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MADE IN RUSSIA

Scientific and Manufacturing Enterprise

TOMSK ELECTRONIC COMPANY

RemTEK Electric Actuators

PRODUCT CATALOGUE

Scientific and Manufacturing Enterprise “Tomsk Electronic Company” is a professional team of engineers and experts that has been creating intelligent electric actuators for enterprises in the oil and gas, petrochemical and nuclear industries for almost 25 years.

HISTORY OF THE COMPANY

“We square up to the most complex technical and technological challenges and solve them at the international standard level to cover demands of our Customers and Partners quickly, with high quality and efficiency”

Andrey Nikolaevich Shestakov
General Director
Of SME “TEC” Ltd.

>1980

In the Tomsk branch of the Research Institute for Machine Building Technology they were developing technologies that was aimed to save people from exhausting manual labor, such as robotics, industrial manipulators, automated machines with numerical program control

1990

The turbulent nineties pushed people to make independent decisions. Employees established their own high-tech production, “Technotron” Research Institute

1999

Research Institute turned into an enterprise, SME “TEC” Ltd. Awarding a tender by Transneft Stock Company gave impetus to the development and manufacture of explosion-proof control units for electric actuators, and two years later the first intelligent electric actuator in the Russian Federation was presented to the public

2002

A variable-frequency electric actuator with a vector control algorithm has been developed

2004

Start of series production of RemTEK electric actuators

2006

Participation in the ESPO and ESTO-2 project with BU-50 control units

2008

RemTEK product range expanded with linear and part-turn actuators

2016

RemTEK qualified according to SIL2

2019

RemTEK qualified according to Intergazcert Voluntary Certification System

2020

RemTEK electric actuators supplemented with built-in energy storage device

2021

Fast-acting electric actuators for automated production facilities and emergency shut-down systems

2022

RemTEK product range expanded with a part-turn actuator with a torque of up to 90 kNm and a multi-turn actuator with torque up to 32 kNm

2023

SME “TEC” Ltd. offers:

- Serial products of intelligent mechanical engineering
- Integrated process equipment
- Engineering
- Serial products and solutions for metallurgical production facilities
- Integrated automation
- Facility design

Qualified engineering and technical staff

75% of employees have a college degree

FULL PRODUCT LIFE CYCLE: FROM DEVELOPMENT TO COMMISSIONING

- Design engineering
- Certification
- Software
- Manufacture
- Delivery to site
- Staff training
- On-site commissioning
- Warranty service
- Service
- Post-Warranty service
- Technical upgrade

International standard

ISO 9001:2015

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We are working for you!

SME “TEC” Ltd.
is a Russian developer, manufacturer and supplier of intelligent engineering products

Contact us:
8-800-550-4176
hotline@mail.npptec.ru

npptec.ru

RemTEK electric actuators made by Tomsk Electronic Company are included in Register of equipment allowed for use at assets of Public Joint Stock Company Gazprom, and qualified according to INTERGAZCERT Voluntary Certification System

RemTEK INTELLEGENT ELECTRIC ACTUATORS

Control of all types of pipeline valves with DN from 15 to 1200 mm in various economy sectors:

- Oil industry;
- Chemistry industry;
- Gas industry;
- Energy sector.

RemTEK provides a high level of reliability, safety and efficiency:

- Reliability;
- Innovation;
- Energy efficiency;
- Intelligent diagnostics;
- Digitalization;
- Predictive maintenance.

- Built-in frequency converter
- Cycloid gears
- Operation temperature from -63 °C to +50 °C
- Explosion protection 1 Ex d IIB T4 Gb
- Protection class IP 67
- Seismic resistance C10
- Power supply 230/400 V with a tolerance from -50% to +47%
- Version with 24 V DC power supply

Functions of RemTEK Electric Actuators

RemTEK electric actuators have wide range of functional capabilities corresponding to the current state of the art.

Position shutdown:

- non-volatile electronic position sensor;
- setting of limit switches using remote control or knobs at the control station;
- setup without opening the case;
- no mechanical contacts;
- high accuracy and reliability of position determination.

Precise stopping of the valve actuator in any position:

- accuracy up to 100 microns for linear actuator;
- up to 1 degree for multi-turn actuator;
- up to 0.1 degrees for part-turn actuator.

Torque cut-off:

- electronic torque limitation using software torque controls;
- control and limitation of torque in starting modes;
- accuracy of torque limitation is 10% of the specified value;
- limit range from 20 to 100%;
- the moments of limitation are set from the remote control, control room knobs or via a digital interface;
- the ability to diagnose valves with a graph of the measured torque displayed on the screen of the electric actuator.

Frequency control of electric motor:

- energy efficiency;
- setting the travel time;
- speed control;
- elimination of shocks, soft selection of play during acceleration;
- precise positioning;
- movement in regulation mode without jerking;
- no starting currents.

Operating data recording:

- total number of cycles;
- number of electric motor starts;
- number of errors due to excess torque;
- number of electric motor protection trips based on temperature;
- total operating time of the electric motor;
- valve condition log (torque trend);
- continuous internal diagnostics of the control unit.

Connection to automated process control system

Support of a wide range of control channels, communication protocols, as well as advanced telemetry capabilities allow using RemTEK in up-to-date automated process control systems:

- discrete control inputs;
- discrete alarm outputs;
- analogue control and signaling;
- digital communication interfaces.

Functionality:

- Control:
  - giving a command to move;
  - recording a given position;
  - position P-regulator;
  - position PID-regulator;
- parameterization:
  - all registers of the electric actuator are available for configuration via the communication interface;
- diagnostics.

Modbus · PROFINET · FieldComm Group MEMBER · PROFIBUS · HART COMMUNICATION PROTOCOL

CONTROL OF PIPELINE VALVES

RemTEK Electric Actuators

Purpose:
RemTEK electric actuators are designed for remote and local control of pipeline valves having DN from 25 to 1200 mm with PN from 1.6 to 25 MPa:

- shut-off valves;
- control valves;
- shut-off and control valves.

Application:

- gas industry;
- oil industry;
- chemical industry;
- energy industry;
- marine transport facilities;
- floating drilling and power units (platforms and ships);
- coastal area.

Functional use:

- regulating systems;
- flow-control systems (cut-off);
- fire-fighting systems;
- safety systems;
- emergency shut-down systems;
- processing systems and facilities.

RemTEK electric actuators have an explosion protection level of "**explosion-proof electrical equipment**" and are intended for installation in zones of class 1 and 2 according to GOST IEC 60079-10-1-2013,

where steam and gas-air explosive mixtures of categories IIA and IIB groups T1, T2, T3, T4 according to the classification GOST R IEC 60079-20-1-2011 may form.

RemTEK explosion-proof electric actuators are **certified** according to key standards and designed to fit for operation in aggressive and explosive environments.

RemTEK multi-turn electric actuators

Specifications

Type of electric actuator	Multi-turn
Automated valve	Slide gate and wedge-shaped valves and other types of valves
Valve diameter	DN 15–1200 mm
Version	Explosion-proof1 Ex d IIB T4 Gb X
Torque	40–32 000 Nm (with the use of an additional gear – up to 260 000 Nm)
Speed of rotation	0.6–450 rpm
Voltage supply	400 V AC or 230 V AC
Valve attachment	GOST R 55510-2013

Application for Gazprom PJSC:

RemTEK electric actuators are supplied to Gazprom PJSC facilities for the following types of valves:

- ball cocks DN 25–700 mm
- gates DN 25–1200 mm
- valves DN 25–700 mm.

- In accordance with STO Gazprom 2-4.1-212-2008, RemTEK multi-turn electric actuators, at the request of valve manufacturers, can be supplied to ball valves equipped with a pre-gear.

RemTEK part-turn electric actuators

Specifications

Type of electric actuator	Part-turn
Automated valve	Ball cocks and disc shutters
Valve diameter	DN 25–1200 mm
Version	Explosion-proof1 Ex d IIB T4 Gb X
Torque	64 – 63 000 Нм
Time	0.2–120 sec
Voltage supply	400 V AC or 230 V AC
Valve attachment	ISO 5211-2001 (F05, F07, F14), GOST R 55510-2013

RemTEK electric actuators meet the requirements:

TR TS 010/2011

- TR TS 012/2011
- TR TS 020/2011
- STO Gazprom 2-4.1-212-2008
- GOST IEC 60079-14-2013
- GOST 31441.1-2011
- GOST 31441.5-2011
- GOST 31438.1-2011
- GOST 12.2.007.0-75
- GOST 12.2.003-91
- GOST R 55511-2013

RemTEK linear electric actuators

Specifications

Type of electric actuator	Linear
Automated valve	Valves and fittings with linear travel
Valve diameter	DN 25–700 mm
Version	Explosion-proof1 Ex d IIB T4 Gb X
Force	3500–220 000 Nm
Speed of rotation	0.4–110 mm/s
Voltage supply	400 V AC or 230 V AC
Valve attachment	According to Customer's requirements

RemTEK electric actuators are included in Register of equipment allowed for use at assets of Public Joint Stock Company Gazprom, and qualified according to INTERGAZCERT Voluntary Certification System

To achieve high **energy efficiency** indicators of an electric actuator, all its components shall comply with the task at hand

Component of electric actuator	Solutions used in RemTEK electric actuators
Control unit	Built-in frequency converter
Electric motor	Self-controlled synchronous or high efficiency asynchronous electric motor
Gearbox	Innovative high-efficient gearboxes

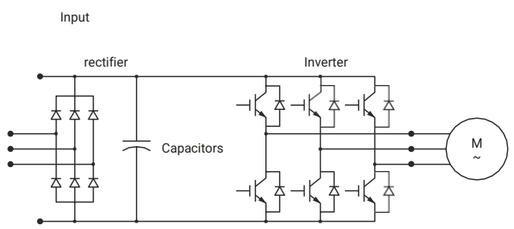
OVERALL EFFICIENCY

Energy Efficiency

- Energy efficiency of the electric actuator;
- Built-in frequency converter;
- High efficiency gear;
- High control precision;
- Energy-efficient electric motors.

Electric Actuator with Built-in Frequency Converter

RemTEK electric actuators for regulating technological processes are equipped with a built-in frequency converter, which ensures high energy efficiency of electricity consumption and high-quality control. The input voltage is rectified and converted into direct current voltage, from which the required frequency and voltage amplitude on the stator of the electric motor are formed. Motor control is performed using vector control algorithms.



Vector control of asynchronous and synchronous electric motors implemented in RemTEK electric actuators reduces the load on substations and the supply mains due to the fact that there are no high starting currents.

Electric Motor

A compact, efficient, reliable electric motor is one of the key elements in the construction of a modern, flexible and cost-saving electric actuator. RemTEK electric actuators use highly efficient asynchronous electric motors and synchronous brushless (self-controlled) motors with permanent magnets

An electric actuator with a thyratron motor has a number of advantages:

- high energy characteristics;
- reduction in energy consumption and operating costs;
- high ratio of maximum and nominal torque;
- maintaining torque over the full speed range;
- compact electric actuator system;
- low vibroacoustic noise;
- high reliability and durability of the system.

An electric actuator with a brushless **synchronous electric motor** with permanent magnets (**thyratron motor**)
combines the reliability of AC machines with the controllability of DC machines and is an advanced and innovative solution in the field of controlled electric actuators. The synchronous motor is **more efficient** than a high-efficiency asynchronous motor, while using a standard stator design and the same control unit.

RemTEK electric actuators with an asynchronous motor also provide **high efficiency figures** due to the use of a frequency converter and vector control with full control of voltage and current in the stator windings.

Innovative Gearboxes and Power Modules

RemTEK electric actuators use highly reliable gearboxes based on:

- cycloidal gearing (pin gear);
- transmissions with intermediate rolling bodies;
- ball screw.

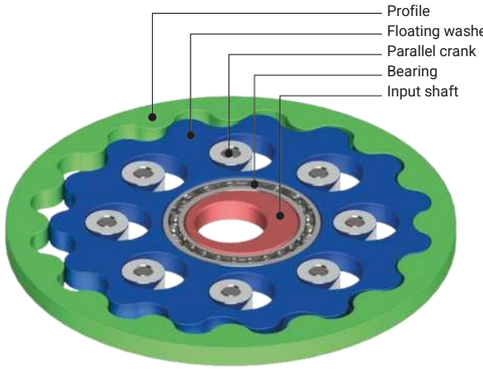
The use of transmissions with intermediate rolling bodies and cycloidal gears ensures the compact size of multi-stage gearboxes and improved weight and dimensions of RemTEK electric actuators.

Advantages of the solutions:

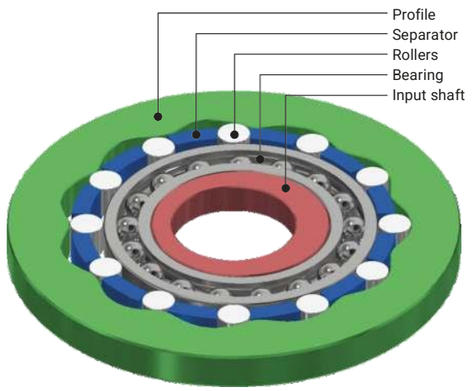
- possible to obtain a large gear ratio;
- input and output shafts are aligned;
- no consoles;
- multi-paired gearing;
- increased resistance to vibration and seismic loads;
- reduction of contact stress

(due to increasing the diameter of driving pins);

- high efficiency factor: 0.85–0.9;
- possible to use a planetary gearbox as a differential transmission;
- long life, minimum 15 Thsd cycles;
- reduced maintenance.



Cycloidal gearing



Wave transmission with intermediate rolling bodies

EFFICIENT VALVE CONTROL

RemTEK electric actuators are provided with functions that ensure reliable and efficient operation of the valves:

Soft start
- no shocks, smooth backlash selection;
- careful handling of valves.

Controlled stop
- controlled deceleration rate;
- precise stop;
- no impacts or bumps up against the stop at the extreme points.

Precise torque control
- smooth increase in torque;
- no excess of torque over the rated values of the valve.

Reduction of the number of starts during regulation (according to experience, from 2 to 10 times).

Reduced of valve wear.

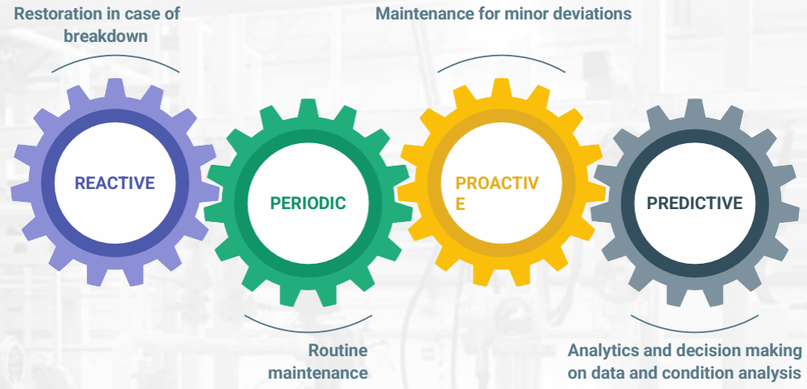
Prevention of water hammer conditions (change in valve shut-off time).

Precise regulation and the possibility of rapid shut-off in case of transfer to a safe state.

NARYM energy storage unit to ensure NO/NC function.

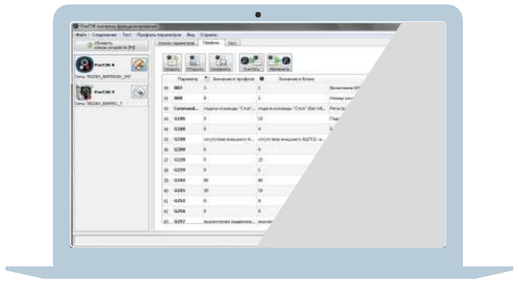
Diagnostics of electric actuator and valves

- Built-in graphic indicator with a menu in Russian and interactive setup modes to help to diagnose the electric actuator with valves on site.
- Complete information on valve torque, recording torque trends. Analysis of the condition of valves.
- Versatility of RemTEK components. Unified components of the electric actuator allow speeding up repair and maintenance.
- Built-in event data recorder “Black box” records all emergency and pre-emergency characteristics, events (power supply voltage, currents, temperature, torque, speed, position, control commands, settings changes) with a time stamp and allows service personnel to carry out maintenance of equipment on a timely basis.
- Diagnostic mode “Partial valve stroke test” (PVST or PST) to check the functional readiness of the actuator-valve set.



Service Software

- programming control parameters;
- reading all operating data;
- reading an event report;
- archiving RemTEK data in a database;
- transfer of parameters from the database to RemTEK;
- service software for commissioning;
- diagnostics of the actuator and valves;
- maintenance requests (preventative maintenance);
- reliability and durability;
- compliance with high quality standards.



- **Reduced maintenance costs** through a predictive maintenance strategy.
- Request for equipment maintenance based on operating hours data (cycle counters) and operating conditions.
- **Expanded memory** for recording control events, operating hours counters and data processing and analysis algorithms.
- **Improved reliability** of equipment operation through timely maintenance.
- **Reduced maintenance costs** due to eliminating unnecessary steps.

РэмТЭК.рф Information Resource

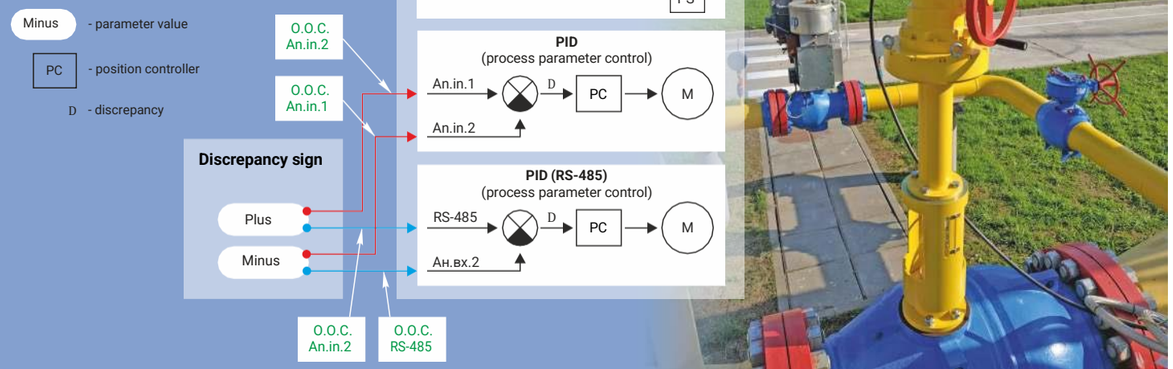
Accessible technical information for design:

- range of electric actuators;
- product advantages;
- specifications;
- information on versions and modifications;
- optional equipment.

Free access to technical information:

- connection diagrams (*.dwg, *.pdf);
- 3D drawings;
- certificates;
- operational documentation;
- technical data;
- questionnaires;
- flow charts:
  - coordinated actuator position for each manufacturer;
  - accurate data on valve and actuator parameters;
  - more than 30 valve manufacturing plants;
  - ready-made preliminary designation of the actuator to use in design documentation.

RELIABLE PROCESS CONTROL



Interfaces for setting the required position:

- via analog input 4-20 mA;
- via RS-485 interface;
- manually from the local control station.

Advantage: smooth movement and stopping of the output element without overtravel.

The built-in PID controller of the process parameter adjusts the valve position in accordance with the readings of an appropriate sensor (pressure, temperature, flow, etc.).
The sensor power supply (24 V) comes from an electric actuator.

Reliability of valve control due to the generation of high torque at any supply voltage

A vector algorithm and a transistor converter used in the RemTEK electric actuator solved the problem of the electric actuator's sensitivity to power line sags. For example, if the voltage drops by 50%, the electromechanical actuator will lose 75% of the torque, and the RemTEK electric actuator will maintain maximum torque values and only reduce the speed in proportion to the voltage drop.
Resistance to mains sags makes it possible to complete the command execution even if one of the phases of the supply mains is broken.

Reduction of thermal load on the electric motor during frequent starts in process control systems

The algorithm makes it possible to obtain the maximum torque on the output element of the electric actuator at currents in the stator of the electric motor that do not exceed values of 2* I_{nom}, including during starting modes. For comparison: an electromechanical actuator with a magnetic starter allows a 7-8 times overcurrent in the starting mode and, as a result, experiences severe thermal overload with frequent starts.

The highest positioning accuracy and speed of discrepancy processing

The electric actuator provides regulation and control of the valve at low speed, but, if necessary, moves to a safe state at maximum speed to meet the flow cut-off time requirements.

Extending the service life of valves due to smooth acceleration and braking (compaction)

RemTEK ensures careful treatment of valves due to smooth selection of backlash, absence of shock load, smooth compaction with torque control.

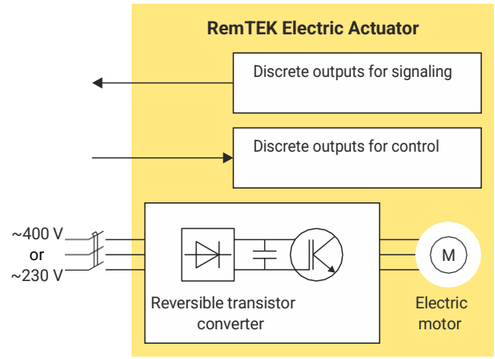
Versions of Electric Actuators Based on Control Principle

1. "V" Version with a Built-in Frequency Converter

The user can independently adjust the speed of the output element of the electric actuator. It helps to exclude water hammers when the flow section of the valve is suddenly shutdown. A smooth change in speed and precise reaching the required position significantly reduces unnecessary movements, increases the service life of the valve, and makes regulation more efficient. The range of travel speeds for multi-turn electric actuators RemTEK is from 0.75 rpm to 450 rpm, the shutdown time for part-turn and linear electric actuators is from 60 s to 0.3 s.

Advantages:

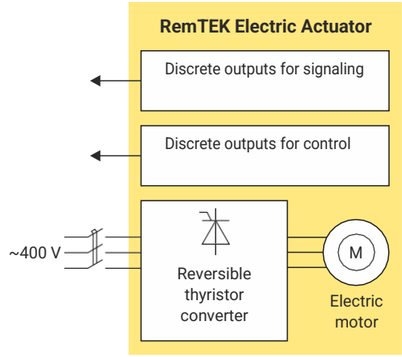
- Frequency motor control;
- Vector, energy-efficient motor control algorithm;
- Accurate and efficient position control;
- Smooth speed reduction when approaching the stop point;
- Accuracy in regulation at low speed and rapid shutdown with one electric actuator;
- Programable shutdown time.



2. "S" Version with Built-in Thyristor Converter

Advantages:

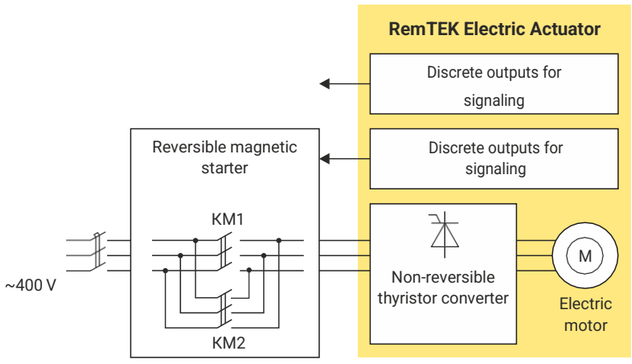
- Soft start and stop of the electric motor;
- Reverse;
- Exact stop (due to dynamic and induction braking modes);
- Precise limitation of electric actuator' torques (due to software torque controllers).



3. "M" Version with External Reversible Magnetic Starter

Advantages:

- Soft start of the electric motor;
- Substitute for imported actuators having external starters;
- Complete diagnostics of the actuator via communication interfaces;
- Local control panel;
- Possibility to upgrade facilities and automatize valves with the existing control circuit on an external reversible starter.



RemTEK ELECTRIC ACTUATORS WITH SAFE STATE FUNCTION

91, 94, and 95 Design Versions

Intended to control shut-off, cut-off or control valves with the transfer of the valve gate to a safe state when the power supply is removed or by a command to transfer to the “Safe state”.

Safe State Function:

- Dedicated discrete input to activate the function of transferring to a safe state;
- Software setting by the user of “Safety Positions”: Open, Closed, specified position of the output element;
- Programming the speed of movement;
- Software delay setting for triggering the safety function to filter false triggering conditions.

RemTEK is recommended for emergency shutdown systems, in safety circuits with a given level of functional safety (SIL2) for controlling shut-off and control pipeline valves, due to its fast response (from 0.2 sec for a 90° stroke) and the ability to adjust positions at low speed.

Implementation of the standard regulation function at low speeds with highly precise position maintenance and rapid transfer to the safety position at a given speed.

Combining a high-efficiency gearbox (wave or cycloidal gears), a highly efficient synchronous brushless motor with permanent magnets, and a built-in frequency converter allows using a **built-in electrical energy storage device**, which ensures that the output element of the electric actuator is transferred to the required position.

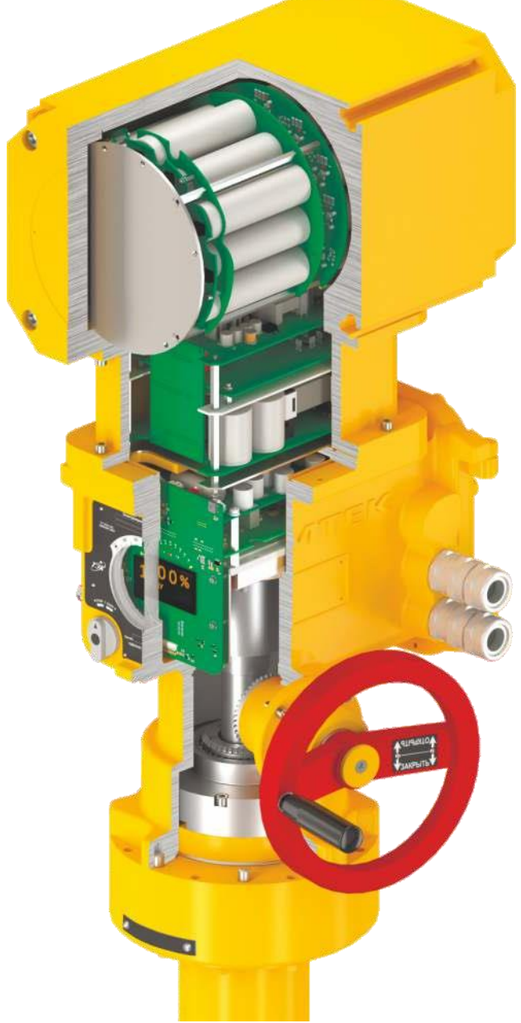
Energy accumulation in reliable supercapacitors with a double dielectric layer with a guaranteed number of charge-discharge cycles (50,000), short readiness time for command execution, and a wide temperature range of charge and discharge.

The energy reserve is from 1 to 10 cycles of movement of the output element depending on the design of the electric actuator and the valves used.

Compliance with the requirements of STO GAZPROM 2-4.1-212-2008 regarding valve shut-off time, as well as compliance with the requirements for shut-off time for process units of explosion safety category I according to OPB (Federal Law No. 96 dated March 11, 2013).

The energy storage device does not require maintenance during its entire service life. Complete diagnostics of the condition and readiness to perform a process operation.

Compliance with functional safety standards according to GOST R IEC 61508 and GOST R IEC 61511 at the SIL2 level.



Features and Advantages

- Series of supercapacitors with secondary power and charge sources built into the electric actuator enclosure;
- It is possible to equip a linear or part-turn electric actuator with a standard NO/NC unit;
- High-efficient thyratron synchronous electric motor with permanent magnets;
- Built-in frequency converter;
- Cycloidal gearboxes and gearboxes with intermediate rolling bodies;
- Diagnostics of the electric actuator;
- “Partial valve stroke” mode for diagnosing the readiness of the valve-electric actuator set to perform an operation;
- Integrated Wi-Fi interface and service software;
- Double insulation of connection box;
- “Digital Economy”, «Industry 4.0 Ready»

Application in Systems with Safety Integrity Level (SIL2)

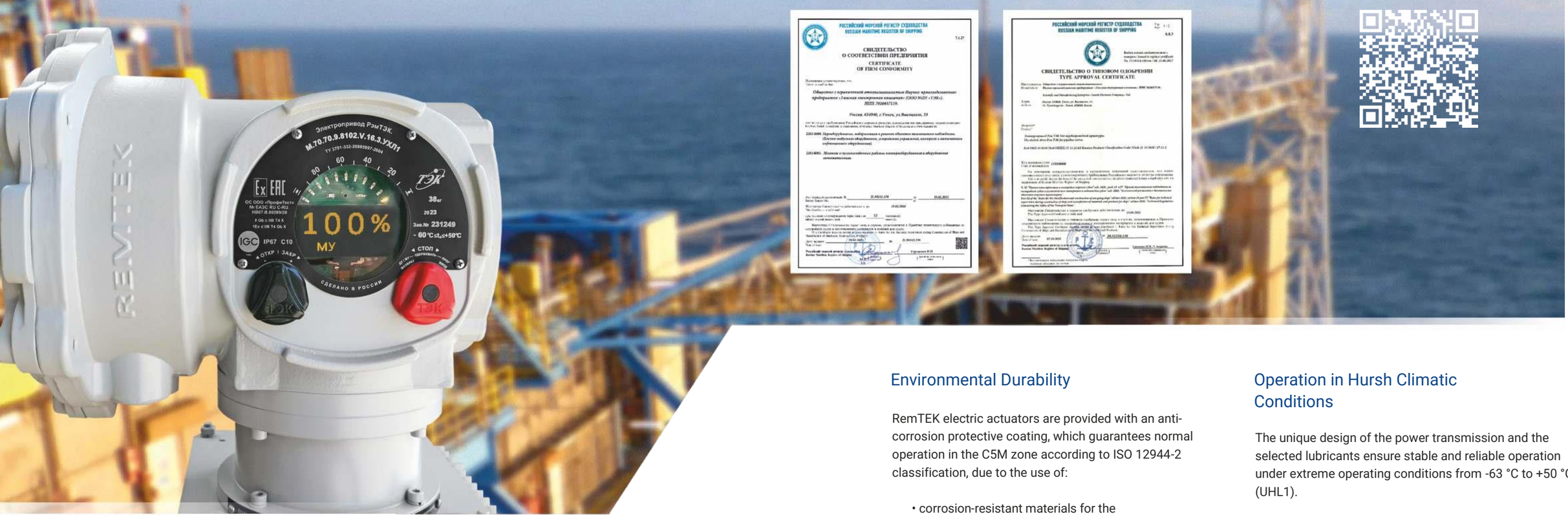
RemTEK has certified fault tolerance indicators in relation to safety functions and can be used in systems with a specified level of functional safety SIL2 (Safety Integrity Level).

Fast cut-off based on a safety signal is the control of a valve, where the valve gate is transferred to a safe state when power supply is removed. The safe, also known as “normal”, state is programmable by the user and includes three options:

- open (NO)
- closed (NC)
- safety position.

Specifications

Type of Electric Actuator	Linear Part-turn Multi-turn
Automated valves	All types
Valve diameter	DN 15–700 mm
Version	Explosion-proof 1 Ex d IIB T4 X
Torque	40–8500 Nm 1000–65000 N
Supply voltage	400 V AC or 230 V AC



РОССИЙСКИЙ МОРСКОЙ РЕГИСТР СУДОХОДСТВА
RUSSIAN MARITIME REGISTER OF SHIPPING

СВИДЕТЕЛЬСТВО
О СООТВЕТСТВИИ ПРЕДПРИЯТИЯ
CERTIFICATE
OF FIRM CONFORMITY

РОССИЙСКИЙ МОРСКОЙ РЕГИСТР СУДОХОДСТВА
RUSSIAN MARITIME REGISTER OF SHIPPING

СВИДЕТЕЛЬСТВО О ТИПОВОМ ОДОБРЕНИИ
TYPE APPROVAL CERTIFICATE

RemTEK ELECTRIC ACTUATORS FOR MARINE APPLICATION

RemTEK electric actuators for marine application have climate groups M1 and OM1 and can be used on ships, offshore platforms for oil and gas production, as well as be installed in the coastal zone on the mainland.

RemTEK electric actuators meet the technical requirements of the “Rules for the Classification, Construction and Equipment of Mobile Offshore Drilling Units and Fixed Offshore Platforms” of the Russian Maritime Register of Shipping.

- Resistant to the marine environment.
- Operable within the range of ambient temperatures from -63 to +50 °C.
- Operable at relative air humidity (75±3) % and temperature (45±3) °C or at relative air humidity (80±3) % and temperature (40±3) °C.

Anticipatory Import Substitution

All actuator’s components are manufactured in the Russian Federation, using only domestic components to meet market needs.

RemTEK electric actuators are suitable for controlling any pipeline valves with DN from 25 to 1200 mm, PN from 1.6 to 25 MPa. They can be considered as substitutes for electric actuators of foreign manufacturers, such as AUMA, Rotork, Limitorque, Biffi, Pechki, etc. They are compatible in connection diagrams with AUMA, so the working documentation does not require any modification.

It is possible to manufacture products in accordance with the Customer’s requirements. For example, especially reliable mechanics can be developed to ensure operation in harsh climatic conditions, marine atmosphere, etc.

Environmental Durability

RemTEK electric actuators are provided with an anti-corrosion protective coating, which guarantees normal operation in the C5M zone according to ISO 12944-2 classification, due to the use of:

- corrosion-resistant materials for the housing and fasteners;
- anodic and chemical oxidation of electric actuator parts to create an additional protective barrier against corrosion;
- **paint and varnish coating system certified by RMRS and PJSC Gazprom;**
- three-layer coating system:
  - epoxy primer;
  - two layers of epoxy enamel.

Specifications

Type of Electric Actuator	Linear Part-turn Multi-turn
Automated Valves	All types
Valve Diameter	DN 25–1200 mm
Version	Explosion-proof1 Ex d IIB T4 Gb X
Torque	40–32000 Nm 1000–220000 Nm
Supply Voltage	400 V AC or 230 V AC
Coating System	Zone C5-M as per ISO12944 paint coating system is certified by RMRS
Coating Durability	Minimum 15 years

Operation in Hursh Climatic Conditions

The unique design of the power transmission and the selected lubricants ensure stable and reliable operation under extreme operating conditions from -63 °C to +50 °C (UHL1).

The protection degree of the explosion-proof enclosure IP67 guarantees the operation of the RemTEK electric actuator when exposed to water and completely protects it from dust penetration. Double sealing of the connection boxes protects the interior space containing electronics from the external environment.

OUR CUSTOMERS

БАЛТИЙСКИЙ ЗАВОД
НЕФТЬ ГАЗПРОМ
ГАЗПРОМ
ЛУКОЙЛ
НПО АВРОРА
АТОМФЛОТ
РОСАТОМ

ELECTRIC ACTUATORS POWERED WITH 24 V DC

Control of valves in systems with renewable power supply sources. Direct connection to an energy storage system without additional converters.

Ideal for use in hard-to-reach areas where alternative energy sources are applied.

Advantages

- no heating required;
- quick start at a temperature of -63 °C;
- communication and diagnostics via RS-485 interface;
- wide range of forces and torques;
- capability to control all types of valves.

Specifications

Type of Electric Actuator	Linear Part-turn Multi-turn
Automated valve	All types
Valve diameter	DN 15–700 mm
Version	Explosion-proof1 Ex d IIB T4 Gb X
Torque	Linear: 700–65000 Nm Part-turn: 64–32000 Nm Multi-turn: 40–10000 Nm
Supply Voltage	+ 24 V
Operating temperature range	-63 °C to +50 °C
Readiness time after supplying power	5 sec
Heater	No heating required

MSSM ELECTRIC ACTUATORS

The MSSM electric actuator is designed for installation on a multi-stream switching manifold (MSSM) as part of an automatic pad metering station.

The electric actuator is fully adapted to the direct replacement of the hydraulic actuators of the old system and provides a reliable, maintenance-free solution for multi-stream switching manifold control.

Structural Features

- reliable mechanics;
- compact gearbox;
- coaxial arrangement of the input and output shafts;
- no console; excellent weight and size indicators;
- high efficiency;
- the transmission allows rollback and ensures reliable sealing of the MSSM pipe;
- monoblock version;
- built-in torque switches, torque control;
- built-in electronic position sensor;
- mechanical indicator of the output element position;
- built-in diagnostics and RS-485 Interface.

Basic Characteristics

- reduced costs of operating the system;
- no maintenance required;
- reduced downtime for repair and replacement of outdated unreliable hydraulic systems;
- reduced costs of downtime;
- hydraulic motor excluded;
- hydraulic system pipes excluded;
- reduced frequency and scope of MSSM maintenance;
- simplified control circuit.

Specifications

Type of Electric Actuator	Multi-travel multi-turn
Automated valve	All types
Valve diameter	DN 15–500 mm
Version	Explosion-proof1 Ex d IIB T4 X
Torque	300–600 Nm
Power supply	400 V AC or 230 V AC
Travel range	360 ang. degree
Number of intermediate positions - programable setting	10, 14, N
Turnaround time	40 sec
Stopping accuracy at a given position	0.5 degree
Type of attachment	F14 acc. to ISO 5211

NARYM ENERGY STORAGE UNIT

Explosion-proof, intelligent electrical energy storage unit

NARYM is an explosion-proof, autonomous field energy storage unit to provide power to field equipment.

The NARYM energy storage unit complies with:

- TR TS 012/2011;
- STO Gazprom 2-4.1-212-2008.

The energy storage unit is an uninterruptible power source for the on-line architecture. At the same time, to ensure quick readiness of field equipment for work, rectified mains voltage is supplied to the load using a bypass circuit. The master controller provides control and diagnostics of all components of the energy storage unit, and also ensures synchronization and power equalization of the output converters when operating on a powerful load.

Basic Functions

- Providing energy to consumers in the event of a power outage or reduction in supply voltage;
- Providing energy to actuators to perform the NO/NC function;
- Providing energy to powerful consumers in low-power mains;
- Uninterruptible power supply to instrumentation (24 V).

The NARYM energy storage unit can be used to **upgrade the existing fleet of motor operated valves with RemTEK electric actuators and equip the valves with the function of returning to normal state in the event of a power failure**.

The storage battery pack has a modular design and consists of cells. Each cell has a built-in BMS system, charge indicators, a temperature stabilization system, and a USB interface for data reading. The cells are replaceable.

The built-in temperature stabilization system ensures operation of the energy storage unit and connected equipment in the ambient temperature range from -63 to +50 °C.

The energy storage unit has discrete inputs and outputs, as well as Modbus RTU interface for communication with the remote-control system (DCS or ESD).

Application Functions

Storage/Reserve – NO/NC Function Equipping RemTEK electric actuators of V-Version with a NARYM energy storage unit ensures the function of moving the valve gate to a safe state in the event of a power supply failure. In this case, the position of the valve for the safe state of the process plant “Normal Open” / “Normal Closed” (NO/NC) is programmed by the user in the settings of the RemTEK electric actuator.

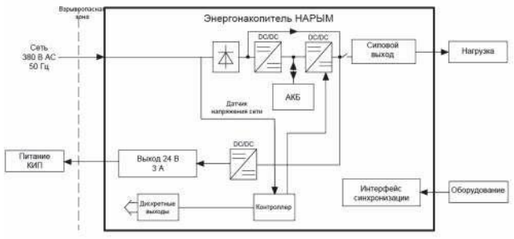
The NARYM energy storage unit can be used to upgrade the existing fleet of motor-powered valves with RemTEK electric actuators and equip the valves with a function of transferring to a normal state in the event of a power failure.

“Power Buffer“
Providing the necessary electrical power for an electric actuator and other equipment in places that do not have a powerful generation source. The energy storage unit acts as a power buffer, providing a charge from the mains while limiting power consumption and delivering energy to the actuator at the required power. This solution allows the use of RemTEK electric actuators with an energy storage unit powered by alternative energy sources (wind generators, solar panels, small generators).

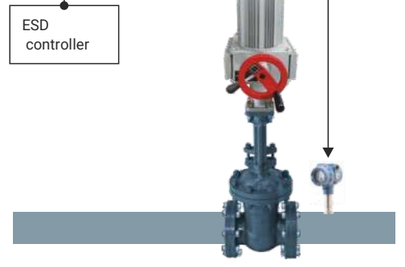
Equipment List

- Mains rectifier;
- Step-down and step-up power converter;
- Battery pack;
- Synchronization interface;
- Discrete outputs;
- Master controller;
- 24 V source for powering instrumentation;
- Temperature stabilization system.

Structural Diagram



Typical Connection Diagram



Specifications

Input supply voltage	400 V 3 ph 50 Hz / 230 V 1 ph 50 Hz		
Output voltage of energy storage unit	Versions: 530 V DC; 300 V DC		
Design	Explosion-proof. 1Ex d IIB T4 Gb X to place at the installation site of electrical equipment		
Versions as per accumulated energy	675 kJ	1125 kJ	3375 kJ
Maximum power for connected load	1.5 kW	3 kW	14 kW
Operating time at maximum load power	180 sec		
Operating time at load power 200 W	30 min		90 min
Maximum current per 24 V channel	2 A		
Operating temperature	from -63 °C to +50 °C		
Dust and moisture protection	IP67		
Charging time	30 min up to 80% of capacity / 2 hours up to 100%		
Bypass power circuit	Yes. The equipment is ready for operation after switching on the input network		
Integration into automated process control systems	Discrete outputs, inputs, RS-485 (Modbus RTU)		

TestTEK MOBILE TEST BENCH

TestTEK mobile test bench for diagnostics of electric actuators is designed to ensure input control, checking the functional readiness, diagnosing and tuning electric actuators of various brands: RemTEK, EPC, EPP, Atlant, Angstrem, AUMA, Rotork, Tula, etc.

Connection to the electric actuator is made via universal programmable discrete inputs/outputs, a receiver and a 4...20 mA signal source, RS-485 interfaces with the ModBus RTU and CAN exchange protocol. Depending on the connection diagram, the bench is configured for a specific type of electric actuator.

Specifications

Rated supply voltage	400 or 230 V
Power supply of electric actuator	400, 230 V
Power of connected electric actuator	up to 7.5 kW
Number of discrete inputs for connecting an electric actuator	8 pcs
Number of discrete outputs for connecting an electric actuator	4 pcs
Number of analog inputs for connecting an electric actuator 4..20 mA	1 pc
Number of analog outputs for connecting an electric actuator 4..20 mA	2 pcs
Connection interface for an electric actuator	RS-485, CAN
Communication interface	Ethernet, USB 2.0

Functions

- control of the electric actuator using discrete, analog and interface signals in intermittent, short-term and long-term operating modes;
- control of electric actuator signaling;
- setting the required motion cyclogram for life tests;
- display of information about the electric actuator, received via signaling circuits, on the liquid crystal display and individual indicators of the station;
- display in the form of trends of electric actuator motion parameters (torque, speed, position);
- maintaining a test archive with display of motion cyclograms;
- setting up the register structure and discrete signaling functions for a specific type of electric actuator;
- saving parameters for subsequent replication and speeding up the commissioning of a group of electric actuators.

REMOTE CONTROL UNIT

The remote control allows configuring and controlling RemTEK electric actuators as conveniently and simply as possible.

The remote control is available in three versions:

- Remote control-B (Base) is designed to set modes, parameters and control commands via the infrared channel of RemTEK electric actuators;
- Remote control-S (Smart) is designed to set modes, parameters and control commands via an infrared channel and provides reading, storage and data transmission from information modules of RemTEK electric actuators via a radio channel

Advantages

- selection and use of the necessary functions without opening the case, regardless of the environment;
- convenient setup using an intelligent menu in Russian;
- support for commissioning mode

Specifications

Parameter	Base remote control PDU-B	Smart remote control PDU-S
Ability to control RemTEK electric actuators	Yes	Yes
Ability to configure RemTEK parameters	Yes	Yes
Ability to read actuator's black box data	No	Yes
Possibility of copying and quickly recording a set of parameters during commissioning. Reduced commissioning time	No	Yes
Computer connection	No	USB
Communication interface for data exchange with electric actuator	IR	IR, WiFi
Range of temperature changes	from -40 to +50 °C	from -40 to +50 °C
Supply voltage	1.5 V (two lithium batteries of AAA type)	1.5 V (two lithium batteries of AAA type)
Current consumption: • receive/transmit mode • standby mode	 3.6 mA 0.006 mA	 60 mA 0.006 mA
Enclosure protection degree	IP54	IP54
Explosion-protection marking	1ExibIIBT4 X	1ExibIIBT4 X
Weight	125 г	125 г

SERVICE SUPPORT FOR PRODUCTS

Customer Service

SME “TEC” Ltd., places special emphasis on support of RemTEK electric actuators supplied to the Customer's facilities.

Tasks of Service Department:

- product support at all stages of the life cycle;
- commissioning;
- Customer technical support;
- warranty service;
- post-warranty service;
- current repairs/overhaul;
- consulting services/training.

Service specialists are ready to consider and satisfy consumer requests for the operation of products of SME “TEC” Ltd. quickly and efficiently.

High-quality services for maintenance and repair of products of SME “TEC” Ltd. both during the warranty and post-warranty periods of its operation.

Fast Commissioning

RemTEK electric actuators are equipped with a Wi-Fi module. The module is located in the area of the local control station indicator and supports a point-to-point connection that complies with the IEEE 802.11b standard.

The module supports data communication between the electric actuator and service software.

Types of Services

Commissioning
The company’s employees have extensive experience in installing electric actuators of the RemTEK series on valves, gates and dampers at various customer sites, as well as putting electric actuators into operation. Customer’s personnel training is also provided.

Technical Support to Customer for Setting Up and Operating the Equipment
By means of telephone communication (hotline 8-800-550-4176, toll-free in Russia), technical support is provided to the consumer regarding the products manufactured by the enterprise, as well as the specifics of its operation and methods of eliminating non-standard situations.

Current Repairs/Overhaul
On the basis of the enterprise, work is being carried out to restore electric actuators after prolonged operation. Restoration work allows to trace the long service life of the equipment.

Warranty Service
The service department of SME “TEC” Ltd., provides warranty service for purchased and installed equipment under the terms of supply contracts.

Post-warranty Service
To provide timely and high-quality service throughout the entire service life of the purchased equipment, the service department of SME “TEC” Ltd., offers a post-warranty service program. Conditions for post-warranty service are to be specified when concluding relevant contracts.

“TEK Configurator” software for Android platforms is available for download at Google Play

Wi-Fi Service Interface
Standard communication interface.
The ability to use mobile devices.

Quick Commissioning
Date transfer to the electric actuator during commissioning, copying, and saving data.

Reading Data from Built-in Black Boxes
Reading and viewing accumulated operation data of electric actuators and valves.

Parameterization, Configuration
Quick and intuitive setup of control modes. Restricting access to settings for operational personnel.

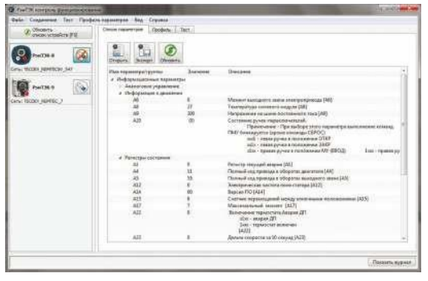
Preventive Maintenance
Storing data from electric actuator operating hours counters. Obtaining information on the service life of valves and electric actuators.

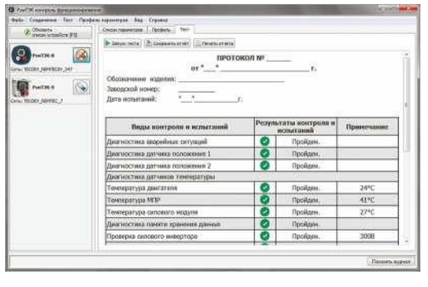
Diagnostics
Reading status data, readings from built-in sensors.

Electronic Product Datasheet
Product data. Prompt assistance from the service department of SME “TEC” Ltd.

Functionalities:

- programming control parameters;
- reading all operating data;
- reading an event report;
- archiving RemTEK data in a database;
- transfer of parameters from the database to RemTEK.



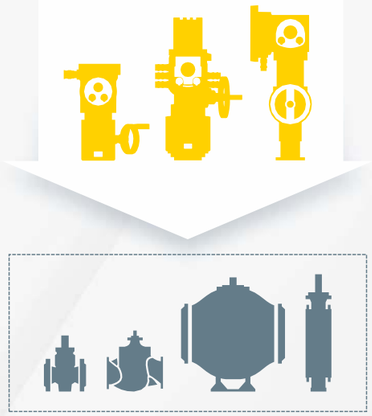


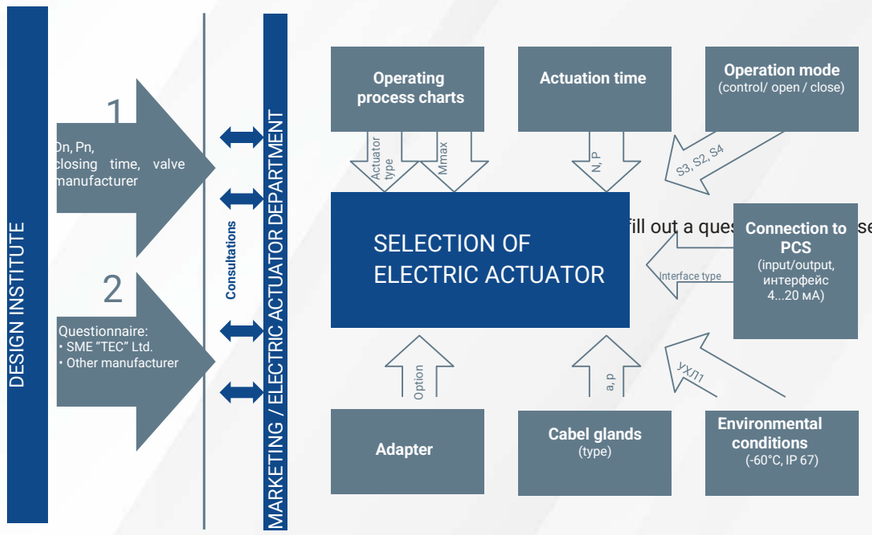
HOW TO ORDER RemTEK ELECTRIC ACTUATOR?

RemTEK electric actuators are compatible in terms of technical characteristics with pipeline valves available from most domestic and foreign manufacturers, which guarantees high-quality and uninterrupted operation at facilities of oil and gas production, oil refining, chemical, metallurgical, mining and other industries.

Fitting electric actuators on valves in accordance with OST 26-07-763-73 (А, Б, В, Г, Д), ISO 5210:1991, ISO 5211-2001 and a set of adapters allow to match electric actuators with all types of valves in terms of mechanical dimensions.

SME “TEC” Ltd., has extensive experience in packaged supplies of electric actuators with valves.





To select an electric actuator, you can use the agreed **operating process charts**

marketing@mail.npptec.ru

Download the questionnaire at **рэмтэк.рф**

When selecting an electric actuator using any of the above methods, specialists of SME “TEC” Ltd. are ready to provide assistance and advice on produced equipment.

Sales:

+7 (3822) 999-011
+7 (3822) 999-036
+7 (3822) 633-958

Questions and requests for selection of valves and RemTEK electric actuators you may forward to the following address:

marketing@mail.npptec.ru

Trade mark	RemTEK
Version	X
M – multi-turn	
Л – linear	
П – part-turn	
Maximum torque on the output element of the electric actuator	XXXXX
N – for linear version	
N№m – for multi-turn and part-turn versions	
Maximum speed / time	XXX
Maximum speed for multi-turn version, rpm	
Minimum time for part-turn version, sec	
Maximum speed for linear version, mm/s	
Maximum stroke for linear version, mm	XXX
Code of design of the electric actuator link for connection of to shut-off and control valves in accordance with adapter catalogue	XXX
9...999 (for version M, the type of connection can be specified, such as АЧ, АК ,Б, В, Г, Д etc.)	
Structural design of electric actuator	XXXX/YY
Digital designation may change when the actuator layout or the design of the control unit, gearbox, or electric motor are changed	
The first two digits indicate the design of the unit	
The third digit indicates the design of the gearbox	
The fourth digit indicates the structural version of the electric motor	
YY – options	
И – galvanic insulation coupling	
Type of electronic control unit	X
V – Version with a built-in frequency converter	
S – Version with a built-in thyristor reversible converter	
M – Version for use with an external reversible starter	
Versions based on Interface signals	XX
Electric actuator power supply	X
2 – power supply 230 V, 1 phase	
3 – power supply 400 V, 3 phases	
4 – combined power supply 230 V /400 V	
5 – power supply 24 V DC	
Climatic version	XXXX
UKhL1 – from minus 60 °C to plus 50 °C	
UKhL 1 – from minus 63 °C to plus 50 °C	
OM1 – from minus 63 °C to plus 50 °C	

RemTEK ELECTRIC ACTUATORS

Purpose

RemTEK electric actuators are designed for remote and local control of pipeline valves with DN from 25 to 1200 mm with PN from 1.6 to 25MPa:

- shut-off valves;
- control valves;
- shut-off and control valves.

Application

- Gaz industry
- Oil industry
- Chemical industry
- Energy industry
- Maritime transport facilities
- Floating offshore drilling and power units (platforms and ships)
- Coastal zones

Functional Use

- Regulating system
- Flow control systems (cutting-off)
- Firefighting system
- Safety systems
- Emergency shutdown system (ESD)
- Processing system and facilities

RemTEK for Marine Application

RemTEK climatic version OM1 additionally complies with the “Rules and Regulations for the Classification and Construction of Marine Vessels”, “Rules for Technical Supervision during Construction of Ships and Manufacture of Shipboard Materials and Products”, “Rules for the Classification, Construction and Equipment of MODU/FOP”, “Technical Regulations on the Safety of Maritime Transport Facilities.”

Application in Explosion Hazardous Areas

RemTEK is provided with an explosion protection of “explosion-proof electrical equipment” level and is intended for installation in zones of classes 1 and 2 according to GOST IEC 60079-10-1-2013, where steam and gas-air explosive mixtures of IIA and IIB categories of T1, T2, T3, T4 groups as classified according to GOST R IEC 60079-20-1-2013 may occur.

Application in Systems with Safety Integrity Level (SIL2)

RemTEK has certified fault tolerance indicators regarding safety functions and can be used in systems with a given integral level of functional safety SIL2 (Safety Integrity Level).

Application at Facilities of GAZPROM PJSC

RemTEK electric actuators are supplied to facilities of Gazprom PJSC for valves of the following types:

- ball cocks DN 25-700 mm;
- gates DN 25-1200 mm;
- valves DN 25-700 mm.

In accordance with STO Gazprom 2-4.1-212-2008, RemTEK multi-turn electric actuators, at the request of valve manufacturers, can be supplied to ball cocks equipped with a pre-gear.

Standards and Regulations

RemTEK complies with the requirements of the following standards:

- STO Gazprom 2-4.1-212-2008
- TR CU 010/2011
- TR CU 012/2011
- TR CU 020/2011
- GOST IEC 60079-1-2013
- GOST 31610.0-2019
- GOST 31441.1-2011
- GOST 31441.5-2011
- GOST 31438.1-2011
- GOST 12.2.007.0-75
- GOST 12.2.003-91
- GOST R IEC 61508-2012
- GOST R IEC 61511-2018

FUNCTIONALITIES

Control Functions

- opening, closing and regulation of the flow area of the valves;
- local control of the electric actuator via an integrated control station;
- remote control of the electric actuator via discrete, analog or digital control signals. Unified automated process control system or telemechanics system connectivity;
- moving the valve closure member using a manual override;
- for part-turn and linear actuators, maintaining the specified position of the output element of the shut-off and control valves in the absence of power supply;
- monitoring the position of the valve closure member in the absence of power supply;
- indication of the position of the valve closure member during operation on the local control station indicator, mechanical position indicators (for part-turn electric actuators) or on indicators of specialized adapters.

Service Functions

- setting control commands and parameterization of the electric actuator from a local control station, via an interface or remote control
- saving information on execution of commands, diagnostics of the electric actuator, service and operational data;
- determination and saving of defect codes with a time stamp in non-volatile memory, viewing of the defect archive on the local control station indicator, transmission of the defect archive via the interface;
- configuration, commissioning and servicing of the electric actuator via a Wi-Fi interface with built-in authorization functions and access control;
- accumulation of operational data and retrieval of warning maintenance messages.

Protection Functions

- moving the valve closure member to the “safety” position in the event of a power failure;
- automatic shutdown of the handwheel actuator when the electric motor is turned on;
- automatic shutdown of the electric motor when the locking device reaches the specified intermediate and extreme positions;
- automatic shutdown of the electric motor when the specified permissible loads on the output shaft of the electric actuator motor are exceeded in any intermediate position of the valve closure member;
- built-in protection of the electric motor: against short circuits of the windings to the housing or among themselves, against overheating, time-current protection, protection against reduction of insulation resistance;
- built-in protection of the electronic control unit against overheating and excessive cooling;
- monitoring the power supply voltage with the generation of alarm messages in case of deviations in the supply mains;
- built-in intelligent diagnostic and protection system with event recording function (“black box”).

Application Functions

- modes for positioning the valve working member;
- mode of regulation of a process parameter (pressure, flow, temperature, etc.) using a built-in PID-controller;
- mode of transferring the output link to a safe state;
- water hammer exclusion mode with time control of movement of the valve working member between specified positions;
- partial valve stroke test for rapid diagnosis of valve.

OPERATING CONDITIONS

Impact	Impact characteristics
Ambient air temperature	from -60 °C to +50 °C
	from -63 °C to +50 °C for low temperature version
Relative humidity	Upper value is 95 % at +35 °C and no condensation at lower temperatures
Atmospheric pressure	from 84 to 106.7 kPa (from 630 to 795 mm Hg) at an altitude of up to 1000 m above sea level
External magnetic and electric fields	permanent or variable with mains frequency and voltage up to 400 A/m
	pulsed magnetic field degree of hardness is 4 according to GOST 30336-95
Electromagnetic interference. Compliance with performance quality criterion A as per GOST 30804.6.2-2013	protection level (Up) 2 kV while limiting high-energy microsecond pulse noise (protection is provided between phase conductors and neutral conductor, as well as between phase conductors, neutral and housing)
	electrostatic discharges severity level is 2 according to GOST 30804.4.2-2013
	nanosecond pulse noise, severity level 3 according to GOST 30804.4.4-2013 and severity level 3 according to GOST R 51516-99
External mechanical effects	RemTEK retains strength and operational capability during and after seismic impact 10 points (on the MSK-64 scale)
	RemTEK complies with the group M40 according to GOST 17516.1-90: • sinusoidal vibration in the frequency ranges from 0.5 to 100 Hz with a maximum acceleration amplitude of 2.5 m/s^2; • single action impacts with peak impact acceleration up to 50 m/s^2 with a duration from 2 to 20 ms.
	RemTEK maintains its operational capability under conditions of vibration within the frequency range from 5 to 80 Hz (according to the requirements of STO Gazprom 2-4.1-212-2008: • with a displacement amplitude of 0.1 mm for frequencies up to 60 Hz; • acceleration amplitude 9.8 m/s2 for frequencies above 60 Hz. Available version according to group M7 as per GOST 17516.1-90.

GENERAL SPECIFICATIONS

Explosion Protection Marking of Electric Actuator	
• Electrics	1 Ex d IIB T4 Gb X or 1 Ex d e IIB T4 Gb X
• Electrics when the cover of the control unit is open	0 Ex ia IIB T4 Ga X
• Non-electrics	II Gb c IIB T4 X
Mode of Operation	
* – depending on RemTEK version	S2 – duration of continuous operation up to 30 minutes*
	S3 – (CDF=25 %), cycle duration is 60 minutes*
	S4 – (CDF=25 %), number of starts per hour is up to 1600*
Path shutdown	Shutdown along the way using electronic position sensor, software position controller
Torque/force shutdown	via electronic torque controller
Additional features	maintaining the maximum torque on the electric motor shaft when the phase voltage of the power supply mains is reduced down to 50% (with a proportional reduction in speed)
Adjustment range of the torque/force limiting clutch on the output element, from the maximum torque value	from 20 % to 100 %
Reduced torque/force limit error	± 10 %
Range of setting the rotating frequency (speed) of the output element	from 10 % to 100 %
Mode for movement for a specified time to eliminate water hammer	available
Output element stop accuracy	
• Multi-turn version	± 10° (Optionally up to 1°)
• Part-turn version	± 1° (Optionally up to 0.1°)
• Linear version	± 100 µm
Ready time for operation after supply voltage is applied	
• at ambient temperatures within the range from -35 °C to +63 °C	Not more than 40 min (ready time depends on ambient temperature)
• at ambient temperatures above -35 °C	Not more than 3 s
Power of the built-in thermostatic system	200 W, connected to main power supply
Type of electric motor	
	three-phase asynchronous
	three-phase synchronous with permanent magnets
Motor temperature sensor	Thermistor PT1000
Class of Electric Motor Insulation	F (155 °C)

GENERAL SPECIFICATIONS

Rated Voltage Supply*	
* – indicated in designation of the electric actuator	400 V, 3 ph, 50 Hz
	230 V, 1 ph, 50 Hz
	24 V DC
Rated voltage tolerance, from rated value	+ 10 % - 15 %
Mains frequency tolerance	± 2 Hz
Noise level, when idling at a distance of 1 m, for part-turn versions	Not more than 65 dB
Time (before the protection is triggered) during which the electric actuator remains operational	
• when the mains voltage exceeds up to 31%	for long duration
• when the mains voltage exceeds up to 47%	1 s
• when the mains voltage drops below 50%	20 s
• when there is a power outage with the resumption of interrupted movement	3 s
Monitoring and storing the position of the output element	after the expiration date, the lithium battery needs to be replaced
• in stand-by mode	Up to 5 years
• in manual override rotation mode without power	300 hours
Protection degree according to GOST 14254-2015	IP67
Seismic Resistance	C10
Grounding	Grounding of the housing complies with the requirements of GOST 21130-75. The grounding clamps are equipped with an anti-self-unscrewing device
Fire Resistance	Certified. RemTEK with a fireproof cover ensures operability under fire exposure at a temperature of 1100 °C and a duration of up to 45 minutes
Installation position in space	any
Force applied to the handwheel at rated load (50 %)	Not more than 150 Nm
Force applied to the handwheel at maximum load (100 %)	Not more than 450 Nm

Reliability figures of RemTEK	
• service life before write-off	40 years
• operational life before write-off	15.000 cycles
• operational life before write-off in control mode	320.000 hours
• mean time to restore	60 minutes
• probability of failure-free operation for the assigned operational life	0.975
• mean storage time in original packaging in places with storage conditions as per group 6 according to GOST 15150-69	3 years

Assigned technical and operational figures of RemTEK	
• assigned service life	30 years
• assigned operational life in control mode	240.000 hours
• assigned operational life in “Open-Close” mode	3000 cycles

Setting / Programming
• using knobs and display at the local control station
• via Wi-Fi or USB service interface
• using the remote-control unit (RC) via IR signals
• via communication interfaces

Local Control Station
• two knobs - mode and command switches: “OPEN/CLOSE”, “STOP”
• soft menu indicator (text-graphic)
• single status indicators

Recording of defects and events preceding them with a time reference in the information module	
• number of defect log entries	500
• number of command log entries	2500
• number of log entries for changes in control parameters	1000
• number of valve condition log entries	5
• number of log entries for restoring parameters from a backup copy	40
• number of log entries of summary alarm information	12
• number of digital input change log entries	200
• number of log entries of changes in remote control	200

Recording of Operational Data
• number of cycles
• number of starts of electric motor
• number of stops due to excess torque
• number of motor protection trips based on temperature
• total operating time of the electric motor

Protections of Electric Motor
• against motor phase failure
• against reducing the insulation resistance of the electric motor circuits below the threshold of 0.5 MOhm
• adjustable time-current protection
• against overheating of the electric motor (built-in temperature sensor)

Protection of Control Unit
• against undercooling and overheating of the power module of the control unit
• against the signal values at the analog inputs going beyond the range (4-20) mA
• against undervoltage
• against increased voltage
• against pulse overvoltage
• against failure of control parameters, position failure, DC failure or lithium cell discharge, against internal errors of the control unit

Note:
A cycle is the movement of a closure/control member from the initial position “Open” (“Closed”) to the opposite one and back, associated with the performance of the main function of the valve. The number of cycles is displayed in the Help menu.

OPTIONAL SPECIFICATIONS OF ELECTRIC ACTUATORS OF CLIMATIC OM1 VERSION

Requirements	Conditions
Ambient air temperature	from-63 °C to +50 °C
Relative humidity	(75 ± 3) % at (45 ± 3) °C (95 ± 3) % at (25 ± 2) °C
Additional ambient factors	salt fog exposure exposure to solar radiation
External magnetic and electric field	permanent or variable fields with mains frequency and voltage up to 1000 A/m according to the requirements of par. 2.1.2.1 Part XI of the “Marine Register Rules”
Electromagnetic interference	electrostatic discharges of air breakdown with an amplitude of 8 kV or contact breakdown - 6 kV radio frequency electromagnetic fields in the range from 3 to 2 GHz with a rms magnetic field strength of 10 V/m nanosecond voltage pulses with an amplitude of 2 kV for power circuits and 1 kV for signal and control cables with a duration of 5/50 ns conduction radio frequency interference in the range from 0.01 to 50 MHz with a voltage of 1 V rms and 30% modulation at a frequency of 1 MHz microsecond voltage pulses along power circuits with an amplitude of 1 kV for symmetrical pulse supply and 2 kV for asymmetrical pulse supply with a duration of 1.2/50 μs
External mechanical impact	RemTEK remains operational under vibration conditions in the frequency range from 2 to 100 Hz: • with a displacement amplitude of ± 1.6 mm at frequencies from 2 to 25 Hz • with acceleration ± 4g at frequencies from 25 to 100 Hz • with impacts with acceleration ± 5g and a frequency of 40–80 beats per minute
Levels of interferences generated by RemTEK in the specified frequency ranges	Levels of conducted interference: • 10–150 kHz – not more than 96–50 dBμV • 15–350 kHz – not more than 60–50 dBμV • 350 kHz – 30 MHz – not more than 50 dBμV radiated interference levels at a distance of 3 meters: • 0.15–0.3 MHz – not more than 80–52 dBμV/m • 0.3–30 MHz – not more than 52–34 dBμV/m • 30–2000 MHz – not more than 54 dBμV/m, with the exception of the range 156–165 MHz, where 24 dBμV/m is set

OPTIONAL SPECIFICATIONS OF ELECTRIC ACTUATORS TO COMPLY WITH FUNCTIONAL SAFETY REQUIREMENTS AT SIL2 LEVEL

The RemTEK electric actuator complies with the safety integrity level (SIL2) according to the standards GOST R IEC 61508-1, GOST R IEC 61508-2, GOST R IEC 61508-3, GOST R IEC 61508-4, GOST R IEC 61508-5, GOST R IEC 61508-6, GOST R IEC 61508-7, GOST R IEC 61511-1.

RemTEK electric actuator belongs to complex devices of type “B” in accordance with GOST R IEC 61508. RemTEK electric actuator operates in a mode with a low request frequency in accordance with GOST R IEC 61508-4.

Indicators of the safety integrity level of the RemTEK electric actuator, not less	
HFT (hardware fault tolerance)	0
Type of device	type B (complex device)
SFF (safe failure fraction)	i95 %
PFD 1oo1D (average probability of dangerous failure on demand)	$<510^{-3}$
*RRF (risk reduction factor)	>500
1DU (lambda of undetected dangerous failures)	$<10^{-6}$
1DD (lambda of detected dangerous failures)	$<10^{-4}$

* - the time interval between control checks is at least 4380 hours, average repair time is 1 hour.

The value of undetectable dangerous failures is given taking into account the partial valve stroke test, as well as continuous interrogation of the actuator via the interface, taking into account interrogation of data from the internal diagnostic system.

Functional safety indicators in accordance with GOST R IEC 61508 for a specific version of RemTEK are given in the operational documentation included in the delivery package.

The RemTEK electric actuator has several safety functions that can be used in the design and operation of technical safety systems.

Safety Function	Function Description
Safe ESD OPEN	When the safety function is triggered, the output element of the electric actuator is moved to the OPEN position
(Safe ESD CLOSE)	When the safety function is triggered, the output element of the electric actuator is moved to the CLOSED position
Safe STOP	When the safety function is triggered, the output element of the electric actuator remains in its current position, and the “STOP” command is executed.
(Safe ESD OPEN + Safe STOP)	When the safety function is triggered, the output element of the electric actuator is moved to the OPEN position, then the STOP command is executed, which prohibits movement of the output element.
Safe emergency ESD CLOSE + Safe STOP	When the safety function is triggered, the output element of the electric actuator is moved to the CLOSED position, then the STOP command is executed, which prohibits movement of the output element.
Emergency transfer to safe position (Safe POSITION)	When the safety function is triggered, the output element of the electric actuator is moved to the specified safety position. Safety position is user configurable.

Specifications of Multi-turn Electric Actuators

Type of Electric Actuator	Torque MAX, N·m	Shutdown torque setting range, N·m	Maximum speed, rpm	Mode S2, min	Mode S3, DCF %, Tc min	Mode S4, s/hour	Type of attachment
RemTEK.M.40.70	40	8...40	70	30	25 %, 60 min	1200	A
RemTEK.M.50.110	50	10...50	110	30	25 %, 60 min	1200	A
RemTEK.M.60.90	60	12...60	90	30	25 %, 60 min	1200	A
RemTEK.M.60.150	60	12...60	150	30	25 %, 60 min	1200	A
RemTEK.M.60.220	60	12...60	220	30	25 %, 60 min	1200	A
RemTEK.M.60.280	60	12...60	228	30	25 %, 60 min	1200	A
RemTEK.M.70.40	70	14...70	40	30	25 %, 60 min	1200	A
RemTEK.M.70.70	70	14...70	70	30	25 %, 60 min	1200	A
RemTEK.M.100.55	100	20...100	55	30	25 %, 60 min	1200	А(Б)
RemTEK.M.100.100	100	20...100	100	30	25 %, 60 min	1200	А(Б)
RemTEK.M.100.150	100	20...100	150	30	25 %, 60 min	1200	А(Б)
RemTEK.M.100.220	100	20...100	220	30	25 %, 60 min	1200	А(Б)
RemTEK.M.120.50	120	24...120	50	30	25 %, 60 min	1200	А(Б)
RemTEK.M.120.70	120	24...120	70	30	25 %, 60 min	1200	А(Б)
RemTEK.M.130.450	130	26...130	450	30	25 %, 60 min	1200	А(Б)
RemTEK.M.150.60	150	30...150	60	15	25 %, 60 min	1200	А(Б)
RemTEK.M.150.100	150	30...150	100	30	25 %, 60 min	1200	А(Б)
RemTEK.M.150.120	150	30...150	120	30	25 %, 60 min	1200	А(Б)
RemTEK.M.150.220	150	30...150	220	15	25 %, 60 min	1200	А(Б)
RemTEK.M.200.30	200	40...200	30	30	25 %, 60 min	1200	А(Б)
RemTEK.M.200.40	200	40...200	40	30	25 %, 60 min	1200	А(Б)
RemTEK.M.200.90	200	40...200	90	30	25 %, 60 min	1200	А(Б)
RemTEK.M.200.230	200	40...200	230	15	25 %, 60 min	600	А(Б)
RemTEK.M.220.120	220	44...220	120	15	25 %, 60 min	600	А(Б)
RemTEK.M.250.230	250	50...250	230	15	25 %, 60 min	600	Б
RemTEK.M.300.30	300	60...300	30	15	25 %, 60 min	900	Б
RemTEK.M.300.40	300	60...300	40	15	25 %, 60 min	900	Б
RemTEK.M.300.60	300	60...300	60	15	25 %, 60 min	600	Б
RemTEK.M.350.230	350	70...350	230	15	25 %, 60 min	300	Б
RemTEK.M.400.10	400	80...400	10	30	25 %, 60 min	1200	Б
RemTEK.M.500.40	500	100...500	40	30	25 %, 60 min	1200	Б(В)
RemTEK.M.600.6	600	120...600	6	30	25 %, 60 min	1200	Б(В)
RemTEK.M.600.20	600	120...600	20	30	25 %, 60 min	1200	Б(В)
RemTEK.M.600.40	600	120...600	40	15	25 %, 60 min	1200	Б(В)
RemTEK.M.600.96	600	120...600	96	15	25 %, 60 min	300	Б(В)
RemTEK.M.800.96	800	160...800	96	15	25 %, 60 min	300	В
RemTEK.M.1000.10	1000	200...1000	10	30	25 %, 60 min	1200	В
RemTEK.M.1000.20	1000	200...1000	20	15	25 %, 60 min	900	В
RemTEK.M.1000.48	1000	200...1000	48	15	25 %, 60 min	600	В
RemTEK.M.1300.35	1300	260...1300	35	30	25 %, 60 min	600	В
RemTEK.M.2000.36	2000	400...2000	36	15	25 %, 60 min	300	В

Type of Electric Actuator	Torque MAX, N·m	Shutdown torque setting range, N·m	Maximum speed, rpm	Mode S2, min	Mode S3, CDF %, Tc min	Mode S4, s/hour	Type of attachment
RemTEK.M.3000.32	3000	600...3000	32	15	25 %, 60 min	300	Г
RemTEK.M.3500.19	3500	700...3500	19	30	25 %, 60 min	300	Г
RemTEK.M.4000.15	4000	800...4000	15	15	25 %, 60 min	300	Г
RemTEK.M.60.150	4000	800...4000	25	15	25 %, 60 min	300	Г(Д)
RemTEK.M.5000.7,5	5000	1000...5000	7,5	15	25 %, 60 min	600	Г
RemTEK.M.5000.15	5000	1000...5000	15	15	25 %, 60 min	300	Г
RemTEK.M.7000.12	7000	1400...7000	12	15	25 %, 60 min	300	Г
RemTEK.M.10000.6	10000	2000...10000	6	15	15 %, 60 min	300	Д
RemTEK.M.10000.12	10000	2000...10000	12	15	15 %, 60 min	300	Д
RemTEK.M.15000.6	15000	3000...15000	6	15	15 %, 60 min	300	Д (F40)
RemTEK.M.15000.12	15000	3000...15000	12	15	15 %, 60 min	300	Д (F40)
RemTEK.M.20000.12	20000	4000...20000	12	15	15 %, 60 min	300	Д
RemTEK.M.32000.6	32000	6400...32000	6	15	15 %, 60 min	300	F48
RemTEK.M.32000.12	32000	6400...32000	12	15	15 %, 60 min	300	F48

Electrical Specifications of Multi-turn Electric Actuators (V-Version)

Version	Supply Voltage, V	Rated Power,W	Gross Power, VA	Rated Current,A	Starting Current,A	Automation Type
RemTEK.M.40.70	230	285	530	2,3	2,3	1P 4A x-ка C
RemTEK.M.50.110	400	555	850	1,2	1,2	3P 4A x-ка C
RemTEK.M.60.90	230	440	665	2,9	2,9	1P 4A x-ка C
RemTEK.M.60.150	400	715	955	1,4	1,4	3P 4A x-ка C
RemTEK.M.60.220	400	880	1325	1,9	1,9	3P 4A x-ка C
RemTEK.M.60.280	230	1520	1975	8,6	8,6	1P 13A x-ка C
RemTEK.M.60.280	400	1520	1975	2,9	2,9	3P 4A x-ка C
RemTEK.M.70.40	230	285	530	2,3	2,3	1P 4A x-ка C
RemTEK.M.70.70	400	495	780	1,1	1,1	1P 4A x-ка C
RemTEK.M.100.55	230	455	680	3,0	3,0	1P 4A x-ка C
RemTEK.M.100.100	400	795	1035	1,5	1,5	3P 4A x-ка C
RemTEK.M.100.150	400	1355	1785	2,6	2,6	3P 4A x-ка C
RemTEK.M.100.220	230	1625	2105	9,2	9,2	1P 13A x-ка C
RemTEK.M.100.220	400	1625	2105	3,1	3,1	3P 4A x-ка C
RemTEK.M.120.50	230	485	840	3,7	3,7	1P 6A x-ка C
RemTEK.M.120.50	400	485	840	1,2	1,2	3P 4A x-ка C
RemTEK.M.120.70	400	760	1090	1,6	1,6	3P 4A x-ка C
RemTEK.M.130.450	400	4345	5285	7,7	7,7	3P 10A x-ка C
RemTEK.M.150.60	230	815	1150	5,0	5,0	1P 8A x-ка C
RemTEK.M.150.60	400	755	1080	1,6	1,6	3P 4A x-ка C
RemTEK.M.150.100	400	1355	1785	2,6	2,6	3P 4A x-ка C
RemTEK.M.150.120	230	1625	2105	9,2	9,2	1P 13A x-ка C
RemTEK.M.150.220	400	2980	3690	5,3	5,3	3P 8A x-ка C
RemTEK.M.200.30	230	505	730	3,2	3,2	1P 4A x-ка C
RemTEK.M.200.40	230	725	1045	4,5	4,5	1P 6A x-ка C

MULTI-TURN ELECTRIC ACTUATORS

Version	Supply Voltage, V	Rated Power,W	Gross Power, VA	Rated Current,A	Starting Current,A	Automation Type
RemTEK.M.200.90	400	1445	1890	2,7	2,7	3P 4A x-ка C
RemTEK.M.200.230	400	3625	4440	6,4	6,4	3P 8A x-ка C
RemTEK.M.220.120	400	2385	2900	4,3	4,3	3P 6A x-ка C
RemTEK.M.250.230	400	4375	5315	7,7	7,7	3P 10A x-ка C
RemTEK.M.300.30	400	955	1100	1,6	1,6	3P 4A x-ка C
RemTEK.M.300.40	400	1445	1890	2,7	2,7	3P 4A x-ка C
RemTEK.M.300.60	400	1510	1965	2,8	2,8	3P 4A x-ка C
RemTEK.M.350.230	400	6085	7320	10,6	10,6	3P 16A x-ка C
RemTEK.M.400.10	230	450	675	2,9	2,9	1P 4A x-ка C
RemTEK.M.500.40	400	1915	2440	3,5	3,5	3P 6A x-ка C
RemTEK.M.600.6	230	400	620	2,7	2,7	1P 4A x-ка C
RemTEK.M.600.20	230	1445	1890	8,2	8,2	1P 13A x-ка C
RemTEK.M.600.20	400	1445	1890	2,7	2,7	3P 4A x-ка C
RemTEK.M.600.96	400	5195	6280	9,1	9,1	3P 13A x-ка C
RemTEK.M.800.96	400	6850	8215	11,9	11,9	3P 16A x-ка C
RemTEK.M.1000.10	230	1445	1890	8,2	8,2	1P 13A x-ка C
RemTEK.M.1000.10	400	1445	1890	2,7	2,7	3P 4A x-ка C
RemTEK.M.1000.20	400	2000	2540	3,7	3,7	3P 6A x-ка C
RemTEK.M.1000.48	400	4435	5385	7,8	7,8	3P 10A x-ка C
RemTEK.M.1300.35	400	4200	5115	7,4	7,4	3P 10A x-ка C
RemTEK.M.2000.36	400	6425	7710	11,2	11,2	3P 16A x-ка C
RemTEK.M.4000.15	400	5415	6530	9,5	9,5	3P 13A x-ка C
RemTEK.M.5000.7,5	400	3590	4400	6,4	6,4	3P 8A x-ка C
RemTEK.M.5000.15	400	6690	8052	11,6	11,6	3P 16A x-ка C
RemTEK.M.7000.12	400	7495	8965	13,0	13,0	3P 20A x-ка C
RemTEK.M.10000.6	400	5540	6680	9,7	9,7	3P 13A x-ка C

Electrical Specifications of Multi-turn Electric Actuators (S-Version)

Version	Supply Voltage, V	Rated Power,W	Gross Power, VA	cosj	Starting Current,A	Starting Current Ratio	Phase Current, A	Automation Type
RemTEK.M.50.110	400	360	1015	0,66	4,55	3,5	1,5	3P 4A x-ка D
RemTEK.M.60.280	400	1100	2155	0,75	15	5	3,1	3P 4A x-ка D
RemTEK.M.70.70	400	320	925	0,66	4,55	3,5	1,3	3P 4A x-ка D
RemTEK.M.100.150	400	980	1945	0,75	15	5	2,8	3P 4A x-ка D
RemTEK.M.100.220	400	1440	2450	0,8	21,6	6	3,6	3P 6A x-ка D
RemTEK.M.120.70	400	550	1275	0,72	8,8	4	1,8	3P 4A x-ка D
RemTEK.M.150.60	400	590	1170	0,81	7	5	1,7	3P 4A x-ка D
RemTEK.M.150.100	400	980	1945	0,75	15	5	2,8	3P 4A x-ка D
RemTEK.M.150.160	400	1570	2655	0,8	21,6	6	3,8	3P 6A x-ка D
RemTEK.M.200.80	400	1045	2060	0,75	15	5	3,0	3P 4A x-ка D
RemTEK.M.200.230	400	2830	4410	0,82	47,6	7	6,4	3P 8A x-ка D
RemTEK.M.220.120	400	1725	2900	0,8	21,6	6	4,2	3P 6A x-ка D
RemTEK.M.250.60	400	980	1945	0,75	15	5	2,8	3P 4A x-ка D
RemTEK.M.300.30	400	590	1370	0,71	8	5	2,0	3P 4A x-ка D
RemTEK.M.300.40	400	1045	2060	0,75	15	5	3,0	3P 4A x-ка D
RemTEK.M.300.60	400	1180	1890	0,85	21,45	6,5	2,7	3P 4A x-ка D

PART-TURN ELECTRIC ACTUATORS

Version	Supply Voltage, V	Rated Power,W	Gross Power, VA	cosj	Starting current,A	Starting Current Ratio	Phase Current, A	Automation Type
RemTEK.M.350.230	400	4955	6940	0,86	79,1	7	10,1	3P 13A x-ка D
RemTEK.M.600.20	400	1045	2060	0,75	15	5	3,0	3P 4A x-ка D
RemTEK.M.600.40	400	1795	2685	0,87	29,44	6,4	3,9	3P 6A x-ка D
RemTEK.M.800.96	400	5740	7615	0,88	81	7,5	11,0	3P 16A x-ка D
RemTEK.M.1000.12	400	1045	2060	0,75	15	5	3,0	3P 4A x-ка D
RemTEK.M.1000.20	400	1495	2580	0,8	19,08	5,3	3,7	3P 6A x-ка D
RemTEK.M.1000.48	400	3590	5225	0,84	59,5	7	7,6	3P 10A x-ка D
RemTEK.M.1300.35	400	3400	4965	0,84	59,5	7	7,2	3P 10A x-ка D
RemTEK.M.2000.36	400	5385	7150	0,88	81	7,5	10,4	3P 13A x-ка D
RemTEK.M.3000.32	400	7175	9520	0,88	111	7,5	13,8	3P 20A x-ка D
RemTEK.M.3500.19	400	4970	6960	0,86	79,1	7	10,1	3P 13A x-ка D
RemTEK.M.4000.15	400	4485	6060	0,88	59,25	7,5	8,8	3P 13A x-ка D
RemTEK.M.4000.25	400	7475	9910	0,88	111	7,5	14,4	3P 20A x-ка D
RemTEK.M.5000.7,5	400	2805	4370	0,82	47,6	7	6,3	3P 8A x-ка D
RemTEK.M.5000.15	400	5605	7440	0,88	81	7,5	10,8	3P 16A x-ка D
RemTEK.M.7000.12	400	6280	8310	0,88	81	7,5	12,0	3P 16A x-ка D
RemTEK.M.10000.6	400	4485	6485	0,84	59,5	7	9,4	3P 13A x-ка D
RemTEK.M.10000.12	400	8970	11850	0,88	111	7,5	17,2	3P 25A x-ка D
RemTEK.M.15000.6	400	8485	12395	0,8	172,8	7,2	18,0	3P 40A x-ка D
RemTEK.M.20000.12	400	17945	23150	0,8	254,9	7,2	35,4	3P 63A x-ка D
RemTEK.M.32000.12	400	28710	36460	0,87	401,8	7	52,8	3P 63A x-ка D

Specifications of Part-turn Electric Actuators

Type of Electric Actuator	Torque MAX, N·m	Shutdown Torque Adjustment Range, N m	Min. Time of Working Stroke, s	Mode S2, min	Mode S3, CDF %, Tc min	Mode S4, s/hour	Type of Attachment
RemTEK.П.64	64	12,8...64	1; 2,5; 3; 4; 6	30	25 %, 60 min	1200	F07
RemTEK.П.125	125	25...125	6	30	25 %, 60 min	1200	F07
RemTEK.П.250	250	50...250	2,5; 4; 6, 12	30	25 %, 60 min	1200	F07
RemTEK.П.600	600	120...600	3; 6; 9; 12	15	25 %, 60 min	1200	F10
RemTEK.П.1000	1000	200...1000	6; 9; 12; 18	30	25 %, 60 min	1200	F12
RemTEK.П.2000	2000	400...2000	6; 9; 12; 18; 24	15	25 %, 60 min	1200	F14
RemTEK.П.3000	3000	600...3000	6; 12	15	25 %, 60 min	900	F16
RemTEK.П.4000	4000	800...4000	6; 9; 12; 18; 24	15	25 %, 60 min	900	F16
RemTEK.П.8500	8500	1700...8500	12; 16; 24; 30	15	25 %, 60 min	900	F25
RemTEK.П.10000	10000	2000...10000	12, 16; 30	15	25 %, 60 min	900	F25
RemTEK.П.16000	16000	3200...16000	12; 18; 24; 30	15	25 %, 60 min	600	F30
RemTEK.П.24000	24000	4800...24000	18; 24; 30	15	25 %, 60 min	600	F30
RemTEK.П.32000	32000	6400...32000	18; 24; 30; 36	15	25 %, 60 min	600	F35
RemTEK.П.48000	48000	9600...48000	24; 30	15	25 %, 60 min	600	F35
RemTEK.П.63000	63000	12600...63000	30; 36; 42	15	25 %, 60 min	600	F40
RemTEK.П.90000	90000	18000...90000	42	15	25 %, 60 min	600	F48

Electrical Specifications of Part-turn Electric Actuators (V-Version)

Version	Supply Voltage, V	Rated Power,W	Gross Power, VA	Rated Current,A	Starting Current,A	Automation Type
RemTEK.П.64.1	230	240	455	2,0	2,0	1P 4A x-ка C
RemTEK.П.64.1	400	240	455	0,7	0,7	3P 4A x-ка C
RemTEK.П.64.2,5	400	110	335	0,2	0,2	3P 4A x-ка C
RemTEK.П.64.1	230	90	295	1,3	1,3	1P 4A x-ка C
RemTEK.П.64.1	400	90	295	0,4	0,4	3P 4A x-ка C
RemTEK.П.64.4	400	70	285	0,1	0,1	3P 4A x-ка C
RemTEK.П.64.6	230	55	260	1,1	1,1	1P 4A x-ка C
RemTEK.П.64.6	400	55	260	0,4	0,4	3P 4A x-ка C
RemTEK.П.125.6	400	85	345	0,50	0,50	3P 4A x-ка A
RemTEK.П.250.2,5	400	440	745	0,6	0,6	3P 4A x-ка C
RemTEK.П.250.4	230	265	525	2,3	2,3	1P 4A x-ка C
RemTEK.П.250.4	400	265	525	0,4	0,4	3P 4A x-ка C
RemTEK.П.250.6	230	175	415	1,8	1,8	1P 4A x-ка C
RemTEK.П.250.6	400	175	415	0,3	0,3	3P 4A x-ка C
RemTEK.П.250.12	400	90	350	0,5	0,5	3P 4A x-ка A
RemTEK.П.600.3	400	775	1155	1,1	1,1	3P 4A x-ка C
RemTEK.П.600.6	230	375	665	2,9	2,9	1P 4A x-ка C
RemTEK.П.600.6	400	375	665	0,5	0,5	3P 4A x-ка C
RemTEK.П.600.9	230	245	500	2,2	2,2	1P 4A x-ка C
RemTEK.П.600.12	230	185	430	1,9	1,9	1P 4A x-ка C
RemTEK.П.1000.6	400	625	970	0,9	0,9	3P 4A x-ка C
RemTEK.П.1000.9	230	410	705	3,1	3,1	1P 4A x-ка C
RemTEK.П.1000.9	400	410	705	0,6	0,6	3P 4A x-ка C
RemTEK.П.1000.12	230	305	575	2,5	2,5	1P 4A x-ка C
RemTEK.П.1000.12	400	305	575	0,4	0,4	3P 4A x-ка C
RemTEK.П.1000.18	230	205	455	2,0	2,0	1P 4A x-ка C
RemTEK.П.1000.18	400	205	455	0,3	0,3	3P 4A x-ка C
RemTEK.П.2000.6	230	1245	1735	7,5	7,5	1P 10A x-ка C
RemTEK.П.2000.6	400	1245	1735	1,8	1,8	3P 4A x-ка C
RemTEK.П.2000.9	230	820	1210	5,3	5,3	1P 8A x-ка C
RemTEK.П.2000.9	400	820	1210	1,2	1,2	3P 4A x-ка C
RemTEK.П.2000.12	230	615	960	4,2	4,2	1P 6A x-ка C
RemTEK.П.2000.12	400	615	960	0,9	0,9	3P 4A x-ка C
RemTEK.П.2000.18	230	405	700	3,0	3,0	1P 4A x-ка C
RemTEK.П.2000.18	400	405	700	0,6	0,6	3P 4A x-ка C
RemTEK.П.2000.24	230	305	575	2,5	2,5	1P 4A x-ка C
RemTEK.П.2000.24	400	305	575	0,4	0,4	3P 4A x-ка C
RemTEK.П.3000.6	400	1870	2510	2,7	2,7	3P 4A x-ка C
RemTEK.П.3000.12	230	920	1335	5,8	5,8	1P 8A x-ка C
RemTEK.П.3000.12	400	920	1335	1,3	1,3	3P 4A x-ка C

Version	Supply Voltage, V	Rated Power,W	Gross Power, VA	Rated Current,A	Starting Current,A	Automation Type
RemTEK.П.4000.6	400	2495	3280	3,6	3,6	3P 6A x-ка C
RemTEK.П.4000.9	400	1645	2230	2,4	2,4	3P 4A x-ка C
RemTEK.П.4000.12	230	1225	1710	7,4	7,4	1P 10A x-ка C
RemTEK.П.4000.12	400	1225	1710	1,8	1,8	3P 4A x-ка C
RemTEK.П.4000.18	230	810	1200	5,2	5,2	1P 8A x-ка C
RemTEK.П.4000.18	400	810	1200	1,2	1,2	3P 4A x-ка C
RemTEK.П.4000.24	230	610	955	4,2	4,2	1P 6A x-ка C
RemTEK.П.4000.24	400	610	955	0,9	0,9	3P 4A x-ка C
RemTEK.П.8500.12	400	2605	3415	3,8	3,8	3P 6A x-ка C
RemTEK.П.8500.16	400	1945	2600	2,8	2,8	3P 4A x-ка C
RemTEK.П.8500.24	230	1290	1795	7,8	7,8	1P 10A x-ка C
RemTEK.П.8500.24	400	1290	1795	1,9	1,9	3P 4A x-ка C
RemTEK.П.8500.30	230	1030	1470	6,4	6,4	1P 8A x-ка C
RemTEK.П.8500.30	400	1030	1470	1,5	1,5	3P 4A x-ка C
RemTEK.П.10000.12	400	1255	1790	2,71	2,71	3P 4A x-ка C
RemTEK.П.10000.16	400	2290	3025	3,3	3,3	3P 6A x-ка C
RemTEK.П.10000.30	230	1215	1700	7,4	7,4	1P 10A x-ка C
RemTEK.П.10000.30	400	1215	1700	1,8	1,8	3P 4A x-ка C
RemTEK.П.16000.12	400	1255	1790	4,08	4,08	3P 6A x-ка A
RemTEK.П.16000.18	400	1255	1790	2,92	2,92	3P 4A x-ка A
RemTEK.П.16000.24	400	1255	1790	2,35	2,35	3P 4A x-ка A
RemTEK.П.16000.30	400	1255	1790	2,00	2,00	3P 4A x-ка A
RemTEK.П.24000.18	400	1975	2680	4,06	4,06	3P 6A x-ка A
RemTEK.П.32000.18	400	2615	3470	5,26	5,26	3P 8A x-ка A
RemTEK.П.32000.24	400	1980	2685	4,07	4,07	3P 6A x-ка A
RemTEK.П.32000.30	400	1605	2220	3,36	3,36	3P 6A x-ка A
RemTEK.П.32000.36	400	1355	1915	2,90	2,90	3P 4A x-ка A
RemTEK.П.48000.24	400	2940	3870	5,86	5,86	3P 8A x-ка A
RemTEK.П.48000.30	400	2375	3170	4,80	4,80	3P 6A x-ка A
RemTEK.П.63000.30	400	3080	4040	6,12	6,12	3P 8A x-ка A
RemTEK.П.63000.36	400	2580	3425	5,19	5,19	3P 8A x-ка A
RemTEK.П.63000.42	400	2225	2985	4,52	4,52	3P 6A x-ка A
RemTEK.П.90000.42	400	3190	4180	6,33	6,33	3P 8A x-ка A

Specifications of Part-turn Electric Actuators with Built-in Energy Storage Unit

Version	Torque MAX, N·m	Shutdown Torque Adjustment Range, N·m	Min. time of Working Stroke, s	Number of Strokes with ensured Safety Function	Mode S2, min	Mode S3, CDF %, Tc min	Mode S4, s/hour	Type of Attachment
RemTEK.П.125.0,3	125	25...125	0,3	43,8	30	25 %, 60 min	1200	F07
RemTEK.П.125.1	125	25...125	1	35,7	30	25 %, 60 min	1200	F07
RemTEK.П.125.3	125	25...125	3	21,3	30	25 %, 60 min	1200	F07
RemTEK.П.125.6	125	25...125	6	12,9	30	25 %, 60 min	1200	F07
RemTEK.П.125.9	125	25...125	9	9,6	30	25 %, 60 min	1200	F07
RemTEK.П.125.12	125	25...125	12	7,2	30	25 %, 60 min	1200	F07
RemTEK.П.250.0,3	250	50...250	0,3	88,8	30	25 %, 60 min	1200	F07
RemTEK.П.250.1	250	50...250	1	20,5	30	25 %, 60 min	1200	F07
RemTEK.П.250.3	250	50...250	3	14,3	30	25 %, 60 min	1200	F07
RemTEK.П.250.6	250	50...250	6	9,8	30	25 %, 60 min	1200	F07
RemTEK.П.250.9	250	50...250	9	7,4	30	25 %, 60 min	1200	F07
RemTEK.П.250.12	250	50...250	12	6,1	30	25 %, 60 min	1200	F07
RemTEK.П.600.0,8	600	120...600	0,8	32,9	30	25 %, 60 min	1200	F07
RemTEK.П.600.1,4	600	120...600	1,4	7,8	30	25 %, 60 min	1200	F07
RemTEK.П.600.3	600	120...600	3	6,8	15	25 %, 60 min	1200	F07
RemTEK.П.600.6	600	120...600	6	5,5	30	25 %, 60 min	1200	F07
RemTEK.П.600.9	600	120...600	9	4,5	30	25 %, 60 min	1200	F07
RemTEK.П.600.12	600	120...600	12	3,9	30	25 %, 60 min	1200	F07
RemTEK.П.1000.1	1000	200...1000	1	32,9	30	25 %, 60 min	1200	F12
RemTEK.П.1000.2	1000	200...1000	2	7,8	30	25 %, 60 min	1200	F12
RemTEK.П.1000.3	1000	200...1000	3	6,8	15	25 %, 60 min	1200	F12
RemTEK.П.1000.6	1000	200...1000	6	5,5	30	25 %, 60 min	1200	F12
RemTEK.П.1000.9	1000	200...1000	9	4,5	30	25 %, 60 min	1200	F12
RemTEK.П.1000.12	1000	200...1000	12	3,9	30	25 %, 60 min	1200	F12
RemTEK.П.1000.18	1000	200...1000	18	3,1	30	25 %, 60 min	1200	F12
RemTEK.П.2000.3	2000	400...2000	3	9,8	30	25 %, 60 min	1200	F14
RemTEK.П.2000.6	2000	400...2000	6	2,3	15	25 %, 60 min	1200	F14
RemTEK.П.2000.9	2000	400...2000	9	2,3	15	25 %, 60 min	1200	F14
RemTEK.П.2000.12	2000	400...2000	12	2,2	30	25 %, 60 min	1200	F14
RemTEK.П.2000.18	2000	400...2000	18	2,0	30	25 %, 60 min	1200	F14
RemTEK.П.2000.24	2000	400...2000	24	1,8	30	25 %, 60 min	1200	F14
RemTEK.П.3000.9	2300	600...3000	9	1,6	15	25 %, 60 min	1200	F16
RemTEK.П.4000.6	4000	800...4000	6	5,0	15	25 %, 60 min	1200	F16
RemTEK.П.4000.9	4000	800...4000	9	1,2	15	25 %, 60 min	1200	F16
RemTEK.П.4000.12	4000	800...4000	12	1,2	15	25 %, 60 min	1200	F16
RemTEK.П.4000.18	4000	800...4000	18	1,1	15	25 %, 60 min	1200	F16
RemTEK.П.4000.24	4000	800...4000	24	1,1	30	25 %, 60 min	1200	F16
RemTEK.П.8500.12	8500	1700...8500	12	2,3	15	25 %, 60 min	1200	F16
RemTEK.П.8500.18	8500	1700...8500	18	2,3	15	25 %, 60 min	1200	F16
RemTEK.П.8500.24	8500	1700...8500	24	1,2	15	25 %, 60 min	1200	F16
RemTEK.П.10000.12	10000	2000...10000	12	2,0	30	25 %, 60 min	1200	F25
RemTEK.П.10000.18	10000	2000...10000	16	2,0	30	25 %, 60 min	1200	F25
RemTEK.П.10000.24	10000	2000...10000	30	1,9	30	25 %, 60 min	1200	F25
RemTEK.П.8500.12	16000	3200...16000	12	1,3	30	25 %, 60 min	600	F30
RemTEK.П.8500.18	16000	3200...16000	18	1,2	30	25 %, 60 min	600	F30
RemTEK.П.8500.24	16000	3200...16000	24	1,2	30	25 %, 60 min	600	F30

Specifications of Linear Electric Actuators

Type of Electric Actuator	Force MAX, N	Shutdown Force Adjustment Range,N	Min. Speed on Gearbox Output, mm/s	Full Stroke*, mm	Mode S2, min	Mode S3, CDF %, Tc min	Mode S4, s/hour
RemTEK.Л.3500.4	3500	700...3500	4	10/60/100	30	25 %, 60 min	1200
RemTEK.Л.3500.7	3500	700...3500	7	10/60/100	30	25 %, 60 min	1200
RemTEK.Л.3500.55	3500	700...3500	55	10/60/100	30	25 %, 60 min	1200
RemTEK.Л.3500.110	3500	700...3500	110	10/60/100	30	25 %, 60 min	1200
RemTEK.Л.7000.4	7000	1400...7000	4	60/100/125/160/200	30	25 %, 60 min	1200
RemTEK.Л.7000.7	7000	1400...7000	7	60/100/125/160/200	30	25 %, 60 min	1200
RemTEK.Л.7000.15	7000	1400...7000	15	60/100/125/160/200	30	25 %, 60 min	1200
RemTEK.Л.7000.55	7000	1400...7000	55	60/100/125/160/200	30	25 %, 60 min	1200
RemTEK.Л.7000.110	7000	1400...7000	110	60/100/125/160/200	30	25 %, 60 min	1200
RemTEK.Л.10000.7	10000	2000...10000	7	60/100/125/160/200	30	25 %, 60 min	1200
RemTEK.Л.10000.10	10000	2000...10000	10	60/100/125/160/200	30	25 %, 60 min	1200
RemTEK.Л.10000.15	10000	2000...10000	15	60/100/125/160/200	30	25 %, 60 min	1200
RemTEK.Л.10000.20	10000	2000...10000	20	60/100/125/160/200	30	25 %, 60 min	1200
RemTEK.Л.10000.55	10000	2000...10000	55	60/100/125/160/200	30	25 %, 60 min	1200
RemTEK.Л.10000.110	10000	2000...10000	110	60/100/125/160/200	30	25 %, 60 min	1200
RemTEK.Л.18000.4	18000	3600...18000	4	60/100/125/160/200	30	25 %, 60 min	1200
RemTEK.Л.18000.7	18000	3600...18000	7	60/100/125/160/200	30	25 %, 60 min	1200
RemTEK.Л.18000.10	18000	3600...18000	10	60/100/125/160/200	30	25 %, 60 min	1200
RemTEK.Л.18000.12	18000	3600...18000	12	60/100/125/160/200	30	25 %, 60 min	1200
RemTEK.Л.18000.20	18000	3600...18000	20	60/100/125/160/200	30	25 %, 60 min	1200
RemTEK.Л.18000.50	18000	3600...18000	50	60/100/125/160/200	30	25 %, 60 min	1200
RemTEK.Л.18000.90	18000	3600...18000	90	60/100/125/160/200	30	25 %, 60 min	1200
RemTEK.Л.25000.6	25000	5000...25000	6	60/100/125/160/200	30	25 %, 60 min	1200
RemTEK.Л.25000.12	25000	5000...25000	12	60/100/125/160/200	30	25 %, 60 min	1200
RemTEK.Л.30000.4	30000	6000...30000	4	125/160/200	30	25 %, 60 min	1200
RemTEK.Л.30000.9	30000	6000...30000	9	125/160/200	30	25 %, 60 min	1200
RemTEK.Л.30000.12	30000	6000...30000	12	125/160/200	30	25 %, 60 min	1200
RemTEK.Л.30000.20	30000	6000...30000	20	125/160/200	30	25 %, 60 min	1200
RemTEK.Л.30000.30	30000	6000...30000	30	125/160/200	30	25 %, 60 min	1200
RemTEK.Л.45000.4	45000	9000...45000	4	125/150	30	25 %, 60 min	1200
RemTEK.Л.45000.9	45000	9000...45000	9	125/150	30	25 %, 60 min	1200
RemTEK.Л.45000.70	45000	9000...45000	70	125/150	30	25 %, 60 min	1200
RemTEK.Л.65000.9	65000	13000...65000	9	220	30	25 %, 60 min	1200
RemTEK.Л.120000.6	120000	24000...120000	6	100/150	30	25 %, 60 min	1200
RemTEK.Л.175000.6	175000	35000...175000	6	100/150	30	25 %, 60 min	1200
RemTEK.Л.220000.6	220000	44000...220000	6	100/150	30	25 %, 60 min	1200

Electrical Specifications of Linear Electric Actuators (V-Version)

Version	Supply Voltage, V	Rated Power,W	Gross Power, VA	Rated Current,A	Starting Current,A	Automation Type
RemTEK.Л.3500.4	230	75	290	1,2	1,2	1P 4A х-ка C
RemTEK.Л.3500.4	400	65	275	0,4	0,4	3P 4A х-ка C
RemTEK.Л.3500.7	230	55	270	1,2	1,2	1P 4A х-ка C
RemTEK.Л.3500.7	400	55	270	0,4	0,4	3P 4A х-ка C
RemTEK.Л.3500.55	230	180	460	2,1	2,1	1P 4A х-ка C
RemTEK.Л.3500.55	400	180	460	0,7	0,7	3P 4A х-ка C
RemTEK.Л.3500.110	400	395	730	1,1	1,1	3P 4A х-ка C
RemTEK.Л.7000.4	230	75	290	1,3	1,3	1P 4A х-ка C
RemTEK.Л.7000.4	400	75	290	0,4	0,4	3P 4A х-ка C
RemTEK.Л.7000.7	230	130	360	1,6	1,6	1P 4A х-ка C
RemTEK.Л.7000.7	400	150	385	0,6	0,6	3P 4A х-ка C
RemTEK.Л.7000.15	230	90	350	1,6	1,6	1P 4A х-ка C
RemTEK.Л.7000.15	400	90	350	0,5	0,5	3P 4A х-ка C
RemTEK.Л.7000.55	230	320	635	2,9	2,9	1P 4A х-ка C
RemTEK.Л.7000.55	400	320	635	1,0	1,0	3P 4A х-ка C
RemTEK.Л.7000.110	400	665	1060	1,6	1,6	3P 4A х-ка C
RemTEK.Л.10000.7	230	165	395	1,7	1,7	1P 4A х-ка C
RemTEK.Л.10000.7	400	165	395	0,6	0,6	3P 4A х-ка C
RemTEK.Л.10000.10	230	70	285	1,2	1,2	1P 4A х-ка C
RemTEK.Л.10000.15	230	320	575	2,5	2,5	1P 4A х-ка C
RemTEK.Л.10000.15	400	320	575	0,8	0,8	3P 4A х-ка C
RemTEK.Л.10000.20	230	165	445	2,0	2,0	1P 4A х-ка C
RemTEK.Л.10000.20	400	165	445	0,7	0,7	3P 4A х-ка C
RemTEK.Л.10000.55	230	440	785	3,6	3,6	1P 6A х-ка C
RemTEK.Л.10000.55	400	440	785	1,2	1,2	3P 4A х-ка C
RemTEK.Л.10000.110	400	895	1345	2,0	2,0	3P 4A х-ка C
RemTEK.Л.18000.4	230	215	465	2,0	2,0	1P 4A х-ка C
RemTEK.Л.18000.4	400	215	465	0,7	0,7	3P 4A х-ка C
RemTEK.Л.18000.7	230	320	575	2,5	2,5	1P 4A х-ка C
RemTEK.Л.18000.7	400	320	575	0,8	0,8	3P 4A х-ка C
RemTEK.Л.18000.10	230	385	650	2,8	2,8	1P 4A х-ка C
RemTEK.Л.18000.10	400	385	650	0,9	0,9	3P 4A х-ка C
RemTEK.Л.18000.12	230	600	940	4,1	4,1	1P 6A х-ка C
RemTEK.Л.18000.12	400	650	940	1,4	1,4	3P 4A х-ка C
RemTEK.Л.18000.20	230	300	610	2,8	2,8	1P 4A х-ка C
RemTEK.Л.18000.20	400	300	610	0,9	0,9	3P 4A х-ка C
RemTEK.Л.18000.50	400	705	1110	1,8	1,8	3P 4A х-ка C
RemTEK.Л.18000.90	400	1270	1810	2,7	2,7	3P 4A х-ка C
RemTEK.Л.25000.6	230	415	710	3,1	3,1	1P 4A х-ка C
RemTEK.Л.25000.6	400	415	710	1,1	1,1	3P 4A х-ка C
RemTEK.Л.25000.12	230	610	915	4,0	4,0	1P 6A х-ка C
RemTEK.Л.25000.12	400	610	915	1,3	1,3	3P 4A х-ка C
RemTEK.Л.30000.4	230	110	375	1,7	1,7	1P 4A х-ка C
RemTEK.Л.30000.4	400	110	375	0,6	0,6	3P 4A х-ка C
RemTEK.Л.30000.9	230	225	520	2,4	2,4	1P 4A х-ка C
RemTEK.Л.30000.9	400	225	520	0,8	0,8	3P 4A х-ка C
RemTEK.Л.30000.12	230	295	605	2,8	2,8	1P 4A х-ка C
RemTEK.Л.30000.12	400	295	605	0,9	0,9	3P 4A х-ка C
RemTEK.Л.45000.70	400	2960	3895	5,9	5,9	3P 8A х-ка C
RemTEK.Л.65000.9	400	545	915	1,4	1,4	3P 4A х-ка C
RemTEK.Л.120000.6	400	1490	1110	1,6	1,6	3P 4A х-ка C
RemTEK.Л.175000.6	400	4500	2090	3,2	3,2	3P 4A х-ка C
RemTEK.Л.220000.6	400	4880	2560	3,9	3,9	3P 6A х-ка C

Specifications of Linear Electric Actuators with Built-in Energy Storage Unit

Type of Electric Actuator	Force MAX, N	Shutdown Force Adjustment Range,N	Min. Speed on Gearbox Output, mm/s	Full Stroke*, mm	Mode S2, min	Mode S3, CDF %, Tc min	Mode S4, s/hour
RemTEK.Л.3500.7	3500	700...3500	7	60	30	25 %, 60 min	1200
RemTEK.Л.3500.55	3500	700...3500	55	60	30	25 %, 60 min	1200
RemTEK.Л.3500.110	3500	700...3500	110	60	30	25 %, 60 min	1200
RemTEK.Л.7000.7	7000	1400...7000	7	60/100	30	25 %, 60 min	1200
RemTEK.Л.7000.15	7000	1400...7000	15	60/100	30	25 %, 60 min	1200
RemTEK.Л.7000.55	7000	1400...7000	55	60/100	30	25 %, 60 min	1200
RemTEK.Л.7000.110	7000	1400...7000	110	60/100	30	25 %, 60 min	1200
RemTEK.Л.10000.10	10000	2000...10000	10	200	30	25 %, 60 min	1200
RemTEK.Л.10000.20	10000	2000...10000	20	200	30	25 %, 60 min	1200
RemTEK.Л.10000.55	10000	2000...10000	55	200	30	25 %, 60 min	1200
RemTEK.Л.18000.4	18000	3600...18000	4	100/160/200/320	30	25 %, 60 min	1200
RemTEK.Л.18000.12	18000	3600...18000	12	100/160/200/320	30	25 %, 60 min	1200
RemTEK.Л.18000.20	18000	3600...18000	20	100/160/200/320	30	25 %, 60 min	1200
RemTEK.Л.18000.50	18000	3600...18000	50	100/160/200/320	30	25 %, 60 min	1200
RemTEK.Л.25000.6	25000	5000...25000	6	125	30	25 %, 60 min	1200
RemTEK.Л.25000.12	25000	5000...25000	12	125	30	25 %, 60 min	1200
RemTEK.Л.30000.4	30000	6000...30000	4	125/160	30	25 %, 60 min	1200
RemTEK.Л.30000.9	30000	6000...30000	9	125/160	30	25 %, 60 min	1200
RemTEK.Л.30000.12	30000	6000...30000	12	125/160	30	25 %, 60 min	1200
RemTEK.Л.30000.20	30000	6000...30000	20	125/160	30	25 %, 60 min	1200
RemTEK.Л.30000.30	30000	6000...30000	30	125/160	30	25 %, 60 min	1200
RemTEK.Л.45000.4	45000	9000...45000	4	125/150	30	25 %, 60 min	1200
RemTEK.Л.45000.9	45000	9000...45000	9	125/150	30	25 %, 60 min	1200
RemTEK.Л.45000.50	45000	9000...45000	50	125/150	30	25 %, 60 min	1200
RemTEK.Л.45000.70	45000	9000...45000	70	125/150	30	25 %, 60 min	1200
RemTEK.Л.65000.9	65000	13000...65000	9	150/220	30	25 %, 60 min	1200
RemTEK.Л.65000.40	65000	13000...65000	40	150/220	30	25 %, 60 min	1200
RemTEK.Л.120000.6	120000	24000...120000	6	100/150	30	25 %, 60 min	1200
RemTEK.Л.175000.6	175000	35000...175000	6	100/150	30	25 %, 60 min	1200
RemTEK.Л.220000.6	220000	44000...220000	6	100/150	30	25 %, 60 min	1200

Specifications of Multi-turn Electric Actuators Powered with 24 V

Type of Electric Actuator	Torque MAX, N m	Shutdown Torque Adjustment Range, Nm	Minimum Time of Working Stroke, s	Mode S2, min	Mode S3, CDF %, Tc min	Mode S4, s/hour	Type of Attachment
RemTEK.M.40.50	40	8...40	50	30	25 %, 60 min	1200	A
RemTEK.M.40.70	40	8...40	70	30	25 %, 60 min	1200	A
RemTEK.M.40.110	40	8...40	110	30	25 %, 60 min	1200	A
RemTEK.M.60.80	60	12..60	80	30	25 %, 60 min	1200	A
RemTEK.M.60.100	60	12...60	100	30	25 %, 60 min	1200	A
RemTEK.M.70.40	70	14..70	40	30	25 %, 60 min	1200	A
RemTEK.M.70.70	70	14...70	70	30	25 %, 60 min	1200	A
RemTEK.M.100.45	100	20..100	45	30	25 %, 60 min	1200	А(Б)
RemTEK.M.120.50	120	24..120	50	30	25 %, 60 min	1200	А(Б)
RemTEK.M.150.30	150	30..150	30	30	25 %, 60 min	1200	А(Б)
RemTEK.M.150.50	150	30..150	50	30	25 %, 60 min	1200	А(Б)
RemTEK.M.200.20	200	40..200	20	30	25 %, 60 min	1200	А(Б)
RemTEK.M.200.30	200	40..200	30	30	25 %, 60 min	1200	А(Б)
RemTEK.M.250.230	250	50..250	230	30	25 %, 60 min	1200	Б
RemTEK.M.300.12	300	60..300	12	30	25 %, 60 min	1200	Б
RemTEK.M.600.6	600	120..600	6	30	25 %, 60 min	1200	Б(В)
RemTEK.M.1000.3	1000	200..1000	3	30	25 %, 60 min	1200	Б(В)

Electrical Specifications of Multi-turn Electric Actuator Powered with 24 V

Version	Supply Voltage, V	Rated Power,W	Gross Power, VA	Rated Current,A	Starting Current,A	Automation Type
RemTEK.M.40.50	24	170	180	7,1	7,1	1P 10A х-ка C
RemTEK.M.40.70	24	235	245	10,4	10,4	1P 13A х-ка C
RemTEK.M.40.110	24	405	425	16,9	16,9	1P 25A х-ка C
RemTEK.M.60.80	24	425	445	17,7	17,7	1P 25A х-ка C
RemTEK.M.60.100	24	425	485	20,2	20,2	1P 25A х-ка C
RemTEK.M.70.40	24	240	255	10,0	10,0	1P 13A х-ка C
RemTEK.M.70.70	24	440	465	19,4	19,4	1P 25A х-ка C
RemTEK.M.100.45	24	375	435	18,1	18,1	1P 25A х-ка C
RemTEK.M.120.50	24	550	580	22,9	22,9	1P 32A х-ка C
RemTEK.M.150.30	24	380	440	18,3	18,3	1P 25A х-ка C
RemTEK.M.150.50	24	705	740	29,4	29,4	1P 40A х-ка C
RemTEK.M.200.20	24	340	400	16,7	16,7	1P 20A х-ка C
RemTEK.M.200.30	24	540	570	22,5	22,5	1P 32A х-ка C
RemTEK.M.250.230	24	695	730	29,0	29,0	1P 40A х-ка C
RemTEK.M.300.12	24	405	465	19,4	19,4	1P 25A х-ка C
RemTEK.M.600.6	24	405	465	19,4	19,4	1P 25A х-ка C
RemTEK.M.1000.3	24	345	405	16,7	16,7	1P 20A х-ка C

Specifications of Part-turn Electric Actuator Powered with 24 V

Type of Electric Actuator	Torque MAX, N m	Shutdown Torque Adjustment Range, Nm	Minimum Time of Working Stroke, s	Mode S2, min	Mode S3, CDF %, Tc min	Mode S4, s/hour	Type of Attachment
RemTEK.П.64	64	12,8...64	1	30	25 %, 60 min	1200	F07
RemTEK.П.125	125	25...125	0,4; 3; 4; 6	30	25 %, 60 min	1200	F07
RemTEK.П.250	250	50...250	1; 3; 4; 6	30	25 %, 60 min	1200	F07
RemTEK.П.600	600	120...600	2; 4; 6	30	25 %, 60 min	1200	F10
RemTEK.П.1000	1000	200...1000	3; 6	30	25 %, 60 min	1200	F12
RemTEK.П.2000	2000	400...2000	8; 12	30	25 %, 60 min	1200	F14
RemTEK.П.4000	4000	800...4000	16; 24	30	25 %, 60 min	1200	F16
RemTEK.П.8500	8500	1700...8500	32; 60	30	25 %, 60 min	600	F25
RemTEK.П.10000	10000	2000...10000	36; 60	30	25 %, 60 min	600	F25
RemTEK.П.16000	16000	3200...16000	30; 50; 60	30	25 %, 60 min	600	F30
RemTEK.П.24000	24000	4800...24000	65	30	25 %, 60 min	600	F30

Electrical Specifications of Part-turn Electric Actuators Powered with 24 V

Version	Supply Voltage, V	Rated Power,W	Gross Power, VA	Rated Current,A	Starting Current,A	Automation Type
RemTEK.П.64.1	24	310	325	13,5	13,5	1P 20A х-ка C
RemTEK.П.125.0,4	24	415	475	19,8	19,8	1P 25A х-ка C
RemTEK.П.125.3	24	190	200	8,3	8,3	1P 13A х-ка C
RemTEK.П.125.4	24	100	145	6,0	6,0	1P 8A х-ка C
RemTEK.П.125.6	24	90	135	5,6	5,6	1P 8A х-ка C
RemTEK.П.250.1	24	345	405	16,9	16,9	1P 20A х-ка C
RemTEK.П.250.3	24	165	215	9,0	9,0	1P 10A х-ка C
RemTEK.П.250.4	24	280	295	12,3	12,3	1P 16A х-ка C
RemTEK.П.250.6	24	120	165	6,9	6,9	1P 8A х-ка C
RemTEK.П.600.2	24	480	545	22,7	22,7	1P 32A х-ка C
RemTEK.П.600.4	24	750	790	32,9	32,9	1P 40A х-ка C
RemTEK.П.600.6	24	215	265	11,0	11,0	1P 13A х-ка C
RemTEK.П.1000.3	24	445	510	21,3	21,3	1P 25A х-ка C
RemTEK.П.1000.6	24	250	305	33,5	33,5	1P 40A х-ка C
RemTEK.П.2000.8	24	390	450	18,8	18,8	1P 25A х-ка C
RemTEK.П.2000.12	24	275	330	33,8	33,8	1P 40A х-ка C
RemTEK.П.4000.16	24	390	450	18,8	18,8	1P 25A х-ка C
RemTEK.П.4000.24	24	760	80	33,3	33,3	1P 40A х-ка C
RemTEK.П.8500.32	24	415	475	19,8	19,8	1P 25A х-ка C
RemTEK.П.8500.60	24	730	770	32,1	32,1	1P 40A х-ка C
RemTEK.П.10000.36	24	435	500	20,8	20,8	1P 25A х-ка C
RemTEK.П.10000.60	24	760	800	33,3	33,3	1P 40A х-ка C
RemTEK.П.16000.30	24	885	970	45,0	45,0	1P 40A х-ка C
RemTEK.П.24000.65	24	660	735	34,0	34,0	1P 40A х-ка C

Specifications of Linear Electric Actuators Powered with 24 V

Type of Electric Actuator	Force MAX, N	Adjustment Range of Shutdown Forces, N	Min. Speed at Gearbox Output, mm/s	Full Stroke*, mm	Mode S2, min	Mode S3, CDF %, Tc min	Mode S4, s/hour
RemTEK.Л.3500.4	3500	700...3500	4	60	30	25 %, 60 min	1200
RemTEK.Л.3500.7	3500	700...3500	7	60	30	25 %, 60 min	1200
RemTEK.Л.3500.35	3500	700...3500	35	60	30	25 %, 60 min	1200
RemTEK.Л.7000.4	7000	1400...7000	4	60/100/125/160/200	30	25 %, 60 min	1200
RemTEK.Л.7000.7	7000	1400...7000	7	60/100/125/160/200	30	25 %, 60 min	1200
RemTEK.Л.7000.15	7000	1400...7000	15	60/100/125/160/200	30	25 %, 60 min	1200
RemTEK.Л.7000.35	7000	1400...7000	35	60/100/125/160/200	30	25 %, 60 min	1200
RemTEK.Л.10000.7	10000	2000...10000	7	60/100/125/160/200	30	25 %, 60 min	1200
RemTEK.Л.10000.10	10000	2000...10000	10	60/100/125/160/200	30	25 %, 60 min	1200
RemTEK.Л.10000.15	10000	2000...10000	15	60/100/125/160/200	30	25 %, 60 min	1200
RemTEK.Л.10000.20	10000	2000...10000	20	60/100/125/160/200	30	25 %, 60 min	1200
RemTEK.Л.10000.35	10000	2000...10000	35	60/100/125/160/200	30	25 %, 60 min	1200
RemTEK.Л.18000.4	18000	3600...18000	4	60/100/125/160/200	30	25 %, 60 min	1200
RemTEK.Л.18000.7	18000	3600...18000	7	60/100/125/160/200	30	25 %, 60 min	1200
RemTEK.Л.18000.10	18000	3600...18000	10	60/100/125/160/200	30	25 %, 60 min	1200
RemTEK.Л.18000.12	18000	3600...18000	12	60/100/125/160/200	30	25 %, 60 min	1200
RemTEK.Л.18000.20	18000	3600...18000	20	60/100/125/160/200	30	25 %, 60 min	1200
RemTEK.Л.18000.25	18000	3600...18000	25	60/100/125/160/200	30	25 %, 60 min	1200
RemTEK.Л.25000.6	25000	5000...25000	6	60/100/125/160/200	30	25 %, 60 min	1200
RemTEK.Л.25000.10	25000	5000...25000	10	60/100/125/160/200	30	25 %, 60 min	1200
RemTEK.Л.30000.10	30000	6000...30000	10	125/160/200	30	25 %, 60 min	1200
RemTEK.Л.45000.5	45000	9000...45000	5	100/150/220	30	25 %, 60 min	1200
RemTEK.Л.65000.5	65000	13000...65000	5	100/150/220	30	25 %, 60 min	1200

Electrical Specifications of Linear Electric Actuators Powered with 24 V

Version	Supply Voltage, V	Rated Power,W	Gross Power, VA	Rated Current,A	Starting Current,A	Automation Type
RemTEK.Л.3500.4	24	60	65	2,7	2,7	1P 4A x-ка C
RemTEK.Л.3500.7	24	45	85	3,5	3,5	1P 4A x-ка C
RemTEK.Л.3500.35	24	200	250	10,4	10,4	1P 13A x-ка C
RemTEK.Л.7000.4	24	85	90	3,8	3,8	1P 6A x-ка C
RemTEK.Л.7000.7	24	45	85	3,53	3,53	1P 4A x-ка C
RemTEK.Л.7000.15	24	90	135	5,6	5,6	1P 8A x-ка C
RemTEK.Л.7000.35	24	200	250	10,4	10,4	1P 13A x-ка C
RemTEK.Л.10000.7	24	180	190	7,9	7,9	1P 10A x-ка C
RemTEK.Л.10000.10	24	95	140	5,8	5,8	1P 8A x-ка C
RemTEK.Л.10000.15	24	410	430	17,9	17,9	1P 25A x-ка C
RemTEK.Л.10000.20	24	170	220	9,2	9,2	1P 13A x-ка C
RemTEK.Л.10000.35	24	285	340	14,2	14,2	1P 16A x-ка C
RemTEK.Л.18000.4	24	100	145	6,0	6,0	1P 8A x-ка C
RemTEK.Л.18000.7	24	410	430	17,9	17,9	1P 25A x-ка C
RemTEK.Л.18000.10	24	500	525	21,9	21,9	1P 32A x-ка C
RemTEK.Л.18000.12	24	200	250	10,4	10,4	1P 13A x-ка C
RemTEK.Л.18000.20	24	305	360	15,0	15,0	1P 20A x-ка C
RemTEK.Л.18000.25	24	375	435	18,1	18,1	1P 25A x-ка C
RemTEK.Л.25000.6	24	130	175	7,3	7,3	1P 10A x-ка C
RemTEK.Л.25000.10	24	210	260	10,8	10,8	1P 13A x-ка C
RemTEK.Л.30000.10	24	110	375	0,6	0,6	1P 4A x-ка C
RemTEK.Л.45000.5	24	290	345	14,4	14,4	1P 16A x-ка C
RemTEK.Л.65000.5	24	305	360	15,0	15,0	1P 20A x-ка C

Versions of Electric Actuators based on Interface Signals

Version Number	Discrete inputs		Discrete outputs, Number of signals	Analog inputs, 4..20 mA, Number of channels	Analog outputs, 4..20 mA, Number of channels	Interface
	Voltage	Qty				
15	24 V DC	5	8	-	-	-
16	24 V DC	5	8	2	1	RS-485
17	24 V DC	5	8	-	1	-
18	24 V DC	5	8	1	1	RS-485
19	24 V DC	5	8	-	-	RS-485
20	230 V AC	5	8	1	1	RS-485
21	230 V AC	5	8	-	-	RS-485
22	110 V DC	5	8	1	1	RS-485
23	24 V DC	5	8	1	2	RS-485
24	24 V DC	5	6	-	-	RS-485
25	24 V DC	5	6	-	1	RS-485
26	24 V DC	5	6	1	2	RS-485
27	24 V DC	5	6 two-wire outputs according to NAMUR-NF EN 60947-5-6-2000 standard	-	-	RS-485
28	24 V DC	5	8	2	2	RS-485
29	24 V DC	5	4	2	1	RS-485
30	24 V DC	5	8	2	1	RS-485
31	24 V DC	5	8-changeover relay NO/NC	2	1	RS-485
40	24 V DC	5	8	2	1	PROFIBUS DP V1
41	24 V DC	5	8	-	-	Foundation Fieldbus H1
42	24 V DC	5	8	1	1	HART
43	24 V DC	1	-	-	-	CAN
44	24 V DC	5	8	1	1	PROFINET
45	24 V DC	5	8	1	1	HART
46	24 V DC	5	8	2	1	HART
47	24 V DC	5	6	-	-	RS-485

Connection Characteristics

RemTEK has up to five explosion-proof cable glands. The parameters and types of cable glands mounted in the RemTEK connection box, as well as the number of cable glands for each version are listed below.

Parameters of Cable Glands

Cable Gland Thread Diameter	Number of Cable Glands	Armored cable		Non-armored cable
		Cable diameter under armor, mm	Cable outer diameter, mm	Cable outer diameter, mm
M20	2	6 – 12	10 – 17	6 – 12
M25	3	11 – 17	17 – 24	10,5 – 17
M32 (special version)	1*	15 – 24	20 – 31	15 – 24

Optionally, at the Customer's request, an M32 cable gland can be installed.

Number of cable glands depending on Version based on interface signals

Version based on interface signals	Cable gland thread diameter		Total number of cable glands
	M20	M25	
15	-	2	2
16	2	3	5
17	1	2	3
18	2	3	5
19	2	2	4
20	2	3	5
21	2	2	4
22	2	3	5
23	2	3	5
24	2	2	4

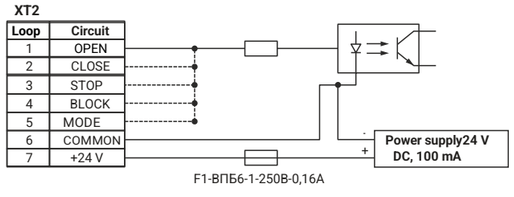
Version based on interface signals	Cable gland thread diameter		Total number of cable glands
	M20	M25	
28	2	3	5
40	2	3	5
41	2	2	4
42	1	2	3
43	2	2	4
44	2	3	5
45	1	2	3
46	2	3	5
47	2	2	4

Specifications of 24 V Power Supply

Output voltage (rated)	24 V
Maximum permissible load current	0.1 A
Built-in protections:	
• against overvoltage	above 39 V
• against overcurrent (fuse)	0.16 A
Regulation	No

Built-in Power Supply 24 V

The discrete input functional unit has a built-in power supply with a rated voltage of 24 V, which can be used to power the RemTEK control circuits.



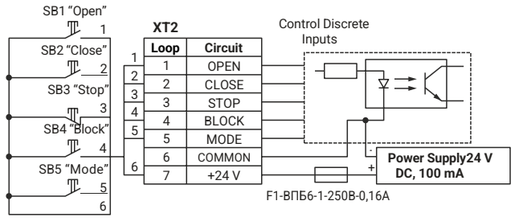
Discrete Input Structural Diagram

Characteristics of Discrete Inputs

RemTEK may have different number of discrete inputs for receiving discrete control commands.

Control Voltage

The control voltage depends on the type of RemTEK version based on interface signals. Standard voltages are 24 V DC and 220 V AC. Other control voltage options are available upon request.



Connection Example using Built-in Digital Input Power Supply

Specifications of Discrete Inputs

Parameter	Permissible Errors			Note
	Min	Rated	Max	
Rated control voltage	20 V 200 V	24 V 230 V	36 V 260 V	DC AC
Input impedance	- -	6 kOhm 42.6 kOhm	- -	24 V, DC 230 V, AC
Insulation voltage	-	-	1500 V	1 min
Recommended logical zero voltage values for discrete control	0 V 0 V	- -	8 V 70 V	Input 24 V, DC Input 2 30 V, AC
Recommended logic unit voltage values for discrete control	18 V 160 V	- -	36 V 250 V	Input 24 V, DC Input 230 V, AC

Characteristics of Discrete Outputs

The electric actuator provides the formation of discrete signaling through relay outputs of the "dry contact" type.

Purpose of Discrete Output Contacts

Connector contacts	Contact Name	Default output function
XT3:1	OPEN	Alarm for reaching the OPEN end position
XT3:2	CLOSED	Alarm for reaching the CLOSED end position
XT3:3	COUPLING	The load torque has exceeded the set value
XT3:4	ACCEDENT	Generalized fault signal
XT3:5	OPENING	Movement of the output element of the electric actuator in OPEN direction
XT3:6	CLOSING	Movement of the output element of the electric actuator in CLOSED direction
XT3:7	RC	The electric actuator is in RC state (remote control)
XT3:8	READINESS	Signaling that the electric actuator is ready for operation
XT3:9	CONTROL	Control signal for the presence of power supply to discrete outputs
XT3:10	POWER SUPPLY	Common wire for discrete outputs. Terminal for

Other setup functions are available via the setup menu. For details, see the Operation and Maintenance Manual.

Specifications of Discrete Outputs

Parameter	Permissible Values	Note
Galvanic isolation voltage	1500 V	1 min
Recommended switching voltage	24 V 230 V	DC AC
Recommended switching current, max	1 A 1 A	24 DC 230 AC
Switching capacity, max	72 VA 660 VA	24 DC AC

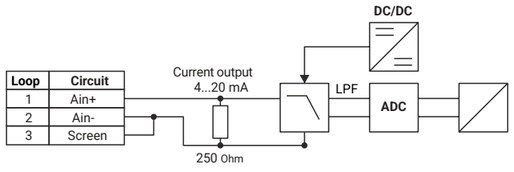
VERSIONS OF ELECTRIC ACTUATORS BASED ON INTERFACE SIGNALS

Analog Inputs

RemTEK provides reception of analog control and feedback signals through universal analog inputs with an input signal range of 4...20 mA.

Analog Input Terminals

Connector	Contact Name	Function
XT6	Ain1. +	Sinc current of analog input 4...20 mA
	Ain1. -	Source current of analog input 4...20 mA. Connected to common wire (Screen)
	SCREEN	Analog input common wire. Neutral wire of the power supply
	Ain2. +	Sinc current of analog input 4...20 mA
	Ain2. -	Source current of analog input 4...20 mA. Connected to common wire (Screen)
	SCREEN	Analog input common wire. Neutral wire of the power supply



Analog Input Structural Diagram

Structurally, the analog signal receiving unit contains: a resistor from which the value of the useful signal is read, a low-pass filter (LPF), an analog-to-digital converter (ADC), as well as a galvanically isolated secondary power source.

Specifications of Analog Inputs

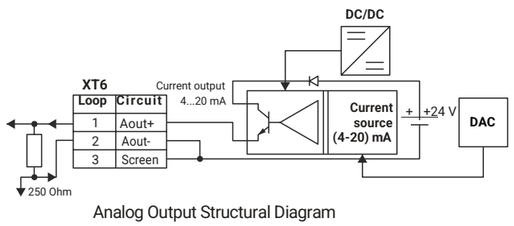
Parameter	Permissible Values		
	Min	Rated	Max
Analog signal range	4 mA	-	20 mA
Galvanic isolation voltage	-	-	1500 V
Input impedance	-	250 Ohm	-
Relative measurement error	-	-	±1 %

Analog Outputs

RemTEK provides information output via analog outputs with an output signal range of 4...20 mA.

Analog Output Terminals

Connector	Contact Name	Function
XT6	Aout1. +	Source current of analog output 4...20 mA
	Aout1. -	Sinc current of analog output 4...20 mA. Connected to common wire
	SCREEN	Analog output common wire. Neutral wire of the power supply
	Aout2. +	Source current of analog output 4...20 mA
	Aout2. -	Sinc current of analog output 4...20 mA. Connected to common wire
	SCREEN	Analog output common wire. Neutral wire of the power supply



Analog Output Structural Diagram

Structurally, the analog signal generation unit contains a digital-to-analog converter (DAC), an analog current generation unit, and a secondary galvanically isolated power source.
The analog output is “active” with the formation of flowing current.

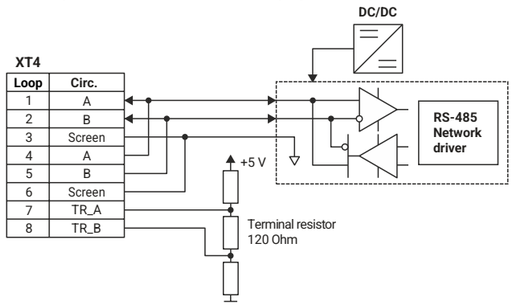
Specifications of Analog Outputs

Parameter	Permissible Values		
	Min	Rated	Min
Analog signal range	4 mA	-	20 mA
Galvanic isolation voltage	-	-	1500 V
Load resistance	50 Ohm	250 Ohm	450 Ohm
Relative signal generation error	-	-	±1 %

RS-485 Interface

The interface is based on the principle of a half-duplex multipoint differential communication line.

The hardware of the electric actuator fully complies with the requirements of the RS-485 physical layer standard.



RS-485 Interface Structural Diagram

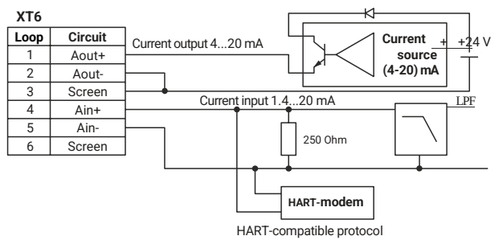
Specifications of RS-485 Interface

Parameter	Permissible Values		
	Min	Rated	Max
Speed of communication via RS -485	1200 baud	9600 baud	115200* baud
Galvanic isolation voltage	-	-	1500 V (1 min)
Link length	-	-	1000 m
Wave resistance of the cable	100 Ohm	120 Ohm	140 Ohm

- The link length affects the maximum communication speed. When increasing the link length, it is recommended to reduce the communication speed.

HART Interface

HART protocol is a digital industrial data transfer protocol. A modulated digital signal, which makes it possible to obtain information about the state of the electric actuator or to configure it, is superimposed on the current carrier of the analog current loop at a level of 4...20 mA.



HART Interface Structural Diagram

The carrier signal of the HART interface shall be applied to the analog input of the electric actuator.

Specifications of HART Interface

Parameter	Value
Interface	4...20 mA, current loop
Communication protocol	HART
Type of data communication	asynchronous
Connection diagram	Half-duplex
Speed of data communication	1.2 kbit/c
Galvanic isolation voltage	1500 V
Link length	1000 m
Connection type	Point-to-point

For a detailed description of the operation and technical characteristics of RemTEK electric actuators, see the Operation and Maintenance Manual.

Information is available on the website РэмТЭК.рф.