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OPERATING INSTRUCTIONS

M 8200 Safety Interface



Allen-Bradley

Guardmaster®

M 8200

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M 8200

Abbreviations

- M 8200** Safety relay interface
- AOPD** Active opto-electronic protective device
- OSSD** Output Signal Switching Device – Safety switching output

1 About this Document

1.1 Function of this document

This document provides instructions on the operation of the safety interface M 8200. It contains information regarding

- Fitting
- Electrical installation
- Placing in operation
- Maintenance

1.2 Target group of this document

The target group of this document is persons who install, place in operation and use the M 8200.

1.3 Level of information

These operating instructions contain information on how to install, place in operation and operate the device. Official and legal regulations are always to be observed; it is not possible here to also provide comprehensive information on these basic requirements. In Germany, the trade association directives (ZH 1/597) in particular are to be observed.

1.4 Symbols used

Some information in these operating instructions is especially marked to provide you with a quick reference.

Note A note provides information on special features of the device.

Explanation An explanation communicates basic knowledge.

Recommendation A recommendation assists in taking the best action.



Warning

Warning!

Always read warnings carefully and heed them conscientiously.

The device can only fulfil its safety-relevant task if it is correctly used, that is "safely" – i. e. fail-safe – fitted and connected.

The safety interface M 8200 conforms to the safety requirements as per safety category type 4 in accordance with pr EN 50 100.

M 8200**2****Safety****2.1 Areas of use of the device**

The M 8200 can be used to provide voltage free contacts from most safety devices. Functions such as restart interlock and contactor monitoring are carried out by the M 8200 in a simple manner.

Both electronic (semi-conductor) and electromagnetic (relay) sensor signals can be processed as input signals. In case of relay outputs, the following must be considered: to prevent short circuits between the output signals, the wires must be individual shielded and the shields must be linked to 0 V.



Warning

Control cabinet operation

The M 8200 is suitable only for installation in control cabinets.

2.2 Regulation use of the device

The safety interface M 8200 may only be used in compliance with the instructions set out in section 2.1 *Areas of use of the device*. If the device is used in any other way, or if it is modified in any way – including in the course of assembly and installation – all warranty claims against Rockwell Automation shall be rendered void.

2.3 General Notes on Safety and Protective Measures

1. The national / international regulations apply for the use / installation of non-contact protection equipment as well as for commissioning and regular technical checks, in particular



Warning

- Machine directive 98/37 EC
- Guidelines for working substances 89/655 EEC
- Safety regulations as well as
- Regulations for the prevention of accidents / rules for safety

It is the responsibility of the manufacturers and users of the machine on which our protection equipment is used, to discuss all safety rules and regulations which may apply with the responsible authorities and to observe these rules and regulations.

2. **Furthermore**, our notes, in **particular the test regulations** (see chapter entitled Tests) in this Technical Description or these Operating Instructions (such as use, assembly, installation or integration in the machine control unit) must be observed and followed.

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3. The tests shall be carried out **by experts** and/or **persons specifically authorized or commissioned** to perform these tests. They shall be comprehensively documented at all times.

4. Our *Operating Instructions* shall be given to **the employee** (operator) working at the machine on which our protection equipment is used. The employee shall be **introduced to his job and the equipment by an expert.**

M 8200**3 Function**

The inputs of the M 8200 are prepared for the dual channel connection of AOPD sensors. These are checked for uniformity and control the output circuit. 2 NO contacts and 1 NC contact are available as output contacts. LEDs signal the output conditions:

Red LED	Output inactive	Make contact open Break contact closed
Green LED	Output active	Make contact closed Break contact open

The M 8200 assumes the restart interlock function, so it is no longer necessary in the machine control system. The required command device (start button) is directly connected to the M 8200 (NO contact).

If the start/restart interlock is already contained in the machine, this function can be deselected on the M 8200 (automatic reset if the sensor protection field is clear).

If the M 8200 outputs switch machine contactors, the M 8200 provides the contactor monitoring function. This can also be disabled, if necessary.

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4 Electrical Connections

The connections are made by way of the two plug-in terminal strips: conductor cross-section max. 2.5 mm². *Fig. 1* shows the connection diagram of the M 8200.

The number of occupied terminals is determined by the selected functions. The Startup/Restart Inhibit and Contactor Monitoring functions can be deselected separately by means of wire links.

Depending on the function selection, the reset device and the NC contacts of the external contactors need to be connected in addition to the sensor, the power supply and the outputs. When contactors are connected, appropriate arc suppression elements must be used directly on the contactor coil. *Fig. 2* shows the configuration of the M 8200 with a external reset and contactor monitoring.

Terminals C 1, C 2, C 3, C 4 and D 1, D 2, D 3, D 4 have a load capacity of 2.5 A..



Warning

Isolated plastic-sheathed cables

Outside the control cabinet the connected output cables of protective device sensors that are not short circuit monitored must be routed in separate plastic-sheathed cables, and the wires of the switching outputs (signal lines to the contactors) must be individually shielded and the shields must be connected to 0 V in the control cabinet.

M 8200



Use of a NO/NC combination

As a general principle, use both NO contacts as switching outputs! To configure machine contactors this means connecting a contactor at each NO output!

If a combination of NO and NC contacts is used as safety switching outputs, both NO contacts must be connected in series. The function of the contactors must be tested by use of external device monitor T_{21} – T_{22} or by equivalent measures.

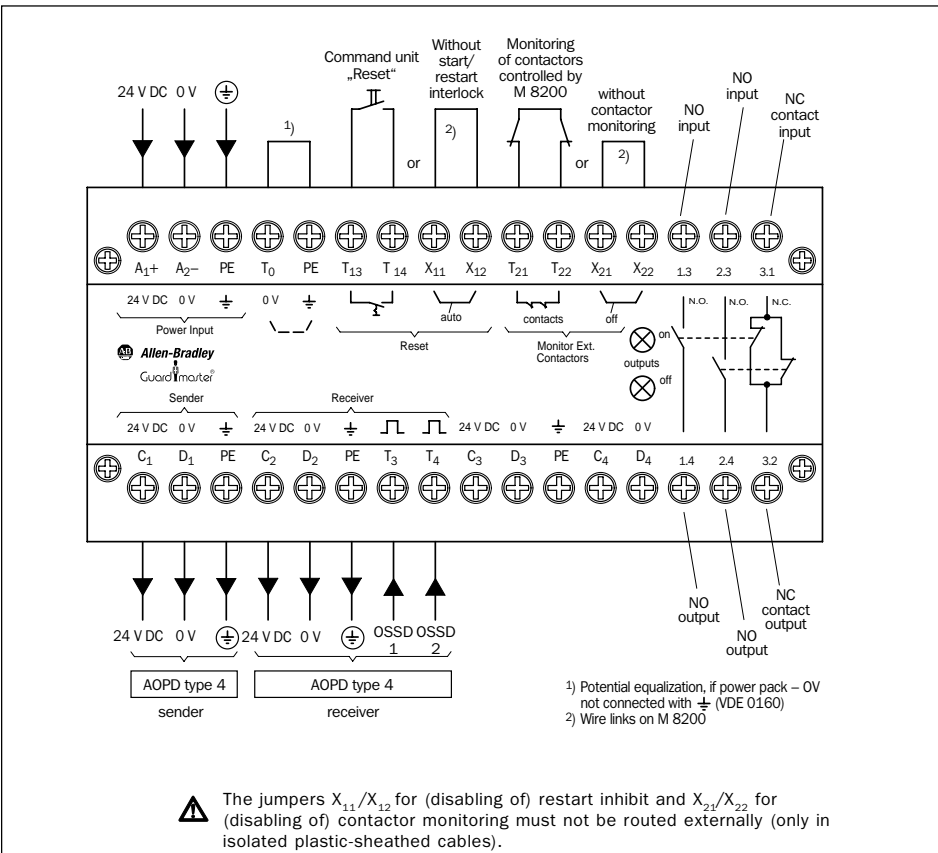


Fig. 1: Connection diagram, M 8200.

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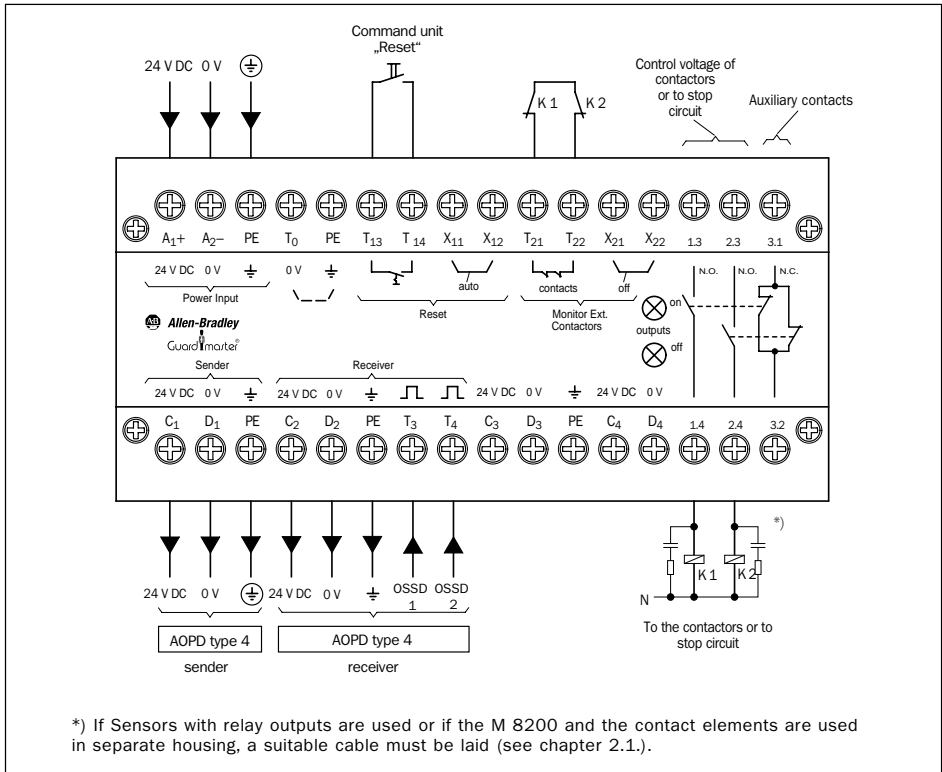


Fig. 2: Connection diagram of the M 8200 with command unit and contactor monitoring

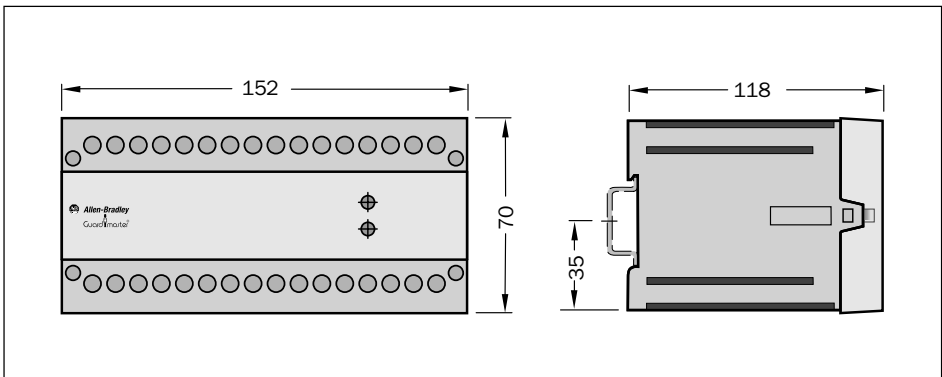


Fig. 3: Dimensions, M 8200

M 8200**5 Commissioning**

After application of the supply voltage and valid sensor signals the M 8200 automatically switches to the green condition – in the "without start/restart interlock" operating mode; the outputs are activated.

In the "with start/restart interlock" operating mode, the necessary command device (Reset button NO) is activated, in order to activate the green condition (activation of outputs). Restart will only be allowed when the reset button is released (testing of NO contact).

M 8200

6 Technical Data

General

Protection class

Housing protection

 Supply voltage U_V

 Residual ripple ¹⁾

Power consumption (no load)

Inputs Command unit

T 13, T 14

Command unit actuation time period

Contacting monitoring

T 21, T 22 contactor monitoring

Permissible contactor drop-off time

Permissible contactor response time

Sensor signal T 3, T 4

Input resistance (active)

Signal active at

Signal LOW at

Time period tolerance between T 3 and T 4

Outputs

Response time

Switching current

Switching voltage AC / DC

Switching AC / DC

Mech. life expectancy (switch actions)

Elec. life expectancy (switch actions)

Delay on Energisation (NO contacts)

Delay on Energisation (NC contacts)

Supply voltage

Connection

Cable cross section

Load capacity of terminals

(C 1 ... 4, D 1 ... 4)

Operating data

Safety category

Tested to

Ambient operating temperature

Storage temperature

Relative humidity (non condensing)

Vibration specification

Shock resistance

Dimensions (W x H x D)

min.	typ.	max.
I		
IP 65 (control cabinet, standard rail)		
19.2 V	24 V	28.8 V
		5 V _{SS}
		0.3 A (6 W)
Start key		
NO contact		
30 ms		
NC contacts in series		
No restrictions		
		200 ms
Two-channel		
606 Ω	674 Ω	742 Ω
17.6 V		U_V
0 V		2.4 V
		15 ms
		15 ms ²⁾
< 0.1 mA ³⁾		4 A
		240 V AC /
		60 V DC
		1200 VA /
		50 W
10 ⁷		
10 ⁹		
	40 ms	
	15 ms	
	U_V	
Pluggable strip terminal		
		2.5 mm ²
		2.5 A
Type 4		
pr EN 50 100 Part 1 and 2		
0 °C		+55 °C
-25 °C		+75 °C
15 %		95 %
5 g, 10 ... 55 Hz as per IEC 68-2-29		
10 g, 16 ms as per IEC 68-2-29		
152 x 73 x 118 mm ³		

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- 1) Maximum voltage limits must not be exceeded, minimum levels must be achieved.
- 2) Response time without attenuation of switching elements (relays), e.g. by means of interference suppressors.
- 3) Contact gold plating vaporizes when currents > 100 mA switched. Minimum switched current becomes 10 mA.

M 8200

7 Declaration of Conformity

See www.AB.com/safety



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Please contact us for Technical Assistance:
In the U.S.: 1-800-666-0001
Outside the U.S.: 001-978-441-9500
On line: <http://www.ab.com/safety>

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Americas Headquarters, 1201 South Second Street, Milwaukee, WI 53204, USA, Tel: (1) 414 382-2000, Fax: (1) 414 382-4444
European Headquarters SA/NV, avenue Herrmann Debroux, 46, 1160 Brussels, Belgium, Tel: (32) 2 663 06 00, Fax: (32) 2 663 06 40
Asia Pacific Headquarters, 27/F Citicorp Centre, 18 Whitfield Road, Causeway Bay, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

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