



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

**MODACT MPSED, MPSPED
MODACT MPSED, MPSPED CONTROL**

Type numbers 52 260 - 52 266



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

1. APPLICATION

The **MODACT MPSED, MPSPED Konstant** electric part-turn (*lever*) actuators operating at a constant speed are used for remote control and automatic regulation of flaps, louvers and valves. They have been specially designed for industrial plants. The actuators should not be used for other purposes than those specified, without prior consultation with the manufacturer.

2. OPERATING CONDITIONS, OPERATING POSITION

Operating conditions

The **MODACT MPSED, MPSPED** actuators should withstand the effect of operating conditions and external influences, Classes AC1, AD5, AD7, AE4, AE6, AF2, AG2, AH2, AK2, AL2, AM-2-2, AN2, AP3, BA4, BC3 a BE3 according to ČSN 33 2000-5-51 ed. 3.

When the actuator is installed on a free area it is recommended to fit it with a light shelter against direct impact of atmospheric effects. The shelter should overlap the actuator contour by at least 10 cm at the height of 20 – 30 cm.

When actuators are to be installed in the working environment with temperature below -10 °C and in the environment with relative humidity above 80 %, it is always necessary to use an anti-condensation heater fitted to all actuators.

The electric actuators can be installed in areas with non-flammable and non-conductive dust, provided that this does not adversely influence their function. Here, it is necessary to strictly observe ČSN 34 3205. It is recommended to remove dust as soon as its layer is about 1 mm thick.

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 space in which the motor is located should be sufficiently large, clean and ventilated.

Surrounding temperature

Operating temperature for the **MODACT MPSED (MPSED Control)** is from -25 °C to +70 °C or from -40 °C to +60 °C.

Operating temperature for the **MODACT MPSPED (MPSPED Control)** is from -25 °C to +60 °C or from -40 °C to +60 °C (*except 52 260*).

Relative humidity from 10 to 100 % with condensation.

Classes of external effects – excerpt from ČSN 33 2000-5-51 ed. 3.

Class:

- 1) AC1 – elevation above sea level ≤ 2000 m
- 2) AD5 – splashing water in all directions
AD7 – water occurrence – shallow dipping
- 3) AE4 – medium dustiness
AE6 – strong dustiness (*MPSPED only*)
- 4) AF2 – occurrence of corrosive or polluting substances from atmosphere. Presence of corrosive polluting substances is significant.
- 5) AG2 – medium mechanical stress by impacts – common industrial processes
- 6) AH2 – medium mechanical stress by vibrations – common industrial processes
- 7) AK2 – serious risk of growth of vegetation and moulds
- 8) AL2 – serious danger of the occurrence of animals (*insects, birds, small animals*)
- 9) AM-2-2 – normal level of the signal voltage. No additional requirements.
- 10) AN2 – medium solar radiation with intensities > 500 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 operate in any operating position.

3. OPERATION MODE, SERVICE LIFE OF ACTUATORS

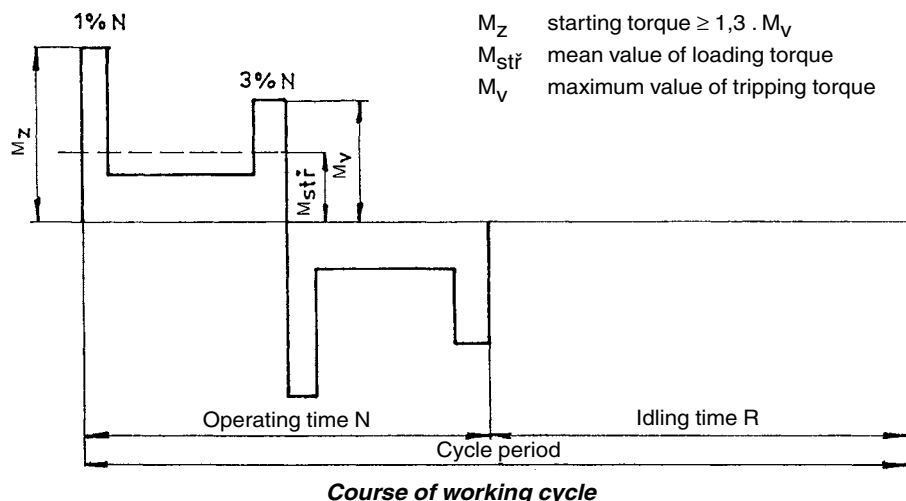
Operation mode

The actuators can be operated with the type of loading S2 according to ČSN EN 60 034-1. The run period at temperature +50 °C is 10 minutes; the mean value of loading torque should not exceed 60 % of the value of maximum tripping torque M_V .

The actuators can also work in the regime S4 (*interrupted run with start-up*) according to ČSN EN 60 034-1.

Load factor $N/N+R$ is max. 25 %; the longest working cycle ($N+R$) is 10 minutes (*course of working cycle is shown in the figure*). The highest number of closing operations in automatic regulation is 1200 cycles per hour. Mean value of loading torque with load factor 25 % and surrounding temperature +50 °C is not higher than 40 % of maximum tripping torque M_V .

The highest mean value of loading torque is equal to rated torque of the actuator.



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.

When using reversing contactor unit the service life of actuator is 1 million starts

Service life [h]	830	1000	2000	4000
Number of starts [1/h]	Max, Number of starts 1200	1000	500	250

When using reversing contactless unit the service life of actuator is 3 million starts

Service life [h]	2490	3000	6000	12000
Number of starts [1/h]	1200	1000	500	250

4. TECHNICAL DATA

Supply voltage

Supply voltage of electric actuator: **MODACT MPSED, MPSPED** 1 x 230 V, +10 %, -15 %, 50 Hz, ±2 %
3 x 230/400 V, +10 %, -15 %, 50 Hz, ±2 %

Actuators designed to operate at another voltage and frequency than those given above are available upon special request. For more details, refer to the Technical conditions.

Enclosure

Protective enclosure of actuators: **MODACT MPSED (MPSED Control)** is IP 55 according to ČSN EN 60 529.
MODACT MPSPED (MPSPED Control) is IP 67 according to ČSN EN 60 529.

Noise

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

Tripping torque

Tripping torque is set at the manufacturer according to the customer's requirements within the range given in Table No. 1. If setting of tripping torque is not required maximum tripping torque of the required type number of the electric actuator is set.

Starting torque

The starting torque of the actuator is a calculated value determined by the starting torque of the electric motor and the total gear ratio and efficiency of the actuator. After run reversion, the actuator can produce a starting torque for the duration of 1 to 2 revolutions of the output shaft when torque-limit switching is locked. Torque switching is blocked only at the end positions. Blocking time is adjustable from 0–20 s.

Self-locking

Self-locking is given by using a worm gear in the countershaft box.

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

Position indicator

The actuator can be fitted with a display as an option for electronic system **DMS2 ED**. Actuator with electronic system DMS2 is equipped with two-line display.

Anti-condensation heater

Anti-condensation heater is connected to **DMS2** and **DMS2 ED** electronic circuit. Switching of the anti-condensation heater is controlled by a thermostat. From the factory is the switching temperature set to 10 °C. The temperature is adjustable by adjusting software **DMS2**. Input power of the anti-condensation heater is 10W / 230 V.

Local control

Local control serves for controlling the actuator from the site of its installation. For DMS2 ED electronic system includes two change-over switches: one with positions "Remote control - Off - Local control", the other "Open - Stop - Close".

The first 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. If the actuator is equipped with **DMS2** electronic system local control consists of 3 buttons - "Open", "Stop", "Close" and rotary switch "Local, Remote, Off".

Dynamic brake

The brake is an optional accessory to the actuators fitted with electronics **DMS2** and **DMS2 ED Control**. As switching elements are used contactors (*mechanical contacts*) or SSR (*modern contactless switching elements*).

After opening the switching element (*contactor or SSR*), it induces dynamic braking moment in the motor for several tenths of second. During the rest period of the actuator no braking torque is developed. The brake reduces dramatically time of the actuator run-down and regulation is thus more precise. The used brakes BR2 are controlled, impulse for action comes from the control unit. Corresponding variant of the brake is chosen according to the electric motor output and the type of switching elements.

Corresponding variant is chosen according to the electric motor power:

contactors	BR2 550	output up to 550 W
	BR 2,2	output up to 2,2 kW
SSR	BR2 BK 550	output up to 550 W
	BR BK 2,2	output up to 2,2 kW

Switching of electric motor

The actuators in variants Control are fitted with built-in reversing contactor combinations or SSR switches. First variant is assembled from two contactors and second variant from contactless switches.

The combination also includes mechanical blocking that prevents both contactors from being closed at the same time. This could, for instance, happen in case of wrong connection of jumpers on the terminal board. The blocking is not dimensioned for long-term action. The over-current relays protects the electric motor against over-loading and is dimensioned with respect to its output. According to the actuator version, the contactors are controlled by the regulator, change-over switch of local control or external input. Control voltage is 230 V / 50 Hz as a standard; it is supplied via contacts of position and/or moment micro-switches. Thus, these micro-switches need not be led out of the actuator. Contactors have defined service life at least 1 million cycles.

To extend the service life we recommend using contactless reversing unit with a minimum service life of 3 million cycles. The standard control voltage is 24V DC. It is used for output into 4 kW or 7.5 kW. The unit consists of semiconductor elements - thyristors.

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 MPSED**, **MPSPEDJ** 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 4 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 MPSED**, **MPSPED** 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.

Isolation resistance

Isolation resistance of electric control circuits against the frame and against each other is min. 20 MΩ. After a dump test, isolation resistance of control circuits is min. 2 MΩ. Isolation resistance of the electric motor is min. 1.9 MΩ. See Technical specifications for more details.

Electric strength of electric circuits isolation

Circuits of anti-condensation heater		1 500 V, 50 Hz
Electric motor	Un = 1 x 230 V	1 500 V, 50 Hz
	Un = 3 x 230/400 V	1 800 V, 50 Hz

Deviations of basic parameters

Tripping torque	±15 % of the maximum range value
Shifting time	+10 % of the maximum range value -15 % of the rated value
Working stroke	1 %
Angled lever play	max 1 %

Protection

The actuators are fitted with one internal and one external protection terminal for ensuring protection against electric shock injury according to ČSN 33 2000-4-41. One protection terminal is also installed on the electric motor. The protection terminals are marked according to ČSN EN 60 417-1 and 2 (013760).

7. DESCRIPTION AND FUNCTION

The lever actuators **MODACT MPSED** and **MODACT MPSED Control** are assembled of electric motor, countershaft box, power gearing, control box, and lever mechanism. The actuators include three-phase asynchronous motors attached to the countershaft box. The actuators, Type No. 52 260, include single-phase electric motors of 20 W and 60 W.

The countershaft box reduces the number of revolutions of the electric motor, self-locking of the whole actuator being provided by means of a self-locking worm gear drive. An advantage of this solution is that electric motors with an electromagnetic brake are not required.

The gears are centrally fitted on the output shaft, thus constituting an independent assembly group. The epicyclic gearing consists of a sun gear and three satellite gears in mesh with the internal gear ring of a double gear set. In its upper part, this double gear set has external teeth for the manual control worm. The worm shaft is spring-loaded, the axial force induced by the torque of the actuator output shaft moves the worm axially against the spring tension. The magnitude of torque is directly proportional to the length of worm advance motion.

The torque sensor acts depending on the length of worm stroke. The magnitude of torque is transmitted to the control box by means of a lever and a pin. The handwheel does not limit the axial motion of the worm and allows the actuator to be controlled in any operating condition, even if the motor is running.

Situated in the upper part of the actuator, the control box forms an independent assembly group. At its upper end, the output shaft of the actuator is extended to the control box.

8. ELECTRONIC OUTFIT

Electro-mechanical control board is replaced with the electronic system **DMS2** or **DMS2 ED**. Both systems scan position of the output shaft and torque of the electric actuator by contact-free magnetic sensors. The sensor of the output shaft position is absolute and does not require any backup power supply in case supply voltage is disconnected during operation of the electric actuator. Both systems can be set and monitored by a computer with controlling programme or manually without a computer.

The more simple system **DMS2 ED** substitutes electromechanical parts and/or provides for controlling the electric actuator by input analog signal as in the version Control.

The system **DMS2** enables the electric actuator to be used for two-position and three-position regulation or to be connected to the industrial bus bar Profibus.

DMS2 ED

Basic outfit:

Control unit	It also contains the sensor of position of the output shaft, 4 push-buttons and 3 signal LEDs for setting and checking the actuator.
Torque-limit unit	
Source unit	Contacts of seven relays (<i>MO, MZ, PO, PZ, SO, SZ, Ready</i>) are connected to the terminal board; state of each relay is signalized by LED. The unit enables the heating resistor to be connected and controlled by the thermostat.

Optional outfit:

Feedback signal 4 – 20 mA	
Analog regulator	
Position indicator – LED display	
Local control	
Contactors or block of contact-less control – for version Control	
Electronic brake	

Main merits:

- Absolute scanning of position independent of backup power supply.
- Simple setting by 4 push-buttons, computer PC or PDA.
- Possibility of back-up making of set parameters on PC.
- Intended for direct substitution of electromechanical components of the electric actuator.

Parameters:

Scanning of position	Contact-less magnetic
Scanning of torque	Contact-less, magnetic
Working stroke	60 – 160°
Blocking of torque	0 – 20 s at reversing in limit positions
Input signal	0/4 – 20 mA with switched on regulator function
Output signal	Local/Remote control, Local open/close
	7 x relay 250 V AC, 3 A (<i>MO, MZ, PO, PZ, SO, SZ, READY</i>)
	Position signal 4 – 20 mA max. 500 ohm, active/passive, galvanic-isolated (<i>optional</i>),
	LED display (<i>optional</i>)
	Electronic brake (<i>optional</i>)
Power supply	230 V AC, 50 Hz, 4 W, over-voltage category II

DMS2

Basic outfit:

Control unit	It also includes a sensor of the output shaft position, 2 signal LED.
Torque-limit unit	
Source unit	It includes: 2 relays for electric motor control; Relay Ready with change-over contact connected to the terminal board; Signalling relays 1 – 4 with one pole of the switching contact connected to the terminal board; Second poles of the switching contacts of relays 1 – 4 are interconnected and brought out to the terminal COM. Heating resistor switched by a thermostat is connected to the unit. The unit controls power switches of the electric motor (<i>contactors or contact-less switching</i>). The electronic brake can be connected to the unit.
Unit of display	Two-row display, 2 x 12 alpha-numeric characters.
Unit of push-buttons	Push-buttons " Open ", " Close ", " Stop ", selector switch " Local ", " Remote ", " Stop ".

Recommended outfit:

Electronic brake – the actuator can be fitted with the electronic brake – this reduces the actuator run-down after switching-off. (*Actuator type No.52 260 can not be produced as a version with an electronic brake*).

Optional outfit (*the electric actuator must be fitted with one of these units*):

Unit of two- and three-position control – Control of the electric actuator by shifting to position "*Open*" and "*Close*" or by analog signal 0 (4) – 20 mA.

Unit of connection Profibus – control of the electric actuator by industrial bus bar Profibus.

The electronic control DMS2 checks, within its function, sequence and fall-out of phases of supply voltage.

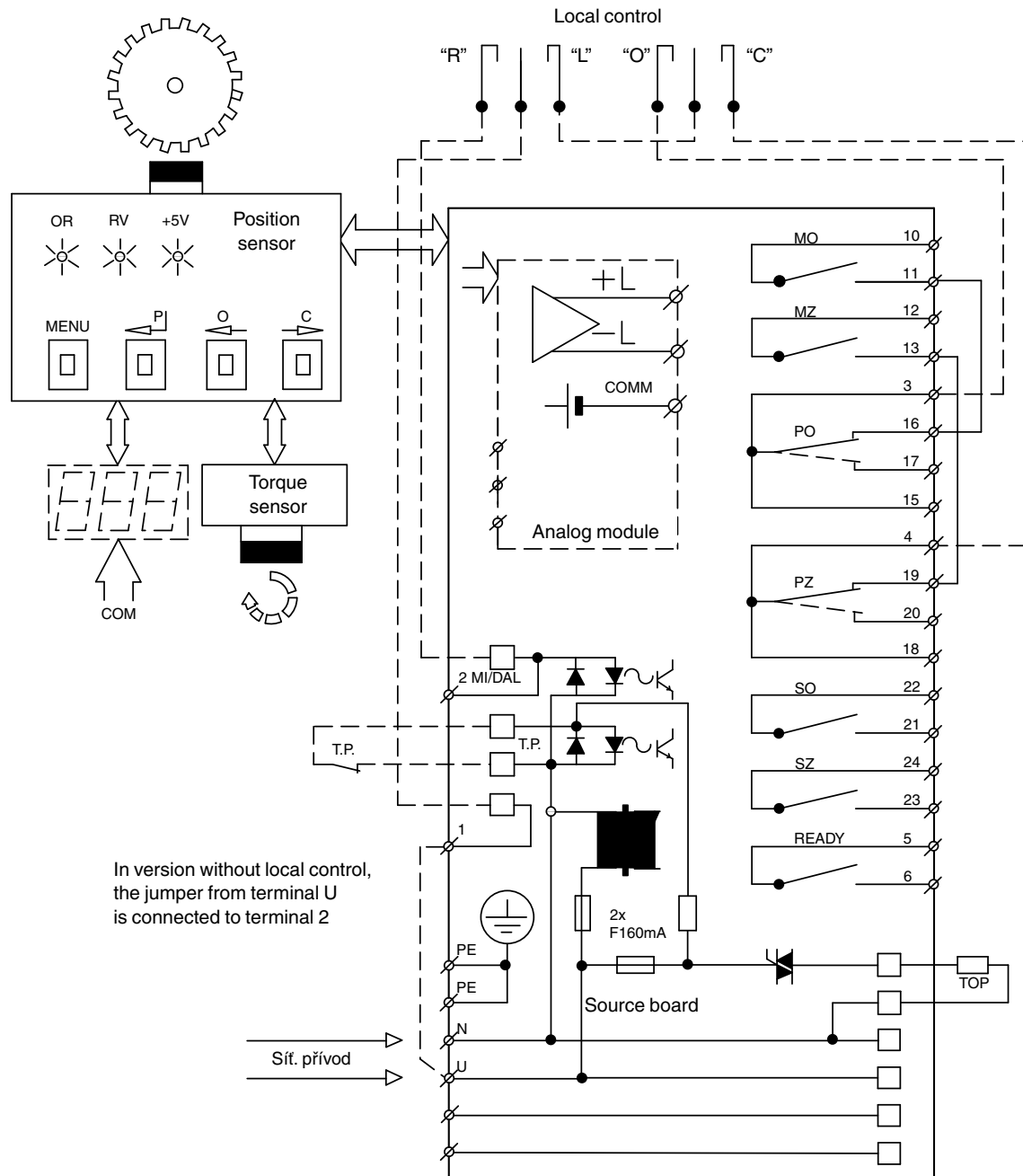
9. ORDERING INFORMATION

When ordering, please specify the following:

- Number of actuators required
- Actuator designation
- Type number
- Working stroke (*maximum angle of lever displacement*)
- Adjusting time of the output section in seconds
- Supply voltage of electric motor
- Special requirements

Example of wiring diagram of electronics **DMS2 ED**
in version **Substitution of electro-mechanical board**
(actuators MODACT MPSED, MPSPED)

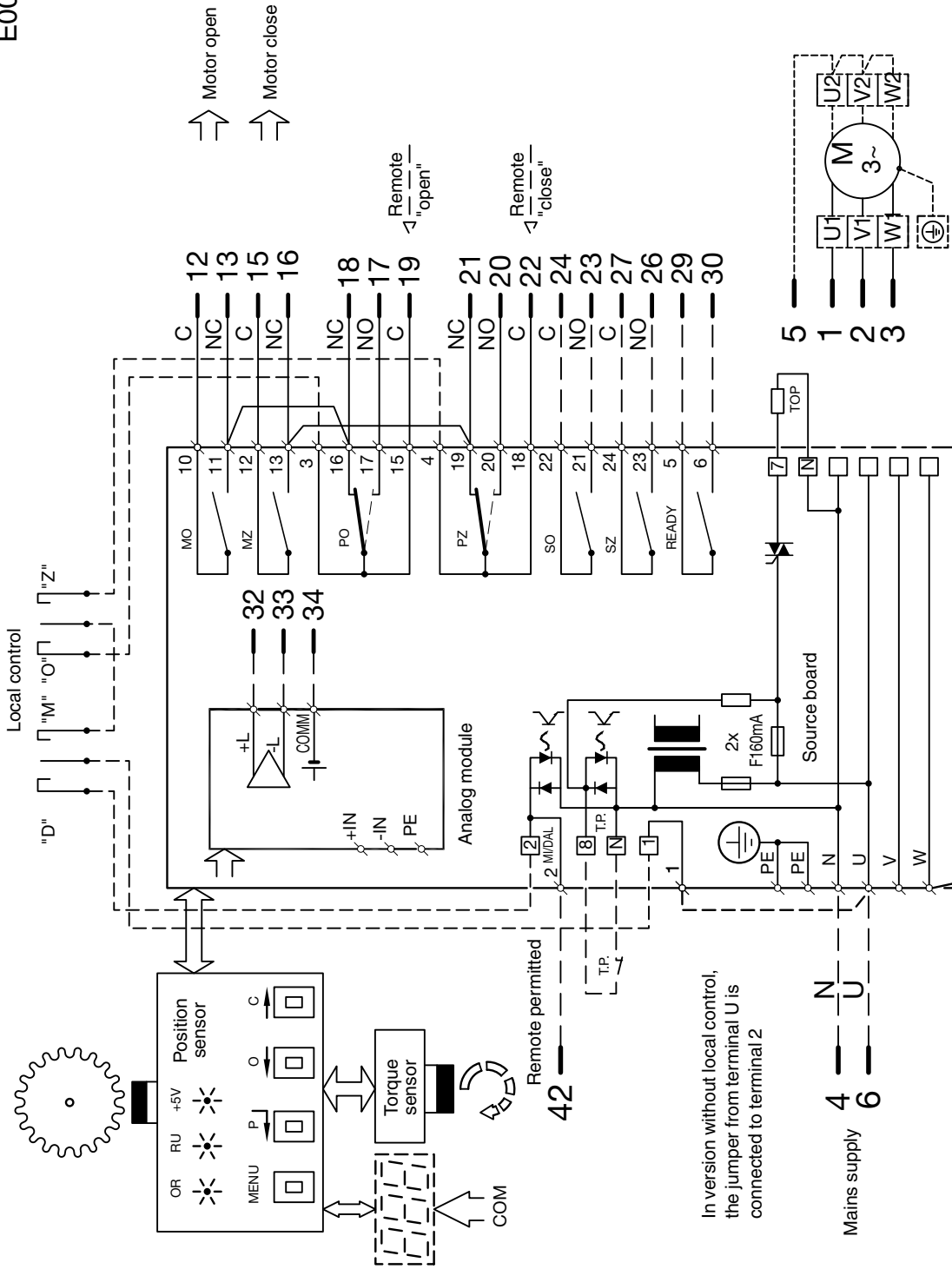
E0001



Note: Here, contacts of relays MO, MZ, SO, SZ are shown with power supply switched off; with power supply switched off contacts PO, PZ are shifted to the position drawn in dashed line.

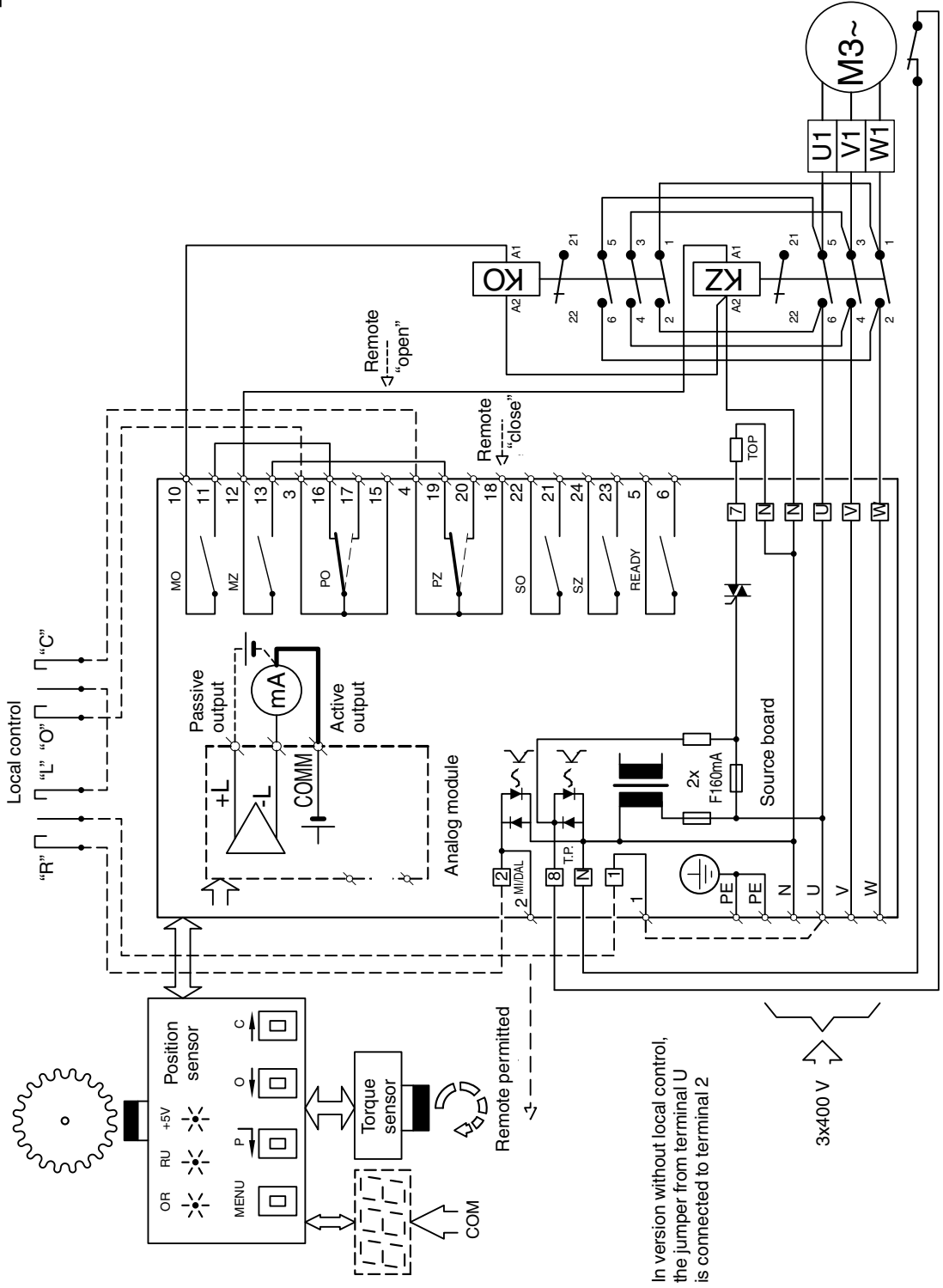
Wiring diagram of electrical actuators **MODACT MPSED, MPSPED 52 261 - 52 266**
in version **DMS2 ED - Substitution of electro-mechanical board with connector**

E0028K



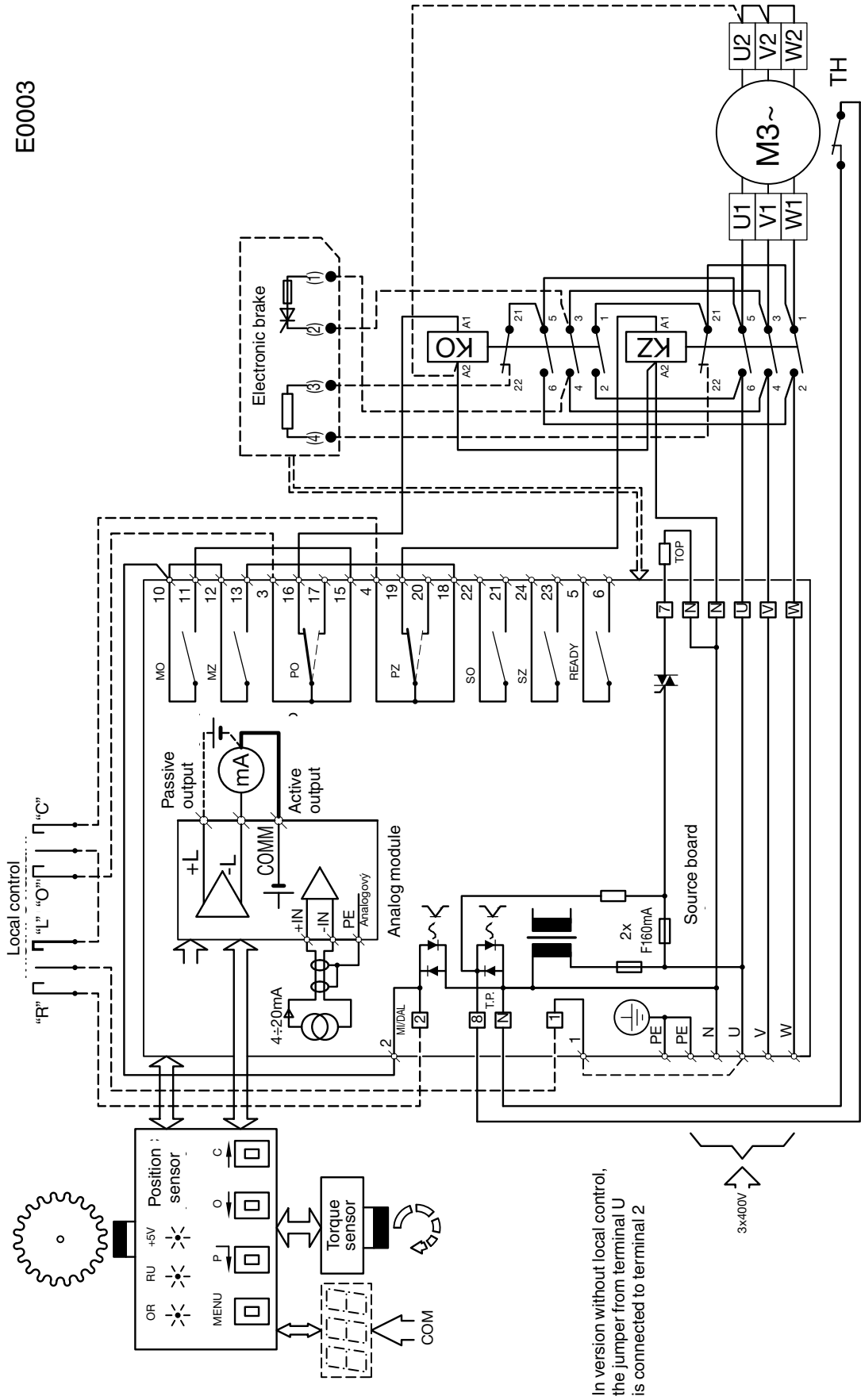
Example of wiring diagram Substitution of electro-mechanical board with contactors and three-phase electric motor
(actuators MODACT MPSED, MPSPED)

E0002



Example of wiring diagram of electronics DMS2 ED in version Control (actuators MODACT MPSED, MPSPED)

E0003

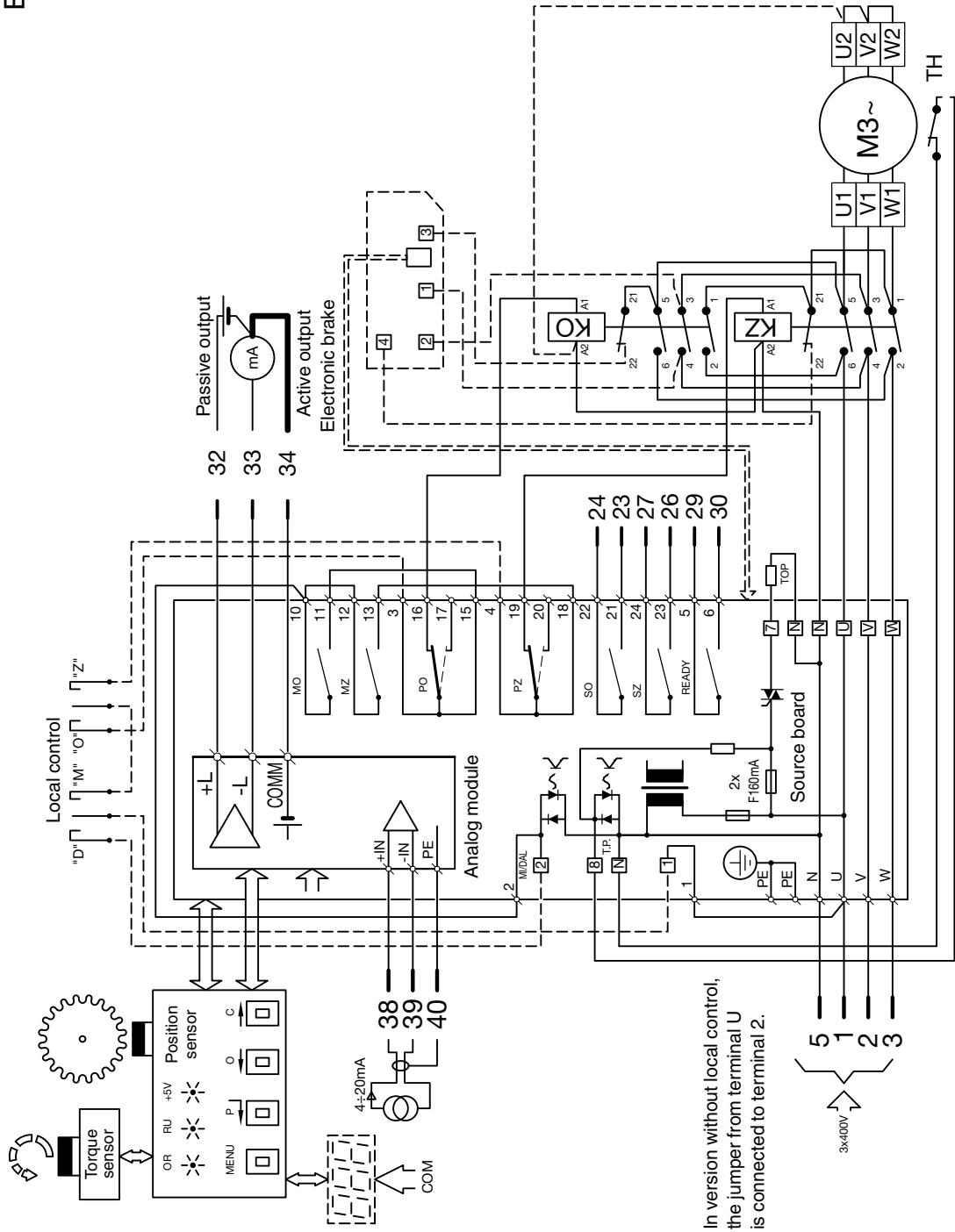


In version without local control, the jumper from terminal U is connected to terminal 2

Note: Here, contacts of relays MO, MZ, SO, SZ are shown with power supply switched off; with power supply switched on, PO, PZ are shifted to the position drawn in dashed line.

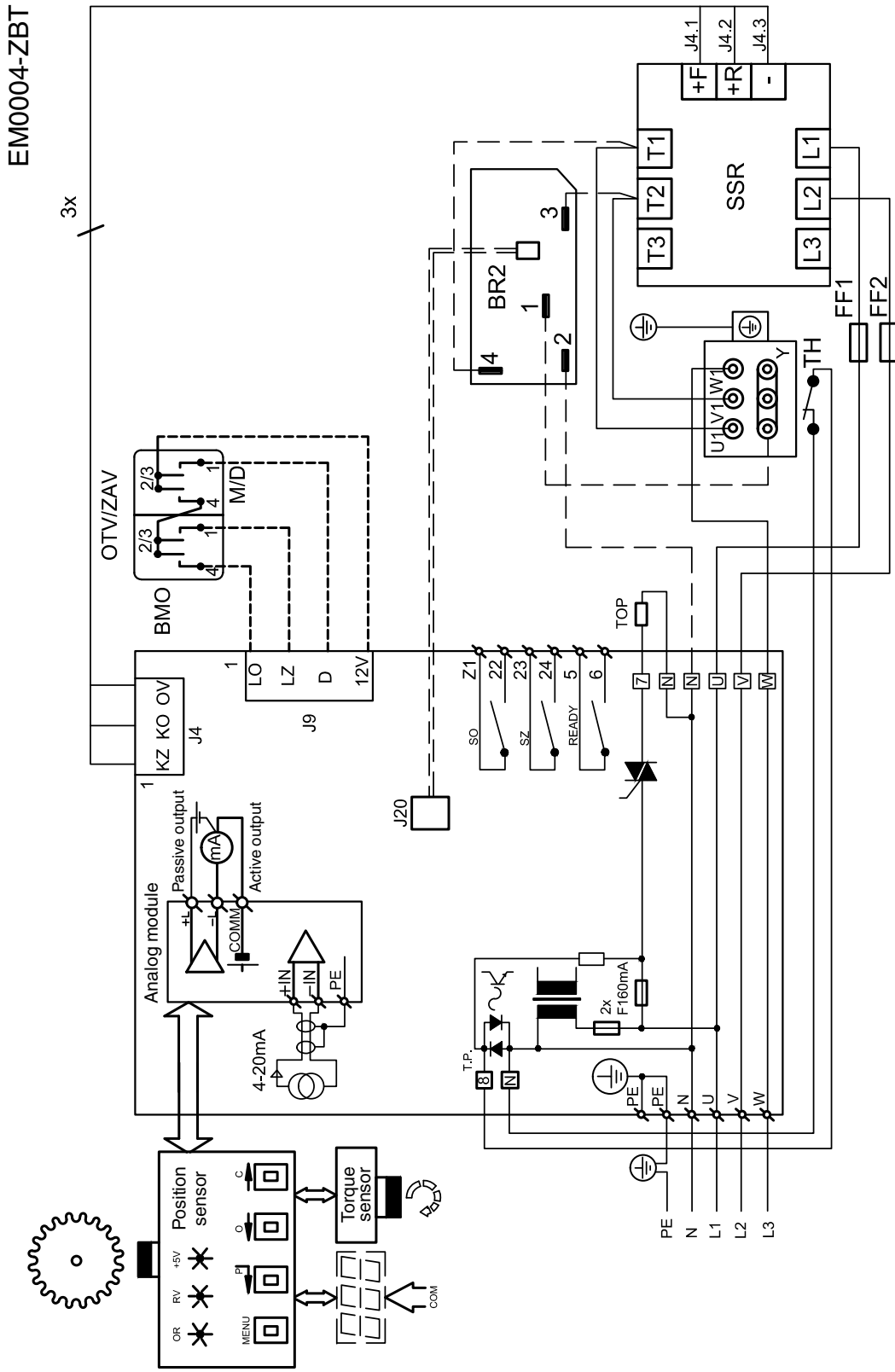
Wiring diagram of electrical actuators **MODACT MPSED, MPSPED 52 261 - 52 266**
in version **DMS2 ED Control with connector**

E0027K



In version without local control,
the jumper from terminal U
is connected to terminal 2.

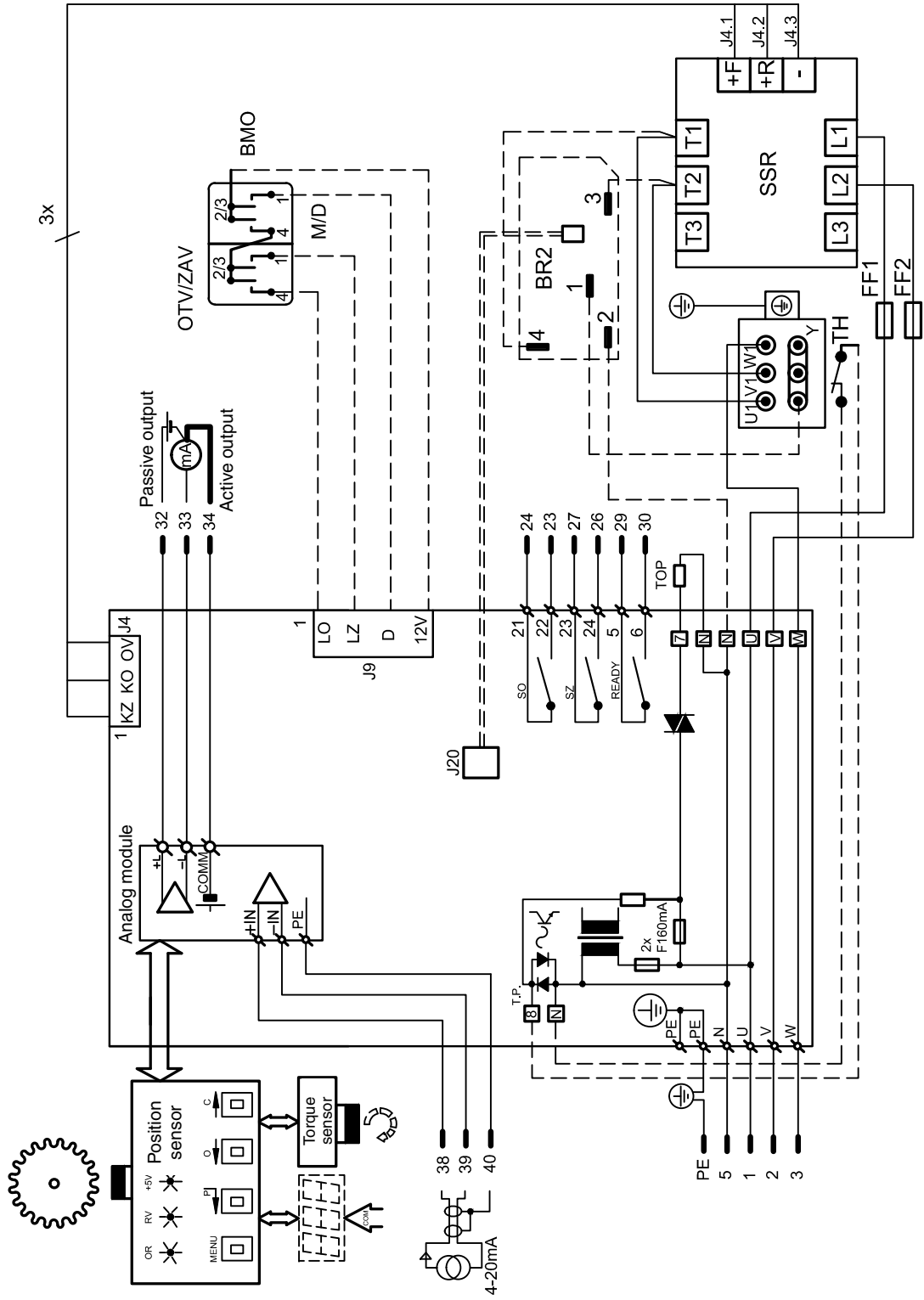
Example of wiring diagram of electronics DMS2 ED in version Control with contact-less switching of electric motor



Note: Here, contacts of relays MO, MZ, SO, SZ are shown with power supply switched off; with power supply switched on contacts PO, PZ are shifted to the position drawn in dashed line.

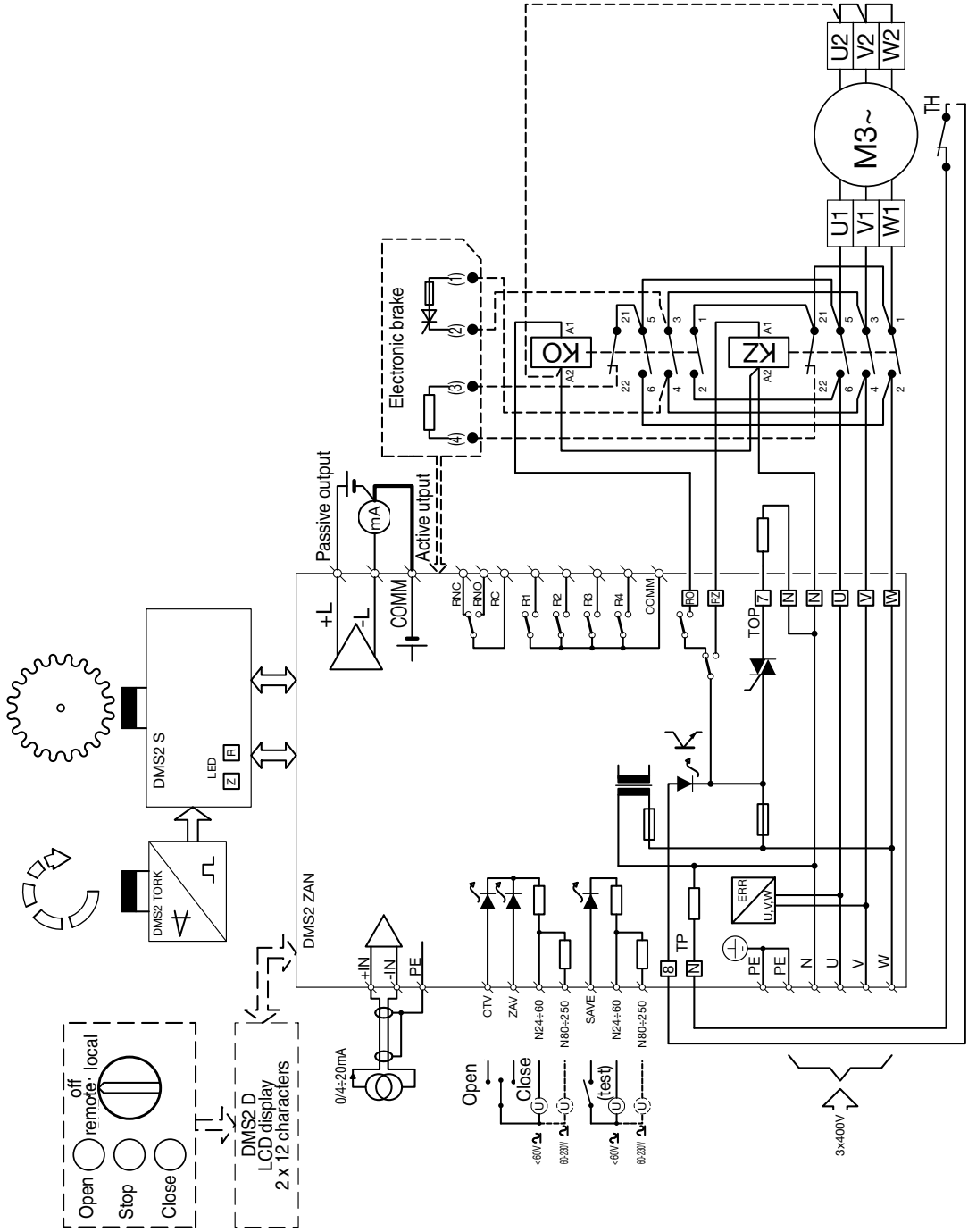
Example of wiring diagram of electronics **DMS2 ED** in version **Control** with contact-less switching of electric motor with connector connection

EM0043K-ZBT



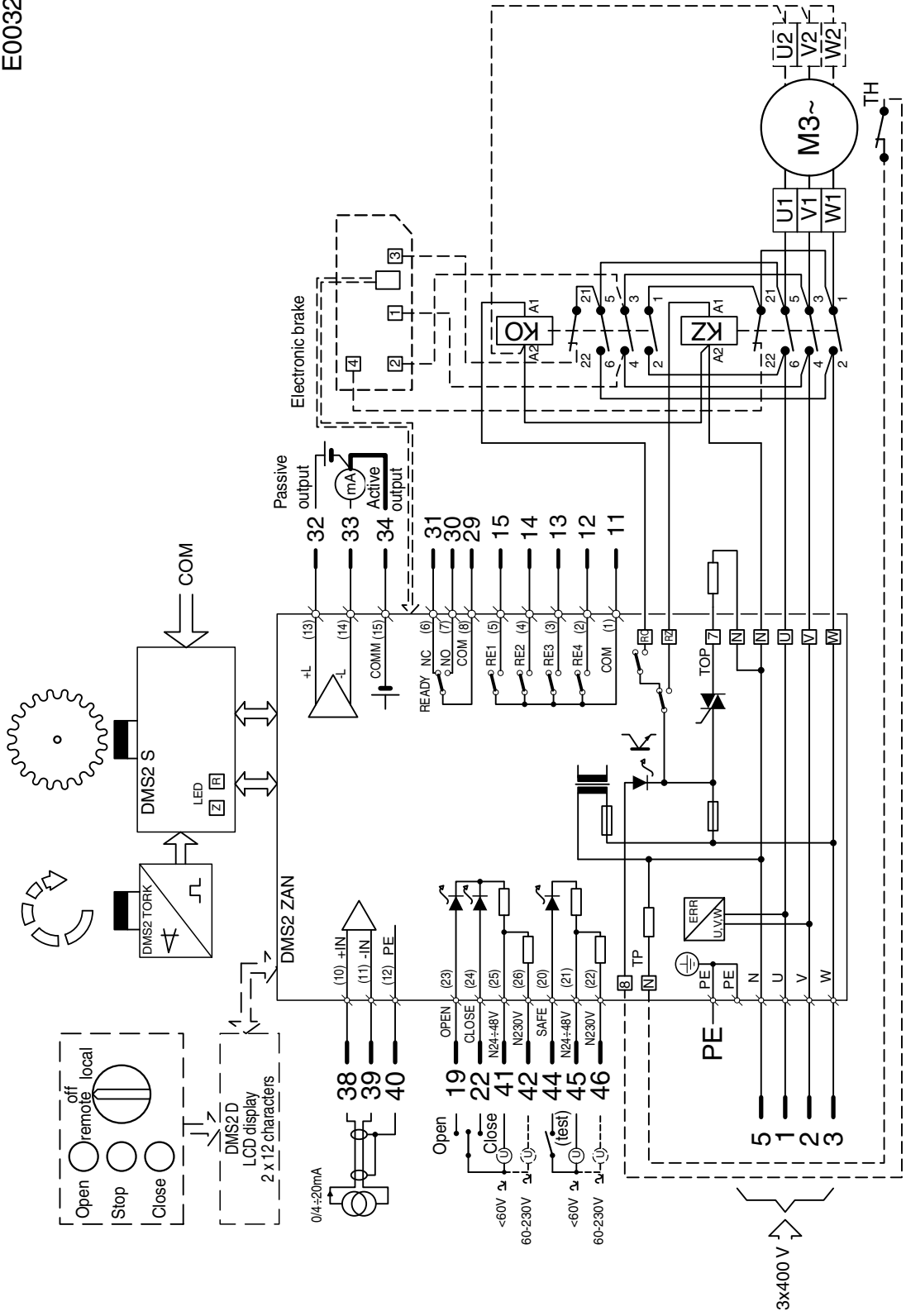
Example of wiring diagram of electronics DMS2 Analog in version Control (actuators MODACT MPSED, MPSPED)

E0006



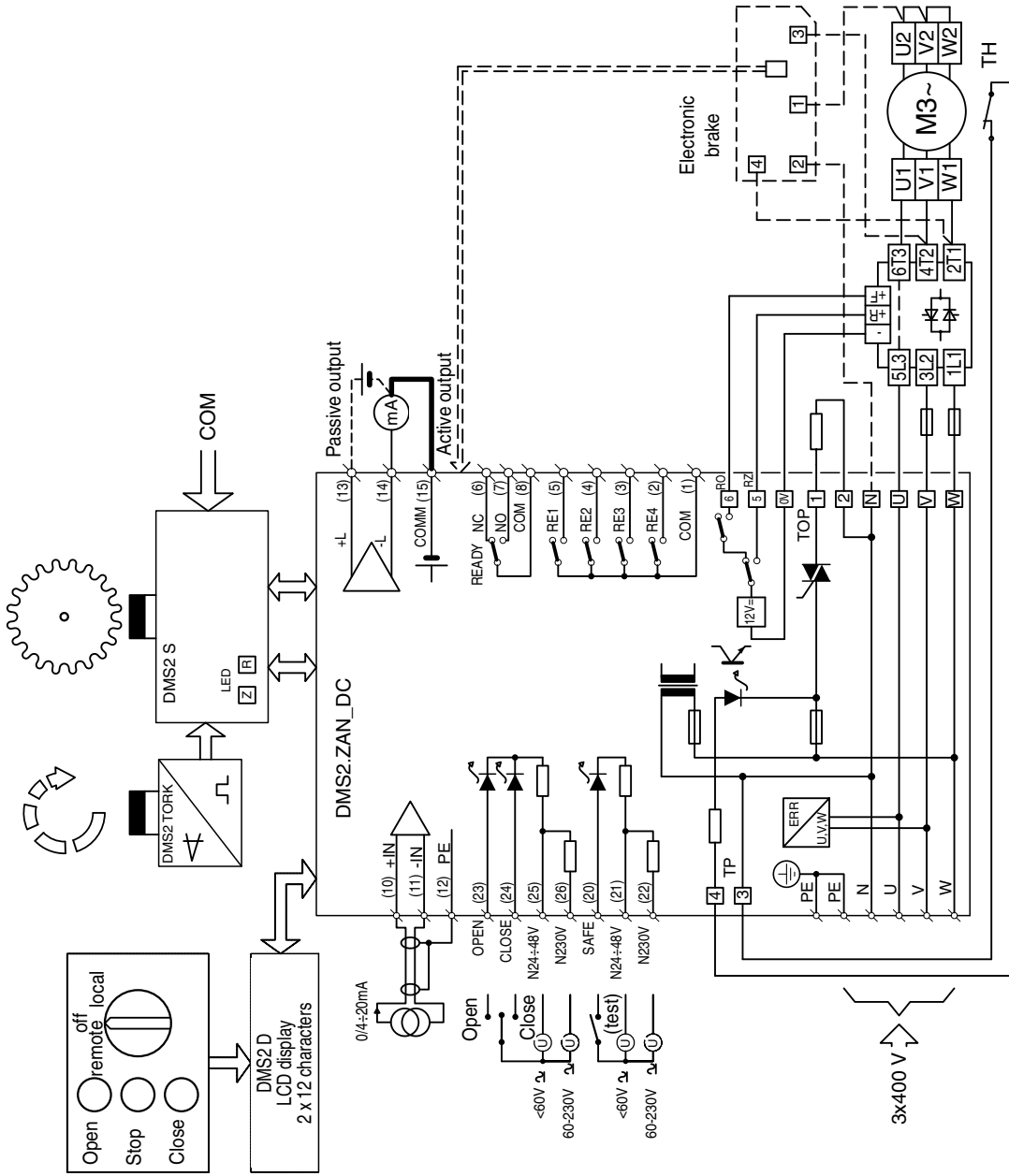
Example of wiring diagram of electronics **DMS2 Analog** in version **Control** with connector connection
(actuators MODACT MPSED)

E0032K

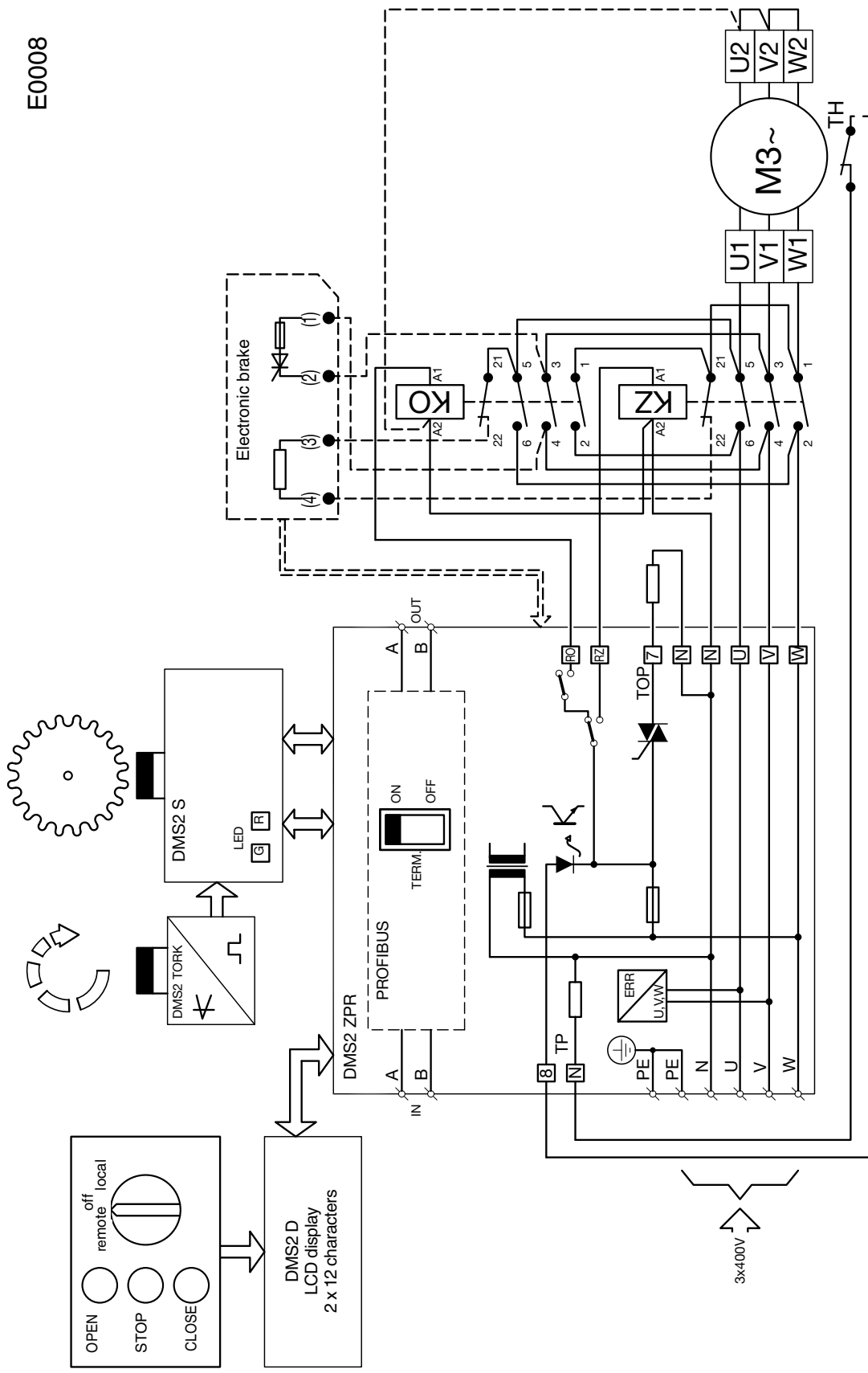


Example of wiring diagram of electronics **DMS2 Analog** with contact-less switching of electric motor
(actuators MODACT MPSED)

E0031

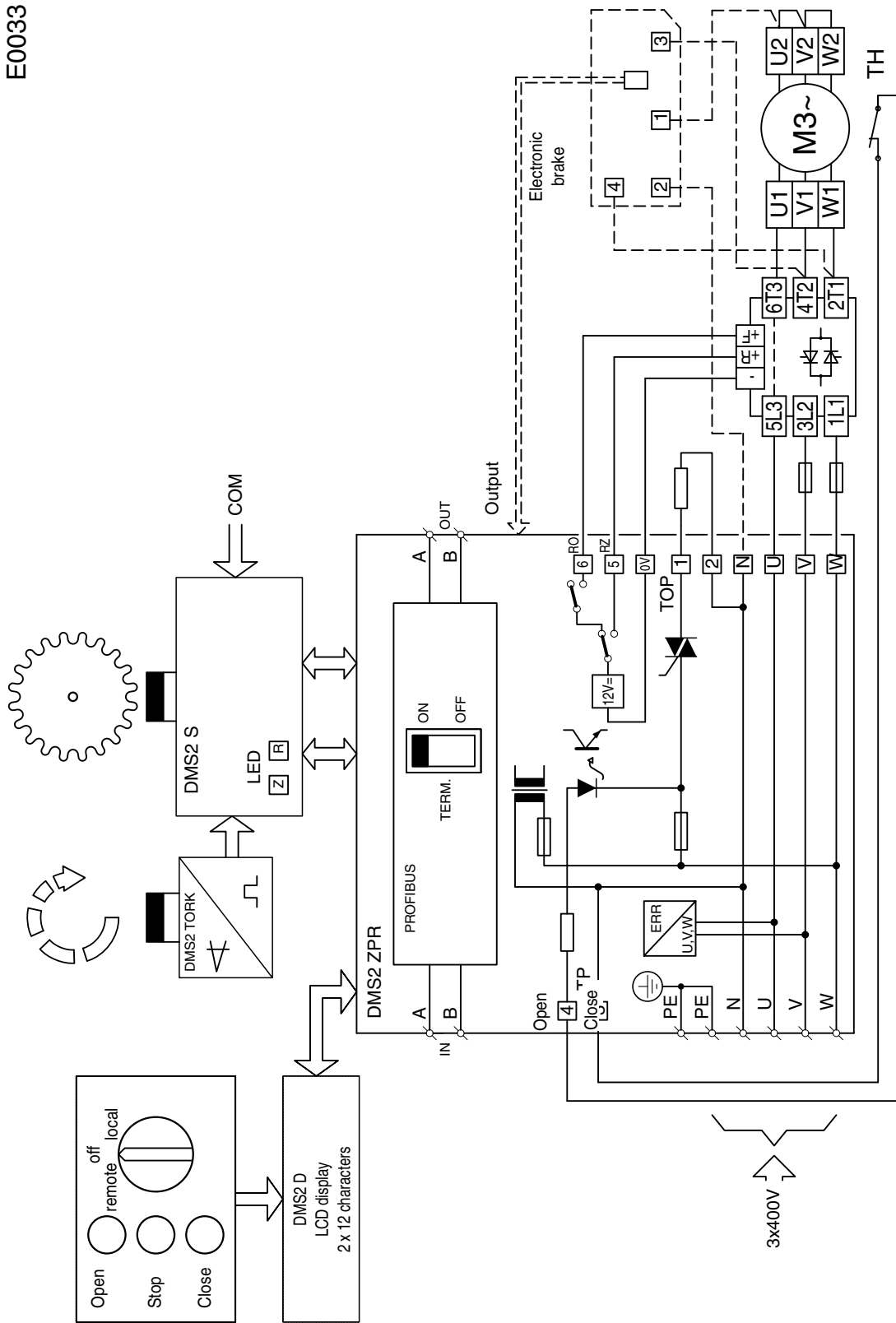


Example of wiring diagram of electronics **DMS2 Profibus (actuators MODACTMPSED, MPSPED)**



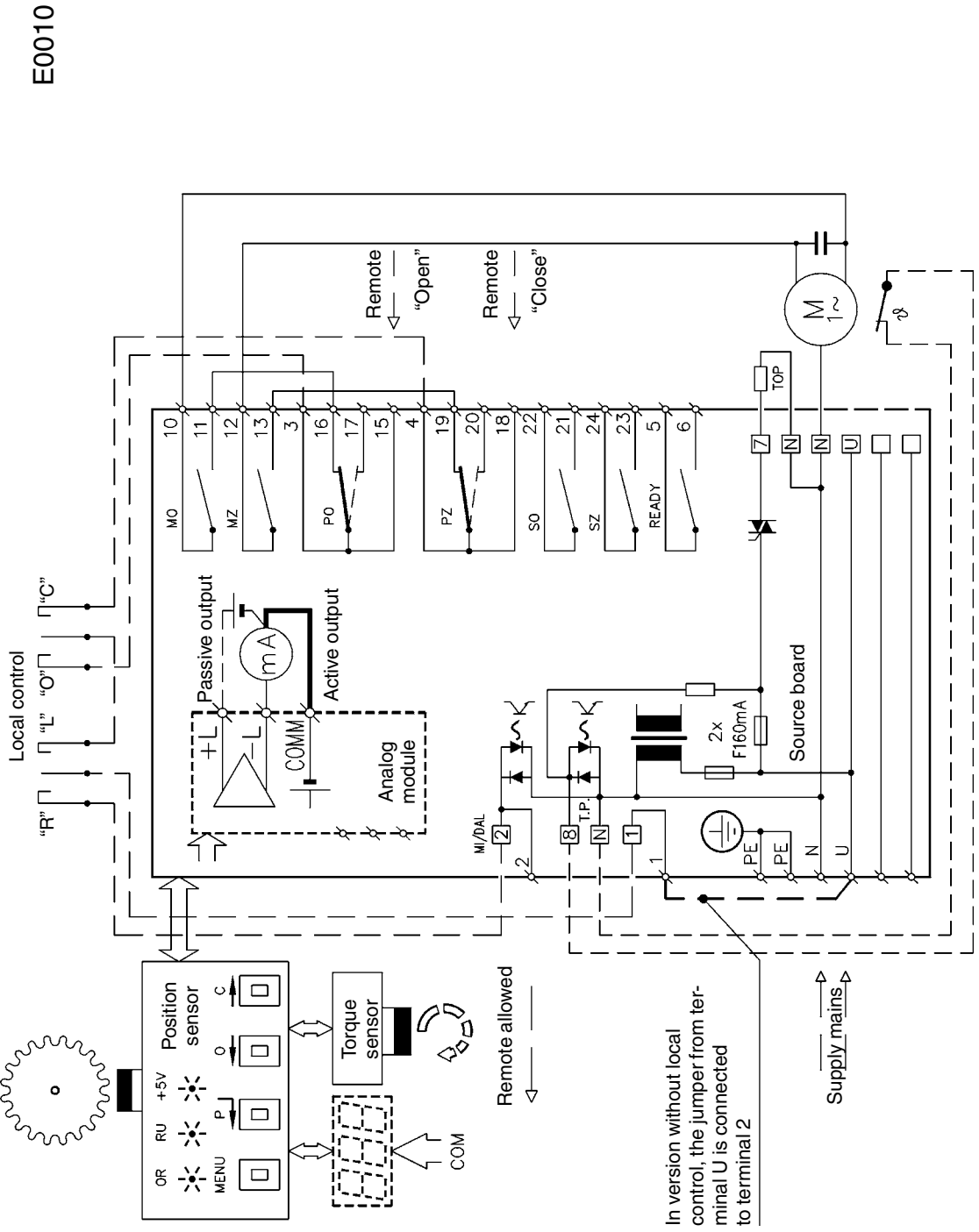
E0008

Example of wiring diagram of electronics **DMS2 Profibus** with contact-less switching of electric motor
 (actuators **MODACT MPSED**)



E0033

Example of wiring diagram of electronics **DMS2 ED** in version **Substitution of electro-mechanical board** (**actuators MODACT MPSED, MPSPED 52 260**) with single-phase electric motor

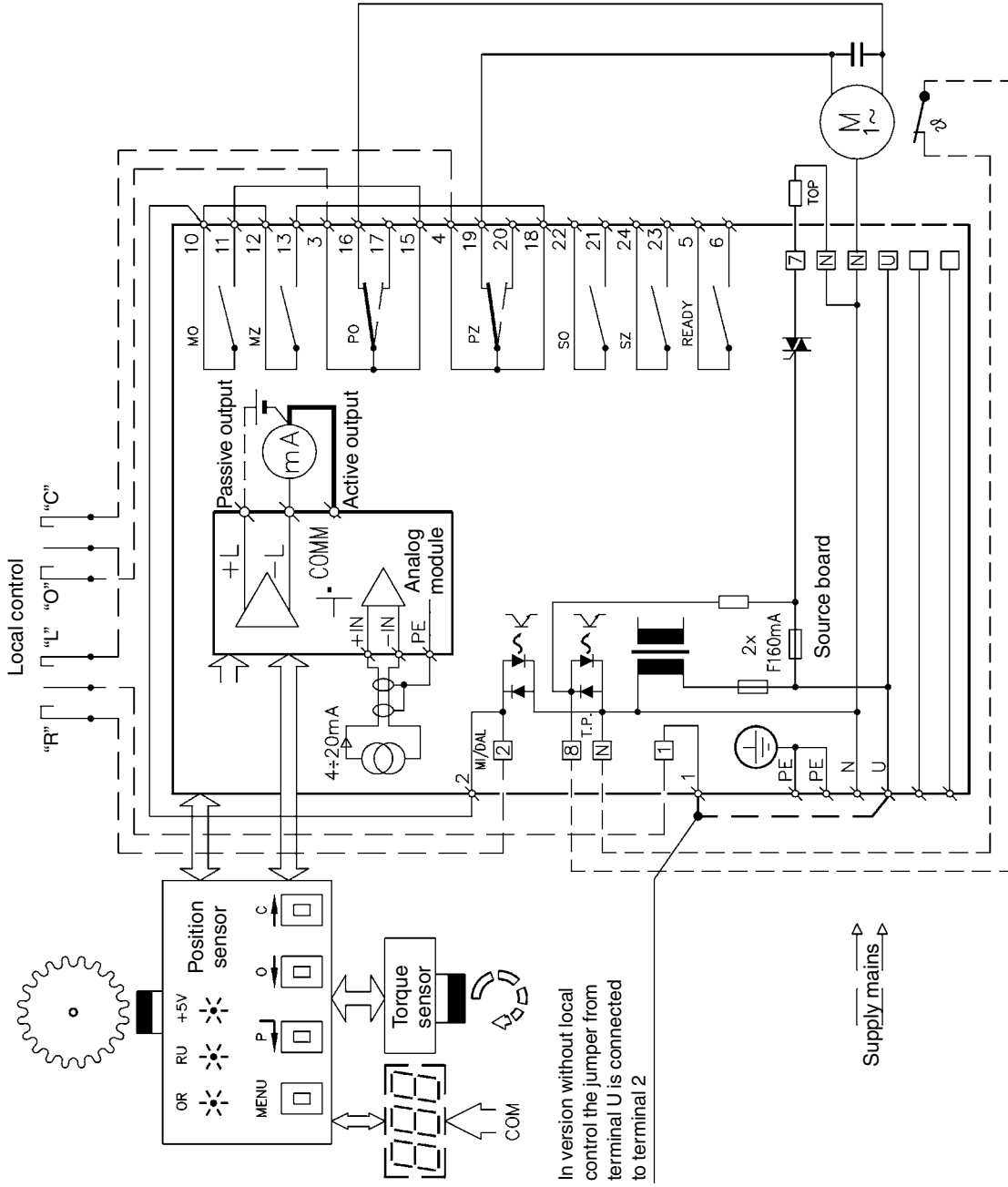


E0010

Note: Here, contacts of relay MO, MZ, SO, SZ are shown with power supply switched off; with power supply switched off, PO, PZ are shifted to the position drawn in dashed line.

Example of wiring diagram of electronics **DMS2 ED** in version **Control**
(actuators MODACT MPSED, MPSPED 52 260) with single-phase electric motor

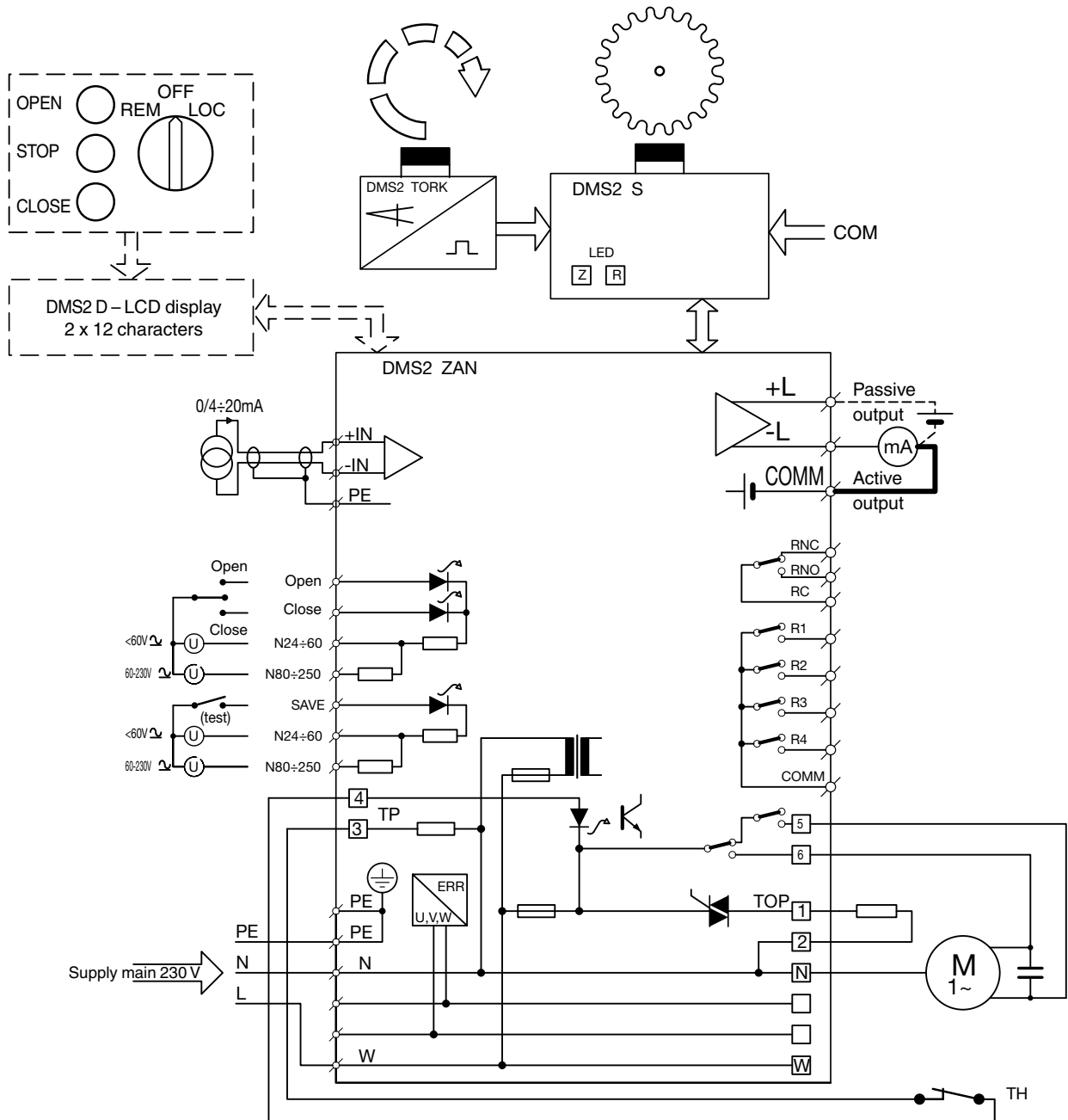
E0012



Note: Here, contacts of relay MO, MZ, SO, SZ are shown with power supply switched off; with power supply switched off contacts PO, PZ are shifted to the position drawn in dashed line.

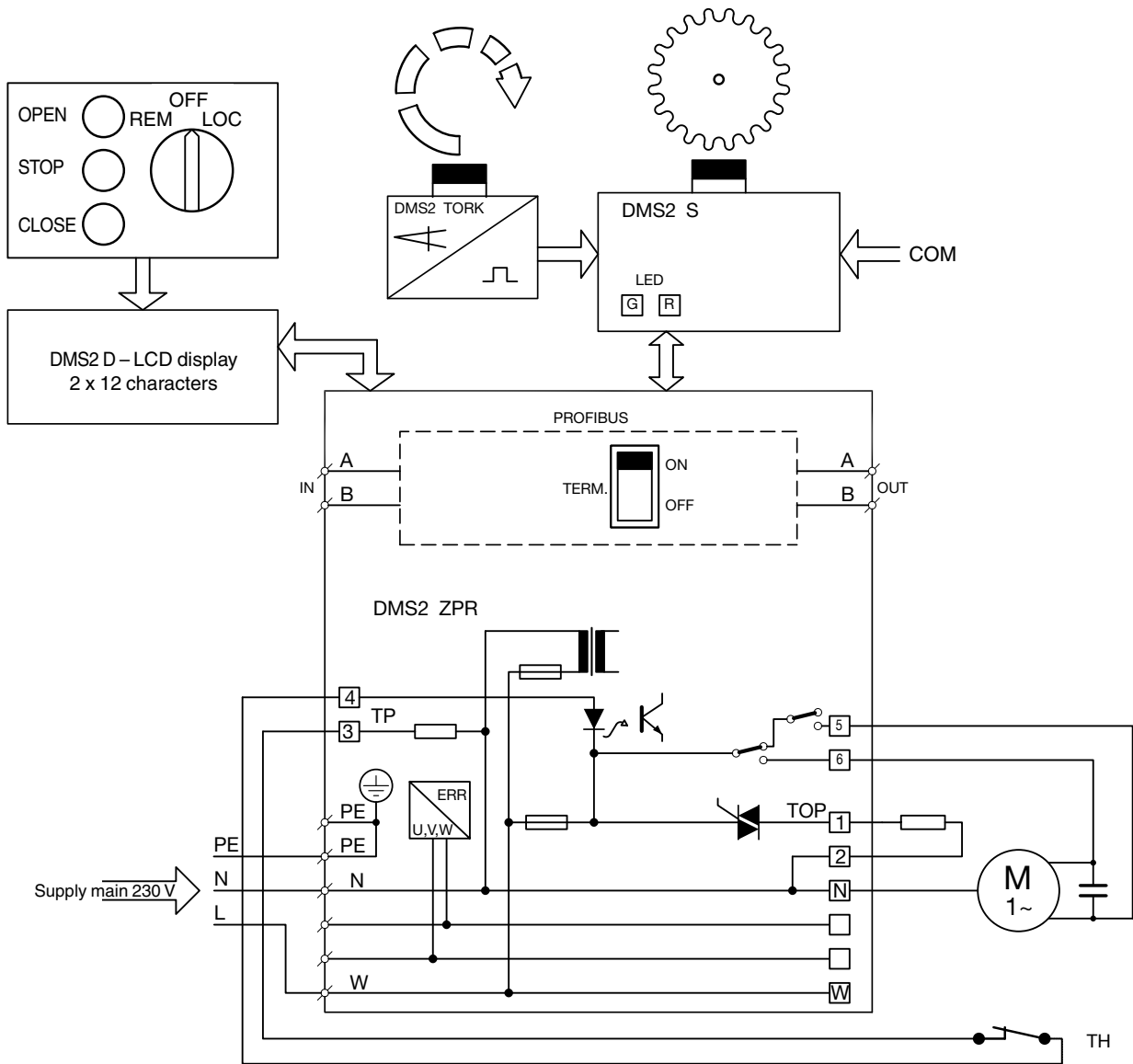
**Example of wiring diagram of system DMS2 Analogue
with single-phase electric motor (*actuators MODACT MPSED, MPSPED 52260*)**

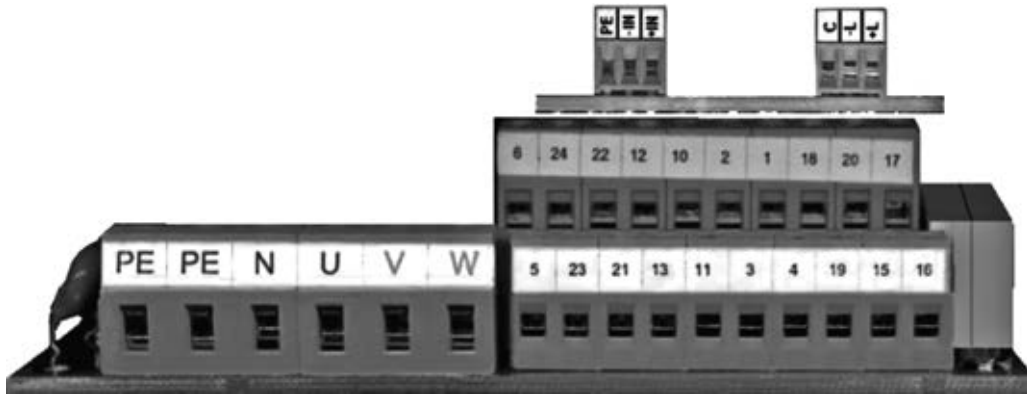
E0018



Example of wiring diagram of system DMS2 in version Profibus
with single-phase electric motor (*actuators MODACT MPSED, MPSPED 52260*)

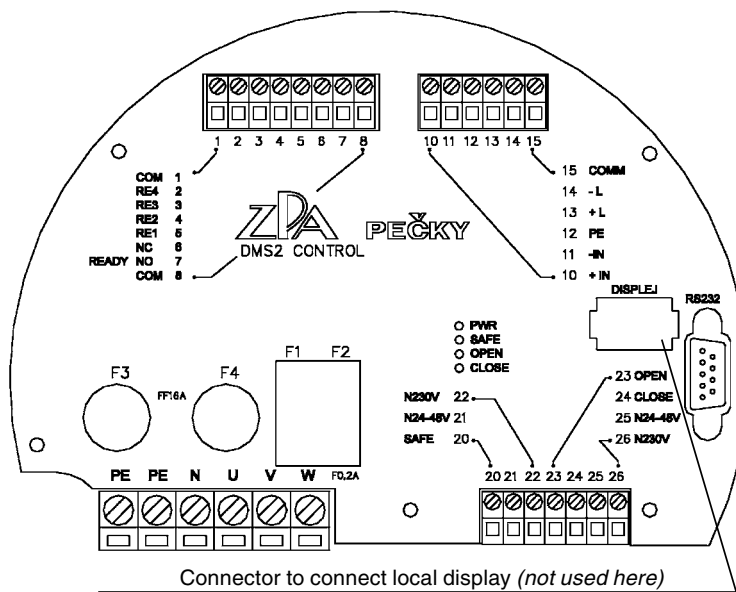
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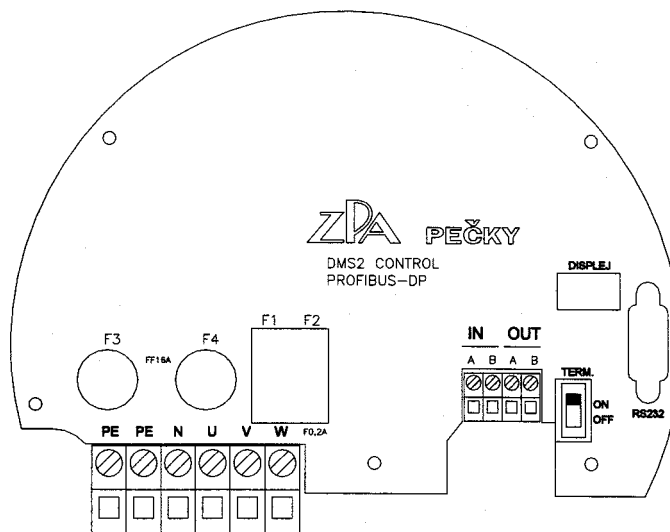


The terminal board of the actuator with electronics DMS2 ED

Note: If the actuator is of one-phase version the supply mains inlet is only connected to the terminals **PE, N, U**. The terminals **V, W** will remain unconnected.



Terminal board DMS2 Analog



Terminal board DMS2 Profibus

Note: In the case of **MODACT MPSED** actuators with one-phase motor, the inlet is connected to the terminal **N** (middle conductor) and **W** (phase conductor). The terminals **U, V** will remain unconnected.

Table 1a – MODACT MPSED, MODACT MPSED Control (IP55) electric actuators
– basic technical parameters

Type designation	Tripping torque range [Nm]	Operating time [s/90°]	Motor power [W]	Voltage [V]	Motor current I _n [A]	Starting motor current I _z [A]	Volume of lubricant [kg]	Weight [kg]	Type Number				
									basic	additional			
MPSED, MPSPED 8/8	20 – 80	8	90	400	0.34	1	0.3	26	5 2 2 6 0	x x 1 x x xD			
MPSED, MPSPED 8/16		16								x x 2 x x xD			
MPSED, MPSPED 8/32		32	60	230	0.53	1.15				x x 3 x x xD			
MPSED, MPSPED 8/63		63	20	230	0.4	1.63				x x 4 x x xD			
MPSED, MPSPED 12,5/8	60 – 125	8	90	400	0.34	1				0.3	26	5 2 2 6 0	x x 5 x x xD
MPSED, MPSPED 12,5/16		16											x x 6 x x xD
MPSED, MPSPED 12,5/32		32	60	230	0.53	1.15							x x 7 x x xD
MPSED, MPSPED 12,5/63		63	20	230	0.4	0.63							x x 8 x x xD
MPSED, MPSPED 16/16	100 – 160	16	120	400	0.42	1.44	0.5	70	5 2 2 6 1				x x 1 x x xD
MPSED, MPSPED 16/32		32											x x 2 x x xD
MPSED, MPSPED 16/63		63											x x 3 x x xD
MPSED, MPSPED 16/120		120											x x 4 x x xD
MPSED, MPSPED 32/16	160 – 320	16	180	400	0.56	1.82	0.5	70	5 2 2 6 2	x x 1 x x xD			
MPSED, MPSPED 32/32		32								x x 2 x x xD			
MPSED, MPSPED 32/63		63								x x 3 x x xD			
MPSED, MPSPED 32/120		120								x x 4 x x xD			
MPSED, MPSPED 63/16	320 – 630	16	370	400	1.03	3.25	0.7	120	5 2 2 6 3	x x 1 x x xD			
MPSED, MPSPED 63/32		32								x x 2 x x xD			
MPSED, MPSPED 63/63		63	180	400	0.56	1.82				x x 3 x x xD			
MPSED, MPSPED 63/120		120	x x 4 x x xD										
MPSED, MPSPED 125/16	630 – 1250	16	370	400	1.03	3.25	0.7	120	5 2 2 6 4	x x 1 x x xD			
MPSED, MPSPED 125/32		32								x x 2 x x xD			
MPSED, MPSPED 125/63		63	x x 3 x x xD										
MPSED, MPSPED 125/120		120	180	400	0.56	1.82				x x 4 x x xD			
MPSED, MPSPED 200/45	1250 – 2000	45	370	400	1.03	3.25	0.7	267	5 2 2 6 5	x x 0 x x xD			
MPSED, MPSPED 400/45	2500 – 4000								5 2 2 6 6	x x 0 x x xD			

Note:

Currents of electric motors apply to $U_n = 3 \times 230/400 \text{ V}, 50 \text{ Hz}$, $U_n = 1 \times 230 \text{ V}, 50 \text{ Hz}$.

The values of parameters apply to working conditions according to ČSN 186330 Cl. 4.1 through 4.5.

Permitted deviation of the shifting time according to ČSN 186330 Cl. 4.19 is -15 % to +10 % of the rated value.

MPSED where x: E = DMSED

Table 1b – MODACT MPSED electric actuators (IP67)

Type designation	Tripping torque range [Nm]	Operating time [s/90°]	Motor power [W]	Voltage [V]	Motor current I _n [A]	Starting motor current I _z [A]	Volume of lubricant [kg]	Weight [kg]	Type Number	
									basic	additional
MPSPED 16/16	100 – 160	16	120	400	0.42	1.44	0.5	70	5 2 2 6 1	x x 1 x x PED
MPSPED 16/32		32								x x 2 x x PED
MPSPED 16/63		63								x x 3 x x PED
MPSPED 16/120		120								x x 4 x x PED
MPSPED 32/16	160 – 320	16	180	400	0.56	1.82	0.5	70	5 2 2 6 2	x x 1 x x PED
MPSPED 32/32		32								x x 2 x x PED
MPSPED 32/63		63								x x 3 x x PED
MPSPED 32/120		120								x x 4 x x PED
MPSPED 63/16	320 – 630	16	370	400	1.03	3.25	0.7	120	5 2 2 6 3	x x 1 x x PED
MPSPED 63/32		32								x x 2 x x PED
MPSPED 63/63		63	180	400	0.56	1.82				x x 3 x x PED
MPSPED 63/120		120	x x 4 x x PED							
MPSPED 125/16	630 – 1250	16	370	400	1.03	3.25	0.7	120	5 2 2 6 4	x x 1 x x PED
MPSPED 125/32		32								x x 2 x x PED
MPSPED 125/63		63	x x 3 x x PED							
MPSPED 125/120		120	180	400	0.56	1.82				x x 4 x x PED
MPSPED 200/45	1250 – 2000	45	370	400	1.03	3.25	0.7	267	5 2 2 6 5	x x 0 x x PED
MPSPED 400/45	2500 – 4000								5 2 2 6 6	x x 0 x x PED

Electric actuators MODACT MPSED

– Specification of meaning of the 6th to 10th place of the type number:

Place in the type number: 1th 2th 3th 4th 5th 6th 7th 8th 9th 10th
Type number 5 2 2 6 x. x x x x x E D

Table 2 – Specification of individual positions in the type number

6 th place	Connecting dimensions, electric connection		6 – terminal board
			7 – connector
7 th place	output shaft end, working stroke (version 5 – 8 is not available for type no. 52 265 and 52 266)	1 – lever, 60°	5 – without lever, 60°
		2 – lever, 90°	6 – without lever, 90°
		3 – lever, 120°	7 – without lever, 120°
		4 – lever, 160°	8 – without lever, 160°
8 th place	shifting time 90°		Table 1
9 th place	fitting of electronics	at 10 th place: 1, 3, 5, 7, 9	Table 3
		at 10 th place: 2, 4, 6, 8	Table 4
10 th place	type of electronics, power switches		Table 5

Table 3 – Actuator fitted with electronics DMS2 ED

Outfit	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	H	J	K	L	M	N	V	W	
Local control		x		x		x		x		x		x		x		x		x		x		x		x	
Display			x	x			x	x			x	x			x	x			x	x				x	x
Contactors or contact-less control					x	x	x	x					x	x	x	x					x	x	x	x	
Analog module	transmitter									x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
	regulator																x	x	x	x	x	x	x	x	

In case the actuator is equipped with electronics DMS2ED in configuration Replacement of Electro-mechanical Board (it does not include regulator) it is not fitted with electronic brake.

Table 4 – Actuator fitted with electronics DMS2

Two-position or three-position control *) – DMS2	R
Profibus – DMS2	P
Two- or three-position control, without display and local control *) – DMS	T
Modbus	Y

*) Two- or three-position regulation of the actuator is set at the manufacturer. Unless otherwise specified in the order, the actuator will be set for three-position regulation (control by signal 4 – 20 mA).

Table 5 – Type of electronics, power switches, brake

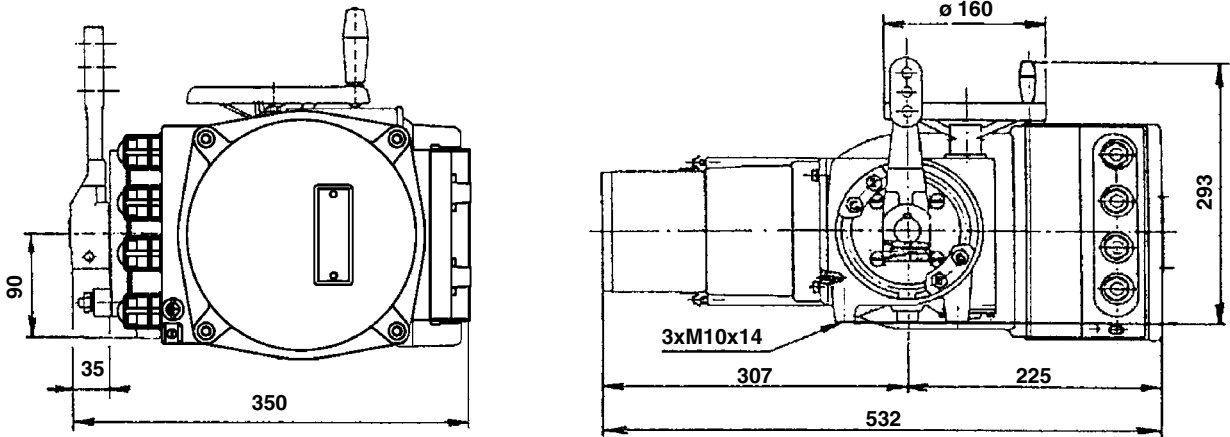
Electronics DMS2 ED – without power switches	1
Electronics DMS2 – with contactors	2
Electronics DMS2 ED – with contact-less switches	3
Electronics DMS2 – with contact-less switches	4
Electronics DMS2 ED – with contactors and brake	5
Electronics DMS2 – with contactors and brake	6
Electronics DMS2 ED – with contact-less switches and brake	7
Electronics DMS2 – with contact-less switches and brake	8
Electronics DMS2 ED – with contactors	9

Notes: The actuators with one-phase electric motors are available in the versions 52 26x.xxxx1xD, 52 26x.xxxx2xD or 52 26x.xxxx9xD.

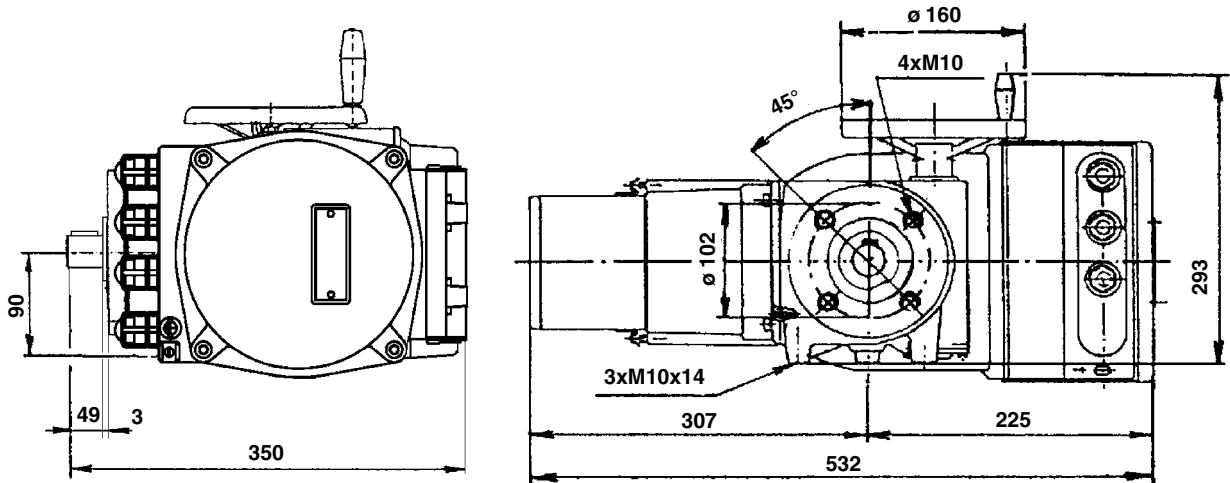
In case the actuator is equipped with electronics DMS2 (character P, R or T at the 9th place) and the character 2 is at the 10th place the actuator with three-phase electric motor is fitted with contactors; the actuator type no. 52 260 with one-phase electric motor is not fitted with contactors.

Dimensional sketch of **MODACT MPSED, MPSPED** electric actuator, Type No. 52 260

– Design with terminal board

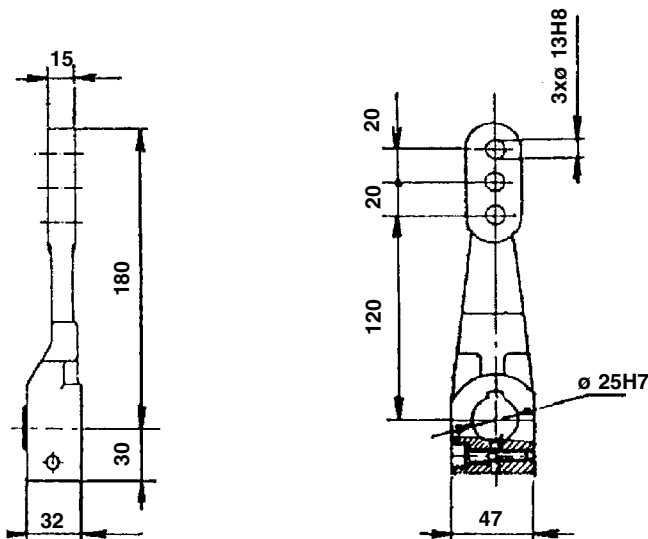


– Flanged design with terminal board

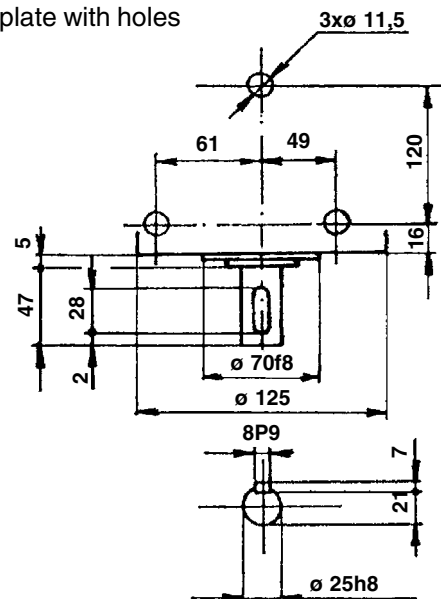


Note: Threads for bushings in terminal box: 1 x M25 x 1.5, 3 x M20 x 1.5 (the bushings are included in the delivery - wrapped-together part).

Lever

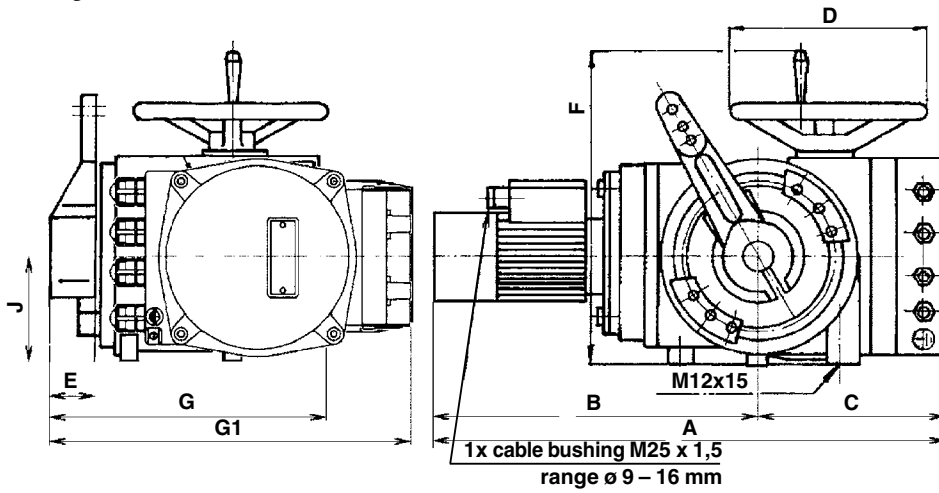


Mounting plate with holes



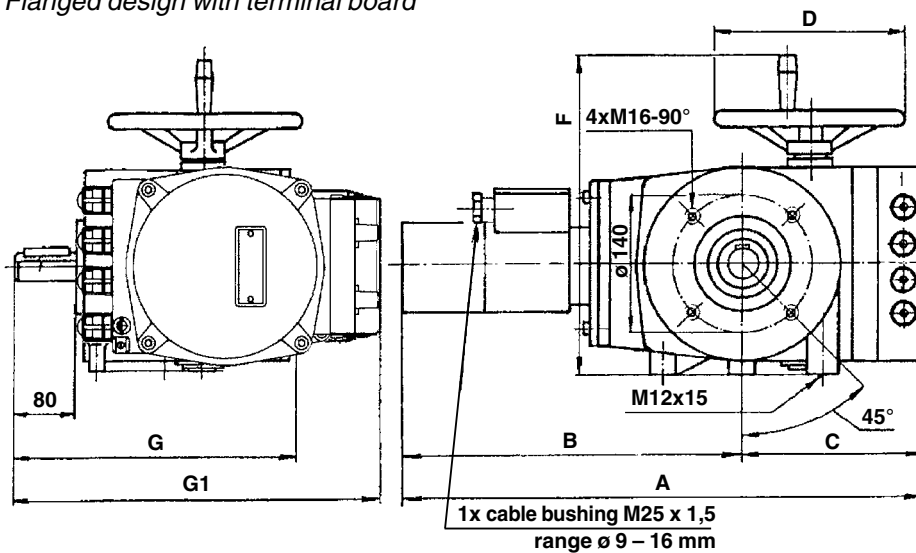
Dimensional sketch of **MODACT MPSED, MPSPED electric actuator**,
Type No. 52 261, 52 262

– Design with terminal board



A	620
B	386
C	234
D	ø 200
E	62
E ₁	60
F	346
G	340
G ₁	456
J	120
K	70
L	90
M	140
N	41
O	ø 14
P	40
R	170
S	56
T	4
U	25
X	65
Y	41
Z	273
d	ø 40 h 8
d ₁	ø 40 H 7
d ₂	3 x ø 20 H 8
b	12 P 9
h	8
e	35

– Flanged design with terminal board



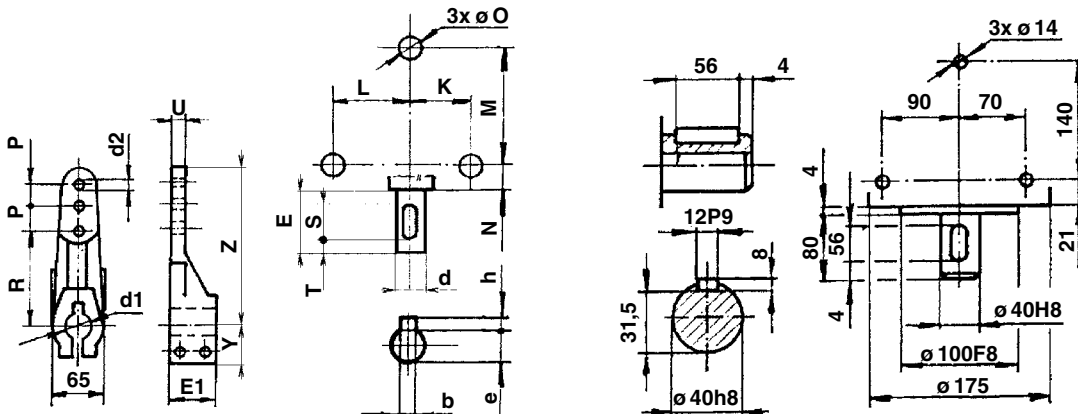
Note: Threads for bushings in terminal box: 1 x M25 x 1,5, 3 x M20 x 1,5 (the bushings are included in the delivery - wrapped-together part).

Lever

Mounting plate with holes

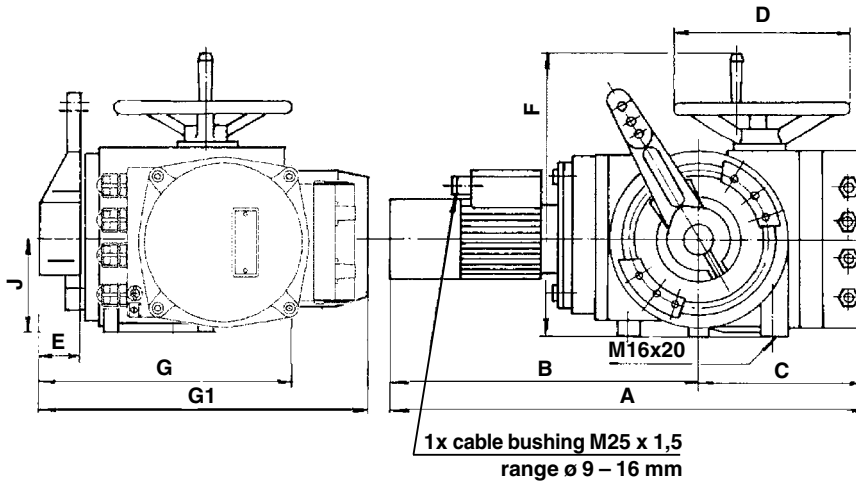
Output shaft

Mounting plate with holes



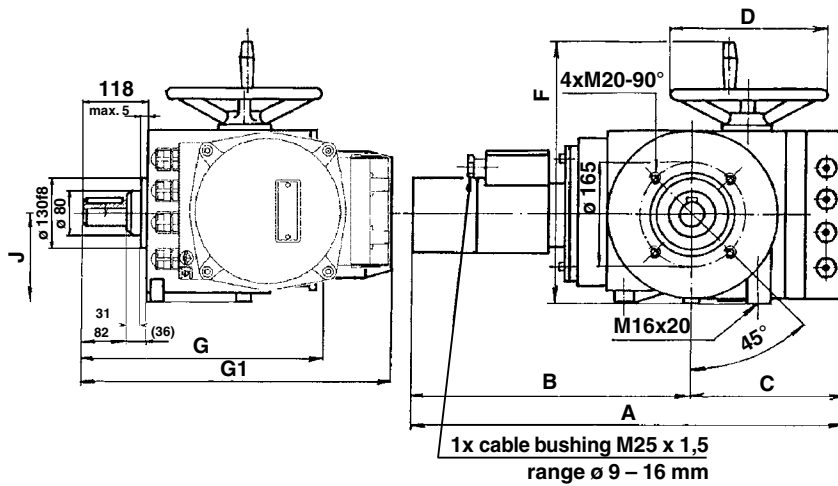
Dimensional sketch of **MODACT MPSED, MPSPED** electric actuators,
Type No. 52 263, 52 264

– Design with terminal board



	Design	
	Terminal board	
	52 263	52 264
A	712	731
B	460	479
C	252	
D	ø 250	
E	82	
E ₁	80	
F	420	
G	445	
G ₁	562	
J	145	
K	100	
L	110	
M	200	
N	60	
O	ø 18	
P	40	
R	170	
S	70	
T	7	
U	30	
X	80	
Y	55	
Z	278	
d	ø 50 h 8	
d ₁	ø 50 H 7	
d ₂	3 x ø 25 H 8	
b	16 P9	
h	10	
e	43,8	

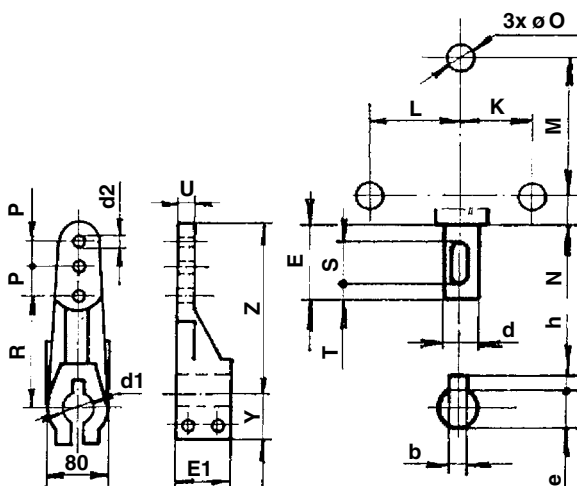
– Flanged design with terminal board



Note: Threads for bushings in terminal box: 1 x M25 x 1,5, 3 x M20 x 1,5 (the bushings are included in the delivery - wrapped-together part).

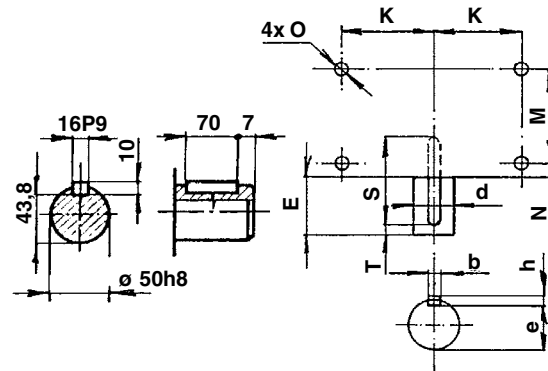
Lever

Mounting plate with holes

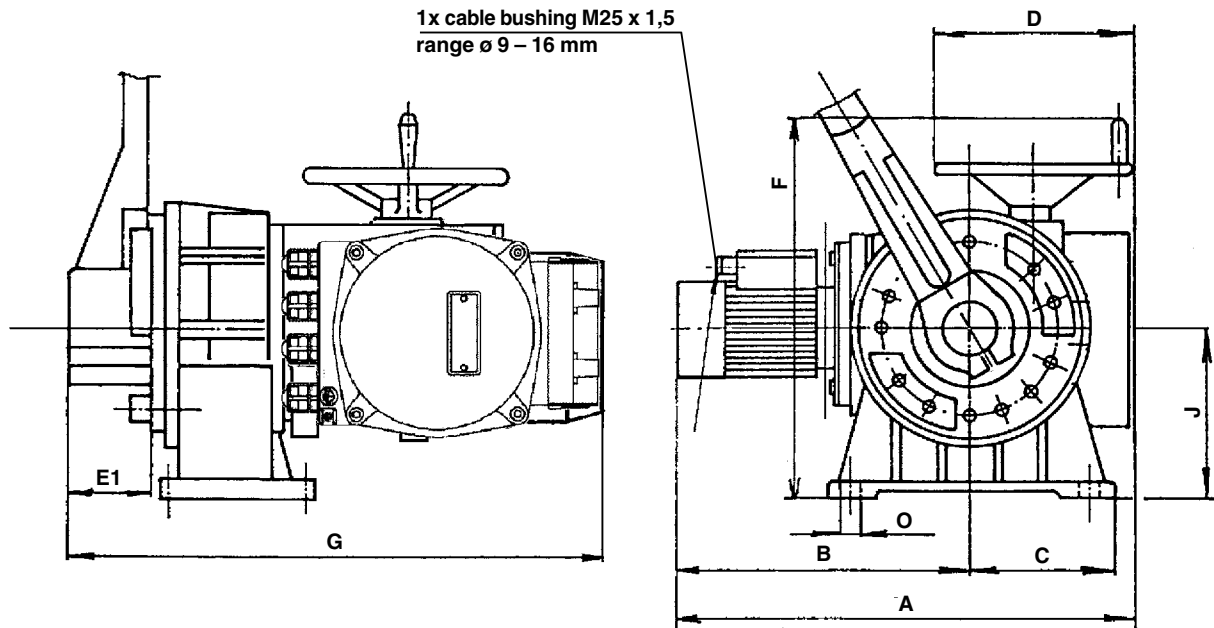


Output shaft

Mounting plate with holes

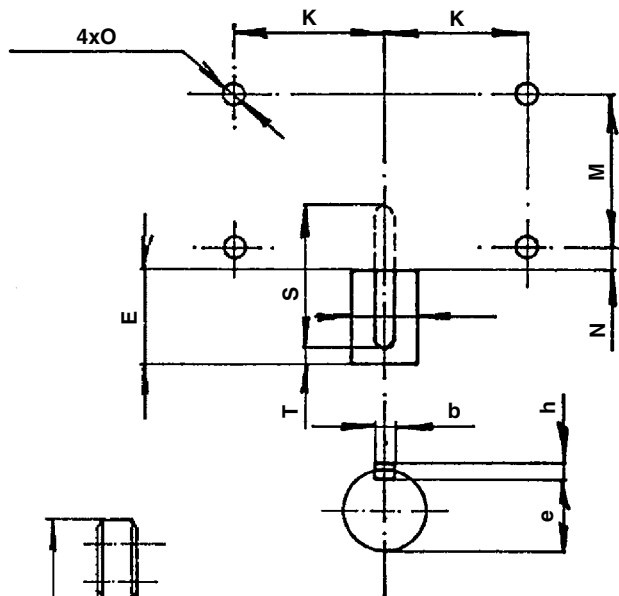


Dimensional sketch of **MODACT MPSED, MPSPED** electric actuators,
Type No. 52 265, 52 266

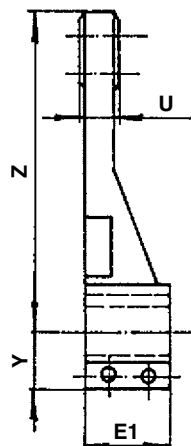
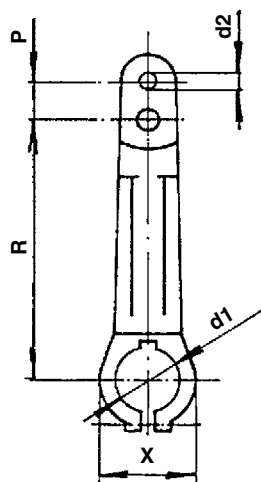


Note: Threads for bushings in terminal box: 1 x M25 x 1,5, 3 x M20 x 1,5 (the bushings are included in the delivery - wrapped-together part).

Mounting plate with holes

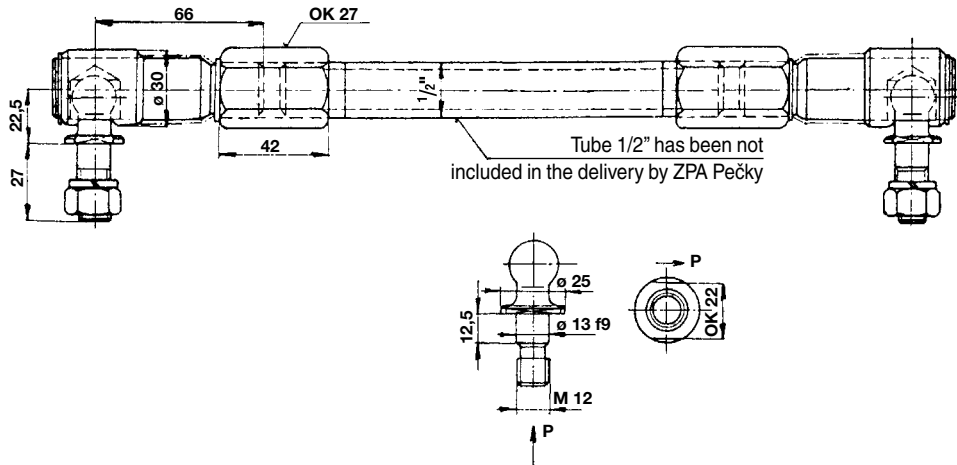


Lever



A	743
B	498
C	220
D	ø 300
E	123
E ₁	120
F	560
G	760
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 90 h8
d ₁	ø 90 H7
d ₂	ø 40 H8
b	25 P9
h	14
e	81,3

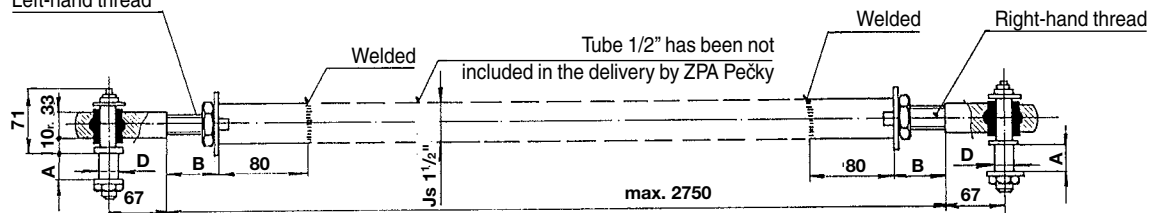
Pull Rod TV 360, Type No. 52 933 for MODACT MPSED actuators, Type No. 52 260



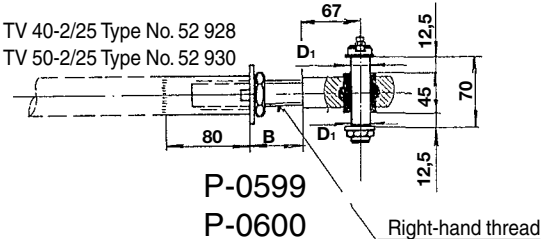
P-0210

Pull Rods TV 40 and TV 50

Actuator side Design TV 40-1/20 - Type No. 52 927
Controlled device side TV 50-1/25 - Type No. 52 929



Design TV 40-2/25 Type No. 52 928
TV 50-2/25 Type No. 52 930



Type	Type No.	Dimensions				Designed for actuator, Type No.
		$\varnothing D_1$	$\varnothing D_2$	A	B	
TV 40 - 1/20	52 927	20	25	23	min. 30 max. 50	52 261
TV 40 - 2/25	52 928			52 262		
TV 50 - 1/25	52 929	25	25	28	min. 30 max. 50	52 263
TV 50 - 2/25	52 930			52 264		

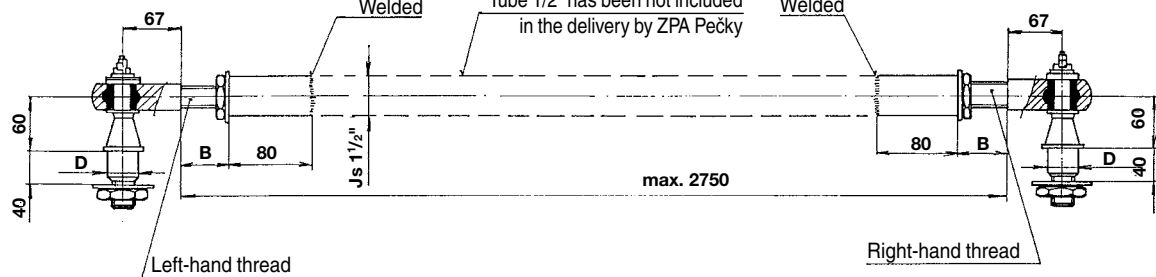
P-0599

P-0600

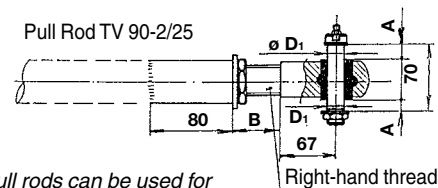
Right-hand thread

Pull Rod TV 90-1/40

Actuator side Welded Tube 1/2" has been not included in the delivery by ZPA Pečky Welded Controlled device side



Pull Rod TV 90-2/25

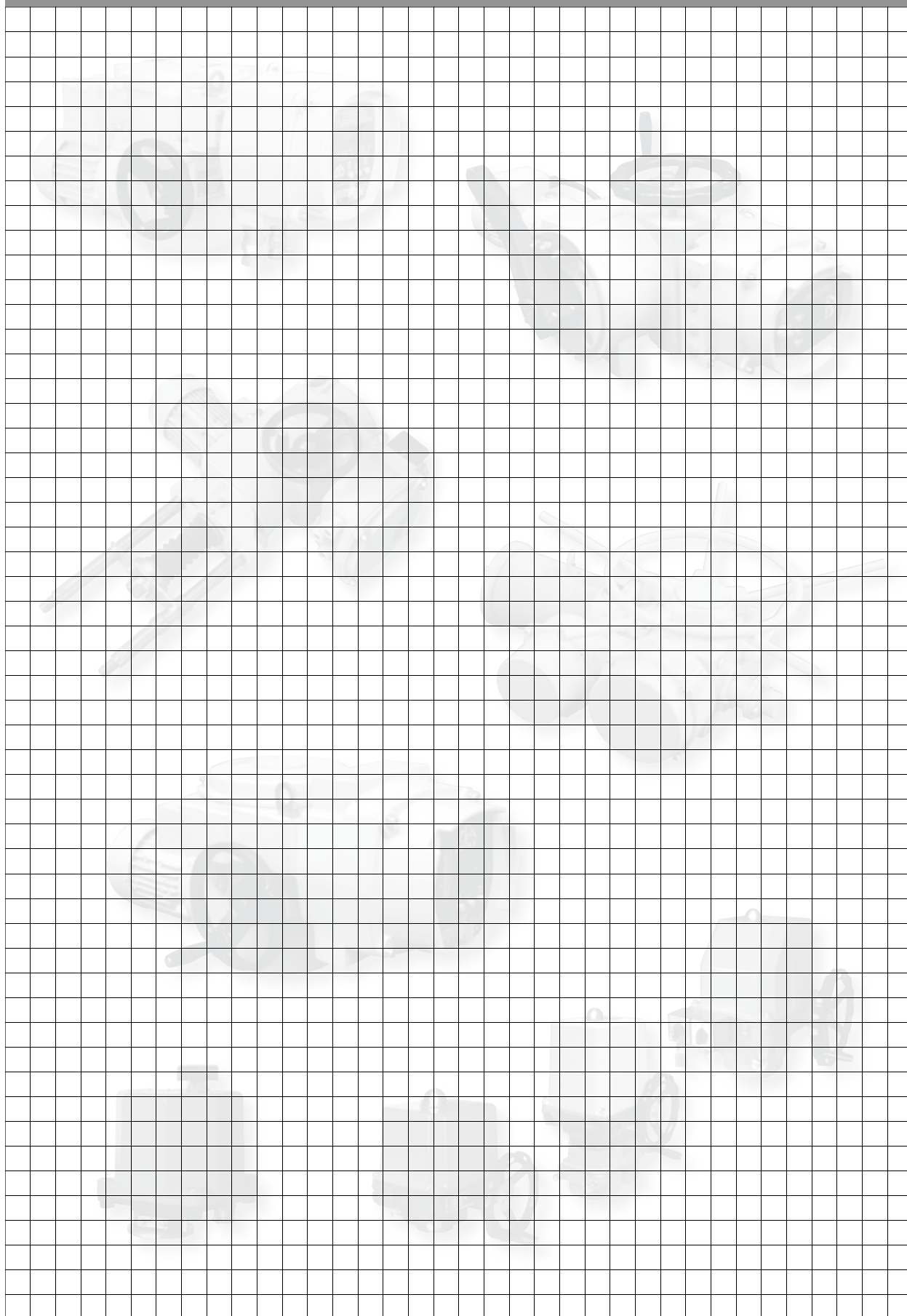


Type	Type No.	Dimensions				Designed for actuator, Type No.
		$\varnothing D_1$	$\varnothing D_2$	A	B	
TV 90 - 1/20	52 934	40	25	12,5	min. 20 max. 50	52 265
TV 90 - 2/25	52 935			52 266		

These pull rods can be used for MPR actuators, Type No. 52 223.

P-0452

Designed for connecting the actuators to the controlled device, these pull rods provide for the transmission of movements of the output section of the actuators to the controlled device. Not included in the delivery, they should be ordered separately.





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

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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

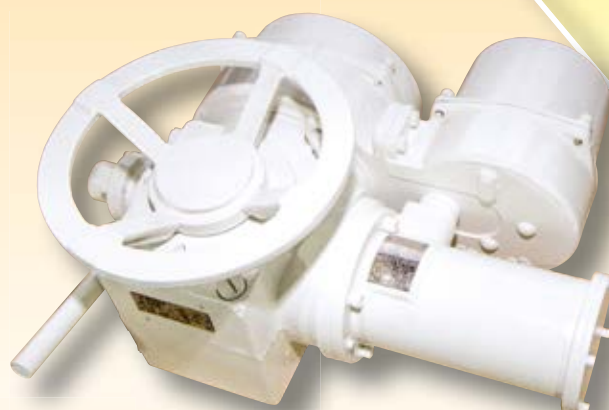
MODACT MPS KONSTANT, MPSED

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

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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