

ModLUX: ambient light measurement module with sensor for ceiling mounting

ModLUX module allows to transmit, over the **CONTATTO** bus, the ambient brightness value detected by a sensor provided together the module.

ModLUX module can be well applied for the brightness regulation of offices, stores, open spaces. ModLUX module can operate exclusively in systems with MCP XT controller.

The sensor has been expressly developed for the ceiling mounting and its prismatic shape allows a good directivity; in this way only the light reflected by the surface in front of the sensor is detected (e.g the floor or the desk).

Thanks to special filter, the sensor is adapted to the sensitivity of the human eyes.

By a 4-way dip switch, ModLUX module can be configured for 5 full scale values: 250, 500, 1000, 1500 and 2000 lux.

The module features a 5-way removable terminal block for the connection to the bus and a 2-way fixed terminal block for the connection to the sensor.

A green LED on a side of the bus terminal shows the power on condition.

ModLUX module is housed inside a DIN 3M module with reduced height; the module is provided with the sensor already connected by 1 meter cable.

Module setting

To set full scale of ModLUX module, the cover of the light sensor terminal block 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
250	OFF	OFF	OFF	OFF
500	ON	OFF	OFF	OFF
1000	ON	ON	OFF	OFF
1500	ON	ON	ON	OFF
2000	ON	ON	ON	ON

The ON position of each switch is toward the top side. 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, put back the terminal cover inserting it in its proper site.

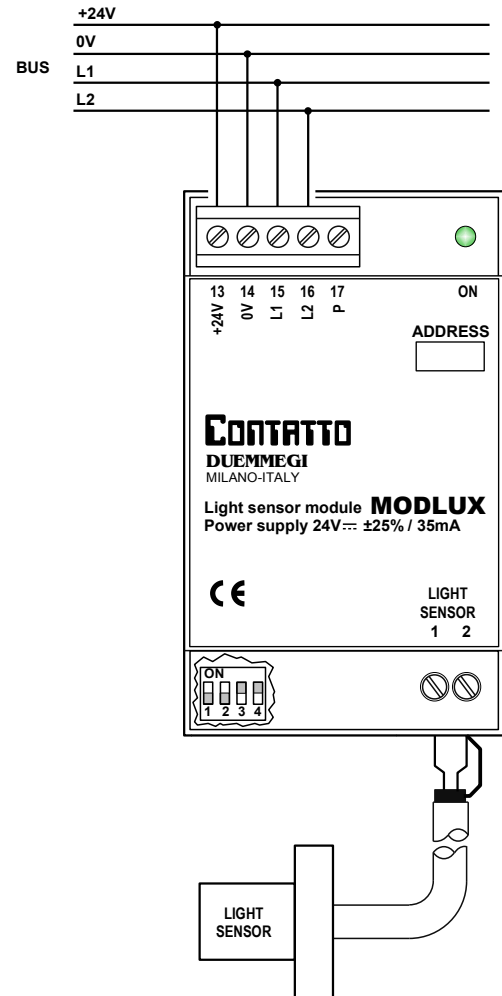
The factory setting of ModLUX full scale is 1000 lux.

Address programming

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

A white label on the front panel allows to write the programmed module address for an immediate visual identification.

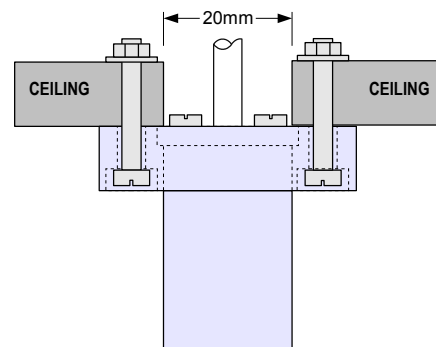
Wiring diagram



Installation

The sensor must be fixed on the ceiling by two 3 or 4mm screws (not provided). For proper mounting, the sensor can be disconnected from the module.

Make a 20mm hole in the ceiling and mount the sensor as shown in the following figure:



Insert the cylinder of the sensor in the provided ring, from the side where the hole of the ring is bigger. Fix then the ring and the sensor to the ceiling by 2 screws with nuts or by 2 Parker screws.

Connect again the sensor cable to the module (white wire to terminal 1, brown and black wires to terminal 2).
Avoid to prolong the connection cable between the sensor and the module; on the contrary, some degradations on the module performance can occur.

Brightness level reading

As said above, ModLUX module take one input address. The brightness measured by ModLUX 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
250	$L_{lux} = 0.25 \times VAL_{bus}$
500	$L_{lux} = 0.5 \times VAL_{bus}$
1000	$L_{lux} = VAL_{bus}$
1500	$L_{lux} = 1.5 \times VAL_{bus}$
2000	$L_{lux} = 2 \times VAL_{bus}$

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
250	$VAL_{bus} = 4 \times L_{lux}$
500	$VAL_{bus} = 2 \times L_{lux}$
1000	$VAL_{bus} = L_{lux}$
1500	$VAL_{bus} = 0.666 \times L_{lux}$
2000	$VAL_{bus} = 0.5 \times L_{lux}$

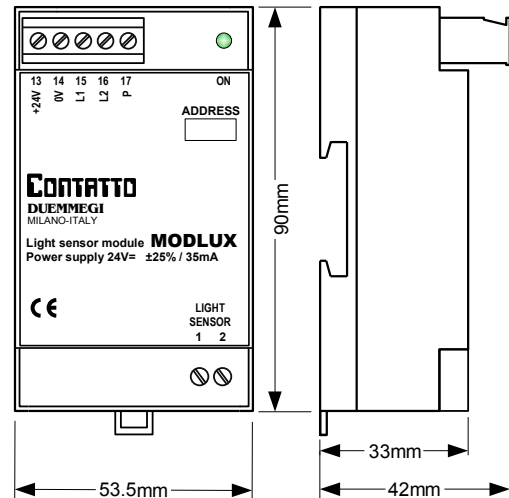
Note: ModLUX can operate with MCP XT controller only.

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: • 250 lux • 500 lux • 1000 lux • 1500 lux • 2000 lux
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	IP20

Outline dimensions

ModLUX module:



Sensor:

