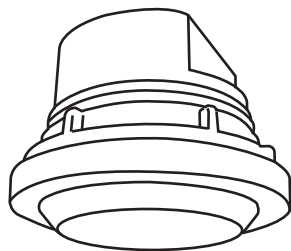


# TRANS

## BED-510 series

Low Voltage SmartDIM Daylight Sensor

### INSTALLATION INSTRUCTIONS



#### ⚠️ WARNING & CAUTION

- Turn power OFF at circuit breaker before installing Power Pack or Sensors.
- Do Not Install To and/or Cover a Junction Box Having Class 1, 3 or Power and Lighting Circuits.
- Class 2 Device Wiring Only – Do Not Reclassify and Install as Class 1, 3 or Power and Lighting Wiring.
- Suitable wiring range 16-20 AWG solid copper wire only.

#### ⚠️ AVERTISSEMENT & PRUDENCE

- Coupez l'alimentation au disjoncteur avant d'installer Power Pack ou capteurs.
- Ne pas installer ou couvrir une boîte de jonction ayant les classes 1 et 3 ou circuits de puissance et d'éclairage.
- Classe 2 Câblage de périphériques Seulement - Ne PAS reclasser et installer Classe 1, 3 ou alimentation et circuits d'éclairage.
- Convient gamme de câblage 16-20 AWG en cuivre massif seulement.

### OVERVIEW

The BED-510 series member of the TRANS family is a 12~24VDC low voltage daylight sensor designed for automatic daylight harvesting in various control modes, including Automatic ON/OFF, SmartDIM, and Virtual Midnight. This sensor is able to continuously measure the ambient light level in the controlled area and provide an isolated dry contact to switch off the unneeded artificial lighting, with 0-10V analog output to maintain constant light level at the area where daylight is available.

This daylight sensor employs a cutting edge digital ambient light sensor (ALS) with an advanced algorithm to provide closed loop, dynamic ambient light level sensing capability. All sensor configurations and setting adjustments can be remotely programmed via a bi-directional IR remote programmer on the floor via intuitive keypad operation. This 2-way remote setting capability does away with the need for ladders, scissor lifts, bucket trucks or any other tools.

Like all TRANS family, the BED-510 series is also available in various mounting options. This feature offers a second-to-none design and installation flexibility for daylight harvesting and control applications in sustainable buildings.

### INSTALLATION NOTES

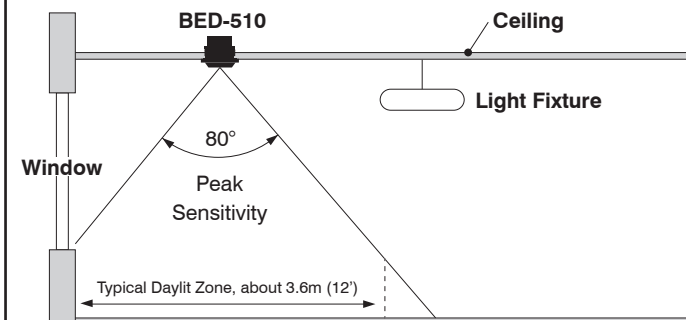
1. Care must be taken when selecting the mounting location of sensor. The ambient light level may vary greatly at different positions in the room, depending on the location of the windows, lighting fixtures, wall colors, floor material, desk top, etc.
2. It is recommended to mount the sensor directly above the work space, such as desk or conference table.
3. Note the path of shadows which may affect the sensor operation. Daylighting control may be problematic if part of controlled area is in shadows while other part has abundant daylight.
4. The sensor is designed to measure ambient light level by looking down from ceiling height. Sensing performance will vary if sensor is mounted to look out from wall. Avoid installing the sensor to directly look into the skylight, the daylight level will exceed the maximum threshold of sensor.
5. The ambient light level on the ceiling can be much lower than that at the windows, corners of the room, or especially the workplace level. Therefore, it is important to measure the light level over the workplace.

### SELECTING A LOCATION

The BED-510 series daylight sensor can be applied to control lights in areas that receive sufficient daylight, thus the electric lights can be reduced or switched OFF. It is important to select a location for the BED-510 series where the representative daylight of the controlled area is available.

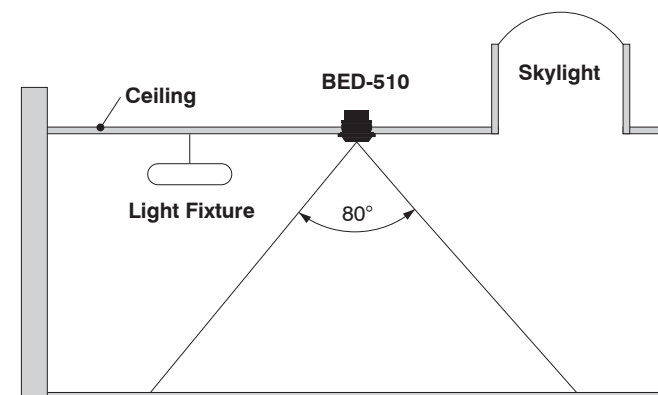
#### Side-lighting area

If the primary daylight source is a window, the daylight sensor is typically mounted between the window and the first row of fixtures.



#### Top-lighting area

If the primary daylight source is a skylight, the daylight sensor should be mounted on the ceiling between the skylight and fixtures, looking down at the floor.



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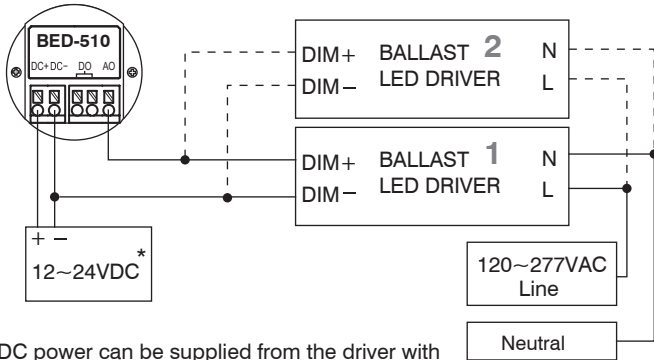
## INSTALLATION

The BED-510 series can be mounted onto the ceiling surface, recess mounted into the ceiling, installed in a 4" junction box, integrated or externally attached to a fixture via various mounting brackets. For more details of available mounting options, please refer to the separate instructions attached.

## WIRING DIAGRAM

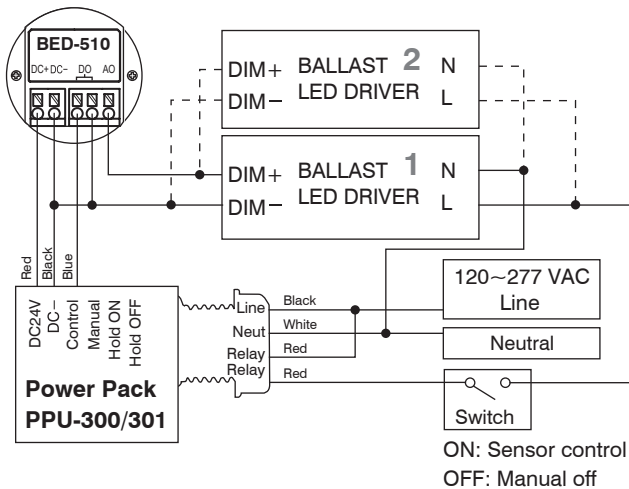
Following diagrams are provided for wiring reference. Consult with a professional BMS engineer or an IR-TEC team member if a more complex wiring diagram is required.

### Standalone Fixture Control



\*DC power can be supplied from the driver with auxiliary DC power output or other source.

### Power Pack Control



## SENSOR SETTINGS

The followings are settings and options available with BED-510 that can be configured through the operation of SRP-280 remote programmer. For more details of remote sensor setting, please refer to the operation instruction of SRP-280.

| Settings                 | Description  | Options                                  | Default  |
|--------------------------|--|--|----------|
| <b>CONTROL</b>           | The mode that the sensor will control.   | DSC, DSVM                                | DSC      |
| <b>AMBIENT LUX</b>       | The ambient light level that sensor will perform the control.  | 10/20/40/60/100/200/400 LUX/DISABLED     | DISABLED |
| <b>DELAY</b>             | The delay time that sensor is set to turn off or dim the light.  | 30 sec./1/3/5/10/15/20/30/60 min.        | 10 min.  |
| <b>HIGH DIM</b>          | The output level set to control the light when ambient is below set threshold.   | 50/55/60/65/70/80/90/100%/SmartDIM       | SmartDIM |
| <b>LOW DIM/ SmartDIM</b> | The low dim output level set to dim the light under DSVM mode. Low dim setting will become SmartDIM bar if SmartDIM control is selected. | 0/5/10/15/20/25/30/40%                   | 30%      |
| <b>RAMP UP</b>           | The speed of increasing the lighting output to HIGH DIM level.   | INSTANT/SOFT/SLOW                        | INSTANT  |
| <b>FADE DOWN</b>         | The speed of decreasing the lighting output to LOW DIM level or off.   | INSTANT/SOFT/SLOW                        | SOFT     |
| <b>VM-TB</b>             | Set the duration before Virtual Midnight.  | 0.5/1/1.5/2/2.5/3/3.5/4/4.5/5/5.5/6 Hour | 2.5 Hour |
| <b>VM-TA</b>             | Set the duration after Virtual Midnight.   | 0.5/1/1.5/2/2.5/3/3.5/4/4.5/5/5.5/6 Hour | 4 Hour   |

## CONTROL MODE

The BED-510 can be programmed by SRP-280 remote programmer to control the light in one of the modes below.

### 1. DSC - Daylight Sensing Control

#### SmartDIM

With SmartDIM enabled under DSC (factory default), the sensor will constantly measure the ambient light level and dynamically adjust its 0-10V dim control output to maintain the overall ambient light level within the preset range. If the ambient light level exceeds the force-off threshold for a period of time, the sensor will disengage its relay contacts for maximum energy saving.

#### Automatic On/Off

The sensor can be programmed to control the light in typical automatic on/off under DSC mode. When the ambient light level is lower than the ON threshold, the sensor will engage its relay contacts together with dim control output as set, and disengage if the ambient light level is higher than the OFF threshold for a period of time.

### 2. DSVM - Daylight Sensing Virtual Midnight

DSVM is a smart control solution for outdoor lighting to achieve more energy savings by reducing the lighting output to a lower level during low traffic period. With DSVM control enabled, the sensor will calculate a hypothetical Virtual Midnight (VM) point by sensing the daylight levels of dusk and dawn. The lighting output will be automatically reduced from high to low dim level, starts from a certain time before (Tb) the Virtual Midnight to another certain time after (Ta) the VM. Both Tb and Ta can be separately programmed according to the control requirements.

## SENSOR ACKNOWLEDGMENT

| Acknowledgement                               | Sensor LED                 | Beep                  | Lighting  |
|---|----------------------------|-----------------------|-----------|
| Full sensor setting upload completed          | -                          | Long x 1<br>Short x 2 | Flash x 2 |
| Sensor resume to factory default              | -                          | -                     | Flash x 2 |
| SmartDIM level set completed                  | -                          | Short x 2             | Flash x 2 |
| Single setting ok                             | -                          | Short x 2             | -         |
| Sensor in operation - during warm up (5 min.) | Flash x 1<br>every 2 sec.  | -                     | -         |
| Sensor in operation                           | Flash x 1<br>every 15 sec. | -                     | -         |

## SPECIFICATIONS

|                 |   |
|-----------------|---|
| Power supply    | 12~24 VDC±5%                              |
| Photo sensor    | Digital data control ambient light sensor |
| Current drain   | 10/20 mA @ 24 VDC, standby/active         |
| Digital output  | Isolated dry contact, max. 1A             |
| Dim control     | 0-10V, ±5%, max. 25 mA sinking current    |
| Sensing range   | Approx. 2~2,000 lux (0.2 ~ 200 fc)        |
| Field of view   | Approx. 80°                               |
| Op. humidity    | Max. 95% RH                               |
| Op. temperature | -40°C~55°C (-40°F~131°F)                  |
| Dimensions      | Ø65 x H45mm (Ø2.56" x H1.77")             |