



**Electric Part-turn Lever Actuators
with a Variable Output Speed**

CATALOGUE

MODACT MPR

Type numbers 52 221 - 52 223



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ZPA Pečky, a.s. is certified company in accordance with ISO 9001 as amended.

1. APPLICATION

The **MODACT MPR Variant** electric lever actuators operating at a variable control speed have been specially designed for the control of actuating variables (*final control elements of continuous and discontinuous regulating systems - flaps, louvers and valves*) in industrial automation and control systems.

2. OPERATING CONDITIONS, OPERATING POSITION

Operating conditions

The electric actuators should withstand the effect of operating conditions and external influences, Classes AC1, AD5, AE4, AF2, AG2, AH2, AK2, AL2, AM-2-2, AN2, AP3, BA4 a BC3, according to ČSN Standard 33 2000-5-51 ed. 3.

When placed on an open area, the actuator is recommended to be fitted with a light shelter to protect it against direct action of atmospheric effects. The shelter should overhang the actuator contour by at least 10 cm at the height of 20 – 30 cm.

If the actuator is used at a location with an ambient temperature under +10 °C and/or relative humidity above 80 %, at a sheltered location, or in the tropical atmosphere, the anti-condensation heater which has been built in all actuators, should be always used.

Installation of the actuators at a location with incombustible and non-conducting dust is possible only if this has no adverse effect on their function. In this case, the provisions laid down in ČSN Standard 35 3205 should be strictly observed. It is advisable to remove dust whenever the layer of dust becomes as thick as about 1 mm.

Notes:

A sheltered location is considered a space where atmospheric precipitations are prevented from falling at an angle of up to 60° from the vertical.

The location of the electric motor should be such that cooling air has free access to the motor and no heated-up blown-out air is drawn in the motor again. For air inlet, the minimum distance from the wall is 40 mm. Therefore, the room in which the motor is located should be sufficiently large, clean and ventilated.

Protective enclosure

Type IP 55, according to ČSN EN 60529.

Temperature

Operating ambient temperature for actuators **MODACT MPR** is -25° to +70°C.

Classes of external influences – as extracted from ČSN Standard 33 2000-5-51 ed. 3.

Class:

- 1) AC1 – Altitude ≤ 2,000 m above sea level
- 2) AD5 – Splashing water in all directions
- 3) AE4 – Small dust content of air
- 4) AF2 – Corroding atmosphere and pollutants; the presence of corroding pollutants is significant.
- 5) AG2 – Average mechanical stress; in current industrial plants
- 6) AH2 – Medium vibrations; in current industrial plants
- 7) AK2 – Serious risk of growth of vegetation and moulds
- 8) AL2 – Serious danger of the occurrence of animals (*insects, birds, small animals*)
- 9) AM2-2 – Harmful effect of escaping vagabon currents
- 10) AN2 – Medium solar radiation with intensities > 500 W/m² and ≤ 700 W/m²
- 11) AP3 – Medium seismic effects; acceleration > 300 Gal ≤ 600 Gal
- 12) BA4 – Personal abilities; instructed people
- 13) BC3 – Frequent contact with the earth potential; persons coming frequently into contact with “live” parts or standing on a conducting base

Corrosion protection

Actuators are standardly delivered with surface treatment corresponding to category of corrosion aggressiveness C1, C2 and C3 according to ČSN EN ISO 12944-2.

On customer's request is possible to do surface treatment corresponding to category of corrosion aggressiveness C4, C5-I and C5-M.

In following table is provided an overview of environment for each categories of corrosion aggressiveness according to ČSN EN ISO 12944-2.

Corrosion aggressiveness level	Example of typical environment	
	Outdoor	Indoor
C1 (very low)		Heated buildings with clean atmosphere e.g. offices, shops, schools, hotels.
C2 (low)	Atmosphere with low level of pollution. Mostly outdoor areas.	Unheated buildings, in which may occur condensation, e.g. stocks, sports halls.
C3 (middle)	Urban industrial atmospheres, mild pollution of sulfur dioxide. Seaside areas with middle salinity.	Production areas with high humidity and low air pollution, e.g. food industry, processing factories, breweries.
C4 (high)	Industrial areas and seaside areas with middle salinity.	Chemical plants, swimming pools, seaside shipyard.
C5-I (very high – industrial)	Industrial areas with high humidity and aggressive atmosphere.	Buildings or areas with predominantly continuous condensation and high air pollution.
C5-M (very high – seaside)	Seaside areas with high salinity.	Buildings or areas with predominantly continuous condensation and high air pollution.

Operating position

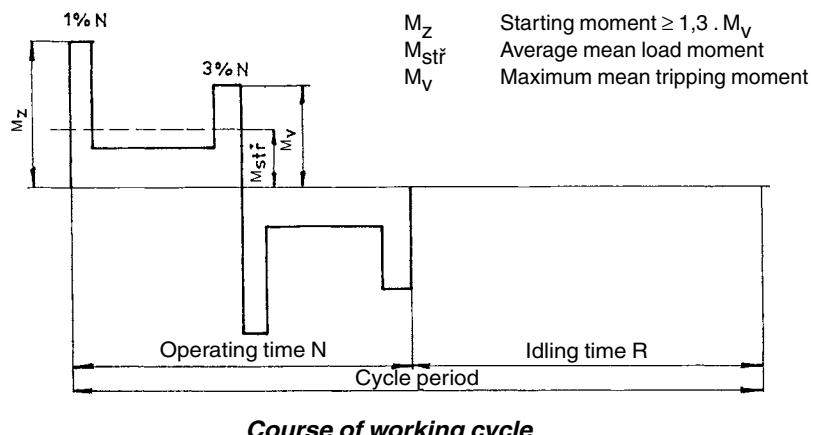
The actuators can be used in any operating position.

3. OPERATION MODE, SERVICE LIFE OF ACTUATORS

Operating mode

According to ČSN EN 60 034-1, actuators can be operated in S2 load category. The operation time at +50 °C shall be 10 minutes, the mean load moment value shall be below or equal to 60 per cent of the maximum switch off moment (M_V). According to ČSN EN 60 034-1, the actuators can also be operated in the S4 mode (*interrupted operation with acceleration intervals*). The load factor N/N+R shall be maximum 25 per cent, the longest operation cycle N+R is 10 minutes (*the course of load is shown in the picture*). The maximum number of switching actions in automatic control mode is 1200 actions per hour. The average mean load moment at load factor of 25 per cent and 50 °C shall not exceed 40 per cent of the maximum tripping moment (M_V).

The average mean load moment shall not exceed the nominal moment of the actuator.



Course of working cycle

Service life of actuators

The actuator intended for shut-off valves must be able to perform at least 10,000 operating cycles (C - O - C).

The actuator intended for regulating purposes must be able to perform at least 1 million cycles with operation time (*during which the output shaft is moving*) at least 250 hours. Service life in operating hours (h) depends on load and number of switching. Not always, high frequency of switching influences positively accuracy of regulation. For attaining the longest possible faultless period and service life, frequency of switching is recommended to be set to the lowest number of switching necessary for the given process. Orientation data of service life derived from the set regulation parameters are shown in the following table.

Service life of actuators for 1 million starts

Service life [h]	830	1 000	2 000	4 000
Number of starts [1/h]	Max. number of starts 1200	1 000	500	250

4. TECHNICAL DATA

If there is not the actuator equipped overcurrent protection when you buy, it is necessary, that this protection will be ensure externally.

Parameter	Unit	Type of electric motor		
		J9A10-00	J10A12-00	J11A11-00
Motor power	W	16	25	50
Excitation phase voltage	V	230	230	230
Control phase voltage	V	230	230	230
Frequency	Hz	50	50	50
Rated voltage of brake	V	230	230	230
Starting torque	Nm	0,33	0,56	1,0
Rated speed of motor	1/min	1150 - 10 %	1250 - 10 %	1100 - 10 %
Rated current of brake	A	0,1 + 10 %	0,1 + 10 %	0,14 + 10 %
Rated current of motor	A	0,41 + 10 %	0,51 + 10 %	0,92 + 10 %
Weight	kg	9	14,5	27

Noise

Level of acoustic pressure A max. 85 dB (A)
Level of acoustic output A max. 95 dB (A)

Tripping torque

At the factory, the tripping torque has been adjusted as shown in Table 1, according to the customer's requirements. If no tripping torque adjustment has been specified by the customer the maximum tripping torque is adjusted.

Sense of rotation

When looking at the output shaft in the direction towards the control box, the CLOSE direction of rotation is identical with the clockwise sense.

Working stroke

The ranges of working stroke are given in Table No. 1.

Manual control

Manual control is performed directly by a handwheel (*without clutch*). It can be used even when the electric motor is running (*the resulting motion of the output shaft is determined by the function of the differential gear*). When the handwheel is rotated clockwise the output shaft of the actuator also rotates clockwise (*when looking at the shaft towards the control box*). On condition that the valve nut is provided with left-hand thread, the actuator closes the valve.

Torque-limit switches in the actuator are set and work when the actuator is under voltage.

When using the manual control, ie. actuator is controlled mechanically, the torque-limit switches doesn't work and the valve can be damaged.

5. ACTUATOR OUTFIT

Torque-limit switches

The actuator is fitted with two torque-limit switches (*MO – OPEN, MZ – CLOSE*) (type DB1G-A1LC), each of which acts only in one direction of motion of the actuator output shaft. The torque-limit switches can be set to operate at any point of the working stroke except the region in which they are locked (see *Starting torque*).

The tripping torque can be adjusted within the range shown in Table 1. The torque-limit switches are locked if the load torque is lost after they have been brought into the OFF-position. This feature secures the actuator against the so-called “pumping”.

Position switches

Position PO, PC position switches define the working stroke of the actuator – each one end position. Actuators with current transmitter, resistive transmitter and transmitter – type DB1G-A1LC - 2 pcs.

Signal switches

Output shaft positioning of the actuator is signaled by two signal switches SO, SC, each for one direction Movement of the output shaft. The point of switching of the microswitches can be adjusted in the entire working stroke range exceptOf the narrow band before the switch point of the microswitch, which switches off the electric motor.

Position transmitters

MODACT MPR servomotors can be supplied without a position transmitter or can be equipped with a position transmitter:

a) 1 x 100 Ω Resistive Transmitter

Technical parameters:

Position sensing	odporové
Angle of rotation	0° – 320°
Linearity	≤ 1 %
Transient resistance	max. 1,4 Ω
Allowed voltage	50 V DC
Maximum current	100 mA

b) Type CPT 1Az passive current transmitter. Power supply to the current loop is not a part of the actuator. Recommended feeding voltage is 18 – 28 V DC, at maximum loading resistance of the loop 500 ohm. The current loop should be earthed in one point. Feeding voltage need not be stabilized; however, it must not exceed 30 V or else the transmitter could be damaged.

Range of CPT 1Az is set by a potentiometer on the transmitter body and its starting value by corresponding partial turning of the transmitter.

Technical parameters of CPT 1Az:

Scanning of position	capacity	
Working stroke	adjustable 0° – 40° to 0° – 120°	
Non-linearity	≤ 1 %	
Non-linearity, including gears	≤ 2.5 % (for a maximum stroke of 120°)	
Hysteresis, including gears	≤ 5 % (for a maximum stroke of 120°)	
<i>(The non-linearity and hysteresis are related to a signal value of 20 mA).</i>		
Loading resistance	0 – 500 ohm	
Output signal	4 – 20 mA or 20 – 4 mA	
Supply voltage	for $R_{load} = 0 – 100$ ohm for $R_{load} = 400 – 500$ ohm	10 to 20 V DC 18 to 28 V DC
Maximum supply voltage ripple	5 %	
Maximum transmitter power demand	560 mW	
Insulation resistance	20 Mohm at 50 V DC	
Insulation strength	50 V DC	
Operational environment temperature	-25 °C to +60 °C	
Operational environment temperature – extended range	-25 °C to +70 °C (additional on demand)	
Dimensions	ø 40 x 25 mm	

c) **Type DCPT3 active current transmitter.** Power supply to the current loop is not a part of the actuator. Maximum loading resistance of the loop is 500 ohm.

DCPT3 can be easily set by two push-buttons with LED diode on the transmitter body.

Technical parameters of DCPT3:

Scanning of position	contact-less magneto-resistant
Working stroke	adjustable 60° – 340°
Non-linearity	max. ±1 %
Loading resistance	0 – 500 ohm
Output signal	4 – 20 mA or 20 – 4 mA
Power supply	15 – 28 V DC, < 42 mA
Working temperature	-25 °C to +70 °C
Dimensions	Ø 40 x 25 mm

For the transmitters CPT 1Az as well as DCPT3, a two-wire connection is used, i.e., the transmitter, the power supply and the load are connected in series. The user should secure that the two-wire circuit of the current transmitter is connected to the electric earth of the associated regulator, computer, etc. This connection should only be made at a single point in any section of the circuit, outside the actuator.

Anti-condensation heater

The actuators are fitted with an anti-condensation heater preventing condensation of water vapour. It is connected to the AC mains of voltage 230 V.

Local control

Local control serves for controlling the actuator from the site of its installation. It includes two change-over switches: one with positions "Remote control - Off - Local control", the other "Open - Stop - Close". The former change-over switch can be built-in as two-pole or four-pole. The change-over switches are installed in a terminal-board box and the control elements on the lid of this terminal-board box.

6. ELECTRIC PARAMETERS

External electric connection

a) Actuator terminal board

The electric actuator is equipped with a terminal board for connection to external circuits. This terminal board uses screw terminals allowing conductors with a maximum cross-section 4 mm² to be connected. Access to the terminal board is obtained after removal of the terminal box cover. All control circuits of the electric actuator are brought out to the terminal board. The terminal box is fitted with cable bushings for connecting the electric actuator. The electric motor is fitted with an independent box with a terminal board and a bushing.

b) Connector

According to the customer's requirements the **MODACT MPR** actuators can be fitted with the connector to provide for connection of control circuits. This connector uses screw terminals allowing conductors with a maximum cross-section 2.5 mm² to be connected. ZPA Pečky, a.s. also supplies a counterpart for the cable. In order to connect the cable to this counterpart it is necessary to use special crimping pliers.

Actuator internal wiring

The internal wiring diagrams of the **MODACT MPR** actuators with terminal designation are shown in this Mounting and operating instructions.

Each actuator is provided with its internal wiring diagram on the inner side of the terminal box. The terminals are marked on a self-adhesive label attached to a carrying strip under the terminal block.

Current rating and maximum voltage of microswitches

Maximum voltage of microswitches is 250 V AC as well as DC, at these maximum levels of currents.

MO, MZ	250 V AC / 2 A; 250 V DC / 0.2 A
SO, SZ	250 V AC / 2 A; 250 V DC / 0.2 A
PO, PZ	250 V AC / 2 A; 250 V DC / 0.2 A

The microswitches can only be used as single-circuit devices. Two voltages of different values and phases cannot be connected to the terminals of the same microswitch.

Isolation resistance

Isolation resistance of electric control circuits against the frame and against each other is min. 20 Mohm. After a dump test, isolation resistance of control circuits is min. 2 Mohm. See Technical specifications for more details.

Electric strength of electric circuits isolation

Circuit of resistance transmitter	500 V, 50 Hz
Circuit of current transmitter	50 V DC
Circuits of microswitches and anti-condensation heater	1 500 V, 50 Hz
Electric motor 230 V	1 500 V, 50 Hz

Deviations of basic parameters

Maximum lever play	– Type No. 52 221, 52 222	1°
	– Type No. 52 223	2°
Switching torque adjusting accuracy range		0 to +30 % of the maximum value of the adjustment
Working stroke adjusting accuracy		1°
Hysteresis of position-limit switches		4° max.
Control time tolerance at rated supply voltage and rated torque in two-phase connection		+15 % to -30 % of the nominal control time value
Supply voltage of electric motor (<i>including brake</i>)		230 V, +10 %, -15 %; 50 Hz, ±2 %

Protection

Actuators are provided with one internal and one external protective terminal serving as protection from electric shock as per ČSN 33 2000-4-41. Also the electric motor is provided with one protective terminal. Protective terminals are identified with a sign complying with ČSN EN 60 417-1 and 2 (013760).

If actuator is not provided with over-current protection when purchased, such protection must be provided externally.

7. DESCRIPTION

The electric actuators consist of the following modules:

Electric motor

A special type of electric motor with an electromagnetic brake is used. This motor can withstand even continuous short circuit operation. (*It need not be switched off in the end positions*).

Countershaft gearbox

This gearbox serves for reducing the rotational speed between the electric motor and the input of power gearing.

Power gearing

This is an epicyclic gear unit that is centrally mounted on the output shaft. The internal gearing, together with the worm wheel with a meshing worm, form a whole.

In addition to manual control, the worm gearing provides for torque-limit switching of the electric actuator. The worm takes up the response of the epicyclic gear to the loading of the output shaft at a torque. Since the worm has been axially spring-loaded it is moved while the electric motor is running and the output shaft loaded. The displacement of the worm is proportional to the load on the output shaft. This displacement performs the torque-limit switching function. The handwheel connected with the worm, enables the electric actuator to be manually controlled.

Control box

The control box can enclose the following functional control blocks:

- a) 2 torque-limit switches
- b) 2 position-limit switches (*in addition 2 position-limit switches in the design variant with a current position transmitter or without transmitter*).
- c) position transmitter (*potentiometer, or current position transmitter - see Tab. 1*)
- d) anti-condensation heater
- e) capacitor for the electric motor

Lever system

The lever arrangement consists of a lever fitted on the output shaft of the actuator and a flange provided with adjustable stops for the lever.

Connecting pull-rod

For connecting the actuator lever to the final control element, a connecting pull-rod is available among special accessories upon special request - see Sketches P-0449 and P-0452.

Working conditions

In continuous operation (*including short-circuit run*)

- in one-phase operation with
a functional brake switching rate: 200 operations per hour
- short-time operation (*max. 24 hours*) with lifetime
of 4.5×10^6 operations switching rate: 660 operations per hour

With NOTREP controller

Minimum switching time with reversing 50 ms
Minimum switching pulse length 150 ms

Note:

The instrument receptacle and plug must not be disconnected under voltage. Even after opening the connector, the actuator must be connected to the protective conductor. Inlet cables to the connector must be fixed to the load-bearing structure at a distance of max. 150 mm from the connector.

8. ORDERING INFORMATION

When ordering, please specify the following:

- Number of actuators required
- Actuator designation and type
- Type No. (*including supplementary numbers*)
- Working stroke (*angle of lever rotation*)
- Tripping torque adjustment (*The tripping torque will be adjusted to a maximum, unless specified*).
- Position transmitter type

Example:

If two MODACT MPR Variant 16 – 25 electric actuators, Type No. 52 221, with cable bushings (*terminal block*), the working stroke of 90°, the torque range of 160 to 250 Nm, adjustment to 200 Nm and a current transmitter of 4 to 20 mA with built-in power supply are required, they should be specified in the order as follows:

2x Electric Actuator MPR 16-25, Type No. 52 221.0227, working stroke 90°, 160 – 250 Nm, adjustment 200 Nm, 4 – 20 mA.

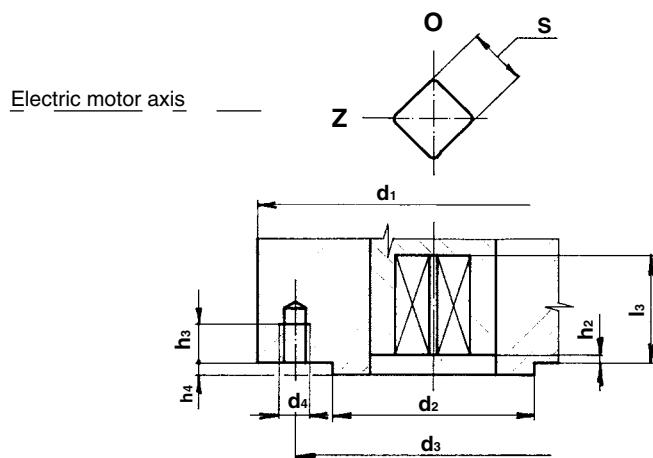
Table 1 – MODACT MPR Variant electric actuators
– technical parameters, determination of the Type No.

Type designation	Rated torque [Nm]	Quiescent torque [Nm]	Actuating time range* [s/90°]	Electric motor			Oil volume [l]	Weight [kg]	Type number	
				[W]	[μF]	Excitation phase/control phase [A]			basic	supplementary
MPR 6,3 - 10	63 - 100	290	11-19	16	2,5	0,41/0,1	0,5	50	52 221	x x 0 x
MPR 10 - 16	100 - 160	510	14-27							x x 1 x
MPR 16 - 25	160 - 250	600	22,5-46							x x 2 x
MPR 20 - 32	200 - 320	950	20-39							x x 3 x
MPR 25 - 40	250 - 400	1400	10-19	50	8	0,92/0,14	0,7	109	52 222	x x 0 x
MPR 40 - 63	400 - 630	1750	14-30							x x 1 x
MPR 63 - 100	630 - 1000	2650	30-55							x x 2 x
MPR 100 - 200	1000 - 2000	4550	50-80	50	8	0,92/0,14	0,7	239	52 223	x x 0 x
MPR 160 - 300	1600 - 3000	5950	73-138							x x 1 x
MPR 250 - 400	2500 - 4000	8940	130-195							x x 2 x
Design										
with terminal block without BMO										6 x x x
with connector without BMO										7 x x x
with terminal block and with BMO										8 x x x
with connector and with BMO										9 x x x
Working stroke										
Working stroke	60° for Type No. 52 221,2		67,5°	Type No. 52 223						x 1 x x
Working stroke	90° for Type No. 52 221,2		90°	Type No. 52 223						x 2 x x
Working stroke	120° for Type No. 52 221,2		112,5°	Type No. 52 223						x 3 x x
Working stroke	160° for Type No. 52 221,2		157°	Type No. 52 223						x 4 x x
Working stroke	90° for Type No. 52 221,2; direct connection									x 5 x x
Additional equipment										
–	Design variant without transmitter									x x x 0
V2	Potentiometer ZPA 1 x 100 ohm									x x x 1
DCPT3	Current transmitter DCPT3 4 - 20 mA; two-wire connection with built-in power supply									x x x 7
CPT 1Az	Current transmitter CPT 1Az 4 - 20 mA; two-wire connection without built-in power supply									x x x 9
Pull-rods – order according to sketches P-0449 or P-0452 verbally.										

* Range of control time depends on magnitude of load on the output shaft (control time increases with load).

FLANGE, according to DIN 5211, Part I;
 dimensions of the square end to ON 1331 19 (DIN 79)

Electric actuator (*adapter for direct connection*) in the end position



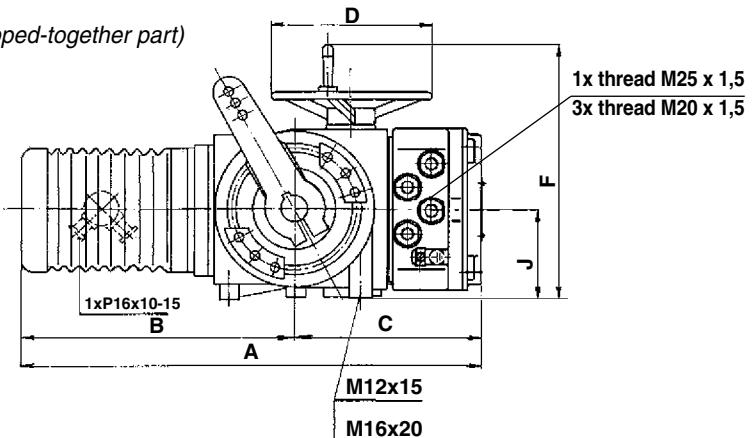
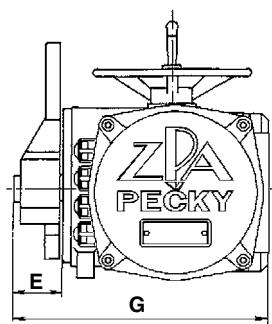
	52 221 F 10	52 222 F 14
d1	125	175
d2	70	100
d3	102	140
d4	M 10	M 16
h2	max 2	max 2
h3	min 16	min 25
h4	max 3	max 4
S H11	22	36
I3	min 24	min 38

	52 221	52 221	52 222
	16 W	25 W	50 W
A	580	637	782
B	350	407	517
C	230	230	265
D	Ø 200	Ø 200	Ø 250
E	81	81	120
F	355	355	420
G	451	451	556

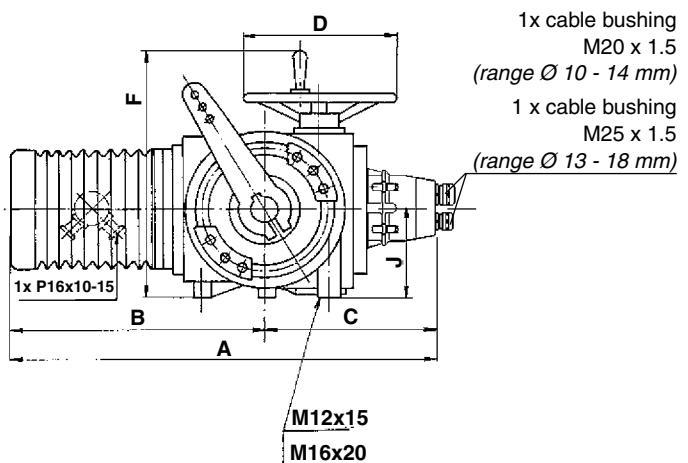
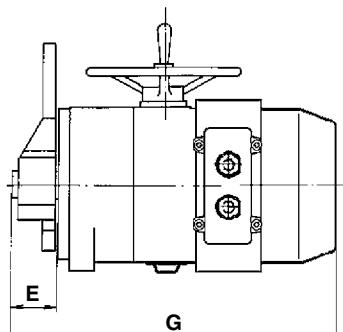
Dimensional sketches of the **MODACT MPR Variant** electric actuators,
Type Nos 52 221 – 52 222

– Design variant with a terminal block

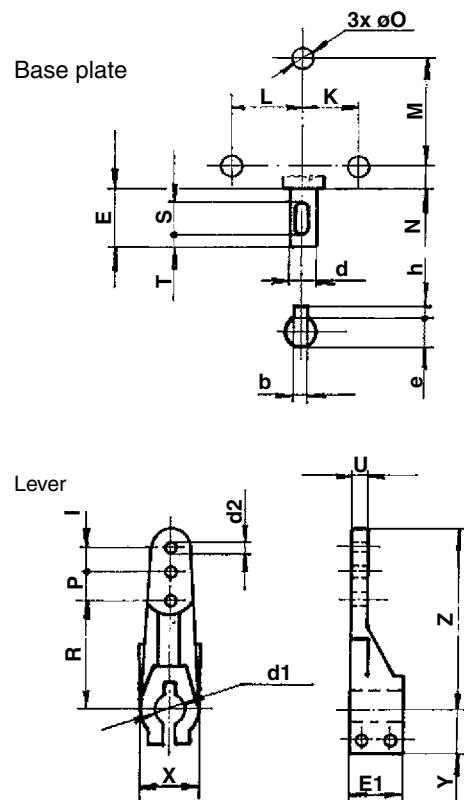
(the bushings are included in the delivery - wrapped-together part)



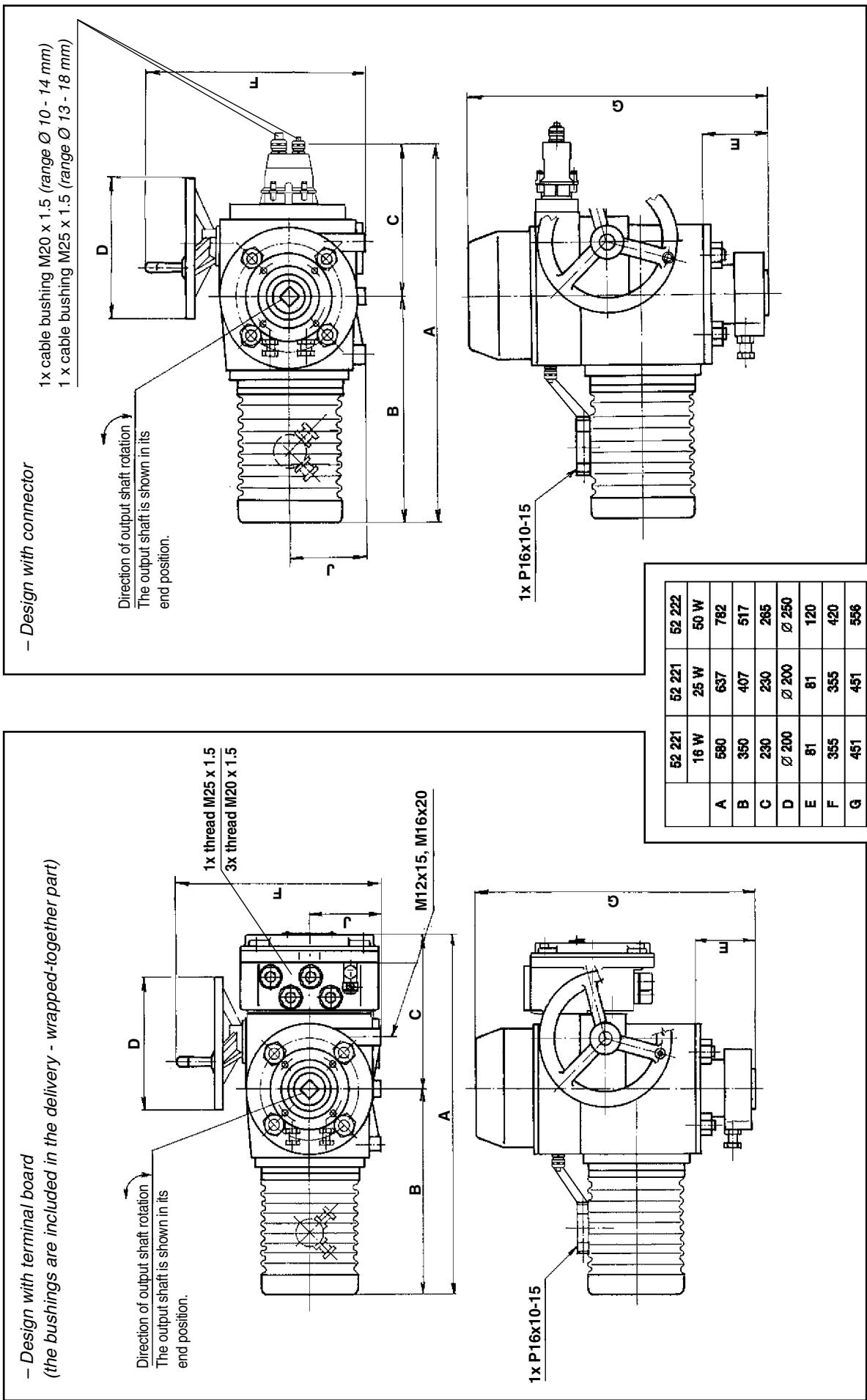
– Design variant with the connector



	terminal block		connector		
	52 221		52 222	52 221	
	16 W	25 W	50 W	16 W	25 W
A	580	637	782	580	637
B	350	407	517	350	407
C	230	265	230	230	265
D	Ø 200	Ø 250	Ø 200	Ø 200	Ø 250
E	65	85	65	65	85
E ₁	60	80	60	60	80
F	355	420	355	355	420
G	455	555	455	455	555
J	120	145	120	120	145
K	70	100	70	70	100
L	90	110	90	90	110
M	140	200	140	140	200
N	41	57	41	41	57
O	Ø 14	Ø 18	Ø 14	Ø 14	Ø 18
P	40				
R	170				
S	56	70	56	56	70
T	4	7	4	4	7
U	25	30	25	25	30
X	66	80	66	66	80
Y	41	55	41	41	55
Z	273	278	273	273	278
d h8	Ø 40	Ø 50	Ø 40	Ø 40	Ø 50
d ₁	Ø 40	Ø 50	Ø 40	Ø 40	Ø 50
d ₂ H8	3 x Ø 20	3 x Ø 25	3 x Ø 20	3 x Ø 25	
b P9	12	16	12	12	16
h	8	10	8	8	10
e	35	43,8	35	35	43,8



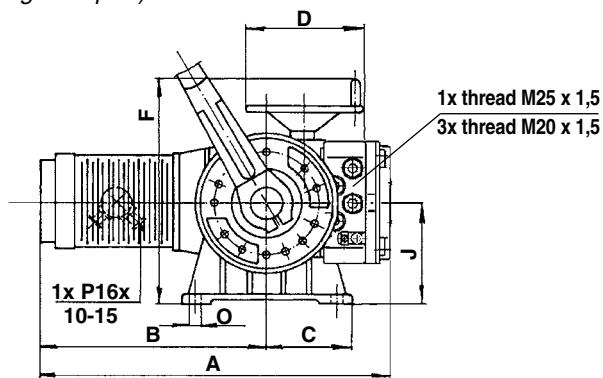
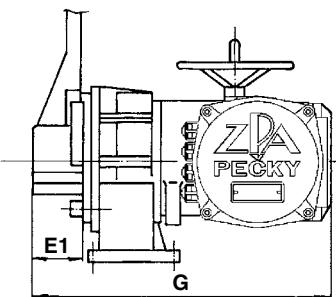
Dimensional sketches of **MODACT MPR Variant** electric actuators, Type Nos 52 221 and 52 222 with a direct-connecting adapter



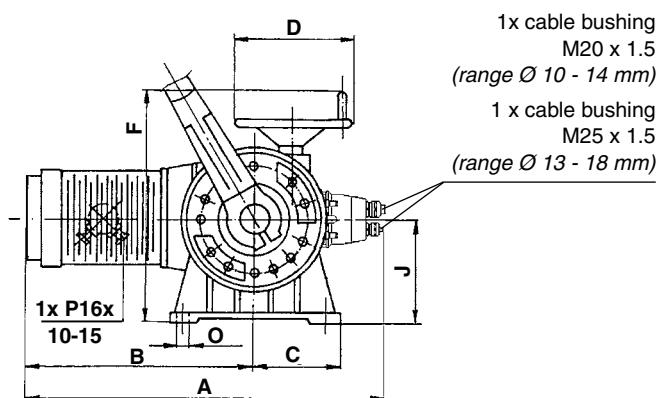
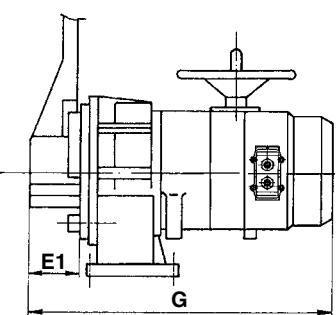
Dimensional sketches of the **MODACT MPR Variant** electric actuator, Type No. 52 223

– Design variant with a terminal block

(the bushings are included in the delivery - wrapped-together part)

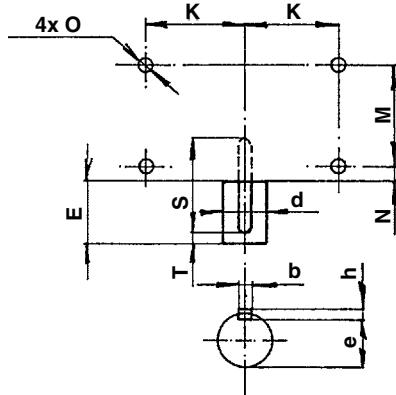


– Design variant with the connector

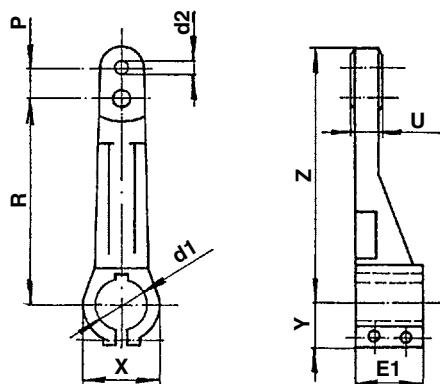


	52 223
A	793
B	548
C	220
D	Ø 250
E	123
E ₁	120
F	560
G	750
J	260
K	185
M	200
N	33
O	Ø 22
P	55
R	400
S	180
T	11
U	36
X	130
Y	80
Z	490
d	Ø 90h8
d ₁	Ø 90h7
d ₂	Ø 40h8
b	25P9
h	14
e	81,3

Base plate



Lever



Dimensional sketch of the pull rods TV 40 and TV 50

Actuator side

Controlled device side

Design TV 40-1/20, Type No. 52927
TV 50-1/25, Type No. 52929

Design TV 40-2/25, Type No. 52928
TV 50-2/25, Type No. 52930

Type	Type No.	Dimensions				Intended for actuator, Type No.
		ø D j7	ø D1 j7	A	B	
TV 40-1/20	52 927	20	25	23	min. 20 max. 50	52 221
TV 40-2/25	52 928					
TV 50-1/25	52 929	25	25	28	max. 50	52 222
TV 50-2/25	52 930					

P-0449

Dimensional sketch of the pull rods TV 90-1/40

Actuator side

Controlled device side

Left-hand thread
M30x1,5

Right-hand thread
M30x1,5

max. 2750

The tube has not been included in the scope of delivery from ZPA Pecky

Welded

Welded

67

60

40

D

B

80

Js 1 1/2"

67

60

40

D

B

Type	Type No.	Dimensions				Intended for actuator, Type No.
		ø D j7	ø D ₁ j7	A	B	
TV 90-1/40	52 934	40	—	—	min. 20	52 223
TV 90-2/25	52 935		25	12,5	max. 50	

P-0452

Internal wiring diagrams of the **MODACT MPR Variant** electric actuators

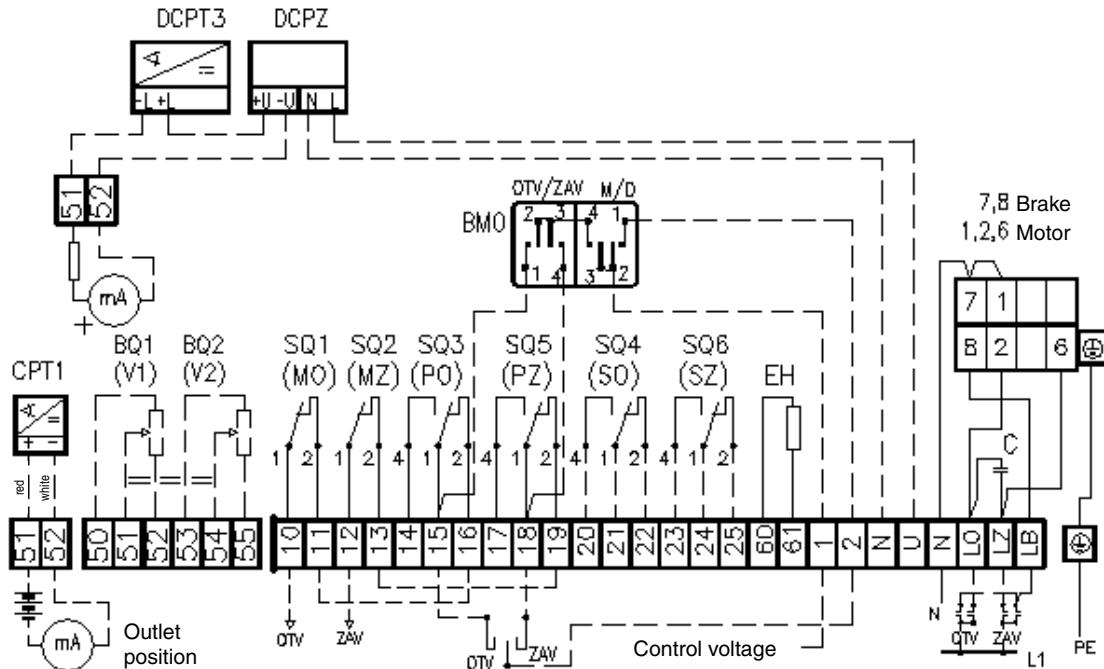
Legend:

MO	– OPEN torque-limit switch	BQ1,BQ2	– potentiometer 1 x 100 Ω
MZ	– CLOSE torque-limit switch	CPT 1Az	– Current position transmitter CPT 1Az 4 – 20 mA
PO	– OPEN position-limit switch	DCPT3	– Current position transmitter DCPT3
PZ	– CLOSE position-limit switch	DCPZ	– Power supply for the current transmitter DCPT3
SO	– OPEN signalling switch	M	– Asynchronous two-phase motor
SZ	– CLOSE signalling switch	MS	– Terminal board
H	– Anti-condensation heaters	Z	– Connector
C	– Capacitor	ST	– Temperature monitor

Internal wiring diagrams of the **MODACT MPR Variant** electric actuators

– with terminal board

P3-0957

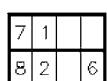


Optional accessories:

Position transmitter

- resistance V1, V2
- current passive CPT 1Az
- current active DCPT3, DCPZ
- without transmitter

Terminal board of electric motor
MODACT MPR Variant



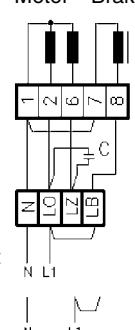
Electric motor wiring

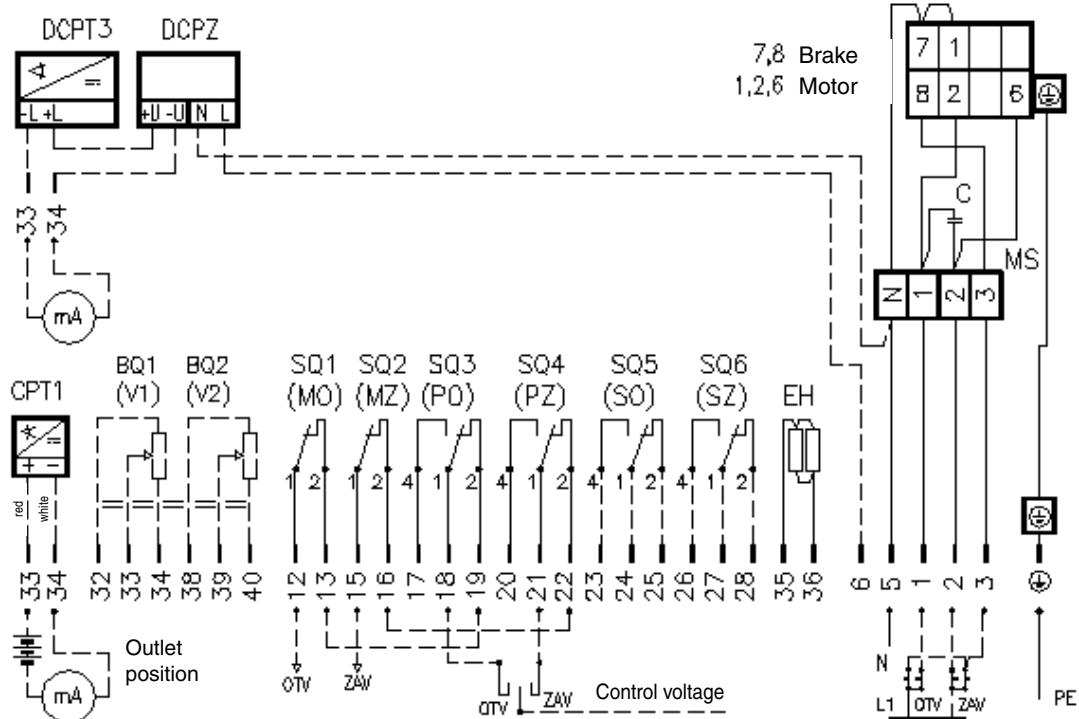
The motor and brake windings are connected to the terminal board.

Without voltage, the brake is engaged.

In switching the motor, voltage must also be connected to the brake for its releasing together with the control phase.

Motor Brake



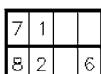


Optional accessories:

Position transmitter

- resistance V1, V2
- current passive CPT 1Az
- current active DCPT3, DCPZ
- without transmitter

Terminal board of electric motor MODACT MPR Variant

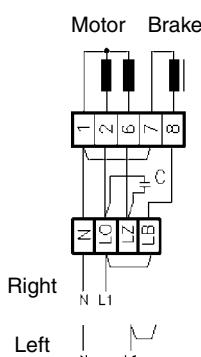


Electric motor wiring

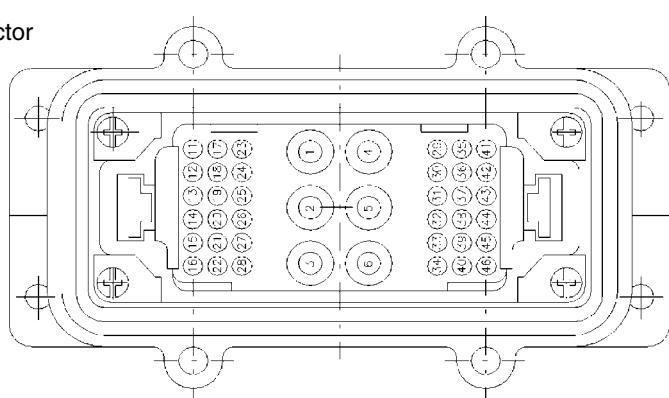
The motor and brake windings are connected to the terminal board.

Without voltage, the brake is engaged

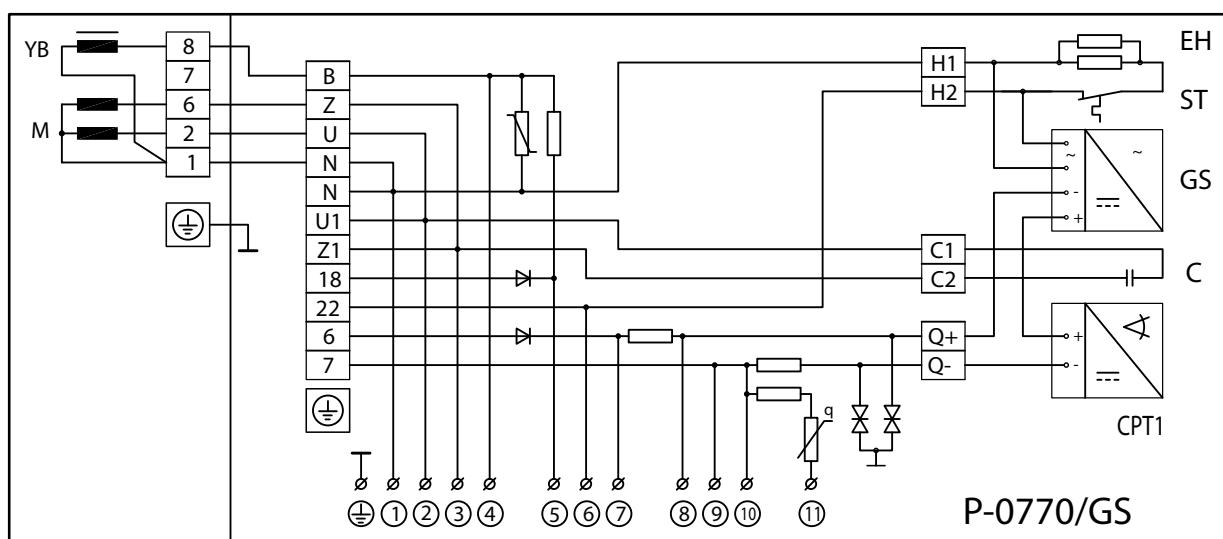
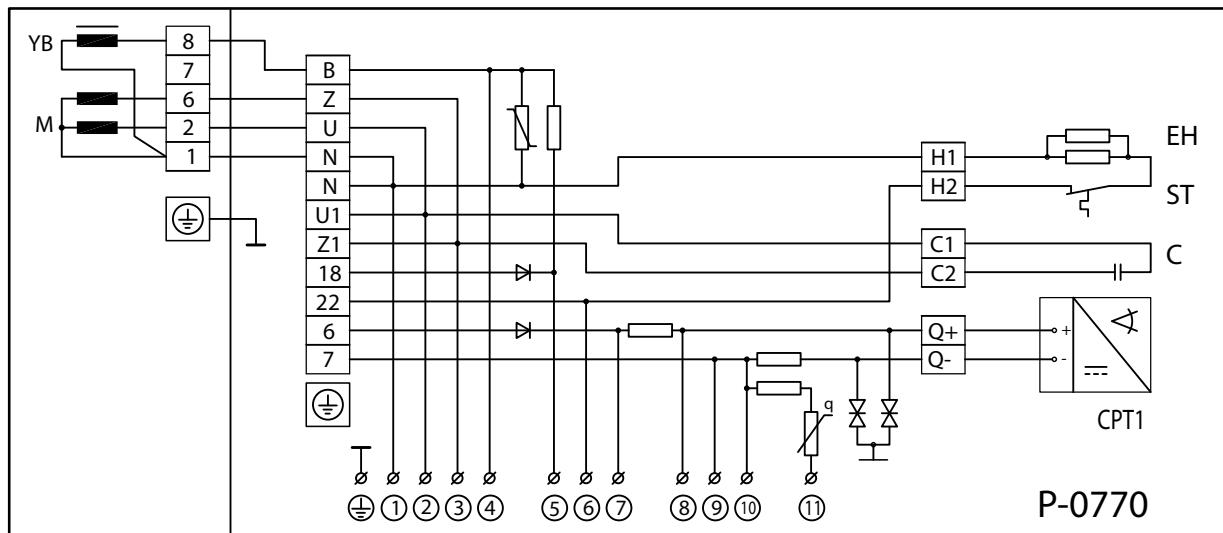
In switching the motor, voltage must also be connected to the brake for its releasing together with the control phase.



– layout of signals on the connected connector

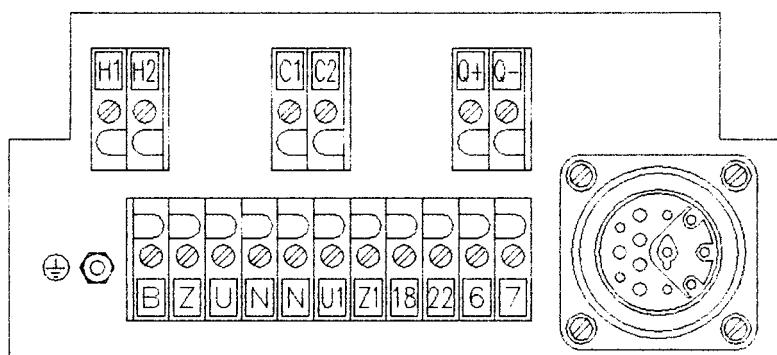


Internal wiring diagrams of the **MODACT MPR Variant** electric actuators
 Type No. 52 22x.06x9, working stroke 60 – 120°, with position transmitter CPT 1Az,
 with power supply GS – ZPT1 or without power supply



ST
 GND, ① ÷ ⑪ – temperature monitor
 – testing equipment connector contacts

Position of terminals and connector on terminal board of actuator





Development, production and services of electric actuators and switchboards.
Top-quality sheet-metal processing (TRUMPF equipment), powder paint shop.

SURVEY OF PRODUCED ACTUATORS

KP MINI, KP MIDI

Electric rotary (90°) actuators (up to 30 Nm)

MODACT MOK, MOKED, MOKP Ex

Electric rotary (90°) actuators for ball valves and flaps

MODACT MOKA

Electric rotary (90°) actuators for nuclear power stations application outside containment

MODACT MON, MOP, MONJ, MONED, MOPED, MONEDJ

Electric rotary multi-turn actuators

MODACT MO EEX, MOED EEX

Explosion proof electric multi-turn actuators

MODACT MOA

Electric multi-turn actuators for nuclear power stations application outside containment

MODACT MOA OC

Electric multi-turn actuators for nuclear power stations application inside containment

MODACT MPR VARIANT

Electric rotary (160°) lever actuators with a variable output speed

MODACT MPS KONSTANT, MPSED

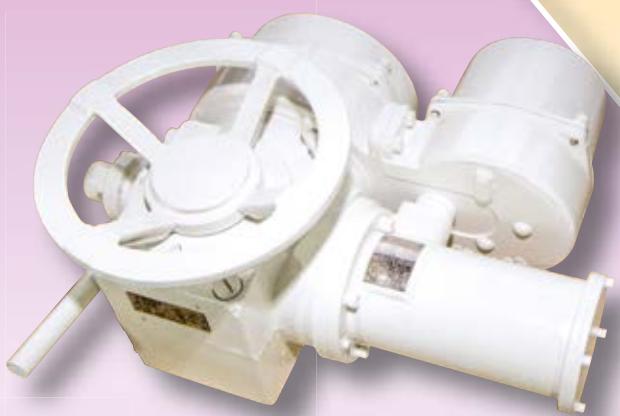
Electric rotary (160°) lever actuators with a constant output speed

MODACT MTN, MTP, MTNED, MTPED

Electric linear thrust actuators with a constant output speed

Deliveries of assembled actuator + valve (or MASTERGEAR gearbox) combinations

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ZPA Pečky, a.s.
tř. 5. května 166
289 11 PEČKY, Czech Republic
www.zpa-pecky.cz

tel.: +420 321 785 141-9
fax: +420 321 785 165
+420 321 785 167
e-mail: zpa@zpa-pecky.cz