

# Digital Unit

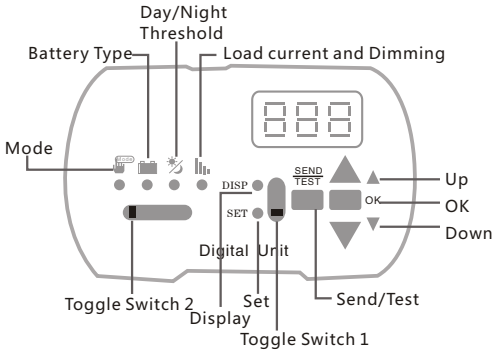
(Used in conjunction with the  
Smart series solar controller)

# User Manual

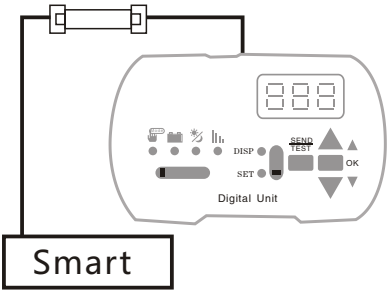
# Digital Unit User Manual

Thanks for selecting the Digital Unit product for setting Smart series solar charge controller. Although the Digital Unit is very simple to use, please take the time to read this user manual. This will help you to make full use of many advantages the controller can provide your solar lighting system.

## 1. Description



## 2. Connection & Display



Connect to Smart with the cable attached.  
**Step 1:** Plug in the communication cable to Digital Unit.  
**Step 2:** Plug the cable with Smart solar charge controller.

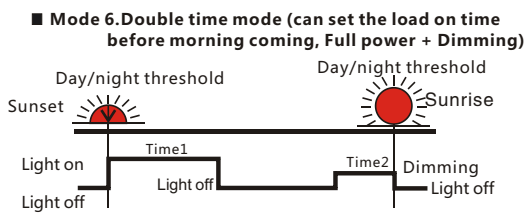
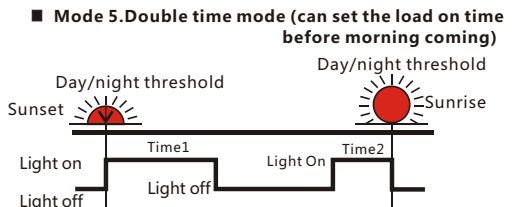
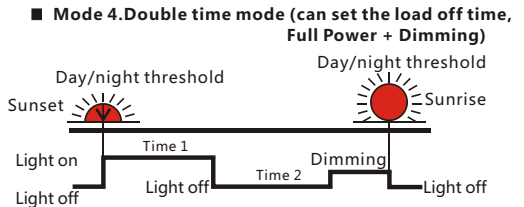
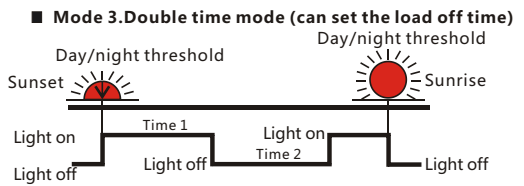
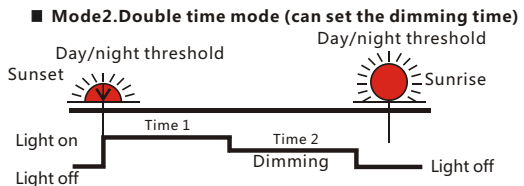
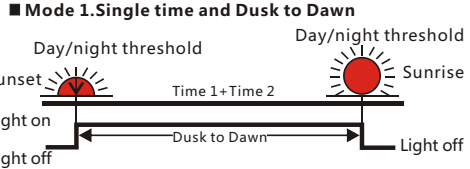
## 3. Operation

### 3.1 Setting status

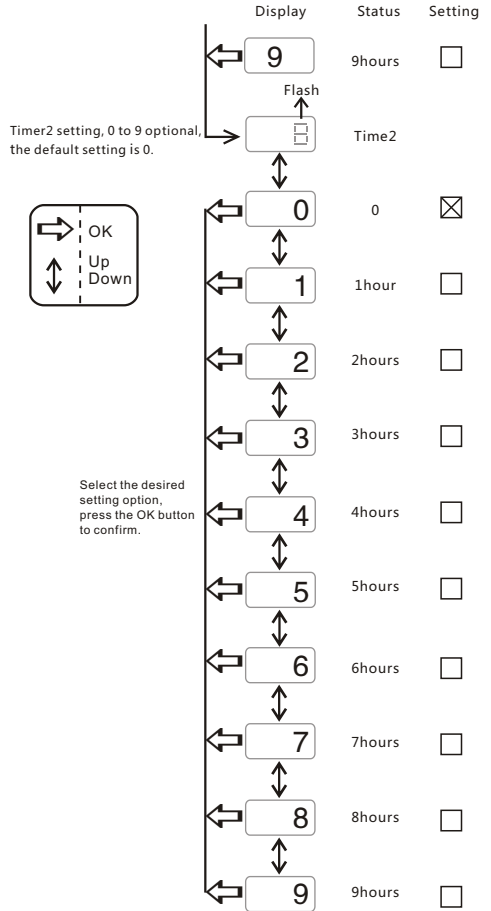
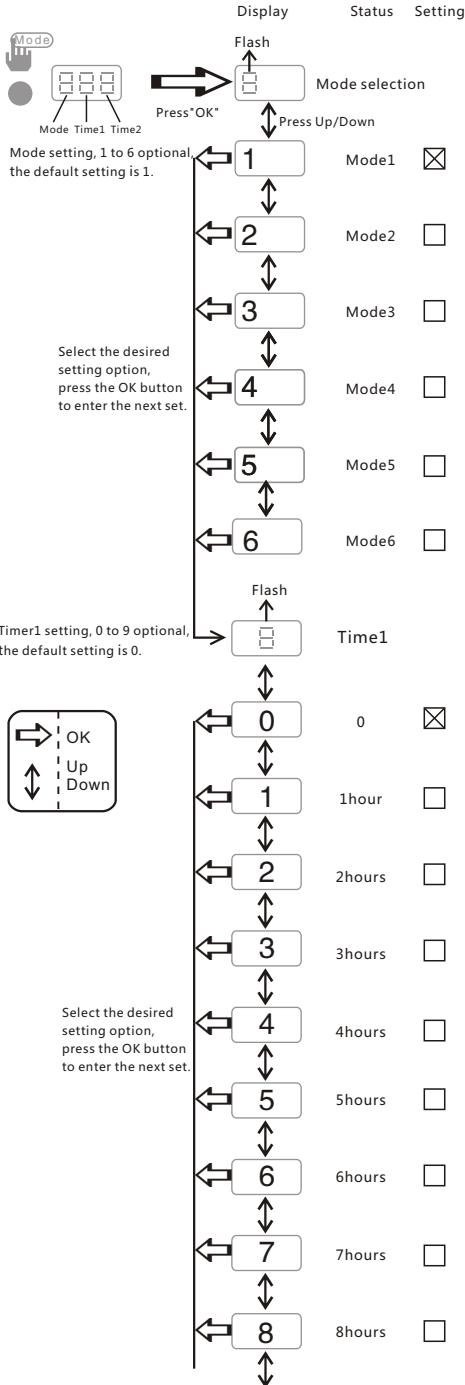
First turn Toggle Switch 1 to "Set".

**1. Load control mode selection**  
 Turn Toggle switch 2 to "Mode", press "OK" to change the setting of mode and time. The default setting is "100", which means Dusk to Dawn mode.


Mode 2,4,6 which include dimming mode, only apply to Smart-CC series constant current solar charge controller.

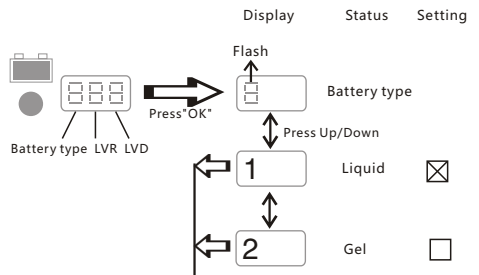


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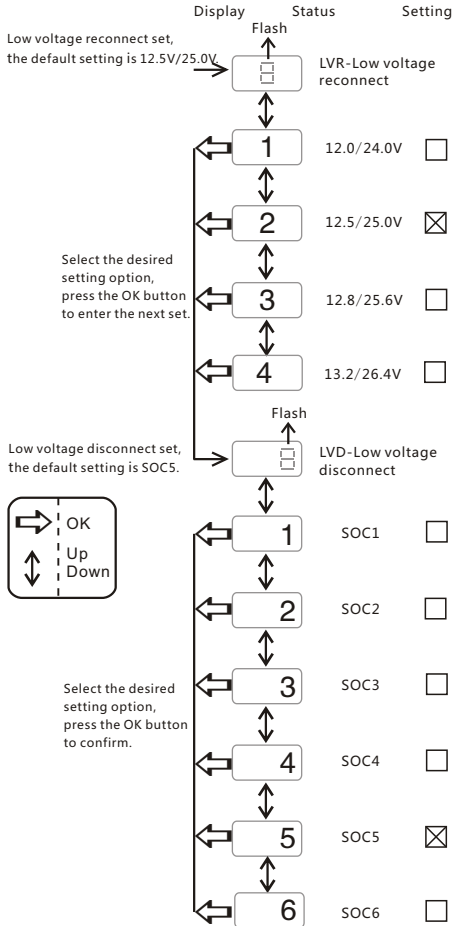


## 3.2 Battery type and Protection setting

Turn toggle switch 2 to "Battery type" , press "OK" to change the setting of battery type and protection.



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## SOC Option Description:

- 1.SOC1----10.8/21.6V
- 2.SOC2----11.0/22.0V
- 3.SOC3----11.5/23.0V
- 4.SOC4----11.0/22.0V~11.7/23.4V
- 5.SOC5----11.2/22.4V~11.8/23.6V
- 6.SOC6----11.4/22.8V~11.9/23.8V

The Smart series controller has two different ways to protect battery from being deep discharged. Choose the best setting for your system.

SOC1-SOC3:Voltage controlled.

As SOC2:Disconnect at 11.0V/22.0V fixed voltage.


SOC4-SOC6 : State of charge(SOC)Controlled.

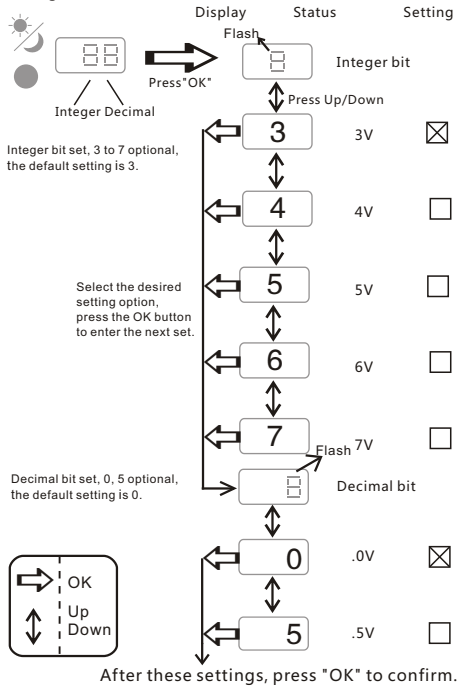
As SOC6:Disconnect at 11.4V/22.8V(at normal load current) up to 11.9V/23.8V(at no load current).

## 3.3 Day/Night threshold

The controller recognize day and night based on the solar array open circuit voltage. The range of this threshold voltage is 3.0V~7.5V, 0.5V each step.

For 24V system, the adjustment range of this day/night threshold is 6.0~15.0V, but the setting range is 3.0~7.5V, the actual day/night threshold voltage is the setting value multiplied by two. For example, if the setting value of day/night threshold is 3.0V, the actual value is 6.0V in 24V system.

Turn toggle switch 2 to "Day/Night threshold" , press "OK" to change the setting of day/night threshold voltage.



## 3.4 Load current and Dimming value setting

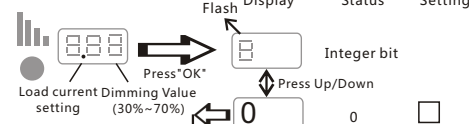
3.4.1 Normal controller only applies to mode 1,3,5, it does not have load current and dimming function. This setting is invalid to the normal controller--the first and second bit of the LCD do not display, although the third bit display but invalid.

3.4.2 The current setting range of constant current controller is as following:

Model	Voltage	Setting range of load current	
SM05-CC	12V	0.1A~2.5A	Digital Unit can limit the current value automatically according to the configuration of the solar system.
	24V	0.1A~4.0A	
SM10-CC	12V	0.1A~5.0A	
	24V	0.1A~8.0A	

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Turn toggle switch 2 to "Dimming" ,Press "OK"  
to change the load current and dimming value.



Load current integer bit set,  
0 to 8 optional,  
the default setting is 1.

Select the desired  
setting option,  
press the OK button  
to enter the next set.

Load current decimal bit set,  
0 to 9 optional, the default setting is 0.



Select the desired  
setting option,  
press the OK button  
to enter the next set.

Flash	Display	Status	Setting
	0	0	<input type="checkbox"/>
	1	1A	<input checked="" type="checkbox"/>
	2	2A	<input type="checkbox"/>
	3	3A	<input type="checkbox"/>
	4	4A	<input type="checkbox"/>
	5	5A	<input type="checkbox"/>
	6	6A	<input type="checkbox"/>
	7	7A	<input type="checkbox"/>
	8	8A	<input type="checkbox"/>
Flash	.	Decimal bit	
	.0	x.0A	<input checked="" type="checkbox"/>
	.1	x.1A	<input type="checkbox"/>
	.2	x.2A	<input type="checkbox"/>
	.3	x.3A	<input type="checkbox"/>
	.4	x.4A	<input type="checkbox"/>
	.5	x.5A	<input type="checkbox"/>
	.6	x.6A	<input type="checkbox"/>

Flash	Display	Status	Setting
	.7	x.7A	<input type="checkbox"/>
	.8	x.8A	<input type="checkbox"/>
	.9	x.9A	<input type="checkbox"/>
Flash	.	Dimming value	
	3	30%	<input type="checkbox"/>
	4	40%	<input type="checkbox"/>
	5	50%	<input checked="" type="checkbox"/>
	6	60%	<input type="checkbox"/>
	7	70%	<input type="checkbox"/>

Dimming value set, 30% to 70%  
optional, the default setting is 50%.



Select the desired  
setting option,  
press the OK button  
to confirm.

The dimming function only applies to mode 2,4,6,  
default setting is 50%.

### 3.5 Send to the controller

After finish all the settings, press the (SEND/TEST) button then wait for response.

The Digital Unit will automatically save the above settings, if another controller requires the same settings, simply press the SEND/TEST button and wait until the Digital Unit displays sent successfully.

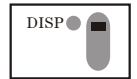
Status	LCD Display	Buzzer
Setting Successful	888	Continuous ring 4 seconds
Setting failure	555	Alarm

After setting, Press "Up" , " Down" or "OK" button to resend.

## 4.View Information and Test

### 4.1 Check the setting of controller

First turn toggle switch 1 to "Disp" .

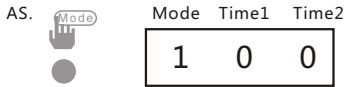


**Warning: Digital Unit will show "555" when the connection is not good, Please reconnect the cable and try again.**

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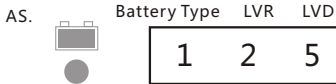
## 4.1.1 Load Control Mode

To check the setting of mode and time, turn toggle switch 2 to "Mode".



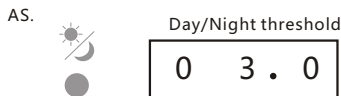
## 4.1.2 Battery type and Protection

To check the setting of battery and protection, turn toggle switch 2 to "Battery Type".



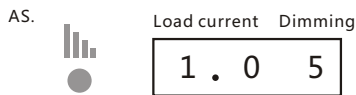
## 4.1.3 Day/Night threshold

To check the setting of Day/Night threshold voltage, turn toggle switch 2 to "Day/Night threshold". Regardless 12V or 24V system, Digital Unit will show the actual voltage of Day/Night threshold.



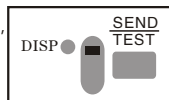
## 4.1.4 Load current and Dimming

Turn toggle switch 2 to "Load current and Dimming", this view only applies to Smart-CC series controller.



## 4.2 Test Function

Turn the toggle switch 1 to "Disp", then press TEST/SEND button on the Digital Unit.



- Pressing TEST/SEND button on the Digital Unit will switch on load terminal for 1 minute in daytime. The testing function can help the user to verify correct installation or for trouble shooting a system problem. For nominal controller, the lights can be turned off via pushing the test button again within this 1 minute.
- For Smart-CC series controller, the user can press the test button again to make the controller works in dimming mode, press the button thirdly to turn off the load (Load and indicator status is shown in the following table).

Number of keystrokes	Load State	LED Status
1	Load open, full power	Green LED flash
2	Load open, dimming	Green & Red LED flash
3	Load close	Green LED flash

## 4.3 Error information

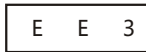
Turn the toggle switch 1 to "Disp", when the controller fails the Digital Unit will display the type of fault.



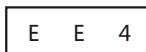
Over current protection



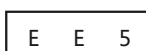
Short circuit protection



Low voltage protection



High voltage protection

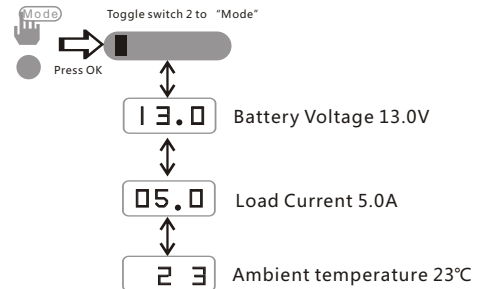


Over temperature protection

If any malfunction with the system, the Digital Unit will display it and the alarm also sounds at the same time, the sound will stop after one minute or the "OK" button is pressed, and the alarm will sound again and again every five minutes till the malfunction is solved.

## 4.4 System Information

To check the system information, turn toggle switch 1 to "Disp", toggle switch 2 to "Mode", then press "OK". You can switch battery voltage, load current and ambient temperature by press "Up" and "Down".



## 5. Technical Data

Self Consumption	< 8 mA
Dimensions	130mm x85 mm x24 mm
Weight	104g
Communication Cable	80cm
Case Protection	IP22
Ambient temperature	-20 ~ +40 °C

Subject change without notice, Ver: DB16.