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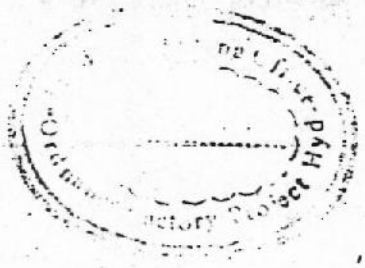

LAMP-holders, lights, Caps

of signaling devices

Technical Specification :

ДУ 0.242,001 ТУ

TRANSLATED	Pankaj Malviya			Ordnance Factory Project Hyderabad.
AUTHENTICATED				
TYPED	D.Y.Vijay Kumar			
EDITED	N.S.PRASAD.	N.S.Prasad	29/8/18	APPROVED
	NAME	SIGN.	DATE	

The present technical specifications(Ty) refer to the lamp holders, lights and caps of signalling devices, intended for the operation in signal-ling circuits of radio-electronic equipment .

Lamp holders lights,caps are supplied in two climatic versions: in version, suitable for operation in all climatic regions, including regions with tropical climate (all climatic version and in version, suitable for operation only in cold and temperature climatic regions. (usual version).

1. CLASSIFICATION, CONVENTIONAL DESIGNATION

1.1 Articles of 10 types, 35 standard ratings are supplied in accordance with drawings.

1.2 Lamp holders, lights, caps got abbreviated designations according to table,1.where,

First element - letter Ф light
letter П lamp holder
letter К cap.

Second element may consist of one or two of the following letters:

М - small size

С - Signalling

Р - Threaded

Ш - Pin

Third element - No.1-8- design version.

Lights, caps are supplied with light filters: colourless (Б) red (К) green (З) yellow (Ж) blue (С) colours.

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Table - 1.

Abbreviated designation of Article.	Version of lights & caps as per colour of light filter.	Climatic version	Complete set of Lights	
			Lamp-holder	Cap
ФМ1	б, ж, К, З, С	Usual, all climatic.		КС1
ФМ2	б, ж, К, З, С	The same.		КС2
ФМ3	б, ж, К, З, С	All climatic.		КСМ1
ФМ4	б ж, К, З, С	"		КСМ2
ФМ5	б ж, К, З, С	"		КСМ3
ФРМ1	б, ж, К, З, С	Usual, all climatic.	ПРМ1	КС3
ФРМ2	б, ж, К, З, С	The same.	ПРМ2	КС4
ФРМ3	б.	"		
ФШМ1	б, ж, К, З, С	"	ПШМ1	КС5
ФШМ2	б, ж, К, З, С	"	ПШМ1	КС6
ФШМ3	б.	"	ПШМ2	КС7
ФШМ4	б, ж, К, З, С	"	ПШМ5	КС3
ФШМ5	б, ж, К, З, С	"	ПШМ5	КС4
ФСШ5	б, ж, К, З, С	"		
КС 1	б, ж, К, З, С	Usual, all climatic.		
КС 2	б, ж, К, З, С	The same.		
КС 3	б, ж, К, С	"		
КС 4	б, ж, К, З, С	"		
КС 5	б, ж, К, З, С	"		
КС 6	б, ж, К, З, С	"		
КС 7	б.	"		
КС 8	б, ж, К, З, С	"		
КС М1	б, ж, К, З, С	All climatic.		

Continuation of Table 1.

Abbreviated designation of Article.	Version of lights & caps as per colour of light filter.	Climatic version	Complete set of Light	
			Lamp-holder	Cap
KCM2	δ, ж, К, З, С	The same		
KCM3	δ, ж, К, З, С	~~All climatic~~ "		
ПМ1		Usual, all climatic.		
PM1		~~The same All climatic~~		
PM2		"		
PM3		"		
PM4		The same.		
M1		Usual, all climatic.		
M2		~~The same. All climatic~~		
M3		"		
M4		"		
M5		"		

Remarks:

1. On customer's requests lamp-holders and caps, building up the lights, except caps of type KCM1, KCM2, KCM3 are supplied.

2. Caps of type KC8 may be supplied with shield, on which designations are available.

1.3. Conventional designation of lamp-holders, lights and caps when placing the order

and in design documentations should consist of the word "Lamp-holder"("Light""Caps"), abbreviated designation of article, designation of version as per colour of lightfilter, designation of all climatic version - letter "В" (for lamp-holders, lights, caps of all climatic version) and designation of the present technical specifications.

Examples of designations:

Lights ФРМ1 - with В ду 0.242.001 ТУ

Lamp-holder ПМ1 ду 0.242.001 ТУ

Cap КС3 - Б ду 0.242.001 ТУ

Lamp-holder ПШМ5 - В ду 0.242.001 ТУ.

2. Technical requirements

2.1. Requirements for design.

2.1.1. Lamp-holders, lights, caps should be manufactured as per approved design and technological documentation.

2.1.2. General view, over all, mounting and connecting dimentions should correspond to the drawings.

Remark: Lights and Lamp-holders may be manufactured with metallic nut and washer instead of plastic nut.

~~2.1.3.~~

2.1.3. Appearance of lamp-holders, lights and caps of signalling devices should correspond to the model of external appearance, approved by director (Chief Engineer) of the plant - manufacturer and customer's representative. Validity period of models of external appearance is 2 yrs.

214. Mass of lamp-holders, lights and caps should not exceed the values, shown in fig. 1+30.

2.1.5. Movable contacts in lamp-holders and lights should move freely, without jamming.

2.1.6. Lamp-holders and lights under electrical load should withstand 100-fold change of lamps, after that resistance of electrical contact between terminals, when the gauge is set in lamp-holder or lights should not be more than 0.2 Ohm.

2.2. Requirements for Electrical Parameters.

2.2.1. Electric parameters of lamp-holders, lights while accepting and supplying should correspond to the norms, shown in items 2.2.1.1., 2.2.1.2., 2.2.1.3.

Remark: Requirements for electric parameters of lights of types ϕ M3, ϕ M4, and ϕM5 caps are not submitted.

2.2.1.1. Insulation of lamp-holders and lights between the terminals and also between the terminals and body in places of fastening to the chassis should withstand without breakdown and surface spark over test AC voltage with frequency 50 Hz, values of which are shown in Table 2.

Table 2

Abbreviated designation of lamp-holder and lights	Test voltage, V		
	In normal climatic conditions at increased and reduced temperature.	At increased air humidity	At reduced atmospheric pressure.
ПМ1, ПРМ3, ПРМ4, ПШМ5, ФМ1, ФМ2, ФШМ4, ФШМ5	500	300	60
ПРМ1, ПРМ2, ПШМ1, ПШМ2, ПШМ3, ПШМ4, ФШМ1, ФШМ2, ФШМ3, ФРМ1, ФРМ2, ФРМ3, ФСШ5	1400	900	270

2.2.1.2. Insulation resistance of lamp-holders and lights between terminals as well as between terminals and body in places of fastening to the chassis should not be less than the values shown in Table 3.

Table 3.

Insulation Resistance, M Ohm						
In normal climatic conditions	In conditions of changes in temprature	In conditions of increased temperature	In conditions of reduced temperature	In condition of increased air humidity		
				At short term effect	At long term effect for usual version	At long term effect for all climatic version
1000	200	100	50	10	5	3

2.2.1.3. Resistance of electrical contact between terminals then the gauge is set in lamp-holder or light should correspond to the values, shown in Table 4.

Talbe 4.

Resistance of Electrical contact, Ohm, not more than		
In normal climatic condition.	In conditions of increased temperature, humidity, reduced temperature and changes in temperature.	After mechanical effects (single impacts, linear loads, multiple impacts, wear resistance).
0.1	0.2	0.2

2.2.2. Electric parameters of lamp-holders and lights during minimum operating time (2.6.1.) within the limits of time equal to period of keeping quality (2.6.2.) during their operation in schedules and conditions, permitted by the present technical specifications, should be:

- Insulation resistance not less than 10 M Ohms.
- Resistance of electrical contact not more than 0.2 Ohm.

Insulation should with stand without breakdown and surface spark over, the test voltage of 0.6V in normal climatic conditions (V test is shown in Table 2).

2.2.3. Electric parameters of lamp-holders and lights during period of keeping quality while storing them in the conditions, permitted by the present technical specifications, should be:

- Insulation resistance not less than 10 M Ohms;
- Resistance of electrical contact not more than 0.2 Ohm.
- Insulation should withstand without breakdown and sufface spark over the test voltage of 0.6V in normal climatic conditions (V test is shown in the Table 2).

2.3. Requirements for stability and strength, at mechanical effects.

2.3.1. Lamp-holders, lights and caps should have mechanical strength and allow the operation in the conditions of the following mechanical loads effect on them;

a) Vibration in frequency range from 1 to 3000 Hz. with maximum acceleration 20g.

b) Multiple impacts with maximum acceleration 150g. at an impact duration 1 - 3 Ms;

c) Single impacts with maximum acceleration 500g. at an impact duration 1 - 2 MC;

d) Linear (centrifugal) loads with maximum acceleration 100g;

e) Acoustic noises in frequency range 50 - 10000Hz at maximum level of sound pressure 140 dB.

2.4. Requirements for stability under climatic effects.

2.4.1. Lamp-holders, lights and caps should be stable against the climatic effects and allow the operation in the conditions of effect of the following factors on them:

a) Air temperature from -60°C upto +85°C (from 213°K upto 358°K)

b) Changes in temperature from -60°C upto +85°C (from 213°K upto 358°K).

c) Hoar frost effect with its following thawing:

d) Air relative humidity upto 98% at temperature +35°C (308°K).

e) Reduced atmospheric pressure 5MM of mercury.

f) Salt fog effect (only for all climatic version);

g) Fungus mould effect (only for all climatic version).

2.5. Requirements for stability under special effects.

2.5.1. Lamp-holders, lights and caps should be stable against the special effects and allow the operation in the conditions of the special factors effect on them for application group not below Vth as per HO. 005. 058.

Remark: For factors of item 18 of table 1 GOST HO.005. 058 - as per application group not below IIIrd.

2.6. Requirements for reliability.

2.6.1. Minimum operating time of lamp-holders, lights and caps in the conditions, permitted by the present technical specifications should be 10000hours.

During specified minimum operating time, the lamp-holders and lights should withstand 100 - fold changes of lamps.

2.6.2. Storage life Keeping quality period of lamp-holders, lights and caps during storage in heated storehouses with air conditions and also lamp-holders, lights and caps, built in protecting device.or in the set of SPTA, should not be less than 12 Yrs.

2.7. Requirements for marking.

2.7.1. The following designations should be clearly applied on each body of lamp-holder and light:

a) Manufacture's trade mark;

b) Marks of manufacturer's TJD and customer's representative should be stamped on the lamp-holders and lights accepted by customer's representative.

e) Date of manufacturing(year) is specified with two digit number, mark should remain legible and stable during operation and storage of lamp-holders, lights in the schedules and conditions, permitted by the present technical specifications, and marks ~~the same~~ Intactness should be ensured

Remark: It is permitted to not stamp the trade marks of TID and customer's representative and the date of manufacturing on the lights ϕM3, ϕM4, ϕM5.

2.8 Requirements for packing.

2.8.1 Lamp-holders, lights and caps should be supplied in the packages, ensuring their protection from mechanical damages, during trasnportation and loading-unloading operations.

Package should be a means protecting of lamp-holders lights and caps from the atmospheric presipitations during their trasnportation and storage.

While supporting the lights, lamp holders and caps whose transportation should becarried out by sea transport, it is necessary to use special packages.

Necessity for supply of the lamp holders, lights and caps in a special package is specified in the contract for supply.

2.8.2 Elements of packing-multipack, shipping container, parts and materials to be used or packing of the lamp holders, lights and caps should correspond to the approved design documentation.

Multipack is intended for initial packing of lamp holders lights or caps.

Shipping container is intended for final packing of holders lights or caps in multipack.

2.8.3 While packing the lamp holders lights caps in the multipack their displacement inside thecontainer and also their contact during tran portation should be excluded.

Placing of multipack in the shipping container.

should exclude the possibility of container displacement inside the shipping container during transportation.

2.8.4 Lamp holders lights, caps of the same type, design versions, version as per colour of light filter, eliminate version should be packed in multipack and shipping container.

Lamp holders, lights and or caps of different types, de design versions, versions of colour of light filters, eliminate versions are allowed to be placed in the same shipping container when the scopes of delivery are small.

2.8.5 The following data should be specified on the multi-pack.

a) Manufacturing trade mark

b) Abbreviated designation of lamp holder, light or cap

c) Designation of version as per colour of lightfilter (for lights and caps).

d) Designation of all climatic version(letter "B").

e) Designation of technical specifications (without plant index)

f) Quantity of lamp holders, lights or caps;

g) Month and last two digits of year of manufacturing;

h) Stamp number of packes (team of packers for team packing).

i) Stamp of TID and customer's representative.

j) Number of technological batch.

Method of data indicating (marking with paint, gluing of wrapper, on which data are printed, enclosure of ticket while using the containers made of transparent materials etc.,) is determined with design of container.

2.8.6 Packing list should be placed in shipping conatainer

from the side of cover.

Packing list should contain the following data:

a) Plant manufacturer's trade mark

b) Abbreviated designation of lamp holder, light or cap

c) designation of version as per colour of light filter (for ~~colour~~ lights and caps)

d) designation of all climatic version (for articles of all climatic version).

e) designation of technical specifications (wihtout plant index)

f) Quantity of multipack units and total quantity of lamp holders, lights and caps in shipping container.

g) Month and year of packing.

h) Stamp number of packer (team of packers),

i) Stamp of TID and customer's reprrsentative.

While packing the lamp holder's lights or caps of different types in one shipping container data given in items b, c, d, f, are specified for each type.

2.8.7 While packing the lamp holders lights or caps in same shipping containers to be supplied to one address, the container should be numbered with fractional number, in numerator serial number of container is shown in denominator total number of containers.

Summary packing list, in which plant manufacturer's trade mark, quantity of shipping containers, total quantity of lamp holders, lights or caps as per types are specified should be placed in the container numbered with first number.

2.8.8 shipping container with packed articles before closing it should be checked selectivity ~~xxxxx~~ manufacturer's TID

Customer's representative carries out periodical check of packages quality.

Incase of violation of the requirements for packing, the articles should be subjected to repacking.

2.8.9 Marks in accordance with requirements of GOST 14192-71 should be applied to the shipping container.

While packing the lamp holders lights or caps in same shipping containers, the additional mark "Documents" is applied to the container, numbered ~~xxxxxx~~ with first number.

2.8.10 Shipping container with packed articles should be put under seal by the plant manufacturer's representative and when supplying the articles to the store houses and customer's representative.(given requirement is not valid while supplying the articles by special communication).

3. QUALITY CONTROL

3.1 Requirements for guarantee and quality control during production. Specified requirements for guarantee and quality control during production of given articles are set in technological documentation on these articles.

3.2 Acceptance rules.

3.2.2 Qualification tests

3.2.21 Content of tests, ~~tests~~ tests content division for test groups ~~xxxxxxxxx~~ and ~~xxxx~~ and sequence of tests within the limits of every group, and also test order of groups within the limits of category should be according to Table 5-

Continuation of Table 6

(1)	(2)	(3)	(4)	(5)
	9. Test for ~~endirance~~ cold endurance during operation	2.4.1	3.3.4.3	
	10, Test for the effect of change in temperature	2.4.1b	3.3.4.4	
K-4	12. Test for the effect of reduced atmospheric pressure	2.4.1d	3.3.4.7	
	13. Test for wear resistance	2.1.6	3.3.1.5	
	14 Test for the effect of hoar frost followed by thawing	2.4.1b	3.3.4.6	
K-5	Test for durability	2.6.1	3.3.6.1.2	
K-6	1. Long term test for moisture resistance	2.4.1f	3.3.4.5	
K-7	Test for the mould-growth	2.4.1h	3.3.4.8	
K-8	Test for the effect of salt fog	2.4.1e	3.3.4.8	
K-9	~~2.~~ Test for the effect of acoustic noises	2.3.1.d	3.3.3.8	
K-10	Test for the effect of special factors	2.5.1	3.3.5.1	
K-11	Checking of packages	2.8.1	3.3.8	

Remark: 1. Test as per groups K-3 + K-11 is carried out parallel on separate samples.

2. Lamp holders, lights and caps undergone the tests as per groups K-1 and K-2 are used for the tests as per any other group.

3. Tests for stability against special effects, acoustic noises are not carried out. to confirmity of articles to these requirements is guaranteed by the

TABLE 5

Test Group	Sequence of tests	Type of tests	Items of technical specifications. Technical requirements.	Items of technical specifications. Methods of Control	REMARK
K-1	1	Appearance check	2.1.3	3.3.1.2	
	2.	Marks check	2.7.1	3.3.7.1	
K-2	1.	Checking of design and dimensions	2.1.2	3.3.1.1.	
	2.	Checking of contacts mobility	2.1.5	3.3.1.4	
	3.	Checking of electrical resistance	2.2.1.3	3.3.2.1.1.	
	4.	Checking of insulation electric strength	2.2.1.1	3.3.2.1.2	
	5.	Checking of insulation resistance	2.2.1.2	3.3.2.1.3.	
K-3	1.	Test for faliure-free performance	2.6.1	3.3.6.1.1.	
K-4	1.	Checking of mass	2.1.4	3.3.1.3.	
	2.	Test for vibration resistance	2-3-1a	3.3.3.2	
	3.	Test for vibfation strength at longterm effect	2.3.1a	3.3.3.3	
	4.	Test for impact strength and impact stability	2.3.1b	3.3.3.4 3.3.3.5	
	5.	Test for the effect of single impacts	2.3.1.b	3.3.3.6	
	6.	Test for the effect of linear(centrifugal) loads	2.3.1r	3.3.3.8	
	7.	Test for heat resistance during operation	2.4.1a	3.3.4.2	
	8.	Short term test for moisture resistance	2.4.1r	3.3.4.5	
	9.				

supplier one the basis of data, obtained on stage of development.

3.2.2.2. For conducting the qualifications tests the samples of lamp holders, lights, caps are completed for groups K-1, K-2 as per rules set for groups C-1, C-2 of approval tests respectively for groups K-3, K-5 as per rules set for test failure free operation and durability respectively; for groups K-4, K-6, + K-10 as per rules set for group П -2 of periodic tests; for group K-11 as per rules, set to group П -3 of periodic tests.

3.2.2.3 For conducting the test, the following plans of control are used.

- for group tests K-1, K-2 plans of control, set for groups C-1, C-2 of approval tests respectively-
- for group K-3 plan of single stage control with quantity of sample 50 pieces;
- for tests groups K-4, K-6, K-7, K-8, K-9, K-10 planes of control set for group П -2 of periodic tests.
- for tests group K-5 plan of single stage control with the quantity of sample of 20 pieces;
- for test group K-11 plan of control set for group, 3 of periodic tests.

3.2.2.3 Total number of defective lamp holders, lights, caps should not exceed the unit for tests group K-3, K-4 and the u unit as per groups K-6 + K-10.

3.2.2.5 Results of qualifications tests are considered to be satisfactory, if satisfactory results have been obtained as per all test groups, Permissible total number of defects lamp holders, lights or caps should not exceed the set value.