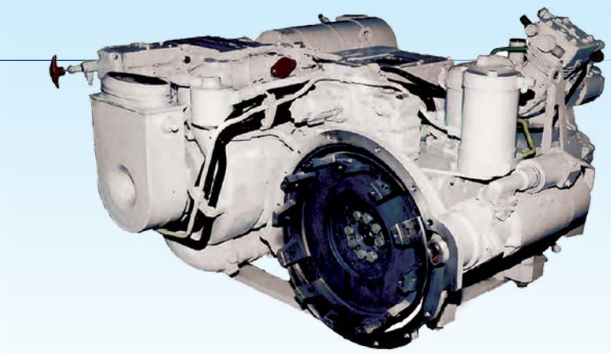
3TD-1

DIESEL ENGINE

Serves as a powerplant at modernization of wheeled armored vehicles: BTR-70, BTR-80, BREM on the base of BTR-70.



Dimensions:
1231x955x581

Rated power:
280 h.p.

Weight:
850 kg

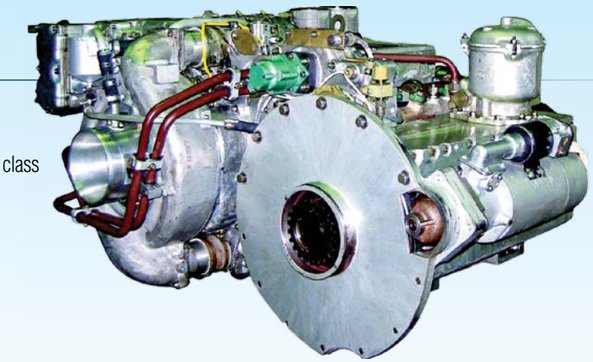
Main Specifications:

Bore	120 mm
Stroke	2x120 mm
Number of cylinders	3
Nominal volume	8,15 l
Specific fuel consumption	158 g/e.h.p.h
Rotation frequency	2600 min^{-1}

3TD-3A

DIESEL ENGINE

Serves as a powerplant at modernization of light class tracked and wheeled armored vehicles BTR-4.



Dimensions:
1182x955x581

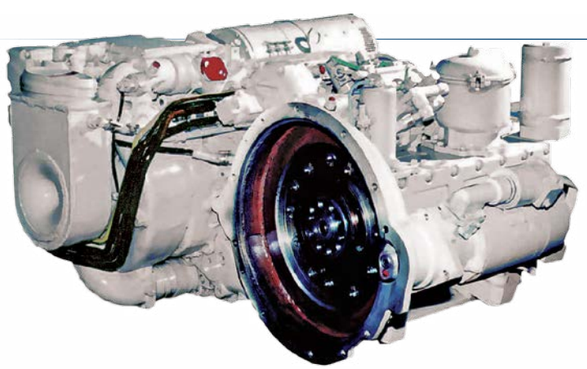
Rated power:
500 h.p.

Weight:
800 kg

Main Specifications:

Bore	120 mm
Stroke	2x120 mm
Number of cylinders	3
Nominal volume	8,15 l
Specific fuel consumption	155 g/e.h.p.h
Rotation frequency	2600 min^{-1}

3TD-2



DIESEL ENGINE

Serves as a powerplant at modernization of tracked: BTR-50, PT-76, OT - 62 «Topaz», BMP-1, BMP -2 and wheeled armored vehicles.

Dimensions:
1231x955x581

Rated power:
400 h.p.

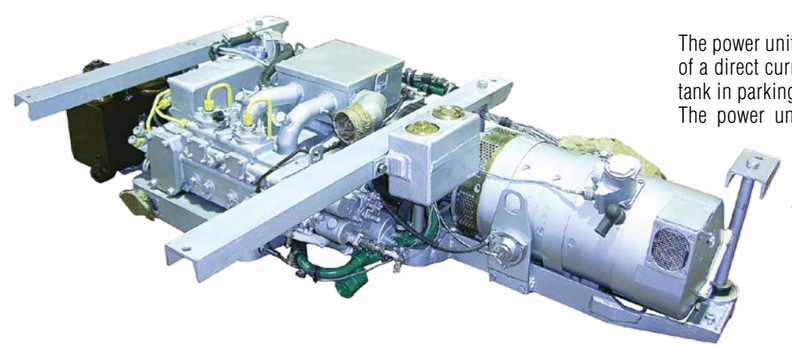
Weight:
850 kg

Main Specifications:

Bore	120 mm
Stroke	2x120 mm
Number of cylinders	3
Nominal volume	8,15 l
Specific fuel consumption	160 g/e.h.p.h
Rotation frequency	2600 min^{-1}

EA10-2

POWER UNIT



The power unit serves as a source of electric power supply of a direct current for all the necessary works of T-72UA1 tank in parking mode with the basic diesel engine off.
The power unit is mounted in the engine-transmission compartment. The cooling unit, starting control gear are installed in the armored compartment on the shelf over the caterpillar track.

Dimensions:
1368x552x355

Rated power:
10 kw

Weight:
250 kg

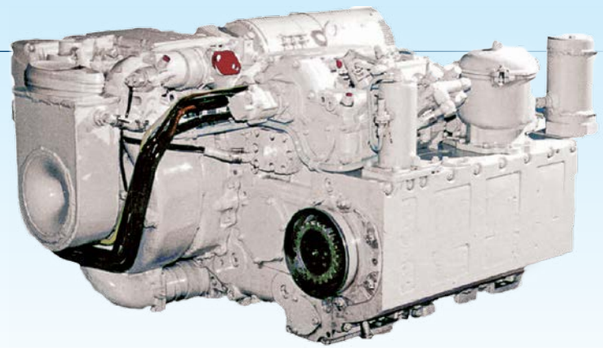
Main Specifications:

Rated voltage	28,5 V
Fuel consumption	4,2 kg/h
Loss of oil on burn-out	0,09 kg

3TD-4

DIESEL ENGINE

Intended for use as a powerplant for modernization of BMP-3 and other armored vehicles.



Dimensions:
1182x955x581

Rated power:
600 h.p.

Weight:
800 kg

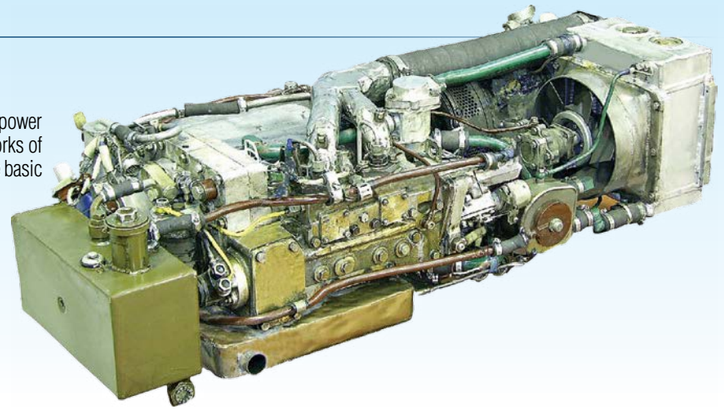
Main Specifications:

Bore	120 mm
Stroke	2x120 mm
Number of cylinders	3
Nominal volume	8,15 l
Specific fuel consumption	160 g/e.h.p.h
Rotation frequency	2600 min^{-1}

EA10-1

POWER UNIT

The power unit serves as a source of electric power supply of a direct current for all the necessary works of military tracked vehicles in parking mode with the basic diesel engine off.



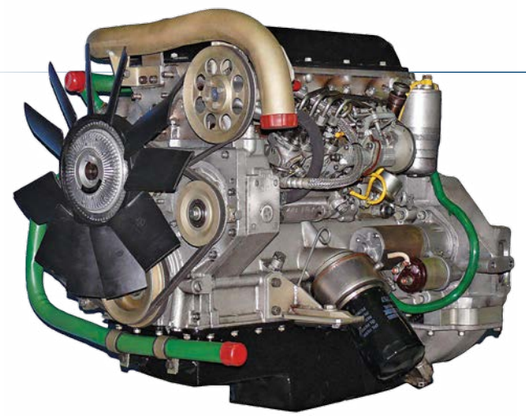
Dimensions:
1300x495x315

Rated power:
10 kw

Weight:
250 kg

Main Specifications:

Rated voltage	28,5 V
Fuel consumption	4,2 kg/h
Loss of oil on burn-out	0,09 kg



4DTNA1

DIESEL ENGINE

Designed for use as a powerplant for UAZ, Gazel, Sobol automobiles.

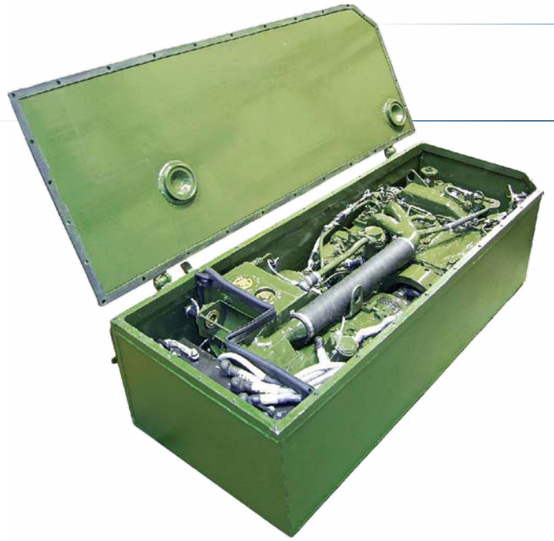
Dimensions:
700x520x700

Rated power:
66,2 (90) kw (h.p.)

Weight:
170 kg

Main Specifications:

Rotation frequency	4200 min^{-1}
Bore	88 mm
Stroke	82 mm
Operating volume	2,0 l
Fuel specific consumption	16,2 g/kW-h



EA10MSB

POWER UNIT

The power unit serves as a source of electric power supply of a direct current for all the necessary works of military tracked vehicles in parking mode with the basic diesel engine off.
Provides basic diesel engine start.
The power unit is mounted in the armored compartment.

Dimensions:
1450x550x390

Rated power:
10 kw

Weight:
560 kg

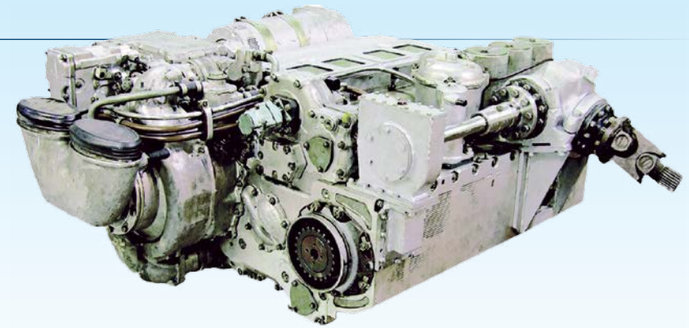
Main Specifications:

Rated voltage	28,5 V
Fuel consumption	4,2 kg/h
Loss of oil on burn-out	0,09 kg

5TDFMA-1

DIESEL ENGINE

Intended for modernization of T-72 tank without change of engine – transmission compartment volume, has the built-in tank fan drive.



Dimensions:
1413x955x581

Rated power:
1050 h.p.

Weight:
1080 kg

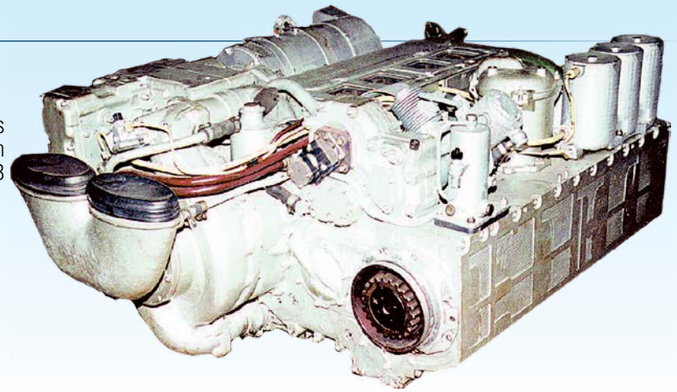
Main Specifications:

Rotation frequency	2850 min^{-1}
Number of cylinders	5
Bore	120 mm
Stroke	2x120 mm
Adaptation factor	1,2
Operating volume	13,6 l
Fuel specific consumption	165 g/e.h.p.-h

5TDFM

DIESEL ENGINE

Designed for use as a powerplant for tanks BM Bulat and T-55AGM. Can be used in modernization of T-54, T-55, T-59, T-62, T-64B tanks.



Dimensions:
1413x955x581

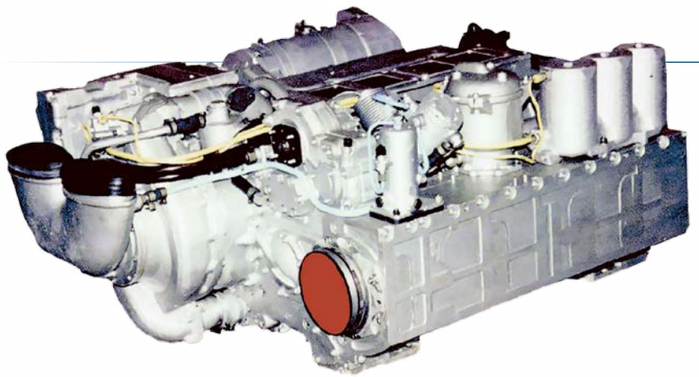
Rated power:
850 h.p.

Weight:
1040 kg

Main Specifications:

Rotation frequency	2800 min^{-1}
Fuel specific consumption	167 g/e.h.p.-h
Bore	120 mm
Stroke	2x120 mm
Operating volume	13,6 l

5TDFMA



DIESEL ENGINE

Intended for modernization of T-55, T-62, T-64 tanks.

Dimensions:
1413x955x581

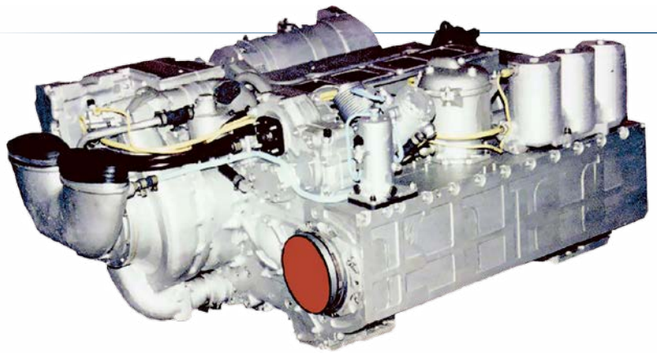
Rated power:
1050 h.p.

Weight:
1080 kg

Main Specifications:

Rotation frequency	2850 min^{-1}
Number of cylinders	5
Bore	120 mm
Stroke	2x120 mm
Adaptation factor	1,2
Operating volume	13,6 l
Fuel specific consumption	165 g/e.h.p.-h

5TDF



DIESEL ENGINE

Designed for use as a powerplant of the T-64 tank.

Dimensions:
1413x955x581

Rated power:
515 (700) kw (h.p.)

Weight:
1040 kg

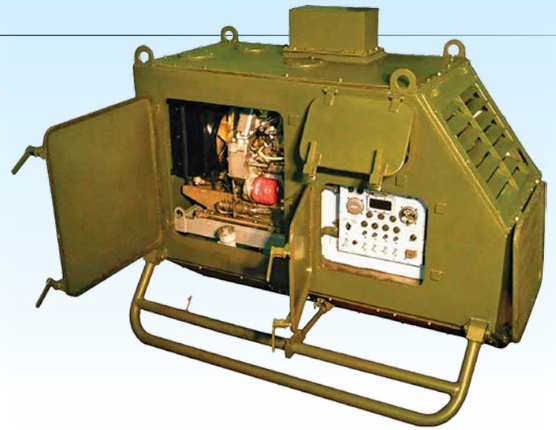
Main Specifications:

Rotation frequency	2800 min^{-1}
Fuel specific consumption	178 g/e.h.p.-h
Bore	120 mm
Stroke	2x120 mm
Operating volume	13,6 l

AD8-P28,5-2RP

POWERPLANT UNIT

Designed for power supply of the on-board complex «Polozhenie - 2».



Dimensions: 1360x620x1000

Rated power: 8 kw

Weight: 500 kg

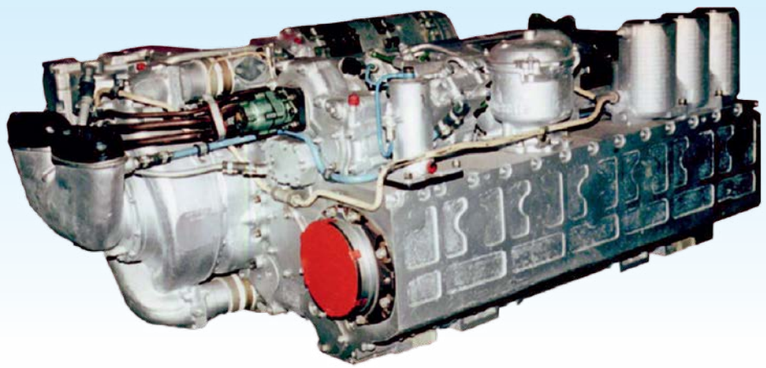
Main Specifications:

Rated voltage	28,5 V
Current	direct
Rotation frequency	3000 min^{-1}
Fuel consumption	3,4 g/e.h.p.-h

6TD-1

DIESEL ENGINE

Designed for use as a powerplant of the T-80UD tank. Can be used for upgrade of the T-72 tank.



Dimensions: 1602x955x581

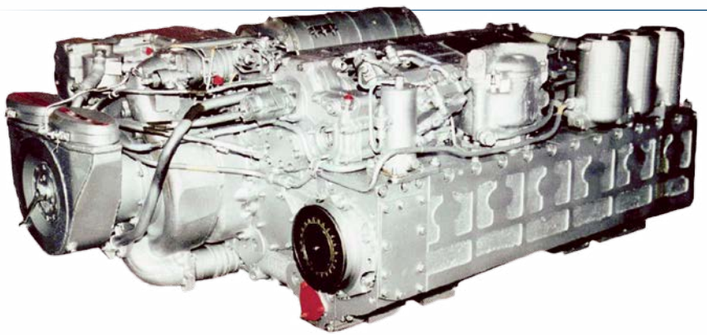
Rated power: 1000 h.p.

Weight: 1180 kg

Main Specifications:

Rotation frequency	2800 min^{-1}
Adaptation factor	1,15
Fuel specific consumption	158 g/e.h.p.-h (g/kW-h)

6TD-2E



DIESEL ENGINE

Designed for use as a powerplant of the Oplot main battle tank. BM «Oplot». Equipped with additional elements of KSUD tank automatic control system.

Dimensions: 1602x955x581

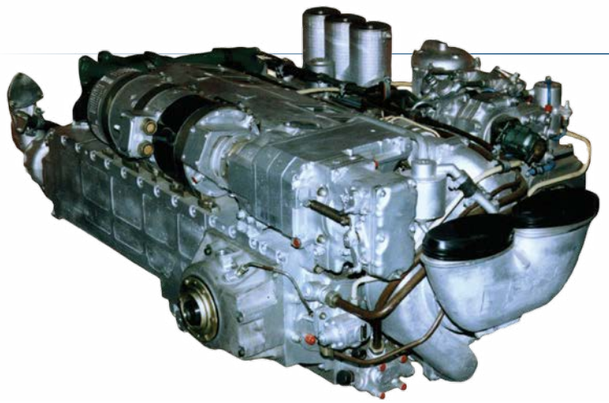
Rated power: 1200 h.p.

Weight: 1180 kg

Main Specifications:

Bore	120 mm
Stroke	2x120 mm
Number of cylinders	6
Operating volume	16,3 l
Fuel specific consumption	160 g/e.h.p.-h (g/kW-h)
Rotation frequency	2600 min^{-1}

6TD-1R



DIESEL ENGINE

Designed for use as a powerplant for armored recovery and repair vehicles BREM-84, and also for modernization of BREM on the basis of T-72 tanks. Equipped with a transmission for additional BREM operating elements.

Dimensions: 1602x1093x581

Rated power: 735 (1000) kw (h.p.)

Weight: 1210 kg

Main Specifications:

Rotation frequency	2800 min^{-1}
Fuel specific consumption	158 g/e.h.p.-h (g/kW-h)
Bore	120 mm
Stroke	2x120 mm
Operating volume	16,3 l

UK-3,2 CRANE PLATFORM

Designed for loading and unloading operations, construction and assembly works as a part of BREM-4RM Armored Repair and Recovery Vehicle.

Main Specifications:

Load moment	12000.0 kg.m
Carrying capacity, max	3.2 t
Action radius	5.5 m
Max cargo lifting height (from crane mount plane)	5.5 m
Crane's rotation angle	360°
Max beam lifting angle	75°
Cargo lifting (lowering) speed	0-4 m/min

AU-AKR-4 EQUIPMENT TO CONTROL THE AUTOMATED TRANSMISSION GEAR

Designed to control switching off the transmission gear and stopping the hydraulic transformer from the driver's cabin in automated and manual modes as well as to enable the system to work in emergency condition.

BU-4 Unit
360×231×52,5

SUT-PU-4 board
288×190×250

Weight:
9 kg

Voltage:
27 V

Power, 27 V:
Not exceeding 15 Vt

Main Specifications:

Time of readiness after feeding	5 s
Endurance	Not exceeding 12 h
Temperature range	-20…+55 °C
Accepted temperatures range	-25…+70 °C

HYDRAULIC CYLINDERS

HYDRAULIC CYLINDERS PISTON-TYPE SPECIAL-PURPOSE

Hydraulic cylinders piston-type with single-end rod with polymeric sealing elements. Used in BTR-4 armored personnel carrier.

Main Specifications:

16ГЦ40/20ПП270-11-120	2.5 kg
16ГЦ63/32ПП338-11-120	5.6 kg

UNIT BIF-2M(T)

Functions as a part of PTT-2 sight and designed for transformation of service information, which inputs into Unit from the tank fire control system, and its transmission to infrared image-forming camera Catherine-FC in the RS-422 format for displaying on surveillance imager screen.

Dimensions:
197x146x39

Voltage:
27 V

Weight:
Not exceeding 1,4 kg

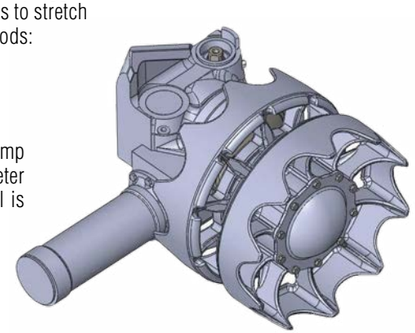
Main Specifications:

The Item provides transformation and transmission of service and readiness information in RS-422 format («Double», «Tsu» «Gunner»)	
The Item provides transformation and transmission of the target distance official information in RS-422 format.	
Time of readiness	Not exceeding 30 s

REMOTE TRACK MECHANISM

Installing the remote mechanism considerably decreases the efforts and time of the crew to stretch the tracks. The mechanism consists of crank with driving wheel, self-plugged worm-worm gear (worm, worm wheel)), hydraulic cylinder with piston enables to stretch the tracks from the driver's seat. Stretching can be done by two double methods:
1. Using the hydraulic drive inside from the driver's seat;
2. Manually by rotating the worm.

The stretch by the hydraulic drive is done by hydraulic pump The control of preliminary stretching is made by manometer in the driving compartment. The stretching and the control is made in 60° sector from the initial crank position



BPS-6 BPS-3 SPARKING PLUGS HEATING UNIT OF DIESEL ENGINES WITH EMBEDDED NETWORK 24 VOLTAGE

Designed to process the input signal of spark plugs heating coming from the object devises and forming input signals of the engine of this object.
Field of use: tanks, tracked and wheeled armored vehicles.

Dimension:
197×150×54

Weight:
1,9 kg

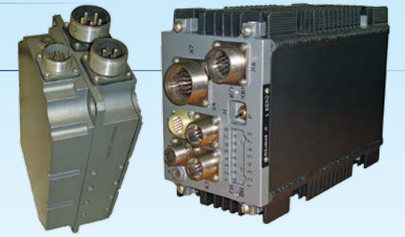
Voltage:
27 V

Power, 27 V:
Not more than 15 Vt

Main Specifications:

Endurance	not more than 12 h
Temperature range	-20…+100 °C
Input signals number	3 or 6
Output power of signal	no more than 130 Vt
Time duration of forming signals	45±5 s
Minimum time between signals switching off	15±3 s

SUZU(T) ITEM



Equipment for controlling the tank anti-aircraft system, designed to control and adjust anti-aircraft system horizontally and vertically. Item provides a wide speed range of the anti-aircraft system, diagnosis algorithm realization and identification of the emergency states.

SUZU1R unit
366x256x175

SUZU 2 unit
270x140x87

Weight:
Not exceeding 15 kg

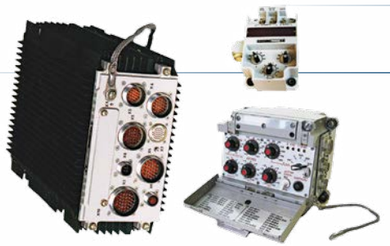
Voltage:
27 V

Power, 27 V:
50 Vt

Main Specifications:

Average squared homing error	Not exceeding 0,152 mRad
Harshness of homing	Not exceeding 0,33 mRad
Homing speed:	
minimal	Not exceeding 0,01 ang/s
maximal	No less 3,54 ang/s
Flip over speed	No less 45,05 ang/s
Endurance	24 h

TIUS-VM(T) ITEM



Designed for automated adjustment in the fire control system to increase hitting probability.

Ballistic calculator block
224x123x296

Board of entering parameter
209x166x160

Indication board
125x200x70

Weight:
15 kg

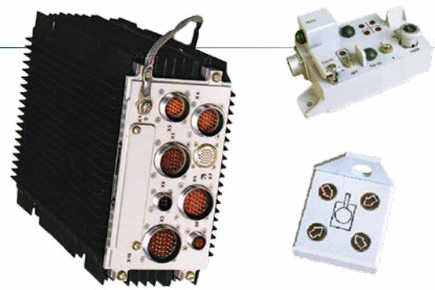
Voltage:
27 V

Power, 27 V:
20±0,5 Vt

Main Specifications:

Calculation accuracy and forming angular aiming signals and lateral lead of gun and machine-gun	0,052 ang.sec.
Time of readiness of the Item to functioning after feeding	10±0,53 s
Endurance	12 hours
Temperature range	-40…+50 °C

TIUS-Z(T) ITEM



Item designed for working as a part of opto-electronic interference system in order to detect lazer radiation of enemy, dispensing fume or aerosol screen, modulated light emission for enemy's guided missiles disorientation.

Analysis and control unit
224x343x123

Indication board
160x92x74

Weight:
7,5 kg

Voltage:
27 V

Power, 27 V:
20±0,5 Vt

Main Specifications:

Spectral range of the analysers	0,6…1,2 mkm
General field of vision	360°
Time of readiness of the Item after feeding	15±0,5 s
Temperature range at accepted measure error ±2 %	-40…+55 °C

TIUS-D4(T) ITEM

Movement control equipment, designed to control speed changing and turns of the object in automatic and manual modes.

Weight:
Not exceeding 23,7 kg

Voltage:
27 V

Main Specifications:

Time of readiness	Not exceeding 10 s
Consumption	Not exceeding 200 Vt

TIUS-P(T) ITEM

Panel for control and display of the tank's driver operating data.

Weight:
max 21 kg

Voltage:
27 V

Power consumption:
max 90 W

TIUS-NM(T) ITEM

The equipment of navigational support and coordination is intended to fulfill tactical tasks of subunit combat vehicles' control, up to battalion level inclusive.
Current time and co-ordinates of a combat vehicle place defined by means of satellite navigating system are used for calculation of a direction and movement speed and at the set destination – range, turn corners and arrival time.

Weight:
7,5 kg

Supply voltage:
27 V

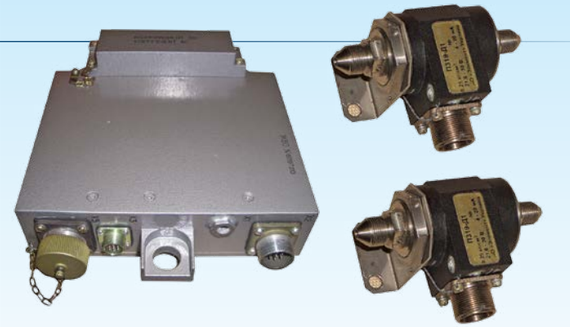
Mains 27 V supply power:
max 50 W

Main Specifications:

Overall dimensions:	
Processing unit	224x123x296 mm
Display panel	300x263x113 mm
Control panel	160x42x17 mm
SN-3700 equipment including:	
Receiving-computing unit	205x144x57 mm
Antenna unit	73,6x119,4x102,8 mm
Item warm-up time for operating after power supply	180 s
Continuous running time	12 hours

TIUS-O(T) EQUIPMENT

The equipment is intended for the continuous control of air cleaning system parameters of the diesel engine. Provides indicating of outcoming signal «FAILURE» at the moment of transition of air cleaner parametres out of admissible values limits.



Weight:
Max 4 kg

Supply voltage:
27 V

Power consumption:
Max 10 W

Main Specifications:

Available machining time	Max 10 s

PPO FIRE EXTINGUISHING BOARD

Designed to receive and process the fire alarm signals from five thermal sensors and output of the signals to two carbon-dioxide cylinders, by sound system and two additional fire alarm indicators. Field of area: life-support equipment of BTR-4 crew.

Dimension:
140x124x79

Weight without packing:
1,4 kg

Weight with packing:
3,2 kg

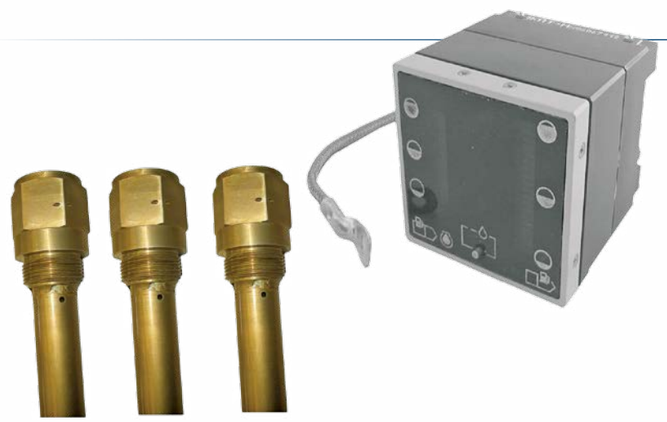
Voltage:
27 V

Power, 27 V:
Not exceeding 5 Vt

Main Specifications:

Endurance	Not exceeding 12 h
Temperature range	-25…+55 °C
Accepted temperature range	-40…+70 °C

ITEM TIUS-U(T)



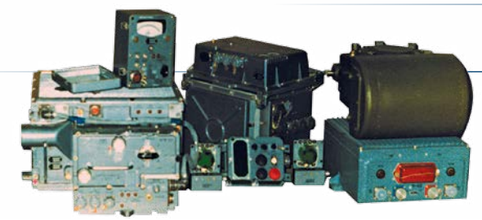
It is designed to indicate the diesel fuel level in front and rear fuel tanks as well as the oil level in the installation object.

Weight:
max 6 kg

Power supply voltage:
27 V

Power consumption:
max 10 W

ITEM 9C485



Equipment is designed to form and transmit coded radio commands. It is a of 9P149 complex mounted on BMP (Infantry Combat Vehicle).

Weight:
max 150 kg

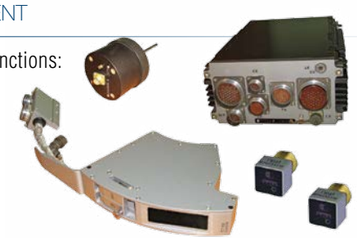
Main Specifications:

Range	4000 m
Pointing angle	
At azimuth	±85°
At tilt angle	Up +(15+1)° / Down -(15-1)°
Warm-up time	180 s
Continuous operation time	3 cycles per 5 h with 1 h break

TIUS-TM1 TANK TRANSMISSION LOCKING CONTROL EQUIPMENT

Tank transmission locking control equipment is designed to carry out the following functions:

- Providing tank reverse transmission system control;
- Switching between forward and reverse modes;
- Locking the low gear at the relevant movement speeds;
- Measuring and displaying the tank speed on a speedometer;
- Providing speed detector communication line monitoring



BAR Unit
140x60x188

BDSh Unit
85x168 diameter

Weight:
4 kg

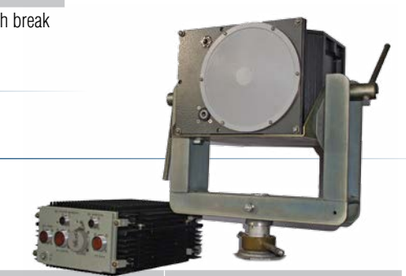
Power, 27 V:
12 W

Main Specifications:

Warm-up time at power on	32 s
Maximum duration of continuous operation (followed by a 1-hour power off interval)	12 h
Operating temperature range	-40...+55 °C
Relative humidity +25 °C	
Line sharing with the processing unit	95% ± 3

BALLISTIC RADAR SYSTEM

It is designed to identify initial shell's launching speed for further shooting correction. It used stand-alone or with ballistic computer.



Main Specifications:

Frequency range	mm
Shell caliber	30-155 mm
Speed measuring range	50-2000 m/s
Measuring areas:	
At distance	<150 m
At azimuth	± 2 °
At tilt angle	± 2 °
Measurement error of convergence time	2 m/s
Measurement error of initial velocity	0,1 m/s
Line sharing with the processing unit	RS-232, RS-422

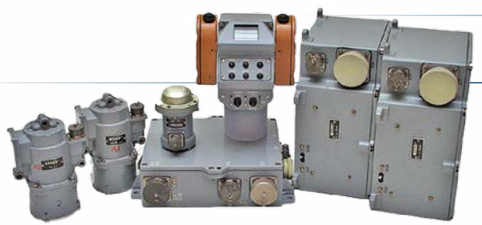
OTS-20.04 FIRE CONTROL SYSTEM

Designed for APCs and ACVs, provides sighting and fire control.

Main Specifications:

Field of view of TV	
TTC-2.03 (elevation x azimuth)	7°37'x10°9'
TTC-1.03 (elevation x azimuth)	1°50'x 2°27'
Angular resolution capability	
Narrow viewing field	30 Arc min
Wide viewing field	3,5 Arc min
Sight angles setting error of TTC-1.03	1,5 Arc min
Monitor screen size on a diagonal	21 cm

STABILIZERS SVU-500-3D, -4D



Designed for stable pointing and guiding in the horizontal and vertical planes land, air and surface targets for effective fire from fixed position, on the move and afloat.
Used in fire control systems for combat module «Shturm» of BTR-3E and BMP-1U (APC-500-3C) products, «Shtorm» and «Parus» combat units of BTR-3E1 (CBY-500-4C) and BTR 4 (CBY-500-4C-01) products.

Weight CBY-500-3C:
not more than 65 kg

Weight CBY-500-4C:
not more than 68 kg

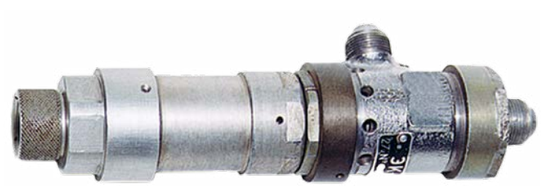
Main Specifications:

Pointing angles range:	
▮ In horizontal plane	circular rotation
▮ In vertical plane	-7° ... +70°
Power of vertical and horizontal pointing drives	500 W
Service life:	
▮ warranty	7 year
▮ general	20 year

EPK-69 ELECTRICAL PNEUMATIC VALVE

It is designed to supply compressed air to the actuating devices by electronic command. Application: T-80U, T-84U.

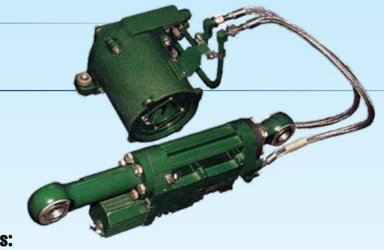
Rated motor supply voltage:
27 V



Main Specifications:

Working body	compressed air
operating pressure	180 ± 10 kgf/cm^2
temperature range	-60 ... +150 °C
Current force	no more 1,5 A
Diameter of of flow area port	no less 8 mm

PV-1888 VERTICAL DRIVE



It is intend for barrel stabilization. Used in weapons control system of the T-80U, T-84U.

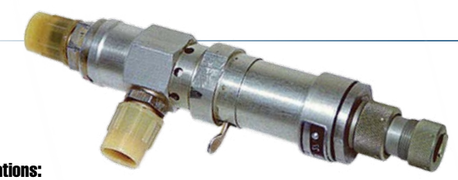
Weight:
51 kg

Rated motor supply voltage:
27 V

Main Specifications:

Current	45 A
Managing the maximum signal	320 mA
Maximum stroke	165 mm
braking force	900 kg/s
Rod speed when load is 225+75 kg	140 mm/s
Operating fluid:	
▮ main	МГЕ
▮ substitute	АМГ

ELECTROVALVE EC-48



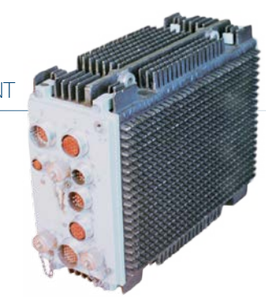
It is designed for compressed air supply 1 ... 8 MPa to 478DU unit's actuating devices by electronic or manual command. Application: T-80U, T-84U.

Weight:
0,5 kg

Main Specifications:

Operating pressure	1…8 MPa
Actuation pressure	no more 1,0 MPa
Minimum voltage tripping, no more (at a pressure of 8 MPa)	20 W
Reaction time	no more 0,025 s
Parameters of the current to the electromagnet:	
▮ voltage	20-28,5 W
▮ amperage	no more 3,5 A
Operating range of ambient temperatures	-60…+120 °C

CONTROL EQUIPMENT TANK MOVEMENT, ENGINE AND TRANSMISSION CONTROL EQUIPMENT



The equipment is intended for the tank mobility characteristics improvement due to the following automation processes: fuel feed, movement HIGH/LOW gear shift, turn control, and also transmission actuator, current and emergency parameter monitoring and indication.

Main Functions:

- ▮ monitoring of current and emergency parameters of the main engine and auxiliary systems of the tank
- ▮ control of road signaling, heating and cleaning of monitoring devices, outside and inside illumination control;
- ▮ air intake tube control with displaying its position;
- ▮ control of starting, stopping, motoring round and preservation of the auxiliary engine of the power generating unit and display of the operating modes of the power generation unit.
- ▮ termo-smoke equipment magnet control
- ▮ display of a fuel level in tanks and oil level in a tank oil system

TANK REVERSING TRANSMISSION CONTROL EQUIPMENT

The reversing transmission control equipment is intended for:

- control of the tank reversing transmission
- shift from the basic mode to the reverse mode and vice versa
- interlock of the low gear engaging with the appropriate motion speeds
- tank speed measurement and its display on the speedometer
- monitoring of the speed sensor unit communication line.

reversing automation unit
140x60x188

traversed path and speed sensor unit
diameter 85x168

unpacked
Not more 4 kg

Power, 27 V:
12 W

Main Specifications:

Readiness time for service after energizing	32 sec
Continuous operation time (with a subsequent interruption for 1 hour)	12 h
Operating temperature range with a permissible measurement error of ±2%	– 40 to +55 °C
Relative humidity at a temperature of +25 °C	95 ± 3%

TANK POWER GENERATING UNIT CONTROL EQUIPMENT

The auxiliary power generating unit (ЭА-10М) engine control equipment is intended for automation of starting and stopping of the auxiliary power generating unit engine, monitoring and signaling of current and emergency parameters of the auxiliary power generating unit engine, control of the process of producing the electric power by the power generation unit, as well as automatic interlock of emergency operating modes.

Main Specifications:

Readiness time for service after energizing	No more 5 s
Continuous operating time (with a subsequent interruption for 1 hour)	24 h
DC stabilizing voltage	27,5±1 V
Ripple voltage	No more 0,75 V
Generator excitation winding current	No more 7 A
Operating temperature range	-30…+55 °C
Relative humidity at a temperature of +25 °C	No more 98%

parameters monitoring and control unit
380x350x120

driver power panel
100x104x87

Weight:
Not more13,1 kg

Voltage:
27 V

Power, 27 V:
Not more 50 W

TANK TRANSMISSION INTERLOCK CONTROL EQUIPMENT

The equipment is intended for providing the interlock of the controls controlling the transmission of the armored vehicle objects of different types to protect the transmission from the wrong actions of the operator (driver) and also for controlling the speedometer.

Main functions:

- automatic determination of the types of the object and transmission on which the article is set up
- control of transmission actuators included as components of the object
- interlock of low gear engagement with the appropriate object motion speeds
- measurement of the object motion speed and its display on the speedometer
- monitoring, processing and testing of data from sensors and transmission actuators of the object
- display of the state of the sensors and transmission actuators of the object.

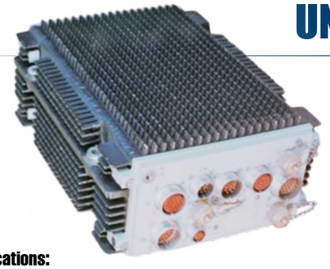
CONTROL EQUIPMENT FOR CONTROLLING THE TANK SYSTEMS AND MODES OF THE MAIN ENGINE AND AUXILIARY SYSTEMS

The system is intended for optimization of the operator (driver) operation due to automation of prestart preparation and start of the main engine (ME), control of the operating modes and protection systems of the ME, providing the operation of the road signaling and display of the current parameters of the ME and auxiliary tank systems.

Main functions:

- digital display of the tank engine and system modes and states
- emergency state indication
- control of the main engine prestart and start
- selection of movement conditions
- control of road signaling
- indication of the fuel level indicator

UNIFIED RADAR MOTION SPEED METER



Unified radar meter for measuring the ground object movement parameters is intended for mounting on vehicles, all-purpose wheeled and caterpillar vehicles, armored vehicle objects, armored carriers with the purpose of creation on its basis measuring, navigation and control complexes.

Main Specifications:

Relative speed measurement error	0,1%
Relative traversed path measurement error	0,13% (per kilimeter)
Relative movement time measurement error	0,1%
Refresh rate	10 (or 1 Гц upon request)
Ambient temperature	- 40 to +50 °C

Transceiver
185x140x65

Measuring unit
330x225x70

Power supply: on-panel direct current mains
24, 12, 110 V

Power consumption
Not more 50 W

BALLISTIC CALCULATOR

The tank ballistic calculator is intended for automation of correction input in the tank fire control system to increase the probability of hitting the target.

Ballistic calculator unit
224x123x296

Parameter input panel
209x166x160

Indication panel
125x200x70

Weight:
15 kg

Supply voltage
27 V

27 V mains power B
20±0,5 W

Main Specifications:

Accuracy of calculation and formation of angles of sight signals and lateral lead advance of a gun and a machine-gun	0,052 angular minutes
Time of the article availability for service after energizing	10±0,53 s
Continuous operating time	12 h
Operating temperature range	-40...+55 °C

NAVIGATION EQUIPMENT

COMPREHENSIVE NAVIGATION MONITORING AND OPERATIVE INTERACTION EQUIPMENT

Processing unit
224x123x296

Display panel
300x263x113

Control panel
160x42x17

Unpacked
17,5 kg

Supply voltage:
27 V

Power, 27 V:
Not more 50 W

Navigational support and interaction equipment is intended for solution of tactical tasks of controlling the fighting vehicles of the unit up to the battalion inclusive.

Main Specifications:

Time of the article availability for service after energizing	180 s
Continuous operating time	12 hours
GPS equipment (type CH-3700) consisting of	
▮ receiving-computing unit	205x144x57mm
▮ antenna unit	73,6x119,4x1028 mm

ARMAMENT CONTROL AND STABILIZATION EQUIPMENT

Control unitBU-K1TsL
366x256x175

Stabilizing unit СУЗУ-2ГН (СУЗУ-2ВН)
270x140x87

1KPI-M Display panel
300x263x88

PU Panel
205x142x88

Weight:
31,2 kg

Voltage:
27 V

27 V mains power at idling
60 Vt

The armament control and stabilization equipment (warfare modules) is intended for stabilization and stabilized pointing of the warfare module weapons unit in horizontal and vertical planes in the automatic mode by sight signals and with taking into account the information about firing conditions.

Main Specifications:

Pointing rate	
▮ minimum	No more 0,02 °/c
▮ maximum	No less 6 °/c
Mean stabilization error	No more 0,3 Th.range
Nonsmoothness of pointing rate	No more 0,3 Th.range
Time of the article availability for service after energizing	35 s
Continuous operating time	12 h

LOADING GEAR CONTROL EQUIPMENT

The loading gear control equipment is intended for creation of military equipment having the increased firing rate.

Commander panel
340x164x80

Gunner panel
240x136x77

Loading panel
100x155x110

Tank body conveyor control unit
24x123x300

Turret conveyor control unit
20x165x270

Voltage:
+ (21,5…29,5) V

Power, 27 V:
not more 110 W

Main Specifications:

Types of usable projectiles	hollow-charge, armour-piercing, guided
▮ in turret conveyor	22 pcs.
▮ in tank body conveyor	14 pcs.
Time of availability for service after energizing	no more 3 s
Continuous operating time	no more 12 hors

SMOKE SCREENING SYSTEM CONTROL EQUIPMENT

The system is intended for operation as a component of the optoelectronic suppression complex for the purpose of acquisition of the enemy laser emission, smoke or aerosol screening, emission of the modulated light for disorientation of the enemy guided missiles.

Nalysis and control unit
224x343x123

Display panels
160x92x74

Unpacked
7,5 kg

Voltage:
27 V

Power, 27 V:
20±0,5 W

Main Specifications:

Spectral range of analyzers	0,6…12 μm
Total field of vision in horizon	360°
Time of the article availability for service after energizing	15±0,5 s
Operating temperature range (with a permissible measurement) error of ±2 %	from – 40 to +55 °C

ANTIAIRCRAFT SYSTEM CONTROL EQUIPMENT

SUZU1P control unit
366x256x175

SUZU 2 amplifier power unit
270x140x87

Weight:
not more 15 kg

Voltage:
27 V

Power, 27 V:
50 W

The tank antiaircraft system control equipment is intended for control and stabilization of the antiaircraft system in horizontal and vertical planes.

Main Specifications:

Mean square pointing error	no more 0,152 mrad
Pointing nonsmoothness	no more 0,33 mrad
Pointing rate	
▮ minimum	no more 0,01 degree/sec
▮ maximum	no less 3,54 degree/sec
Conveying speed	no less 45,05 degree/sec
Continuous operating time	24 h

TANK CASE CONTROL EQUIPMENT

Parameters control unit
224x296x123

Information-control panel
105x90x45

Traffic signalization control panel
75x209x193

Traffic condition selection panel
201x86x70

Alarm signaling panel
160x45x17

Unpacked
1,4 kg

Packed
3,2 kg

The tank case control equipment is intended for the parameters control and auxiliary power set work control, air pipe, condensate drain, the road signaling, external and internal illumination control, and also for emergency parameters indication.

Main Specifications:

Endurance	no more than 12 h
Temperature range	-20…+100 °C
Input signals number	3 or 6
Output power of signal	no more than 130 Vt
Time duration of forming signals	45±5 s
Minimum time between signals switching off	15±3 s

CONTROL EQUIPMENT OF AUTOMATIC TRANSMISSION OF APC BTR-4E

Block BU-4
360x231x52,5

Panel SUT-PU-4
288x190x250

Without packing
7,9 kg

With packing
9,6 kg

Voltage:
27 V

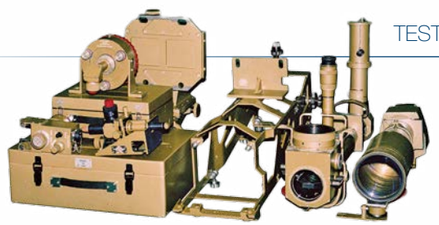
Power, 27 V:
not more 15 W

Control equipment of automatic transmission of APC BTR-4E is intended for control of gear change by automatic transmission a for blocking of the hydraulic torque convertor from a driver seat in the automatic and manual mode of movement, and also for a possibility of transition of a control system in emergency mode as a part of object of installation of APC BTR-4E.

Main Specifications:

Available machining time after power supply	5 s
Continuous work time	no more12 hours
Operating temperature range	-20...+55 °C
Limiting allowable temperature range	-25...+70 °C

KPA 9V940 TEST AND CONTROL EQUIPMENT



Designed for Technical Maintenance II and parameters checking during repair of the tank hardware, guided weapons consisting of 9S516 data unit, 9S517 automatic control unit, 9S831 or 9S601 voltage transducer combined with 1A43 or 1A43U system in the tank as a part of a tank.

Weight in packing boxes
184 kg

Main Specifications:

Raster rotation frequency check	1,000±10 Hz
Pancratic system displacement time:	
▮ for 1K13 item	15.1-16.6 s
▮ for 9C516 item	17.9-20.6 s
Checkup of data field parameters in the center and extreme points with error	Not more than 20%

KPA 9V992 TEST AND CONTROL EQUIPMENT

It is designed for automated technical maintenance of 1K118 Thermal Imaging TV Control Device together with KPM 9V945 automated control system.

Control panel:
550x215x243

Optico-mechanical craft simulator unit:
425x215x174

Weight:
not more than 60 kg

Supply voltage from AC network 50Hz:
220±22 V

Main Specifications:

Preparation time	not more than 5 min
Continuous operation	not more than 8 h
Built-in self-control time	not more than 2 min

SE2PI PRE-HEATING PROTECTIVE GLASS

Designed for protection of monitoring devices against dust, dirt and precipitation, and also demisting or glass freezing in the heated zone.

Dimensions (incl. cable - 510 mm)
max. 108x67x54

Weight:
max. 0,63 kg

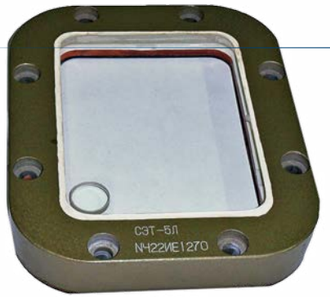
Constant current source
29 V

Power consumption
max. 11 W

Main Specifications:

Visual transmittance coefficient	min. 0,8
Operating conditions	-50 – +50 °C

PRE-HEATING PROTECTIVE GLASS SET-5L



Designed for protection of the observer or monitoring devices (sighting units) against dust, dirt and precipitation, and also demisting or glass freezing in the heated zone.

Dimensions (incl. cable - 510 mm)
max. 108x67x54

Weight:
max. 3,5 kg

Power consumption
max. 120 W

Main Specifications:

Visual transmittance coefficient	min. 0,92
Constant current source	29 V

4C20, 4C22 DESIGNED TO PROTECT ARMORED COMBAT VEHICLES FROM THE CUMULATIVE WEAPONS

Designed to protect Armored Combat Vehicles from the cumulative weapons.

Overall dimensions:
251,9x131,9x13

Mass fraction 4S20:
1,34 kg

Mass fraction 4S22:
1,37 kg

PVV-5A in item 4S20:
0,25 kg

PVV-12M in item 4S22:
0,28 kg

Main Specifications:

Operating temperature range	-50…+50 °C
Package – wooden box	40 piece

TKN-1SM NIGHT VISION DEVICE

TKN-1SM is an optoelectronic passive-active night vision device which is designed for a vehicle's commander to observe road, terrain and other unit's vehicles in night conditions.

Overall dimensions:
260x210x320

Weight:
not more than 5 kg

DC power supply voltage:
27+2-5 V

Power consumption:
not more than 6 W

Main Specifications:

Distance of seeing a MBT type of target in passive mode at target's contrast against background not less than 0.4, atmospheric transparency not less than0.7 and natural night illumination from 5×10^{-3} to 5 lx	no less 400 m
Distance of seeing a MBT type of target in active mode at illumination by the 'OU-3K' type searchlight with infrared filter at target's contrast against background not less than 0.4 and atmospheric transparency not less than 0.7	no less 300 m

TKN-3VM COMBINED OBSERVATION DEVICE

TKN-3VM' is a combined optoelectronic passive-active night-vision observation device. It is designed for the commander of a combat vehicle to survey the road, terrain and other unit's vehicles in day and night time environment.

Main Specifications:

Optoelectronic channel	
Distance of seeing of a surveillance object e.g MBT in passive mode at contrast of a surveillance object against background not less than 0.4, at atmospheric transparency not less than 0.7, at natural night illumination from 5×10^{-3} to 5 lx	no less 1,200 m
Distance of seeing of a surveillance object e.g MBT in active mode at illuminating by 'OU-3K' type illuminator with infrared filter at contrast of a surveillance object against background not less than 0.4, at atmospheric transparency not less than 0.7.	no less 1,000 m

Overall dimensions
217x195x460

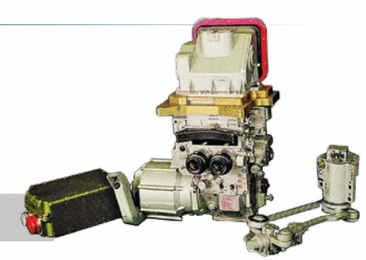
Weight:
not more than 12.5 kg

DC voltage
27 V

Eye piece heater's power consumption
not more than 13 W

PNK-4CR TANK SIGHTING AND OBSERVATION COMPLEX

Designed for targets observation, detection, recognition and aimed fire by the commander from a tank gun and coaxial machine gun or anti-aircraft system in day-and-night time.

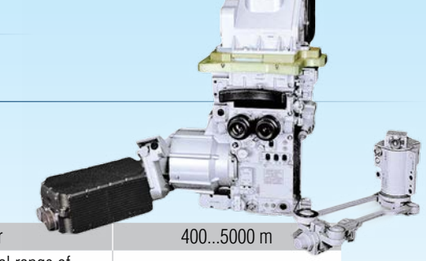


Main Specifications:

Target recognition range from site at meteorological range of vision not less than 10,000m and 0.5m target contrast	no less 4,000 m
Target visibility range in night channel in passive mode	no less 800 m
System readiness time upon stabilizer activation	no more 2 min
Magnification:	
▮ one-fold day channel	no less 1x
▮ multifold day channel	no less 8x
▮ night channel	no less 5.5x

PNK-5 TANK SIGHTING AND OBSERVATION COMPLEX

It is designed for search of targets, detection, recognition, measurement of range and aimed fire by commander from stationary position and on move at ground or lowaltitude targets from the antiaircraft system and dubbed fire from the tank gun and coaxial machine gun.aimed fire by commander from stationary position and on move at ground or lowaltitude targets from the antiaircraft system and dubbed fire from the tank gun and coaxial machine gun.



Main Specifications:

Target detection range by built-in laser rangefinder	400...5000 m
Target recognition range from site at meteorological range of vision not less than 10,000m and 0.5m target contrast	not less than 4000 m
Target visibility range in night channel in passive mode	not less than 800 m
System readiness time upon stabilizer activation	not more than 2 min
Magnification:	
▮ one-fold day channel	not less than 1x
▮ multifold day channel	not less than 7,5x
▮ night channel	not less than 5,5x

PNK-6 TANK PANORAMIC SIGHTING SYSTEM

Designed for the observation and recognition of ground and aerial targets from the tank commander's workstation in daylight and at night visibility conditions.

Weight:
not more than 400 kg

27V DC power consumption
not more than 500 W

Main Specifications:

Tank size targets detection range	
Via visual channel	not less than 5,500 m
Via IR channel in WFOV	not less than 4,000 m
Target distance measurement range	200...9,500 m
Rms error of target range measurement by the laser rangefinder	not more than ±5 m
Readiness time	not more than 5 min

T01- K01ER TANK NIGHT SIGHTING SYSTEM

Intended for observation, detection, identification of the targets and assurance of the aimed shot from a gun and coupled with it machine-gun at night.

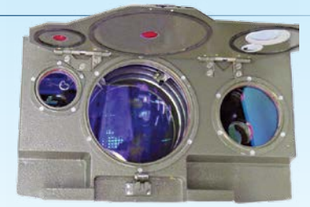
Weight:
48 kg

Main Specifications:

Magnification	7.5 multiplicity
Vision field	not less than $5^{0}25'$
Target (tank) range of vision with brightness 3.10^{-3} lux	not less than 1400 m
Day sight mark tracking error	not more than 0,5 division point
Readiness time	not more than 10 s

OEM, OEM-V OPTOELECTRONIC MODULES

OEM and OEM-V optoelectronic modules are designed for surveillance of the background-target situation under the day time and lowered illumination environments as well as for measuring the distance to a chosen target.



OEM:
490x378x214

OEMV:
422x214x378

Weight OEM:
not more than 32,5 kg

Weight OEMV:
not more than 31,8 kg

Main Specifications:

Distance of detection of a ground object with frontal projection sized not less than 2.3 m×2.3 m:	
in day time at more than 25 km of meteorological visibility, natural illumination from 100 to 1.5×10^{5} lx and at contrast of a surveillance object against background not less than 0.5	
▮ for narrow field	not less than 5 km
▮ for wide field	not less than 2 km
▮ at lowered illumination not less than 1.5×10^{-3} lx in passive mode	not less than 800 m

OPTOELECTRONIC MODULES WITH LASER GUIDANCE CHANNEL OEM-L, OEM-L1

OEM-L and OEM-L1 optoelectronic modules with laser guidance channel are designed to register background and target situation, to find distance under natural and low illumination, and to form the space-and-time structure of the laser information guidance field ranging from 50 to 5000 m.

OEML:
430x235x395

OEML1:
430x395x235

Weight OEML:
not more than 36 kg

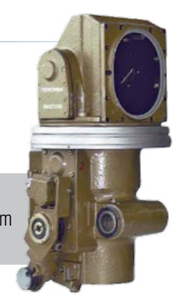
Weight OEML1:
not more than 40 kg

Main Specifications:

Distance of detection of a MBT type of target colored by the 'HV518' ('TU 610966–75' state standard) protective enamel, with its bard facing an observer, in open terrain:	
under day conditions and meteorological visibility distance of not less than 10 km and under illumination ranging from 100 to 10^{5} lx:	
▮ for narrow-field channel for shooting from 30-mm cannon	not less than 5000 m
▮ for wide-field channel for shooting from 30-mm cannon	not less than 2500 m
▮ for narrow-field channel for shooting by guided missile	not less than 7000 m

TPN-1M-49-23 TANK NIGHT SIGHT

TPN-1M-49-23 is the optoelectronic passive-active night vision device and is designed for battle field observation when inflicting direct fire firm tank cannon and coaxial machine gun from a halt and on the move against mobile and fixed targets in night conditions.



Overall dimensions:
280x256x430

Weight:
not more than 13 kg

DC power supply voltage:
27+2-5 V

Power consumption:
not more than 6 W

Main Specifications:

Distance of seeing a MBT type of target in passive mode at target's contrast against background not less than 0.4, atmospheric transparency not less than0.7 and natural night illumination from 5×10^{-3} to 5 lx	not less than 1300 m
Distance of seeing a MBT type of target in active mode at illumination by the 'L-2G' type searchlight with infrared filter at target's contrast against background not less than 0.4 and atmospheric transparency not less than 0.7	not less than 800 m
Magnification	5.2±0.5 magnification factor
Viewing field	not less than 6°

9SH350I1 SEARCH DEVICE

9SH350I1 device is designed for search and observation of background target and situation ranging in day/low illumination as well as for registering the heat emissions of objects and ground features.

Main Specifications:

Distance of detection (identification) of an object under meteorological visibility distance (MVD)	not less than 15 km
In day conditions under the ground illumination ranging from 100 to 105 lx:	
▮ for narrow viewing field	not less than 7 (5) km
▮ for wide viewing field	not less than 2 (1,7) km
Under low ground illumination not less than 0.5 lx:	
▮ for narrow viewing field	not less than 4 (2,5) km
▮ for wide viewing field	not less than 1,8 (1,5) km
Thermal imager' viewing field, horizontally and vertically	not less than 5°29' x 4°7'
Distance of detection	3,000 m
Distance of identification	1,500 m

ANTI-AIRCRAFT SIGHT BPK-2-42M

BPK-2-42M is a periscopic, combined sight of day and passive-active night type. It is designed for ground surveillance, target detection, identification and ranging with the help of rangefinder reticle as well as for sight shooting from the cannon by organic ammunition.

Overall dimensions
337x357x458

Weight:
not more than 25 kg

DC power supply voltage
27+2-5 V

Main Specifications:

Magnification of the sighting device:	
▮ day system	6 magnification factor
▮ night system	5,5 magnification factor
Viewing field of the sighting device:	
▮ day system	10°
▮ night system	6°40'

PN-90 GUIDANCE UNIT

PN-90 guidance unit is designed for visual tele-observation, target selection and tracking (by the gun pointer), formation of the guiding field inside laser beam within the range of programmed distances from 250 to 5000 m.

Overall dimensions:
377x252x170

Weight:
not more than 15,5 kg

DC power supply voltage:
from 18 to 32 V

Power consumption:
not more than 170 W

Main Specifications:

Distance of detection (identification) by the television channel of the onboard target projection of a MBT type, which has the contrast not less than 0.35 against the earth surface, buildings and vegetation, under meteorological visibility distance not less than 25 km:	
under natural illumination of terrain not less than 5 lx	not less than 2,5 (1,7) km
under natural illumination of terrain from 100 to 10^{4} lx	not less than 8 (4) km

TNPO-160, TNP-165A, TNPT-3, TNPO-115T, TNPO-170A, NPA-65A, L36.65SB 2B, BMO -190B, TNPO-168V

DAY-TIME OBSERVATION DEVICES

Designed for road and terrain observation when driving armored vehicles.

Main Specifications:

	TNPO-160	TNP-165A	TNPT-3	TNPO-115T	TNPO-170A	TNPA-65A	L36.65sb2B	BMO-190B	TNPO-168V
Viewing field angle, in planes, deg, not less than:									
horizontal	78	71	118	108	91	140	116	69	138
vertical	28	33	54	29	19	35	42	20	31
Viewing field angle in vertical plane, deg, not less than:									
upper	12	12	35	9	12	16	15	9	16
lower	19	21	19	20	11	17	29	9	17
Field of view angle, in planes, deg, not less than:									
horizontal	36	34	45	42	44	52	49	32	–
vertical	5	7	12	5.30	5.5	6	8.5	5.16	7
Binocular viewing field angle in horizontal plane, deg, not less than	12	9	10	11	14	10	14	9.5	
On-axis beam deflection angle, deg, not less than	–	19	–	–	–	45 ± 2	–	–	–
Device periscope effect, mm	160	165	–	114±6	162±6	65±4	113±5	190±10	173±5
Visual coefficient of transmission, not less than	0.44	0.68	0.60	0.44	0.44	0.6	0.6	0.43	0.45
Weight, kg, not more than	3.4	2.85	2.35	2.8	2.9	0.74	2.26	3.4	7.5
Operating temperature range, °C	from –50 to +50								

TVN-5, TVNE-4PA, TVNE-4B, TVNE-1PA, TVNE-1B, TVNO-2BM, TVNO-2, TVN-2T, TVN-2B, TVN-2, TVN-5M

NIGHT VISION DEVICES

Designed for giving the possibility to drive armored vehicles at night both under conditions of up to 5×10–3 lux natural night luminosity (in passive mode), and with headlamp light (covered by the infrared filter) used (in active mode).

Main Specifications:

	TVN-5	TVNE-4PA	TVNE-4B	TVNE-1PA	TVNE-1B	TVNO-2BM	TVNO-2	TVN-2T	TVN-2B	TVN-2	TVN-5M
Magnification	×1										
Field of view, deg, in planes:											
horizontal	36	36	35	35	35	30	30	30	30	30	40
vertical	27	33	33	33	33	30	30	30	30	30	30
Road distance visibility in modes, m, not less than:											
active	80	60	60	60	60	50	50	50	50	50	150
passive	180	120	100	100	100	–	–	–	–	–	450
Supply voltage from vehicle-borne DC mains, V	27	27	27	27	27	27	27	27; 13	27	27; 13	27
Power consumed, W, not more than:											
with heating	94.5	50	50	50	90	50	50	–	–	–	95
without heating	5.4	6	6	6	3	6	6	6	6	6	5.5
Weight, kg, not more than	6	4.8	3.9	3.9	4.2	4.1	3.8	3.6	3.7	3.5	6
Operating temperature range, °C	from –50 to +50										

1PZ-3 DAYTIME ANTI-AIRCRAFT SIGHTS FOR ICVS

Intended for surveillance of air space when searching for air targets, tracking of air targets that move at a speed of up to 250 m/s and laying of guns and machine guns at them when firing from a stationary position, search for ground targets and laying of guns and machine guns at them when firing from a stationary position.

Overall dimensions:
570x375x230

Weight:
not more than 23,8 kg

Voltage:
27 V

Main Specifications:

Magnification of the sighting device	1,2/4 magnification rate
Viewing field of the sighting device	49/14°
Exit pupil diameter	5,4/3,6 mm
Distance of exit pupil from outer surface of the eye piece's last lens	26/26 mm

GUIDANCE DEVICE PN-B

PN-B' guidance device is designed to form the target video signal as well as the missile guidance field within the laser beam at distances of 50 to 5000 m.

Overall dimensions:
372x138x482

Weight:
not more than 14,6 kg

DC power supply voltage:
27+2-5 V

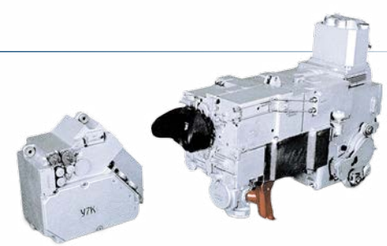
Power consumption:
not more than 200 W

Main Specifications:

Distance of detection of a MBT type ground target sized 2.5 m×2.5 m in day time under meteorological visibility distance not less than 25 km:	
under natural illumination of terrain from 100 to10^4 lx and at contrast of a surveillance object against background not less than 0,5 km	not less than 6,5 km
under natural illumination of terrain not less than 0,5 lx	not less than 2,5 km

1G46, 1G46M GUNNER'S TANK SIGHTS

Designed for target observation, detection, recognition and aimed firing from a gun and coaxial machine gun, as well as for missile guidance in daylight.



Weight:
not more than 115 kg

Main Specifications:

Zoom magnification	x 2,7...12
Laser rangefinder measurement range	400...5115 m
Maximum target range measurement error	±10 m
Guided missile firing range	5000 m
Readiness time	less than 3 min

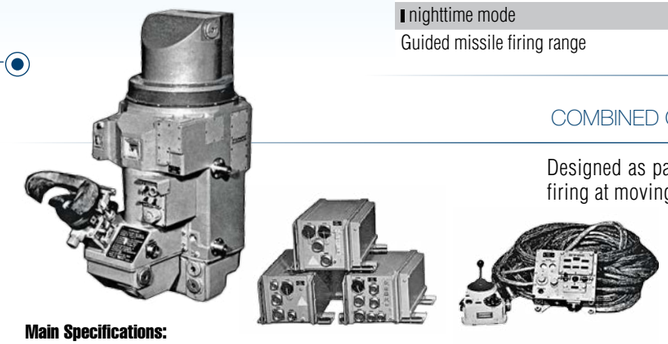
1K13 SIGHTING AND GUIDANCE DEVICES

Designed for targets observation, search and detection in daylight and at night, aimed fire by standard missiles from a gun and coaxial machine gun under night visibility conditions, as well as for the aimed fire by guided missiles from a gun and their guidance during the flight in daylight.

Main Specifications:

Visibility range:	
in daylight	not less than 5000 m
at night, passive mode	not less than 500 m
at night, active mode	not less than 1200 m
Magnification:	
daytime mode	not less than 8
nighttime mode	not less than 5,0
Guided missile firing range	4000

COMBINED OPTICAL CONTROL DEVICE 1K118



Designed as part of combat vehicle for missile guidance and firing at moving or stationary targets.

Weight without cables
not more than 145 kg

DC
27 +1,5 – 0,5 V

AC
115 ± 11,5 V

400Hz ± 40Hz
12±1,2 V

Main Specifications:

Magnification	3,5...12
Field of view	20...5 deg.
Eye relief	21 mm
Resolution	19,6...5,9 ang.s
Control field generation range	50-6000 m
Continuous operation	6 h

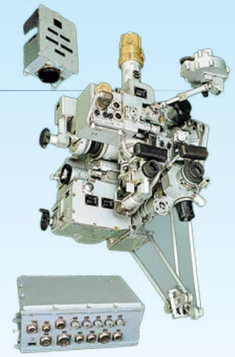
SUIT-1 OPTOELECTRONIC SYSTEM FOR BARREL BENDING MEASUREMENT

The system measures the current value of armoured and artillery armaments barrel bending which appears as a result of the barrel heating during fire, exposure to nonuniform solar heating and also mechanical deformations of the barrel.

Main Specifications:

Range of angles measurement	from -5 to +5 mrad
Measurement error	±0,1 mrad
Threshold measuring frequency	1 Hz
Dynamic range of output voltages	from - 5 to +5 V
Power supply voltage	24 ±3 V
Operating temperature range	from - 40 to +60 °C

1P-22 AUTOMATED SIGHTING SYSTEM



Designed for gun aiming when firing from indirect or direct laying positions.

Weight:
105 kg

Main Specifications:

Range of aiming angles:	
▮ from minus	1-00 mil
▮ to plus	11-66 mil
Elevation angle range	± 2...50 mil
Tangent sight sighting angle limit:	
▮ from minus	0-83 mil
▮ to plus	3-33 mil

1K118T THERMAL IMAGING TV CONTROL DEVICE

Designed for ground targets search, detection and recognition in daylight and at night, including adverse weather conditions, generation of a laser beam control field and missile guidance at a target.

Weight:
not more than 165 kg

Main Specifications:

Tank-size target detection range with 0.8 visibility:	
Detection range by TV channel at daytime	6000 m
Detection range by TI channel at nighttime	3500 m
Control field generation range with control field diameter from 5 to 6m	from 50 to 6000 m
Readiness time	not more than 6,0 min

TV AND LASER GUIDANCE UNIT 1PN-TL

Designed for RK-2S missile system guidance and it further monitoring. Used as a part of BTR-4E armored personnel carrier or other analogue to it vehicles.

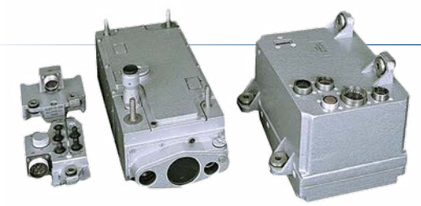
Dimensions
432x375x157

Supply voltage
27 V

Main Specifications:

TV-channel FOV angle	1^0 x 45'
Detection (recognition) range of a ground tank-type target sizing (2.5x2.5m) with a daylight contrast not less than 0.4, with terrain illumination from $5x10^5$ lux up to 1 lux and minimum visibility range not less than 15 km:	5000 (4000) m
Resolution in direction perpendicular to sweep (vertical lines)	not more than 25"

RANGEFINDER KDT-2U



Designed for target range measuring and range data transfer to the indication unit and ballistic computer.
Consists of transceiver with installed laser emitter, photodetector and viewfinder, electric unit, indication unit, control unit, cables, protective glass and SPTA set.

Weight:
25 kg

DC supply voltage
not more than 27 V

Main Specifications:

Distance measuring range	450...4000 m
Measurement error	not more than 10 m
Two-phase gating range	1400, 2400 m
Number of simultaneously ranged targets	3 pc
Viewfinder magnification	2,5

1PZ-3, 1PZ-7, 1PZ-10 DAYTIME ANTIAIRCRAFT SIGHTS FOR APC

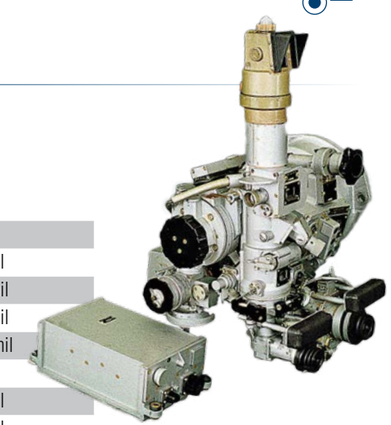
Designed to be used as day sighting devices to fulfill the following tasks:
- airspace monitoring during search for aerial targets;
- aerial targets tracking at velocities up to 250 m/s and aiming of guns and machine-guns when firing from stationary position;
- search for ground targets and aiming of guns or machine-guns when firing from stationary position.

Weight:
not more than 23,5 kg

Main Specifications:

Magnification	1,2 and 4
Optical system angular field of view	49 and 14 deg.
Exit pupil diameter	6,0 and 4,0 mm
Transmission factor	not less than 30%
Resolution limit	50 and 20 deg.

PG-2 PERISCOPIC SIGHT



Designed for gun aiming while firing from indirect laying positions and fire over sights.

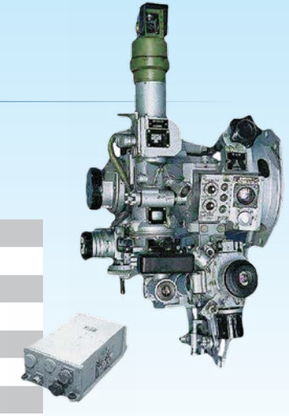
Weight:
45 kg

Main Specifications:

Range of aiming angles	
▮ from minus	1-00 mil
▮ to plus	11-66 mil
Target elevation range	±2-50 mil
Range of panorama goniometer aiming angles	±60-00 mil
Tangent sight aiming angles range	
▮ from minus	0-83 mil
▮ to plus	3-50 mil
Shot zone	2±0,5 angular minute

PG-4 PERISCOPIC SIGHT

Designed for gun aiming while firing from indirect laying positions and fire over sights.

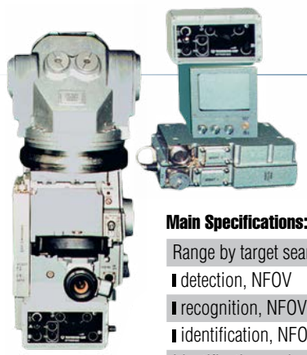


Weight:
46 kg

Main Specifications:

Range of aiming angles	
▮ from minus	1-00 mil
▮ to plus	11-66 mil
Target elevation range	±2-50 mil
Range of panorama goniometer aiming angles	±60-00 mil
Tangent sight aiming angles range	
▮ from minus	0-83 mil
▮ to plus	3-50 mil
Shot zone	2±0,5 angular minute

PTT-2 TANK THERMAL TV SIGHTING SYSTEM



Designed for targets observation, detection, identification and aimed firing from a gun and coaxial machine-gun from the gunner's or commander's workstations in daylight or at night, including under adverse weather conditions.

Main Specifications:

Range by target search stages, at $\Delta T \geq 2^{o}K$:	
▮ detection, NFOV	12 km
▮ recognition, NFOV	35 km
▮ identification, NFOV	2,5 km
Identification under adverse weather conditions, NFOV	2,0 km
Angle tracking accuracy	0,5 mrad
Readiness time for operation in normal climatic conditions	6,0 min

Weight:
50 kg

Consumed power:
120 W

TDM TV RANGE-FINDING MODULE

Designed for targets search, detection and recognition in daylight or under poor visibility conditions and range measuring to detected targets as a part of fire control system.

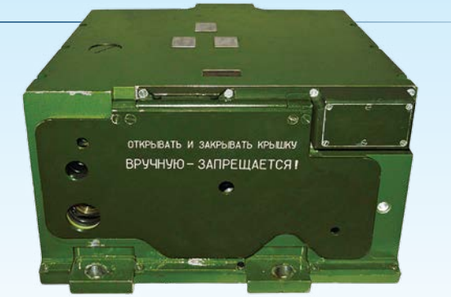
Main Specifications:

Detection (recognition) range of a ground tank-type target with a daylight contrast not less than 0.5, with terrain illumination from 1.5x105 lux up to 1 lux and minimum visibility range not less than 15 km:	
▮ for NFOV channel	5000 (4000) m
▮ for WFOV channel	3000 (1500) m
Detection (recognition) range of a ground tank-type target with a daylight contrast not less than 0.5, under low terrain illumination from 1 lux up to $5x10^{-3}$ lux and minimum visibility range not less than 10 km:	
▮ for NFOV channel	1200 (800) m
▮ for WFOV channel	600 (400) m

TDM-M

TV RANGE-FINDING MODULE

Designed for targets search, detection and recognition in daylight or under poor visibility conditions and range measuring to detected targets as a part of fire control system.

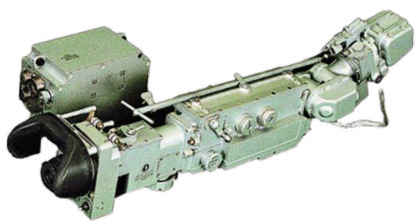


Main Specifications:

Detection (recognition) range of a ground tank-type target with a daylight contrast not less than 0.5, with terrain illumination from 1.5x105 lux up to 1 lux and minimum visibility range not less than 15 km:	
▮ for NFOV channel	5000 (4000) m
▮ for WFOV channel	3000 (1500) m
Detection (recognition) range of a ground tank-type target with a daylight contrast not less than 0.5, under low terrain illumination from 1 lux up to $5x10^{-3}$ lux and minimum visibility range not less than 10 km:	
▮ for NFOV channel	1400 (1000) m
▮ for WFOV channel	800 (600) m

TSHSM-32PV, TSHSM-41UK

TANK DAYTIME SIGHTS



Designed for target observation, detection and identification in daylight as well as for aimed fire at ground targets from a gun and coaxial machine gun.

Sight:
1100x160x250

Electric unit:
285x150x173

Total weight:
33 kg

Main Specifications:

Magnification	3,5; 6,9
Angular field of vision:	
▮ 3,5 magnification	18.0 deg
▮ 6,9 magnification	9.0 deg
Resolution limit:	
▮ 3,5 magnification	16 ang.s
▮ 6,9 magnification	10 ang.s
Max stabilization (tracking) error	±0.3 mil