High Frequency Switching AC/DC Module

MXF100200 Modules

User Manual

MXF100200 Module User's Manual	
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Publication Instructions

Introduction

In order to guide related power equipment manufacturers to design and produce power systems using our company's related products, this technical guide is specially compiled.

This manual describes in detail of the appearance, function and parameter index, interface definition and operation instructions of MXF100200 high frequency switch rectifier module.

Audience

This manual is suitable for power supply cooperative manufacturers, power supply users, power supply maintenance engineers, etc.

Conventions in this manual

1. Mark on the product


HV warn

Paste this mark where high voltage exists.


PE end

Add this tag on the protective earth end of the bottom frame of the cabinet.

2. Mark in the manual


Note

Attention words refer to conditions or practices that may cause damage to this equipment or other equipment.

Contents

1. Overview

MXF100200 High-frequency module is an AC/DC module with AC voltage input and adjustable DC voltage output. The module adopts DSP digital control and resonant soft switch; the module has the high power density and high efficiency characteristics.

2. Main Features

- **High Efficiency**

  Reduce energy consumption, meet the requirements of energy conservation and emission reduction, and save electricity bills for customers..

- **High power density**

  Can save space and reduce system cost.

- **DSP Digital Control**

  Fewer components, higher environmental stability, higher reliability, and more convenient expansion.

- **Low Input Harmonics**

  Reduce the pollution to the grid, and have higher adaptability to the grid.

- **Wide Input & Output Voltage Range**

  Suitable for most occasions with different input and output voltages.

- **Wide Operating Temperature Range**

  Wide operating temperature range meets most harsh working environments

- **Hot Swap**

  Suitable for easy use and reduced maintenance costs.

- **Built-In Anti-Reverse Protection, With Failure Self-Isolation Function**

  Greatly improve system reliability.

- **Perfect Fault Self-Detection Prompt**

  Abundant fault detection, convenient for customer maintenance.

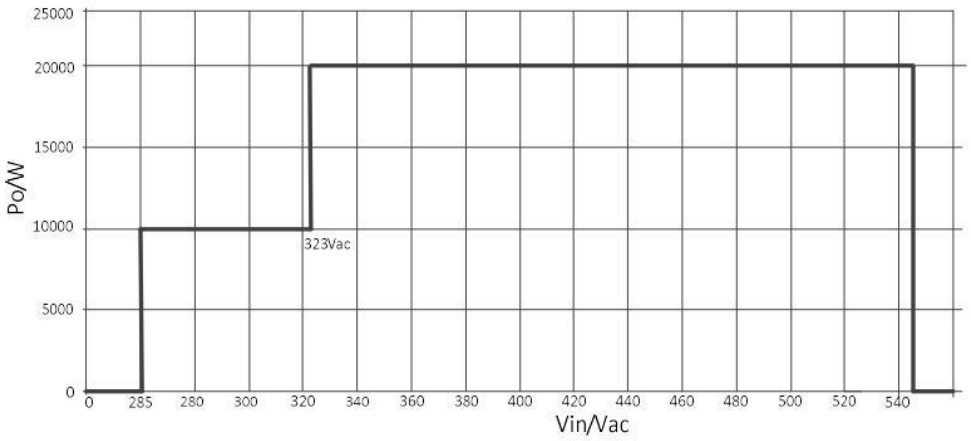
3. Index

Item	Parameter index
➢ Dimensions and module type	
Dimensions	248mm (Width) × 85mm (Height) × 395mm (Depth)
Module net weight	≤9.0 kg
➢ DC output	
Rated output power	20kw
Model	MXF100200
Rated output voltage	100Vdc
Rated output current	200A
DC output voltage range	50-100Vdc
Current limit adjustable range	10-105% stepless adjustable
Peak-to peak noise	≤1.05V
Voltage regulation accuracy	≤±0.5%
Steady current accuracy	≤±1%
Efficiency @ full load rated output voltage	≥92%
➢ AC input	
Rated input voltage	380Vac/50Hz (three-phase four-wire system, without neutral wire)
Input voltage range	Full load rated working voltage range: 323Vac~437Vac Working voltage range: 285~530Vac 285～322Vac half-load output 323Vac～530Vac full load output
Input current	＜35 A
Input protection	Safety protection; lightning protection circuit
➢ Working environment conditions	
Working temperature	-40C~45C normal operation; Derating output at 50C~75C
Storage temperature	-40C~75C
Relative humidity	0～95%non-condensing
Altitude	Full load output below 2000m
➢ Product safety and reliability	
Dielectric strength	The input can withstand 3535VDC withstand voltage for 1 minute to the shell.
	Input to output can withstand 4242VDC withstand voltage for 1 minute
MTBF	＞100000 hours
➢ Communication and alarm	
Communication interface	CAN
Output reverse connection fuse failure isolation protection;	
Alarms and status are monitored via the CAN communication port, and three panel LED indications	

3.1 Input limited power control

The relationship between the output power of charging module and the input voltage is shown in Figure 1. When the input voltage is between 323Vac - 530Vac (Hysteresis less than 15V), the module can output 20kw at full load, when the input voltage is between 285-322Vac, the module can only output 10kw.

Figure 1 Input limit power curve



3.2 Temperature limited power control

When the ambient temperature is below 45°C, the module will output full power; if the ambient temperature is above 50°C, it will be used with linear power limit; if the ambient temperature is 75°C, the output power of the module drops to 6kW±10% of the rated power; when the ambient temperature is above 75°C, the module shuts down

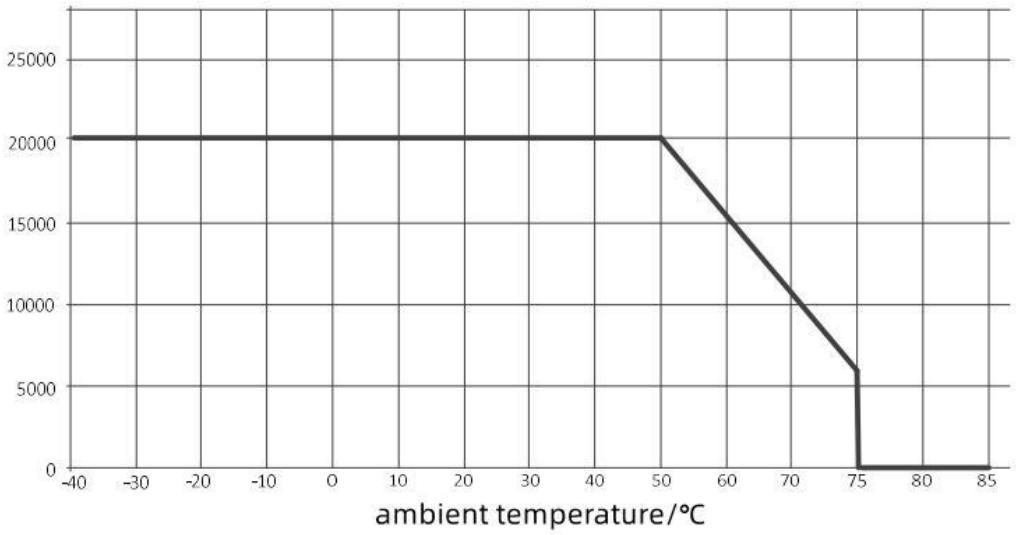


Figure 2 Temperature limit power curve

3.3 Output Voltage Current Control

The relationship between module output voltage and output current is shown in Figure 3:

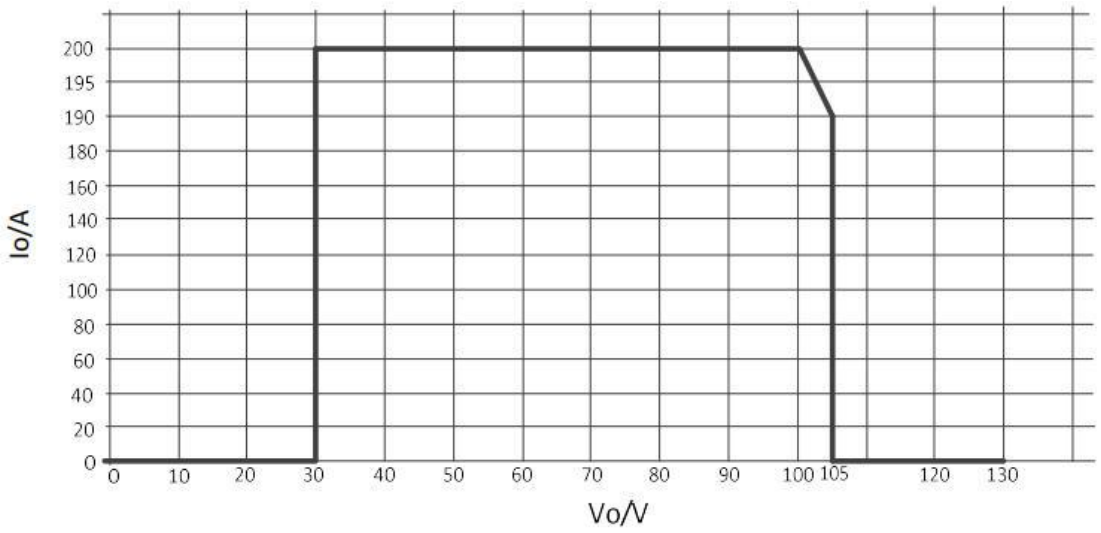


Figure 3 Module output V-I curve

4. Shape Structure and Interface

4.1 Shape structure & Dimension

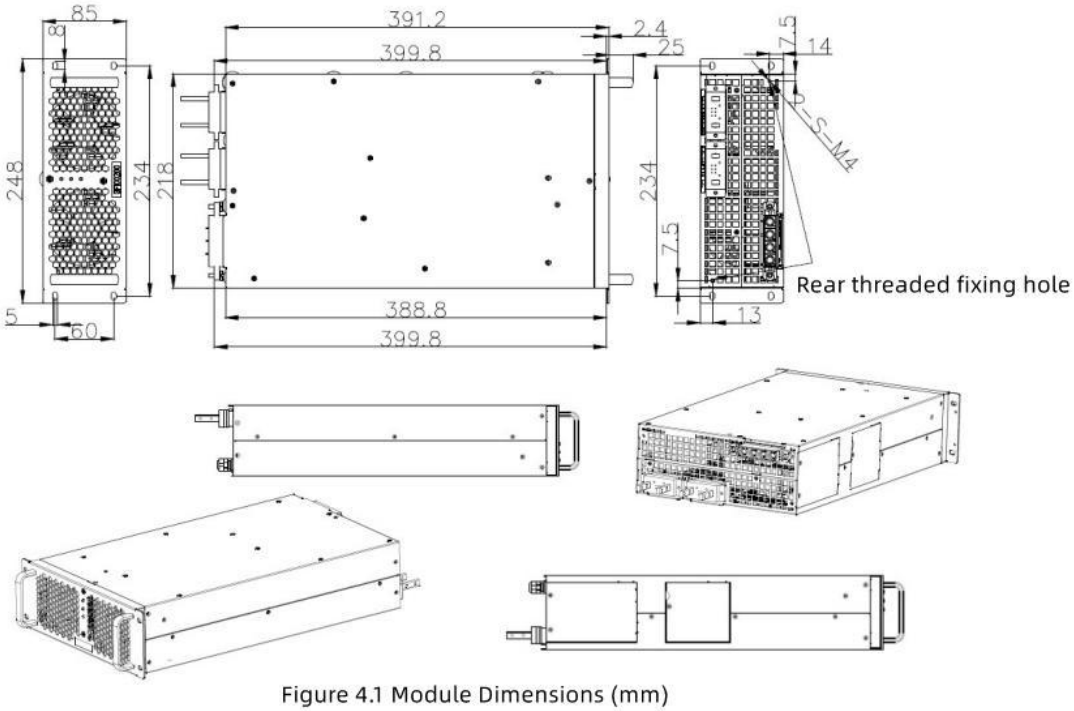


Figure 4.1 Module Dimensions (mm)

4.2 Panel shape structure and size

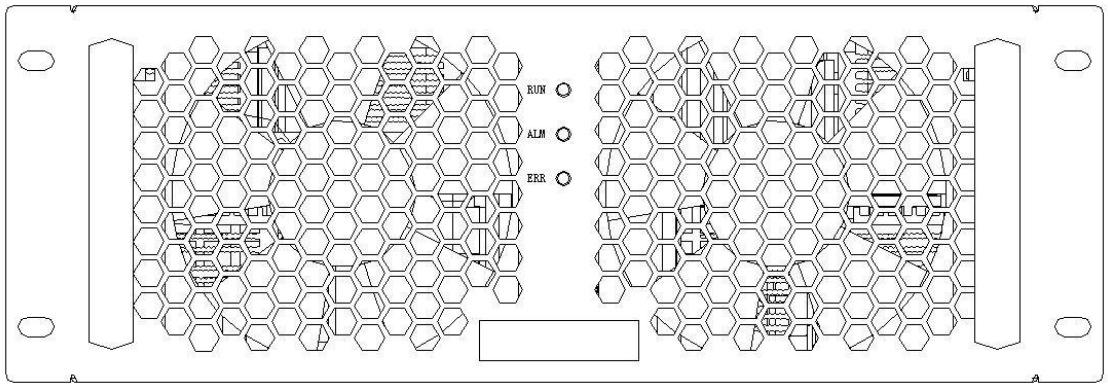


Figure 4.2 Module Front View

Table 2: Indicator Definition Table

Indicator Light	State	Instruction
Power Indicator RUN (Green)	Always on	The module has an AC input
	4Hz flashing	The module has an AC input, but the module is powered off.
	Often off	1. No AC input 2. The module is in sleep state.
Alarm Indicator ALM (Yellow)	Often off	1. The module works normally, no protection alarm. 2. The module is in shutdown state (At this time Run-lights flashing)
	Always on	1. Ambient temperature over-temperature alarm (over than 55°C) 2. AC input low voltage limit power. 3. Output overvoltage or undervoltage 4. Module internal failure
	4Hz flashing	1. Module and external communication interruption. 2. The module assigns address when power on.
Alarm Indicator ERR (Red)	Often Off	The module is functioning normally without faults.
	Aways on	1. Output overvoltage lockout 2.The module is seriously current-unbalance 3. Internal over-temperature protection 4. AC input overvoltage, undervoltage, lack of phase, serious voltage imbalance. 5. Unrecoverable no-output crash.
	4Hz flashing	Fan Failure

4.3 Input and output interface

The input and output signals of the AC/DC module must be connnected through the rear socket. As shown in Figure 4.3, definition of each pin is shown in Table 3.

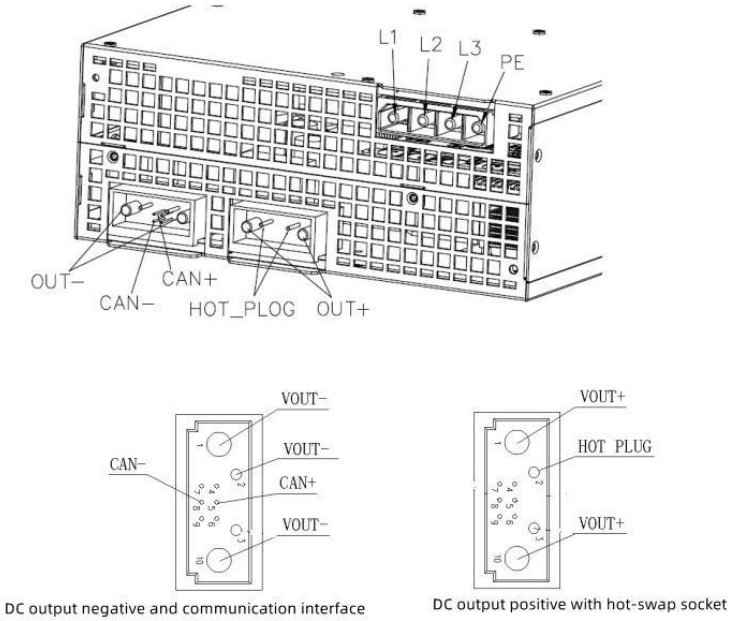


Figure 4.3 Definition for input and output socket

Table 3: Module socket definition:

Signal Name	Pin Number	Signal definition	Illustration
AC Input	L1	Three-phase AC inut live wire	The AC input terminal of the module, the input mode is three-phase three wire system, no phase sequeence requirement.
	L2	Three-phase AC inut live wire	
	L3	Three-phase AC inut live wire	
	PE	Protection PE	Protective ground of module leads to connection with the module shell.
DC output negative and communication interface	1	OUT-	DC output negative pole,1,2,3,10 pins are connected together.
	2	OUT-	
	3	OUT-	
	5	CAN+	Weak signal terminal， CAN communication interface between the module and upper-level equipment
	8	CAN-	
	10	OUT-	DC output negative pole,1,2,3,10 pins are connected together.
DC output positive with hot-swap socket	1	OUT+	DC output positive, 1, 10 pin connecting together
	2	Hot Swap	Hot-swap, connect to the DC output positive
	3	Hot Swap	Hot-swap, connect to the DC output positive
	10	OUT+	DC output positive, 1, 10 pin connecting together

Notice:

1. In order to ensure safety, please ensure that the protective PE terminal of the AC input is correctly connected to the earth;

2. In order to ensure the system reliability, the three-phase AC input of each module must be equipped with a switch with hierarchical protection function.

3. In order to ensure the system reliability, the positive and negative DC output of each module must be equipped with a switch with hierarchical protection function.

5. Installation and Design

5.1 Module cooling requirements

The fan is installed at the air inlet of the module. The module adopts the design of fan front air intake and fan rear air outlet for heat dissipation. When designing the system, it is necessary to ensure more than 10 cm of space at the front of the module panel for the air inlet, and to ensure a smooth air inlet channel; at the rear of the module, the air outlet ensures a smooth air outlet channel. Compared with the air inlet, the air outlet has a certain temperature rise, so the design of the module tail system should try to avoid installing temperature sensitive devices.

Notice:

1. The air inlet and outlet of the cabinet must be equipped with suitable dust-proof cotton, and the dust-proof cotton should be cleaned regularly according to the actual environment to ensure the heat dissipation requirements of the cabinet.

2. At the beginning of the cabinet design and during long-term use, it is necessary to consider the design of the cooling air inlet and outlet air ducts of the modules. The temperature of the air inlet of the modules in the cabinet must be controlled within 5°C compared to the temperature of the cabinet air inlet.

6. Other Parameters

6.1 Cooling Method

Air cooling, temperature combined with current speed regulation.

6.2 Noise

In normal operation with a rated resistive load, the generated noise [environmental noise is less than 65dB(A)] is less than 75dB(A)

6.3 Mean time between failure

MTBF≥100000h

6.4 Environmental parameters

Working temperature: -40°C～+50°C

Storage temperature: -40°C～+75°C

Relative humidity: 0%～90%RH

Altitude: ≤2000m Full load output

7. Fault Diagnosis

The module has a built-in CPU. When a fault occurs, the fault indicator light on the panel will light up. When it is confirmed that the module is faulty, please immediately loosen the fixing screws on the front panel of the module, remove the module, and replace it with a backup module if there is one. This module supports live hot swapping.

8. Package, Transportation and Storage

8.1 Packaging

The equipment is packed in a carton and individually packaged. Packed in shockproof foam plastic.

The packing box also contains packing list, installation and operation instructions, and each rectifier module is affixed with a factory certificate.

8.2 Transportation

The module should be transported in a well-packed condition, and it should not be subject to violent vibration and collision during transportation, and should be protected from moisture and rain.

8.3 Storage

The module should be stored in a room with -40° C~+75° C, relative humidity less than 95%, no corrosive gas, and air ventilation, and the storage period is 1 year.