

KS

KOREAN INDUSTRIAL STANDARD

Photoelectric Controls for Public Lighting

KS C 8110-1992

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Rep. of Korea

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Photoelectric Controls for Public Lighting

1. Scope

This Korean Industrial Standard specifies photoelectric controls for public lighting of integral or separate system with a rated voltage (110)V or 220V intended for individual use in general outdoor places under a.c. single-phase two-wire system (hereinafter referred to as "PC switches").

Remark General places above-mentioned do not include the following :

- (a) Places where corrosive gases exist.
- (b) Places where damage from salt is anticipated such as seashore.
- (c) Places where it is always high temperature or high humidity.

The voltage in parentheses shall not be in use in future.

2. Definitions

For the purposes of this standard, the following definitions apply :

(1) photoelectric control for public lighting (PC switch)

A switch to control putting on and off of the light source automatically by means of relay or semiconductor switch, using photoconductive cell or the like.

Normative References :

- KS A 0006 Standard Atmospheric Conditions for Testing
- KS A 0401 Preferred Numbers
- KS B 5203 Vernier Callipers
- KS C 1302 Insulation Resistance Testers (Battery Operated)
- KS C 3302 600V Grade Polyvinyl Chloride Insulated Wires (IV)
- KS C 7601 Fluorescent Lamps for General Lighting Service
- KS C 7604 High Pressure Mercury Vapour Lamps
- KS C 8111 Testing Methods for Wiring Devices
- KS C 8305 Plugs and Receptacles for Domestic and Similar General Use
- KS C 8309 Small Switches for Indoor Use
- KS C 8410 Couplings for Conduit Tubes
- KS D 8304 Electroplated Coatings of Zinc on Iron or Steel

(2) photoconductive cell

A cell which causes variation in its electric conductivity when it receives light.

(3) time-delay system

A PC switch consisting of thermal relay, electronic circuit or electromagnetic relay or the like in combination with them.

(4) quick-acting system

A PC switch consisting of electromagnetic relay or electronic circuit which operates remarkably quicker than time delay system.

(5) switching illuminance (band)

The illuminance (band) of natural light which causes switching of the load electrically, when a PC switch is installed outdoors in service condition. The measurement is carried out on the illuminance at the vertical surface facing north at the position where the PC switch is installed.

(6) switch-on illuminance

The illuminance which makes the load circuit to close and lies within the switching illuminance band.

(7) switch-off illuminance

The illuminance which makes the load circuit to open and lies within the switching illuminance band.

(8) light-receiving plane

The plane perpendicular to the maximum sensitive direction in which the illuminance required to switch on and off the lights becomes minimum.

(9) current consumption

The current consumed in a PC switch when the rated voltage is applied to the power source side.

3. Classification

The PC switches are classified into 2 classes of integral system of Table 1 and separate system of Table 2. The type designation is assigned according to response speed, switching illuminance, rated voltage and rated current. The separate system is, further classified according to the kinds of PC switch receptacle.

Table 1 Integral System

Response speed	Switching illuminance	Rated current A Rated voltage V	Type designation				
			1	3	6	10	15
Time-delay system	Type 1	(110)	11B1	13B1	16B1	110B1	115B1
		220	21B1	23B1	26B1	210B1	215B1
	Type 2	(110)	11B2	13B2	16B2	110B2	115B2
		220	21B2	23B2	26B2	210B2	215B2
	Type 3	(110)	11B3	13B3	16B3	110B3	115B3
		220	21B3	23B3	26B3	210B3	215B3
Quick-acting system	Type 1	(110)	11R1	13R1	16R1	110R1	115R1
		220	21R1	23R1	26R1	210R1	215R1
	Type 3	(110)	11R3	13R3	16R3	110R3	115R3
		220	21R3	23R3	26R3	210R3	215R3

Table 2 Separate System

Response speed	Switching illuminance	Receptacle	Rated current A	Type designation				
			Rated voltage V	1	3	6	10	15
Time-delay system	Type 1	S	(110)	11BS1	13BS1	16BS1	—	—
			220	21BS1	23BS1	26BS1	—	—
		M	(110)	11BM1	13BM1	16BM1	110BM1	115BM1
			220	21BM1	23BM1	26BM1	210BM1	215BM1
	Type 2	S	(110)	11BS2	13BS2	16BS2	—	—
			220	21BS2	23BS2	26BS2	—	—
		M	(110)	11BM2	13BM2	16BM2	110BM2	115BM2
			220	21BM2	23BM2	26BM2	210BM2	215BM2
	Type 3	S	(110)	11BS3	13BS3	16BS3	—	—
			220	21BS3	23BS3	26BS3	—	—
		M	(110)	11BM3	13BM3	16BM3	110BM3	115BM3
			220	21BM3	23BM3	26BM3	210BM3	215BM3
Quick-acting system	Type 1	S	(110)	11RS1	13RS1	16RS1	—	—
			220	21RS1	23RS1	26RS1	—	—
		M	(110)	11RM1	13RM1	16RM1	110RM1	115RM1
			220	21RM1	23RM1	26RM1	210RM1	215RM1
	Type 3	S	(110)	11RS3	13RS3	16RS3	—	—
			220	21RS3	23RS3	26RS3	—	—
		M	(110)	11RM3	13RM3	16RM3	110RM3	115RM3
			220	21RM3	23RM3	26RM3	210RM3	215RM3

Remark The meaning of symbols used in the type designation is as follows :

The first figure : 1 of the first figure denotes rated voltage, 1 is (110)V, 2 is 220V. The following 1 or 2 figures denote rated current, 1 is 1A, 3 is 3A, 6 is 6A, 10 is 10A and 15 is 15A.

B : Time-delay system

R : Quick-acting system

No symbol : Integral system

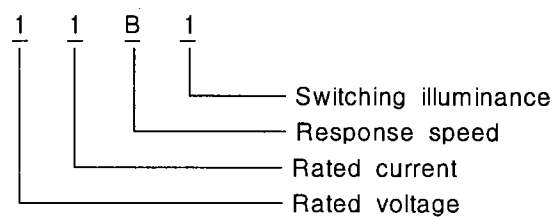
S : Separate system in which inner diameter (d_p) of skirt shown in Fig. 1 is 58 mm or more.

M : Separate system in which inner diameter (d_p) of skirt shown in Fig. 1 is 70 mm or more.

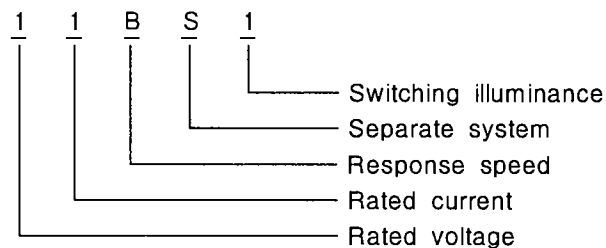
Symbol of the end : 1 is Type 1 (switch-on illuminance 10 to 80 lx),
 2 is Type 2 (switch-on illuminance 50 to 100 lx), and
 3 is Type 3 (switch-on illuminance 5 to 20 lx).

Example :

(1) Integral System



(2) Integral System



4. Performances

4.1 Insulation Resistance

The insulation resistance shall be not less than 10M Ω when tested by the method of 7.3.

4.2 Dielectric Withstand Voltage

The dielectric withstand voltage shall be tested by the method of 7.4, and the PC switch shall withstand the test voltage.

4.3 Switching Operation

The switching operation shall be as follows :

- (1) When a PC switch is tested by the method of 7.5.2(1), the switching illuminance shall comply with Table 3.

Table 3 Switching Illuminance

Test voltage	Test temperature °C	Switch-on illuminance lx		Switch-off illuminance lx
Rated voltage	20 ± 5	Type 1	10 to 80	Not more than + 14 steps (5 times) ⁽¹⁾ from the respective measured switch-on illuminance for Type 1
		Type 2	50 to 100	
		Type 3	5 to 20	
	- 10 ± 5	Within ± 8 steps (0.4 to 2.5 times) ⁽¹⁾ from the measured illuminance under above temperature range		Not more than the the respective measured switch-on illuminance (on time) for Type 2
	40 ± 5			
110% rated voltage	20 ± 5			Not more than + 8 steps (2.5 times) ⁽¹⁾ from the respective measured switch-on illuminance for Type 3
90% rated voltage				

Note ⁽¹⁾ Above-mentioned "step" means the step shown in Fig. 3 of 7.5.2(1), "time" in parentheses is the aimed numerical value calculated from the step and is shown for informative reference.

- (2) When a time-delay system PC switch is tested by the method of 7.5.2(2) (under the conditions of ambient temperature 20 ± 5°C and rated voltage), the specimen shall operate within 2 min in the switch-on level and switch-off level respectively, and shall not operate in non-switching level.
- (3) When quick-acting system PC switch is tested by the method of 7.5.2(3) (under the conditions of ambient temperature 20 ± 5°C and rated voltage), the switching illuminance shall comply with Table 3.
- (4) On the PC switch constructed to have special delay time between switch-on actuation and switch-off actuation, the tests of 7.5.2(2) and 7.5.2(3) shall not be applied.

4.4 Current Consumption

The current consumption of PC switch shall comply with Table 4, when tested by the method of 7.6.

Table 4 Current Consumption

Switching illuminance	Rated current A		Current consumption mA
	Time-delay system	Quick-acting system	
Type 1, Type 2	3 and under	3 and under	Under 20
Type 3			Under 10
Type 1, Type 2, Type 3	6 to 15	—	Under 50
	—	6 to 15	Under 100