On approval of the list of measurements related to state regulation

Invalidated Unofficial translation

Order of the acting Minister of Industry and Infrastructure Development of the Republic of Kazakhstan dated March 29, 2019 No. 170. Registered in the Ministry of Justice of the Republic of Kazakhstan on March 29, 2019 No. 18444. Abolished by the joint order of the Acting Minister of Industry and Infrastructure Development of the Republic of Kazakhstan dated July 11, 2023 No. 497 and the Acting Minister of Trade and Integration of the Republic of Kazakhstan dated July 18, 2023 No. 285-NK.

Unofficial translation

Footnote. Abolished by the joint order of the Acting Minister of Industry and Infrastructure Development of the Republic of Kazakhstan dated July 11, 2023 No. 497 and the Acting Minister of Trade and Integration of the Republic of Kazakhstan dated July 18, 2023 No. 285-NK (effective sixty calendar days after the date of its first official publication).

In accordance with subparagraph 2) of article 6-3 of the Law of the Republic of Kazakhstan dated June 7, 2000 "On ensuring the uniformity of measurements", I HEREBY ORDER:

1. To approve the attached list of measurements related to state regulation.

2. The Committee for technical regulation and metrology of the Ministry of Industry and Infrastructure Development of the Republic of Kazakhstan, in the manner prescribed by law, to ensure:

1) state registration of this order in the Ministry of Justice of the Republic of Kazakhstan;

2) within ten calendar days from the date of the state registration of this order, its sending in the Kazakh and Russian languages to the Republican state enterprise on the basis of the right of economic management “Republican Legal Information Center” for official publication and inclusion in the Reference Control Bank of regulatory legal acts of the Republic of Kazakhstan;

3) placement of this order on the Internet resource of the Ministry of Industry and Infrastructure Development of the Republic of Kazakhstan.

3. The supervising vice minister of industry and infrastructure development of the Republic of Kazakhstan shall be authorized to oversee the execution of this order.

4. This order shall come into force on April 11, 2019 and shall be subject to official publication.

Acting Minister *K. Uskenbayev*

Approved by the
order of the Acting Minister of
industry and infrastructure
development of the
Republic of Kazakhstan dated
March 29, 2019 № 170

The List of measurements related to government regulation

№	Name of measurements indicating the object and scope of application	Metrological requirements		Note
		Measuring range	Maximum permissible error or accuracy class	
1	2	3	4	5
In the field of technical regulation and metrology				
1.	Measurement of the geometric dimensions of the State flag	from 0 to 500 mm from 0 to 2000 mm	± 0,1 mm accuracy class 2	ST RK 988 GOST 7502
2.	Measurement of the geometric dimensions of the State Emblem	from 0 to 1000 mm	± 0,1 mm	ST RK 989
3.	Measurement of color of samples of the State Emblem and the State Flag and material objects depicting the State Emblem and the State Flag or elements of its symbols	No limits	Absolute measurement error of color coordinates ± 2; chromaticity coefficients ± 0,02	ST RK 989 ST RK 988
4.	Measurements made during state metrological control:			ST RK 2.156
	mass measurement	from 0,5 to 6200 g	± 0,02 %	
	temperature measurement	From minus 25 ºC to 120 ºC	± 0,5 ºC	
	volume measurement	nominal volume of 100.0 ml at 20 ºC	± 0,1 %	
		100,0 ml	± 0,02 %	
	humidity measurement	(20 – 90) %	± 7,0 %	
In the field of civil aviation				
5.	Measurement of meteorological optical visibility range	10 m – 100 km	± 50 m to 600 m ± 10 % from 600 m to 1500 m ± 20 % over 1500 m	relative accuracy
6.	Ceiling measurement	0 m – 30 km	± 10 m (33 foots) to 100 m (330 foots)	relative accuracy

			± 10 % over 100 m (330 foots)	
7.	Measurement of air flow displacement directions	from 0 to 360°	± 10 °	
8.	Air displacement velocity measurement	from 0 to 75 m/s	from 0,5 m/s (1 knot) to 5 m/s (10 knots) ± 10 % over 5 m/s (10 knots)	relative accuracy
9.	Atmospheric pressure measurement	from 5002 to 1080 hPa	± 0,5 hPa	2 Taking into account the climatic characteristics of the aerodrome, meteorological equipment may include instruments with smaller ranges
10.	Ambient temperature measurement	from minus 80 to plus 60 ° C	± 1 °C	
11.	Measurement of relative humidity	from 0 to 100%	± 5% at temperatures above 0 ° C, ± 10% at temperatures below 0 ° C	relative accuracy
In the field of roads				
12.	Measurement of length when determining the length of sections (roads)	Below 1000 m Above 1000 m	± 0,1 m ± 1,0 m	GOST 33475
13.	Measurement of the evenness of the road pavement (roads)	(0 - 200) mm	± 0,1 mm	ST RK 1219 PR RK 218-03
		(0 - 200) cm/km	reducial error ± 10 %	GOST 33101 ST RK 1219 PR RK 218-03
		By the international roughness index (IRI) (0 - 10) m/km	reducial error ± 2 %	GOST 33101 ST RK 1219 PR RK 218-03
14.	Slope measurement when determining slope of sections (roads)	± 120 permille	± 3 permille	GOST 33475 RK SET OF RULES 3.03-101 RK SET OF RULES 3.04-101
15.	Turn angle measurement (roads)	± 180○	reducial error ± 1○	GOST 33475 RK SET OF RULES 3.03-101
16.	Measurement of turning radius (of roads)	(10 - 3000) m	reducial error ± 10 %	GOST 33475 RK SET OF RULES 3.03-101

17.	Measurement of the height of the elements of the microprofile of surface of the coating (roads)	(0,001 - 0,150) m	relative accuracy ± 10 %	GOST 33101
18.	Measurement of depth gauge of road pavement (roads)	(0,003 - 0,150) m	± 0,002 m	GOST 32825
19.	Measurement of the elastic deflection of the road pavement (roads)	(0,2 - 1,5) mm	reducial error ± 5 %	GOST 32729 ST RK 1377
20.	Coating thickness measurement (roads)	(0,05 - 0,50) m	± 0,02 m	RK SET OF RULES 3.03-101
21.	Measurement of the grip of a vehicle tire with road pavement	(0,1 - 0,7)	reducial error ± 0,05 %	GOST 33078 ST RK 1279
22.	Road sign visibility measurement	(0,3 - 150) m	reducial error ± 1 %	GOST 32945 GOST 32946 ST RK 1125
23.	Brightness measurement when determining the brightness level of the road pavement (roads)	(10 - 2·105) cd/m2	relative accuracy ± 10 %	GOST 33176 GOST 33175 ST RK GOST P 54305
24.	Measurement of the level of illumination of the road pavement (roads)	(10 - 2·105) lx	relative accuracy ± 8 %	GOST 33176 GOST 33175 ST RK GOST P 54305
25.	Road sign luminance measurement	(0 - 100) %	relative accuracy ± 2 %	GOST 32945 GOST 32946 ST RK 1125
26.	Measurement of luminance factor of road markings	(0 - 100) %	relative accuracy ± 2 %	GOST 32953 GOST 32952 ST RK 1124
In the field of railway transport				
Rail Track Measurement				
27.	Track width	(1510-1550) mm	± 1,0 mm	Order of the Minister of Investment and Development of the Republic of Kazakhstan dated April 30, 2015 No. 544 “On approval of the Rules for technical operation of railway transport” (registered in the
28.	Relative position of both rail threads in height (level)	150 mm	± 1,0 mm	
29.	Rail bend arrow in horizontal (levelling)	± 225 mm	± 1,0 mm	

30.	Rail bend arrow in a vertical plane (depression of track)	± 50 mm	± 1,0 mm	Register of state registration of regulatory legal acts under No. 11897)
31.	Measurement of multichannel vibration diagnostics of structures, foundations, bases, bridge structures	0.5 - 100) Hz (5 - 1000) Hz vibration velocity measuring range, (0,1 – 500) mm/s	± 5,0 %	
Contact network measurement				
32.	Measurement of the height of the contact wire from the level of the rail head	(5675 – 6800) mm	± 3 mm	Order of the Minister of Investment and Development of the Republic of Kazakhstan dated April 30, 2015 No. 544 “On approval of the Rules for technical operation of railway transport” (registered in the Register of state registration of regulatory legal acts under No. 11897)
Rail profile measurement				
33.	Vertical rail head wear	(0-13) mm	± 0,01 m	
34.	Side wear of rail head	(0-20) mm	± (1-2) mm	
35.	Rail head metal hardness measurement	MTP (HRC) 25 ± 5 45 ± 5 65 ± 5 HB 100 ± 25 200 ± 50 400 ± 50 HV 450 ± 50 800 ± 75 HSD 30 ± 7 60 ± 7 95 ± 7	±1,5 HRC ±10 HB ±12 HV ±2 HSD	
Identification (measurement) of the depth of the rail defects (flaw detection)				
36.	Rail defect depth and its location	(3 – 580) mm	± 2 %	
Rolling stock measurement				
Motion parameters				

37.	Speed measurement	from 0 to 140 km / h (passenger); from 0 to 90 km / h (freight)	± 1 km / h (passenger); ± 2 km / h (freight)	
38.	Measurement (conversion) of pressure	(0 – 1) MPa	± 0,02 MPa	
39.	Rotation angle measurement	Angle of rotation of the axis of the sensor modulator, 0 - 8,57.. .359,94	± 1,3	
Rolling stock design parameters				
40.	Measurement of parameters of wheel sets of cars	(94,5 - 95,1) mm (2,9 - 3,1) mm (5,9 - 6,1) mm (45,3 - 45,7) mm (98,8 - 99,2) mm (123,7-124,3) mm (154,7-155,3) mm (97,5-98,2) mm (5,9-6,1) mm (45,4-45,6) mm (7,32-7,68) mm (154,8-155,2) mm (97,8-98,2) mm (96,8-97,2) mm (950 – 1200) mm (33,9-34,1) mm (17,9-18,1) mm (27,9-28,1) mm (17,9 - 18,1) mm (12,82 – 13) mm (70,0 - 70,1) mm (829,9-830,1) mm (1439,5 - 1440,5) mm (0-16) mm (0-90) mm (18-33) mm (0 – 20) mm (25 – 40) mm	D = ± 0,1 mm D = ± 0,1 mm D = ± 0,1 mm D = ± 0,2 mm D = ± 0,2 mm D = ± 0,3 mm D = ± 0,3 mm D = ± 0,5 mm D = ± 0,18 mm	
41.	Monitoring the height of the axis of the automatic coupling of the rolling stock above the top level of the rail heads, determining the difference between the heights of the automatic coupling	- milling bar, slid flat, weld-on deposit (0 – 10) mm, - ridge thickness (18-33) mm	± 0,1 ± 0,3 mm	

42.	Box angle temperature measurements	From minus 20 °C to 600°C	± 1 °C	
43.	Measurement of serviceability of non-coupled automatic coupling of cars	(97,5 - 98,2) mm (5,9 - 6,1) mm (45,4- 45,6) mm (7,32-7,68) mm (154,8 - 155,2) mm (97,8-98,2) mm (96,8 - 97,2) mm	D = ± 0,2 mm D = ± 0,1 mm D = ± 0,1 mm D = ± 0,18 mm D = ± 0,2 mm D = ± 0,2 mm D = ± 0,2 mm	
44.	Measurement of measurements between the side radial blocks of the car	(1439,5 - 1440,5) mm	D = ± 0,1 mm	
45.	Determination of position of the wedge in relation to the truck bolster in the operation of the car	(829,9-830,1) mm	D = ± 0,1 mm	
Measurement of parameters of alarm, centralization and blocking devices (ACB)				
46.	Measurement of voltage, alternating and direct current, magnitude of direct and alternating current, resistance to direct current	0 to 30 A DC 0 to 300 A AC 0 to 1000 V from 0 to 10 megohms	Accuracy class: 1,0 ÷ 4,0	
47.	Measurement of voltage, alternating and direct current, magnitude of direct and alternating current, resistance to direct current	0 to 30 A DC 0 to 300 A AC 0 to 1000 V from 0 to 10 megohms	Accuracy class: 1,0 ÷ 4,0	
48.	Measurement of voltage, alternating and direct current, magnitude of direct and alternating current (including in code rail circuits and in tone frequency rail circuits, in broadband and selective modes), resistance to direct current	from 0 to 20 A 0 to 1000 V from 0 to 200 megohms 5 Hz to 100 kHz	± (0,5 ÷ 2) %	
49.	Measurement of time parameters of ALSN code signals	60 ms – 1999 s	± 10 мс	

50.	Measurement of insulation resistance in rail circuits	(0,1 – 10) Ohm / km	± 5 %	
51.	Phase difference measurement in phase-sensitive rail circuits	(0,1 – 250) V	± 1 %	
52.	Measurement of insulation resistance of installation and cable conductors	(0 – 10000) Megohms	± 15 %	
53.	Earth resistance measurement	(0,1 – 1000) Ohm	± 5,0 %	
54.	Measurement of the potential difference " cable-to-ground", drainage current	50 mA to 50 A 75 mV to 600 V	1,0 – 4,0 1,0 – 4,0	
55.	Arrow transition force measurement	(0 – 10) kN	± 10 %	
56.	Measurement of deceleration of signal relays and feeder switching time	(1 – 10) s	d = ± 0,03 s	
57.	Measurement of time parameters of automation at crossings	0.2 s and 60 minute counter with 1 min division	± 0,6 ms ± 1,8 ms	
58.	Relay time measurement	from 1 to 105 ms	± 0,005 %	
59.	Measurement of direct voltage and current strength, alternating voltages and current strength, direct current electrical resistance	0 to 40 A DC 0 to 20 A AC By voltage: 0 to 1000 V by resistance: from 0 to 200 megohms by frequency: 0 to 100 kHz	± 0,05 %	
60.	AC voltage measurement	By voltage: 0 to 300 V by frequency: from 0 to 5 MHz	± 4 %	
61.	Measurement of electrical vibrations of sound and ultrasonic frequencies	by frequency: 0.3 to 620 kHz by level: from minus 50 dB to 10 dB by frequency: 0.2 kHz to 1620 kHz By level:	± 0.5 kHz ± 0.2 dB	

	, measurement of the level of a sinusoidal signal	from minus 70 dB to 10 dB	± 0.5% ± 0.2 dB	
62.	Measurement at test benches of phase-sensitive signaling relays of ACS devices of their electrical and time parameters	25, 50 Hz 50 to 220 V 10 to 10 mA 0.25 to 1.0 ohm from 0.03 to 0.3 s	-	
63.	Measurement of time parameters of the ACS relay	from 1 ms to 100 s	± 0,005 %	
64.	Measurement of waveforms and measurement of their parameters	from 0 to 100 MHz 0.005 ms to 50 ms	± 2 %	
65.	Measurement of electrical vibrations of sound and ultrasonic frequencies (low-frequency generators)	from 20 Hz to 200 kHz	Harmonic coefficient K.g. - from 0.05% Frequency setting from 0.01 Hz	
66.	Measurement of electrical oscillations of radio frequencies (high frequency generators)	from 100 kHz to 1 GHz	Frequency setting from 1×10-7	
67.	Measurement of the frequency of electrical vibrations, the period of electrical vibrations, time intervals, pulse duration, counting the number of electrical pulses (frequency meters)	Frequency: from 0.01 Hz to 1 GHz Period: from 10 -6 C to 10 C	± 2,5 × 10-7	
68.	Measurement of electric capacitance, inductance, impedance	0,15 %	± 0,02 %	
69.	Measurement of magnetic flux to magnetic induction	25-0-25 uV, 50-0-50 uV, 100-0-100 uV, 250-0-250 uV	± 1 %	
70.	Wire thickness measurement	from 0 to 25 mm	± 2,0 mm	
Measurement of the parameters of telecommunication devices on the main railway network				
	Measurement of resistances, level,			

71.	gain, attenuation of symmetry or reflection, special measurements, laboratory measurements of high precision of equipment of carrier frequency communication equipment	From 0.2 kHz to 1620 kHz	± 1 Hz	
72.	Measurement of amplitude and time parameters of an electric signal supplied to its input	(0 – 100) MHz (0,05 – 200) ms	± 2 %	
73.	Measurement of frequency and period of sinusoidal signals	from 0.1 Hz to 10 MHz 0.1 ms to 100 s	± 1 %	
74.	Measurement of cable line parameters and determination of fault locations мест повреждений	from 0.1 Ohm to 1 GOhm 100 nF to 10 mF	± 2,5 %	
75.	Measurement of parameters and heterogeneities of cable cores in the mode of a DC / AC bridge and an OTDR at a distance of up to 20 km	(0 - 100) V, 10 kW to 20 GW from 50 m to 20 km	± 2,5 %	
76.	Measurement by localization of damage by direct and alternating current, Murray measurement ; Küpfmüller measurement, analysis of interference voltage using additional automatic filtering, insulation resistance measurement, loop resistance measurement, resistance difference measurement, capacitance measurement (two-wire and four-wire),	1 Ohm to 10 kOhm		

	ground-capacitance measurement, measurement of open and wire crossings, damage localization in areas with mixed cables		± 0,2 % indication ± 0,005 Ohm	
77.	Measurement of the function of the level of interference (noise) during the passage of the routes of communication cables and metal communications at intersections with cables	from 0.2 m to 4.6 m in probe mode 10% from 4.6 m to 6 m, 50 Hz, 100 Hz, 450 Hz or 60 Hz, 120 Hz, 540 Hz 15 kHz to 60 kHz	± 5 %	
78.	Optical - physical measurements of illuminance of crossings, aprons, shunting parks, etc	from 5 lx to 100 lx	± 10 %	
79.	Measurement of the heating temperature on the surface of the object (contact connection of wires, disconnectors of the contact network, equipment, etc.	from minus 20 ° C to 650 ° C from minus 20 to 120 ° C 0 to 650 ° C 300 to 1500 ° C	± 2 %	
80.	Cargo weight measurement	The largest weighing limit LWLi, where LWLi = LWL; the smallest weighing limit SWLi, where SWLi = SWL (i-1) and SWLi = SWL.	Class I-up to 50,000 e incl.; from 50,000 e to 200,000 e incl.; St. 200 000 e Class II - from 0 to 5 000s inclusive; from 5,000 e to 20,000 e incl .; St. 20 000 e Class III - from 0 to 500 e inclusive; from 500 e to 2,000 e incl . ; St. 2 000 e Class IV - from 0 to 50 e incl .; from 50 e to 200 e incl. ± 0.5 e; ± 1.0 e; St. 200 e; ± 1.5 e	ST RK 2.102 ST RK 2.247
		The smallest measurement limit is 0.005, 0.01, 0.025, 0.05, 0.1, 0.25, 1, 2		

81.	Measurement of static tensile forces on diesel locomotives	kN. The largest measurement limit is 0.1, 0.2, 0.5, 1, 0, 2.0, 5.0, 10, 20 kN	± 2 %	
In the field of automobile transport				
82.	Measurement of axial loads of freight vehicles	per axle: rom 0.2 t to 30 t	± 10 % of the measured mass of the axial load	Order of the Minister of Investment and Development of the Republic of Kazakhstan No. 342 dated March 26, 2015 "On approval of the permissible parameters of vehicles intended for movement on the roads of the Republic of Kazakhstan" (registered in the Register of state registration of regulatory legal acts under No. 11009); Order of the acting Minister of Transport and Communications of the Republic of Kazakhstan dated August 13, 2010 No. 362 "On approval of the rules for organization of work of transport control posts on the territory of the Republic of Kazakhstan" (registered in the Register of state registration of regulatory legal acts under No. 6472)
83.	Measurement of axial loads and the total mass of freight vehicles	per total weight: from 1 t to 200 t	± 3% of the measured mass of the axial load or a group of axles	
84.	Measurement of axial loads and the total mass of freight vehicles on the weighing equipment	By total weight: from 3.5 t to 200 t by axes: from 1 t to 50 t	- by total weight ± 5% - by axes ± 8% - group of axles ± 10% - per axis in a group of axes ± 10% - center distance, geometric parameters ± 2%	
85.	Measurement of axial loads, gross weight and overall parameters of freight vehicles on weighing equipment	-By total weight: from 0.1 t to 150 t - by axes: from 0.5 t to 20 t	- By total weight: ± 4% - by axes: ± 10%, - per group of axles ± 10% - per axis in a group of axes ± 14% - length ± 50 mm - height and width ± 35 mm - center distance ± 50 mm	
86.	Measurement of overall parameters of vehicles	from 0.05 m to 50 m	± (1.5 mm + 0.05L) m L - overall parameters	
				Order of the acting Minister of Investment and Development of the Republic of Kazakhstan dated December 31, 2015 No. 1288 "On approval of the Rules for organization of work and rest of drivers, as well as the

87.	Measurement used when registering drivers' work and rest regimes	From 0 to 220 km / h	± 6 km / h	use of tachographs" (registered in the Register of state registration of regulatory legal acts under No. 14095); Decree of the President of the Republic of Kazakhstan dated May 12, 1995 No. 2272 "On accession of the Republic of Kazakhstan to the European Agreement concerning the work of crews of vehicles engaged in international road transportation"
In the field of water transport				
88.	Relative humidity measurement	(0 - 100)% by volume	± 1,5 %	GOST 12.1.014-84
89.	Measurement of air temperature of a working zone	From minus 20 to 70 ºC	± 1,5 ºC	GOST 12.1.014-84
90.	Measurement of illumination of workplaces	(1 - 20000) lx	± 5 lx	Order of the Minister of National Economy of the Republic of Kazakhstan dated February 28, 2015 No. 169 "On approval of Hygienic standards for physical factors affecting a person" (registered in the Register of state registration of regulatory legal acts under No. 11147)
91.	Workplace noise measurement	(25 – 140) dB	± 1 dB	
92.	Wind speed measurement	(10 – 40) m/s	± 1,5 m/s	Appendix 379 of the Order of the Minister of Transport and Communications of the Republic of Kazakhstan dated March 09, 2011 No. 127 "On approval of the Rules for construction of inland navigation vessels" (registered in the Register of state

				registration of regulatory legal acts under No. 6871)
93.	Measurement of insulation resistance of electrical circuits	from 100 kiloohm to 50 megohm	± 0,05 kiloohm	Order of the acting Minister of Transport and Communications of the Republic of Kazakhstan dated April 21, 2011 No. 216 “On approval of the Rules for inspection of ships in operation” (registered in the Register of state registration of regulatory legal acts under No. 6991)
94.	Ambient temperature measurement	from minus 30 to 50 ºC	± 1,5 ºC	Appendix 379 of the Order of the Minister of Transport and Communications of the Republic of Kazakhstan dated March 09, 2011 No. 127 “On approval of the Rules for construction of inland navigation vessels” (registered in the Register of state registration of regulatory legal acts under No. 6871)
95.	Measurement of the weight of materials extracted from water	(100 - 15000) kg	± 50 kg	Order of the Minister of Transport and Communications of the Republic of Kazakhstan dated September 27, 2013 No. 761 “On approval of the Rules for planning and conducting engineering works to ensure the safety of navigation on inland waterways” (registered in the Register of state registration of regulatory legal acts under No. 8861)
96.	Measurement of excess points of reference, distances	(0 - 1000) m	± 0,01 m	
97.	Measurement of horizontal angles when leveling on the ground	(0 - 360) º	± 1 º	

98.	Inland waterway depth measurement	(1 – 50) м	± 0,2 м	Order of the Minister for Investment and Development of the Republic of Kazakhstan dated February 24, 2015 No. 161 “On approval of the Rules for operation of inland waterways” (registered in the Register of state registration of regulatory legal acts under No. 10870)
99.	Pressure measurement in hydraulic systems	(80-106) MPa	± 0,2 MPa	Order of the acting Minister of Transport and Communications of the Republic of Kazakhstan dated April 21, 2011 No. 216 “Rules for inspection of ships in operation” (registered in the Register of state registration of regulatory legal acts under No. 6991)
100.	Pressure measurement in pneumatic systems	(600-800) MPa	± 0,5 MPa	
101.	Oil pressure measurement in the lubrication system of internal combustion engines	(1-25) MPa	± 0,5 MPa	
102.	Measurement of oxygen gas pressure in pressured vessels	(1- 25) MPa	± 0,5 MPa	Order of the Minister of Investment and Development of the Republic of Kazakhstan dated December 30, 2014 No. 358 “On approval of the Rules for ensuring industrial safety during operation of pressured equipment” (registered in the Register of state registration of regulatory legal acts under No. 10303)
103.	Propane gas pressure measurement in pressured vessels	(1- 4) MPa	± 0,2 MPa	
104.	Measurement of water and oil	(0 – 120) °C	± 2 °C	Order of the acting Minister of Transport and Communications of the Republic of Kazakhstan dated April 21, 2011 No. 216 “On approval of the Rules for

	temperature of engines			inspection of ships in operation" (registered in the Register of state registration of regulatory legal acts under No. 6991)
105.	Measurement of distances between control points on the ground	(0 - 250) m	± 0,5 m	Order of the Minister of Transport and Communications of the Republic of Kazakhstan dated September 27, 2013 No. 761 "On approval of the Rules for planning and conducting engineering works to ensure the safety of navigation on inland waterways" (registered in the Register of state registration of regulatory legal acts under No. 8861)
106.	Measurement of metric values of intermediates and products used in ship repair	(0 – 200) mm	± 0,2 mm	Order of the Minister of Transport and Communications of the Republic of Kazakhstan dated April 07, 2011 No. 201 "On approval of the Rules for ship repair" (registered in the Register of state registration of regulatory legal acts under No. 6938)
107.	Voltage measurement	(4 – 600) V	± 0,1 V	Order of the acting Minister of Transport and Communications of the Republic of Kazakhstan dated April 21, 2011 No. 216 "On approval of the Rules for inspection of ships in operation" (registered in the Register of state registration of regulatory legal acts under No. 6991)
108.	Current measurement	(0 – 100) A	± 0,5 A	

109.	Current frequency measurement	(0 – 60) Hz	± 0,5 Hz	Order of the Minister of Transport and Communications of the Republic of Kazakhstan dated March 09, 2011 No. 127 “On approval of the Rules for construction of inland navigation vessels” (registered in the Register of state registration of regulatory legal acts under No. 6871)
110.	Measurement of the rotational speed of the crankshaft of internal combustion engines	(0 – 1500) rpm	± 1 rpm	Order of the acting Minister of Transport and Communications of the Republic of Kazakhstan dated April 21, 2011 No. 216 “On approval of the Rules for inspection of ships in operation” (registered in the Register of state registration of regulatory legal acts under No. 6991)
111.	Atmospheric pressure measurement	(600 – 800) mm Hg	± 1,5 mm Hg	Appendix 379 of the Order of the Minister of Transport and Communications of the Republic of Kazakhstan dated March 09, 2011 No. 127 “On approval of the Rules for construction of inland navigation vessels” (registered in the Register of state registration of regulatory legal acts under No. 6871)
112.	Measurement of the thickness of products made of various materials during the work on the corrosion protection of metal	(1,0 - 199,9) mm	± 1 mm	

	gates and locks of water gates of hydraulic structures			Order of the Minister of Investment and Development of the Republic of Kazakhstan dated April 30, 2015 No. 550 “Rules for technical operation, inspection and repair of navigable hydraulic structures (locks)” (registered in the Register of state registration of regulatory legal acts under No. 11915)
113.	Measurement of coordinates of occurrence of defects ; equivalent defect sizes in concrete structures	(1,0 – 6000,0) mm	± 5 mm	
114.	Measurement of thickness of products with one-sided access to concrete structures	(0,5 – 6000,0) mm	± 0,1 mm	
115.	Measurement of distances (horizontal and vertical) movements of earthwork and concrete structures and their foundations	(0 - 5000) mm	± 3 mm/km	
116.	Vessel roll measurement	(0 - 40)º	± 1º	Appendix 384 of the Order of the Minister of Transport and Communications of the Republic of Kazakhstan dated March 09, 2011 No. 127 “On approval of the Rules for construction of inland navigation vessels” (registered in the Register of state registration of regulatory legal acts under No. 6871)
117.	Thickness measurement of hull structures of inland waterway vessels	(0,8 – 100) mm	± 0,1 mm	Order of the acting Minister of Transport and Communications of the Republic of Kazakhstan dated April 21, 2011 No. 216 “On approval of the Rules for inspection of ships in operation” (registered in the Register of state registration of regulatory legal acts under No. 6991)
118.	Measurement of the external and internal dimensions of parts of a cylinder-piston group of internal combustion engines	(0 – 250) mm	± 0,01 mm	
119.	Measurement of the hull, working surfaces of parts of the screw-steering complex of ships	(3 – 500) mm	± 0,1 mm	

In the field of energy conservation and energy efficiency				
120.	Temperature measurement on the surface of materials in the field of energy conservation and energy efficiency	from minus 40 to 280 ° C	± 5,0 %	GOST 26629; GOST 11828 GOST 25380 SP-RK-4.0203; RD-153-34.0-20363; RD-13-04;
121.	Measurement of flow and metering of fluid and coolant in the field of energy conservation and energy efficiency	from 0.7 to 1500000 m³ / s	± 3.0% at flow rates from 0.1 to 1 m³ / s; ± 1.5% at flow rates from 1.0 to 20 m³ / s;	GOST 8.611; GOST 28702; GOST 15528
122.	Thickness measurement in the field of energy conservation and energy efficiency	from 0,2 to 1000 mm	± 0,3 mm	GOST 28702
123.	Measurement of ambient temperature and materials in the field of energy conservation and energy efficiency	from 0 to 550 °C	± 10 °C	GOST 26629; SP-RK-4.0203; RD-153-34.0-20363; RD-13-04;
124.	Measurement of heat flux density in the field of energy conservation and energy efficiency	(10 – 999) W / m²	± 6 %	GOST 25380;
125.	Temperature measurement of heat flux density in the field of energy conservation and energy efficiency	from minus 30 to 80 ° C	± 0,2 °C	GOST 8.558; GOST 26629; (it is applied when carrying out an energy audit of industrial enterprises)
126.	Measurement of AC resistance in the field of energy conservation and energy efficiency	(2 – 200) Megohms	± 1,5 %	GOST 13109
127.	Measurement of AC power in the field of energy conservation and energy efficiency	(2 – 400) A	± 2 %	GOST 13109
128.	Measurement of AC voltage in the field of energy conservation and energy efficiency	(2 – 600) V	± 2 %	GOST 13109
129.	Measurement of gas and air velocity	(0,80 -30,00) m/s	± 2 %	GOST 12.1.005

130.	Air humidity measurement	(0-90) %	± 3 %	GOST 12.1.005
131.	Light measurement	(1-200 000) lx	± 10 %	
132.	Distance measurement	(0,05-100) m	± 1,5 %	GOST 21830; GOST 8.051;
133.	Measurement of power quality indicators	(2 -200) Megohms	± 10 %	GOST 13109
134.	Measurement of liquid and gas pressure	(0-200) mm WG	± (0,08-0,98) mm WG	
135.	Measurement of the quality and quantity of the composition of gas mixtures	(O) from 0 to 25% (CO) from 4 to 4000% (NO) from 0 to 3000%	(O-oxygen) ± 3.3%; (CO-carbon) ± 6.6%; (NO-nitrogen) ± 6.6%;	GOST 8.207; RD 34.01.101; RD 34.25.514; RD 34 RK 1-26.303
In the field of industrial safety				
Measurement of the temperature of the working environment of pressured vessels (boiler drum, reservoir, tank)				
136.	- air	(0 – 100) °C	Accuracy class 2,5	
137.	- water	(0 – 115) °C		
138.	- steam	(115 – 650) °C		
139.	- gas	(minus 200 – 0) °C		
Measurement of the temperature of the working environment of pressured vessels (pipeline)				
140.	- water	(0 – 115) °C	Accuracy class 2,5	
141.	- steam	(115 – 650) °C		
Measurement of the pressure of the working environment of pressured vessels (boiler drum, reservoir, tank)				
142.	- air	0 MPa (kgf / cm2) – 2,5 MPa (25 kgf / cm2)	Accuracy class not below 2,5	
143.	- water	more than 2.5 to 14 MPa (more than 25 to 140 kgf / cm2)	Accuracy class not below 1,5	
144.	- steam	more than 14 MPa (140 kgf / cm2)	Accuracy class not below 1,0	
145.	- gas	(0 – 120) MPa	Accuracy class not below: 1) 2.5 - at a working pressure of the vessel up to 2.5 MPa (25 kgf / cm2); 2) 1.5 - at a working pressure of the vessel over 2.5 MPa (25 kgf / cm2)	
		0 MPa (kgf / cm2) - 2.5MPa (25 kgf / cm2)	Accuracy class not below 2,5	

146.	Measurement of pressure of a working environment (water, steam) of the pipeline	more than 2.5 to 14 MPa (more than 25 to 140 kgf / cm2)	Accuracy class not below 1,5	
		more than 14 MPa (140 kgf / cm2)	Accuracy class not below 1,0	
147.	Temperature measurement during the melt of ferrous, non-ferrous, precious metals and alloys based on these metals	(0 – 2500) °C	± 2 °C	
In the field of construction				
148.	Measurements used to determine the tensile strength of concrete, compressive strength in construction	from 0 to 1500 kN	± 2 %	GOST 10180
149.	Measurements used to determine the adhesion strength of masonry in construction	from 0 to 160 MPa	Axial tensile strength is calculated with an error of up to 0.01 MPa	GOST 24992
150.	Measurements used to determine the deflection of structures in construction	No limits	± 2 %	GOST 8829
151.	Measurements used to determine the protective layer of concrete and the location of reinforcement in reinforced concrete structures in construction	from 5 to 130 mm	±(0,05tpr + 0,5) mm tpr – range of thickness of the protective layer of concrete	GOST 22904
152.	Measurement of geometric dimensions in construction	from 0 to 5000 mm from 0,05 to 100 m	± 0,06 mm ± 2,0 mm	GOST 26433.0 GOST 26433.1 GOST 13015 GOST 21520 GOST 25485 GOST 25820 GOST 31359 GOST 31360 GOST 379 GOST 530 GOST 9480 GOST 10922 GOST 8478 GOST 14098

				GOST 23279 GOST 5781
153.	Measurement of temperature and humidity in construction	From minus 0 to 100 %	± 5 %	RK SET OF RULES EN 1991-1-5:2003/2017 RK TDS 01-01-5.1-2013 GOST ISO 3745
		From minus 10 °C to 60 °C	± 0,5°C	
154.	Measurement of acoustic control systems in construction	Measured thickness range from 0.5 to 6000 mm Range of measurements of the depth of the defect from 2 to 6000 mm	± (0,1+0,02·H) mm ± (0,3+0,03·X) mm	
155.	Mass measurement in construction	No limits	± 2 %	-
156.	Pressure measurement in construction	from 0.6 to 1600 kgf / cm2	± 2,5 %	-
157.	Measurements used to determine the strength characteristics of materials in construction	The maximum ultimate load of at least 2000 N, a constant speed of movement of the movable clamp (100 ± 10) mm / min	± 2 %	GOST 31899-1
158.	Measurement of horizontal and vertical angles during geodetic works in construction	The smallest viewing distance - 1.2 m	± 3 mm	-
159.	Измерения, применяемые при полевых испытаний грунтов в строительстве	(0 – 80) mm	± 0,1 %	GOST 5686
160.	Measurement of the bearing capacity of piles during construction	(0,3 – 1200) tf	± 5 %	GOST 5686
161.	Measurements used in stamp tests of soil in construction	(0 – 200) mm	± 0,1 %	GOST 20276
162.	Measurements used in determining the geometric dimensions of products in construction	No limits	± 2 mm	GOST 530
	Measurement of normative and design			

163.	resistance to tensile, compression, bending, crushing, shear - of structures during construction	(0 – 50) tf	± 1· 10-2 tf	GOST 10180 SNiP II-23-881
164.	Measurement of stress to tensile, compression, bending, crushing, shear in construction	(0 – 50) tf	± 1· 10-2 tf	GOST 10180
165.	Measurement of elastic coefficient foundation during construction	(0,1 – 5) t/m3	± 5 %	GOST 10922 ST RK 10922
166.	Cross-sectional measurement during construction	(0,1 – 6000) mm	± 1 %	GOST 10180
167.	Measurement of yield strength, elasticity, reinforcing products in construction	(0 – 350) mm	± 2 %	GOST 12004
168.	Measurement of the flexural strength of cement beams in construction	(0-10) kN	± 1 %	GOST 310.4
169.	Measurement of the bending strength of wall materials in construction	(20-1000) kN	± 1 %	GOST 8462
170.	Measurement of compressive strength of products in construction	(0 – 250) mm	± 1 mm	GOST 8462; GOST 24332
171.	Measurement of strength of products in construction	No limits	Relative accuracy ± 2 %	GOST 24992
172.	Measurement of mobility of concrete in construction	(0 – 1000) mm	± 2 %	GOST 7473
173.	Measurement of stiffness of concrete in construction	(0 – 10000) MPa·s	± 1 %	GOST 28013
174.	Measurement of delamination of concrete in construction	No limits	± 2 %	GOST 28013
175.	Bulk density measurement of concrete in construction	No limits	± 2 %	GOST 28013; GOST 17623; GOST 27005

176.	Measurements used to determine the density of concrete in construction	No limits	± 1 %	GOST 12730.1
177.	True density measurement in construction	No limits	Up to ± 1000 g/cm3	GOST 12730.1
178.	Measurements used to determine porosity, water tightness, breathability, moisture and water absorption of concrete in construction	No limits	relative accuracy ± 0,1 %	GOST 12730.0 GOST 12730.2 GOST 12730.3 GOST 12730.4 GOST 12730.5
179.	Measurement used to determine the frost resistance of concrete in construction	No limits	± 1 %	GOST 10060-2 GOST 10060-3
180.	Water resistance measurements in construction	(0 - 2,0) MPa	± 1 %	GOST 12730.0 GOST 12730.5
181.	Breathability measurements in construction	(0 – 1) kPa	± 1 %	GOST 12730.0 GOST 12730.2
182.	Measurements used to determine the specific heat of cement in concrete during construction	No limits	no more than ± 0,1 kcal / kg	GOST 24316
183.	Thermal conductivity measurement in construction	(0 – 100) °C	± 0,25 %	GOST 24316
184.	Measurement of water absorption in construction	(0 – 100) %	± 0,1 %	GOST 12730.3
185.	Measurement of vapor permeability coefficient of concrete in construction	No limits	± 1 %	GOST 12852.5
186.	Measurements used to determine sound power levels of noise sources in construction	No limits	± 1 %	GOST EN 29053; GOST ISO 3745
187.	Acoustic resistivity measurements in construction	(100 – 10000) Hz	± 5 %	GOST EN 29053 GOST ISO 3745

188.	Measurement of mechanical resistance in construction	(10 – 1000) Hz	± 5% for amplitude and ± 10 ° for phase	
189.	Measurements used to determine parameters of free vibrations in construction	No limits	± 1 %	RK SET OF RULES 2.03-30
In the field of housing and communal services				
190.	Water flow measurement D from 15 to 50 mm (winged) D from 65 to 150 mm (turbine)	D 15 mm from 0.01 to 3.5 m3 / h D 20 mm from 0.015 to 5.0 m3 / h D 25 mm from 0.02 to 7.9 m3 / h D 32 mm from 0.03 to 13.0 m3 / h D 40 mm from 0.04 to 20.0 m3 / h D 50 mm from 0.05 to 31.5 m3 / h D 65 mm from 0.1 to 120.0 m3 / h D 80 mm from 0.1 to 200.0 m3 / h D 100 mm 0.2 to 300.0 m3 / h D 125 mm 0.2 to 350.0 m3 / h D 150 mm 0.2 to 600.0 m3 / h	For cold water: Q1 to Q2 d = ± 5% Q2 to Q4 d = ± 2% For hot water: Q1 to Q2 d = ± 5% Q2 to Q4 d = ± 3%	
		D 10 mm from 0.028 to 1.4 m3 / h D 15 mm from 0.1 to 3.5 m3 / h D 20 mm from 0.02 to 8.1 m3 / h D 25 mm from 0.06 to 12.2 m3 / h D 32mm		

191.	Water flow measurement (ultrasonic)	from 0.07 to 40.0 m3 / h D 40 mm from 0.1 to 45.0 m3 / h D 50 mm from 0.1 to 70.0 m3 / h D 65 mm from 0.65 to 120 m3 / h D 80 mm from 0.4 to 180 m3 / h D 100 mm from 0.63 to 280m3 / h D 150 mm from 1.5 to 750m3 / h D 200 mm from 2 to 1100m3 / h D 250 mm from 5 to 2000 m3 / h D 300 mm from 6 to 2500 m3 / h D 350 mm from 7 to 3500 m3 / h D 400 mm from 8 to 4500 m3 / h D 500 mm 10 to 7000 m3 / h D 600 mm 12 to 10,000 m3 / h D 700 mm from 14 to 14000 m3 / h D 800 mm from 16 to 18000 m3 / h D 900 mm from 18 to 23000 m3 / h D 1000 mm from 20 to 28000 m3 / h	For cold water: Q1 to Q2 d = ± 5% Q2 to Q4 d = ± 2% For hot water: Q1 to Q2 d = ± 5% Q2 to Q4 d = ± 3%	For commercial metering (depending on installation, V - vertically or H - horizontally) for metering water up to 30 ° C according to GOST R 50193.1 Accuracy class is not lower than C, according to ST RK STB ISO 4064-1 the ratio Q3 / Q1 is not lower than 100, for water accounting from 30 to 90 ˚C according to GOST R 50193.1 Accuracy class is not lower than B, according to ST RK STB ISO 4064-1 the ratio Q3 / Q1 is not lower than 50 ΔQmin - minimum temperature difference between the heat carrier of the direct and return flows of the heat supply system ΔQ - temperature difference between the heat carrier of the direct and return flows of the heat supply system Q1 - minimum flow rate; Q2 - nominal flow rate; Q4 - maximum flow rate; Δ - the absolute error; d - the relative error.
		D 15 mm from 0.002 to 9.0 m3 / h D 20 mm from 0.025 to 12.0 m3 / h		

192.	Water flow measurement (electromagnetic)	D 25 mm from 0.04 to 16.0 m3 / h D32 mm from 0.09 to 20 m3 / h D 40 mm from 0.1 to 27.0 m3 / h D 50 mm 0.3 to 40.0 m3 / h D 65 mm from 0.4 to 60.0 m3 / h D 80 mm from 0.8 to 80 m3 / h D 100 mm from 0.16 to 160 m3 / h D 150 mm 1.25 to 450.0 m3 / h D 200 mm from 2.5 to 650 m3 / h D 250mm from 3.2 to 1100 m3 / h D 300 mm 1.0 to 1800 m3 / h D 350 mm from 3.8 to 2600 m3 / h D 400 mm from 4.9 to 3400 m3 / h D 450 mm from 6.2 to 4200 m3 / h D 500 mm from 7.7 to 5000 m3 / h D 600mm from 11.2 to 5800 m3 / h D 1000 mm 32.7 to 8200 m3 / h	For cold water: Q1 to Q2 d = ± 5% Q2 to Q4 d = ± 2% For hot water: Q1 to Q2 d = ± 5% Q2 to Q4 d = ± 3%	
193.	Measurement of the amount of heat (thermal energy)	No limits	d = ±(0,5 + ΔQmin ⁄Δ Q) %	
		D 15 mm		

194.	Measurement of fluid flow when measuring the amount of heat (thermal energy) (electromagnetic flow meters)	from 0.002 to 9.0 m3 / h D 20 mm from 0.025 to 12.0 m3 / h D 25 mm from 0.04 to 16.0 m3 / h D32 mm from 0.09 to 20 m3 / h D 40 mm from 0.1 to 27.0 m3 / h D 50 mm 0.3 to 40.0 m3 / h D 65 mm from 0.4 to 60.0 m3 / h D 80 mm from 0.8 to 80 m3 / h D 100 mm from 0.16 to 160 m3 / h D 150 mm 1.25 to 450.0 m3 / h D 200 mm from 2.5 to 650 m3 / h D 250mm from 3.2 to 1100 m3 / h D 300 mm 1.0 to 1800 m3 / h D 350 mm from 3.8 to 2600 m3 / h D 400 mm from 4.9 to 3400 m3 / h D 450 mm from 6.2 to 4200 m3 / h D 500 mm from 7.7 to 5000 m3 / h D 600mm from 11.2 to 5800 m3 / h D 1000 mm 32.7 to 8200 m3 / h	d = ±5 %	

195.	Measurement of fluid flow when measuring the amount of heat (thermal energy) (ultrasonic flow meters)	D 10 mm from 0.028 to 1.4 m3 / h D 15 mm from 0.1 to 3.5 m3 / h D 20 mm from 0.02 to 8.1 m3 / h D 25 mm from 0.06 to 12.2 m3 / h D 32mm from 0.07 to 40.0 m3 / h D 40 mm from 0.1 to 45.0 m3 / h D 50 mm from 0.1 to 70.0 m3 / h D 65 mm from 0.65 to 120 m3 / h D 80 mm from 0.4 to 180 m3 / h D 100 mm from 0.63 to 280m3 / h D 150 mm from 1.5 to 750m3 / h D 200 mm from 2 to 1100m3 / h D 250 mm from 5 to 2000 m3 / h D 300 mm from 6 to 2500 m3 / h D 350 mm from 7 to 3500 m3 / h D 400 mm from 8 to 4500 m3 / h D 500 mm 10 to 7000 m3 / h D 600 mm 12 to 10,000 m3 / h D 700 mm from 14 to 14000 m3 / h D 800 mm from 16 to 18000 m3 / h	d = ±5 %		

		D 900 mm from 18 to 23000 m3 / h D 1000 mm from 20 to 28000 m3 / h		
196.	Measurement of liquid temperature when measuring the amount of heat (thermal energy)	from 0,1 to 150 ºC	Δ = ± 2,1 º C	
197.	Measurement of fluid pressure (pressure transmitter) when measuring the amount of heat (thermal energy)	from 0 to 2500 kPa	d = ± 0,5%	
198.	Liquid temperature measurement	From minus 50 to 300 0C	± 0,05 %	
199.	Water mass measurement	from 0 to 6000 kg	± 1,0 %	
200.	Atmospheric pressure measurement	from 80 to 106 kPa	± 0,5 %	
201.	Time measurement	from 0 to 60 s, from 0 to 60 min	± 2,0 %	
202.	Pressure measurement, pressure gauges	from 0 to 1.0 kgf / cm2 from 0 to 4.0 kgf / cm2 from 0 to 6.0 kgf / cm2 from 0 to 10.0 kgf / cm2 from 0 to 16.0 kgf / cm2 from 0 to 25.0 kgf / cm2 from 0 to 40.0 kgf / cm2 from 0 to 400.0 kgf / cm2	0,015 % 0,06 % 0,09 % 0,15 % 0,24 % 0,375 % 0,6 % 6,0 %	
203.	Overpressure measurement (pressure transmitters)	from 0 to 2500 kPa	margin of permissible basic error ± 0.5%	
204.	Mass measurement	from 0.02 to 260 g from 0.5 to 1500 g from 0 to 220 g from 0 to 2100 g	± 0,1 %	
		from 250 to 900 Nm from 315 to 990 Nm		

205.	Optical density measurement	from 325 to 1000 Nm from 190 to 1100 Nm	± 0,5 %	
206.	Measurement of hydrogen pH	from 0 to 14 units. pH from 0 to 14 units pH from 0 to 14 units pH	± 0,05 pH unit	
207.	Electrical conductivity measurement	from 10-4 to 10 cm / m	± 1 %	
208.	Humidity measurement	from 0 to 110% from 0 to 210%	± 0,02 %	
209.	Temperature measurement Humidity measurement	from 16 to 40 0C from 20 to 90%	± 0,2 %	
210.	Dissolved oxygen measurement	from 0.1 up to 20.0 mg	-	
211.	Measurement of particle size composition	from 0.25 to 1 mm	-	
212.	Measurement of organohalogen and inorganic impurities in water	Detecting process 4· 10-14 g/s according to Lindane	± 2,8 %	
213.	Measurement of mass concentrations of heavy metals in water	from 185 to 900 nm from 190 to 600 nm	± 3,0 % ± 6,0 %	
214.	Measurement of mass concentration of anions and cations in water	from 0 to 15000 mS / cm from 190 to 380 nm	± 0,5 % ± 5 %	
In the field of geology and subsoil use				
215.	Measurement of elastic wave velocity	from 2 to 100 Hz	Relative accuracy ± 10 %	
216.	Measurement of acceleration of gravity at the exploration site	from 0 to 50 m/s2	Relative accuracy ± 7 %	
217.	Measurement of the characteristics of the magnetic field in the exploration site	1-100 mt	Relative accuracy ± 5 %	
218.	Measurement of the electromagnetic field at the exploration site	from 1 to 1000	Relative accuracy ± 5 %	
219.	Measurement of natural rock radioactivity along the wellbore	from 0 to 250 mR / h	Relative accuracy ± 7 %	

220.	Measurement of the angle of deviation of the well from the vertical, azimuth	1) from the zenith angle (0-180) ° 2) from azimuth (0-360) °	± 7 %	
221.	Measurement of the change in borehole diameter to depth	(100 – 600) mm	± 0,5	
222.	Measurement of fluid inflow or absorption in a well	(10 – 150) m/s2	± 1 %	
223.	Measurement of water temperature in the wellbore	(0 – 150) °C	from 0,1 to 0,5 °C	

Note:
mm - millimeter;
cm - centimeter;
km - kilometer;
m - meter;
g - gram;
mg - milligrammm;
ml - milliliter;
s - the second;
m / s2 - square meter per second;
ms - millisecond;
ms - microsecond;
min - minute;
h - hour;
hPa - hectopascal;
MPa - megapascal;
cd / m2 - candela per square meter;
lx - lux;
Hz - hertz;
kHz - kilohertz;
MHz - megahertz;
GHz - gigahertz;
dB - the decibel;
MTR - a measure of hardness;
HRC - the Rockwell hardness number;
HB - the Brinell hardness number;
HV - the Vickers hardness number;
HSD – the Shore hardness number scale D;
A - ampere;

mA - micromper;
V - volt;
mV - millivolt;
Megohms - Megaohm;
GOhm - hygoohm;
kOhm - kilo-ohm;
ALSN - automatic locomotive alarm;
ACB - (alarm, centralization, blocking);
N - Newton;
N m - Newton - meter;
kN - kilonewton;
mVB - microweber;
nF - nanofarad;
microfarad - microfarad;
LWLi (LWL) - the largest weighing limit;
SWLi - the smallest weighing limit;
e - the price of calibration;
kg - kilogrammm;
t - a ton;
tf - the ton of force;
t / m3 - ton per cubic meter;
rpm - revolution per minute;
mm Hg - millimeter of mercury;
mm WG - millimeter of water;
W - watt;
W / m² - watts per square meter;
kgf / cm2 – kilogram-force per square centimeter;
MPa · s - millipascal per second;
kcal / kg - kilocalories per kilogram;
pH unit - the unit of hydrogen;
mt - millitesla;
mR / h - microroentgen per hour;
mS - microsiemens;
° C - degree.