

REGADA[®]



REMATIC
Control units DMS3



REMATIC actuator control units

Traditional REGADA electric actuators are controlled through electro-mechanic position and torque units, and position transmitters with mechanical drives and the position of fittings is indicated by mechanical position indicators that provide rough indication of the achieved position. The actuators are equipped with a positioner to enable control by unified signal. These systems are set to fixed values and cannot be reset arbitrarily in operation, alternatively such resetting is limited. In case of REMATIC actuators, all of these functions are provided for by the DMS3 electronic contactless actuator control system with absolute position sensing. The system enables parameters setting, operation of the actuator, and control and monitoring of the set properties using a PC. The DMS system provides many new functions and features compared to traditional actuators, while providing unbeatable comfort during parameters setting. In case of a loss of power, all of the set values are stored without the need for a backup power source.

DMS3 ED

REMATIC electric actuators equipped with DMS3 ED electronics can be used, through the application of power supply voltage, to control the switching of the electric motor through relays. The parameters setting is performed using pushbuttons and flashing LEDs on the control unit or using a PC software (RS 232 interface). These units are designed for ON - OFF operation.

DMS3

REMATIC electric actuators equipped with DMS3 electronics are suitable for control by 24 V DC voltage (2P control) or by analogue input signal 0/4 - 20 mA or 0/2 - 10 V (3P control). Electric motors are switched by photoelectric elements. parameters setting is performed: using pushbuttons and flashing LEDs on the control unit, using a local control module with LCD display or using a PC software (RS 232 interface). These units are designed for continuous control or ON - OFF operation. The system enables toggling between digital and analogue control, or impulse control.

DMS3 PROFIBUS

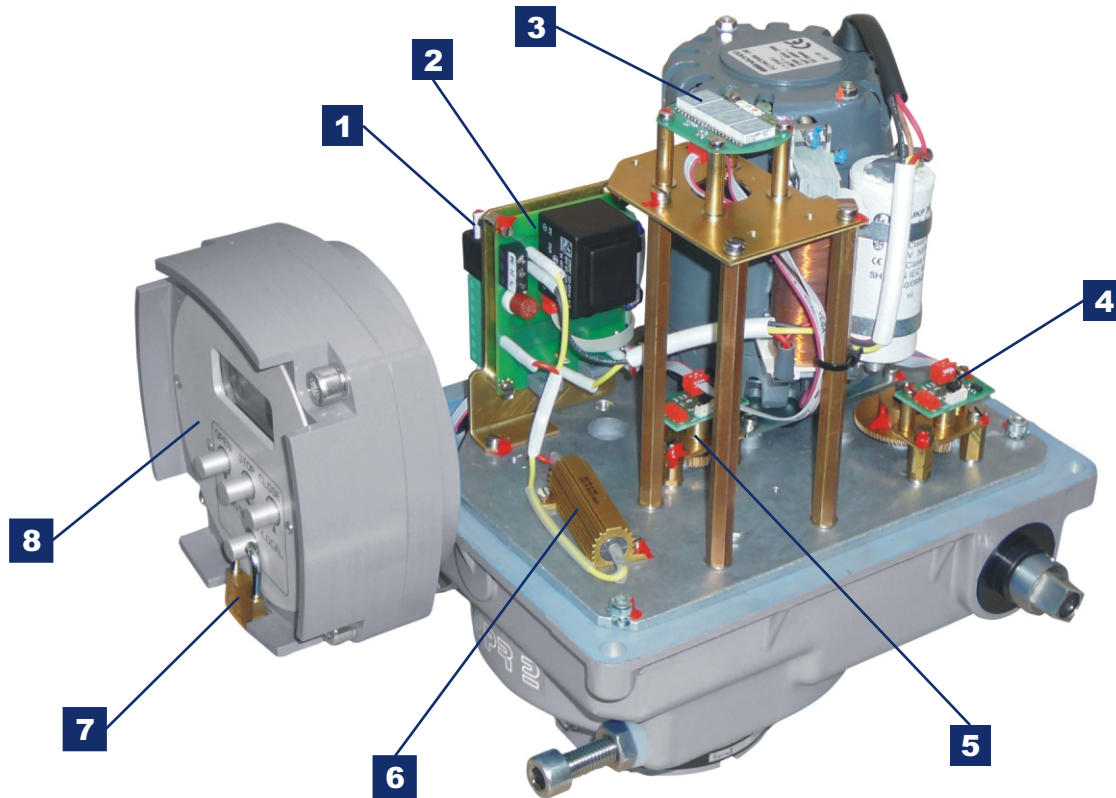
REMATIC electric actuators with Profibus DP communication protocol - under preparation.

Overview of the DMS3 system functions

POSITIONER FUNCTIONS
3P control - three-position control. Control by analogue input signal 0/4 - 20 mA (0/2 - 10V). Designed for continuous control operation Limit position control (tight closing, full opening) Positioner calibration
2P control - two-position control. Control command signals by permanent voltage 24 V DC, max. 10 mA. Designed for closing operation. OPEN - CLOSE
2P impulse control - control by 24 V DC impulse (without permanent voltage supply)
3P/2P/I2 - switching 3P/2P/I2 (impulse control)
Operation timing mode
Current position transmitter 4 - 20 mA, passive
ESD safety function - response to failure

SWITCHING-OFF
Switching-off in limit positions (programmable): switching-off by position, torque, or by a combination of there
Setting of the switching-off torque: torque adjustable from 50% to 100% (by size of drives 1)
Torque blocking: within selected range from limit position and from 0 - 20 s
Torque interlocking at motor start-up
REPORTING AND SIGNALING
Error messages by: <ul style="list-style-type: none"> - flashing red LED on control unit - numeric codes and captions on LED display and flashing red LED (under cover) - numeric codes and captions on LCD local control display and flashing red LED
Operation indication - through LEDs on control unit and on display
Messages and functions of programmable relays (RE1, RE2, R3, R4, 45) - choice of 18 functions
Failure reporting through programmable READY relay: errors, errors or warnings, errors or no remote, errors or warnings or no remote.
Activation of the electric motor thermal protection
ADDITIONAL ACCESSORIES AND FEATURES
Anti-condensation system - heating resistor controlled from control unit
DBL - function - local control release
RS 232 programming interface for PC parameters setting
LOCAL CONTROL
Two-line display - for indication of actual position and for parameters setting
LED signalling of operation and failure
Functions: REMOTE - OFF - LOCAL, OPEN - STOP - CLOSED
PARAMETERS SETTING
Adjustment by 4 pushbuttons and 6 signal LEDs on control unit
Adjustment using local control module pushbuttons and messages on LCD display
Parameters setting using PC program. Three levels of parameters setting: <ul style="list-style-type: none"> - user mode, for standard user of the actuator - service mode, for trained service personnel. This mode is activated by attaching an HW key to the PC - manufacturing mode. The menu is accessible only to the manufacturer
DATA ARCHIVING
Saving or printing of parameters for the purposes of their archiving
Displaying all current errors and memory positions with error logs from prior operation
Displaying the hours and minutes of actuator/controller operation
Displaying the number of relay activations to "Closed and Open" positions
Last warning message and error log
Number of warnings and error log

Basic parts of the DMS3 system



1 Control unit

The control unit is the heart of the DMS3 system. The control unit processes data from sensors and inputs and analyses the data and issues commands to control the electric motor - used to drive the actuator. The control unit adjusts the output and relay settings and transmits data to displays. The control unit comprises a position controller enabling control by unified input signal 0/4 - 20 mA (0/2 - 10V). The control unit controls communication with other DMS3 system modules. The memory stores the parameters for system configuration and function. Enables the system menu for parameter adjustment and performs system diagnostics.

The control unit comprises:

- ▶ actuator setup panel using 6 LEDs and 4 pushbuttons
- ▶ READY relay to indicate readiness of the actuator or to indicate errors and failures
- ▶ 2 freely programmable relays RE1, RE2 (torque, position, ...)
- ▶ analogue current position transmitter 4 - 20 mA, passive
- ▶ terminals for connection of inputs and outputs
- ▶ communication connector for parameters setting through the PC - interface RS 232

2 Power supply board

Provides power to electronic circuitry and electric motor as well as auxiliary output voltage 24 V DC.

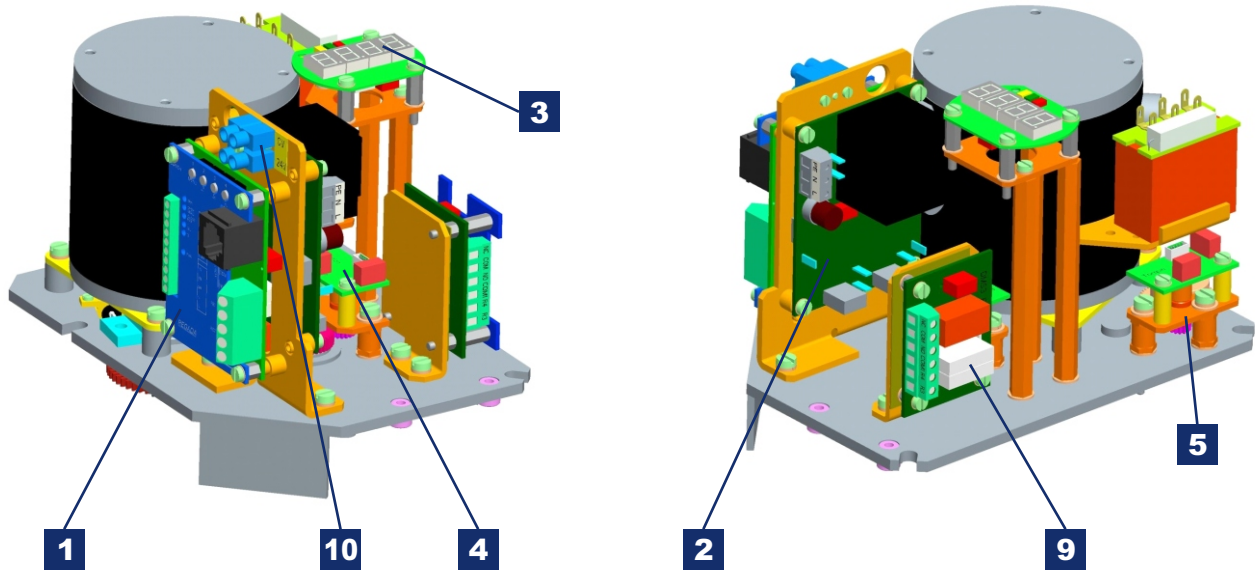
Z1/Z4 - for actuator size "0" with single-phase motors

Z2 - for actuator sizes "0.1, 1, 2, 2.3, 2.4, 3, 3.4 and 3.5" and auxiliary voltage output 24 V DC, 40 mA

Z3 - for Modakt actuators for 3-phase power supply voltage with auxiliary voltage 24 V DC, 100 mA

3 LED display

Used to indicate position during operation and to indicate LED menu captions during parameters setting of the actuators using control unit pushbuttons. It is equipped with 3 LEDs to enable signalling of operation and failures. The LED display is supplied with actuators starting from size "0.1" when no local control option is selected.



- 4 Position sensing unit**
 Provides contactless magnetic sensing of the position of the output shaft.

- 5 Torque sensing unit**
 Provides contactless magnetic sensing of the torque of the output shaft. For part-turn and linear actuators, this is available from size 1.

- 6 Heating resistor**
 Used to maintain the required ambient temperature for electronic circuitry. The resistor is controlled by the control unit and the temperature can be set from -40°C to +70°C using a PC software program.

- 7 Padloc**
 Prevents unauthorized handling of local control.

- 8 Local control module**
 Indicates the current position during operation, provides information on error messages. In the "OFF" position, all values can be set using module pushbuttons without opening the top cover.
 Contains:

 - two-line alphanumeric LCD display indicating: information about the actuator, actuator parameterization captions and indication of the current position during operation
 - three LEDs to indicate operation and failure status
 - lockable pushbutton to select functions: REMOTE - OFF - LOCAL
 - pushbuttons for actuator parameters setting and control of OPEN - STOP - CLOSE
 - padlock to prevent unauthorized tampering

- 9 Accessory relay module**
 Contains three independent programmable relays R3, R4, R5.

- 10 Auxiliary output voltage**
 Auxiliary voltage terminals for connection of control inputs

Control and functions of the positioner

2P control

Control by power voltage

The DMS3 ED control unit is selected to control actuators in OPEN - STOP - CLOSE mode, using power voltage. Parameters setting is performed using the same control program as in DMS3 or using the pushbuttons on the control unit.

Control by 24 V DC

The DMS3 control unit is selected to control actuators in OPEN - STOP - CLOSE mode, using 24 V DC voltage. When programming the control unit in the Controller menu for 2P control, the actuator is controlled by commands OPEN - CLOSE - by applying 24 V DC voltage (continuous signal) to "Open and Close" terminals. This menu enables the setting of impulse mode OPEN - CLOSE, wherein the actuator is activated by impulse lasting at least 50 ms and remains active until switching-off in the limit position without the presence of continuous control voltage. In the intermediate position, the actuator can be stopped by applying 24 V DC to input I1, which is programmed as STOP.

In actuator sizes from "0.1", an auxiliary output voltage 24 V DC is supplied from the power supply unit to the terminal board, which can be used to switch the control modes 3P/2PI2, i.e. continuous control / Open-close mode / impulse mode.

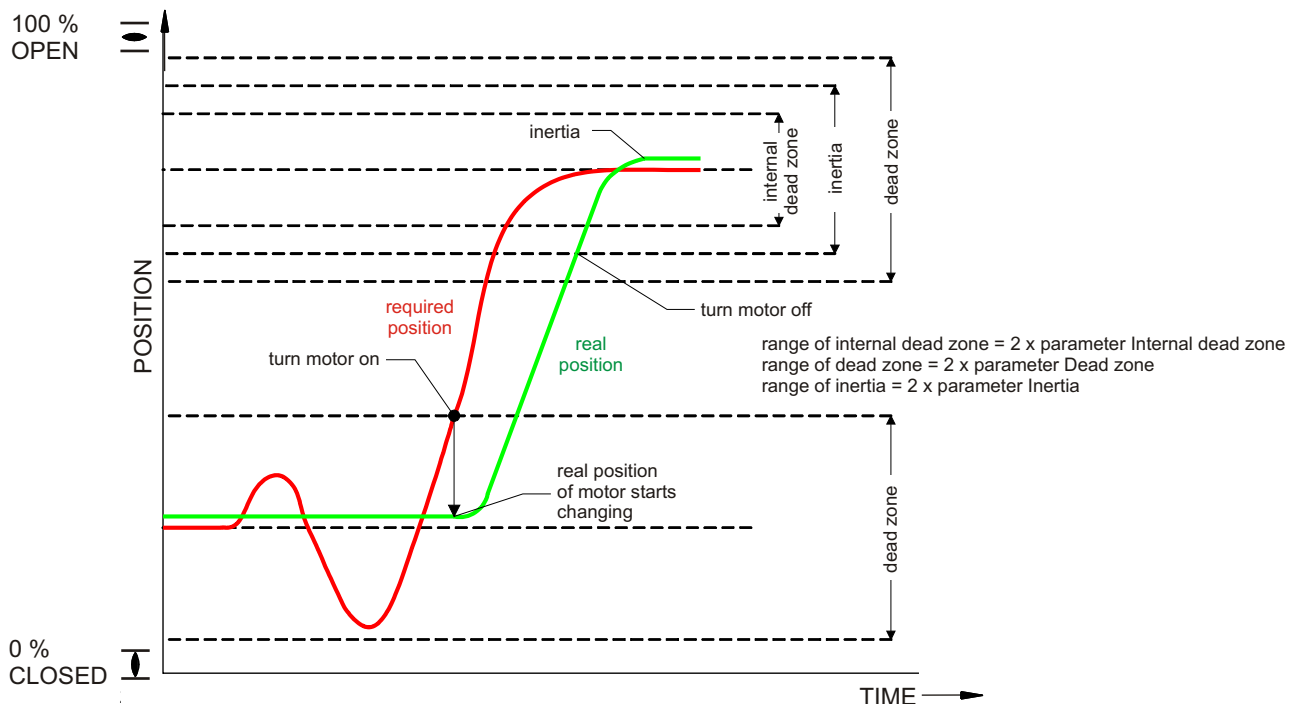
3P control

Control by signal 0/4 - 20 mA

The positioner is a part of the DMS3 system control unit. It can be activated in the Control menu by selecting option 3P. Unified input signals 0/4 - 20 mA or 0/2 - 10 V are supplied to terminals -IN, +IN.

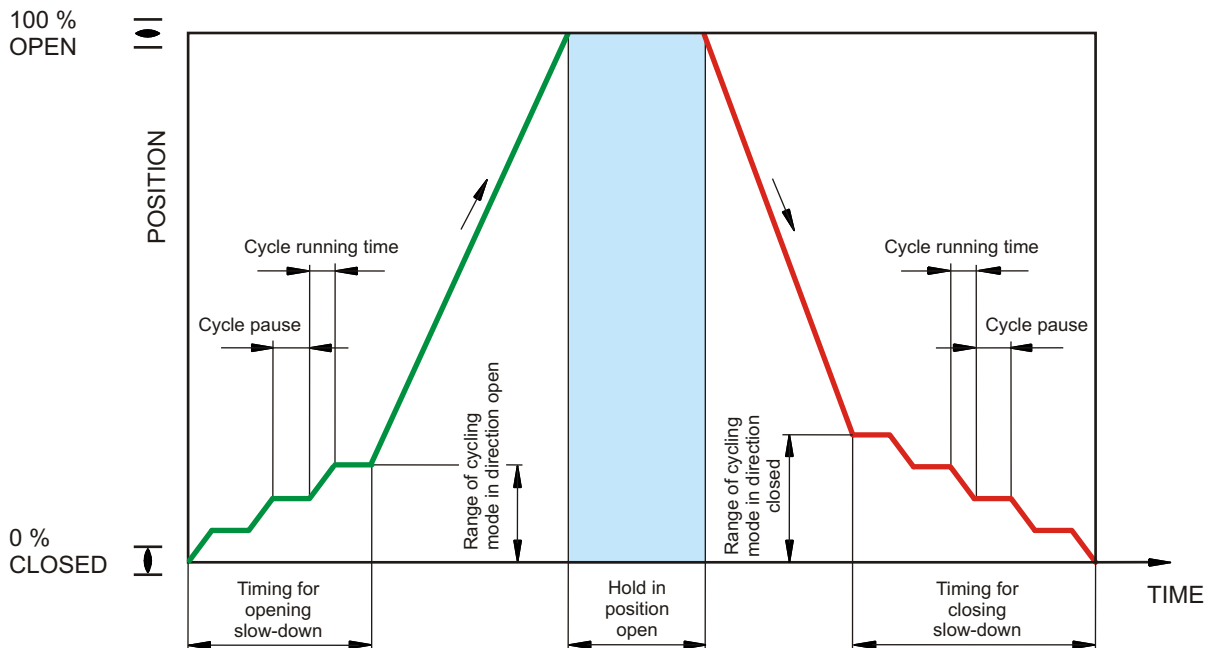
A three-position positioner processes the required position value and the real position value while continuously comparing the two values. If the difference exceeds the set tolerance range, a command is issued to operate the motor by the necessary increment in the corresponding direction. The control process can be stabilized by correct adjustment of the tolerance (hysteresis) range. In order for the actuator to stop in the new desired position, the control unit turns the motor off earlier by a rundown value measured during calibration. The moment when the motor is switched in the desired position defines the range of internal tolerance (hysteresis), determining the accuracy of the control.

The positioner also includes the function "tight closing or full opening" of the fitting, depending on the definition of the Limit position parameter or depending on the setting of the tolerance (hysteresis) range. If value 0-5% is set in the Tolerance menu, when the actuator reaches this range, it is switched off at 0% or at 100% or depending on torque. By selecting options 3P/2PI2 in the "Regulation" menu, voltage applied to input I2 can be used to de-activate the continuous control mode and switch the system to control mode OPEN - STOP - CLOSE, i.e. 2P control , or 2P impulse mode.



Timing mode

The purpose of timing is to slow down the speed of the actuator to achieve the desired position within the selected stroke zone. Electric motor operation time and duration of the delay can be set from 1 to 250s. The timing mode can be activated separately for the OPENING and the CLOSING direction or as the same value for both directions. Timing is possible for closing (2P) as well as continuous control (3P) mode.



Switching off

REGADA actuators are equipped with two independent measurement systems: measuring of position and torque. Depending on the fitting type, the Limit position menu can be used to select switching-off in limit positions such as: position switching-off, torque switching-off for both directions or in combination, i.e. one direction by position, the other by torque. Selection is available through all parameters setting methods.

Torque adjustment

Actuators size 1 and larger are equipped with a torque sensor. The switching-off torque can be adjusted from 50% to 100% maximum switching-off torque, independently for both directions. The adjustment is carried out using PC software, by pushbuttons on local control or by pushbuttons on the control unit. Torque switching-off can be applied to limit positions (stops) or in an intermediate position - considered an error.

Torque blocking

Torque blocking in limit positions. Used to block the torque switching-off during movement from the limit position due to breakage of the valve closing element. Maximum starting torque of the actuator is reached. This is not used with valves with increased torque in limit position, or with valves that have been in limit position for an extended time. Blocking is possible only at limit positions determined by the parameters Blocking position O and C. The O torque moment can be blocked from 0 to 5% of the stroke and the C torque can be blocked within 100 to 95% of the stroke. The blocking time is determined by parameter Blocking time - from 0 to 20 seconds.

Response to failure

In case of failure of the control signal or other failure, the actuator can be set to the following modes:

STOP - the actuator stops immediately and maintains this position.

POSITION OPEN - the actuator is reset to the OPEN position.

POSITION CLOSED - the actuator is reset to the CLOSED position.

SAFE POSITION - the actuator is reset to a pre-programmed position.

Upon resolution of the failure, the actuator assumes a position corresponding to the signal of the desired value.

Torque interlocking at start-up.

Used to span the increased momentum moment at start-up.

Messages and signalling

Error messages

Calibration is performed after setting of the limit positions of the actuator. If the calibration is completed without errors, the actuator output shaft is set to a position depending on the remote control signal. In case of an error during calibration, the system issues an error message by flashing the ERROR LED, by toggling the READY relay and through captions in displays specifying the type of error. The actuator can be connected to a PC in order to determine the type of error using a software program. These error messages are indicated during operation, as well. In case of a failure, the actuator is stopped and its operation will resume when the failure is resolved.



READY relay

The programmable READY relay provides a summary error reporting depending on the selected setting:

- › Errors
- › Errors or warnings
- › Errors or NO remote
- › Errors or warnings or NO remote

Thermal safety - activation of thermal protection

Single phase electric motors (except for SP 0, ST 0, SP 0.1) are equipped with thermal safety as a standard, installed in the motor winding within the zero conductor circuit. When the temperature is exceeded, the circuit is broken and the electric motor goes out of operation until the winding cools down and the thermal cut-out closes again. Three-phase electric motors have a thermal cut-out integrated into the control unit. In the "Thermal cut-out failure" set to "Thermal cut-out active", an error is reported if the electric motor overheats and the actuator movement is stopped. When the "Ignore thermal cut-out" choice is selected, the actuator keeps working regardless of the motor winding temperature. Resetting of the thermal cut-out can be set for Automatic, whereas the actuator, upon cooling, resumes standard operation or using local control.

Indication of operation and position

Indicator of REMATIC actuator drive in the OPEN or CLOSE direction or failure reporting by the system using:

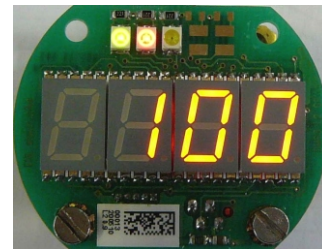
- › LEDs on the control unit
- › LEDs on display visible through top cover sight glass
- › LEDs on local control (depending on the actuator outfitting)

% indication of the position is provided by the system through LED display or LCD display, provided that the actuator is fitted with local control.

Reporting of actuator operation with determination of the direction of movement is possible through programmable relays.

LED display

(inside actuator, visible through cover sight glass)



LCD display

(on local control module)



Actual position transmitter

For actual position reporting, the actuators with a control board for 3P control are capable of converting the measured position value acquired by the contactless magnetic sensor to the analogue signal 4-20 mA. The signal is applied to terminals -L and +L of the output signal terminal board on the control unit. Output signal is passive. Maximum load: 500 Ohm
Supply voltage: 15 - 24 V DC

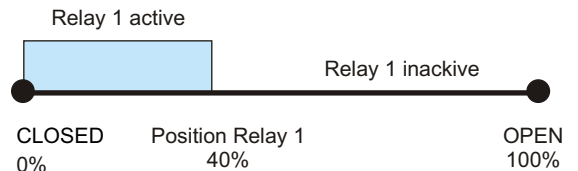
Programmable signal relay

Actuators with the DMS3 system are equipped with 2 basic relays, RE1 and RE2, or alternatively with module and 3 auxiliary relays R3, R4, R5 (starting from actuator size "0.1"). The relays can be programmed to indicate the following conditions:

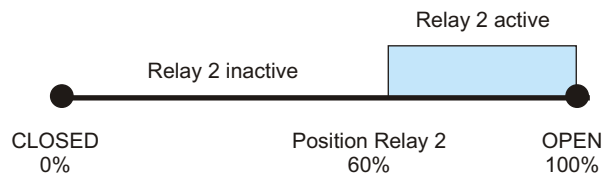
- › Relay inactive
- › OPEN position achieved
- › CLOSED position achieved
- › Switching-off torque activated in the OPEN direction
- › Switching-off torque activated in the CLOSED direction
- › Switching-off torque activated in the Open or Closed direction
- › Open torque activated or Open position achieved
- › Closed torque activated or Closed position achieved
- › Movement to Open position
- › Movement to Closed position
- › Movement (in both directions)
- › Movement - flasher (intermittent operation indication)
- › Relay active from 0% to selected position *
- › Relay active from selected position to position 100% *
- › Warning (as a function of the Ready relay)
- › Remote control activated
- › Local control activated
- › Control off

*** Replacement of signal switches by relay functions:**

To position: Relay is active from position Z (0%) up to the value of parameter Relay position 1 (3... 5 for the remaining relays)



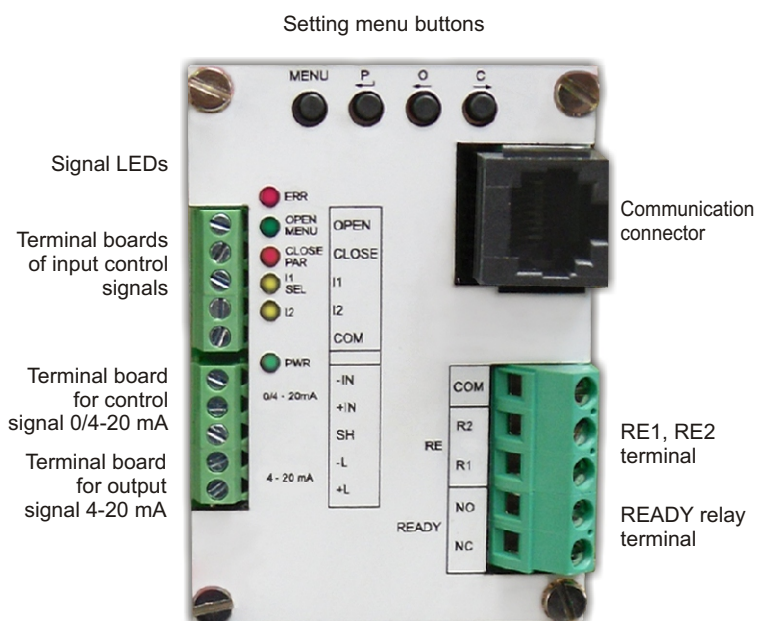
From position: Relay is active from the value of parameter Relay position 2 (3... 5 for the remaining relays) to position O (100%)



Parameters setting of the DMS3 system

Parameters setting using pushbuttons and LEDs on the control unit

Setting is performed using four pushbuttons: MENU, P, O and C (Menu, Parameter, Open, Close) and flashing LEDs (MENU, PAR, SEL). Indication is also provided through LED display, if the actuator is equipped with it (starting from size 1). When the menu is activated, normal operation of the actuator is disabled. Access to the menu may be user password protected. LEDs are also used for indication of: error reporting (ERR), indication of movement direction (OPEN, CLOSE), supply of control voltage to inputs I1 and I2 used to toggle the actuator to 2P mode and stopping in impulse mode. The control unit is equipped with terminal boards for the connection of input and output signal wires and a terminal board for output reports: READY relay and RE1 and RE2 relay.

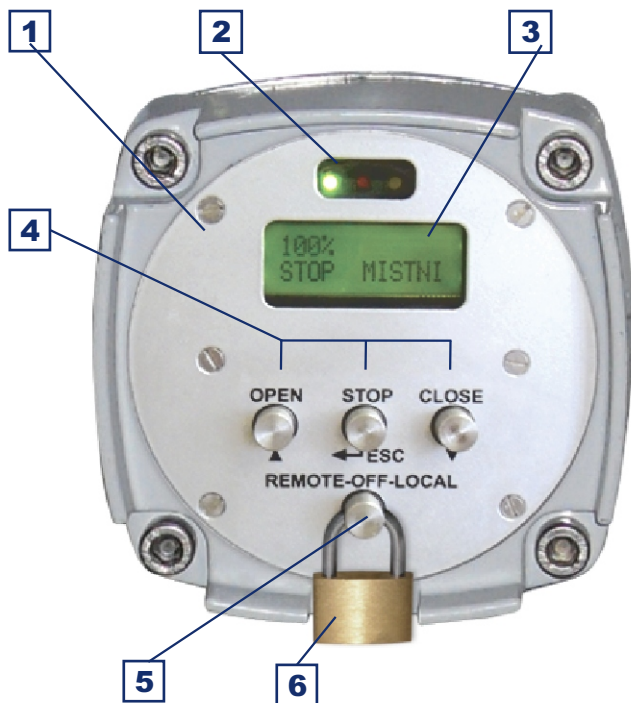


Parameters setting using multifunction pushbuttons on the local control module

Local control contains the elements required for parameters setting and control of the actuator from the point of installation. The setting is "non-intrusive", i.e. it is performed without removing the cover of the actuator.

The local control module is fitted with LED operation and failure indication. Upon release of the Remote-OFF-Local pushbutton and switching to LOCAL mode, the actuator can be controlled in the OPEN and CLOSE direction using the OPEN, CLOSE and STOP pushbuttons.

The setting is carried out using pushbuttons and indications on the LCD display on the local control unit. Upon release of the Remote-OFF-Local pushbutton and switching of the system to OFF condition, the ESC button is used to enter the menu. Arrows are used to scroll individual menu options. Access to a selected menu is possible by short-pressing ESC and selected parameters are saved by long-pressing ESC. Menu options and parameter selection are displayed on the two-line LCD display. Access to the menu may be user password protected. When the menu is accessed, normal operation of the actuator is disabled. The parameters setting menu is available in four languages: English, Czech, Polish and Russian.



- 1** Local control panel
- 2** LED signalling of operation and failure
- 3** LCD display
- 4** OPEN-STOP-CLOSE pushbuttons
- 5** REMOTE-OFF-LOCAL pushbutton
- 6** Padlock

Parameters setting using the EHL Explorer software on a laptop or a PC

Parameters setting performed on a laptop or a PC using the EHL explorer software is the fastest and simplest method of setting the actuator parameters. There are three levels of parameters setting:

- user mode, for the standard user of the actuator
- service mode, for trained service personnel. This mode is activated by attaching a HW dongle to the PC
- manufacturing mode. The menu is accessible only to the manufacturer.

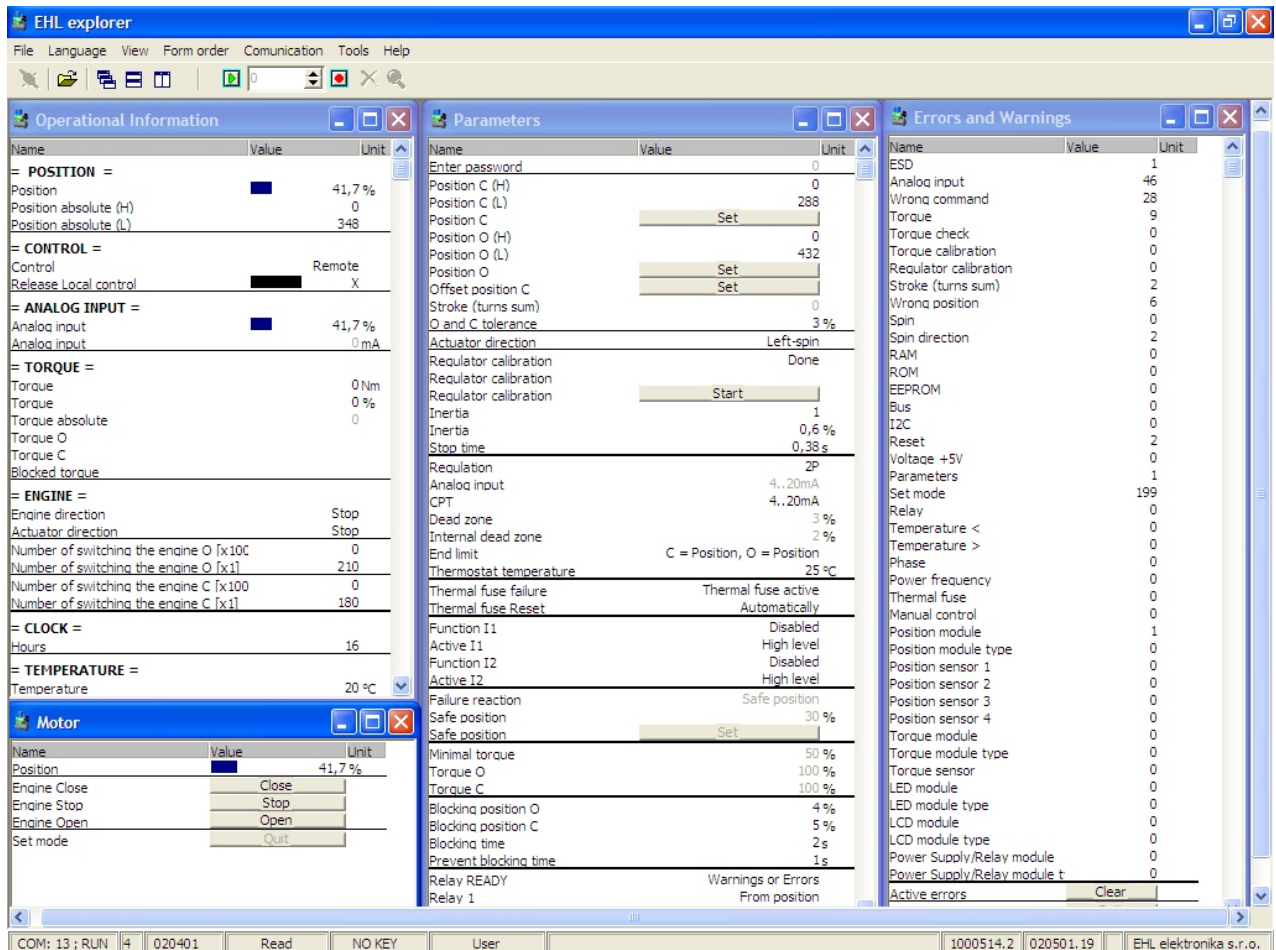
Different screens can be selected on the PC monitor to set and monitor individual parameters. Screens most frequently used for customer settings:

Operating data - the screen provides data on actual position, control, magnitude of the control signal, torque, operating hours, number of motor activation events in individual directions.

Motor - used to activate the actuator and to reset the actuator to limit positions during parameters setting.

Errors and warnings - this screen indicates errors and warnings during parameters setting of the actuator and during its operation.

Parameters - main screen used to adjust the actuator settings. All major user functions are set here: adjustment of limit positions, calibration pushbutton, controller mode selection - 3P/2P/impulse control, selection of input and output signal, controller tolerance, switching of heating resistor, programming of thermal cut-out, adjustment of response to failure and adjustment of safe position during failure or loss of signal, setting of switching-off torque from 50% to 100% of the switching-off torque, setting of blocking in limit positions and blocking at motor start-up, setting of programmable relay functions, timing operation, saving of set values or reloading from memory.



Diagnostics

Monitoring

All functions and set parameters are continuously monitored. If deviations from normal operation or set parameters are observed, the system assesses the deviation as a warning or an error. Warnings can be viewed in the Warnings screen, errors are viewed in the Errors or Errors and warnings screen. At the same time the errors are indicated by flashing ERR LEDs or by indication of the error code on the LED display alternatively by indication of error caption on the LCD display. In case of a warning, the actuator can still be operated, in case of an error the

actuator is stopped and the operation can be resumed only when the error is resolved. Warnings and errors are defined by the manufacturer.

Logging

During operation of the actuator, data is collected and can be displayed in the Operating data menu. The data includes the indication of the desired position, actual position, motor operation in the desired direction, number of motor activation events and total operating hours. The set parameters can be saved in a backup file to be retrieved at any time to restore previously set parameters.

Technical specifications

Operating conditions

Operating temperature

Basic standard version for temperature range -25 °C to +55 °C

Additional available environment version:

- cold version for temperature range -40 °C to +40 °C
- see version for temperature range -40 °C to +55 °C
- tropical version -25 °C to +55 °C

LCD display is functional only in temperatures higher than 25 °C.

Additional information on environmental conditions can be found in the technical sheet Operating environment.

Protection enclosure

Rematic actuators in standard form are protected according to IP 67.

Electrical connection

Rematic actuators are connected through cable bushings to the screw terminals of the control unit and power supply according to the corresponding wiring diagrams.

Electric motor switching

Single-phase motors are switched by photoelectric elements. Three-phase electric motors are switched through reversing contactors or relays.

Thermal protection of the electric motors

SP actuators with asynchronous motors are equipped with thermal cut-out integrated in stator winding. Thermal cut-out is based on thermal break type contacts. Dislocated thermal protection can be provided upon request.

Actuator protection

Actuator power supply board is fitted with a power source fuse. The values and characteristics of the fuses can be found in the installation manuals of the corresponding actuators.

Heating of the control space

In order to maintain an appropriate environment for control functions, the internal space is heated by a heating resistor with power supply voltage equal to the power supply voltage of the electric motor (max. 250 V AC). Switching of the heating element is provided by an electronic PCB acting as a temperature controller. The contact breaking temperature can be adjusted from -40 °C to +70 °C using PC software, based on the Thermostat temperature parameter. The default value of the heating element off temperature is +25 °C.

Operating mode

ON-OFF or impulse S2, 10 min. operation
Modulating operation S4, 25%, max. 1,200 c/hour, with loading torque (thrust) according to the catalogue.

Mounting position

Rematic actuators - SP and ST types can operate in any position (a position below the valve is not recommended).

Mechanical connections

Mechanical connections of part-turn actuators (flanges and openings in the output shaft) comply with standard ISO 5211. Various designs of openings are available in the output shaft or using a replacement insert. Upon agreement with the manufacturer, additional non-standard couplings can be provided. Mechanical connection of linear electric actuators is made through pillars or a flange. The rod of the valve is connected by means of actuator's coupling's nut. Multiturn actuators are connected in accordance with the standards ISO 5210 or DIN 3338 with different shapes of the output.

Manual control

Manual control of actuator sizes "0 and 0.1" is provided by a hand wheel installed on the top of the actuator. Actuators starting from size "1" are equipped with manual control with permanent readiness. The control signals must be off when the actuators are controlled manually.

Corrosion protection

As a standard, the actuators are supplied with a synthetic paint surface treatment. For "marine" environments, the equipment is equipped with improved corrosion resistant surface treatment (cathodic protection + two-component paint).

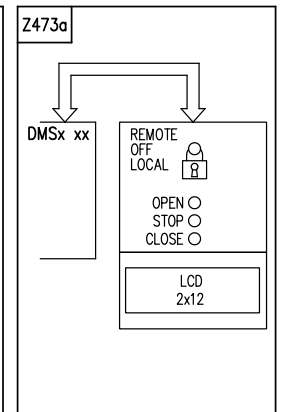
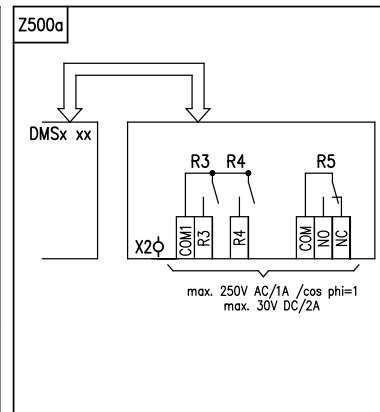
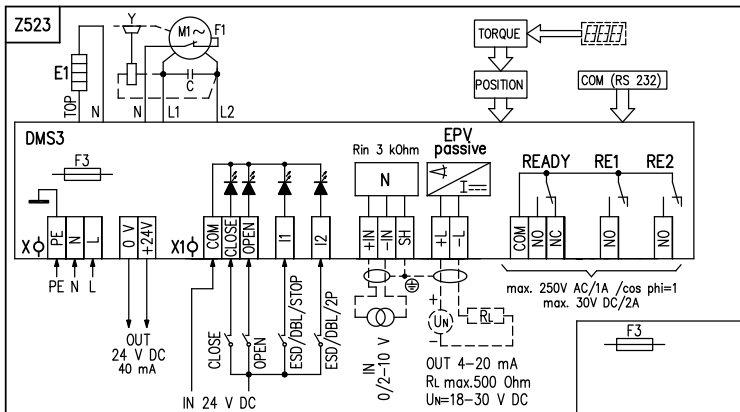
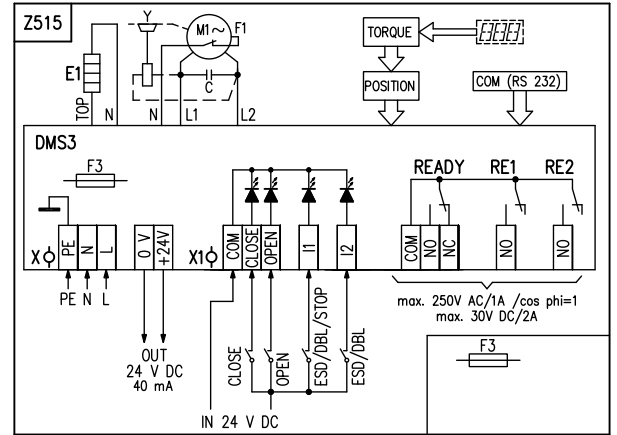
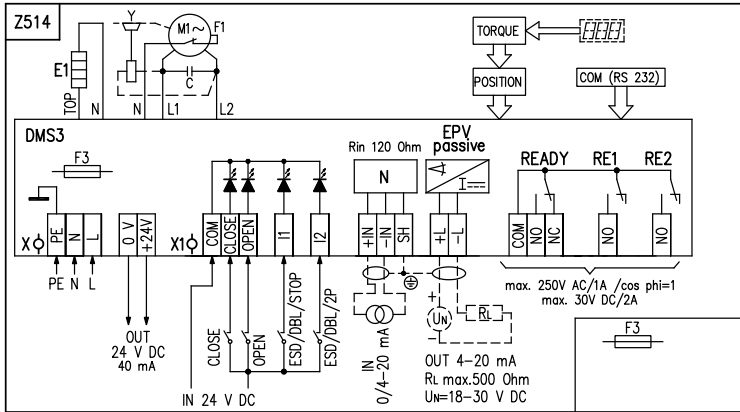
Digital / analogue inputs and outputs

For cooperation between the actuator and supervising control system, the actuator is equipped with:

- ▶ **4 digital inputs:** Open, close, I1 (Stop, local control release, ESD - response to failure), I2 (ESD, local control release, 2P - toggling from analogue to digital Open-close or impulse control).
- ▶ **3 digital outputs:** 2 programmable relays RE1 and RE2, READY relay (standard equipment)
- ▶ **3 digital outputs:** 3 programmable relays R3, R4, R5 (optional from size 0.1).
- ▶ **analogue input (desired value):**
Positioner input control signals:
- current: 0/4 - 20 mA, 20 - 4/0 mA
- voltage: 0/2 - 10 V, 10 - 2/0 V DC
Controller linearity deviation: 0.5 %
Positioner tolerance: adjustable within 1-10%
- ▶ **analogue outputs:**
Output signal current: 4 - 20 mA, passive (electronic position transmitter - EPV) Supply voltage: 18 to 30 V DC
Loading resistance: max. RL=500 Ohm
Auxiliary output voltage 24 V DC, 40 mA to control I1 and I2 inputs.

The output signal is galvanically separated from the input control signal.

REMATIC actuators + DMS3 control unit wiring diagrams (examples)



Wiring diagrams of actuators from the size "1"

Legend:

- Z473.....wiring diagram of electric local control for control unit DMS3
- Z500a.....wiring diagram module with 3 additional relays
- Z514.....wiring diagram of actuators REMATIC - (3P) control by analogue input signal 0/4 - 20 mA with switching 3P/2P/I2 (impulse control) and output signal 4 - 20 mA, passive.
- Z515.....wiring diagram of actuators REMATIC for ON/OFF - (2P) control
- Z523.....wiring diagram of actuators REMATIC - (3P) control by analogue input signal 0/2 - 10 V with switching 3P/2P/I2 (impulse control) and output signal 4 - 20 mA, passive.
- Z571.....wiring diagram of actuators REMATIC - communication protocol MODBUS
- Z571a.....wiring diagram of actuators REMATIC - communication protocol PROFIBUS

Electric connection:

- PE, N, Lterminals of supply (24 V AC resp. 110/120 V AC, resp. 230/240 V AC, 50/60 Hz (according to the specification)
- 0 V, +24 Vterminals of output voltage 24 V DC (40 mA)
- COM, CLOSE OPEN.... terminals of control inputs 24 V DC
- I1, I2..... terminals of control inputs 24 V DC for control switching 3P/2P/I
- +IN, -IN, SHterminals of unified input signal 0/4 - 20 mA (or 0/2-10V)
- +L, -L, SHterminals of output current signal (passive) 4 - 20 mA
- COM, NO, NCterminals of relay READY resp. relay R5
- COM, NOterminals of relay terminals RE 1, RE 2
- COM, R3, R4terminals of relay R3, R4

Inputs I1, I2, OPEN, CLOSE:

- Input voltage (on-state): 24 V DC, 15 30 V DC
- Input voltage (off-state): 0 4 V DC
- Input current: app. 5 mA
- Galvanic isolation: optocomponents
- Period of input sampling: 3 ms
- Pulse length (on-state): min. 50 ms
- Pulse length (off-state): min. 50 ms

Input -IN, +IN: 0/4 - 20 mA

- Input resistance: 120
- Input current: 0..20 mA
- Maximum input current: 30 mA
- Period of input sampling: 3 ms
- Delayed response of controller: 50 ms

Relay READY and relay R5:

- Switching contact, release contact: max. 230 V AC/1 A/cos =1, max. 30 V DC/2A

Relay RE1, RE2, R3, R4:

- Switching contact: max. 230 V AC/1A /cos =1, max. 30 V DC/2A

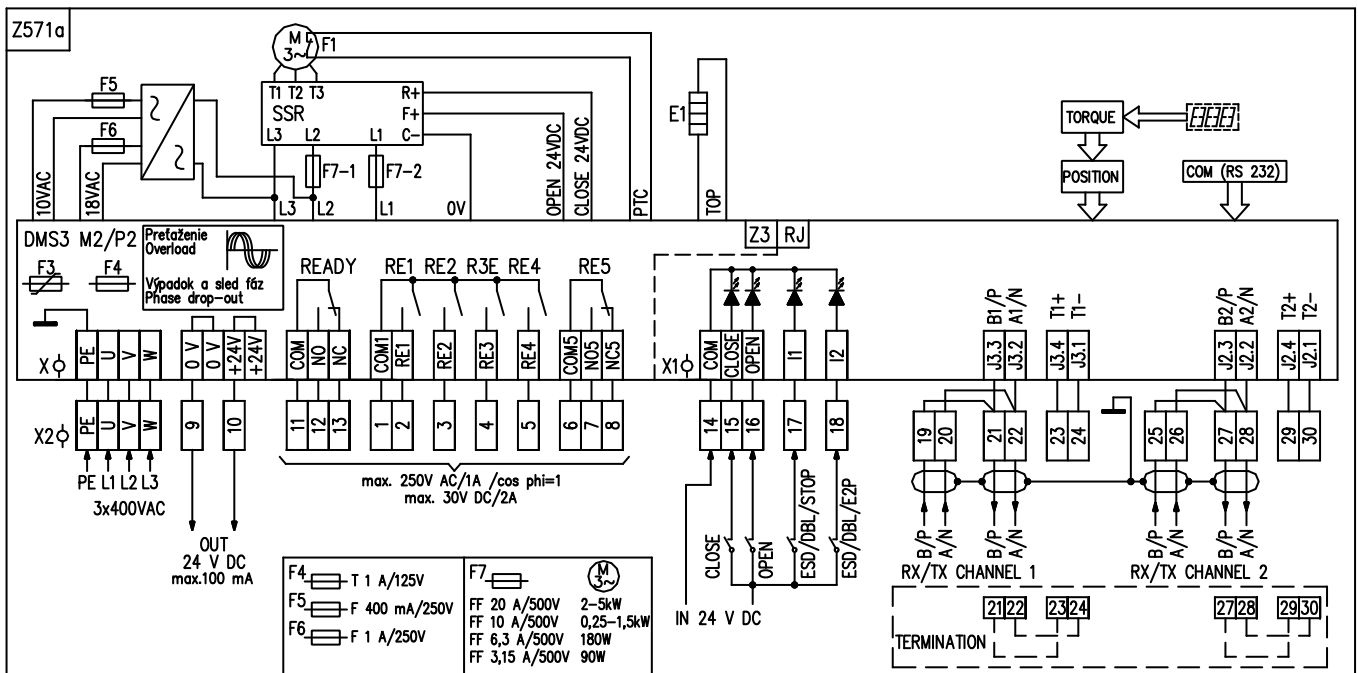
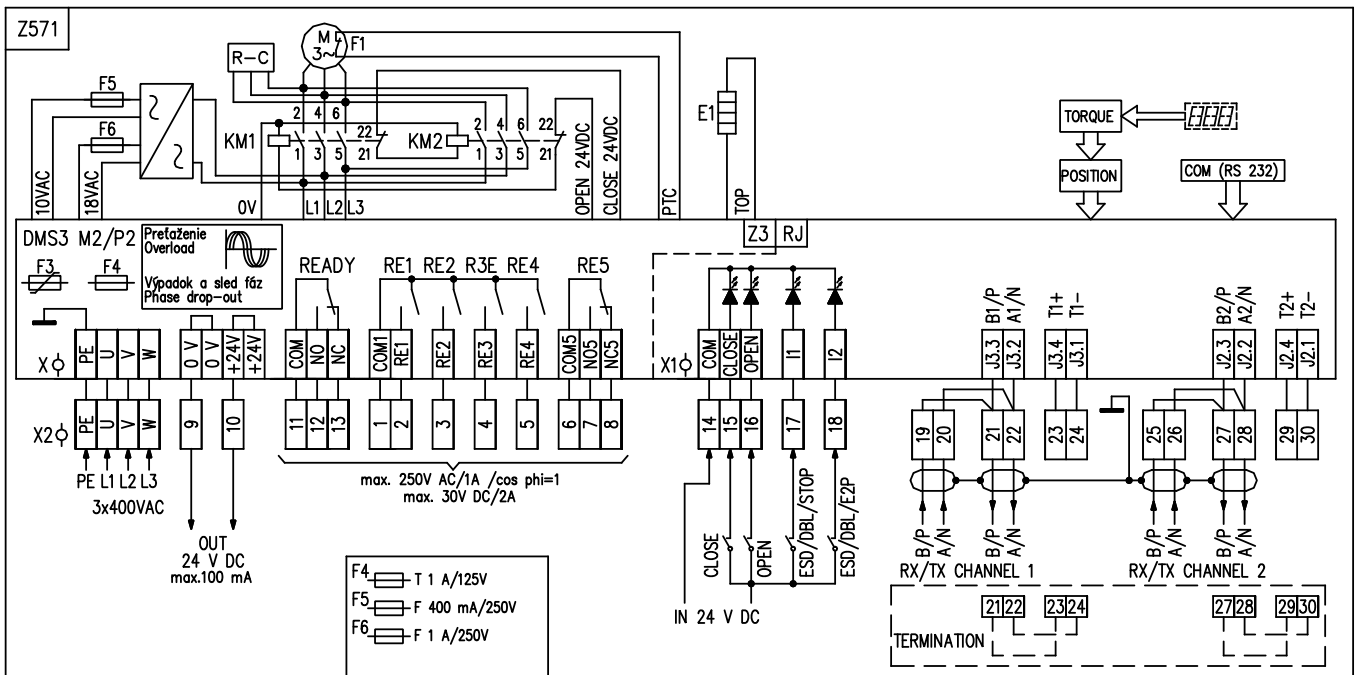
Output -L, +L (passive CPT) 4 - 20 mA :

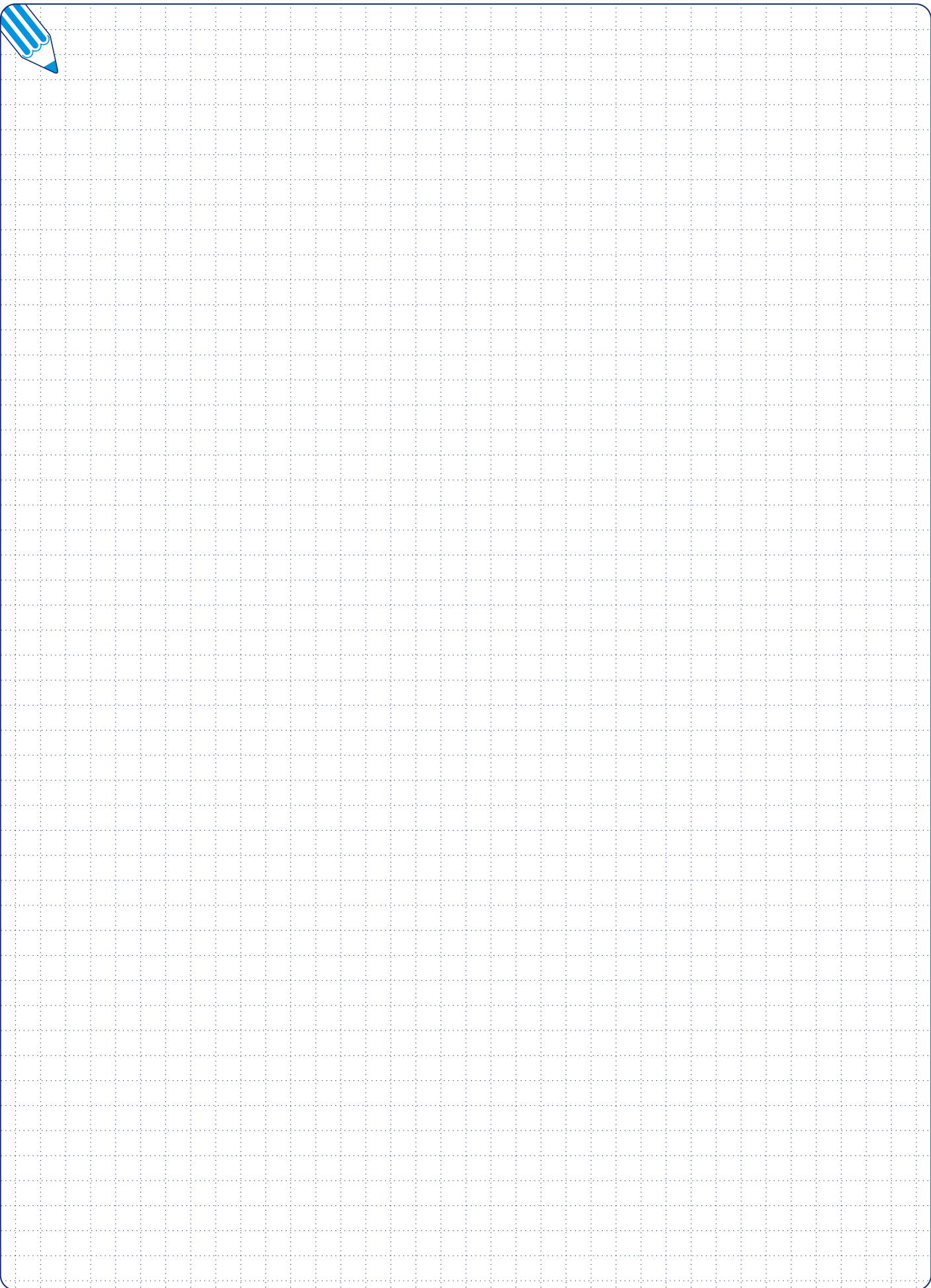
- Loading resistance: max. 500
- Supply voltage: 18 V...30 V
- Galvanic isolation: optocomponents
- Output +5V, GND:
- Output current: max. 200 mA

COM(RS232)...connecting the control unit to a PC
 DMS3electronic module
 EPV passive ...electronic position transmitter is passive with output current signal 4 - 20 mA
 E1space heater
 F1motor's thermal protection
 F3 to F6fuse of voltage supply source
 KM1, KM2reverse contactors
 Mthree-phase electric motor
 Ncontroller
 POSITIONposition scanning
 Rininput resistance
 RLload resistance

UNvoltage for EPV
 R1free programmable relay
 R2free programmable relay
 READYREADY relay (free-programmable)
 RE1 to RE5 ...free programmable relay
 SSRcontactless switching module of electric motor (solid state)
 TORQUEtorque scanning
 Xvoltage supply source terminal board with screw terminals
 X1terminal board with screw terminals on the control unit
 X2screwless terminal board of terminal box

Wiring diagrams of electric actuators REMATIC with communication protocol MODBUS and PROFIBUS (examples)





Electric actuators STANDARD



Explosion-proof electric actuators



Electric actuators for nuclear power plants



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