PLC MULTIPOINT DAYLIGHT HARVESTING PHOTOSENSORS (VOLTAGE BASED)

MK7-B SERIES

DESCRIPTION

The **PLC-Multipoint MK7-B Series Daylight Harvesting Photosensors** develop a variable output voltage that corresponds to the amount of present ambient light. These precise ambient light-level measurement units are designed to detect and transmit, via an analog signal, the amount of light present at their location to the remote analog input point of most lighting controllers and building automation systems. The sensors contain a precision photo-diode type cell that provides an exact, proportional output over a wide range of light levels, allowing for accurate lighting control.

MK7-B-CCF
Indoor

MK7-B-CR
Outdoor

MK7-B-CS
Skylight

FEATURES

- ***Daylight harvesting Sensors***
- ***Multiple voltage output***
- ***3-Wire, external power***
- ***Compatible with many lighting controllers and building automation systems***
- ***0-7,500fc Measuring range***
- ***Fixed response time***
- ***Adhesive indoor sensor ceiling mount, all others are 1/2" NPT***
- ***NIST traceable factory calibration available***
- ***California Title 24 Compliant, RoHS, ETL/UL916 Listed***
- ***Voltage-based sensor sends signal up to 500'***
- ***Custom wire lengths, lens and housing modifications, as well as multipoint NIST calibration services are also available***

OPERATION

The sensor heads contain patented solid-state circuitry designed to be accurate, adjustable, and flexible over a wide range of input and output voltages. The standard three-wire sensors operate from any input voltage between 12-24 VDC and give a return output signal of 0-5, 1-5, 0-10, 1-10 VDC. The sensors come factory calibrated. The sensor is equipped with a variable range potentiometer, but calibration equipment, such as a foot-candle meter, would be required to change the range of the unit.

APPLICATION

MK7-B Sensors allow building automation controllers to become sophisticated lighting control computers to control any type of lighting application. There are three basic types of sensors:

Indoor
Designed to monitor the ambient light levels in offices, schools, etc., the sensor mounts in a 1/2" hole in the ceiling tile using the adhesive backing. It is factory-calibrated to 100fc and features an adjustable maximum range from 70–750fc and a 60° field of view with clear fresnel lens.

Outdoor
Designed to mount horizontally in a standard threaded 1/2" conduit or 1/2" knockout, it monitors the outside ambient light levels for parking garages, security lighting, sign lighting, etc. It is typically mounted on the roof facing the Northern sky. It is factory-calibrated to 250fc and features an adjustable maximum range from 50–750fc.

Skylight
Used in skylight wells, it is designed to vertically-mount in a standard 1/2" conduit or 1/2" knockout. It monitors the ambient light levels in warehouses, "big box" retailers, distribution centers, shopping malls, etc. The sensor is factory-calibrated to 2,000fc and is adjustable to a maximum range from 1,000–7,500fc.

SPECIFICATIONS

Supply Voltage	12-24 VDC, 20 mA max
Analog Output	(model specific) 4-20 mA @ 850Ω, 0/1-5VDC @ 5KΩ min, 0/1-10VDC @ 5KΩ min
Indoor (-CCF)	0-100 fc = Analog selected output
Outdoor (-CR)	0-250 fc = Analog selected output
Skylight (-CS)	10-2000 fc = Analog selected output
Sensor type	Blue-enhanced photo-diode
Accuracy	Overall ±12%
Operating Temp	±10%
Linearity	±2%
Repeatability	±0.5%
Range Adjust	Can be field adjusted
Indoor (-CCF)	0-100 fc Factory Calibrated, Adjustable 0 to 750 fc
Outdoor (-CR)	0-250 fc Factory Calibrated, Adjustable 0 to 750 fc
Skylight (-CS)	0-2000 fc Factory Calibrated, Adjustable 0 to 7500 fc
Response Time Adjust	
Protective Lens	Non-polarized plastic
Indoor (-CCF)	Clear Fresnel lens
Outdoor (-CR)	Clear flat lens
Skylight (-CS)	Opaque dark dome
Operating Temperature	-40° to 140°F (-40° to 60°C)
Operating Humidity	10% to 95% Non-condensing
Wiring Terminations	3 wire 18 AWG pigtails
Mounting	
Indoor (-CCF)	Smooth back for ceiling down mounting w/double stick tape
Outdoor (-CR)	1/2" MNPT for Horizontal mount
Skylight (-CS)	1/2" MNPT for Vertical-up mount
Enclosure Rating	NEMA 1-Indoor (-CCF) and Skylight (-CS) NEMA 3R Outdoor (-CS)
Dimensions	
Indoor (-CCF)	1.5"x 1.5" x 1.7" (38 x 38 x 43 mm)
Outdoor (-CR)	1.4"x 1.4" x 2.4" (36 x 36 x 61 mm)
Skylight (-CS)	1.3" x 1.3"x 2.8" (33 x 33 x 71 mm)
Weight	0.13 lb (0.06 Kg)
Approvals	ETL/UL916, NEC Class 2, RoHS, California Title 24 Compliant
Warranty	2 year

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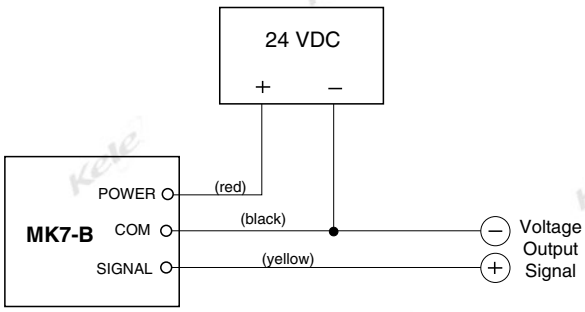
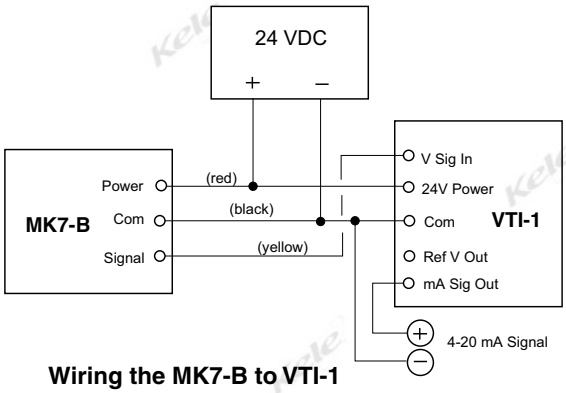
WIRING / CALIBRATION

The sensors come factory calibrated. Each sensor is equipped with a variable range potentiometer, but calibration equipment, such as a foot-candle meter, would be required to change the range of the unit. Note: there is a charge for recalibration of the unit by the manufacturer. Rotating the potentiometer one way or the other causes the upper limit voltage that the sensor produces to correspond to lower or higher foot-candle readings. For example, with a 5V model at the minimum gain setting, the sensor will deliver 5 VDC at 750 fc; at the maximum setting, the sensor will deliver 5 VDC at 50 fc. The zero light level setting is fixed and will not change. The adjustment procedure allows for precise light level monitoring and can compensate for the physical light sensing location of the unit, which may differ from the actual light level present at the task level. Once the calibration procedure is completed, it will remain constant with no further adjustments. Complete installation instructions are provided with the unit. The lower end output (zero light level) and the upper end light level outputs can be custom-ordered for specific voltages. A range of the standard output voltages supplied are listed in Specifications.



Wiring the MK7-B



Wiring the MK7-B to VTI-1

To prevent electrical shock and possible equipment damage, disconnect power coming from the controller prior to hookup. Wiring from the sensor to the controller should be with 18- or 22-gauge stranded wire. Do not run the low-voltage wire with or near power wiring. For long wire runs or where there is excessive electrical noise, shielded cable or cable in conduit is required. Cable length should not exceed 500' (152m). Wire the sensor to the appropriate analog port of the controller according to the controller manufacturer's instructions and the specific details of the particular sensor listed on this page.

ORDERING INFORMATION

MODEL	DESCRIPTION
MK7-B	Daylight Harvesting Photosensor
CCF	Indoor (ceiling facing down)
CR	Outdoor (horizontal facing north)
CS	Skylight (indoor facing up)
	OUTPUT SIGNAL
VTI	4-20 mA
0/5	0-5 VDC
1/5	1-5 VDC
0/10	0-10 VDC
1/10	1-10 VDC

MK7-B – **CCF** – **1/5**

Example: **MK7-B-CCF-1/5** Light sensor, indoor housing, 1-5 VDC output signal