PWM Solar Charge Controller 12/24V

(with light turn-off timer)

1. DESCRIPTION

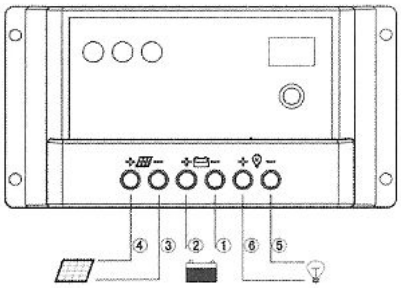
- Programmable load output with lighting control mode.
- Three stage battery charging (bulk – absorption – float).
- Protected against over current.
- Protected against short circuit.
- Protected against reverse polarity connection of the battery or solar array.
- Low voltage load disconnect.
- Easy to set up thanks to two digit seven segment display.

2. INSTALLATION

IMPORTANT NOTE :

- **Always connect the batteries first, in order to allow the Controller to recognize system voltage**
- **Use a 12V (36 cells) solar array for a 12V battery system.**
- **Use a 24V (72 cells) solar array for a 24V battery system.**

The display will show a ‘‘12’’ if the Controller detects a 12V battery, and a “24” if it detects a 24V battery



Do not exceed Solar and Load ratings

3. LED INDICATORS



Green LED:
Off: No sunlight or not enough sunlight. Charger off.
Fast flashing: Bulk charge.
On: Absorption charge.
Slow flashing: Float charge.



LED=Green: battery fully charged (> 12,7V)
LED=Orange: battery ok (12,4V - 12,7V)
LED=Red: battery low (11,2V - 12,4V)
LED=Flashing Red: battery fully discharged (< 11,2V)
(load output cut off level: 11,2V)



LED=ON: load output is on.
LED=OFF: load output is off.
LED=Slow flashing: Overload.
LED=Fast flashing: Short Circuit

Please note:

1. The load output will cut off in case of over load or short circuit. The load output will attempt to restart after 30 seconds.
2. After over discharge, the load will reconnect automatically when the battery is recharged to 13,1V / 26,2V.
3. After over discharge, the load can be reconnected manually by pressing the on/off push button, if the battery voltage exceeds 12,6V / 25,2V.

4. SETTING THE LOAD OUTPUT

4.1 Settings

0	Load output permanently off	9	Load output turned on during 9 hours after sunset
1	Load output turned on during 1 hour after sunset	10	Load output turned on during 10 hours after sunset
2	Load output turned on during 2 hours after sunset	11	Load output turned on during 11 hours after sunset
3	Load output turned on during 3 hours after sunset	12	Load output turned on during 12 hours after sunset
4	Load output turned on during 4 hours after sunset	13	Load output turned on during 13 hours after sunset
5	Load output turned on during 5 hour after sunset	H	Manual load control
6	Load output turned on during 6 hours after sunset	C	Load output controlled by battery voltage only
7	Load output turned on during 7 hours after sunset	L	Dusk to dawn mode
8	Load output turned on during 8 hours after sunset	d	Debug mode

4.2 Settings description

0 Charger only
The load output is switched off permanently.

1-13 Light control + delay
The load output automatically turns on after sunset (array voltage < 4V) and the built-in timer starts counting.
When the timer reaches the set time, or when the low voltage limit is reached, the load output will turn off.

H Manual
The load output can be turned on and off manually with the push button.
(low voltage shutdown remains active)

C Load output controlled by battery voltage only
Load disconnect and load reconnect will be based only on battery voltage, see section 3

L Dusk to dawn mode
Turn on delay (array voltage < 4V): 10 seconds.
Turn off delay (array voltage > 4V): 1 minute.
No timer function.

d Debug mode
Same as L mode but without delay of 10s/1min

5. SPECIFICATIONS

PWM Controller	DKTD1205	DKTD1210	DKTD1220	DKTD1230
Battery Voltage	12/24V with automatic system voltage detection*			
Rated charge current	5 A	10 A	20 A	30 A
Recommended solar array	36 cell for 12 V / 72 cell for 24 V			
Automatic low voltage load disconnect	Yes			
Maximum solar voltage	28 V for a 12 V system and 55 V for a 24 V system (1)			
Self-consumption	< 10 mA			
Overload protection	Shut down after 60 s in case of 130% load			
	Shut down after 5 s in case of 160% load			
	Short circuit: immediate shut down			
Grounding	Common positive			
Operating temp. range	-20 to +50°C (full load)			
Humidity (non condensing)	Max 95 %			
Settings				
Charge voltage 'absorption'	14.2 V / 28,4 V			
Charge voltage 'float'	13.8 V / 27,6 V			
Load disconnect	11,2V / 22,4V			
Load reconnect	12,6V / 25,2V (manual) 13,1V / 26,2V (automatic)			
Enclosure				
Protection class	IP20			
Terminal size	5 mm² / AWG10			
Weight	0,13 kg			0,15 kg
Dimension (h x w x d)	70 x 133 x 33,5 mm (2.8 x 5.3 x 1.3 inch)			
Mounting	Vertical wall mount Indoor only			
Humudity (non condensing)	Max. 95%			
Operating temperature	-20°C to +50°C (full load)			
Cooling	Natural convection			
Standards				
Safety	IEC 62109-1			
EMC	EN 61000-6-1, EN 61000-6-3, ISO 7637-2			

1) For 12V use 36 cell solar panels
For 24V use 72 cell solar panels
or 2x 36 cell in series

2) The controller switches to the lower float voltage level 2 hours after the absorption voltage has been reached.
Whenever the battery voltage becomes lower than 13 V, a new charge cycle is triggered.