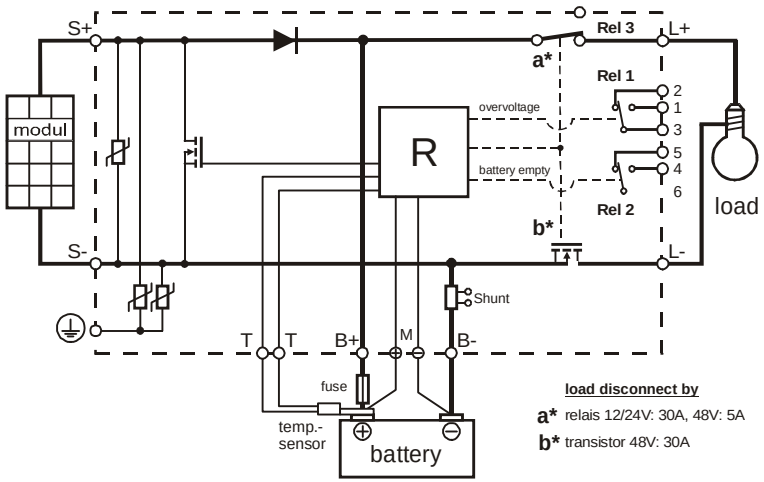
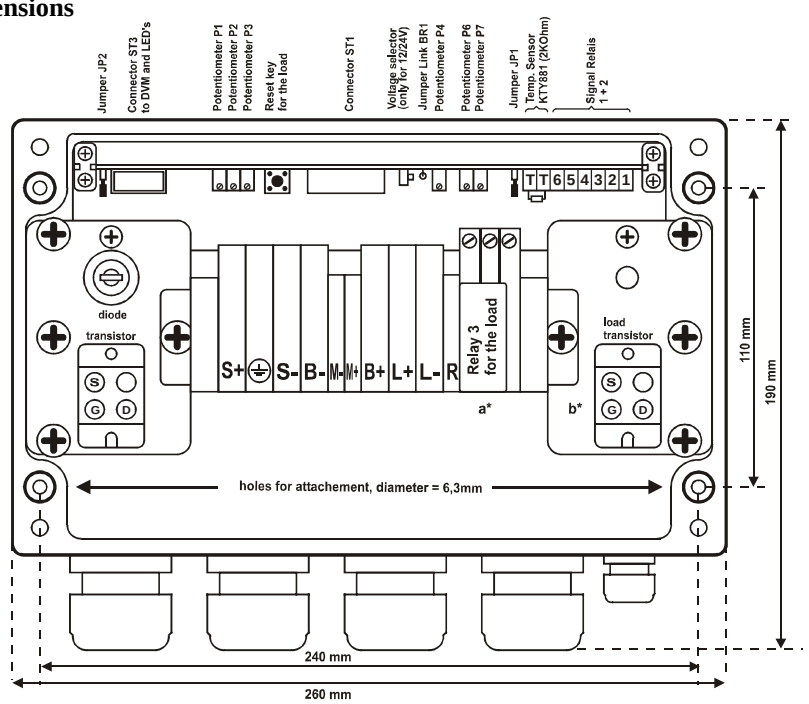
- Do not expose the regulator to direct sunlight and high temperatures.
- Make sure that either the sensor KTY881 or the substitute resistor R19 is in the terminals T/T. To measure the battery temperature fasten the sensor underneath a pole terminal.
- Important for testing: If you substitute the modules by an external power supply it its necessary to limit the short-circuit current by a protective resistance (> 10Ω)

Block circuit



Dimensions



SLR130/145 Solar Charge Regulator

Applications:

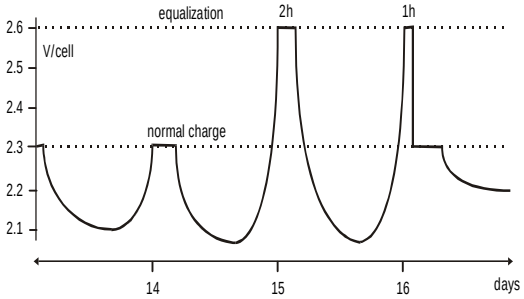
Stand alone photovoltaic installations with up to 2,5kW module performance. System voltage 12,24 and 48V. Used in professional photovoltaic installations such as telecommunication systems, radio- and TV- booster stations, directional radio installations as well as autonomous household energy supply. Specific voltages and models provided on request.

Technical features:

- Automatic overcharge protection using the shunt-switch principle. Optimal charge and charge maintenance via impulse charging (PWM) at switching frequency 20Hz.
- High efficiency of >96%. Defined switch flanks prevent interference with radio signals.
- Integrated lightning protection through appropriate protectors in input circuit.
- Integrated long-term timer (15 days) for periodic equalization charge.
- Automatic protection against discharging of battery. The load is switched off by a bistable load relay if the charge level falls below the discharge threshold. No increased current consumption in all states.
- Warning "empty battery" via LED and voltage free photo MOS relay.
- The load cut-off has a delay of about one minute to allow for brief load variations. Early reset is possible by pressing a reset key inside the device.
- LC-Display with automatic switching between current and voltage measurement.
- Five LED display functions on the cover of the housing.
- Malfunction display „overcharge„ via LED and under voltage signal relay.
- compact case (aluminum pressure cast), see- through panel on cover.
  The life span of the charge regulator is at least that of the solar module.
- Two year warranty with proper use within recommended ranges of operation.

Equalization cycle:

Batteries with liquid electrolytes may suffer a sulfating of electrodes and separation of acid layers if they are exclusively charged below the gassing voltage (especially in batteries with high walls). This leads to the loss of capacity and damage to electrodes.

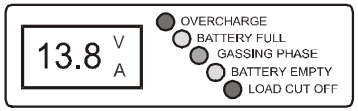


Equalization cycle every 15 days

To prevent this separation of electrolytes and to improve the battery life span, the SLR130/145 starts every fifteen days a gassing cycle. For about three hours the final charge voltage will be increased to 2.6V/cell. The resulting gassing phase will be finished after three hours of gassing charge (>2.4V/cell). (See figure)

For sealed gel batteries the gassing phase can be deactivated.

Displays in the housing cover:



Integrated LC-Display with automatic switching between current (A) and voltage (V) measurement every 10 sec. In current mode the measuring device shows the sum of the charge current minus the discharge current.

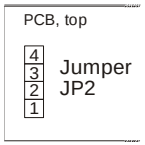
LED 1 red	*overcharge*	if voltage > 2.45V / cell
LED 2 green	*battery full*	final charge voltage reached
LED 3 green:	*gassing phase*	active gassing cycle
LED 4 yellow:	*battery empty*	if voltage < 2.0V / cell
LED 5 red:	*load cut off*	if voltage < 1.95V / cell

Operating features of the charge regulator:

Potentiom.	adjustment *	default	LED	Relay
1	finale charge voltage	2.3V/cell	2, green	-
2	load disconnection voltage	<1.95V/cell	5, red	-
3	load reconnect voltage	>2.2V/cell	5, red	-
6	battery empty prewarning	2.0V/cell	4, yellow	1
7	overcharged	>2.45V/cell	1, red	2

* *Note: Please contact us prior to any readjustments of the potentiometers!*

Reset key TA1 reconnects load prior to reaching the reconnect voltage.
If Jumper Link BR1 is opened, the gassing voltage is reduced from 2.6V to 2.45V/cell.
If Jumper JP1 is opened, the load disconnection time delay is disabled.

Jumper JP02 controls the gassing phase: 	Jumper between Pin 3 + Pin 4	gassing phase is prevented (for sealed gel batteries)
	Jumper between Pin 2 + Pin 3 or missing	regular gassing cycles
	Jumper between Pin 1 + Pin 2	gassing phase is constantly active (for testing only)

Signaling relays:

Function	Relay	terminal ST02 contacts and voltages			
		active	V/cell	inactive	V/cell
overcharge	1	3 - 1	>2.45V	3 - 2	<2.35V
battery empty prewarning	2	6 - 4	<2.00V	6 - 5	>2.25V

Technical data at 25°C				
nominal system voltage	U_{Sys}	12V	24V	48V
final charge voltage	U_{CT}	13.8V	27.6V	55.2V
max. module current SLR130/145	IK_{max}	30/45A		
Load disconnect, ILoad = 0A	$U_{load\ off}$	11.7V	23.4V	46.8V
Load disconnect, ILoad = 30A	$U_{load\ off}$	10.8V	21.6V	43.2V
Load reconnect	$U_{load\ on}$	13.2V	26.4V	52.8V
maximum permanent load current	$I_{loadmax}$	30A		5/30A
battery prewarning, ILoad = 0A	$U_{bat.\ temp}$	12.0V	24.0V	48.0V
battery prewarning, ILoad = 30A	$U_{bat.\ temp}$	11.1V	22.2V	44.4V
gassing phase voltage, min	$U_{timer\ 2}$	14.4V	28.8V	57.6V
gassing phase voltage, max	$U_{gas\ end}$	15.6V	31.2V	62.4V
"overcharge" signal on	$U_{overchg}$	14.7V	29.4V	58.8V
maximum input voltage	$U_{in\ max}$	50V		100V
max. current for signal relays	$I_{LSigmax}$	150mA, max. 200V DC		
quiescent current	I_V	< 6mA		
operating temperature range	T_A	-15..+50°C		
maximum relative humidity		75%		
ingress protection of enclosure		IP 65, splash proof		
case		aluminum pressure cast		
terminals, cable glands		10mm², 4x PG21, 1x PG9		
overall dimensions, weight		260 x 190 x 90mm, 3 kg		

Option :

- The external temperature sensor KTY|8/10 mm adjusts the final voltage to the battery temperature by -4.5mV/°C/cell, default at 25°C. Remove the 2KΩ substitute resistor when the external KTY sensor is used.

Connection and Installation

- The system voltage has to agree with the rated voltage of the regular.
- Insert a fuse into the battery circuit to protect the charge regulator (see sketch).
- To avoid voltage loss due to too long wires set up the regulator close to the battery.
- High currents and long wires may cause discrepancies in voltage measurement. To avoid this cases you can connect the battery poles directly with the M+/M- terminals. Make sure to insert the battery fuse at the positive pole!
- Succession of connection: 1. Battery, 2. Modules, 3. Load. Respect correct polarity !