



Scientific and Manufacturing  
Enterprise

**TOMSK  
ELECTRONIC  
COMPANY, Ltd.**

# RemTEK

## ELECTRIC DRIVES

### PRODUCT CATALOGUE



[www.npptec.ru](http://www.npptec.ru)

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## Company Overview

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Dear colleagues!

Scientific Manufacturing Enterprise «Tomsk Electronic Company», Ltd. is an engineering company that offers innovative solutions and products for Oil&Gas, petrochemical and steelmaking industries.

The state-of-the-art manufacturing premises in combination with the high qualified staff ensure resolving any process tasks with the compliance to the requirement of international standards. The Quality management system of the Company is certified to meet the requirements of ISO 9001:2008 standard. SME «TEC» is a Member of Association of Oil and Gas Equipment Producers and Scientific and Industrial Valve Manufacturers Association. New markets and Customers are continuously attracted by a wide range of our products.

Following the development trends of the Russian fuel&energy sector our company is proud to offer the RemTEK electric drives that meet the heaviest duty operation conditions including those of the Arctic, offshore fields, high corrosiveness conditions and within the conditions requiring fireproof solutions.

Grace to the technical parameters the RemTEK drives easily replace the foreign analogues and are exported as well.

High qualified design engineers are able to develop electric drives according to specific requests of the Customer in terms of

valve connection, power connections, data exchange interfaces, design solutions etc. Due to the specific hi-tech solutions the RemTEK drives have no foreign analogues in terms of energy performance. These drives ensure operation capability and the utmost protection of the process valves and pipelines against the damage in case of emergency situation including the power supply cut-off.

This catalogue presents one of our activities and namely the electric drives RemTEK series. We hope the data stated herein will be interesting and useful for you and will help to build long term business relationship with our company.

Andrey Nikolaevich Shestakov  
General Director of SME «TEC», Ltd.

## Company Overview

SME «TEC» is an **engineering and manufacturing company** that produces explosion proof electric drives RemTEK in series.

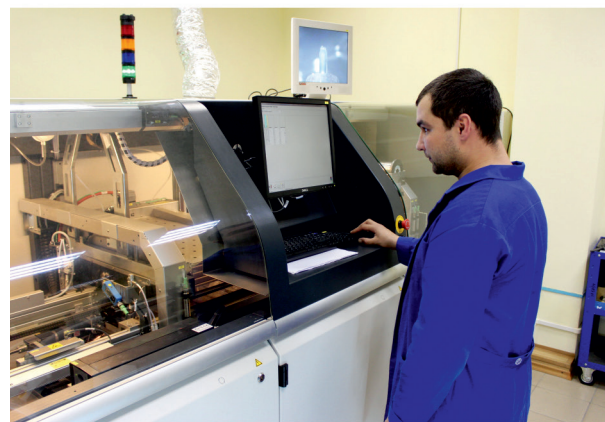
Qualified engineers and process staff of SME «TEC» in combination with the state-of-the-art premises **ensure the development of design engineering documentation and manufacturing of all electric drive components:** gearboxes, electric motors, electronic control units.

In order to check the **lifetime of the electric drives within the heaviest duty operating conditions** the Company possesses the up-to-date testing laboratory equipped with the following modern equipment: vibration and load stands, climate chambers, generators of microsecond and nanosecond impulse noises, static surges, devises simulating voltage depression and overcurrent.

**High quality of the products** is ensured by a strict compliance to the requirements of Quality management system ISO 9001 throughout all divisions and departments of the Company. The Quality control department equipped with the up-to-date inspection tools is in charge of the quality of the products we release.

**Warranty and after warranty service** of the supplied electric drives is performed by our service company.

**Service centers of the Company** located in Surgut and Irkutsk are always available to support and our customers.





## Application

The RemTEK electric drives are used for remote and local control of shut-off and shut-off & control valves **installed at pipelines with various diameters and operating pressures** of chemical, oil, gas and power industries.

The RemTEK electric drives are designed and manufactured as **«explosion proof equipment»** and are to be installed in zones Class 1 and 2 according to the requirements of GOST 30852.9-2002 (IEC 60079-10:1995) with potential generation of steam and gas-air explosive mixtures ranked IIA and IIB group T1, T2, T3 and T4 as classified by GOST 30852.11-2002 (IEC 60079-12:1978), GOST 30852.5-2002 (IEC 60079-4:1975).

The explosion proof RemTEK electric drives are **certified** in accordance with the requirements of all main standards and are designed to operate within aggressive and explosion hazard environment.

**RemTEK electric drives meet the requirements of the following standards:**

- TR CU 012/2011;
- STO Gazprom 2-4.1-212-2008;
- GOST 30852.0-2002 (IEC 60079-0:1998);
- GOST 30852.1-2002 (IEC 60079-1:1998);
- GOST 30852.13-2002 (IEC 60079-13:1998);
- GOST 31441.1-2011 (EN 13463-1:2001);
- GOST 31441.5-2012 (EN 13463-5:2003).

### Outstanding features of RemTEK electric drives:

- built-in frequency converter algorithms of motor vector control;
- electronic limit switches by position and torque;
- settings of electric drive are done trough a menu, there is no need to open the case;
- wide range of opportunities to connect process automation systems;
- built-in data storage device black box;
- reliable gearboxes **with performance factor up to 0.9**;
- explosion proof marking – **IIGbcIIBT4 X, 1ExdIIBT4 X (0ExiaIIBT4 X)**;
- case protection against dust and moisture – **IP67** (IP68 optional);
- vibration resistance – **M40** (M7 optional) as per GOST 17516.1-90;
- seismic resistance – **C10**;
- operating temperature range – **from -63 up to +50°C (UHL1)**;
- power voltage range **380 V 3 phase or 220 V 1 phase** with tolerance range **from -50% up to +47%** from the nominal.

**RemTEK electric drives are listed in the Register of the equipment approved for installation at PJSC Gazprom facilities.**



## RemTEK Advantages

RemTEK electric drives ensure the highest safety reliability level and the wide range of available modifications engages to resolve the wide range of professional tasks.

- **Control of any pipeline valves DN from 25 up to 1200 mm.** The modifications of RemTEK drives (multi-turn, part-turn and linear) are able to control any type of valves to adjust the flow and/or to shut it off. The RemTEK electric drives are equipped with built-in position proximity sensor that ensures synchronization with any type of valve in terms of required travel and also controls the position of output arm in case of power shutdown.

- **Reliable operation within poor quality of power supply network.** RemTEK electric drives are able to easily withstand power voltage increase up to 47 % (and its decrease by 50 %) and fully meet requirements of GOST 13109-97 standard. The applied design solutions maintain the drive operational in case of supply voltage depression up to three seconds. The important advantage here is the maintaining of the required torque at the drive output during the supply voltage depression.

- **Highly reliable gearboxes.** These gearboxes are based on cycloidal and ball screw gears with the use of aviation type non-freezing lubricants. The screw and nut gear made of anti frictional materials without lubricants ensure the drive lifetime up to at least 15000 cycles till the decommissioning.

- **Energy performance (start up current not exceeding 1 nominal for the V modification).** The RemTEK drives ensure the limits of the start up currents. The start up current at the drive input does not exceed the nominal current of the electric motor. This results in the substation load decrease and decrease in the feeding cable section.

- **Operation within tough climatic conditions.** The tailor made design of the power transmission and careful selection of lubricants ensure stable and flawless operation of the drives within the tough operation conditions from -63°C up to +50 °C (UKhL1).



The explosion protection IP67 of the casing ensures the RemTEK operation under the water exposure and fully protects the drive against dust. The double sealing of the connection boxes protects the inside electronics against the environmental exposure.

- **Reliable asynchronous and synchronous motors.** The RemTEK drives are equipped with explosion proof motors type DATEK and DASTEK designed by SME «TEC»



- **Integration opportunity with any modern automation and telecontrol systems** Support of wide range of control channels (digital and analog) and different communication protocols (Modbus RTU, PROFIBUS DP, PROFINET, FF H1 and HART).

The extended telemetering features ensure the RemTEK drives integration into the state-of-the-art automation systems. The built-in control features (P-position control, PID-process parameter control) ensure the quick integration of the RemTEK drives into the process automation systems.



- **The built-in black box module** is in charge of recording all emergency and alarm parameters and events (power supply voltage, current, temperature, torque, speed, position, control commands, setting changes) with time marks and allow the maintenance staff performing the equipment maintenance quickly and efficiently.

- **The built-in frequency converter and soft control of the output arm speed.** The customer is in a position to adjust the speed of the electric drive output arm. This avoids the hydraulic impacts in case of sudden closing of the valve flow section. The soft speed control and precise positioning into the required point reduce unnecessary traveling increasing the valves lifetime and making the control more efficient. The travel speed range of multi-turn RemTEK electric drives is from 0.75 rev/min up to 450 rev/min and the shut off time for part-turn and linear drives id from 60 sec up to 3 sec.

- **Precise positioning.**

Careful control of the valves through RemTEK electric drives is an important part of quality approach to the operation conditions of the customer's equipment. This is ensured by the following elements: built-in electronic algorithm of torque limitations resulting in reliable and precise operation of the drives, wide range of torque trips if different directions and at different stages including speeding up, stopping and while traveling.

- **Easy settings**

The RemTEK electric drives are quickly, easily and safely put into operation by means of infrared port and USB interface. The remote control is used to set up the required parameters of the RemTEK drive (the torque value, limit positions, control and indication features) without opening the drive casing.

- **Built-in graphic display** with menu in Russian dialog setting modes is used to set up the electric drive for any valves.



- **Optimum electric drive configuration** Careful selection of all electric drive components: motor, gearbox and control unit is aimed to solve the process task with maximum performance.

- **Optimum weight-size parameters** The applied cycloidal gearboxes result in optimum and compact weight/size ratio.

- **Galvanic insulation of electric drive** There is an opportunity to equip the RemTEK electric drives with the insulating coupling to ensure the drive casing galvanic protection from the valves. These couplings ensure an efficient protection against the leakage currents and serve to decrease the load onto the cathodic protection stations of the pipelines installed under the ground.

- **Fire proof casing**

The fire protection of the electric drives is able to withstand the direct fire exposure with 1000 °C within 30 minutes.

- **Drive painting**

The drive casing and its components may be painted according to the Customer's request. Please indicate the RAL code when placing an order.

- **Mechanical adapters**

Are used to connect the drives to any valves. Manufacturing and supply of all adapters required to install the drive onto the non-standard valves.

# Control Pattern

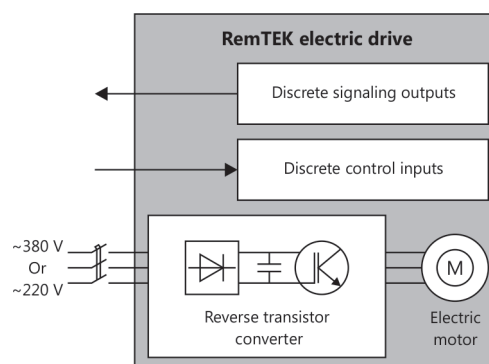
The RemTEK electric drives are equipped with frequency or thyristor control units that ensure the flexible settings of the electric drive (range, precision control of speed, torque and other parameters) as per the requirements of the Customer.

SME «TEC», Ltd. offers three modifications of electric drives with different control type:

## 1. Modification with built-in frequency converter «V»

### Advantages:

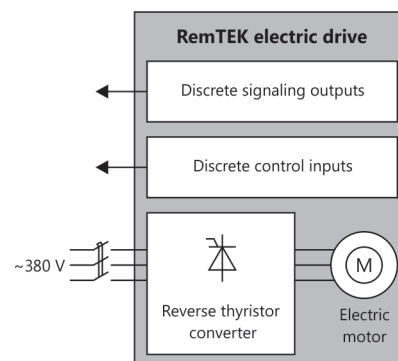
- frequency control of the motor;
- vector and energy efficient motor control algorithm;
- precise and efficient positioning control;
- smooth speed decrease when approaching the break point;
- precise control at slow speed and fast shut off with the same electric drive;
- programming of the shut off time.



## 2. Modification with built-in thyristor converter «S»

### Advantages:

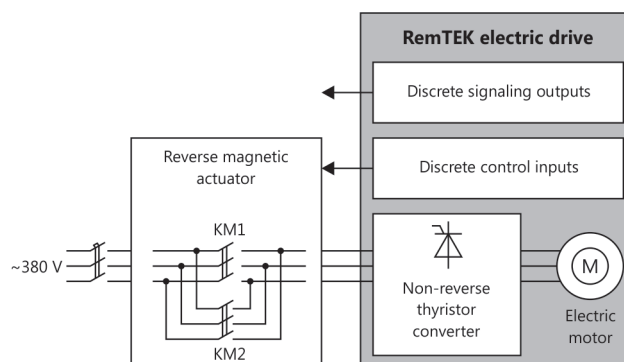
- soft start and stop of electric motor;
- reverse available;
- precise stopping (ensured by dynamic and induction breaking modes);
- precise limitation of electric drive torque (ensured by programmed torque control).



## 3. Modification with external magnetic reverse starter «M»

### Advantages:

- soft start of electric motor;
- replacement of import drives by external starters;
- full scale drive diagnostics through the communication interfaces;
- local control panel;
- further upgrade opportunity and availability of integration into automation systems with control mode through external reverse starter.





# RemTEK Features

RemTEK drives have a wide range of functional features that fully meet the level of the state-of-the-art equipment.

## Positioning trip:

- non-volatile electronic sensor of positioning;
- adjustment of limit switches through remote control or with the buttons of control panel;
- settings without casing opening;
- no mechanic contacts;
- highly precise and reliable positioning,

## Precise stop of valves actuators in all positions:

- accuracy up to 100 micron for linear drives;
- up to 1 degree for multi-turn drives;
- up to 0.1 degree for part-turn drives.

## Torque trip:

- electronic torque limitation by means of programmable torque control;
- accuracy of torque limit is 10 % of preset value;
- limit range from 20 up to 100 %;
- the torque limits are set through remote control, control panel buttons or digital interface;
- opportunity of valves diagnostics with measured torque graph at the electric drive display.

## Frequency control of electric motor:

- energy efficiency;
- setting of the travel time;
- adjustment of travel speed;
- no impacts, soft selection of free play at the speeding up;
- precise positioning;
- shockless travel at the adjustment mode.

## Connection to process automation systems:

- discrete control inputs;
- discrete alarm outputs;
- analog control and alarms;
- RS-485 interfaces with
- Modbus RTU and PROFIBUS DP protocols;
- redundant CAN interface;
- PROFINET interface;
- Foundation Fieldbus H1 interface;
- HART interface.

## Operational data recording:

- total number of cycles;
- number of electric motor starts;
- number of errors related to over torque;
- number of electric motor protections as per the temperature;
- total time of electric motor operation;
- valves state logbook (torque trend);
- continuous internal diagnostics of the control unit.



## Extra Features

- travel for a preset time;
- electric motor availability control;
- turn over jammed valves;
- highly precise positioning according to a position sensor;
- settings of pressure, flow rate, temperature by means of built-in PID-controller;
- electric drive calibration mode onto the valve without traveling;
- electric drive control through built-in control panel or remote control unit;
- graph indication with Russian menu and dialog setting modes;
- commissioning mode;
- internal diagnostics of emergency and alarm events and their recording in «black box» with a time mark;
- support of wide range of control channels (digital and analog), communication protocols (Modbus RTU, PROFIBUS DP, PROFINET, FF H1 and HART);
- data reading through a radio channel or interface.

## Service Features



### WiFi service interface

Standard communication interface.  
Opportunity to use mobile devices.

### Fast putting into operation

Data transfer onto the electric drive during commissioning and start up, data copying and storage.

### Reading the data of built-in «black boxes»

Reading and viewing of the accumulated data of electric drive and valves operations.

### Paramentering and settings

Quick and comfortable setting of the control modes.  
Limited access to the settings for authorized staff only.

### Preventive maintenance

Storage of electric drive operation data.  
Information on the drive and valves operational life.

### Diagnostics

Reading the status data and the same of built-in sensors.

### Electronic passport

Device information.  
Prompt service support by SME «TEC», Ltd.





# RemTEK Electric Drives

## Data Sheet

Version of electric drive	multi-turn, part-turn and linear
Nominal diameter of valves	from 15 up to 1200 mm
Range of torque	from 3500 up to 45000 Nm – linear from 40 up to 10000 Nm – multi-turn from 64 up to 10000 Nm – part-turn up to 64 000 Nm with an extra gearbox
Speed range of traveling	from 0.4 up to 20 mm/sec – linear from 0.6 up to 450 rev/min – multi-turn from 0.06 up to 9 rev/min – part-turn
Limit and torque switches	Built-in electronic limit and torque switches
Explosion proof type	1ExdIIBT4 X (0ExiaIIBT4 X), IIGbcIIBT4 X
Dust and moisture protection	IP67, IP68 (optional). Double insulation of connection boxes
Operational temperature	from -63 up to +50°C UHL1 from -40 up to +50°C M1 from -63 up to +50°C OM1
Seat type	As per the requirements of GOST R 55510-2013, ISO 5211-2001 (F05, F07, F14). Adapters are manufactured is required.
Control unit type	Built-in reverse thyristor or solid state power converter with soft start and precise stop features
Supply voltage, V	380 V AC (3 ph) or 220 V AC (1 ph) Tolerance: -50 %, +47 %
Power of electric drive	from 0.09 up to 11 kW
Discrete signals	Up to 5 programmable control inputs. Control voltage: 24 V DC, 110 V DC, 220 V AC. Up to 9 programmable outputs «dry contact» type. 6...250 V, built-in power supply source 24 V/100 mA
Analog signals	Positioning settings - 4...20 mA Signal from external parameter sensor - 4...20 mA Positioning indicator - 4...20 mA Current torque value - 4...20 mA
Interface	RS-485/CAN/PROFINET/FF1/HART Protocol Modbus RTU, PROFIBUS DP
Protections of electric motor	Short circuit Phase loss Overheating Insulation resistance fall
Control modes	Local - by control panel buttons, manual backup or through remote control unit. Remote - through discrete or analog signals or interfaces.
Extra features	Built-in P-position controller Built-in PID - process parameter controller Pulse control mode for control valves

Operation time	S2 – period of continuous operation up to 30 minutes S3 – (PV = 25 %), cycle time is 60 minutes. S4 – (PV = 25 %), number of starts per hour not exceeding 1200 (depends on the electric motor power)
Heater of control unit	Built-in, additional cable is not required
Corrosion protection	Available. Coating class C5-M as per ISO12944. Coatings authorized for application at PJSC Gazprom projects are used.
Position sensor	Electronic absolute proximity encoder
Manual backup	Available. With auto switch off
Network control	Control of supply network voltage. Measurement and recording of pulse and effective voltages.
Warranty	24 months since the date of putting into operation however not more than 36 months since the date of shipment from the manufacturer
Indicators of reliability	Lifetime to decommissioning - not less than 15000 cycles. Design service life is 30 years.
Diagnostics	Reset and storage of the data related to commands, change of parameters, alarm and emergency events. Data exchange through interface. Fully remote setting of the drive through interface. Diagnostics of discrete control networks and analog control signal according to the requirements of NAMUR NE43 standard.







## RemTEK Multi-turn Drives



### Data Sheet

Type	multi-turn
Valves to be automated	gate and taper-seat, and other types of valves (with use of additional gearbox)
Valve diameter	DN 25 - 1200 mm
Version	explosion proof (1ExdII BT4 X (0ExiaII BT4 X), II6bcIIBT4))
Torque	40 – 15000 Nm (with use of additional gearbox up to 260000 Nm)
Rotation speed	0.6 – 450 rev/min
Supply voltage	380 V AC or 220 V AC
Connection to valve	GOST R 55510-2013

### Main Modifications

Modification	Electric drive max torque, Nm	Speed range at the gearbox output, rev/min	Range of torque limitation at the electric drive output	Nominal power of the electric motor, kW	Seat type
RemTEK.A.40	40	7...70	8...40	180	A
RemTEK.A.50	50	11...110	10...50	370	A
RemTEK.A.60	60	22...220	12...60	1100	A
RemTEK.A.70	70	4...40	14...70	180	A
		7...70		370	
RemTEK.A(B).100	100	18...180	20...100	1100	A, B
		22...220		1500	
RemTEK.A(B).120	120	7...70	24...120	750	A, B
RemTEK.A(B).130	130	16...160	26...130	1500	A, B
RemTEK.A(B).150	150	6...60	30...150	550	A, B
		5,2...52		550	
		10...100		1100	
		12...120		1100	
		16...160		1500	
		20...200	40...200	550	
		22...220	30...150	1500	

Modification	Electric drive max torque, Nm	Speed range at the gearbox output, rev/min	Range of torque limitation at the electric drive output	Nominal power of the electric motor, kW	Seat type
RemTEK.B.160	160	22...220	32...160	2500	B
RemTEK.A(B).200	200	4...40	40...200	550	A, B
		8...80		1100	
RemTEK.A(B).220	220	12...120	44...220	1500	A, B
RemTEK.B.250	250	23...230		4000	B
RemTEK.B.300	300	3...30	60...300	550	B
		6...60		1500	
RemTEK.B.300	300	6...60		1500	C
RemTEK.B.350	350	23...230	70...350	5500	B
RemTEK.B.(C).500	500	4...40		1500	B, C
RemTEK.B.(C).600	600	4...40	120...600	4000	B, C
RemTEK.C.800	800	9,6...96	160...800	5500	C
RemTEK.C.1000	1000	2...20	200...1000	1500	C
		4,8...48		4000	
RemTEK.C.1300	1300	3,5...35	260...1300	4000	C
RemTEK.D.2000	2000	3,6...36	400...2000	5500	D
RemTEK.D.3000	3000	3,2...32	600...3000	7500	D
RemTEK.D.4000	4000	1,5...15	800...4000	4000	D
		2,5...25		7500	
RemTEK.D.5000	5000	0,75...7,5	1000...5000	3000	D
		1,5...15		5500	
RemTEK.E.7000	7000	1,2...12	1400...7000	5500	E
RemTEK.E.10000	10000	0,6...6	2000...10000	4000	E
		1,2...12		7500	





## RemTEK Part-turn Drives



### Data Sheet

Type	part-turn
Valves to be automated	ball valves and disc dampers
Valve diameter	DN 25 - 1200 mm
Version	explosion proof (1ExdIIBT4 X (0ExiaIIBT4 X))
Torque	64 – 10000 Nm (with use of additional gearbox up to 260000 Nm)
Rotation speed	0.6 – 9 rev/min
Supply voltage	380 V AC or 220 V AC
Connection to valve	ISO 5211-2001 (F05, F07, F14), GOST R 55510-2013

### Main Modifications

Modification	Range of torque limitation, N	Speed range at the gearbox output, rev/min	Nominal power of electric motor, W
RemTEK.P.250	50...250	0.3...3	180
		0.6...6	370
RemTEK.P.600	120...600	0.3...3	550
		0.9...9	1100
RemTEK.P.1000	200...1000	0.13...1.3	370
		0.2...2	750
		0.22...2.2	370
		0.35...3.5	750
RemTEK.P.2000	400...2000	0.25...2.5	1100
RemTEK.P.3000	600...3000	0.15...1.5	750
		0.25...2.5	1500
RemTEK.P.4000	800...4000	0.06...0.6	550
		0.13...1.3	1100
		0.25...2.5	1500
RemTEK.P.8500	1700...8500	0.04...0.4	550
		0.07...0.7	1100
		0.15...1.5	1500
RemTEK.P.10000	2000...10000	0.03...0.3	550
		0.05...0.5	1100
		0.1...1	1500





## RemTEK Linear Drives



### Data Sheet

Type	linear
Valves to be automated	valves and other types with linear travel
Valve diameter	DN 25 - 200 mm
Version	explosion proof (1ExdIIBT4 X (0ExiaIIBT4 X))
Torque	3500 – 45000 Nm
Rotation speed	0.4 – 20 mm/sec
Supply voltage	380 V AC or 220 V AC
Connection to valve	a set of adapters is used to connect the drives to any valves according to GOST R 55510-2013

### Main Modifications

Modification	Range of torque limitation, N	Speed range at the gearbox output, mm/sec	Travel, mm
RemTEK.L.3500	700...3500	0,7...7	60
RemTEK.L.6500	1300...6500	1.5...15	100
RemTEK.L.7000	1400...7000	0.7...7	60
RemTEK.L.18000	3600...18000	0.4...4	100
		0.9...9	
		1.2...12	
		2.0...20	
RemTEK.L.25000	5000...25000	0.6...6	125
RemTEK.L.30000	6000...30000	0.4...4	
RemTEK.L.45000	45000	0.4...4	
		0.9...9	



## Compact RemTEK Electric Drives. New Design



### Application:

Compact electric drive for process installations.

### Main features:

- built-in frequency converter;
- local control panel;
- manual backup;
- double insulation of connection boxes.

### Data Sheet

Type	linear part-turn multi-turn
Valves to be automated	for all types
Valve diameter	DN 25 - 500 mm
Version	explosion proof 1ExdIIBT4 X
Torque	40 – 10000 Nm 1000 – 25000 N
Supply voltage	380 V AC or 220 V AC

### Main Modifications

Modifications of part-turn drives	Torque limitation range, Nm	Shut off time, sec
RemTEK.P.75	15...75	6...60
RemTEK.P.125	30...125	
RemTEK.P.250	50...250	
RemTEK.P.600	120...600	
RemTEK.P.1000	200...1000	
RemTEK.P.2000	400...2000	9...100
RemTEK.P.4000	800...4000	
RemTEK.P.8500	1700...8500	12...100
RemTEK.P.10000	2000...10000	

Modifications of linear drives	Torque limitation range, N	Speed at gearbox output, mm/sec
RemTEK.L.3500	700...3500	1...20
RemTEK.L.7000	1400...7000	
RemTEK.L.10000	2000...10000	
RemTEK.L.18000	3600...18000	
RemTEK.L.25000	5000...25000	
RemTEK.L.30000	6000...30000	
RemTEK.L.45000	9000...45000	

Modifications of multi-turn drives	Torque limitation range, Nm	Rotation speed of output arm, rev/min
RemTEK.A.50	10...50	5...150
RemTEK.A.100	20...100	
RemTEK.A.150	30...150	
RemTEK.B.200	40...200	4...80
RemTEK.B.300	60...300	3...60
RemTEK.B.600	120...600	3...30
RemTEK.C.1000	200...1000	1...20



## RemTEK Electric Drives for Maritime Application



The RemTEK electric drives for maritime application have the climatic versions M1 and OM1 and can be installed at sea vessels, sea oil & gas platforms, as well as in the near-shore areas.

The RemTEK electric drives meet the requirements of Rules of classification, construction and equipment of mobile offshore drilling units and fixed offshore platforms by the Russian Maritime Register of Shipping.

### Data Sheet

Type	linear part-turn multi-turn
Valves to be automated	for all types
Valve diameter	DN 250 - 1200 mm
Version	explosion proof 1ExdIIBT4 X
Torque	40 – 10000 Nm 1000 – 45000 N
Supply voltage	380 V (220 V)
Coatings	C5-M area as per ISO12944 paining coatings are certified by RMRS
Service life of coatings	not less than 15 years

**СВИДЕТЕЛЬСТВО  
О СООТВЕТСТВИИ ПРЕДПРИЯТИЯ  
CERTIFICATE  
OF FIRM CONFORMITY**

Настоящим удостоверяется, что  
This is to confirm that

Общество с ограниченной ответственностью «Томская электронная компания»  
(ООО ИНИТ "ТЭК")  
Россия, 634040, г. Томск, ул. Высоцкого, 33

соответствует требованиям Российского морского регистра судоходства как предприятие, осуществляющее:  
has been found to conform to requirements of Russian Maritime Register of Shipping as a Firm engaged in:

Код 22014000. Изготовление, переоборудование, модернизация и ремонт объектов технического наблюдения по одобренной РС технической документации.

Код 22014001. Монтаж и пуско-наладочные работы электрооборудования и оборудования автоматизации.

Код 22018000. Проектно-конструкторские работы.

Акт освидетельствования № 15.19108.130 от 17.08.2015  
Survey Report No. 15.19108.130 of 17.08.2015

Настоящее Свидетельство действительно до 17.08.2020  
This Certificate is valid until 17.08.2020

при условии подтверждения через каждые 12 месяцев (с),  
subject to confirmation each 12 month(s).

Настоящее Свидетельство теряет силу в случаях, установленных в Правилах технического наблюдения за постройкой судов и изготовлением материалов и изделий для судов.  
This Certificate becomes invalid in cases stipulated in Rules for the Technical Supervision during Construction of Ships and Manufacture of Shipboard Materials and Products.

Дата выдачи 06.10.2015 № 15.51742.130  
Date of issue 06.10.2015 No 15.51742.130

Российский морской регистр судоходства  
Russian Maritime Register of Shipping

М.П. (подпись)  
Сергиенко И.И.  
(фамилия, инициалы)  
NAME



# ADDITIONAL COMPONENTS

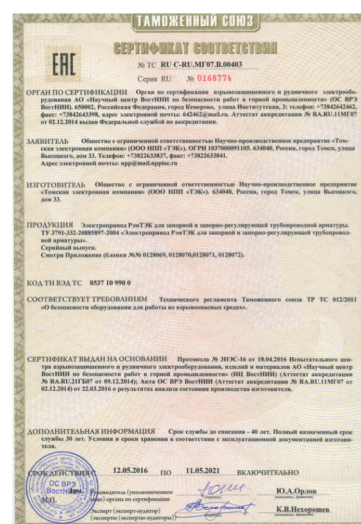
## Galvanic Isolation Couplings

### Scope of Application

Fulfillment of the requirements of STO Gazprom 2-4.1-212-2008 (7.2.3.6 and 7.2.1.4) for the installation of electric drives onto shut-off and shut-off and control valves.

### Technical Data Sheet

- meet the requirements of GOST R 55510;
- certified as non-electric equipment being a part of RemTEK electric drive and have explosion proof marking II Gb с IIB T4 X;
- the connection flanges of the coupling are coated with anti-static enamel preventing the generation of static electrical discharge;
- electric strength of the coupling is not less than 2000 V 50 Hz within 1 minute;
- coupling insulation resistance >106 Ohm, at 1000 V.



### Main Modifications

Name	Designation	Seat as per GOST R 55510	Maximum torque, Nm	ØD, mm	L, mm	Drive Type
MI-A (МИ-А)	OFT.18.2103.31.00.00	A	220	140	80	Multi-turn
MI-B (МИ-Б)	OFT.18.2103.32.00.00	B	600	170	77	
MI-B (МИ-Б)	OFT.18.2103.35.00.00	C	1300	265	100	
MI-D (МИ-Г)	OFT.18.2103.33.00.00	D	5000	382	73	
MI-E (МИ-Д)	OFT.18.2103.34.00.00	E	10000	485	100	
MI-250-P (МИ-250-П)	OFT.18.2103.10.00.00	F07	250	125	56	Part-turn
MI-600-P (МИ-600-П)	OFT.18.2103.11.00.00	F10	600	226	130	
MI-1000-P (МИ-1000-П)	OFT.18.2103.12.00.00	F12	1000	226	142	
MI-2000-P (МИ-2000-П)	OFT.18.2103.13.00.00	F14	2000	226	144	
MI-4000-P (МИ-4000-П)	OFT.18.2103.14.00.00	F16	4000	240	152	
MI-10000-P (МИ-10000-П)	OFT.18.2103.15.00.00	F25	10000	330	182	
MI-4500-L (МИ-45000-Л)	OFT.18.2103.50.00.00	-	45000	130	75	Linear

# NARYM

## Energy Storage Unit

(NARYM multi-purpose accumulation unit)

### Application

#### Capacity Buffer»

- Supply of required electric power for electric drives in the areas without powerful generation source. Power storage bank is used as power buffer: charging from the net with a limit of power consumption, more power output to the drive.
- Operation of RemTEK with power storage bank in combination with alternative power sources (wind generators, solar panels, small size generators).

#### Storage Unit/Backup

- Function of the valve actuation in case of power shutdown. Function to switch a process plant into safe mode. Normally open / Normally closed (NO/NC).

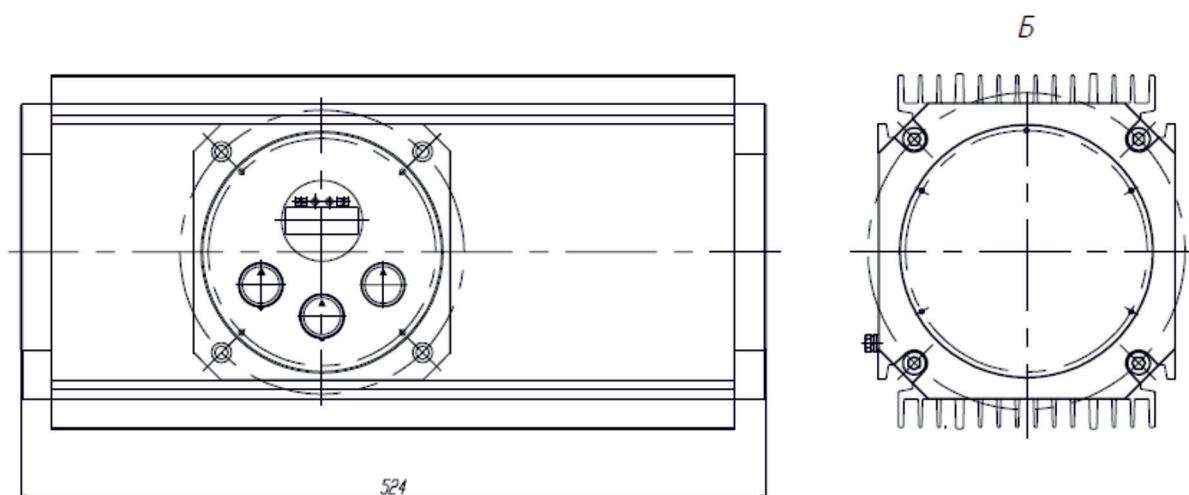


### Main Features

- transformation of input voltage and charging of accumulators;
- charging parameters control;
- output of the power to feed the consumers;
- equipment power supply through bypass;
- diagnostics of the accumulator battery state;
- status indication of power storage bank;
- adjustment of the power consumption from the net when the Bypass mode is off.

### Data Sheet

Design solution	Explosion proof. 1 Exd II B T4 x To be installed near electric equipment.
Operating temperature	from -63 up to +50 °C
Dust and moisture protection	IP67
Storage power modifications	225, 450, 675, 900, 2250, 3375 kJ
Number of devices connected	1
Input power supply voltage	380 V 3 ph 50 Hz; 220 V 1 ph 50 Hz Input voltage tolerance from -50 % up to + 30 %
Power bank output voltage	Modifications: 530 V DC; 300 V DC; 380 V AC (3 ph); 220 V AC (1 ph)
Charging time	15 minutes to 80 % of the capacity
Bypass power supply circuit	Yes. Immediate equipment power supply once the input network is connected.



### Main Modifications

Type	Stored power, kJ	Electric drives compatible
Narym-225	225	RemTEK.A.50.110 RemTEK.A.70.70 RemTEK.P.XXX.250.6 RemTEK.P.XXX.1000.1,3 RemTEK.L.XX.3500.7.60 RemTEK.L.XX.6500.15.100 RemTEK.L.XX.7000.7.60 RemTEK.L.XX.15000.20.100 RemTEK.L.XX.18000.4.100 RemTEK.L.XX.18000.12.100 RemTEK.L.XX.18000.20.100 RemTEK.L.XX.25000.6.125 RemTEK.L.XX.30000.4.125 RemTEK.L.XX.45000.4.125
Narym-450	450	RemTEK.A.60.220 RemTEK.A.120.70 RemTEK.B.120.70 RemTEK.B.140.60 RemTEK.A.150.100 RemTEK.B.150.100 RemTEK.A.200.80 RemTEK.B.200.80 RemTEK.B.280.30 RemTEK.P.XXX.600.9 RemTEK.P.XXX.1000.3,5 RemTEK.P.XXX.2000.2,5 RemTEK.P.XXX.4000.1,3 RemTEK.P.XXX.8500.0,7 RemTEK.P.XXX.10000.0,5

Type	Stored power, kJ	Electric drives compatible
Narym-675	675	RemTEK.A.100.180 RemTEK.B.100.180 RemTEK.A.130.160 RemTEK.B.130.160 RemTEK.A.100.220 RemTEK.B.100.220 RemTEK.A.220.120 RemTEK.B.220.120 RemTEK.B.300.60 RemTEK.B.500.40 RemTEK.C.500.40 RemTEK.C.1000.20 RemTEK.P.XXX.3000.2,5
Narym-900	900	RemTEK.B.600.40 RemTEK.C.600.40
Narym-2250	2250	RemTEK.B.200.230 RemTEK.B.350.230 RemTEK.C.750.96 RemTEK.C.1000.48 RemTEK.C.1300.35 RemTEK.D.2000.36 RemTEK.D.3500.15 RemTEK.D.5000.7,5 RemTEK.D.4900.15 RemTEK.E.6100.12 RemTEK.E.9000.6
Narym-3375	3375	RemTEK.D.3000.32 RemTEK.D.4000.25 RemTEK.E.8400.12



## TestTEK Mobile Diagnostics Tool for Electric Drives

The mobile diagnostic tool TestTEK is designed to perform incoming inspection, testing of functional availability, diagnostics and adjustment of the following types of electric drives: **RemTEK**, EPC, EPP, Atlant, Angstrom, AUMA, Rotork, Tula and others.

The electric drive is connected through universal programmable discrete inputs/outputs, receiver and signal source 4...20 mA, interfaces RS-485 with data exchange protocols ModBus RTU and CAN. The drive settings to a certain stand is performed depending on the type of connection.



### Functions

- The drive control through discrete, analog and interface signals during turning short-term, short term and long term operations;
- Control of electric drive signaling;
- Setting of the required flow chart to perform operational life testing;
- Visualization of the drive information on the LCD display and singular indicators;
- The drive operation parameters are displayed as trends (torque, speed, position);
- Archiving of the test results including flow charts;
- Settings of register structure and discrete signaling functions for a certain type of electric drive;
- Storage of the data for further copying and fast putting into operation of the electric drives group.

### Data Sheet

Nominal supply voltage, V	380 or 220
Power supply of electric drive, V	380, 220
Power of connected electric drive, kW	up to 7.5
Number of discrete inputs to connect electric drive, pcs.	8
Number of discrete outputs to connect electric drive, pcs.	4
Number of analog inputs to connect electric drive 4...20 mA, pcs	1
Number of analog outputs to connect electric drive 4...20 mA, pcs.	2
Electric drive connection interface	RS-485, CAN
Communication interface to computer	Ethernet, USB 2.0

Along with the station the specialized software is supplied.

## Remote Control Unit

The remote control unit is (PDU) used for easy and comfortable configuration and control of RemTEK electric drives.

There are three modifications available:

- PDU-B (Base) is designed for setting up the modes, parameters and control commands of RemTEK electric drives through infrared channel;
- PDU-S (Smart) is designed for setting up the modes, parameters and control commands of RemTEK electric drives through infrared channel; also used for reading, storing and transferring the drive data through a radio channel.



### Advantages

- selection and use of required functions without opening the drive casing in any environment;
- user friendly intellectual menu in Russian;
- support of «commissioning» mode.

Parameter	Base PDU-B	Smart PDU-S
Control of RemTEK electric drives	Yes	Yes
Setting up of RemTEK parameters	Yes	Yes
Ability to read the data from electric drive «black boxes»	No	Yes
Copying and fast recording the parameters set while commissioning. Saving the commissioning time.	No	Yes
Computer connection	No	USB
Data exchange interface to electric drive	IR	IR WiFi
Range of temperature change, °C	from -40 up to +50	from - 40 to +50
Power supply, V	1.5 (two Li elements «AAA»)	1.5 (two Li elements «AAA»)
Current consumption, mA		
- sending/receiving mode	3.6	60
- sleep mode	0.006	0.006
Casing protection	IP54	IP54
Explosion proof marks	1ExibIIBT4 X	1ExibIIBT4 X
Weight, g	125	125

# Digital and Analog Control Channels

The RemTEK electric drives may be controlled through discrete or analog control channels.

## Special features of control through discrete inputs/outputs:

- ability to set up the functions for discrete «dry contact» outputs;
- ability to set up the triggering thresholds for discrete inputs with ADC (resistance to interferences).

Discrete inputs of RemTEK electric drive

Discrete input*	Command
OPEN	Electric drive start to «Open» direction
CLOSE	Electric drive start to «Close» direction
STOP	Electric drive stop
BLOCK	Actuating commands «Stop», «Open», «Close» with further interlock of the drive control till the moment the voltage is released from this input
MODE	Remote setting of the operation mode «Local»/«Remote», switching of «Discrete/Analog» control modes

These are programmable functions.

To perform the induced-noise protection while controlling the drive through discrete signals the RemTEK drives have feature to set up the triggering thresholds for logical zero and one signals. The voltage level at the discrete inputs are monitored through the local control panel and RS-485 interface. This solution ensures the control signals' diagnostics and improves the control system reliability.

Discrete outputs of RemTEK electric drive

Discrete output*	Function
OPEN	Signaling the reaching limit position «Open»
CLOSED	Signaling the reaching limit position «Closed»
OPENING	Electric drive starts in «Open» direction
CLOSING	Electric drive starts in «Close» direction
COUPLING	Output torque exceeded the set value. Electric drive stop.
EMERGENCY	Complex failure signal
DU	Electric drive is under remote «DU» mode
READY	Signaling the electric drive is ready for operation
CONTROL	Control signal the power supply of the drive discrete outputs from telecontrol systems is available

\* Other designation of discrete inputs/outputs available depending on the electric drive modification.

A modification with NAMUR NE43 signals diagnostics is also available.

Parameters of discrete inputs/outputs

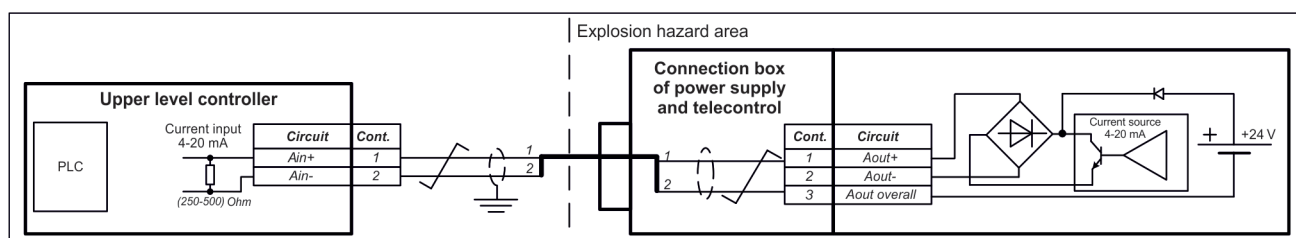
Parameter	Range of values			Notes
	Min.	Nominal	Max.	
Parameters of discrete outputs				
Recommended voltage of commutation, V	-	24	36	DC
	-	110	250	DC
	-	220	250	AC
Commutation current, A	-	-	0,5	
Parameters of discrete inputs				
Recommended voltage values of logical zero for discrete control, V	0	—	8	input 24 V DC
	0	—	70	input 220 V AC
	0	—	30	input 110 V DC
Recommended voltage values of logical one for discrete control, V	18	—	36	input 24 V DC
	160	—	250	input 220 V AC
	80	—	160	input 110 V DC
Microsecond interferences 1/50 mcs as per GOST 51317.4.5-99, kW			4	input 24 V DC input 220 V AC input 110 V DC



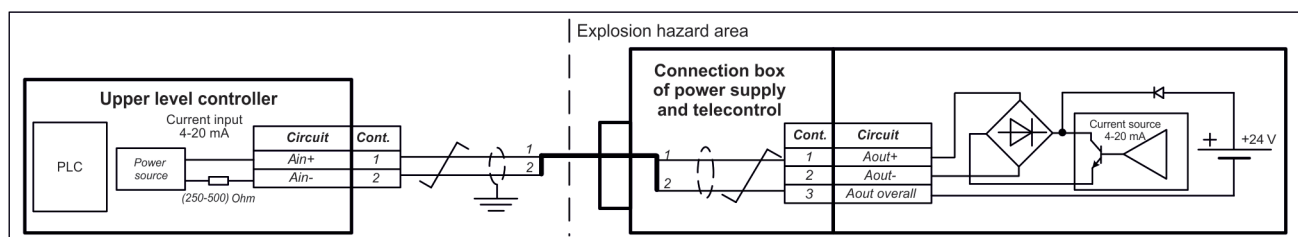
## Special control features through analog signals

- receiving analog signals 4-20 mA for settings of position of the output arm and to receive signal on of the drive feedback in node of process parameter controller;
- sending analog signal 4-20 mA on the current position of the output arm or on the current torque on the output arm of the drive.

### Connection diagram of the analog output 4..20 mA using internal power source



### Connection diagram of the analog output 4..20 mA using external power source



## Application for Adjustments

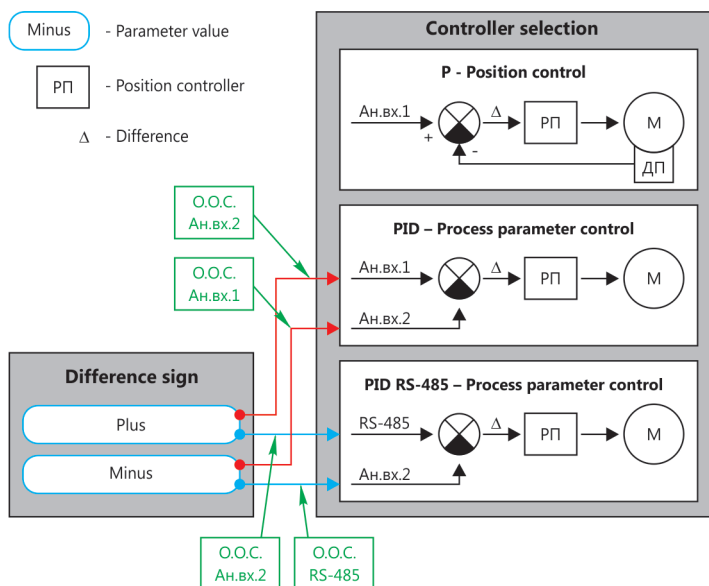
**Built-in P position controller** is used to set up the output arm of the drive to a required position according to absolute readings of the built-in position sensor.

### Interfaces to set up the required position:

- as per analog input 4-20 mA;
- through RS-485 interface;
- manually through the local control panel.

Advantage - smooth traveling and stop of the output arm without re-settings.

**Built-in PID process parameter controller** is in charge of the correction of valves position according to the readings of a corresponding sensor (pressure, temperature, flow rate, etc.). The electric drive is the power source for the sensor (24 V).



## Connection to Process Automation Systems

Support of wide range of control channels, communication protocols and extended opportunities of telemetering ensure the drives integration into the state-of-the-art automation systems.

### Connection to automation systems:

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

### Opportunities of RemTEK electric drives connection to automation systems

#### Connection to the control systems through interfaces

- RS-485, Modbus RTU protocol;
- Profibus DP;
- Ethernet protocols: PROFINET, ETHERCAT;
- CAN interface;
- HART interface;
- Foundation FieldBUS.

#### Functional features

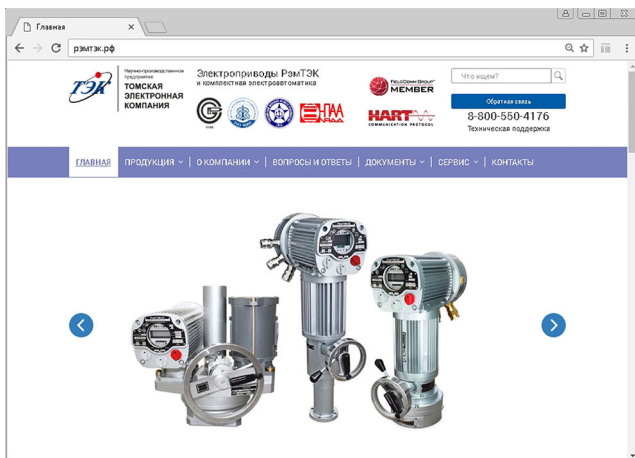
- control:
  - sending command to travel;
  - set position recording;
  - P-position controller;
  - PID position controller;
- parametering:
  - all the drive registers are available through communication interface;
- status diagnostics.



Connection diagrams, dimensional and connection drawings, data sheets, 3D models of RemTEK electric drives are available for download at the web site of SME «TEC»

**рэмтэк.рф**

## Information Resource РэмТЭК.рф



- electric drives catalogue;
- products advantages;
- technical data sheets;
- available versions and modifications;
- additional equipment.

#### Full access to the technical data:

- connection diagrams (\*.dwg, \*.pdf);
- 3D drawings;
- certificates;
- operation documentation;
- technical data;
- check lists;
- process charts.

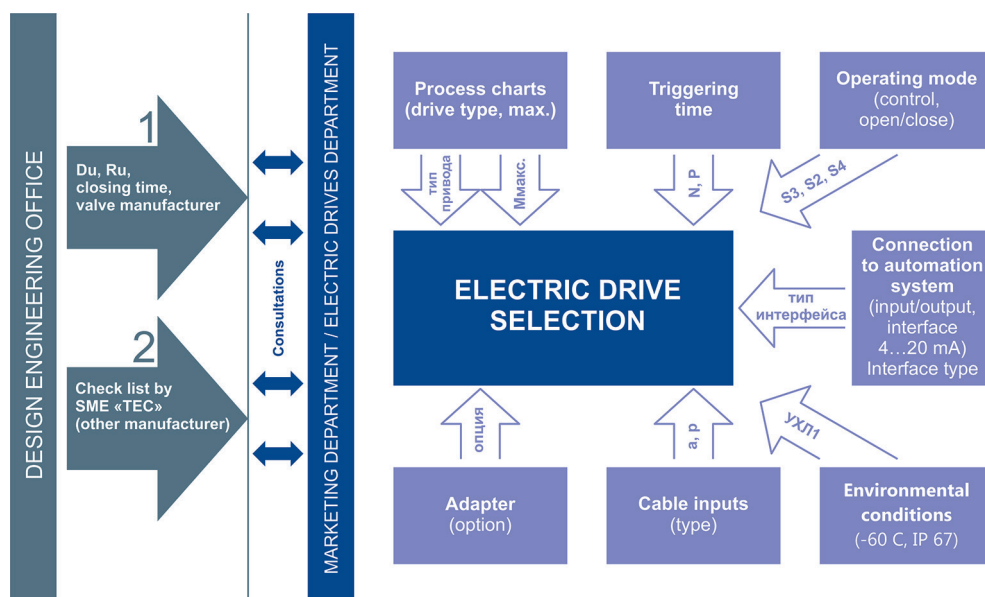
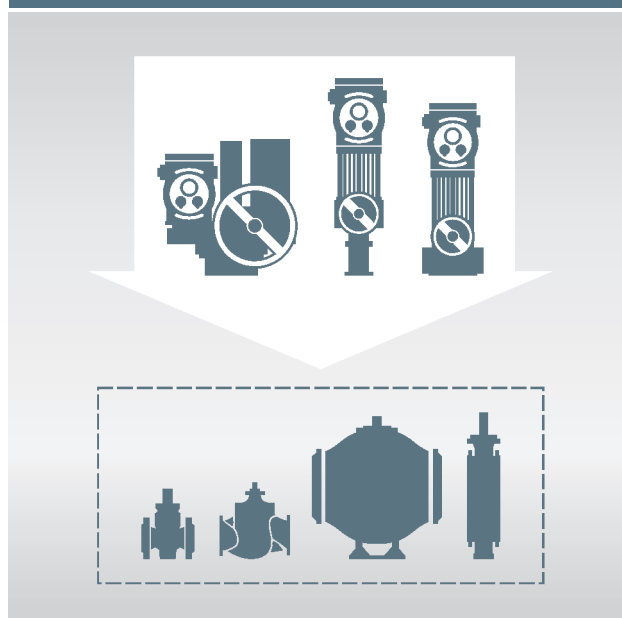
## How to Place an Order

The RemTEK technical parameters fit the pipeline valves of domestic and import manufacturers that ensure reliable and flawless operation at the projects of oil&gas, refining, chemical, steelmaking, mining and other industries.

The drive seats to the valves according to OST 26-07-763-73 (A, B, C, D), ISO 5210:1991, ISO 5211-2001 and the set of adapters ensure fitting of the electric drives onto any valves.

SME «TEC» is experienced in packaged supply of electric drives along with valves.

### Packaged supply of RemTEK electric drives with the valves from the manufacturers



To choose the right type of the electric drive you can use agreed **process charts**.

In any case the representatives of SME «TEC» are at your disposal to help you and consult regarding the offered products.



Or you can fill the check list and send it to **marketing@mail.npptec.ru**.

Sales Department:

**+7 3822 633 958, +7 3822 634 175**  
**+7 3822 999 011, +7 3822 999 036**  
**+7 3822 999 038, +7 3822 999 039**

We are also at your disposal to help you with the valves choice.

Please contact us at the address:

**marketing@mail.npptec.ru**



## Service Department

SME «TEC», Ltd., pays a special attention to the service support of RemTEK drives supplied to our Customers.

### Tasks

Prompt review of the Customer quality claims related to the SME «TEC» products.

Qualified maintenance and repairs of SME «TEC» products within warranty and after warranty periods.

### The service department of SME «TEC» render the following services:

- **Commissioning and putting into operation**

The company staff has a wide experience in installation and commissioning of RemTEK electric drives onto valves, gates and dampers in different industries. We also offer the Customer's staff training.

- **Technical support of the Customers in terms of equipment settings and operation**

By phone (hot line number 8-800-550-4176, free calls within the Russian Federation) we support our Customers, answer all questions related to the Company products and help solving abnormal situations.

- **Routine repairs/overhaul**

The Company offers refurbish services of the electric drives being operating for a long period. This results in extension of the drive service life.

- **Warranty service**

The service department of SME «TEC» is in charge of warranty service of the supplied equipment according to the contractual terms and conditions.

- **After warranty service**

The Service department of SME «TEC» offers an after warranty service schedule to render quality maintenance services within the whole service life of the equipment. The terms and conditions of after warranty services are subject to negotiations when entering corresponding contracts.



### Service department SME «TEC», Ltd.

#### Coverage area: Russia and CIS

Address: Russia, Tomsk, ul. Vysotskogo, 33

Director: Galiveev Rinat Ravilievich

Phone: +7-923-440-0044

Phone: 8-800-550-4176

(free call within the Russian Federation)

E-mail: galiveev@mail.npptec.ru

#### The Service department includes:

##### Technical center (Irkutsk)

#### Coverage area: Irkutsk and Baikal region

Address: Russia, Irkutsk, ul. Rabotchaya, 2a/4  
(BC «Premier»), office 430

Director: Chetverikov Aleksey Valerievich

Phone: +7-923-440-6360

Phone: 8-800-550-4176

(free call within the Russian Federation)

E-mail: chetverikov\_av@mail.npptec.ru

##### Technical center (Surgut)

#### Coverage area: Tumen region, KhMAD, YNAD

Address: Russia, 628426, KhMAD-Yugra, Tumen region,  
Surgut, prospekt Mira, 42 (BC Office Palace),  
office 205

Director: Lvov Aleksey Sergeevich

Phone: +7-923-440-64-70

Phone: 8-800-550-4176

(free call within the Russian Federation)

E-mail: lvov@mail.npptec.ru

Hot line:

**8-800-550-4176**

All the questions you have you can forward to:

**hotline@mail.npptec.ru**



## Consulting Services

In order to upgrade the professional skills of the Customer maintenance staff SME «TEC» offer the following consulting services:

### • Training in the Company

The main feature and advantage of the consulting services rendered at our Company is the availability of specially equipped rooms and classes and in-house designed stand equipment. With all these facilities we are able to simulate emergency/ abnormal situations during the operation of the RemTEK drives without interruption and/or shutdown of the process of oil&gas industry.

### • On-site training

SME «TEC» also render training services at the Customer premises.

The training consists of the following parts:

- theory course;
- practice course;
- tests;
- visit to SME «TEC» (training in the Company).

**Theory course** consists of detailed information regarding the RemTEK electric drives and namely: design, operation principle, technical parameters, functional features, installation, setting, commissioning and operation recommendations.

**Practice source** participation in setting and adjustment

of RemTEK drive to perform the following functions:

- soft start and stop of electric motor;
- auto switch off of the electric motor as per the signals of the built-in position sensor when the limit positions are reached;
- opening, closing and controlling of the valve flow section with a stop of valve gate in any position within the traveling range;
- auto switch off when exceeding the set load parameters of the drive output arm with any position of the valve movable gate;
- maintaining the set position of the valve movable gate when the power supply is off;
- control of the valve movable gate position when the power supply is off;
- programming and sending commands to electric drive, the drive diagnostics with remote control unit and manual control panel;
- reading and storage of the defects codes in non-volatile memory equipped with self-contained power supply and real time clock, reading of the defects archive with the time mark at the control unit indicator and transfer of the defects archive to the remote control unit.

# Check List

Name of facility \_\_\_\_\_

Company name \_\_\_\_\_

Original check list code \_\_\_\_\_

Filled in by (full name) \_\_\_\_\_

Contact phone /fax/e-mail \_\_\_\_\_

Date \_\_\_\_\_

## Basic data for electric drive selection

1. Valve parameters						
Type of valve	<input type="checkbox"/> tapered gate	<input type="checkbox"/> slide gate	<input type="checkbox"/> valve	<input type="checkbox"/> ball valve	<input type="checkbox"/> disc damper	<input type="checkbox"/> other _____
Valve designation				Year of production		
Manufacturer						
Maximum permissible pressure, MPa		DN, mm		Operational pressure, MPa		
				Max. pressure drop, MPa		
Installation flange size /connection type as per OST/ISO	<input type="checkbox"/> A	<input type="checkbox"/> B	<input type="checkbox"/> C	<input type="checkbox"/> D	<input type="checkbox"/> E	<input type="checkbox"/> other _____
Pre gearbox availability (for ball valves)	<input type="checkbox"/> no		<input type="checkbox"/> yes	Gear ratio per torque with performance rate		
				Gear ratio per speed		
Maximum spindle torque, Nm	Open			Close		
	$M_{stroke}$	$M_{tear\ off}$	$M_{wrecking}$	$M_{stroke}$	$M_{tear\ off}$	$M_{wrecking}$
Safety rate as per maximum torque						
Maximum load at spindle, N (for valves)	Open			Close		
	$F_{stroke}$	$F_{tear\ off}$	$F_{wrecking}$	$F_{stroke}$	$F_{tear\ off}$	$F_{wrecking}$
Number of weight nut turns (for gates)			Spindle stroke, mm (for gates)			
Operating range, degrees (for gates and ball valves)	<input type="checkbox"/> 45°	<input type="checkbox"/> 90°	<input type="checkbox"/> 180°	<input type="checkbox"/> other _____°		
Maximum spindle stroke, mm (for valves)						
Minimum shut off time, sec			Maximum shut off time, sec			
Drive location	<input type="checkbox"/> on top		<input type="checkbox"/> underneath		<input type="checkbox"/> side	



<b>2. Electric drive parameters</b>						
Supply voltage	<input type="checkbox"/> 380 V, 50 Hz		<input type="checkbox"/> 220 V, 50 Hz		<input type="checkbox"/> 220 V, 50 Hz 380 V, 50 Hz	
Required torque (force) at electric drive output arm? Nm (N)			Rate of max. torque of electric drive to max. design torque of the valve/gate control			K = _____
Drive on the valve location	<input type="checkbox"/> horizontal		<input type="checkbox"/> vertical		<input type="checkbox"/> other	
Output arm rotation of electric drives, rev/min (for multi-turn and part-turn types)		Speed of output arm travel, mm/ sec (for linear)		Shut off time, sec (for part- turn)		
Operation time	<input type="checkbox"/> open/close <input type="checkbox"/> control		S3 (PV 25% , 60 min) S4 (PV 25%) Number of starts per hour: _____			
Casing protection	<input type="checkbox"/> IP67			<input type="checkbox"/> other _____		
Explosion proof protection	<input type="checkbox"/> 1ExdIIBT4, 11GbcIIBT4				<input type="checkbox"/> other _____	
Ambient temperature, °C	min _____ , max _____					
Galvanic isolation of the drive from valve	<input type="checkbox"/> yes			<input type="checkbox"/> no		
Electronic control unit	<input type="checkbox"/> M		<input type="checkbox"/> S Thyristor reverse converter		<input type="checkbox"/> V Frequency reverse converter	
Connection diagram code (if available)						
Field bus control	<input type="checkbox"/> RS-485 Modbus RTU	<input type="checkbox"/> RS-485 Profibus DP	<input type="checkbox"/> ProfiNET	<input type="checkbox"/> CAN	<input type="checkbox"/> not required	<input type="checkbox"/> other _____
Discrete signaling outputs	<input type="checkbox"/> yes			<input type="checkbox"/> no		
Discrete control inputs	<input type="checkbox"/> yes			<input type="checkbox"/> no		
Nominal voltage of discrete control circuits	<input type="checkbox"/> 24 V DC		<input type="checkbox"/> 110 V DC		<input type="checkbox"/> 220 V AC	
Positioner 4-20 mA	<input type="checkbox"/> yes			<input type="checkbox"/> no		
Current input 4-20 mA	<input type="checkbox"/> yes 1 pc. position		<input type="checkbox"/> yes 2 pcs. position, torque		<input type="checkbox"/> no	
Built-in PID process parameter controller	<input type="checkbox"/> yes			<input type="checkbox"/> no		
Connection cable type	<input type="checkbox"/> armored cable		<input type="checkbox"/> cable laid in pipe		<input type="checkbox"/> cable laid in steel hose Ø_____	
Set of cable inputs	<input type="checkbox"/> standard			<input type="checkbox"/> per request		
Cable outer diameter Number of cable inputs	_____ mm, _____ pc, Type <input type="checkbox"/> armor <input type="checkbox"/> in pipe _____ mm, _____ pc, Type <input type="checkbox"/> armor <input type="checkbox"/> in pipe					
Remote control unit (IR) within scope of supply	<input type="checkbox"/> yes			<input type="checkbox"/> no		
Required (pcs.)						
Hydrogen sulfide content exceeds 3 mg/m <sup>3</sup>	<input type="checkbox"/> yes <input type="checkbox"/> no		Fire proof			<input type="checkbox"/> yes <input type="checkbox"/> no
Coating parameters						
RAL color code			RAL color code of backup wheel			
Additional conditions						
<b>3. Start-up required</b>			<input type="checkbox"/> yes		<input type="checkbox"/> no	
<b>4. Staff training required</b>			<input type="checkbox"/> yes		<input type="checkbox"/> no	



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