

## JSM-02C-230V-2A

### General

This module can work with 2 software versions.

1. One set of blinds with two motors, down for glare protection and up for light control (software version "LL")
2. Two blinds each with one motor for glare protection or shading (software version "VS").

This module has 4 relay outputs (0.05 - 2A) for directly connecting the 2 blind motors. The module automatically calculates the calibrated run time of the motors during each run. The slat adjustment is processor-controlled with a computer accuracy

of 256 steps for the setting from 0-180°. The blind module can be programmed and configured very easily with our ProgrammDesigner programming software (ProgrammDesigner version 3. 64 and up, master version V4.50; compiler V4.50). The specific parameters of the individual blinds are transferred to the blind module via the master module.

The current statuses of the relays for controlling the blind motors is displayed via LEDs.

### In- / Outputs

- 4 relay outputs, 230V/2A
- 4 inputs (without function)

### Function displays

- 1 red LED indicates the operating voltage
- 1 yellow flashing LED indicates the communication with the Master
- The current statuses of the relays for controlling the blind motors is displayed via 4 green LEDs.

### Design

- Light grey plastic casing, can be snapped onto 35 mm DIN rail mounting 4 separating units

### Special function DIP switch 1

- reserve
  - switch must be OFF

### Operating modes

The jalousie modul JSM-02C-230V-2A works in 4 operation modes (mode 1-4). These are set by the outputs Ax.7 and Ax.8 of the Master-Modul.

mode	function	state Ax.7	state Ax.8
mode 1	manual mode	0	0
mode 2	automatic mode	1	0
mode 3	target value mode	0	1
mode 4	I/O mode	1	1

### Mode 1 “manual mode”

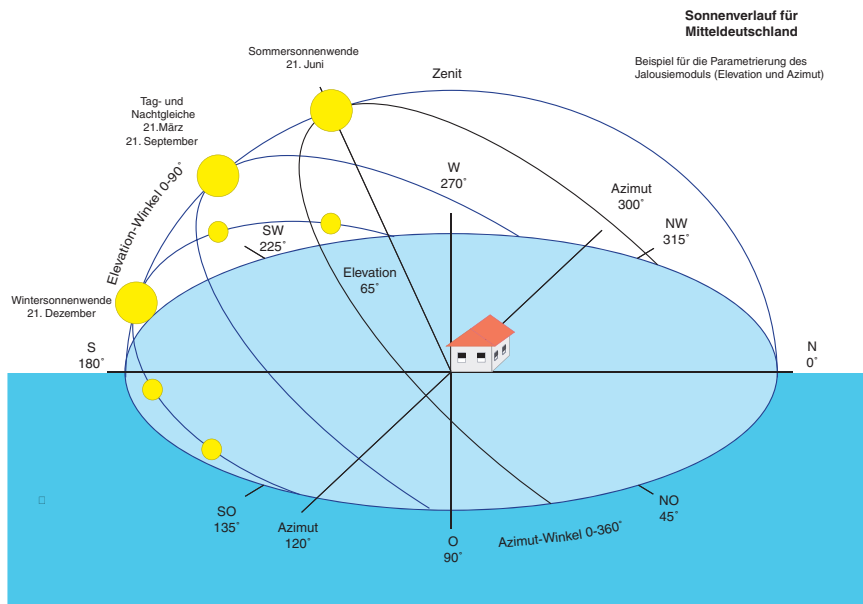
This mode is used to operate the blinds manually. The following functions are possible:

- Direct control of the output contacts via a programming link in the master. Example: COPY Ax.1 = Ex.1 (Ax.1 is the output contact in the blind module, Ex.1 is a key e.g. on site). A short press of the key moves the blinds one angle step (angle can be parameterised). A long press of the key effects continuous movement after 1 second until the end switch-off or the blinds are stopped manually. Pressing the key during operation stops the process immediately.
- The pause time for changing the direction of the blinds can be set using a time parameter (parameter 10). This allows you to adhere to the minimum pause time for changing direction as specified by the respective blind manufacturer.
- The central up and down outputs (Ax.5, Ax.6) have absolute priority (alarm, fire brigade, escape routes etc.). This function takes effect on both blind motors. Pressing and holding “central up”, for example, overrides any motion functions and the blinds will move up. A pulse activates the command. You can also lock the manual motion functions by means of permanent contact.
- The anti-block mechanism (set using parameters 11 and 16) protects the blind motors. If the drive does not reach its final switch-off within the set time, the contact is disconnected from the module. This is signalled via the signal input Ex.7 and can be further processed in the master. The blinds can only be released for motion again by pressing the up/down keys at the same time, changing the mode, activating the wind/rain monitoring system or the central function.
- The rain guard is activated by the master via a bit within the weather data (see Programmdesigner description). If the rain bit is set by the master module, the blinds will immediately go up (analysis can be set with parameter 33).
- The wind guard is always active in this mode. The master sends the current wind speed and direction to the blind module. If the wind guard does not need to be analysed, e.g. in the case of indoor blinds, you can enter 50m/s for both wind values. The designated setting parameters (see parameters 21-32) are the response delay time and 2 speeds (speed 1 and speed 2). The two speeds are assigned the analysis directions (N, NE, E, SE, S, SW, W, NW). This allows you to protect the blinds on each façade according to the wind direction, without all the blinds going up at once. If the wind strength exceeds the set threshold values and delay times, the blinds will go up automatically and will remain locked until the wind strength falls below the set value. When the wind guard is activated, the anti-block mechanism will be reset automatically. If the wind strength measured is twice as high as the set threshold value, the wind guard will be activated without a time delay. When the wind guard locks the blinds a signal is sent back to the GLT system (Ex.6).

### Mode 2 “automatic mode”

In this mode blind operation and the slat angle setting are fully automatic. The following functions are possible:

- The blinds go down when all the conditions in table 1 (see right) are fulfilled or when all the conditions in table 2 are fulfilled. Table 2 takes priority. If both sets of conditions are fulfilled (table 1 and table 2), the slat angle will always be calculated by the condition in table 2 (compulsory shading). The function described below is identical for both sets of blinds, however the parameters can be set individually. !! See tables!! If none of the conditions is fulfilled, the blinds will go “up” or “down” to the defined starting position with the defined angle, as well as a definable night setting (parameter 72-77). See “Special functions in automatic mode.”
- The pause time for changing the direction of the blinds can be set using a time parameter (parameter 10). This allows you to adhere to the minimum pause time for changing direction as specified by the respective blind manufacturer.
- Die central up and down outputs (Ax.5, Ax.6) have absolute priority (alarm, fire brigade, escape routes etc.). This function takes effect on both blind motors. Pressing and holding “central up“, for example, overrides any motion functions and the blinds will move up. The central functions must be programmed as a permanent contact. The motors will run for as long as the command is present and stop when it is cancelled.
- The anti-block mechanism (can be set using parameters 11 and 16) protects the blind motor. If the drive does not reach its final switch-off within the set time, the contact is disconnected from the module/the module disconnects the contact. This is signalled via the signal input Ex.7 and can be further processed in the master. The blinds can only be released for motion again by changing the mode or activating the wind/rain monitoring system.
- The rain guard is activated by the master via a bit within the weather data (see Programmdesigner description). If the rain bit is set by the master module, the blinds will immediately go up (analysis can be set with parameter 33).
- The wind guard is always active in this mode. The master sends the current wind speed and direction to the blind module. If the wind guard does not need to be analysed, e.g. in the case of indoor blinds, you can enter 50m/s for both wind values. The designated setting parameters (see parameters 21-33) are the response delay time and 2 speeds (speed 1 and speed 2). The two speeds are assigned the analysis directions (N, NE, E, SE, S, SW, W, NW). This allows you to protect the blinds on each façade according to with the wind direction, without all the blinds going up at once. If the wind strength exceeds the set threshold values and delay times, the blinds will go up automatically and will remain locked until the wind strength falls below the set value. When the wind guard is activated, the anti-block mechanism will be reset automatically. If the wind strength measured is twice as high as the set threshold value, the wind guard will be activated without a time delay. When the wind guard locks the blinds, a signal is sent back to the GLT system (Ex.6).



**Condition table 1: all conditions in the table are AND functions**

No.	Significance	Parameter	Parameter no.
1	The azimuth (direction from which the sun is shining) must be between the left and right angle limit of the window	Left azimuth limit Right azimuth limit	1 2
2	The elevation (angle of elevation of the sun over the horizon) must be between the lower and upper angle limit of the window.	Lower elevation limit Upper elevation limit	3 4
3	The wind guard must not be active		internal
4	The set shading illumination must be reached	How the internal shading illumination is formed is explained below	internal

**Condition table 2: all conditions in the table are AND functions**

No.	Significance	Parameter	Parameter no
1	The wind guard must not be active		
2	One of the two compulsory shading illuminations must be reached.		46, 47

### Calculating the slat angle when the conditions in table 1 are fulfilled

There is a parameter table for the calculation which contains the slat angle according to the elevation (angle of elevation of the sun over the horizon) (parameters 50-59). The resolution of this table is 10° based on the elevation.

An appropriate slat value can therefore be saved for all elevation values from 0 to 90° in 10° intervals. If the sun is in between the elevation values graded in 10°, the slat angle is interpolated. This enables dif-

ferent motion strategies according to the elevation. By default the table values are set so that the slats are always 90° to the sun, thus ensuring the maximum glare protection. If you also want the blinds to let some sunlight in when the sun is shining, the following values have proven successful:

Parameter	Elevation	Slat angle
50	0	20
51	10	30
52	20	40
53	30	50
54	40	60
55	50	75
56	60	90
57	70	90
58	80	90
59	90	90

In order to create daylight control systems, the blind manufacturer must specify the right slat angle to the respective elevation angle, or you have to determine it yourself by testing (e.g. in manual mode).

### Calculating the slat angle when the conditions in table 2 are fulfilled

The slat angle assigned to the respective compulsory shade illumination will be implemented (parameters 48-49 with motor for glare protection and 60-61 with motor for light control). Confirmation that the compulsory shading has been activated will be sent back to the GLT system.

### Calculating the shading illumination

The brightness value currently measured by the light sensor from the set analysis direction (par. 41) is used for the calculation.

To prevent oscillation, you can set the delay time for shading and deshading separately. The external light value measured is smoothed out by a time filter (par. 34).

The outside light value can also be changed via the GLT system. You can give clearance for scaling the outside light value with parameter 35. This option should be used for special applications. In the case of standard applications this parameter should be set to "do not use".

Parameter	Parameter Nr.
Ansprechzeit (Verzögerungszeit) (Sekunden) Verschatten	39
Ansprechzeit (Verzögerungszeit) (Sekunden) Entschatten	40
Auswerterichtung Lichtwert	41

The shading illumination limit value depends on the current elevation

If the elevation is less than 0°, the shading illumination will automatically be deemed as not reached.

The threshold light value is determined as follows from 4 elevation limit values:

<b>Parameters to be used</b>	<b>Parameter no.</b>
Elevation 0 to 19°	42
Elevation 20 to 39°	43
Elevation 40 to 59°	44
Elevation 60 to 90°	45

### **Special functions in automatic mode**

- Park position: in automatic mode the blinds can be moved to a predefined slat angle if one of the above conditions is not fulfilled (par. 72, 73). This means that the blinds can, for example, generally be put down during the day, even if the outside light is below the specified threshold value.
- Night position: if the outside light value is below the value specified in parameter 76 over the time period specified in parameter 77, the blinds can be positioned at an angle defined in parameter 75 on clearance (par. 74).

### Mode 3 “target value mode”

In this mode the blind slat angle is set by the master. This is necessary, for example, if you want cleaning settings or separately programmable controls.

- The slat angles for both sets of blinds are specified directly by the master via the analogue control channel AAx.1. The values 0-180 correspond to the angle positions 0-180°. Setting 0° is closed, right down. At value 255 the blinds go up. Setting pulses (adjusting the slats) are only issued to the blinds when the difference between the target angle value and the actual angle value is greater than the angle value specified in parameter 8.
- The pause time for changing the direction of the blinds can be set using a time parameter (parameter 10). This allows you to adhere to the minimum pause time for changing direction as specified by the respective blind manufacturer.
- The central up and down outputs (Ax.5, Ax.6) have absolute priority (alarm, fire brigade, escape routes etc.). This function takes effect on both blind motors. Pressing and holding, for example, “central up”, overrides any motion functions and the blinds will go up. The central functions must be programmed as a permanent contact. The motors will run for as long as the command is present and stop when it is cancelled.
- The anti-block mechanism (can be set using parameters 11 and 16) protect the blind motor. If the drive does not reach its final switch-off within the set time, the contact is disconnected from the module/the module disconnects the contact. This is signalled via signal input Ex.7 and can be further processed in the master. The blinds can only be released for motion again by changing mode or activating the wind/rain monitoring system.
- The rain guard is activated by the master via a bit within the weather data (see Programmdesigner description). If the rain bit is set by the master module, the blinds will immediately go up (analysis can be set with parameters).
- The wind guard is always active in this mode. The master sends the current wind speed and direction to the blind module. You can set each blind motor separately. If the wind guard does not need to be analysed, e.g. in the case of indoor blinds, you can enter 50m/s for both wind values. The designated setting parameters (see parameters 22-44) are the response delay time and 2 speeds (speed 1 and speed 2). The two speeds are assigned the analysis directions (N, NE, E, SE, S, SW, W, NW).

This allows you to protect the blinds of each façade according to the wind direction without all the blinds going up at once. If the wind strength exceeds the set threshold values and delay times, the blinds will go up automatically and will remain locked until the wind strength falls below the set value. The anti-block mechanism is automatically reset when the wind guard is activated. If the wind strength measured is twice as high as the set threshold value, the wind guard will be activated without a time delay. When the wind guard locks the blinds, a signal is sent back to the GLT system (Ex.6).

### Mode 4 “I/O mode”

In this mode the module functions as a normal switch module.

- The outputs are activated directly by the master. Once again, the two outputs (up and down) cannot be active at the same time as the relay outputs are additionally locked against each other in the hardware. If both outputs are set, the JSM module will disconnect the two relay contacts.
- No central function
- No anti-block mechanism analysis
- No rain monitoring system analysis
- No wind monitoring system analysis

## Functions of in- / outputs of the jalousie module

The individual functions of the in-/ and outputs are dependent on the respective collimated operating mode.

### Mode 1: Handbetrieb:

Output	Function	Input	Function
Ax.1	steering antiglare or jalousie 1 short: angle up long: completely up	Ex.1	feedback „antiglare active“
Ax.2	steering antiglare or jalousie 1 short: angle down long: completely down	Ex.2	feedback „antiglare active“
Ax.3	steering light control or jalousie 2 short: angle up long: completely up	Ex.3	feedback „light control active“
Ax.4	steering light control or jalousie 2 short: angle down long: completely down	Ex.4	feedback „light control active“
Ax.5	central up	Ex.5	not defined
Ax.6	central down	Ex.6	wind- / rain alarm active
Ax.7	ever 0	Ex.7	anti-blocking device active
Ax.8	ever 0	Ex.8	not defined

Target value angle = no function

### Mode 2: Automatic mode:

Output	Function	Input	Function
Ax.1	Bit=1 forced shading switched off	Ex.1	feedback „antiglare active“
Ax.2	Bit=1 park night jalousie switched off	Ex.2	feedback „antiglare active“
Ax.3	Bit=1 forced shading switched off	Ex.3	feedback „light control active“
Ax.4	Bit=1 park day jalousie switched off	Ex.4	feedback „light control active“
Ax.5	central up	Ex.5	forced shading active
Ax.6	central down	Ex.6	wind- / rain alarm active
Ax.7	ever 1	Ex.7	anti-blocking device active
Ax.8	ever 0	Ex.8	jalousie es down at the automatic mode

When using the “artificial light correction” option, the value can be read in via the analogue input of the AEx.1 module. When using the special function “outside light value scaling” the factor is transferred to the blind module via the analogue output AAx.1. This function allows the user to change the light limit values for shading/deshading. Target value angle = light value scaling [255 = light value (sensor) x 10].

<b>AAx.1 Korrekturfaktor</b>	<b>zur Auswertung verwendeter Lichtwert</b>
0%	Sensorlichtwert x1
10%	x2
20%	x3
100%	x10

#### Mode 3: Sollwertbetrieb:

<b>Output</b>	<b>Function</b>	<b>Input</b>	<b>Function</b>
Ax.1	no function	Ex.1	feedback „antiglare active“
Ax.2	no function	Ex.2	feedback „antiglare active“
Ax.3	no function	Ex.3	feedback „light control active“
Ax.4	no function	Ex.4	feedback „light control active“
Ax.5	central up	Ex.5	no defined
Ax.6	central down	Ex.6	wind- / rain alarm active
Ax.7	ever 0	Ex.7	anti-blocking device active
Ax.8	ever 1	Ex.8	no defined

Target value angle = angle to be set.

The target value angle is specified for both blind motors jointly via analogue output AAx.3

<b>desired value</b>	<b>Jalousie position</b>
<b>AAx.3</b>	
0	jalousie down, lamellae 0°
45	jalousie down, lamellae 45°
90	jalousie down, lamellae 90°
180	jalousie down, lamellae 180°
181-254	no defined (jal. down 180°)
255	jalousie above

#### Mode 4: I/O mode:

Output	function	Input	Function
Ax.1	Bit =1 output J1 on = ON	Ex. 1	feedback signal "glare protection active"
Ax.2	Bit =1 output J1 off = ON	Ex.2	feedback signal "glare protection active"
Ax.3	Bit =1 output J2 on = ON	Ex.3	feedback signal „light control active“
Ax.4	Bit =1 output J2 off = ON	Ex.4	feedback signal „light control active“
Ax.5	no function	Ex.5	not defined
Ax.6	no function	Ex.6	wind / rain alarm active
Ax.7	always 1	Ex.7	not defined
Ax.8	always 1	Ex.8	not defined

Target value angle = no function

#### Blind module error messages

The blind module performs an internal self test and signals the following possible faults:

- Yellow LED flashes quickly (4Hz) >> parameter memory faulty, module needs to be reprogrammed.
- Yellow LED does not light up >> no connection to the master module, check address and BUS cable.
- Red LED does not light up >> check module's 24V operating voltage.

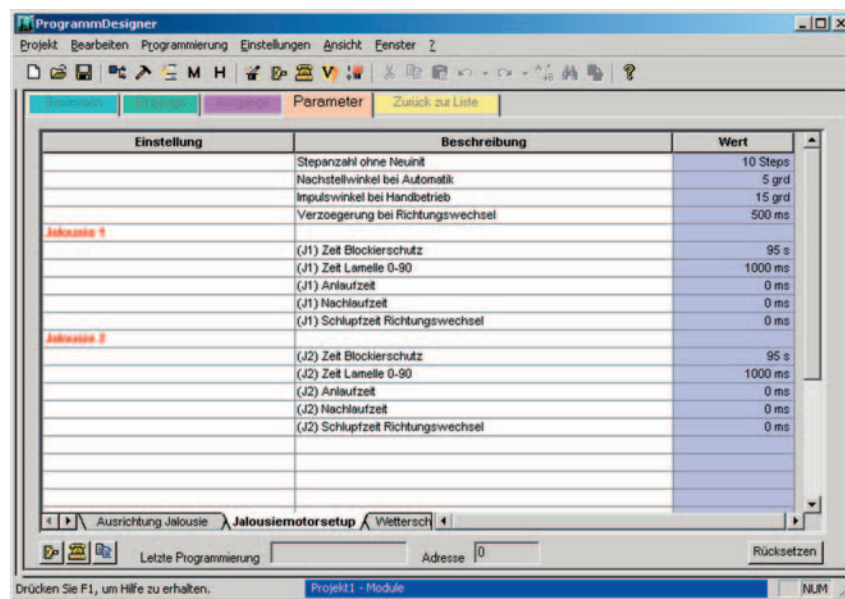
#### Starting up

Preparation:

- In order to calibrate the blinds you need either a test touch pad or a handheld transmitter with UP/DOWN keys for each blind motor. It is also recommended that you have the possibility of simulating the brightness for east, south, west and north, as well as the elevation, azimuth and wind speed.
- The blind motors must be connected as the currents are calculated during the run. If the motors are not connected the blind module detects an error and does not switch the outputs on.
- Compass for aligning the central daylight sensor ZTLS-04.
- The central daylight sensor, SUN-PRO-01, radio controlled clock DCF-77 and, if available, wind speed sensor, wind direction sensor and rain sensor must be installed and configured to provide the blind module with the specific data via the subnet.
- You must know the exact position of the building.
- You must have ground plans with the position of the blinds drawn in.
- Protractor to determine the directions and the angle of the sun position.

The exact position of the blinds is determined on the basis of the ground plan. The following data is required for each set of blinds:

„Left azimuth limit“	from when the sun hits the window e.g. 40°
„Right azimuth limit“	up to when the sun hits the window e.g. 230°
„Lower elevation limit“	lowest position of the sun default 0° or determine (hill or building in front)
„Top elevation limit“	highest position of the sun default 0° or determine (canopy)



- Motor setup >> enter “anti-block mechanism time“ as maximum (255s) for first run of the blinds.
- Bring blinds down.
- Put blinds up and calculate the total run time of the blinds.
- Add a safety time of 10s to the calculated run time, enter it into the setup menu under “anti-block mechanism time“ and transfer to the module (bottom left key with D-SUB plug symbol).
- Set “pulse angle in manual mode“ to 90° and transfer.
- Now using the test touch pad move blinds step by step (inch). > First step, blinds should be horizontal. > Second step, blinds should be fully tilted inwards.
- Enter the values for “time - slats 0-90“ in the motor setup (this value must be calculated by gradual trial and error).
- Adjust the values until the blinds do not yet go up after the second step, but do not close any further either.
- Set “pulse angle in manual mode“ to 10° and transfer.
- Now the blinds should be horizontal when you press 9 times ( $9 \times 10^\circ = 90^\circ$ ) and should tilt completely inwards when you press another nine times ( $18 \times 10^\circ = 180^\circ$ ).
- If the blinds are not completely closed after pressing 18 times, you need to enter a value in the “warm-up time“ parameter (e.g. 3ms).
- If the blinds are fully closed too soon, enter a value in the “follow-up time“ parameter (e.g. 2ms).

Note: You can only set a warm-up time or a follow-up time!

- These values must also be calculated by repeated trial and error.
- The second motor is set as described above.
- To complete the motor setup set the pulse angle to 15° in manual mode and transfer it.
- Ask your blind manufacturer for the wind guard parameters (for interior blinds set this value to ?).

As far as the other parameters are concerned, we recommend you use the default values and correct them if necessary.

### Troubleshooting

problems with the blinds:

All the parameters are correct but the blinds will not set the angle or they stop beforehand....

!!! Check the run time!!!

The motor may have run into the anti-block mechanism. This can only be rectified by changing mode (e.g. switching from automatic to manual or vice versa) or by pressing the "UP/DOWN" keys at the same time.

The blind module sets the seventh input bit (Ex.7) for signalling the anti-block mechanism!

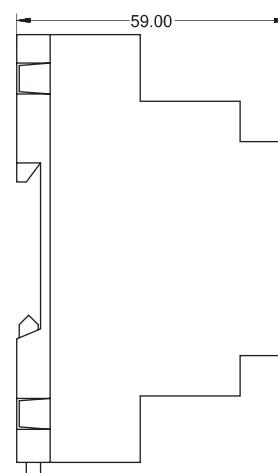
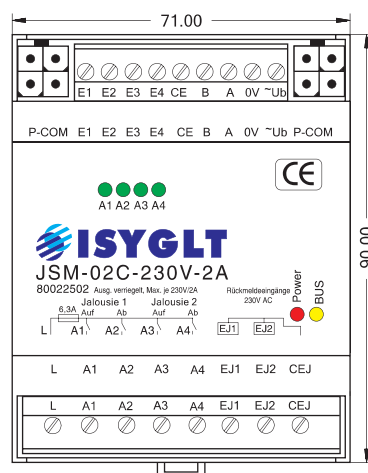
### Technical datas

Type	JSM-02C-230V-2A
Art. Nr.	80022512
Operating voltage	16-35V DC, 16-27V AC
Current consumption max.	60mA at 24V; 80mA at 16V
Outputs	4 relay outputs 250V min. 50mA max. 2A
Output voltage	250V AC each output
Output current	Min. 50mA (because of end position recognition) max. 2A
Insulation voltage	Outputs - BUS 1000V
Subnet (RS-485)	max. 5,6V limited by Z-diodes
Dimensions	BxHxT 71x90x59mm (4TE)
Weight	190g
Connections	Screw terminals 2,5mm <sup>2</sup> , pluggable, BUS connector
Operating temperature	0...+50°C
Storage temperature	-25...+70°C
Humidity	0 ...85 % r.F. non condensing
Protection class	IP30
EMV immunity	Use in typical industrial environment. Category 3 according to IEC-1000-4-4 (Test was carried out within a whole system)
ESD immunity	Category 3 according to IEC-1000-4-2
CE sign	yes

### Terminal assignment

≅ Ub	Operating voltage
0V	Operating voltage
A	Subnet (BUS A, RS-485)
B	Subnet (BUS B, RS-485)
E1	Not allocated
E2	Not allocated
E3	Not allocated
E4	Not allocated
CE	Not allocated
L	Common connection for relay output (internal with fuse 6,3A abgesichert) secured
A1	Blind motor antigrare UP
A2	Blind motor antigrare DOWN
A3	Blind motor light guidance UP
A4	Blind motor light guidance DOWN
EJ1	Not allocated
EJ2	Not allocated
CEJ	Not allocated
PCOM	ISYGLT-Subnet and operating voltage
PCOM	ISYGLT-Subnet and operating voltage

### View



### Wiring diagram

