

# Delta Monitoring Solution

Delta Solar System Software  
Operation Manual

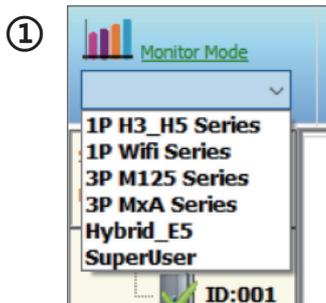
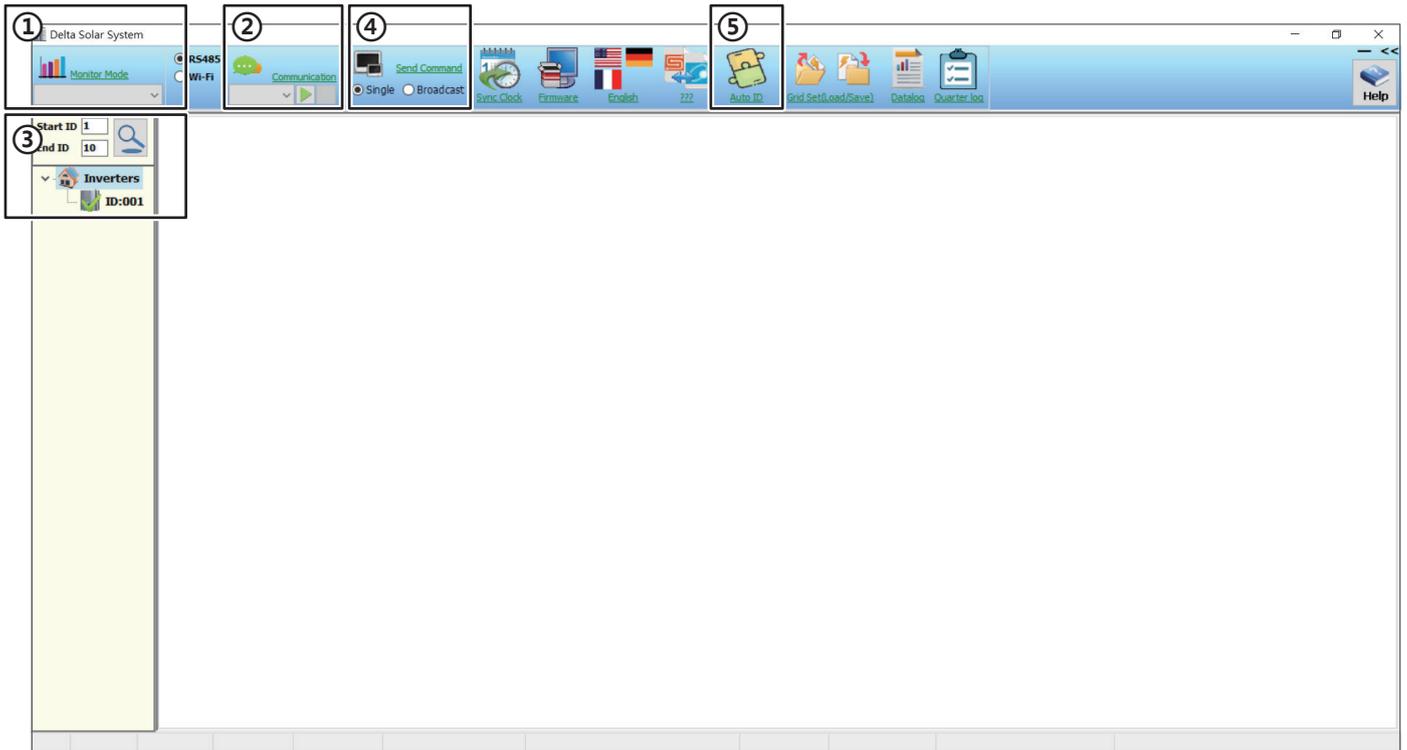


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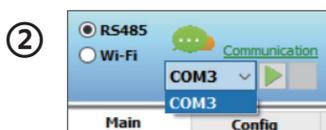
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# 1. Home Screen



**Monitor Mode:**  
Choose corresponding model.



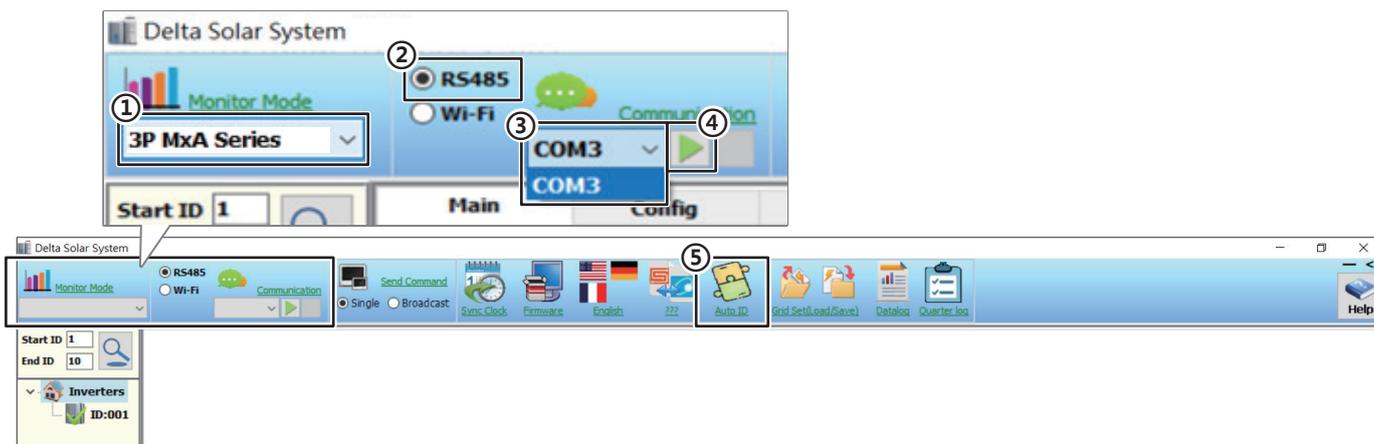
**Communication:**  
Select USB COM port which connects to RS485 box.  
Press”  ” button.

**3 ID set up:**  
Check inverter ID and key in Start ID & End ID.  
Press”  ” button.

**4 Send Command:**  
Choose “Single” can send command to the current set inverter.  
Choose “Broadcast” can send command to all inverters detected.

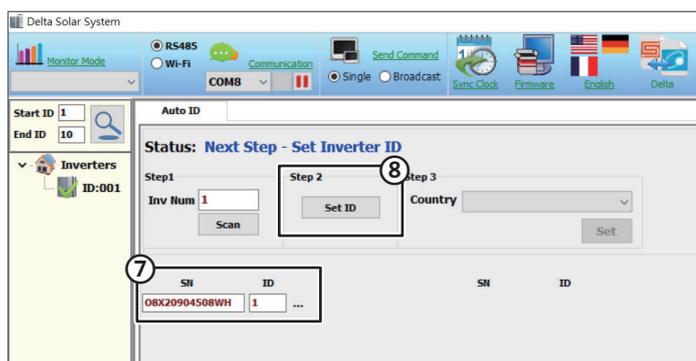
**5 Auto ID Function:**  
Click this icon for inverters first time commission, please refer to **Chapter 2** for more details.

## 2. Auto ID function (first commission)

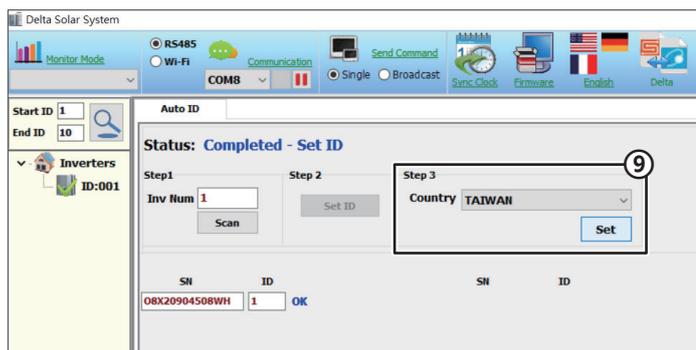


- ① Select the corresponding model
- ② Click “RS485”
- ③ Select communication port (automatic detection by the system)
- ④ Click 
- ⑤ Click “Auto ID 

- ⑥ Enter numbers of inverters, and click “Scan”



- ⑦ The serial number of the successfully scanned device will be displayed, the default ID can be changed.
- ⑧ After ID setting is completed, click “Set ID”.



- ⑨ Select the country of inverter, and click “Set”.

\* Time will also be sync from laptop or PC at this step

# 3. Main Page

The screenshot shows the main page of an inverter control interface. It features a top navigation bar with 'Main', 'Config', and 'Ctrl' tabs. The main content area is organized into several panels:

- Version (1):** Displays firmware versions (DSP FW V51.29, Redundant FW V1.11, Comm. FW V1.26, ARC FW V1.15) and hardware details (Serial Number 08X20904508WH, Model Name M70A\_260).
- Status (2):** Shows 'Remote ctrl' (On), 'State Check PV Power(8)', 'Countdown 0 s', and 'Max Power 76,380 W'. A 'Grid unlock' button is also present.
- Warning Display (3):** A large empty box for displaying warnings.
- Output (4):** A table showing Voltage(L-N), Current, Power, and Freq. for Output 1, 2, and 3.
- Input (5):** A table showing Voltage, Current, and Power for Input 1, 2, 3, 4, 5, and 6.
- Inverter Time (6):** Shows 'Clock' (2021/03/24 08:03:05) and 'Installation' (0/00/00).
- Temperature (7):** Shows 'Now' and 'Max' temperatures for Ambient, Boost-1, Boost-2, and Inverter-S.
- Output Energy (8):** Shows 'Today' (0.000 KWh, 0:0:0 runtime) and 'Life' (415.500 KWh, 8:12:7 lifetime).
- Bus Voltage (9):** Shows PBus (0.0 V) and NBus (0.0 V).
- Max Input Value (10):** A table of Vdc, Idc, and Pdc for 8 different channels.
- Max Output Value (11):** A table of Vac, Iac, and Fac for 3 different channels.
- String Current (12):** A 24-column table showing current for each string (1: 0.00 A to 24: 0.00 A). A 'DC1/2 Enable (M88H)' checkbox is also visible.
- Total Power (13):** Shows 'Output 0.00A', 'Input 0.00A', 'Q: Cap 0 Var', and 'PF: Cap 0.00'.

- ① **Version:** Showing all FW version, Serial Number and Model Name.
- ② **Status:** Showing inverter status and maximum power.
- ③ **Warning Display:** Showing warning of the inverter.
- ④ **Output:** Showing Output voltage, Current, Power and Freq readings.
- ⑤ **Input:** Showing input voltage, Current and Power readings.
- ⑥ **Inverter Time:** Showing inverter time.
- ⑦ **Temperature:** Showing temperature for internal ambient and module.
- ⑧ **Output Energy:** Showing energy generated and runtime for today / Life.
- ⑨ **Bus Voltage:** Showing bus voltage of internal bus capacitor.
- ⑩ **Max. Input Value:** Showing maximum input voltage ever occurs.
- ⑪ **Max. Output Value:** Showing maximum output voltage ever occurs.
- ⑫ **String Current:** Showing each string current.
- ⑬ **Total Power:** Showing total output information, include current and power.

14 Derating Records for OPV		Derating Records for OPV_Lo		Derating Records for PM		Derating Records for Ramp Up		Derating Records	
Start Time	Add up Time	Start Time	Add up Time	Start Time	Add up Time	Start Time	Add up Time	Thermal OPV Vin OPV_Lo PF P(F) Ramp up Others	
01.		01.		01.		01.			
02.		02.		02.		02.			
03.		03.		03.		03.			
04.		04.		04.		04.			
05.		05.		05.		05.			
06.		06.		06.		06.			
07.		07.		07.		07.			
08.		08.		08.		08.			
09.		09.		09.		09.			
10.		10.		10.		10.			
11.		11.		11.		11.			
12.		12.		12.		12.			

Derating Records for Vin		Derating Records for Thermal		Derating Records for PF		Derating Records for Others		15 Test Value	
Start Time	Add up Time	Start Time	Add up Time	Start Time	Add up Time	Start Time	Add up Time	T00:	
01.		01.		01.		01.		0	11
02.		02.		02.		02.		0	0
03.		03.		03.		03.		0	2065
04.		04.		04.		04.		0	2058
05.		05.		05.		05.		0	2059
06.		06.		06.		06.		0	0
07.		07.		07.		07.		0	0
08.		08.		08.		08.		0	0
09.		09.		09.		09.		0	0
10.		10.		10.		10.		0	0
11.		11.		11.		11.		0	0
12.		12.		12.		12.		0	0

14 **Derating Records:** Showing derating records of the inverter.

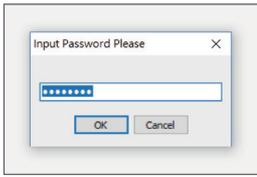
15 **Test Value:** Showing some internal DSP value.  
This tab is for engineer when doing on site checking.

16 Error Event		17 Energy - Day	
Time	Code		
00.		2021/03/24: 0.000 KWh	2021/03/08: 0.000 KWh
01.		2021/03/23: 98.000 KWh	2021/03/07: 0.000 KWh
02.		2021/03/22: 7.000 KWh	2021/03/06: 0.000 KWh
03.		2021/03/21: 0.000 KWh	2021/03/05: 0.000 KWh
04.		2021/03/20: 0.000 KWh	2021/03/04: 0.000 KWh
05.		2021/03/19: 53.000 KWh	2021/03/03: 0.000 KWh
06.		2021/03/18: 76.000 KWh	2021/03/02: 0.000 KWh
07.		2021/03/17: 75.000 KWh	2021/03/01: 0.000 KWh
08.		2021/03/16: 70.000 KWh	2021/02/28: 0.000 KWh
09.		2021/03/15: 36.000 KWh	2021/02/27: 0.000 KWh
10.		2021/03/14: 0.000 KWh	2021/02/26: 0.000 KWh
11.		2021/03/13: 0.000 KWh	2021/02/25: 0.000 KWh
12.		2021/03/12: 0.000 KWh	2021/02/24: 0.000 KWh
13.		2021/03/11: 0.000 KWh	2021/02/23: 0.000 KWh
14.		2021/03/10: 0.000 KWh	2021/02/22: 0.000 KWh
15.		2021/03/09: 0.000 KWh	2021/02/21: 0.000 KWh
16.			
17.			
18.			
19.			
20.		<b>Energy - Month</b>	
21.		2021/03: 410.000 KWh	2020/03: 0.000 KWh
22.		2021/02: 0.000 KWh	2020/02: 0.000 KWh
23.		2021/01: 0.000 KWh	2020/01: 0.000 KWh
24.		2020/12: 0.000 KWh	2019/12: 0.000 KWh
25.		2020/11: 0.000 KWh	2019/11: 0.000 KWh
26.		2020/10: 0.000 KWh	2019/10: 0.000 KWh
27.		2020/09: 0.000 KWh	2019/09: 0.000 KWh
28.		2020/08: 0.000 KWh	2019/08: 0.000 KWh

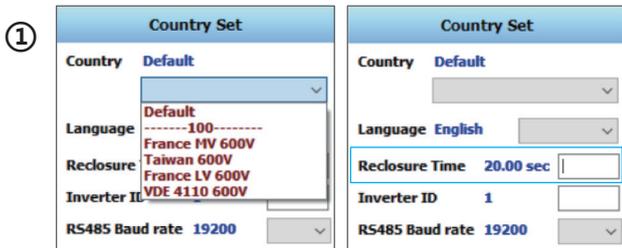
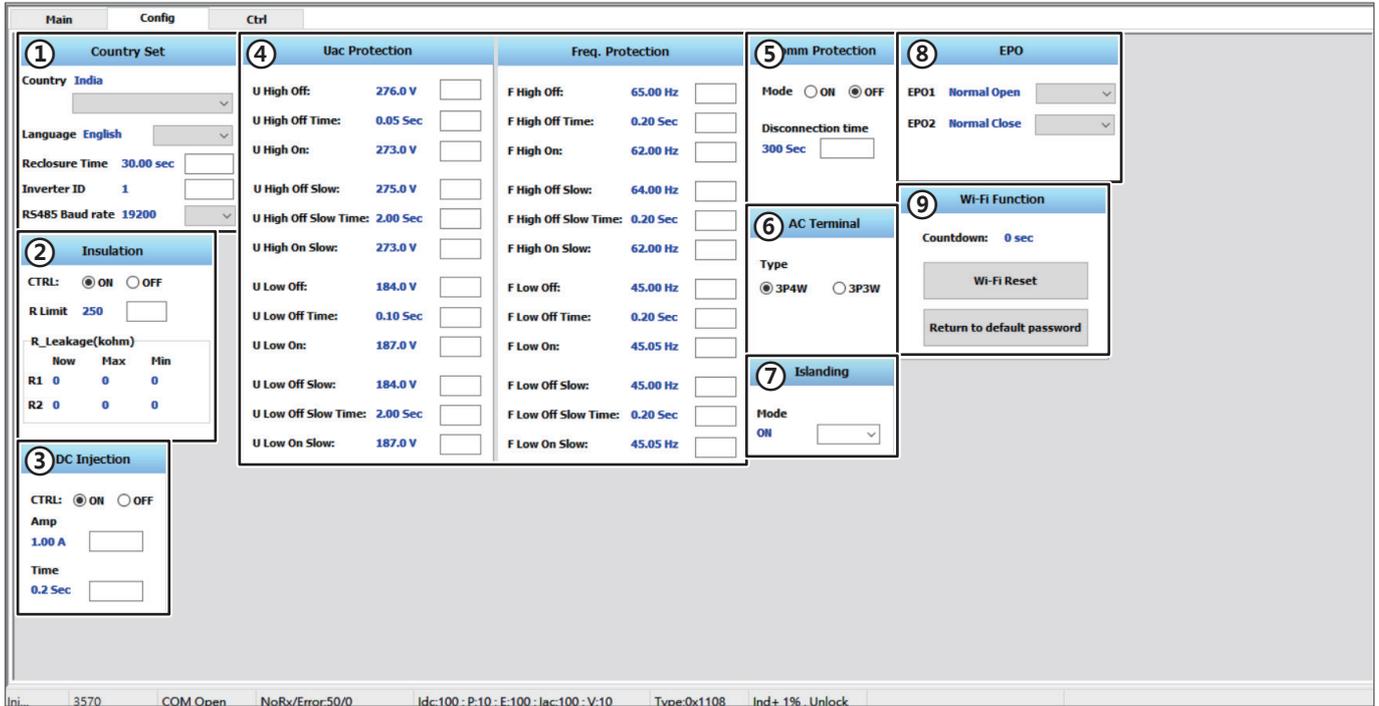
16 **Error Event:** Log error events up to 30 pcs.

17 **Energy Day / Month:** Showing Day / Month energy of the inverter.

# 4. Config Page



Please contact local service team to get the password first.

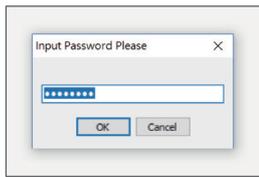


### Country Set:

- Country: allowed to choose different country setting.
- Reclosure time: allowed to change reclosure time.

- ② **Insulation:** Allowed to enable/disable Insulation detection.
- ③ **DC Injection:** Allowed to enable/disable DC injection detection.
- ④ **Uac/Freq. Protection:** Allowed to change Uac/Freq. protection setting.  
Key value in the blank, if the value is out of the range, it will not be modified in inverter side.
- ⑤ **Comm Protection:** Allow to set the communication protection with other device, if disconnect over specific value, inverter will shutdown.
- ⑥ **AC Terminal:** Allowed to change AC terminal setting.  
if there has N wire on AC side please chose 3P4W.
- ⑦ **Islanding:** On/Off selection for anti-islanding function.
- ⑧ **EPO:** Emergency power off function, user can set the port to Normal open /close depends on different applications.
- ⑨ **Wi-Fi Function:** Allowed to reset Wi-fi module or reset password.  
\* Only for Wifi supported inverters.

# 5. Ctrl Page



Please contact local service team to get the password first.

The screenshot displays the 'Ctrl' page with 13 numbered panels:

- 1 Active Power:** Mode (Disable), PM (%), Ramp Up Power (%), Active Power Slope, Active Power Slope(Fall).
- 2 Reactive Power:** Mode (Disable), Fixed cosφ, Fixed Q (%), Response Time.
- 3 P(U) Function:** Mode (Disable), Recovery Time(s), P Lock-in(%), Lower Power(%), V Lock-in(Vac), V Lock-out(Vac), Start Voltage, Stop Voltage, Pend, V recover.
- 4 P-F Control:** Over Frequency (Mode, Gradient, Freq. Start/Stop, F Recovery), Under Frequency (Mode, Gradient, Freq. Start, F Recovery).
- 5 Q(U) Ctrl:** Q\_Vmax, Q\_Vmin, Vmax, Vmin, Upper(V2), Lower(V1), Q2, Q3, Lock-in Power, Lock-out Power, Hysteresis, VRef, Mode, TRef.
- 6 Q(P) Function Setting:** Mode (Rated), No of Set Point, P0-P9, Q0-Q9.
- 7 Fan Test:** Mode (ON/OFF), Duty.
- 8 Anti-PID:** Trip Time, State (Ready).
- 9 Time Reactive Power:** Mode (Disable).
- 10 FRT:** Dead Band Umin/Umax, K Factor, LVRT\_Mode (Internal/External), T1/T2/T3 Time, Uac Fault(Vdrop), HVRT\_Mode (Disable), T1/T2 Time, V1/V2.
- 11 Q by Night:** Const\_Q\_Percent, Q(U)\_Upper/Lower Limit, Q(U)\_Vmin/Vmax, Q(U)\_V1/V2, Q(U)\_P\_Lock\_in/out, Q(U)\_Hysteresis, Response\_Delay.
- 12 cos(φ) of P Ctrl:** Upper/Lower, Ind, Upper(P1), Lower(P2), V Lock in/out.
- 13 Q(P) 24/7 Function Setting:** Mode (Rated), No of Set Point, P0-P9, Q0-Q9.

**1 Active Power**

Mode: Disable

PM (%): 100 %

Ramp Up Power(%): 6000 %

Active Power Slope: 60 sec

Active Power Slope(Fall): 10 sec

## Active Power:

- Mode: Enable/Disable this function
- PM(%): Control the maximum output power percentage(0%-100%)
- Ramp Up Power(%): Ramp up rate per minute (max 6000)
- Active Power Slope: Time to reach the setting maximum output power
- Active Power Slope (Fall): only available in particular grid code.

**2 Reactive Power**

Mode: Disable

Fixed cosφ: 1

Fixed Q (%): Ind 44%

Response Time: 0.00 sec

## Reactive Power:

- Mode: Enable and select the reactive power mode
- Fixed cos(Φ): Control the setting of cos(Φ) in “Constant cos(Φ)” mode
- Fixed Q(%): Control the setting of Q in “Constant Q” mode
- Response Time: Response time setting for all reactive power mode (0%-95% of setting value)

### ③ P(U) Function:

P(U) Function	
Mode:	Disable <input type="text"/>
Recovery Time(s):	300 sec <input type="text"/>
P Lock-in(%):	20 % <input type="text"/>
Lower Power(%):	5 % <input type="text"/>
V Lock-in(Vac):	253.0 V <input type="text"/>
V Lock-out(Vac):	248.4 V <input type="text"/>
Start Voltage:	253.0 V <input type="text"/>
Stop Voltage:	253.0 V <input type="text"/>
Pend:	5 % <input type="text"/>
V recover:	248.4 V <input type="text"/>

- Mode: Enable/Disable the function
- Recovery Time(s): Delay time after the voltage back to V lock-out
- P Lock-in(%): Function will work when output power greater than this setting
- Lower Power(%): Min Output power when Vac exceed V Lock-in
- V Lock-in(Vac): Output power start reducing when Vac exceed this setting value
- V Lock-out(Vac): Output power will remain the same when Vac back to this setting value
- Start/Stop Voltage: Only available in US grid code
- Pend: Only available for US grid code
- V recover: Only available in single-phase inverter

### ④ P-F Control:

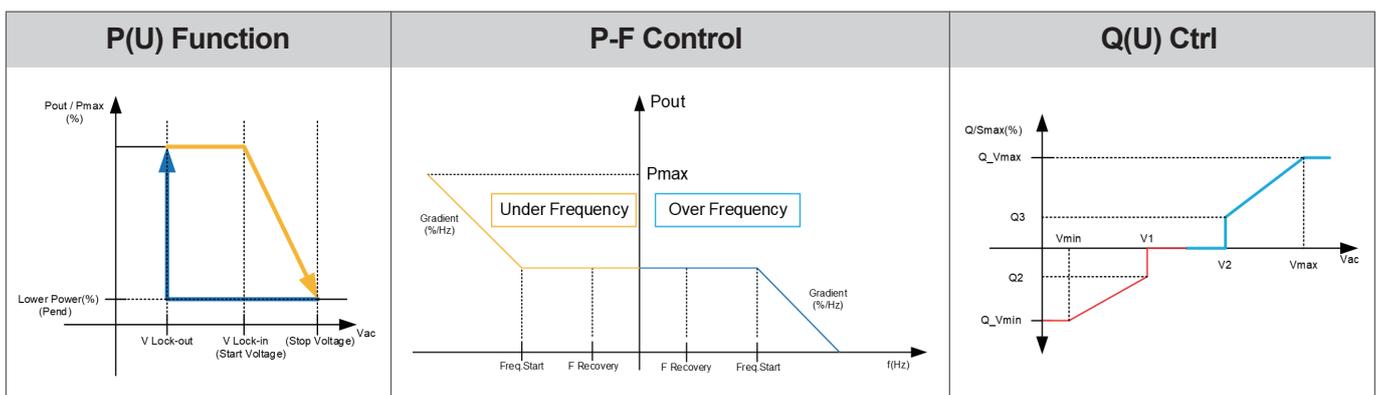
P-F Control	
<b>Over Frequency</b>	
Mode: Disable <input type="text"/>	Gradient (%): 40 % <input type="text"/>
Freq. Start: 60.20 Hz <input type="text"/>	Freq. Stop: 62.70 Hz <input type="text"/>
F Recovery: 60.20 Hz <input type="text"/>	Response Time: 0.00 sec <input type="text"/>
<b>Under Frequency</b>	
Mode: Disable <input type="text"/>	Gradient (%): 40 % <input type="text"/>
Freq. Start: 59.80 Hz <input type="text"/>	
F Recovery: 59.80 Hz <input type="text"/>	

- Gradient(%): Rate of change of power/pref per Hz
- Freq.Start: Output power start reducing when frequency exceed this setting value
- Freq.Stop: Read-only(calculated by inverter)
- F Recovery: Hysteresis when setting different from Freq.start
- Response Time: Time Delay when freq. exceed Freq.Start

### ⑤ Q(U) Ctrl:

Q(U) Ctrl	
Q_Vmax Ind 48% <input type="text"/>	Q_Vmin Cap 48% <input type="text"/>
Vmax: 232.0 V <input type="text"/>	Vmin: 210.0 V <input type="text"/>
Upper(V2): 223.2 V <input type="text"/>	Lower(V1): 218.8 V <input type="text"/>
Q2: 0 <input type="text"/>	Q3: 0 <input type="text"/>
Lock-in Power: 0 % <input type="text"/>	Lock-out Power: 0 % <input type="text"/>
Hysteresis: 0.0 V <input type="text"/>	VRef (for IEEE1547) Mode: OFF <input type="text"/>
	TRef: 0sec <input type="text"/>

- Lock-in Power: Function start working when active power is higher than this setting value
- Lock-out Power: Function stop working when active power is lower than this setting value
- Q2: The reactive power when voltage is V1
- Q3: The reactive power when voltage is V2
- Hysteresis: N/A in most of the grid codes
- VRef(for IEEE1547 / US region) Mode: Disable/ enable VRef function
- TRef: The time frame for VRef function to re-define the VRef. (1=0.1s)

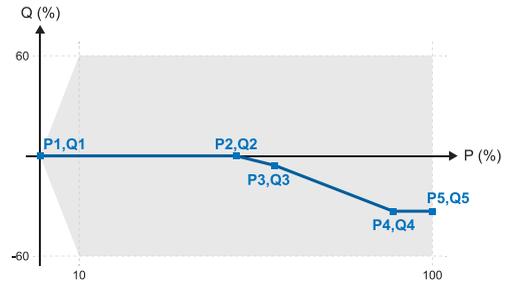


**⑥ Q(P) Function Setting:**

No. of Set Point : 0 ~ 10

Px: Set point of output power (Unit: 0.1%)

Qx: Set point of reactive power up to 63% (Unit: 0.1%)



**⑦ Fan Test:** You can use fan test function to test the fan.

**Fan Fail:** Showing the defective fan during fan test.

**⑧ Anti-PID:**

When Trip time is '0' means this function is disable, if the value has been set, the anti-PID function will start after 30 mins when inverter status shows "No DC".

Set specific value for anti-PID function active time.

\*Range of Trip Time value : 0~11 (hour)

**⑨ Night Time Reactive Power:**

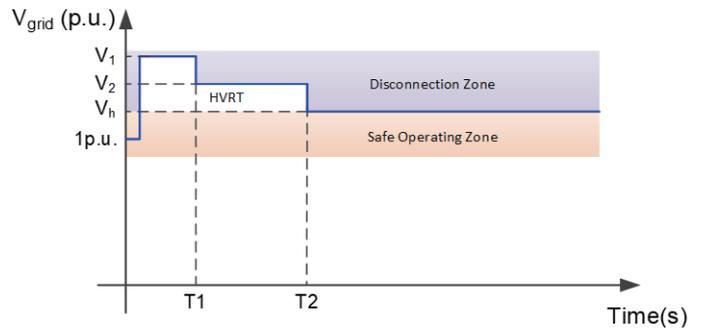
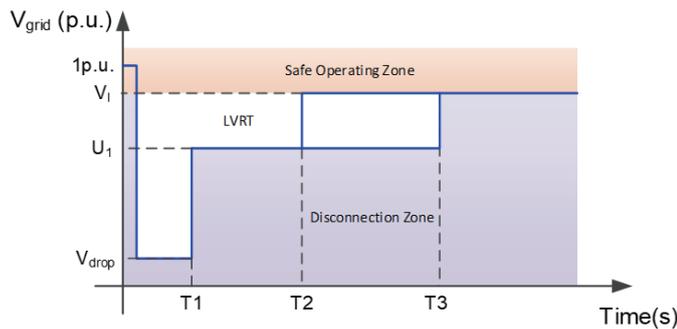
Mode: Disable/ Enable by selecting the mode

The selected mode in this block will overwrite the setting in "Reactive Power" block during night time.

**⑩ FRT:**

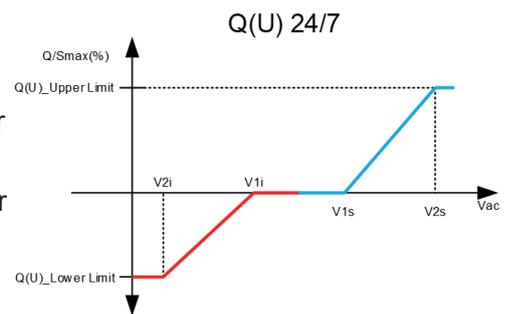
Enable: Feed-in reactive power when FRT occur.

Enable(Limit Grid Support): Do not Feed-in reactive power when FRT occur.

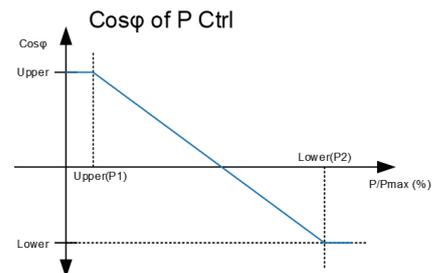


**⑪ Q by Night:**

- ContantQ\_Percent: Setting of Q of the "Fixed kVar 24/7" mode
- Q(U)\_P\_Lock\_in: Function start working when active power is higher than this setting value
- Q(U)\_P\_Lock\_out: Function stop working when active power is lower than this setting value
- Q(U)\_Hysteresis: N/A in most of the grid codes
- Response\_Delay: Response time setting for all reactive power mode of 24/7 (0%-95% of setting value)



**⑫ Cos(Φ) of P Ctrl:** V Lock in / V Lock out: N/A in most grid code



**⑬ Q(P) 24/7 Function Setting:**

No. of Set Point: 0 ~ 10

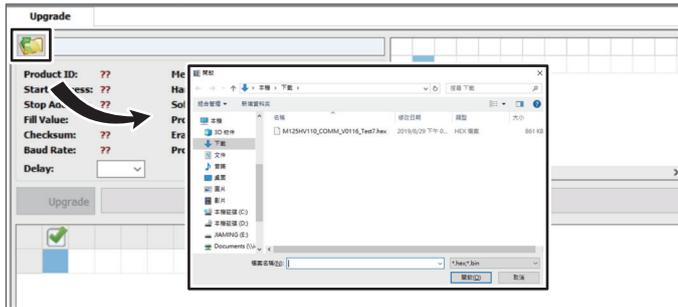
Px: Set point of output power (Unit: 0.1%)

Qx: Set point of reactive power up to 63% (Unit: 0.1%)

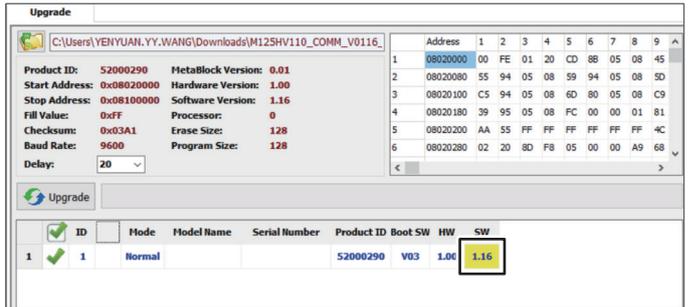
# 6. Other Functions



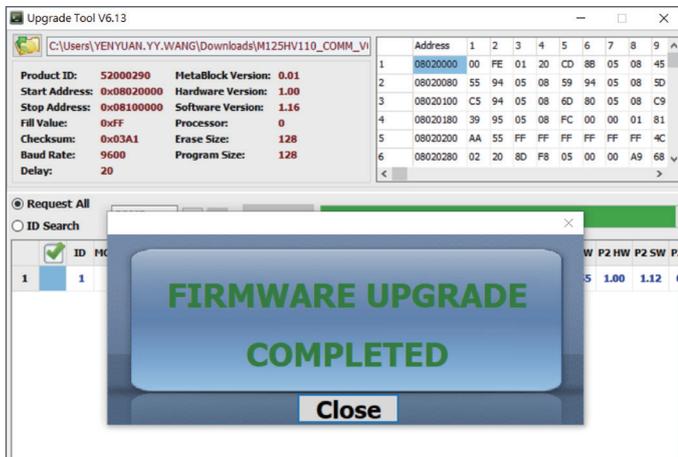
- ① **Sync Clock:** synchronize inverter’s time with your laptop’s
- ② **Firmware:** for FW upgrade



After first connection, press “” to load FW file.



After the file is loaded, the current FW version will shown in yellow, you can know whether the FW needs to be upgraded or not. If yes, press “”.

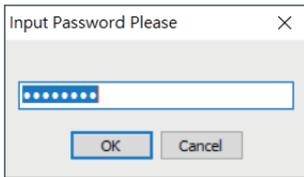


When upgrade finished, “FIRMWARE UPGRADE COMPLETED” will be shown.

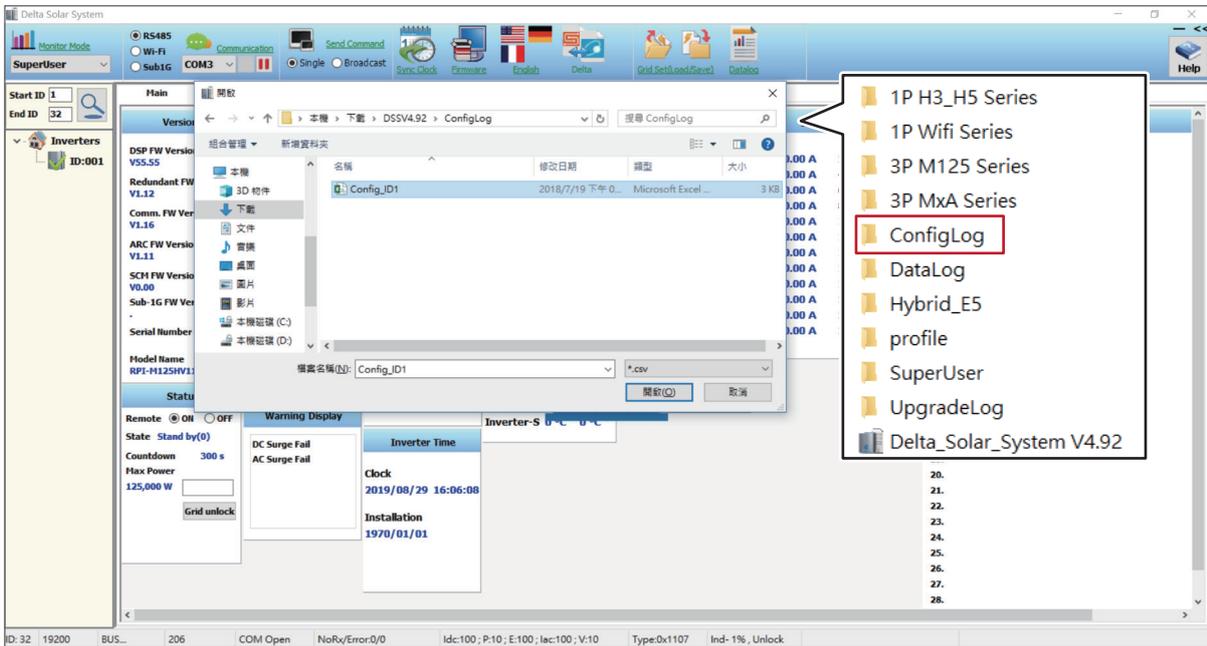
- ③ **Language:** Three languages available(English /German/French)by clicking the national flag.
- ④ **Protocol:** Switch between Sunspec & Delta protocol.

Notice :  
If switched to Sunspec, there will be no readings in DSS because DSS is for Delta protocol

⑤ **Grid Load:**



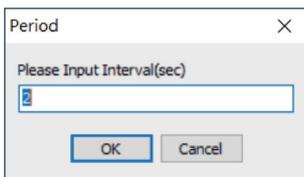
Enter the password you got.



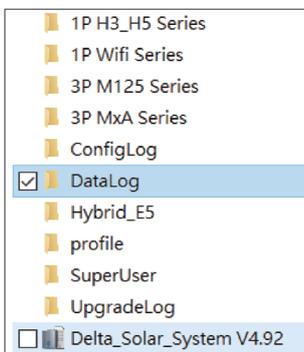
“Config\_ID1” can be found in “ConfigLog” folder, settings can be implemented to other inverters.

⑥ **Grid save:** save the Grid setting as “Config\_ID1” in “ConfigLog” folder

⑦ **Datalog :** log data in Main page



Time interval can be chosen.



Data will be in “Datalog” folder.

