

# Instructions for G120XA FSH-J X9 terminal

## How to use the X9 connector which only use in G120XA FSH-J

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**Abstract:** When many customers use G120XA FSH-J power section products for the first time, F7862 alarm will appear after power on operation. Preliminary inspection shows that there is no obvious abnormality in wiring, and it is impossible to locate the cause of the problem when they are not familiar with the product.

**Keywords:** X9, F7862, external fault

### 1、Fault analysis

#### **F07862(A) External fault 3**

Reaction: OFF2 (IASC/DCBRK, OFF1, OFF3, STOP2, None)

Answer: Immediate (power on)

Reason: The condition of "external fault 3" exists.

Notes:

"External fault 3" is triggered by 1/0 loose edges of the following parameters:

- "AND" logic operation of binary interconnection input p2108, p3111, p3112

- Turn on delay p3110

See also: p2108, p3110, p3111, p3112

Exclusion method:

- Eliminate the cause of the fault

- Response failure

<b>p2108[0...n]</b>	<b>BI: External fault 3 / External fault 3</b>		
CGU 120XA_USS	Access level: 3	Automatic calculation: -	Data type: unsigned32 / Binary
(PM330)	Modifiable: T, U	Calibration: -	Dynamic subscript: CDS, p0170
	Unit group: -	Unit selection: -	Function diagram: 2546
	Minimum value: -	Maximum value: -	Factory settings: 4022.1
<b>Explain:</b>	Set the signal source of external fault 3		
	External fault 3 is enabled according to the "AND" logic operation results of the following signals		
	- BI: reverse bp2108		
	- BI: p3111		
	- BI: reverse p3112		
<b>Relevance:</b>	See also: p3110, p3111, p3112		
	See also: F07862		

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Explain

External fault is triggered by 1/0 failing edge

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<b>R4022.0...3</b>	<b>CO/BO: PM330 digital input status / PM330 DI status</b>				
CGU 120XA_USS	Access level: 3	Automatic calculation: -	Data type: unsigned32 / Binary		
(PM330)	Modifiable: T, U	Calibration: -	Dynamic subscript: CDS, p0170		
	Unit group: -	Unit selection: -	Function diagram: 2546		
	Minimum value: -	Maximum value: -	Factory settings: 4022.1		
<b>Explain:</b>	Display the status of the power unit PM330 digital input				
<b>Digit group:</b>	Bit	signal name	1 signal	0 signal	FP
	00	DI 0 (X9.3, External alarm)	high	low	-
	01	DI 1 (X9.4, External fault)	high	low	-
	02	DI 2 (X9.5, Class 0 emergency stop)	high	low	-
	03	DI 3 (X9.6, Class 1 emergency stop)	high	low	-
<b>Relevance:</b>	See also: r4023				

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Explain

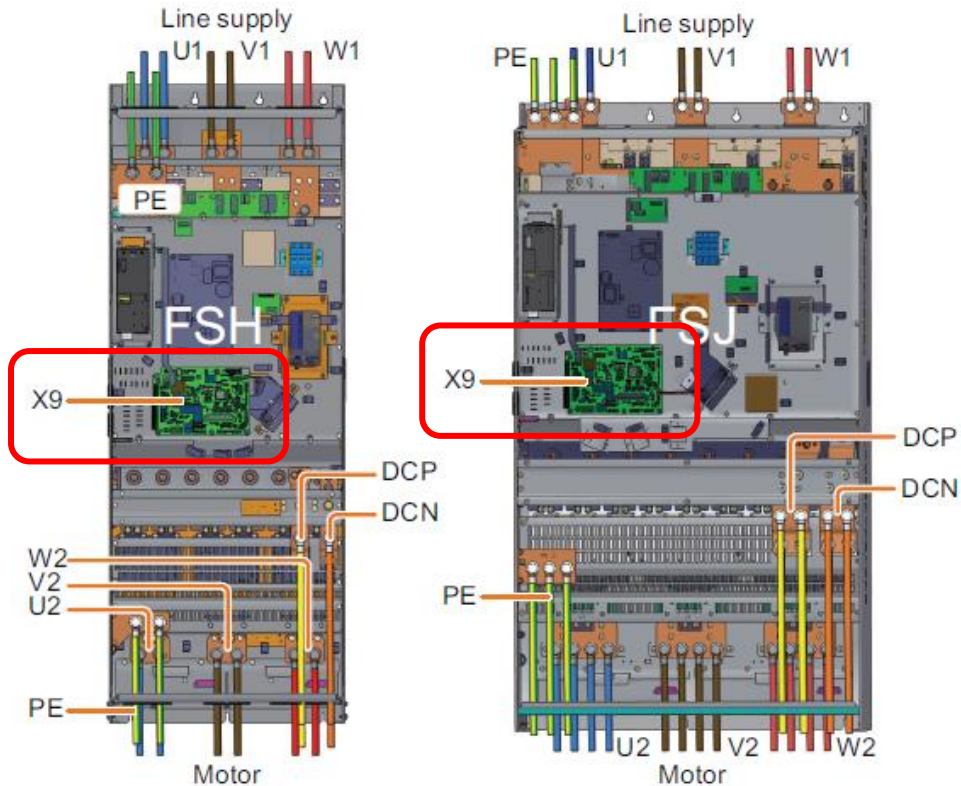
DI: Digital Input

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As shown in the figures above, the reason of the appearance of F7862, according to the user manual of G120XA, is that the input signal of the signal source r402.1 of external fault 3 is low, and the state of r4022.0~3 is controlled by X9 terminal. Therefore, when F7862 fault occurs, it is necessary to confirm whether X9 terminal has been correctly connected!

## 2、X9 terminal

1. Mechanical installation of G120XA FAH-J X9 terminal



## 2. G120XA FAH-J X9 terminal function

Terminal strip X9 is used to connect external 24V DC power supply and main contactor or bypass contactor.

To connect the terminal strip X9, remove the front cover of the converter. Its DIs can be connected with fault signal and alarm signal.

When the converter is connected to the power supply through the main contactor, it is necessary to connect the external 24V DC power supply.

The power supply must be near the converter (such as in the same control cabinet), and the cable length to terminal block X9 shall not exceed 5 meters.

Terminal	Name	meaning	Input/output	Technical data
1	P24	External power supply	Input	Voltage: 24V DC (20.1V ~28.8V) Current consumption: 2A maximum
2	M	Electronic grounding	Reference	
3	External	External	Input	Voltage: -3V ...+30V

	alert	alarm		Current consumption: ✓ 6.4 mA at 24V DC ✓ 1.3 mA when < 5V ✓ 4 mA when > 15V ✓ 8 mA at 30V
4	External fault	External fault	Input	
5	Stop 0	Emergency OFF, category 0	Input	Level (including waviness): ✓ High level: 15V ...30V ✓ Low level: -3V ...+5V
6	Stop 1	Emergency stop category 1	Input	
7	M		Reference	
8	DC link charged	Enable signal, "U" DC link charged	Output	Voltage:24V DC Maximum load current: 500mA Continuous short circuit protection The output current is taken from the power supply via X9 terminal
9	NC	Not connected		
10	NC	Not connected		
11	Activation line contactor	Line contactor control	Output	Contact type: NO contact Maximum load current: 4A, 230V AC, $\cos\phi = 0.6$ ind Floating potential
12	Activation Line contactor	Line contactor control	Output	For feeders with contactless outputs (e.g.4A/250V fuses), a protection device is required to prevent overload and short circuit. The overvoltage limiter must be connected to the excitation coil of the main contactor (e.g. RC circuit). The following relay contact characteristic values are applicable to the control of the main contactor: ✓ 250V AC, 10A (NC and NO) currency, 85°C ✓ 24V DC, 10A (NC and NO) , currency, 85°C ✓ 30V DC,8A (NO) 、 6A (NC) , currency, 85°C ✓ B300 (NC and NO) , general purpose,85°C ✓ R300 (NC and NO) , general purpose, 85°C ✓ 24V AC, 2.0A (NC and NO) , general purpose,

				85°C
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**Note:**

**1) The input is low level active**

All signal inputs are low level active (anti break).

**2) Terminal 3~6 not used**

When terminal 3~6 is not in use, DC 24V must be applied. To do this, use an external power supply or terminal 9 on the control unit. Terminal 2 and 7 with reference potential X9 and terminal 28 on the control unit. Refer to terminals 2 and 7 with potential X9 and terminal 28 on the control unit.

**3) Main contactor control**

When power is supplied to the main contactor via terminals 11 and 12, it is not necessary to disconnect from the power supply system via the control transformer. 250V/8A fuse must be used as protection measure.

**4) Strain relief**

The cables for the control unit and terminal X9 must be fixed to the terminal block in the cable channel under terminal X9 for strain relief. If the cable is introduced into the cable channel from the side (at the height of terminal X9), the strain relief must be performed outside the power module.

**5) Wiring standard**

Maximum connection cross section: 2.5 mm<sup>2</sup> (14AWG)

Minimum connection cross section: 0.2 mm<sup>2</sup> (25AWG)

Maximum tightening torque: 0.5 Nm (4.4 lbf.in)

### 3、 Troubleshooting

1. According to the actual use requirements, the wiring should be correct to ensure that r4022.03 input is high when there is no abnormal external alarm/alarm and emergency stop signal.
2. If the current hardware wiring cannot be completed, the alarm can be shielded by setting parameters. Since pins 3 to 6 on X9 terminal correspond to external alarm 3, external fault 3, emergency stop category 1 and emergency stop category 2 respectively, all the 4 corresponding bic0 parameters need to be set high. The specific settings are as follow:

parameter	meaning	Default value	Setting value
P2117.0	BI: set the signal source of external alarm 3.	r4022.0	1
P2108.0	BI: set the signal source of external fault 3.	r4022.1	1
P849.0	BI: no fast stop/ fast stop (OFF3) signal source 2/	r4022.2	1

	OFF3 signal source 2		
P845.0	BI: without slow stop/ slow stall (OFF2) signal source 2	r4022.3	1