

Operating instructions for the processor-controlled Universal Sensor Relays USR12-500-230V UC, USR12-500-12V UC and USR12-500-24V UC, components of the Shading System and Roller Blind Control BRS



USR12-500-230V 5A/250V AC, USR12-500-12V UC 0,5A/12V UC and USR12-500-24V UC 0,5A/24V UC, each 5 NO contacts

The processor-controlled Universal Sensor Relays USR12 evaluates the control input, light sensor, rain sensor, frost sensor and wind sensor and, depending on the setting of the rotary control under a flap on the front panel, sends control commands to the actuators EGS12.1 and/or EGS12.2.

The 230V-type is equipped with an isolation transformer for the internal power supply and the connected sensors (apart from rain/frost sensor).

The supply voltage is 230V at the L - N terminals. The 12V-type has a supply voltage of 12V UC $\pm 10\%$ at the terminals +B1 - -A2 with power supply ENT12-24 W-230V/12V DC, the 24V-type has a supply voltage of 24V UC $\pm 10\%$ at the terminals +B1 - -A2 with power supply ENT12-24 W-230V/24V DC.

2 module units = 36 mm wide and 55 mm deep.

Apart from setting brightness and delay times, the operating mode rotary switch can be used to select a test mode. Whenever the switch setting is changed from OFF (sensor functions off) to TEST, one of the contact outputs 2 to 6 (in ascending order) is activated while TEST is selected.

Light sensor LS is connected to the terminals LS and GND and, acting as a **sun sensor**, outputs a pulse of 2 sec. to contact output 2 when a threshold that has been set with a rotary control is **exceeded**. The switching threshold can be set from 2 to 2000 lux to 2 to 60 klux with the operating-mode rotary switch. An LED indicates that the switching threshold has been exceeded. The light sensor function is required to activate shading elements and to open blinds; there is no priority assignment.

Light sensor LS, in the form of a **twilight sensor**, outputs a pulse of 2 sec. to contact output 3 when a switching threshold that has been set with a rotary control has been exceeded for at least a whole delay

period. Using the operating-mode rotary switch, the switching threshold can be changed from 2 to 2000 lux to 2 to 60 klux and the delay from 5 to 15 minutes. An LED indicates when values are below threshold. It flashes slowly during the delay period.

The twilight sensor function is needed to deactivate shading elements, to close blinds and to turn on security lighting – it is not assigned a priority. The lux range that is selected does not depend on the selected sun-sensor range.

Only one Light Sensor LS can be connected to a USR12. Additional light sensors for a variety of directions and switching thresholds require a Light and Twilight Sensor Relay LSR12.

If the switching threshold of the twilight sensor has been set equally or higher than the switching threshold of the sun sensor, the switching threshold of the sun sensor will be internally raised over the switching threshold of the twilight sensor.

Rain sensor outputs 4 and 6 of Rain/Frost Sensor RFS are connected to terminals RFS4 and RFS6. Contact outputs 4 and 6 close when the switching threshold, set between normal and sensitive with a rotary control, is exceeded. An LED indicates that the switching threshold has been exceeded. When the rain sensor surface has dried out, contact outputs 4 and 6 open and a pulse of 2 sec. is automatically sent to contact output 2 when the sun-sensor switching threshold has just been exceeded.

For the power supply of the rain/frost sensor RFS, the 12V DC output of power supply ENT12-24 W-230V/12V DC is connected to the measurement lead of the rain sensor, terminals 1 (+) and 2 (-) as well as terminal GND with (-) of the power supply. Ensure correct polarity.

The rain-sensor function is required to close windows and to retract blinds and awnings. It has priority.

As rain and frost trigger identical functions in the overwhelming majority of applications, contact outputs 4 (rain) and 6 (frost) are closed simultaneously to reduce installation costs.

Frost sensor outputs 4 and 5 of Rain/Frost Sensor RFS are connected to the terminals RFS4 and RFS5 and contact output 6 closes when the monitored temperature drops to 1°C or below. Contact output 6 opens again when the temperature exceeds 3°C for as long as 5 minutes. An LED is used as a „temperature too low“ indicator. Sensor output 4 = RFS4 is used in conjunction with the rain sensor if both sensors are connected. If only the frost sensor is used, the power supply ENT12-24 W-230V/12V DC has still to be connected as described for using the rain sensor. Sensor terminal 3 has no function and one conductor of the supplied 6-wire measurement lead is, therefore, unused.

The frost-sensor function is used to control the ventilation of winter gardens, green houses and is required for other windows to prevent excessively cold, outside air being used. It has priority. As windows are usually also closed when there is rain, the rain sensor also activates contact output 6.

Wind sensor WS is connected to the terminals WS and GND and closes contact output 5 when a wind speed = switching threshold between 2 m/s and 20m/s, set with a rotary control, is exceeded. If the wind speed is below the switching threshold, there is a delay to cover a short period of no wind. This delay is the same as the delay for the twilight sensor and can be set to a value between 5 minutes and 15 minutes with the operating-mode rotary selector switch.

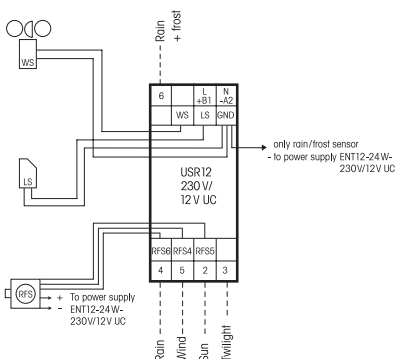
An LED indicates that the threshold has been exceeded; it flashes slowly over the delay period. On delay time-out, contact output 5 opens and a pulse of 2 sec. is automatically sent to contact output 2 when the sun-sensor switching-threshold has just been exceeded.

A wind-sensor malfunction can cause considerable damage and this is why the **USR12 continuously monitors the wind sensor**. If no signal has been received for 24 hours and has not been frost recognized at the same time, which could possibly block the wind sensor, the LED flashes and contact output 1 is closed for one second. This simulates wind without setting a priority to prevent damage and to alert the user about the problem. In the same way will be proceeded if a cable break will be recognized. The wind-sensor function is required to retract awnings and blinds and has priority.

Only one wind sensor can be connected to a USR12. Should further wind sensors be required to cover a variety of wind sensitivities for awnings and blinds, a separate USR12 must be connected for each one. If necessary, see the operating instructions of the appropriate shading elements for the maximum wind speed that can be set for the universal sensor relay.

m/s = km/h		m/s = km/h		m/s = km/h	
3	10,8	7	25,2	10	36,0
5	18,0	8	28,8	11	39,6
6	21,6	9	32,4	12	43,2
13	46,8	16	57,6	20	72,0
14	50,4	17	62,2		
15	54,0	18	64,8		

Do not lay measurement leads parallel to other electrical lines – measurement leads must be screened if longer than 10m. For example, JY-ST-Y. To extend leads use screw terminals and damp-proof connectors. When selecting an installation site for light, rain/frost and wind sensors, ensure that the sensors are not in the shadow of the objects being monitored.



Caution!

These electrical devices may only be installed and fitted by trained technicians.