

DISK 05 TYPE LED MODULE

APPLICATIONS MANUAL

WARNING

- Direct LED emission can seriously damage the eyes. Never view a LED emission directly.
- Never use a disassembled LED module.
- The LED module becomes hot during illumination. Pay attention not to be burned while handling it.

INTRODUCTION

This Application Manual is produced for engineers who intend to design lighting items using the Stanley Disk 05 Type LED Modules.

Through the use of this Application Manual, the lighting items can use their unique characteristics effectively. Safety precautions and notes on the necessary quality conditions for design are described in this manual. Before the LED lighting item is designed, be sure to read this manual thoroughly and understand the functions of LED modules.

For performance and quality specifications of LED modules, refer to specifications (separately supplied).

SPECIAL FEATURES OF DISK 05 TYPE LED MODULE

The Stanley Disk 05 Type LED Module is the latest and most unique LED module which has the following special characteristics.

- The thin and innovative illuminating instrument can be designed (to a diameter of 58mm and a thickness of 8mm with lens, to a diameter of 55mm and a thickness of 5.5mm without lens).
- 6 units of high power arranged (1W) LED illumination provides sufficient luminous intensity.
- The various LED modules can be selected from the line-ups: high efficiency and bright daylight color type, natural color balance type with superior color rendition exceeding CRI: Ra90, and light bulb type.
- The luminous flux of DSC16S1N (6500K) is equivalent to that of a 30W light bulb respectively.
- The Disk 05 Type LED module conforms to the RoHS Directive.

APPLICABLE LED MODULES

This Application Manual applies to the following Stanley Disk 05 Type.

MODEL	EMITTED COLOR (COLOR TEMPERATURE)
DSC16S1N (with lens)	Cool white (6,500K)
DSM16S1N (with lens)	Natural white (5,000K)
DSP16S1N (with lens)	White (4,200K)
DSW16S1N (with lens)	Warm white (3,000K)
DSC1601N (without lens)	Cool white (6,500K)
DSM1601N (without lens)	Natural white (5,000K)
DSP1601N (without lens)	White (4,200K)
DSW1601N (without lens)	Warm white (3,000K)

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1. CHARACTERISTICS AND VARIATIONS

This Application Manual applies to the following Stanley Disk 05 Type.

Model	Emitted Color (Color Temperature)	Power Consumption	Color rendition	Luminous Flux TYP (lm)	Shape	Type
DSC16S1N	Cool white (6,500K)	7. 2W (typ)	Ra70	320	120° Wide flux distribution	φ 58 × H8 (with lens)
DSM16S1N	Natural white (5,000K)		Ra80	265		
DSP16S1N	White (4,200K)		Ra92	210		
DSW16S1N	Warm white (3,000K)		Ra92	190		
DSC1601N	Cool white (6,500K)		Ra70	350		φ 55 × H5.5 (without lens)
DSM1601N	Natural white (5,000K)		Ra80	290		
DSP1601N	White (4,200K)		Ra92	230		
DSW1601N	Warm white (3,000K)		Ra92	220		

●Recommended power supply

Model	Input	Output	Power Consumption	Remarks
CCO4530Y-1CB	AC100/240V	45V 300mA Constant current	13.5W (typ)	MOONS

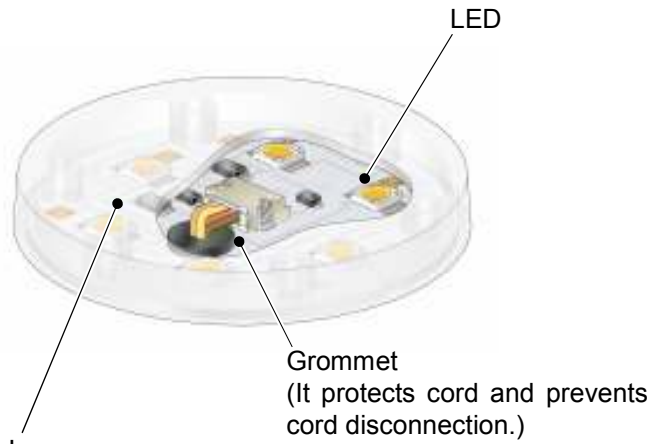


The CCO4530Y-1CB: manufactured by MOONS, distributed by STANLEY

2. GENERAL VIEWS, NAMES, DESCRIPTIONS

●Front side

DS * 16S1N type

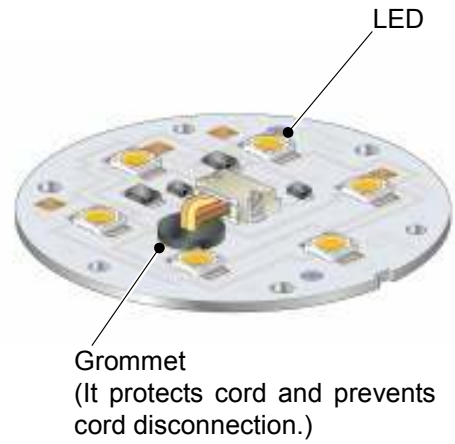


Lens cover

The lens cover protects LED surfaces and LED emission is diffused to create soft light.

Material: PMMA

DS * 1601N type



●Back side

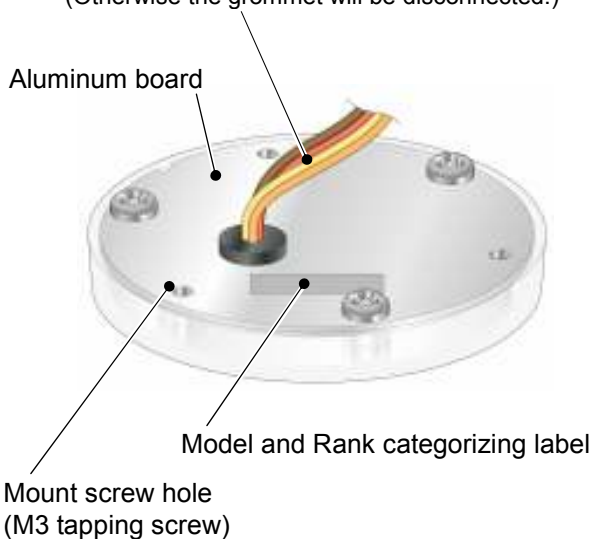
DS * 16S1N type

Power cord

Power cord: DC power is supplied to Disk 05 by this power cord. (Red(+), Black (-))

A grommet protects the power cord and prevents cord disconnection.

⚠ Never pull the power cord excessively.
(Otherwise the grommet will be disconnected.)



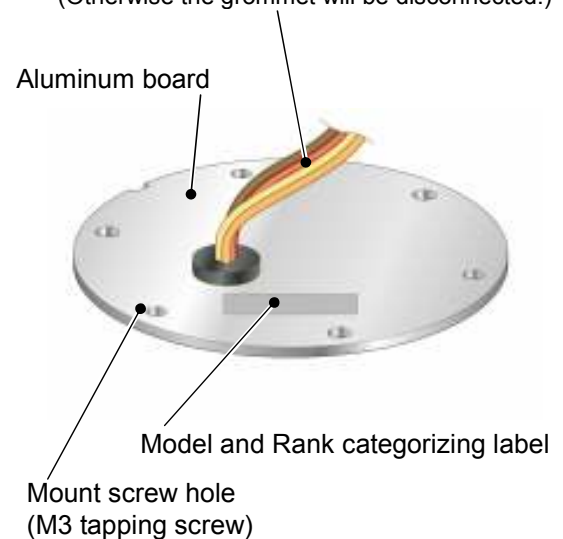
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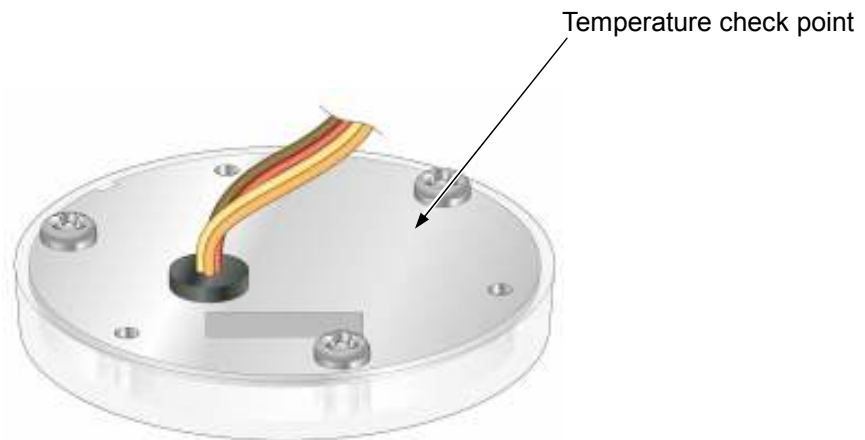
3. EFFECTIVE MOUNTING WITH REGARD TO HEAT SINK

CAUTIONS

- No heat sink fin is installed on the LED module. Be sure to mount a heat sink and check that the module temperature does not exceed that specified before using the module.
- After the LED module is installed to the actual site, check the module temperature at the check point is lower than 70°C.

In general LED life and the emission efficiency are proportioned to heat dissipation.

When the LED module is used within the specified current, heat will not reach the ignition temperature. However, usage without heat sink will decrease the luminescence efficiency and shorten its life.



The module temperature must be measured in the supposed various actual environments before the LED module is installed on the actual site because the temperature condition in the product designed laboratory environment may be different from eventual installation environments.

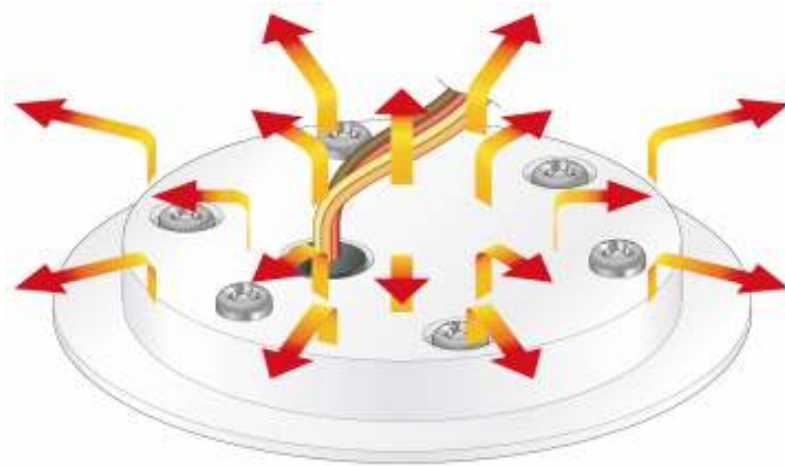
When measuring temperature, use the thermocouple while it adheres to the check point on the module. Do not use a non-contacting thermometer (such as an electronic thermometer or a laser thermometer) because of their measurement error.

●Design of the heat sink fin and block

Disk 05 has a unique configuration with thin and high luminescence. It is possible to dissipate heat from the LED module maintaining its temperature below its maximum temperature by installing a heat sink commercially available. Furthermore, unique configuration can be designed in order to maximize the special features of Disk 05 while observing the aforementioned maximum operating temperature. (The heat sink design dominates the designing of the lighting product.)

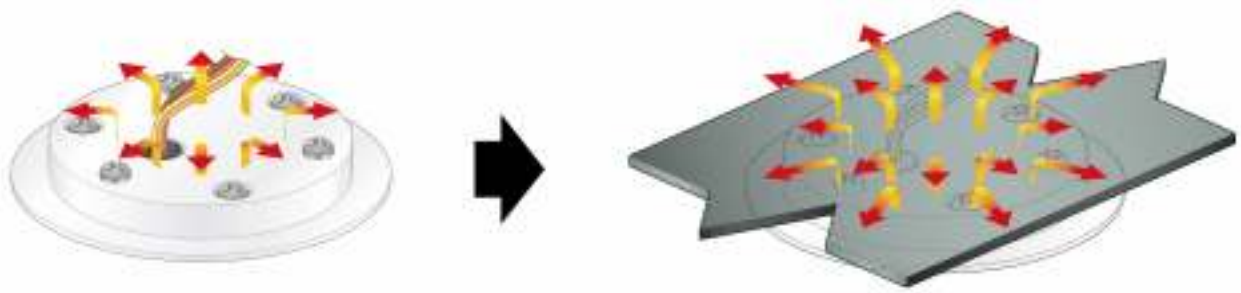
●Construction with heat sink block

When the air contacting surface area of the aluminum heat sink exceeds 50cm^2 , the aluminum heat sink's surface temperature can be maintained below 70°C at 25°C of the ambient temperature. However, confirm the actual temperature by measuring at the test point.



The heat dissipation efficiency will vary depending on installation method and direction.

1. Having the LED module's heat sink contacting the customer prepared case or the frame as another heat sink block (aluminum, iron or ceramic frame, etc.) will promote higher power dissipation efficiency.

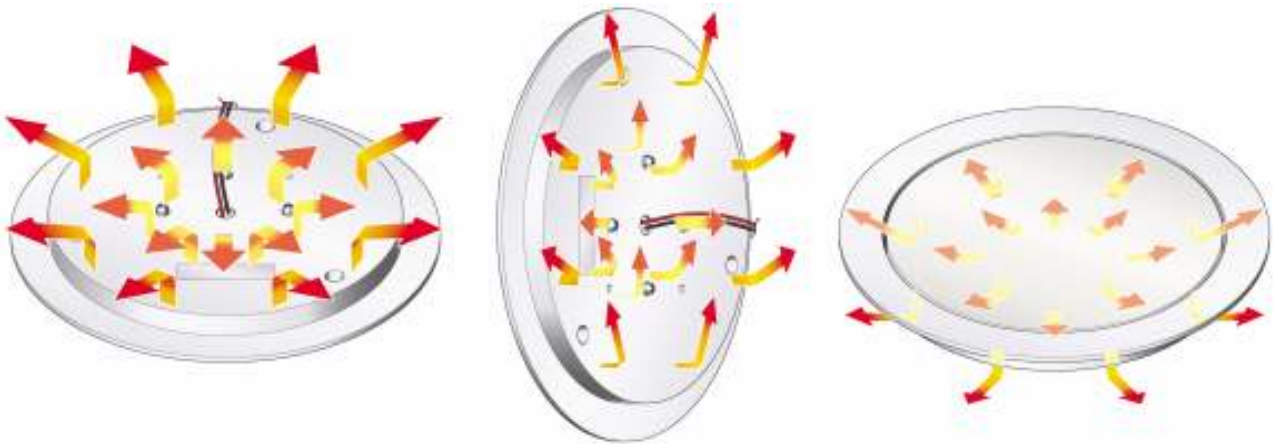


2. The downward illumination orientation is best for heat dissipation. Heat dissipation efficiency will decrease in proportion to sideways to upward orientation.

•Downward orientation

•Sideway orientation

•Upward orientation

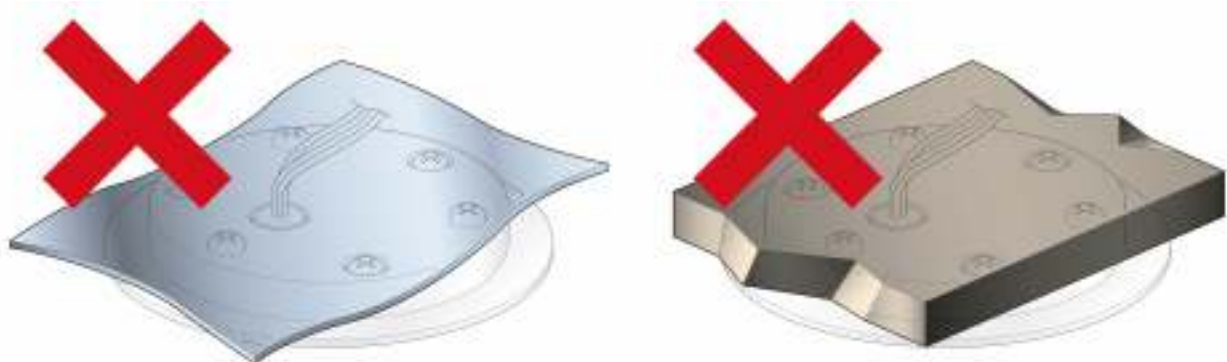


Approximately 10°C difference will be observed between downward and upward orientations.

3. Heat is radiated in proportion to the heat sink fin area in contact with air. If the heat sink fin is covered with a heat insulation sheet or other material, the heat radiation efficiency will decrease.

•Cover with cloth or heat insulating material.

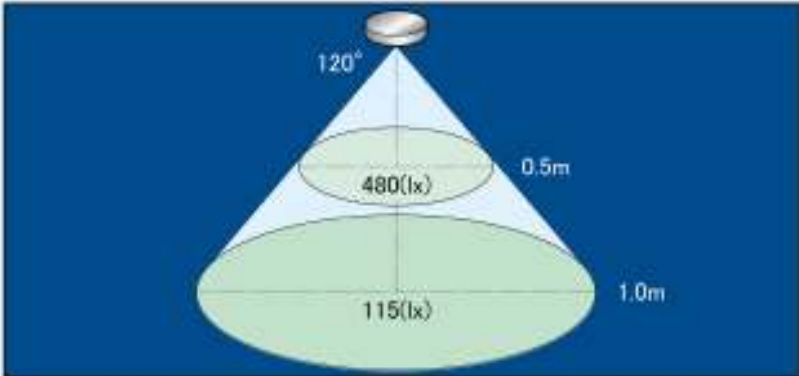
•Directly install to wood timber, concrete, plastic, etc.



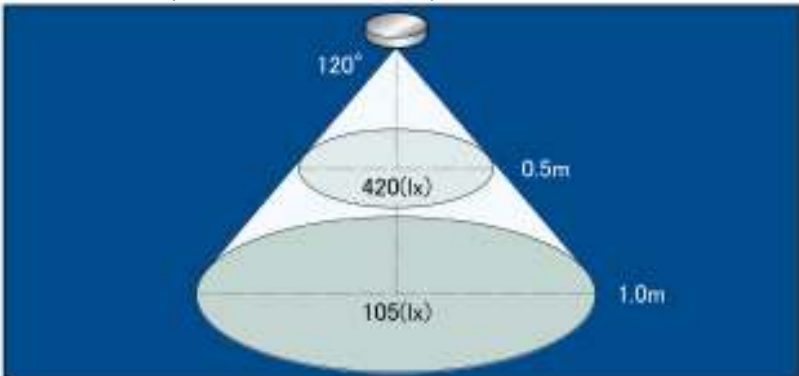
4. OPTICAL DESIGN

DS * 16S1N type

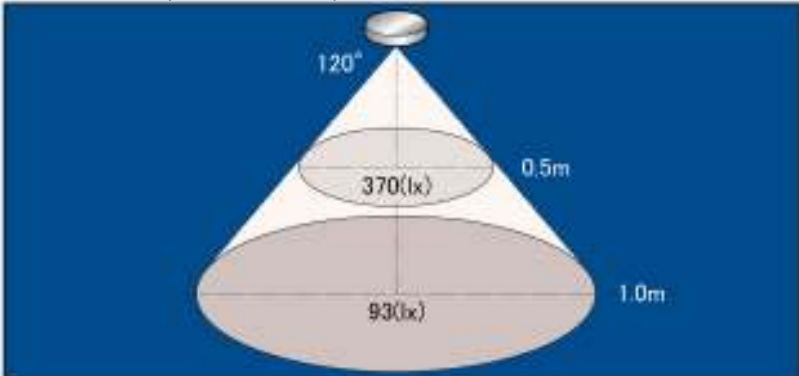
●DSC16S1N (Cool White 6,500K)



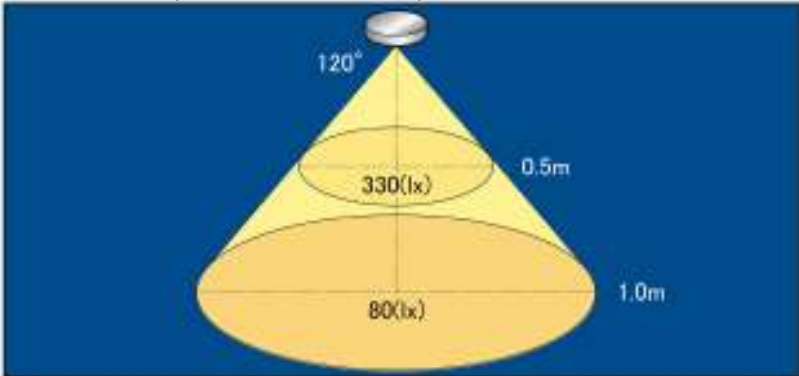
●DSM16S1N (Natural White 5,000K)



●DSP16S1N (White 4,200K)

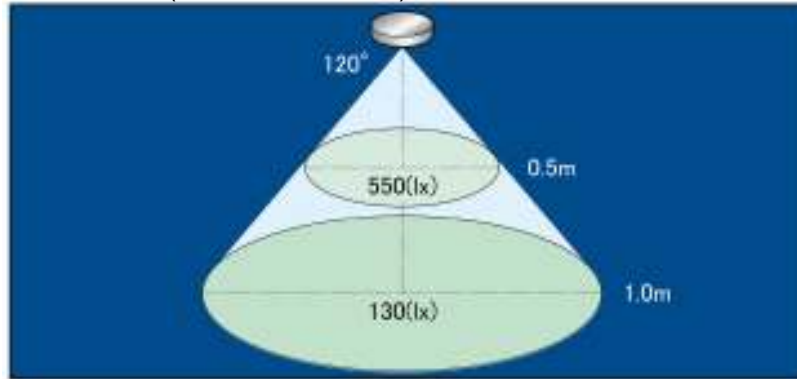


●DSW16S1N (Warm White 3,000K)

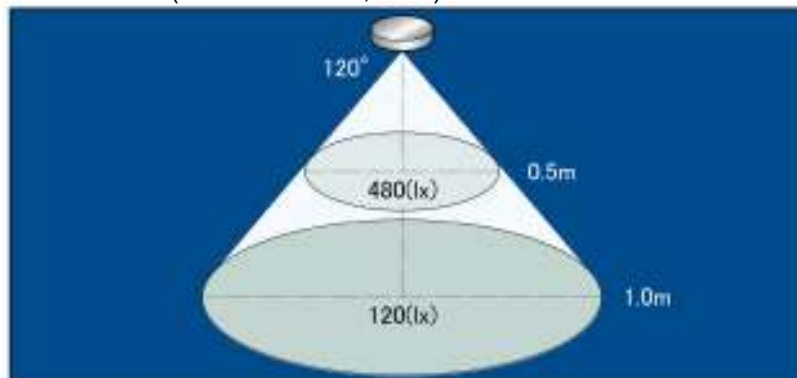


DS * 1601N type

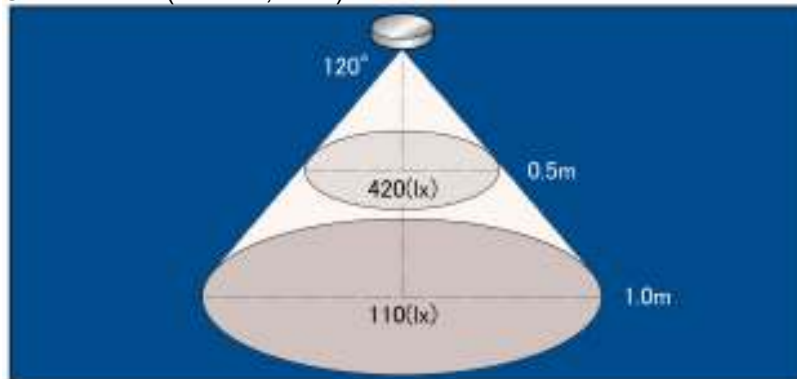
- DSC1601N (Cool White 6,500K)



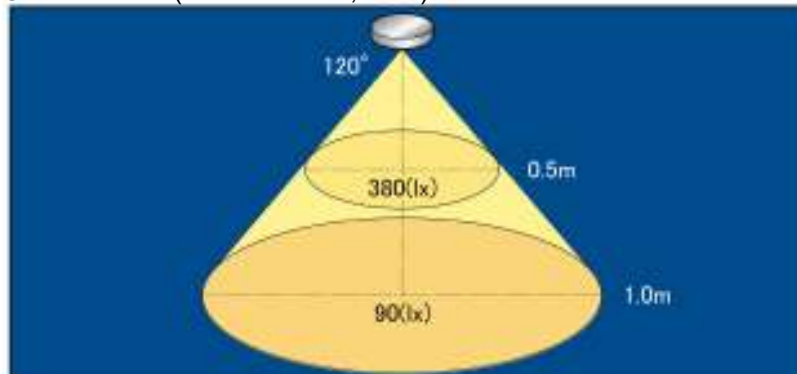
- DSM1601N (Natural White 5,000K)



- DSP1601N (White 4,200K)



- DSW1601N (Warm White 3,000K)



●Color temperature and its dispersion

The four kinds of Color Temperature can be selected from the Disk 05 Type LED module. Select one's desired Color Temperature mode. LEDs produce little Color Temperature dispersion. When several modules are placed side by side, select products of the same color rank.

Model	Emitted Color (Color Temperature)	Power Consumption	Color rendition	Luminous Flux TYP (lm)	Shape	Type
DSC16S1N	Cool white (6,500K)	13.5W (typ)	Ra70	320	120° Wide flux distribution	φ 58 × H8 (with lens)
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5. ELECTRICAL CONNECTION, SETTING of POWER SUPPLY

The normal precautions for connecting power supply must be observed.

A specified DC power supply is needed for the Disk 05. Furthermore, the DC constant current power supply is recommended for safe illumination.

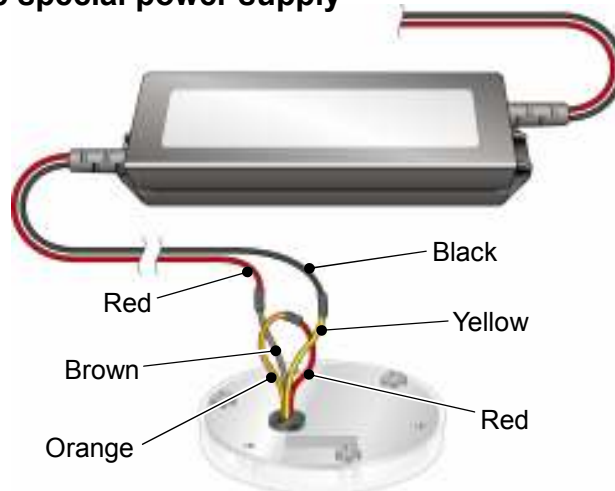
STANLEY provides several special types of DC power supply for Disk 05. These special DC power supplies provide simple and safe electrical connection.

●Exclusive power supply (unit)

The CCO4530Y-1CB (MOONS) is provided for Disk 05 power supply.

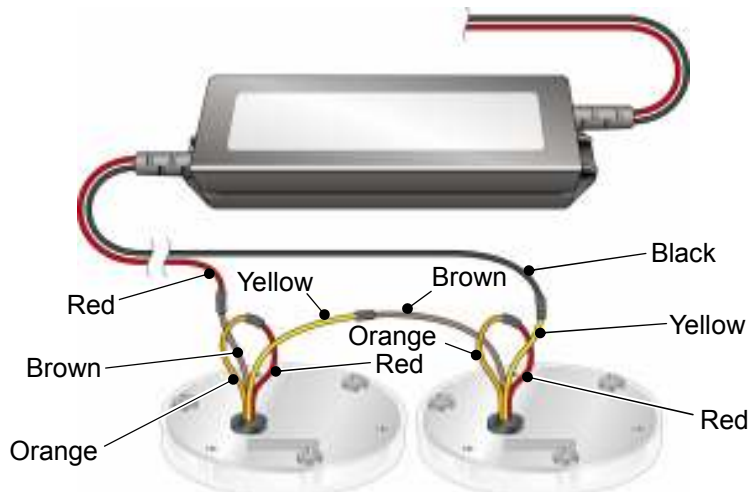
Connect the power supply unit as shown below. One power supply is necessary per two module.

1) Connection via the special power supply



2) Connecting method using the special power supply unit: 2 LED modules with one power supply

NOTE: The light units can be parallel connected. However in order to minimum the imbalance of the luminous intensity of the LED modules, the series connection is recommended.



Power supply performance depends on the installation's ambient temperature conditions. Before Disk 05 installation, be sure to check the separate CCO4830Y-CB1 Specifications and its Instruction Manual.

●When the user selects the power supply independently:

The power supply must conform to the conditions shown below.

Constant current value : 300mA or higher

Maximum output voltage : 25V or higher

6. APPLICATION EXAMPLES OF DISK 05 TYPE LED MODULE

The Disk 05 Type LED module facilitates simple optical design and instrument installation.

Furthermore, as it can be configured into rich variations and combinations, the applicable range will widen according to the design worked-out by designers. The following design examples show combined Disk 05 applications. Please make use of them to create unique illumination applications.

The following designs are categorized the building illumination and lighting items.





CAUTIONS

- (1) Direct viewing of LED may hurt eyes. Never stare the LED emission source directly.**
- (2) The aluminum board is hot while illuminating. Pay attention to avoid burns when handling the LED module.**
- (3) Use a DC constant current power supply because no current limit resistance is installed on this product. If the DC constant voltage power supply is used, select appropriate current limit resistance.**
- (4) This product is not water proofed. Do not install this product outdoors or in a wet place.**
- (5) The luminous intensity and color tone may little disperse with time due to LED inherent characteristics.**
- (6) Pay attention not to bend this unit while handling and storing this product. If this unit is warped, it will cause product malfunction. Especially pay attention to check the product is flat installed at the site.**
- (7) In order to prevent electrostatic damage while installation, be sure to take the electrostatic measures.**
- (8) When replacing or executing maintenance, pay attention not to apply excessive stress to the installed parts (LED, lens, etc.).**
- (9) When cleaning the lens unit, clean it after the light goes off with dry cloth. Never use alcohol, neutral, acid or alkaline detergent.**
- (10) Before installing or removing this product, be sure to turn off power.**
- (11) Pay attention to connect the same polarity when connecting this product and power supply or series connecting the same products.**
- (12) If dirt adheres to the light emitting portion, it will cause decreased light intensity or unequal illumination. As the need arises, take the dust proofing measures.**
- (13) The characteristics described in this specifications may be altered without previous notice in order to improve the performance.**