

Delta Monitoring Solution

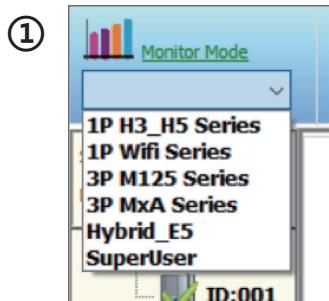
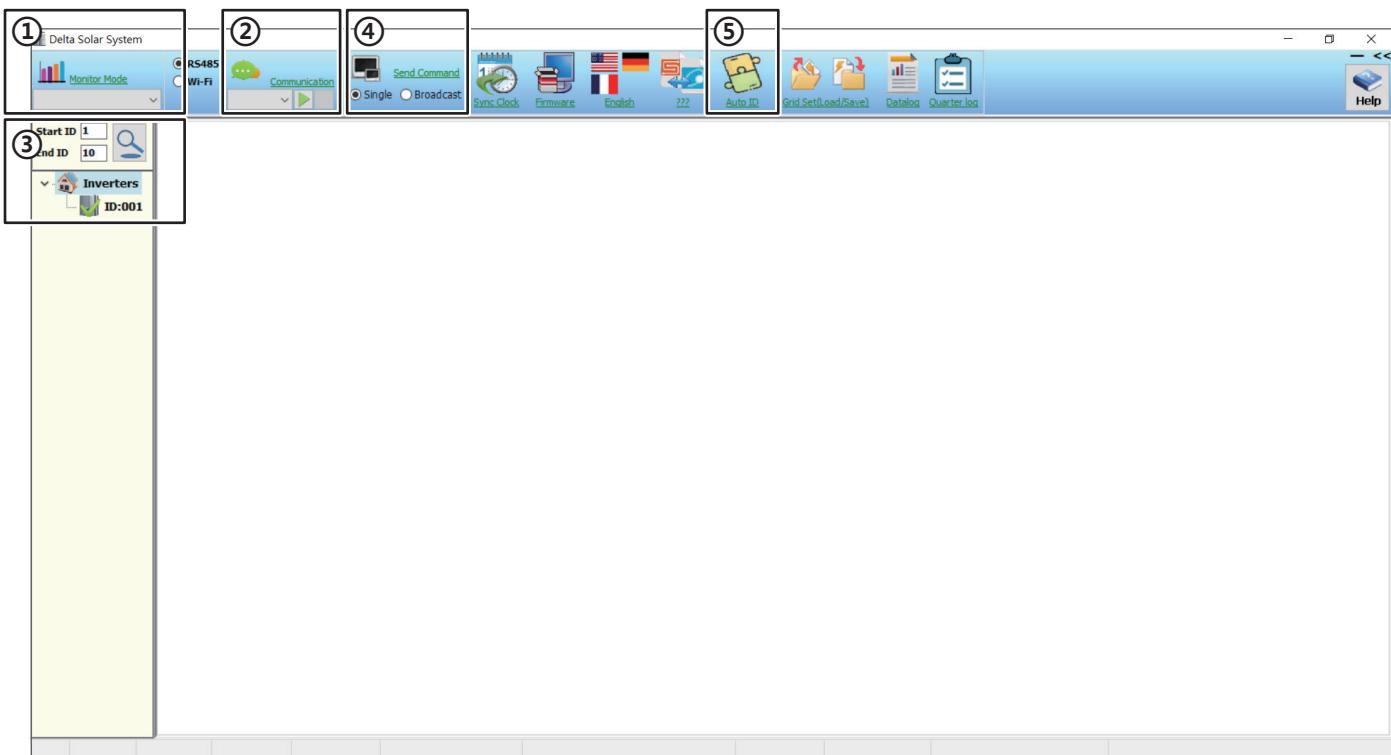
Delta Solar System Software Operation Manual



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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:

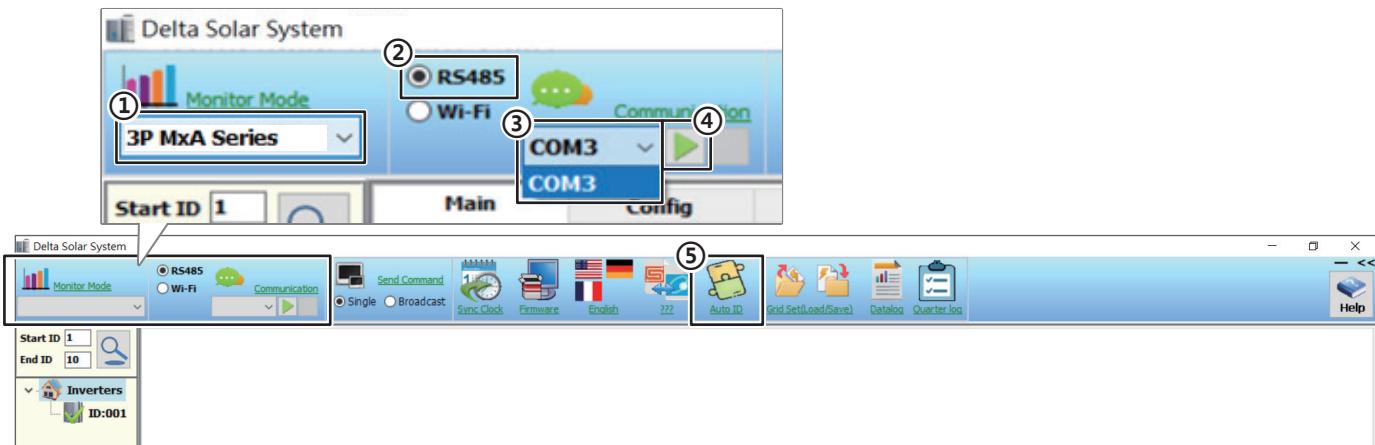
Choose "Single" can send command to the current set inverter.

Choose "Broadcast" can send command to all inverters detected.

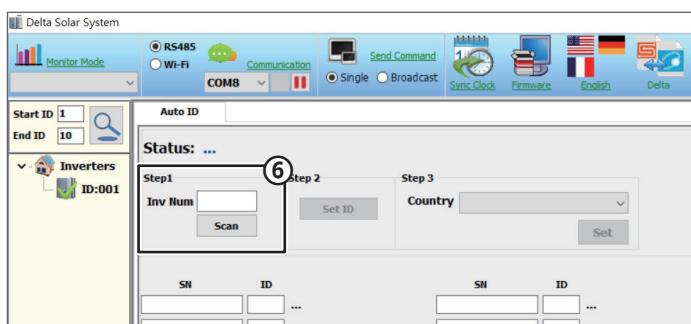
(5) Auto ID Function:

Click this icon for inverters first time commission, please refer to **Chapter 2** for more details.

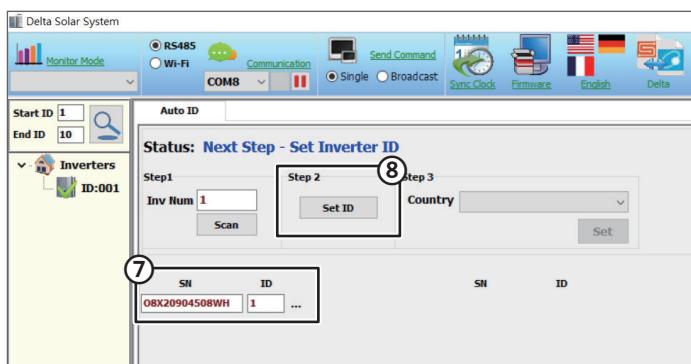
2. Auto ID function (first commission)



- 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 been sync from laptop or PC at this step

3. Main Page

Main	Config	Ctrl																																																																									
<p>① Version</p> <p>DSP FW Version V5.1.29</p> <p>Redundant FW Version V1.11</p> <p>Comm. FW Version V1.26</p> <p>ARC FW Version V1.15</p> <p>.</p> <p>.</p> <p>Serial Number 0B820904508WH</p> <p>Model Name M70A_260</p>	<p>④ Output 1</p> <p>Voltage(L-N) 0.0 V</p> <p>Current 0.00 A</p> <p>Power 0 W</p> <p>Freq. 0.00 Hz</p>	<p>Output 2</p> <p>Voltage(L-N) 0.0 V</p> <p>Current 0.00 A</p> <p>Power 0 W</p> <p>Freq. 0.00 Hz</p>	<p>Output 3</p> <p>Voltage(L-N) 0.0 V</p> <p>Current 0.00 A</p> <p>Power 0 W</p> <p>Freq. 0.00 Hz</p>	<p>⑦ Temperature 1</p> <table> <thead> <tr> <th></th> <th>Now</th> <th>Max</th> </tr> </thead> <tbody> <tr> <td>Ambient</td> <td>34 °C</td> <td>46 °C</td> </tr> <tr> <td>Boost-1</td> <td>26 °C</td> <td>63 °C</td> </tr> <tr> <td>Boost-2</td> <td>0 °C</td> <td>0 °C</td> </tr> <tr> <td>Inverter-S</td> <td>25 °C</td> <td>71 °C</td> </tr> </tbody> </table>		Now	Max	Ambient	34 °C	46 °C	Boost-1	26 °C	63 °C	Boost-2	0 °C	0 °C	Inverter-S	25 °C	71 °C	<p>⑩ Max Input Value</p> <table> <tbody> <tr> <td>Vdc1:</td> <td>800.0 V</td> <td>Vdc2: 800.3 V</td> </tr> <tr> <td>Idc1:</td> <td>21.14 A</td> <td>Idc2: 21.12 A</td> </tr> <tr> <td>Pdc1:</td> <td>12700 W</td> <td>Pdc2: 12740 W</td> </tr> <tr> <td>Vdc3:</td> <td>800.2 V</td> <td>Vdc4: 800.1 V</td> </tr> <tr> <td>Idc3:</td> <td>21.01 A</td> <td>Idc4: 20.07 A</td> </tr> <tr> <td>Pdc3:</td> <td>12700 W</td> <td>Pdc4: 12100 W</td> </tr> </tbody> </table>	Vdc1:	800.0 V	Vdc2: 800.3 V	Idc1:	21.14 A	Idc2: 21.12 A	Pdc1:	12700 W	Pdc2: 12740 W	Vdc3:	800.2 V	Vdc4: 800.1 V	Idc3:	21.01 A	Idc4: 20.07 A	Pdc3:	12700 W	Pdc4: 12100 W	<p>⑫ String Current 1</p> <table> <tbody> <tr> <td>1:</td> <td>0.00 A</td> <td>2: 0.00 A</td> </tr> <tr> <td>3:</td> <td>0.00 A</td> <td>4: 0.00 A</td> </tr> <tr> <td>5:</td> <td>0.00 A</td> <td>6: 0.00 A</td> </tr> <tr> <td>7:</td> <td>0.00 A</td> <td>8: 0.00 A</td> </tr> <tr> <td>9:</td> <td>0.00 A</td> <td>10: 0.00 A</td> </tr> <tr> <td>11:</td> <td>0.00 A</td> <td>12: 0.00 A</td> </tr> <tr> <td>13:</td> <td>0.00 A</td> <td>14: 0.00 A</td> </tr> <tr> <td>15:</td> <td>0.00 A</td> <td>16: 0.00 A</td> </tr> <tr> <td>17:</td> <td>0.00 A</td> <td>18: 0.00 A</td> </tr> <tr> <td>19:</td> <td>0.00 A</td> <td>20: 0.00 A</td> </tr> <tr> <td>21:</td> <td>0.00 A</td> <td>22: 0.00 A</td> </tr> <tr> <td>23:</td> <td>0.00 A</td> <td>24: 0.00 A</td> </tr> </tbody> </table>	1:	0.00 A	2: 0.00 A	3:	0.00 A	4: 0.00 A	5:	0.00 A	6: 0.00 A	7:	0.00 A	8: 0.00 A	9:	0.00 A	10: 0.00 A	11:	0.00 A	12: 0.00 A	13:	0.00 A	14: 0.00 A	15:	0.00 A	16: 0.00 A	17:	0.00 A	18: 0.00 A	19:	0.00 A	20: 0.00 A	21:	0.00 A	22: 0.00 A	23:	0.00 A	24: 0.00 A
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<p>② Status</p> <p>Remote ctrl ON</p> <p>State Check PV Power8%</p> <p>Countdown 0 s</p> <p>Max Power 76,380 W</p> <p>Grid unlock</p>	<p>⑤ Input 1</p> <p>Voltage 0.0 V</p> <p>Current 0.00 A</p> <p>Power 0 W</p> <p>Input 2</p> <p>Voltage 0.0 V</p> <p>Current 0.00 A</p> <p>Power 0 W</p>	<p>⑥ Inverter Time</p> <p>Clock 2021/03/24 08:03:05</p> <p>Installation 0/00/00</p>	<p>⑧ Output Energy</p> <p>Today</p> <p>Wh 0.000 kWh</p> <p>Runtime 0:0:0</p> <p>Life</p> <p>Wh 415.500 kWh</p> <p>Lifetime 8:12:7</p>	<p>⑪ Max Output Value</p> <table> <tbody> <tr> <td>Vac1:</td> <td>302.2 V</td> <td>Pac1: 23860 W</td> </tr> <tr> <td>Iac1:</td> <td>111.94 A</td> <td>Fac1: 60.11 Hz</td> </tr> <tr> <td>Vac2:</td> <td>321.4 V</td> <td>Pac2: 24030 W</td> </tr> <tr> <td>Iac2:</td> <td>111.92 A</td> <td>Fac2: 60.11 Hz</td> </tr> <tr> <td>Vac3:</td> <td>301.0 V</td> <td>Pac3: 23820 W</td> </tr> <tr> <td>Iac3:</td> <td>112.03 A</td> <td>Fac3: 60.11 Hz</td> </tr> </tbody> </table>	Vac1:	302.2 V	Pac1: 23860 W	Iac1:	111.94 A	Fac1: 60.11 Hz	Vac2:	321.4 V	Pac2: 24030 W	Iac2:	111.92 A	Fac2: 60.11 Hz	Vac3:	301.0 V	Pac3: 23820 W	Iac3:	112.03 A	Fac3: 60.11 Hz	<p>⑫ DC1/2 Enable (M88H)</p> <p>⑬ Total Power</p> <table> <thead> <tr> <th>Output</th> <th>Input</th> </tr> </thead> <tbody> <tr> <td>0.00A</td> <td>0.00A</td> </tr> <tr> <td>0W</td> <td>0W</td> </tr> </tbody> </table> <p>Q: Cap 0 Var</p> <p>PF: Cap 0.00</p>	Output	Input	0.00A	0.00A	0W	0W																																														
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- 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.

⑯ 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 PM P(T) 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		⑯ Test Value
Start Time	Add up Time	Start Time	Add up Time	Start Time	Add up Time	Start Time	Add up Time	T00: 0 11 T01: 0 0 T02: 0 2065 T03: 0 2058 T04: 0 2059 T05: 0 0 T06: 0 0 T07: 0 0 T08: 0 0 T09: 0 0 T10: 0 0 T11: 0 0
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.		

⑯ **Derating Records:** Showing derating records of the inverter.

⑯ **Test Value:** Showing some internal DSP value.

This tab is for engineer when doing on site checking.

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

⑯ Energy - Month	
2021/03: 410.000 KWh	2020/03: 0.000 KWh
2021/02: 0.000 KWh	2020/02: 0.000 KWh
2021/01: 0.000 KWh	2020/01: 0.000 KWh
2020/12: 0.000 KWh	2019/12: 0.000 KWh
2020/11: 0.000 KWh	2019/11: 0.000 KWh
2020/10: 0.000 KWh	2019/10: 0.000 KWh
2020/09: 0.000 KWh	2019/09: 0.000 KWh
2020/08: 0.000 KWh	2019/08: 0.000 KWh

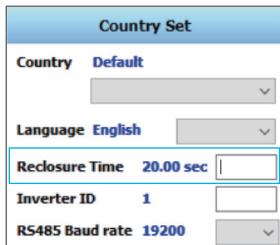
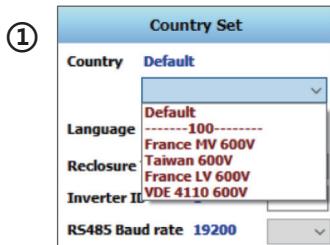
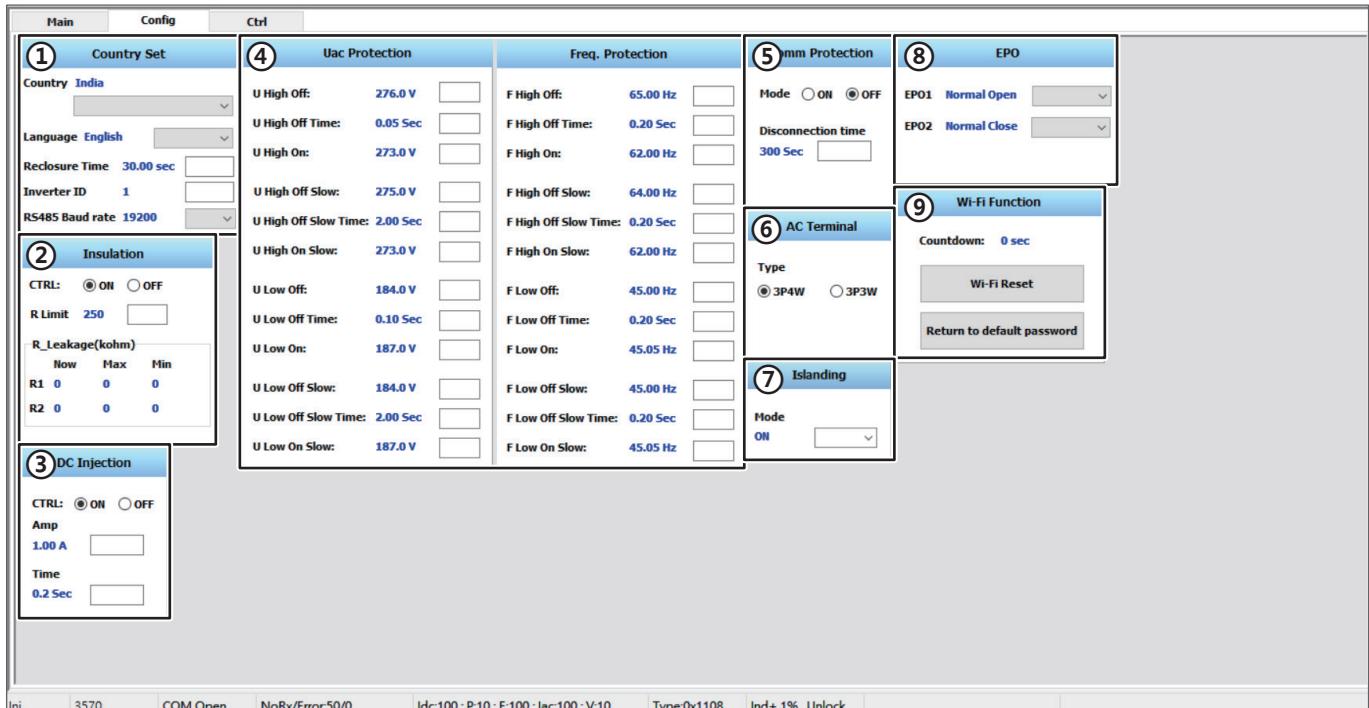
⑯ **Error Event:** Log error events up to 30 pcs.

⑯ **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.

Main	Config	Ctrl			
① Active Power	② Reactive Power	③ P(U) Function	④ P-F Control	⑤ Q(U) Ctrl	⑥ Q(P) Function Setting
Mode Disable PM (%) 100 % Ramp Up Power(%) 6000 % Active Power Slope 60 sec Active Power Slope(Fall) 60 sec	Mode Disable Fixed cosΦ 1 Fixed Q (%) Cap 0% Ind 0% Response Time 10.00 sec	Mode: Disable Recovery Time(s) 300 sec P Lock-in(%) 20 % Lower Power(%) 5 % V Lock-in(Vac) 253.0 V V Lock-out(Vac) 248.4 V Start Voltage 253.0 V Stop Voltage 253.0 V Pend 5 % V recover 248.4 V	Over Frequency Mode: Disable Gradient (%) 40 % Freq. Start 60.20 Hz F Recovery 60.20 Hz Under Frequency Mode: Disable Gradient (%) 40 % Freq. Start 59.80 Hz F Recovery 59.80 Hz	Q_Umax Ind 48% Vmax 232.0 V Upper(V2) 223.2 V Q2 0 % Lock-in Power 0 % Freq. Stop 62.70 Hz Response Time 0.00 sec Lower(V1) 218.8 V Q3 0 Lock-out Power 0 % VRef (for IEEE1547) 0.0 V Hysteresis 0.0 V TRef 0sec	Mode Rated No of Set Point 5 P0 10.0% P1 50.0% P2 60.0% P3 90.0% P4 100.0% P5 100.0% P6 100.0% P7 100.0% P8 100.0% P9 100.0% Q0 Cap 0 Q1 Cap 0 Q2 Ind 5.0% Q3 Ind 33.0% Q4 Ind 33.0% Q5 Ind 33.0% Q6 Ind 33.0% Q7 Ind 33.0% Q8 Ind 33.0% Q9 Ind 33.0%
⑦ Fan Test	⑧ Anti-PID	⑩ FRT	⑪ Q by Night	⑫ cos(ϕ) of P Ctrl	⑬ Q(P) 24/7 Function Setting
Mode: ON OFF Duty 0 Anti-PID Trip Time 0 State Ready	Fan Fail Internal F00_F01_F02_F03 F04_F05_F06_F07 F08_F09_F10_F11 F12_F13_F14_F15 External F00_F01_F02_F03 F04_F05_F06_F07 F08_F09_F10_F11 F12_F13_F14_F15	Dead Band Umin 90 % K Factor 1.0 LVRT_Mode Mode: Enable T1 Time 0.40 sec T2 Time 1.80 sec T3 Time 1.80 sec HVRT_Mode Mode: Disable T1 Time 0.10 sec T2 Time 5.00 sec	Q_U_Percent 0 % Q_U_Upper_Limit -44 % Q_U_Lower_Limit 44 % Q_U_Ymin(V2) 184.0V Q_U_Ymax(V2s) 253.0V Q_U_V1(V1l) 230.0V Q_U_V2(V1s) 230.0V Q_U_P_Lock_in 0 % Q_U_P_Lock_out 0 % Q_U_Hysteresis 0.0V Response_Delay 10.00 sec	Upper 1 Ind 0% Lower 0.90 Ind 0% Upper(P1) 100 % Lower(P2) 50 % V Lock in 0.0 V V Lock out 0.0 V	Mode Rated No of Set Point 5 P0 10.0% P1 50.0% P2 60.0% P3 90.0% P4 100.0% P5 100.0% P6 100.0% P7 100.0% P8 100.0% P9 100.0% Q0 Cap 0 Q1 Cap 0 Q2 Ind 5.0% Q3 Ind 33.0% Q4 Ind 33.0% Q5 Ind 33.0% Q6 Ind 33.0% Q7 Ind 33.0% Q8 Ind 33.0% Q9 Ind 33.0%
⑨ Time Reactive Power					

① Active Power

Mode Disable PM (%) 100 %	Disable Enable
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 Ind 0%	
Fixed Q (%) Ind 44% Ind 0%	
Response Time 0.00 sec	

Mode Disable	
Fixed cosΦ 1 Ind 0%	
Fixed Q (%) Ind 44% Ind 0%	
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
Recovery Time(s)	300 sec
P Lock-in(%)	20 %
Lower Power(%)	5 %
V Lock-in(Vac)	253.0 V
V Lock-out(Vac)	248.4 V
Start Voltage	253.0 V
Stop Voltage	253.0 V
Pend	5 %
V recover	248.4 V

- 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:

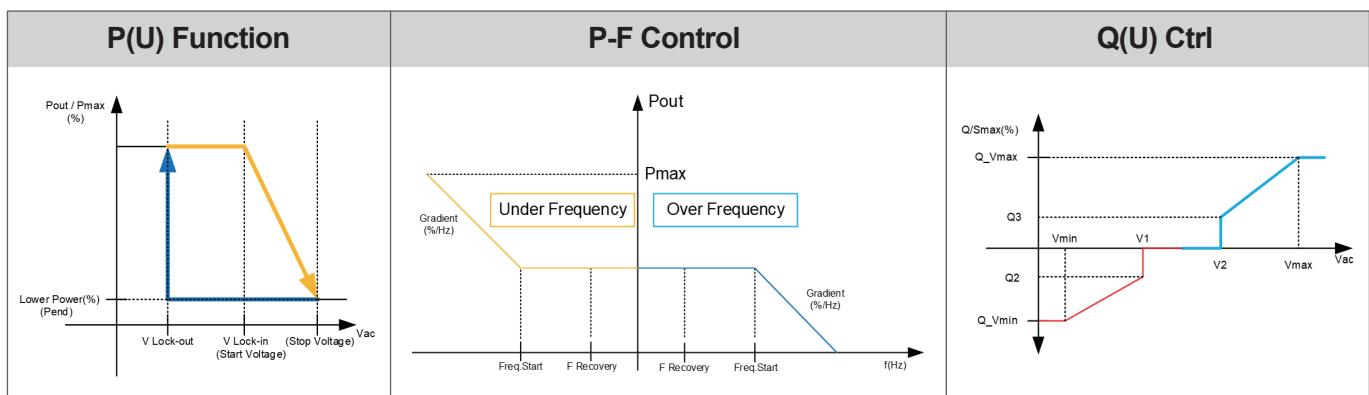
P-F Control	
Over Frequency	
Mode Disable	Gradient (%)
40 %	
Freq.Start	60.20 Hz
Freq.Stop	62.70 Hz
F Recovery	60.20 Hz
Response Time	0.00 sec
Under Frequency	
Mode Disable	Gradient (%)
40 %	
Freq.Start	59.80 Hz
F Recovery	59.80 Hz

- 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%	Q_Vmin Cap 48%
Ind	Ind
Vmax 232.0 V	Vmin 210.0 V
Upper(V2) 223.2 V	Lower(V1) 218.8 V
Q2 0	Q3 0
Lock-in Power 0 %	Lock-out Power 0 %
Hysteresis 0.0 V	VRef (for IEEE1547)
	Mode OFF
	TRef 0sec

- 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)

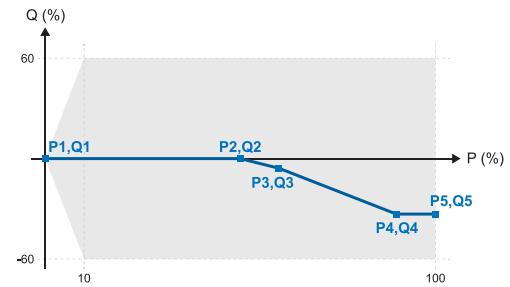


⑥ Q(P) Function Setting:

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:

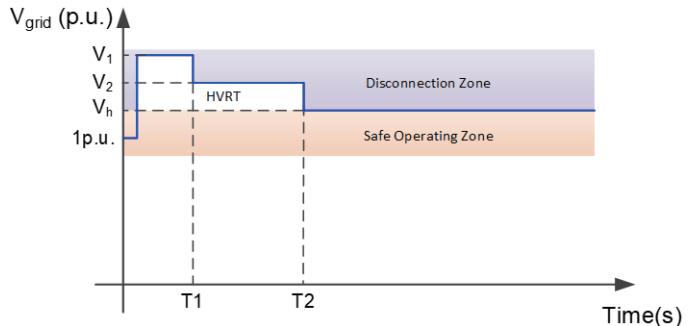
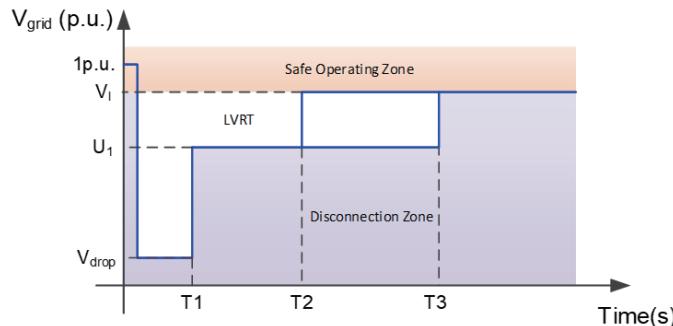
Mode: Disable/ Enable by selecting the mode

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

⑩ FRT:

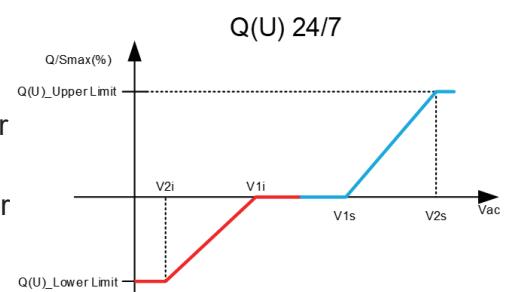
Enable: Feed-in reactive power when FRT occur.

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



⑪ Q by Night:

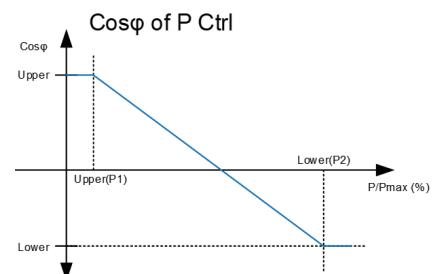
- ContantQ_Percent: Setting of Q of the "Fixed kVar 24/7" mode
- Q(U)_P_Lock_in: Function start working when active power is higher than this setting value
- Q(U)_P_Lock_out: Function stop working when active power is lower than this setting value
- Q(U)_Hysteresis: N/A in most of the grid codes
- Response_Delay: 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:

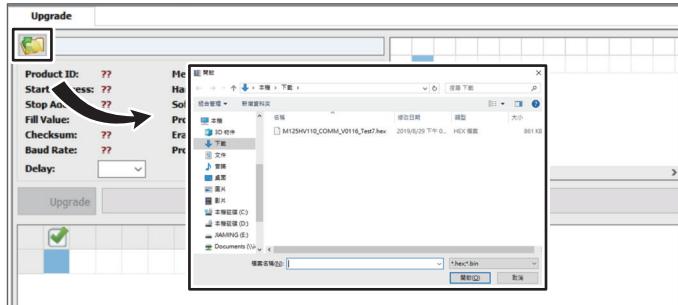
- No. of Set Point: 0 ~ 10
- Px: Set point of output power (Unit: 0.1%)
- Qx: Set point of reactive power up to 63% (Unit: 0.1%)



6. Other Functions



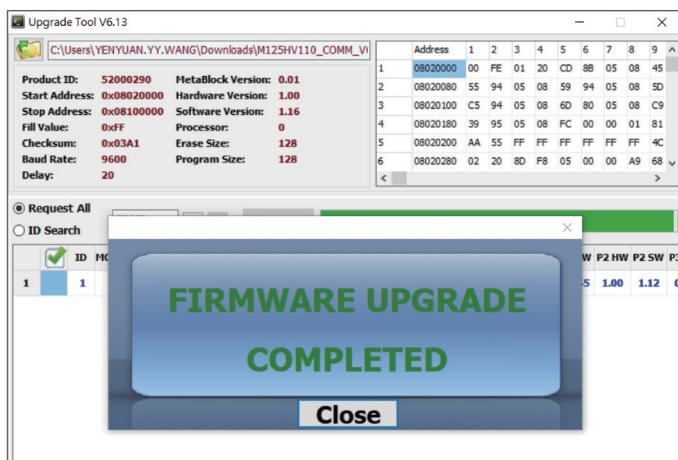
- ① **Sync Clock:** synchronize inverter's time with your laptop's
 ② **Firmware:** for FW upgrade



After first connection,
press " " to load FW file.

Address	1	2	3	4	5	6	7	8	9	^
1	08020000	00	FE	01	20	CD	88	05	08	45
2	08020080	55	94	05	08	59	94	05	08	5D
3	08020100	C5	94	05	08	60	80	05	08	C9
4	08020180	39	95	05	08	FC	00	00	01	B1
5	08020200	AA	55	FF	FF	FF	FF	FF	FF	4C
6	08020280	02	20	8D	F8	05	00	00	A9	68

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 " ".



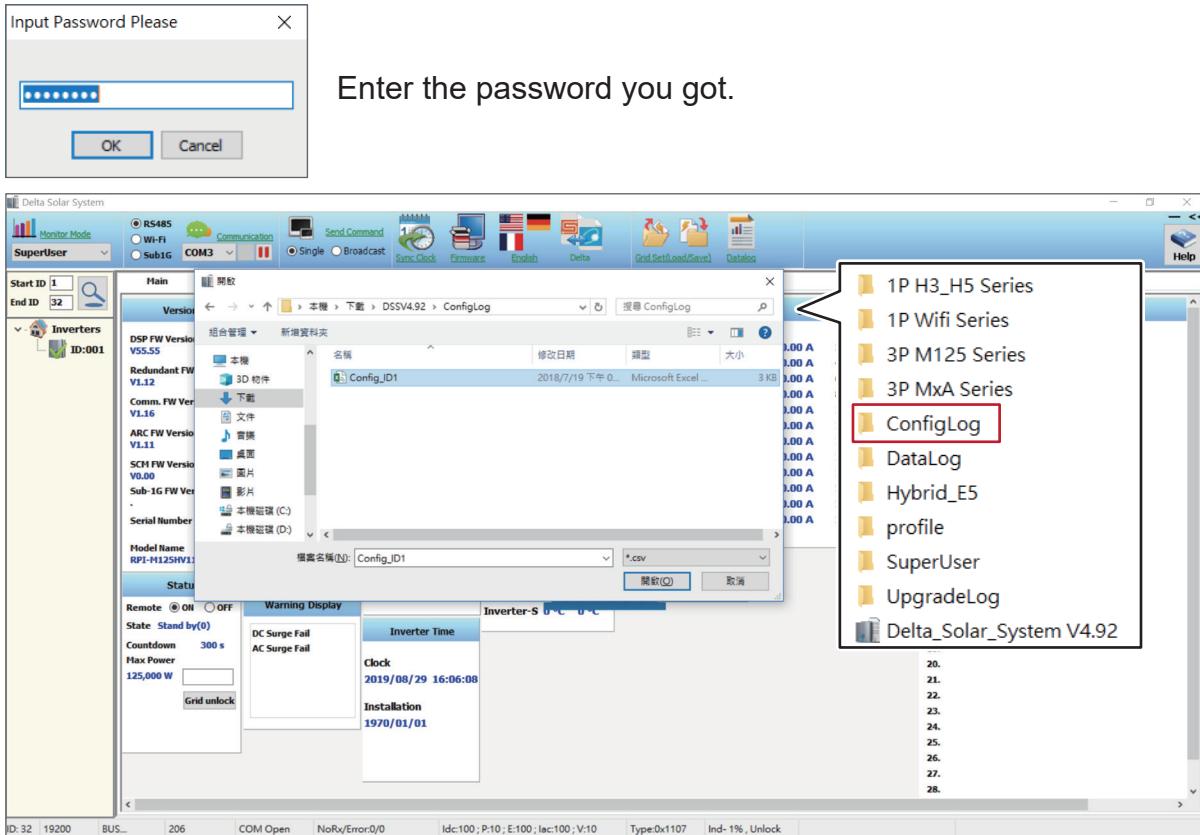
When upgrade finished,
 "FIRMWARE UPGRADE COMPLETED"
 will be shown.

- 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

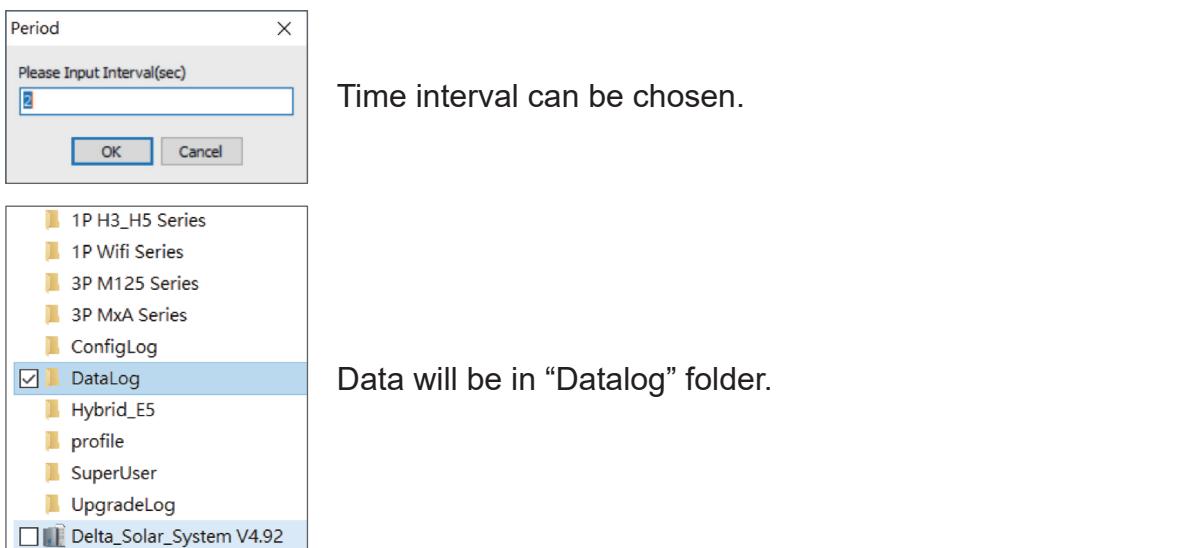
⑤ Grid Load:



“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





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