Technical Specifications

Revision: 1.00

Issued Date: 2020-10-01

Model No.: DM30AD1000M

Description: 30KW, 1000V AC to DC Rectifier

DELTRIX
charging solutions

Revision History

Revision	Revision Summary	Date
1.00	Initial Release	2020-10-01

Table of Contents

1. Power Supply Overview

1.1 Table 1　Input Electrical Characteristics Overview

Input Voltage Range	rated three-phase four-wire 323VAC to 437VAC, operating voltage range: 285~475VAC
Frequency Range	50Hz/60Hz±5%
Power Factor	> 0.99 @ full load；> 0.98 @ half load
Inrush Current	15Atyp peak, 323VAC; 20Atyp peak, 475VAC
Efficiency	95%min　@750V full load @380VAC
Harmonic Current	＜5% @Full load@380VAC
Start-up Time	3～7s
Compatible DC Input	400VDC~800VDC；full load@580VDC~800VDC

1.2 Output Electrical Characteristics Overview

1.2.1　Table 2　Output Voltage ,Current & Regulation

Output Voltage	Regulation	Rated Current	Max Current	Current Regulation
200V~500V	±0.5%	60A	88.2A	±1% (the output DC current is set in the range of 20%. 100%

500V~1000V	±0.5%	30A	45.45A	of the rated value, when the set output DC current is greater than or equal to 30 A, the output current error shall

				not exceed ± 1%; when the set output DC current is less than 30 A, the output current error should not exceed ±0.3 A)

Note: input voltage range: three-phase 323~437 VAC;

the module supports automatic switching of output at both ends.

1.2.2 Table 3 DC Output Voltage Ripple & Noise

Output Voltage	Ripple & Noise (Max.)
200V~1000V	±0.5%(RMS) / ±1%(Peak-Peak)

Note:

1) measurements shall be made with an oscilloscope with 20MHz bandwidth.

2) input voltage range: three-phase 323~437 VAC

1.2.3 Table 4 DC Output Current Ripple & Noise

Peak of Current Ripple/A	Current Ripple Frequency/Hz
1.5	f≤10
6	f≤5000
9	f≤150 000

Note:

1) measurements shall be made with an oscilloscope with 20MHz bandwidth.

2) input voltage range: three-phase 323~437 VAC

1.2.4 Table 5 Output Current Fall Response Time

Reference Current ΔI（A）	Response Time（s）
≤40	1
＞40	ΔI/40

1.2.5 Output Current Shutdown Rate

>200A/s

1.2.6 Table 6 DC Output Overshoot at Turn-on & Turn-off

200V~1000V Overshoot Voltage(V)	
on	off
5%	5%

Note: All of DC output current from Min. to Max.

1.2.7 Table 7 DC Output Voltage Rise Time

Output Voltage	380VAC input &Full Load
1000V	3~7 s

Note: It starts from 10% of the output voltage to 90% of the output voltage.

1.2.8 Parallel

Parallel operation and grouping functions are required and the maximum number of parallel modules is 31. When the average output current of each module is 50 % ~ 100 % of the rated current value in the mode of parallel current sharing operation, the average current-unbalance shall not exceed ±5%.

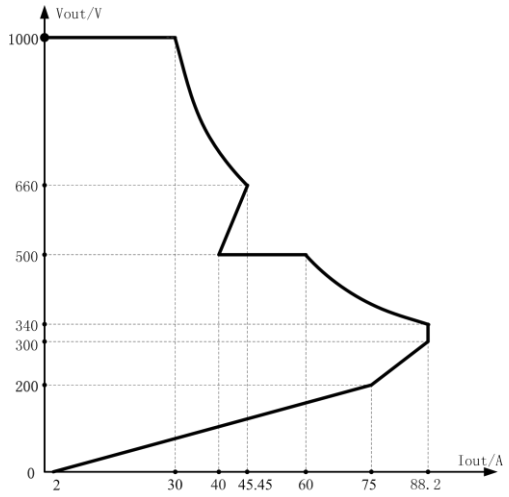
1.2.9 Table 8 Voltage Limit Overview

Limit voltage	Comments
200～1000VDC	continuously adjustable in the steady state

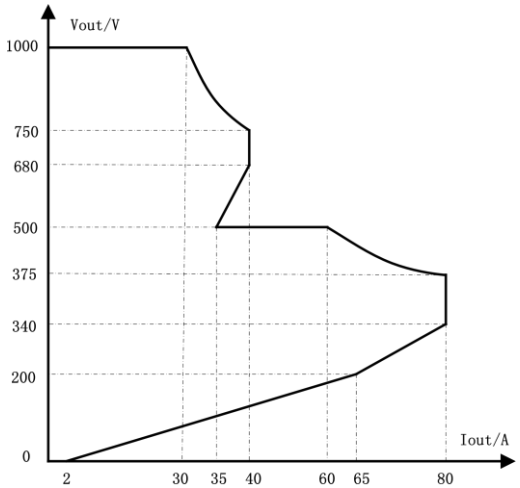
1.2.10 Table 9 Current Limit Overview

Limit Current	Comments
2.0~88.2A	continuously adjustable in the steady state

1.2.11 Fig. of Output Overview



MR950-100H外特性曲线（交流输入）



MR950-100H外特性曲线（直流输入）

1.3 Remote On/Off Control

1. Remote Signaling

Transmit the protection signal (AC over-voltage/under-voltage, phase loss, over-temperature, output over-voltage, over-current and other signals) and fault signal of the module to the monitoring unit.

2.Telemetering

The output voltage and output current are measured and reported to the monitoring unit.

3. Remote Control

According to the command of the monitoring unit, controls the ON/OFF of the charging module.

4. Remote Regulation

Regulate the output voltage of the module according to the command of the monitoring unit and adjust the output current limiting point in the range of 1% ～ 100%.

1.4 Protection

1.4.1 Table 10 DC Output Over-voltage Protection

Max. Over-voltage	Comments
515V	1. The switching point from low voltage to high voltage is 505V, the highest output voltage of the low voltage section is 510V, and the hardware over-voltage protection point is 535V; 2. The switching point from high voltage to low voltage is 495V, the highest output voltage of high voltage section is 1010V, and the hardware over-voltage protection point is 1060V.
1015V	

1.4.2 Table 10 DC Output Short Circuit Protection

Output Short Protection
output current limit point is minimized to 2A, continuous output

Note: it meets the needs of large capacity capacitive load charging.

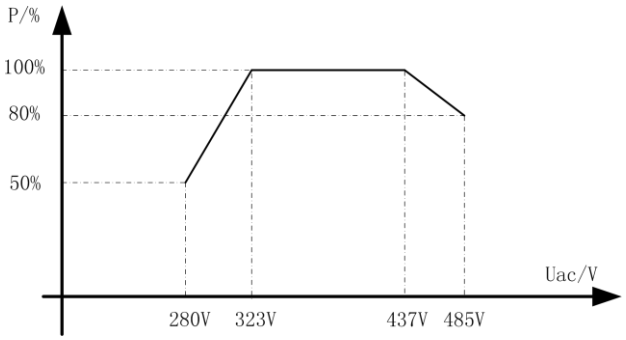
1.4.3 Table 11 AC Input Over voltage Protection

Over voltage	Recovery
three-phase 485±10VAC	three-phase 465±10VAC
the module can work with derating in the case that the input voltage is higher than 437VAC. the module can withstand up to 530VAC AC input voltage	

1.4.4 Table 12 AC Input Under-voltage Protection

Under voltage	Recovery
three-phase 275±10VAC	three-phase 295±10VAC
the module can work with derating in the case that the input voltage is lower than 323VAC;	

Note: the input voltage under test varies within the range of three-phase 323VAC ~ 437VAC



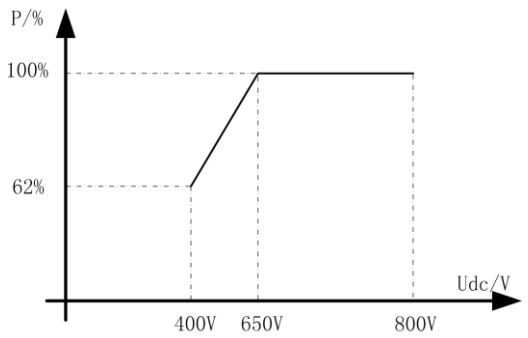
交流输入降额曲线

1.4.5 Table 13 DC Input Over-voltage Protection

Over-voltage	Recovery
800±10VDC	770±10VDC

1.4.6 Table 14 DC Input Under-voltage Protection

Under-voltage	Recovery
400±10VDC	430±10VDC
the module can work with derating in the case that the input voltage is lower than 650VDC;	



直流输入降额曲线

1.4.7 Phase Loss Protection

It supports the function of phase loss. In the case of phase loss, the protection function is triggered. After phase loss recovery, the module returns to normal.

1.4.8 Over-temperature Protection

The protection function shall be triggered in the case of over-temperature. Once the temperature drops, it resumes automatically.

1.5 Others

The module is equipped with a shutdown output discharge circuit and the discharge time from shutdown to output voltage less than 60V is less than 500ms.

It can control fan rotation mode according to the output current temperature and other information.

It can check the working state of the fan and alarming caused by faults

It supports CAN communication and grouping & parallel operation.

A rotary switch with 5 characters is used for the module address setting. The module automatically gets the address when the code is zero, otherwise the selected value is the module address.

2. Isolation

2.1 Table 14 Insulation Resistance

Input to Output	DC1000V 10MΩmin (at room temperature)
Input to FG	DC1000V 10MΩmin (at room temperature)
Output to FG	DC1000V 10MΩmin (at room temperature)

2.2 Table 15 Insulation & Voltage Resistance

Input to Output	3535VDC No breakdown or flashover
Input to FG	3535VDC No breakdown or flashover
Output to FG	3535VDC No breakdown or flashover
CAN to Input	4242VDC No breakdown or flashover
CAN to Output	4242VDC No breakdown or flashover

3. Safety

CE LVD: EN 61851-1:2011; EN 61851-23:2014; EN 62477-1

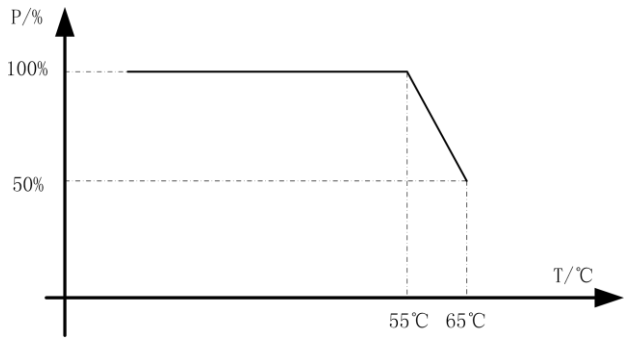
4. EMC

EMC: IEC 61851-21-2

5. Environmental Requirements

5.1 Temperature

- Operating: －20°C to +55°C
  - Derating from 55~65°C
- Storage: - 40°C to+70°C



环境温度降额曲线

5.2 Humidity

- Operating: From 10% to 95% relative humidity (non-condensing).
- Store: From 5 to 95% relative humidity (non-condensing).

5.3 Altitude

- Operating: to10,000 ft.
- Store: to 20,000ft.

5.4 Cooling Method

- forced air cooling

5.5 Noise

- <65dBb @ 680V/44.1A 340V/88.2A 25°C

5.6 MTBF > 300000 Hour

6. Mechanical Dimensions

Measuring Unit	Each	Packaging Dimension	Remark
Height	87mm±0.5mm	/	/
Width	440mm±0.5mm	/	/
Depth	390mm±0.5mm	/	/

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