GENERAL INFORMATION :

A charge regulator is indispensable for maintaining peak performance and long life span for batteries and solar installations. These special demands of solar power installations are met optimally by the solar charge regulator SLR 308/316. Due to their added functions are they especially suitable for operating solar lighting systems such as battery operated street and parking lighting but also for alarm and surveying systems.

Technical description :

The SLR 308/316 offers the following regulating and monitoring functions:

Battery control :
- Automatic overcharge protection using the shunt principle (regulator).
- Optimal charge and charge maintenance via pulse charging (PWM) at charging frequency of 20 Hz.
- High efficiency up to 98 %.
- The shunt charge regulator allows charging even deep discharged batteries.
- Defined switch flanks prevent interference with radio signals. Automatic protection against discharging of battery.
- The load is switched off by an intelligent High-Side Power Switch if the charge level falls below the discharge threshold. This power switch is short-circuit and overtemperatur protected.
- Red LED for displaying "*load off*".
- A blocking diode (Schottky diode) prevents the battery being discharged the by the solar module at night.

Lighting control :
- Brightness control via the solar module. Potentiometer P 3 adjusts level of brightness. Additional sensors are not necessary.
- The on-times of the lighting device during darkness are adjustable via a 24h electronic clock with LCD display.
- Up to 6 periods of "on-time" can be programmed.
- Green LED for "*lamp on*".

Options :
- **IRS 1007 :** Infrared motion detectors like the IRS1007 or LBP120 can limit the time of lighting to reduce current consumption. A model for two sensors is optionally available
- **KTY :** The temperature sensor KTY 881-8 adjusts the final voltage to the battery temperature by -4,5 mV/C/ cell.

Technical Data at 25°C		SLR 308		SLR 316	
Nominal system voltage	U_{sys}	12V	24V	12V	24V
full charge voltage	U_{ct}	14.1V	28.2V	14.1V	28.2V
maximum solar generator power	P_{max}	130W	260W	260W	520W
Load disconnect voltage	$U_{load\ off}$	11.0V	22.0V	11.0V	22.0V
load reconnect voltage	$U_{load\ on}$	12.5V	25.0V	12.5V	25.0V
maximum input voltage	U_{INmax}	50V			
maximum solar module current	I_{Kmax}	8 A		16 A	
maximum continuous load current	$I_{load\ max}$	8A		12A	
internal blade fuse		10A		15A	
quiescent current (UBatt=12V, LED off)	IV	$\leq$ 3mA			
operating temperature range	TA	-15...50°C			
max. admissable humidity		75 %			
ingress protection of enclosure		IP 65, splash proof			
case bottom		plastic		aluminium	
case cover		clear plastic cover			
terminals		4 mm²		10 mm²	
cable glands		1x PG9, 3x PG16		1x PG9, 3x M25x1,5	
overall dimensions		160 x 110 x 60mm		175 x 115 x 60mm	
weight incl. accessories		470g		670g	

Protection against overload, polarisation and burning of wires
- High standard of quality due to select components. The life span of the charge regulator is at least that of solar modules. Low quiescent current due to selection of energy conserving components.
- Two-year warranty with proper use within the recommended ranges of operation.

Connection and installation:

- The system voltage has to agree with the rated voltage of the regulator. Check the 12/24V switch position on the board.
- To avoid voltage loss due to long wires, the solar regulator is to be set up close to the battery.
- Use heavy wires if possible (at least 2.5 mm^2).
- It is essential to respect the correct polarity with all connecting wires.
- Do not expose the regulator to direct sunlight and high temperatures.
- The brightness threshold must be set at the same time of day (brightness) when the lamp is later supposed to switch on and off. Set the slide switch of the timer on *Timer,* then press *On/Off* until *On* appears on the timer display. The relay connects the application, the green LED *"lamp on"* is lit. When delivered the potentiometer P3 is turned all the way to the left, so that the lamp is activated even at a high level of brightness (daylight). The level of brightness is set by turning the potentiometer P3 to the right (clockwise). The application is switched off, and the green control LED *"lamp on"* turns off. Make sure that the automatic discharging protection is inactive (LED red *Off*). Slowly turn the potentiometer to the left until the lighting device is connected (note that there is a built-in delay of 10 seconds). <u>Attention :</u> at final voltage $\geq$ 14.1 (28.2) V you cannot switch the lighting on for technical reasons. I.e. the level of brightness can only be set at a battery voltage of $\leq$ 14.0 (28.0) V.
- When connecting the sensor KTY 881-(x) to the clamps T/T the attached substitute resistor R19 (2KΩ) is omitted. To measure the battery temperature the sensor is fastened underneath a pole clamp.
- When using the IR-Sensor IRS1007 connect the clamps 1-3 of the charge regulator with the clamps 1 - 3 of the sensor. Use wires of at least 0,5 mm^2.
- Important for checking or testing the solar charge regulator: If power supply units, batteries or other sources of current substitute the solar generator and are attached to the clamps S+/S-, then it is absolutely necessary to include a protective resistance in series with the source in order to dynamically limit the short-circuit current.

Programming the clock : (not valid for the SLR308-4000)

Reset the clock via the *Res*et key. During a possible interruption of battery voltage the programming is erased also.

- To set the time move the slide switch to the clock symbol $\bigcirc$ and adjust the keys + / - to the correct time. The clock starts when you move the slide switch to another position.
- To program the 6 possible switching commands set the slide switch to symbol C1. Choose *ON* or *OFF*. Set the switching times with the +/- keys and confirm with *ENTER*.
- Programmed switching commands can be controlled through repeated pressing of the *Enter* key. The switching commands are displayed chronologically and can be adjusted via +/ - keys. Confirm by pressing the *Enter* key.
- To activate the clock program move the slide switch to *AUTO*.
- The clock setting enables a manual operation of the circuit exit for testing (use the *On/Off* keys). An *On/Off* display must not be changed during this operation. At this stage the charge regulator may not be within voltage limits (UBatt < 14.1 resp. 28.2 V), the discharge protection must be inactive (LED red turned off), the potentiometer P3 is turned all the way to the left, and any IR sensor must be disconnected.