

**ModSUN: outdoor brightness measurement module**

ModSUN module allows to transmit, over the **CONTATTO** bus, the ambient brightness value detected by a sensor inside the module itself. ModSUN module can be well applied for the brightness regulation for external or internal applications in industrial plants. ModSUN module can be use only in systems that uses MCPXT.

The module has been developed for applications requiring a case with integrated sensor, with a good extent of the protection degree, for external use or for detection of brightness in hangars or similar industrial buildings.

Through a 4-way dip switch, ModSUN module can be configured for 5 full scale values: 500, 1000, 2000, 20000 and 100000 lux.

The module features a 5-way removable terminal block for the connection to the bus. A green LED on the board of the module informs about the power on condition. ModSUN module is housed inside a plastic module with transparent cover and IP55 protection degree.

**Module setting**

To set full scale of ModSUN module, the transparent cover has to be removed. This operation can be performed with the help of a little screwdriver.

In this way, the 4-way dip switch can be accessed (see the figure in the wiring diagram paragraph); allowed settings are the following:

F.Scale [lux]	SW1	SW2	SW3	SW4
500	OFF	OFF	OFF	OFF
1000	ON	OFF	OFF	OFF
2000	ON	ON	OFF	OFF
20000	ON	ON	ON	OFF
100000	ON	ON	ON	ON

The ON position is reported on the dip-switch.

To avoid damage due to electrostatic discharge, it is strongly recommended to avoid to touch other parts of the circuit. After the desired setting has been performed, place back the transparent cover.

The factory setting of ModSUN full scale is 1000 lux.

**Address programming**

ModSUN module takes 1 input address, to be assigned by FXPRO programmer.

A proper area on the lateral label allows to write the programmed module address for an immediate visual identification.

**Brightness level reading**

As said above, ModSUN module take one input address. The brightness measured by ModSUN module is reported on the bus as analog value in the range 0 to 1023; the value read from the bus will then match, for each one of the available full scale, a value in lux given by:



F.Scale [lux]	Formula
500	$L_{lux} = 0.5 \times VAL_{bus}$
1000	$L_{lux} = VAL_{bus}$
2000	$L_{lux} = 2 \times VAL_{bus}$
20000	$L_{lux} = 20 \times VAL_{bus}$
100000	$L_{lux} = 100 \times VAL_{bus}$

where  $VAL_{bus}$  is the value read from the bus and  $L_{lux}$  is the brightness value measured by the sensor.

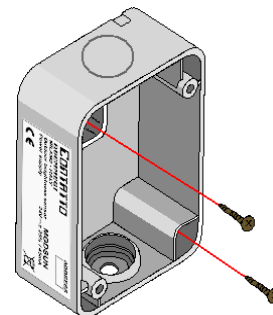
On the contrary, a given brightness value will be sent on the bus as:

F.Scale [lux]	Formula
500	$VAL_{bus} = 2 \times L_{lux}$
1000	$VAL_{bus} = L_{lux}$
2000	$VAL_{bus} = 0.5 \times L_{lux}$
20000	$VAL_{bus} = 0.05 \times L_{lux}$
100000	$VAL_{bus} = 0.01 \times L_{lux}$

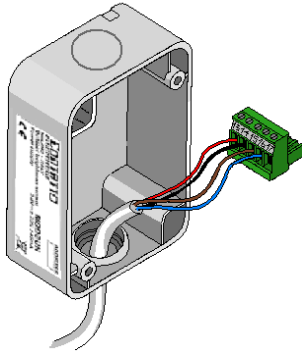
**Note:** ModSUN can exclusively operate with the MCP XT controller.

**Installation hints**

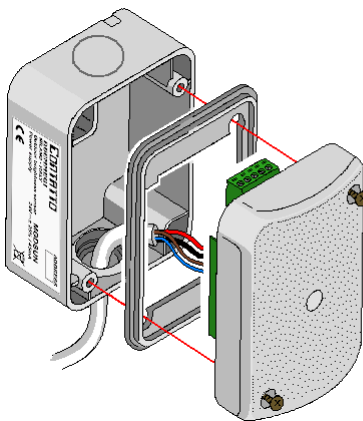
The bottom of the case must be fixed on the wall (vertical or horizontal) by two screws (not provided).



Introduce the bus through the cable bushing: pay attention to the coupling between them in order to assure the water-proof characteristic of the module. After that connect the bus cable to the 5-way removable terminal block: pay attention to the polarity.



Finally, insert the removable terminal block into the related male connector. Place in the correct way the gasket on the cover and apply to the bottom of the module: pay attention that the removable terminal block be on the opposite side of the cable bushing.

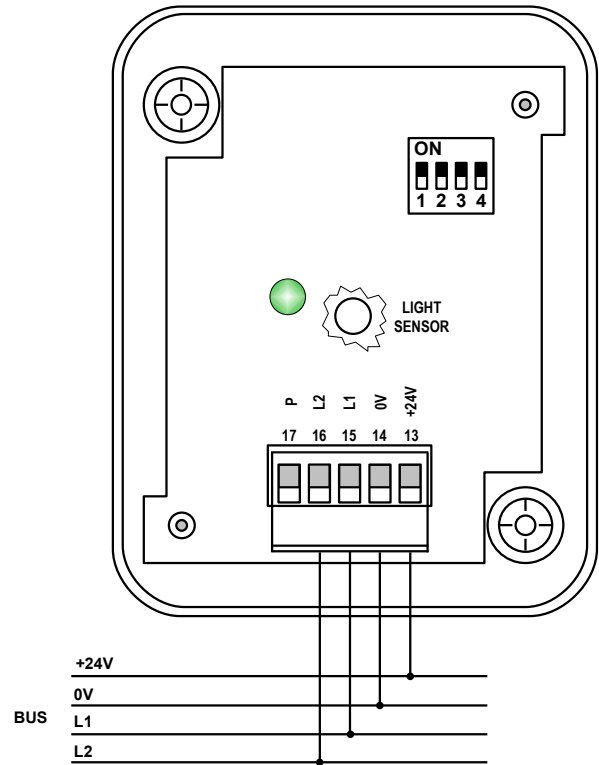


**Technical characteristics**

Supply voltage	24V $\pm$ 25% SELV
MAX current consumption	35mA
Sensor type	Photodiode with integrated filter for adaptation to human eye sensitivity
Full scale	Configurable among: <ul style="list-style-type: none"> <li>• 500 lux</li> <li>• 1000 lux</li> <li>• 2000 lux</li> <li>• 20000 lux</li> <li>• 100000 lux</li> </ul>
Resolution	1023 points
Measurement error	$\pm$ 5% of full scale value
Operating temperature	-10 $\div$ +50 °C
Storage temperature	-30 $\div$ +85 °C
Protection degree	IP55

**Wiring diagram**

The required connections for the proper operation of ModSUN module are those related to the bus as shown by the following wiring diagram.



**Outline dimensions**

