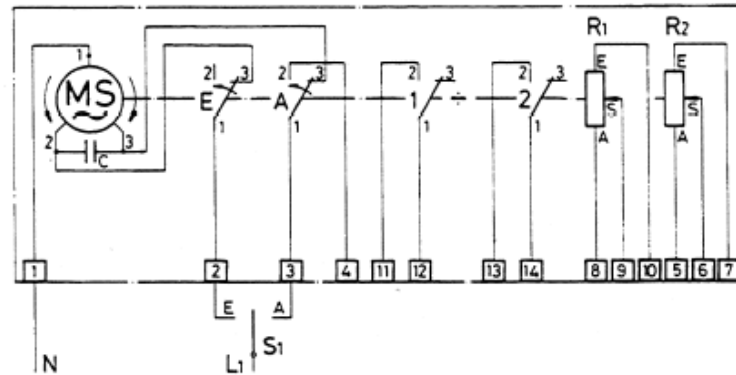
MPP, MPR, MPF, MPRE, MPPS, MPPR, MPZ



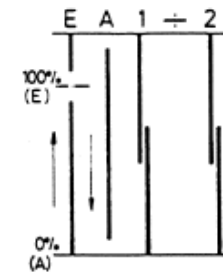
Motorpotentiometer



Motorized potentiometer



MPC (KG13)



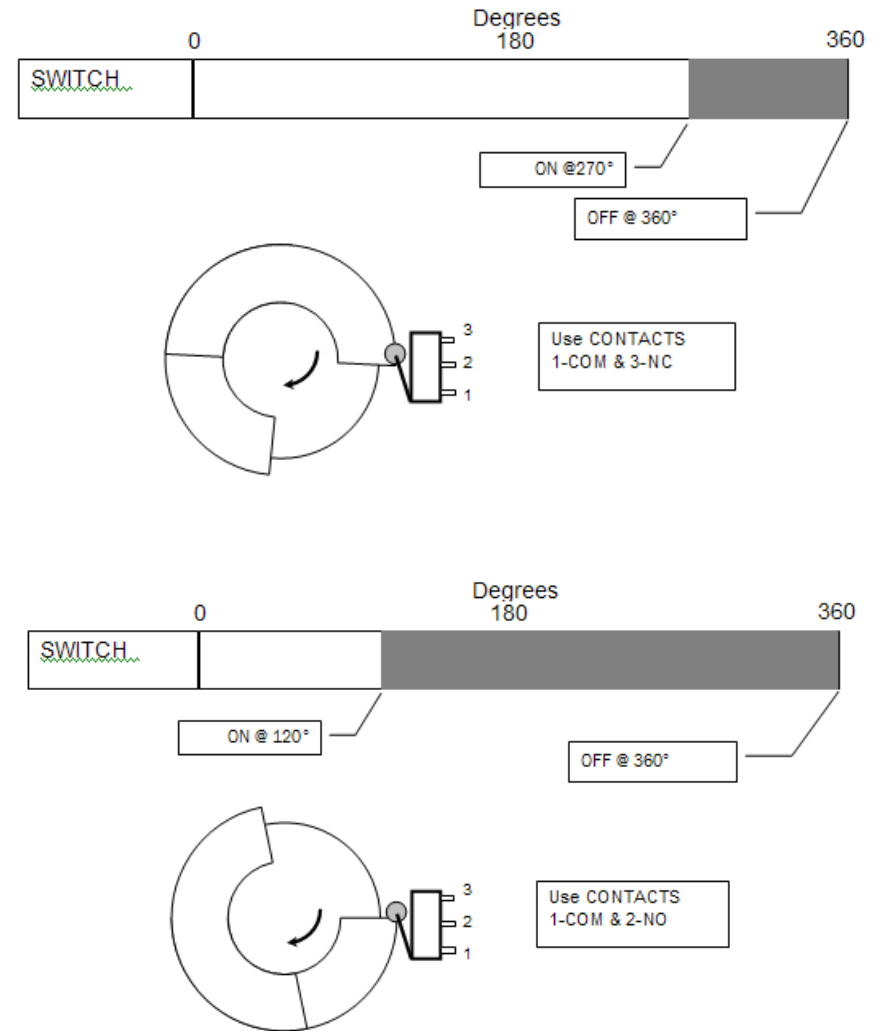


Cam Programming (General Guidance)

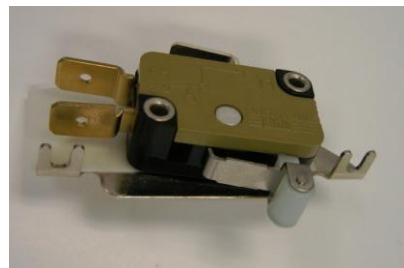
Single cams can produce only a fixed single pulse (20° wide) if switch channel uses standard NV4101.20 single cams.

Double cams (NK4201.180) can be programmed for a switching profile of 4° to 356°. Due to the design of the cam, switches cannot be disengaged for more than 180°.

If the system requires that the switch does not make contact for more than 180°, the normally closed (NC) contact must be wired. For programs greater than 180°, the NO contact is used. The right-hand illustrations depict these two cam programming cases. It is always helpful to diagram the desired switch settings before wiring and programming the cams.



KS25B4 Precision  
Snap Action Switch



S84 Series  
Enclosed Microswitch

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## Micronor Switch Types (General Guidance)

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### MICRONOR Standard

Most Micronor standard products used the proprietary and proven Model KS25B4 Precision Snap Action Switch. Electrical rating is 4A 250 VAC/ 1A 60 VDC.

For replacements, order: **Micronor P/N 6099.00.035**



### For Special Heavy Duty Applications

Some applications require a higher rated, enclosed microswitch. Typical for use in special motor potentiometer, cam timers and rotary limit switch applications is the S84 series Controlled Opening Microswitch. Electrical rating is 10A 250 VAC/6A 24VDC.

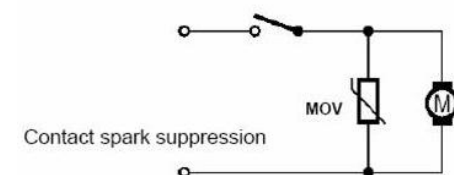
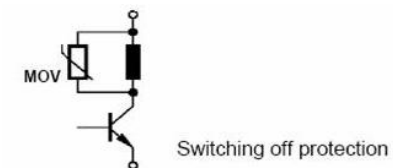
For replacements, order: **Micronor P/N 6099.26.024**




Higher rated microswitches (to 20A) as well as MIL-rated switches are also available.

### Contact Arcing Protection With Relay (Inductive) Loads




Consult [www.littlefuse.com](http://www.littlefuse.com) for MOV (varistor) product information and application notes



GENERIC Wiring and Cam Programming Table (to be filled in by user)

Wiring Block Contact No.	CAM PROGRAM (in Degrees)		SWITCH CONTACT DESIGNATION			Customer Circuit ID	SWITCHING DIAGRAM	
	ON	OFF	COM	NC	NO		0°	360°
							 Denotes Closed Contact	
1								
2								
3								
4								
5								
6								
7								
8								

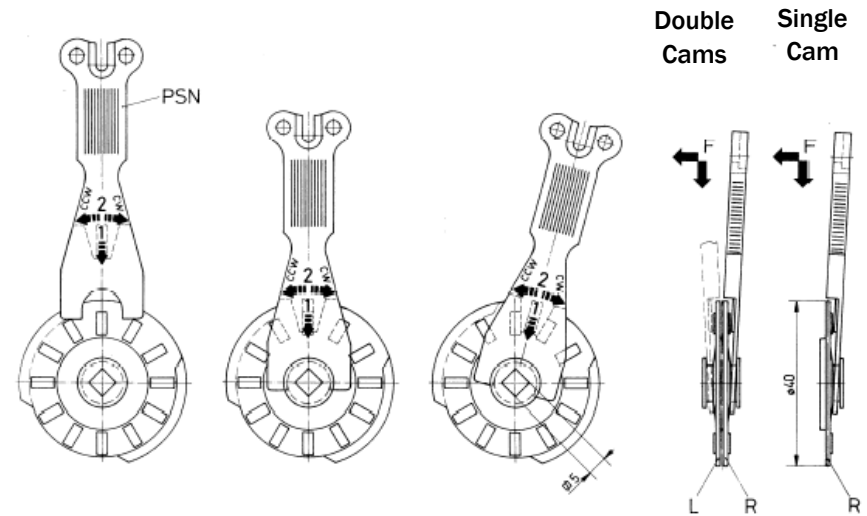
**EXAMPLE:**

Wiring Block Contact No.	CAM PROGRAM (in Degrees)		SWITCH CONTACT DESIGNATION			Customer Circuit ID	SWITCHING DIAGRAM	
	ON	OFF	COM	NC	NO		0°	360°
							 Denotes Closed Contact	
1	10	90	X			SW1		
2				X		SW1		
3	45	225	X			SW2		
4					X	SW2		

Cam Programming (NK Series with PSN Black key)

Programming the switching profile is done with the PSN (black) cam programming tool. The general technique is shown in the diagram to the right.

- Step 1 Insert PSN key into unit, as shown in right hand figure, with the numbered side away from the cam and the notched side towards the cam.
- Step 2 While gently applying pressure against the cam with the key, rotate the cam to the desired position.
- Step 3 For double cams (NK4201), adjust the other side of the cam by flipping over the key and repeating steps 1 and 2 on the other side of the cam.
- Step 4 Test the unit to confirm that the switch engages and disengages at the selected positions.



**Single Cam (20°)**

**Double Cam (1 side Shown, 180°)**

