

# DTU Operating Manual

DTU is designed primarily to allow users to easily see real-time data of each module throughout the network, preserve various states of various nodes within the network, set various operating parameters, monitor the operation of the various state parameters and work out the statistics of various parameter values.

## Features:

1. DTU collects the data of each node in the network through wireless Nrf2.4G (2.4G coverage radius: 50 m)
2. 10 / 100M adaptive network.
3. Current version supports 60 micro-inverter networking.
4. 2 x16 LCD displays simple but important message.

## I. Interface

1. Serial port: RS232
2. Ethernet port: RJ45

It is connected to the network via RJ45 port. User can get access to DTU (httpserver) through the browser.

3. Power: DC5V (1000mA)

## II. Functional operation

Start and log into DTU. LCD displays the following content according to the initialization:

- (1) BOOTLOADER normal start and display:

BOOT SYSsetup....

- (2) System initialization:

10:26:30  
System setup....

- (3) Network initialization:

10:27:55  
ETH\_BSP\_Config

- (4) Initialization completed, access to network IP

10:27:55  
IP:0.0.0.0

(5) Access to IP:

10:27:55  
IP:192.168.1.122

(6) Display of other important information in program run.

0.16kW    0.07kWh  
ALL:05    LINK:01

According to IP 192.168.1.XXX displayed on LCD, log into DTU through the browser.

### III. System data view

#### 1. System information

Click View→Plant Info

The screenshot displays the Hoymiles web interface. At the top, there is a navigation menu with options: Home, View, Config, Device ID, Events, Pwinquiry, Upgrade, and a help icon (?). Below the menu, a dropdown menu is open under 'View', showing 'Plant Info' and 'Real Time Data'. The main content area is divided into two columns. The left column contains four large digital displays: 'Total Output Power' showing 0.00 kW, 'Total Energy' showing 0.00 kWh, 'CO2 Saved' showing 0.00 t, and 'Plant Status' showing a dash (-). The right column is titled 'System Information' and contains two sections: 'System Information' and 'NetWork Information'. The 'System Information' section lists: System ID: 00:00:00:00:00:00, Firm Ware: 00.00.00.00, Build Time: 14 -01 -00 (Day-Month-Year), and Send Date Time: 0 (300Secs-900Secs). The 'NetWork Information' section lists: Mac Address: cc:bb:aa:99:88:02, Mac Address RF: 00:00:00:00:00:00, Enable DHCP: , IP address: 192.168.01.130, Gateway: 192.168.01.01, NetMask: 255.255.00.00, and DNS: 192.168.01.01.

Information contained:

System information display, the system information is set by Config→SystemConfig when the device begins to start.

Click Home or View→Real Time Data

## 2. Monitoring of real-time data

Click Home or View → Real Time Data

Click Home or View → Real Time Data



Home View **Config** Device ID Events Pwinquiry Upgrade ?

Plant Info View as: [table](#) | [panel](#)

Real Time Data

Total Output Power

**0.00 kW**

Total Energy

**0.00 kWh**

Today Energy

**0.00 kWh**

CO2 Saved

**0.00 kg**

Plant Status

-

ID	VOLPV	VOLGRID	FREQ	POWER	ENERGY	TEMP	TIME
11050099	0.0V	0.0V	0.0Hz	0.0W	0Wh	0.0C	2000-00-00 00:00:00
1105009f	0.0V	0.0V	0.0Hz	0.0W	0Wh	0.0C	2000-00-00 00:00:00
1105001e	0.0V	0.0V	0.0Hz	0.0W	0Wh	0.0C	2000-00-00 00:00:00
11040005	0.0V	0.0V	0.0Hz	0.0W	0Wh	0.0C	2000-00-00 00:00:00
110500c3	0.0V	0.0V	0.0Hz	0.0W	0Wh	0.0C	2000-00-00 00:00:00
11040111	0.0V	0.0V	0.0Hz	0.0W	0Wh	0.0C	2000-00-00 00:00:00
11040114	0.0V	0.0V	0.0Hz	0.0W	0Wh	0.0C	2000-00-00 00:00:00
110500c7	0.0V	0.0V	0.0Hz	0.0W	0Wh	0.0C	2000-00-00 00:00:00
110500c6	0.0V	0.0V	0.0Hz	0.0W	0Wh	0.0C	2000-00-00 00:00:00
11040113	0.0V	0.0V	0.0Hz	0.0W	0Wh	0.0C	2000-00-00 00:00:00
11040112	0.0V	0.0V	0.0Hz	0.0W	0Wh	0.0C	2000-00-00 00:00:00
110500c9	0.0V	0.0V	0.0Hz	0.0W	0Wh	0.0C	2000-00-00 00:00:00
11040115	0.0V	0.0V	0.0Hz	0.0W	0Wh	0.0C	2000-00-00 00:00:00
11040116	0.0V	0.0V	0.0Hz	0.0W	0Wh	0.0C	2000-00-00 00:00:00

edata.htm

Home statistics: total outputs power, total energy, today energy, CO<sub>2</sub> saved

Real-time display: Node ID, VOLPV, VOLGRID, FREQ, power, energy, temperature, time.

## 3. Emery query

Click Pwinquiry



Home View Config Events **Pwinquiry** Upgrade Registration ?

Energy inquiry : 14 -06 -23 (Year-Month-Date)

Total Output Power

**0.32 kW**

Total Energy

**0.97 kWh**

CO2 Saved

**0.76 t**

Plant Status

-

ID	ENERGY	WEEK	MONTH	HISTORY	TIME
1104001b	0000	0042	0042	18169	2014-06-03
1104001a	0000	00219	0124	0124	2014-06-03
1104001e	24120	24120	10311	10311	2014-06-03
1104001b	0000	0042	0042	18169	2014-06-04
1104001a	65161	66124	66185	66185	2014-06-04
1104001e	0080	24200	10391	10391	2014-06-04
1104001b	0000	0000	0042	18169	2014-06-05
1104001a	0000	0000	66185	66185	2014-06-05
1104001e	0000	0000	10391	10391	2014-06-05
1104001f	0000	0000	0000	0000	2014-06-05
1104001b	0000	0000	0042	18169	2014-06-06
1104001a	0000	0000	66185	66185	2014-06-06
1104001e	0000	0000	10391	10391	2014-06-06
1104001f	0000	0000	0000	0000	2014-06-06

11021692100/Pwinquiry.htm

Description: fill in the query date, day query: energy query of entry date.  
Month query: daily energy query of entry month.

#### 4. Ground fault display and exclusion

Click Config → GFDI Fault



Machine ID	State	Operation
11050099	GFDI Fault	<input type="button" value="Clear Fault"/>

Operation: Check whether there is a ground fault, if you need to clear the ground fault, click Clear Fault

#### 5. Time set

Click Config → Date/Time



Date & Time:

Date: 14 - 07 - 29 (Year-Month-Day)

Time: 17 : 41 : 00 (Hour:Minute:Second)

Description: if you set the system time, please fill in the time in the sequence of Year-Month-Day, Hour: Minute: Second.

## IV. System login

(Non-professional users banned!)

When system logs into the page that require permissions, you need username and password:

Description: After the user enters username and password, he can go to config→system config to modify the user name and password, the default is admin / admin.



Home View Config Device ID Events Pwinqury Upgrade ?

View as: [table](#) | [panel](#)

Total Output Power  
0.00 kW

Today Energy  
0.00 kWh

CO2 Saved  
0.00 t

Plant Status  
-

USERNAME: admin

PASSWORD: [masked]

ENTER CLEAR

### 1. LimitPower

Click Config→LimitPower



Home View Config Device ID Events Pwinqury Upgrade ?

GFDI Fault  
LimitPower  
Para Settings  
System Config  
Date/Time

Total Output P  
0.00 kW

Total Energy  
0.00 kWh

CO2 Saved  
0.00 t

Plant Status  
-

Send All Total Deviceid: 01

ID Number	SET PW PCT%	EST PW PCT%
11040103	0.0	0.0%

Parameter Description: In case of node set in SET PW PCT, the limit power value 0 indicates Not Set

EST PW PCT displays current limit power value of node, and 0 means Not Successful

## 2. Configuration of parameters grid-connected protection

Click Config→Para Setting



Parameter Config:			
OverVol limit1:	290.0 V	OverVol trip time1:	0.16 s
OverVol limit2:	270.0 V	OverVol trip time2:	1.00 s
UnderVol limit1:	195.5 V	UnderVol trip time1:	2.00 s
UnderVol limit2:	120.0 V	UnderVol trip time2:	0.16 s
OverFre limit1:	52.00 Hz	OverFre trip time1:	0.16 s
OverFre limit2:	51.00 Hz	OverFre trip time2:	0.16 s
UnderFre limit1:	48.00 Hz	UnderFre trip time1:	0.16 s
UnderFre limit2:	47.00 Hz	UnderFre trip time1:	0.16 s
LongTerm reconnect time:	10.00 s		

Set the various protection nodes of micro-inverter and time delayed for protection operation

## 3. System settings

Click Config→System Config



System Information:	
System ID:	00:00:00:00:00:00
Firm Ware:	00.00.00.00
Build Time:	14 - 01 - 00 (Day-Month-Year)
Send Date Time:	44 (300Secs-900Secs)
Username:	admin
Password:	admin
NetWork Information:	
Mac Address:	cc:bb:aa:99:88:09
Mac Address RF:	00:01:11:03:00:09
Enable DHCP:	<input checked="" type="checkbox"/>
IP address:	192.168.01.103
Gateway:	192.168.01.01
NetMask:	255.255.255.00
DNS:	192.168.01.01

Configuration Description: set System ID, Firm Ware, Build Time, Send Date Time, MAC address, RF address, check whether IP address is dynamically assigned or not, and set network parameters when IP address is static.

#### 4. Manual configuration of system node ID

Click Device ID → Manual Config



Hoymiles

ID Number	State	Operation
110500a3	On	Open Close Delete
11050024	On	Open Close Delete

Manually add ID by clicking ADD ID to add the ID to the list below. If you have added all ID, click REG ID for the registration of ID in the system.

#### 5. Automatic configuration of node ID

Click Device ID → Auto Scan



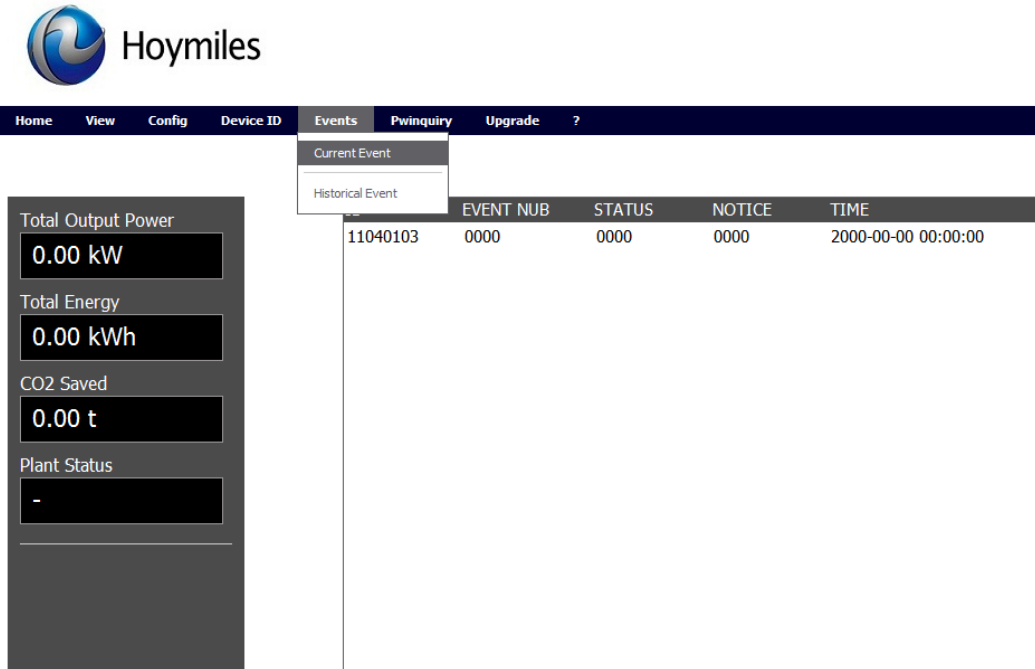
Hoymiles

ID
110500a3
11050024
11040114
110500c7
11040115
11040111
11040112
11040116
110500c9
11030101
11040103
110500c6
11040117
11040118
11040113
110500c3
11040102

Description: Configuration of Network Node ID  
Auto Search of ID and adding of Reg ID to the user ID list afterwards.

## 6. Real-time fault inquiry

Click Event→Current Event



The screenshot shows the Hoymiles web interface. The navigation bar includes Home, View, Config, Device ID, Events, Pwinquiry, Upgrade, and a help icon. The 'Events' menu is open, showing 'Current Event' and 'Historical Event' options. The 'Current Event' option is selected, displaying a table with the following data:

EVENT NUB	STATUS	NOTICE	TIME
11040103	0000	0000	2000-00-00 00:00:00

On the left side of the interface, there are four summary cards: Total Output Power (0.00 kW), Total Energy (0.00 kWh), CO2 Saved (0.00 t), and Plant Status (-).

View real-time fault of each node

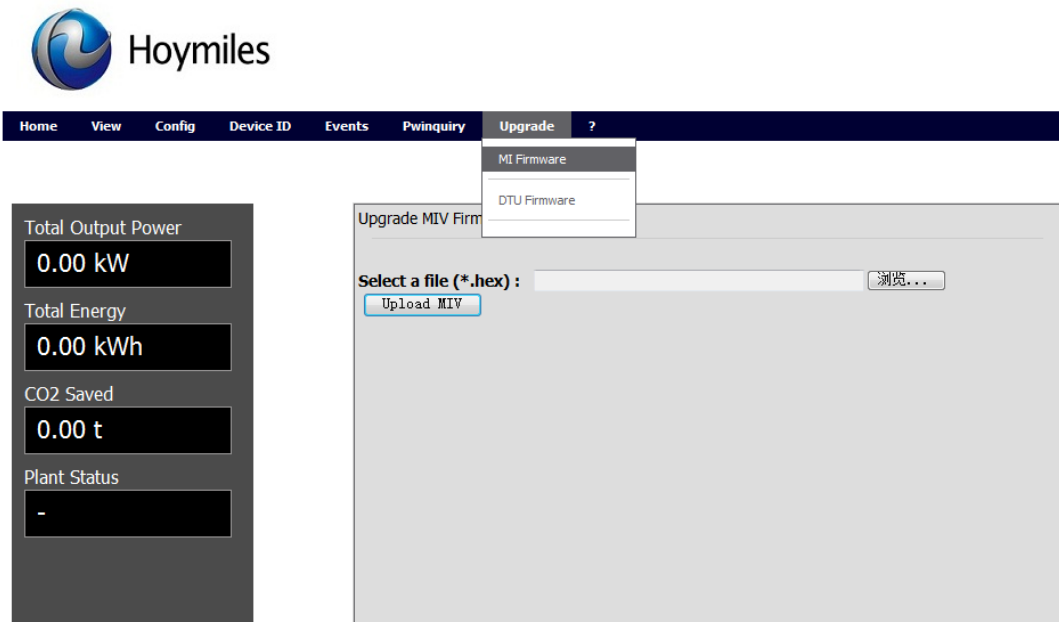
## 7. Historical fault query

Click Event→Historical Event

Historical fault query: Fill in time → day query or month query. If there is more than one page, click page down and up to display other data.

## 8. Update of micro-inverter program

Click Device ID→Manual Config



The screenshot shows the Hoymiles web interface. The navigation bar includes Home, View, Config, Device ID, Events, Pwinquiry, Upgrade, and a help icon. The 'Upgrade' menu is open, showing 'MI Firmware' and 'DTU Firmware' options. The 'MI Firmware' option is selected, displaying a form for uploading MIV firmware. The form includes a text input field for the file name, a file selection button (浏览...), and an 'Upload MIV' button. The left side of the interface shows the same summary cards as in the previous screenshot: Total Output Power (0.00 kW), Total Energy (0.00 kWh), CO2 Saved (0.00 t), and Plant Status (-).



Select the program to be downloaded through Browse as follows:

Upgrade MIV Firmware

Select a file (\*.hex): E:\MIC\_250\MI250\_CN.hex

Click Upload MIV. The update of ID requires micro-inverters updated as follows:



Home View Config Device ID Events Pwinqury Upgrade ?

Total Output Power  
**0.00 kW**

Total Energy  
**0.00 kWh**

CO2 Saved  
**0.00 t**

Plant Status  
-

Upgrade is success to DTU: you can dick the botton to upgrade program to target

Machine ID	State	Operation
11050099	100%	<input type="button" value="Up_MI"/>
1105009f	100%	<input type="button" value="Up_MI"/>
1105001e	100%	<input type="button" value="Up_MI"/>
11040005	100%	<input type="button" value="Up_MI"/>
110500c3	100%	<input type="button" value="Up_MI"/>
11040111	100%	<input type="button" value="Up_MI"/>
11040114	100%	<input type="button" value="Up_MI"/>
110500c7	100%	<input type="button" value="Up_MI"/>
110500c6	100%	<input type="button" value="Up_MI"/>
11040113	100%	<input type="button" value="Up_MI"/>
11040112	100%	<input type="button" value="Up_MI"/>
110500c9	100%	<input type="button" value="Up_MI"/>

Upgrade is success to DTU: you can dick the botton to upgrade program to target

Machine ID	State	Operation
1105009f	100%	<input type="button" value="Up_MI"/>
11050119	00%	<input type="button" value="Up_MI"/>
1105007c	100%	<input type="button" value="Up_MI"/>
11050137	100%	<input type="button" value="Up_MI"/>
11040005	100%	<input type="button" value="Up_MI"/>

When the state shows the percentage of 100%, it indicates a successful update of micro inverters for this address.

### 9. DTU program update

Click Upgrade → DTU Firmware

Home View Config Device ID Events Pwinquiry Upgrade ?

ME Firmware  
DTU Firmware

Upgrade DTU Firm

Total Output Power  
**0.00 kW**

Total Energy  
**0.00 kWh**

CO2 Saved  
**0.00 t**

Plant Status  
-

Select a file (\*.hex) :  浏览...

Upload DTU

Select the program to be updated through Browse.

Upgrade DTU Firmware

Select a file (\*.hex) : E:\larry\DTU\_A6\_0.hex 浏览...

Upload DTU

Click Upload DTU to upload DTU program as shown in the table below

Home View Config Device ID Events Pwinquiry Upgrade ?

Total Output Power  
**0.00 kW**

Total Energy  
**0.00 kWh**

CO2 Saved  
**0.00 t**

Plant Status  
-

Upgrade is success to DTU: you can click the botton to upgrade program to target

Machine ID	State	Operation
DTU_PRO	RST AND IAP	Up_DTU

Click Up\_DTU, and LCD displays.

Bootloader...IAP

DTU program updates start until LCD displays.

10:27:55  
IP:192.168.1.122

It indicates update process is successful, if the original IP is the same with the original one this time, the page will display as shown below.



Home View Config Device ID Events Pwinqury Upgrade ?

Total Output Power  
**0.00 kW**

Total Energy  
**0.00 kWh**

CO2 Saved  
**0.00 t**

Upgrade is success to DTU: you can dick the botton to upgrade program to target

Machine ID	State	Operation
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System update ends.