M0007000B

SANMOTION

MOTION CONTROLLER

C

FX 200/A

CAN Option Module

Project Engineering Manual

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E

ENGLISH

History

Version	Date	Changes to chapter	Description	Author
V1.0	180304		New	Meis
V1.1	110504		Various changes	Meis
V1.2	270406		New front view	Meis
V1.3	050707		Various changes	Meis
V1.4	080108		Graphics changed	Meis

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1 Introduction

1.1 Purpose of the document

This document describes the CAN option module FX 200/A.

Note:
The module's functionality is only guaranteed if used within a CP 23x. The module is not designed for connection with foreign modules.

1.2 Intended use

The FX 200/A may only be used in the fields of operation stated in the technical description and only in conjunction with recommended/approved third-party equipment/installation.

The FX 200/A has been developed, manufactured, tested and documented in accordance with the appropriate safety standards. Provided, therefore, that the instructions and safety precautions relating to the intended use are properly observed, under normal circumstances the products do not represent any danger to the health of personnel or a risk of damage to other property or equipment.

1.3 Notes on this document

This manual is part of the product. It must be retained over the whole lifetime and if necessary referred to subsequent owners or users of the product.

1.3.1 Contents of document

- Description of the CAN option module FX 200/A
- Inserting the FX 200/A into a CPU-module CP 23x
- Description of the wiring (incl. EMC-guidelines)
- Configuration of the option module
- Technical Data

2 Safety notes

2.1 Representation

At various points in this manual you will see notes and precautionary warnings regarding possible hazards. The symbols used have the following meaning:



DANGER!

- **indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.**



WARNING!

- **indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.**



CAUTION!

- **means that if the corresponding safety measures are not taken a potentially hazardous situation can occur which, if not avoided, may result in property damage or slight bodily injury.**

NOTICE

- **NOTICE used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.**



- **This symbol reminds you of the possible consequences of touching electrostatically sensitive components.**

Information
Information on use of equipment and useful practical tips are identified by the symbol "Information". "Information" do not contain any information that draws attention to potentially dangerous or harmful functions.

2.2 General safety instructions

- The device is defined as an "open type equipment" (UL 508) or as an "offenes Betriebsmittel" (EN 61131-2), so that it must be installed in a control cabinet.
- For projecting the module the project engineering manual "SANMOTION C Automation System" is also necessary.
- The safety instructions in the project engineering manual "SANMOTION C Automation System" are to be complied with.



- **When removed from the rack, the modules used in the system are sensitive to electrostatic discharge. Before handling modules, touch a grounded metal object in order to discharge any static electricity from your body.**
- **All SANMOTION C modules are defined as "open type equipment" (UL508) or "offenes Betriebsmittel" (IEC61131-2) so that they must be installed in a control cabinet.**

NOTICE

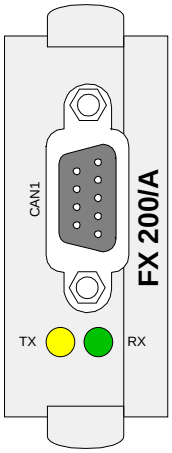
- **Turn off the power supply before installing or removing the module. Otherwise, the module can be destroyed or undefined signal states can lead to damage of the control system.**

3 Description of the module

The FX 200/A is an option module to be slotted into a CPU module of the type CP 23x of the SANMOTION C control system. It provides the CAN-connection for the CAN Controller integrated into the CPU.

Note:
The module's functionality is only guaranteed if used within a CP 23x. The module is not designed for connection with foreign modules.

3.1 Front view

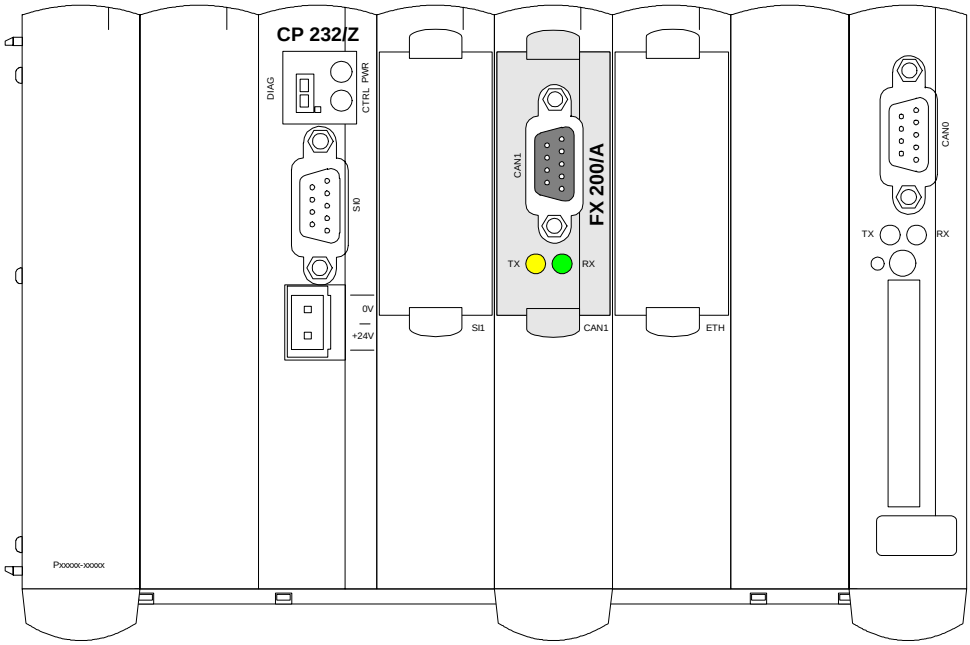


FX 200/A front view

4 General assembly and installation instructions

The module has been designed for operation with a CP 23x, where it is inserted into the **middle** slot.

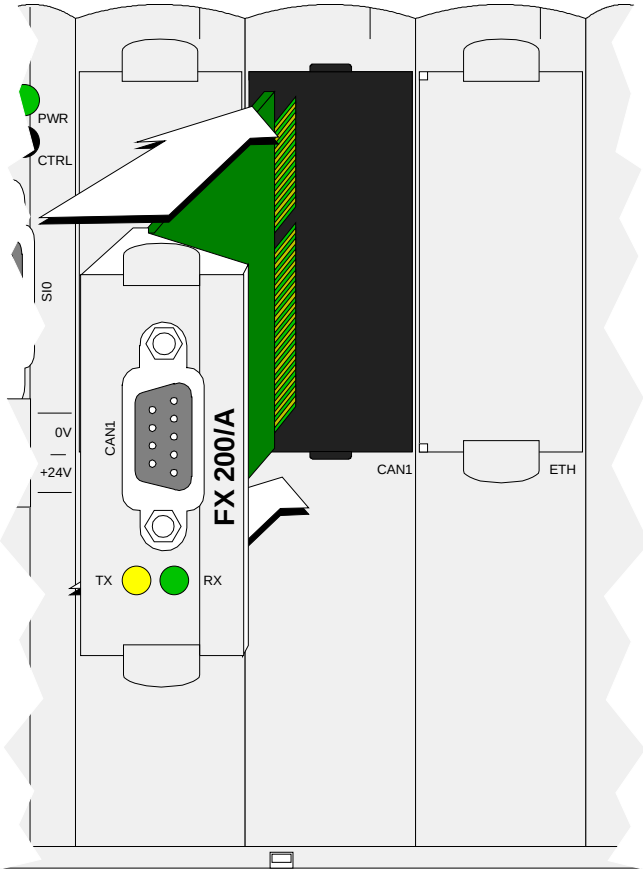
Example: Inserted in a CP 232/Z:



Information
Turn off the power supply before inserting or removing the module.

4.1 Mounting the module

1. Turn off power supply.
2. Remove cover.
3. Insert module in the right position (labeling "FX 200/A" to the right) into the middle slot.

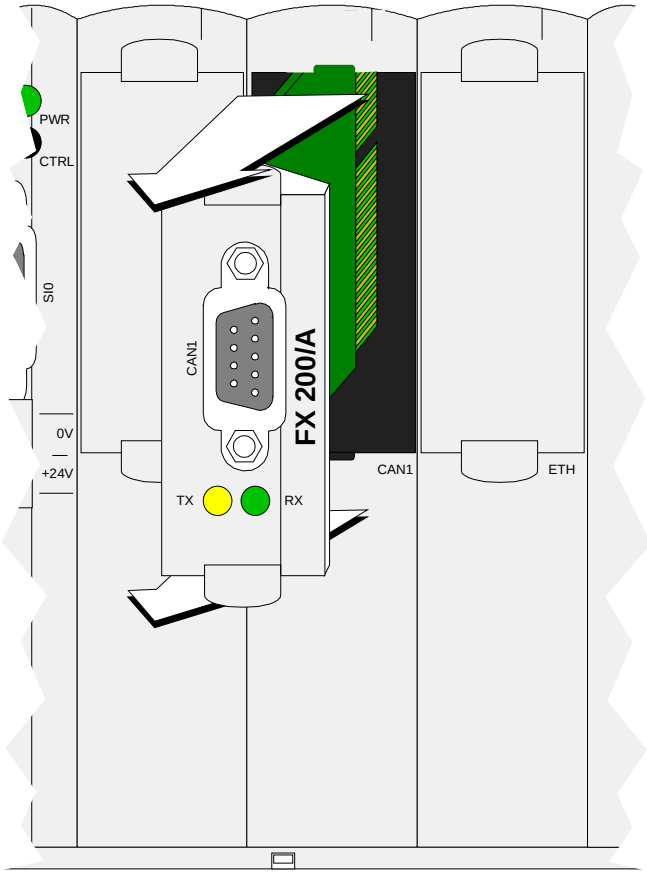


Inserting the FX 200/A option module

4.2 Dismounting the module

In reverse order:

1. Turn off power supply.
2. Pull module from the slot.
3. Insert cover.

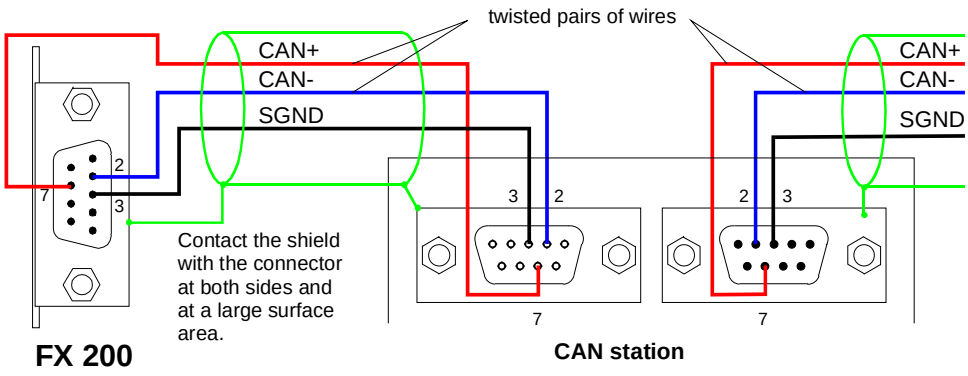


Removing the FX 200/A option module

5 Connection and wiring

5.1 CAN interface

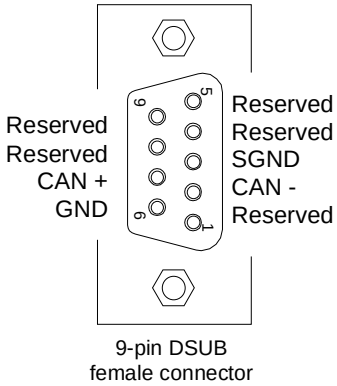
5.1.1 Example of connecting



Example for the connection of a FX 200/A via CAN

Further information: See system manual "SANMOTION C Automation System".

5.1.2 Pin assignment



Pin assignment, DSUB-female connector

Information
Both ground connections SGND (Signal Ground) and GND (optional ground connection) are connected internally. The designation was chosen in accordance to Standard CiA (CAN in Automation).

Further information: See system manual "SANMOTION C Automation System".

5.1.3 CAN Status-LEDs

The module is fitted with two Status-LEDs, which are activated from the Microcontroller.

Designation	Color	Description
RX-LED	Green	Briefly lights up on receipt of a CAN-message
TX-LED	Yellow	Briefly lights up on transmission of a CAN-message

5.1.4 Cable and plug specifications

Further information: See system manual "SANMOTION C Automation System"

5.1.5 Maximum cable length

The Baud rate can be software adjusted individually for each CAN bus line. The maximum possible Baud rate is basically dependent on ring-operated modules and on the cable length.

With the modules currently in use the specific line delay in the lines results in the following ratio between Baud rate and maximum cable length:

Baud rate	Max. cable length	
	6 ns/m	5.2 ns/m
125 kbit/s	542 m	625 m
250 kbit/s	250 m	289 m
500 kbit/s	104 m	120 m
800 kbit/s	42 m	48 m
1 Mbit/s	21 m	24 m

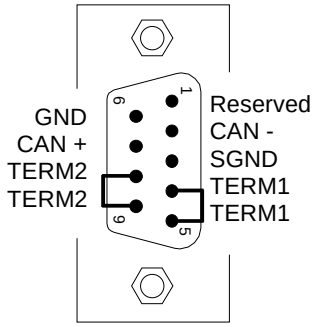
Information:
The length specifications in the table are maximum values based on ideal conditions. The practical cable length is reduced by poor shielding contact, strong interference, stub lines and poor cable quality.

In addition, the cable length depends on the properties of the other CAN bus line participants.

We recommend dimensioning the CAN cable so that it is only as long as absolutely necessary.

5.1.6 Interface bus termination

To activate the Bus termination at the first and the last participant, both the pins 4 and 5 (TERM1) must be connected as well as the pins 8 and 9 (TERM2)



CAN interface with activated bus termination

5.2 EMC and wiring guidelines

Further information: See system manual "SANMOTION C Automation System"

6 Configuration

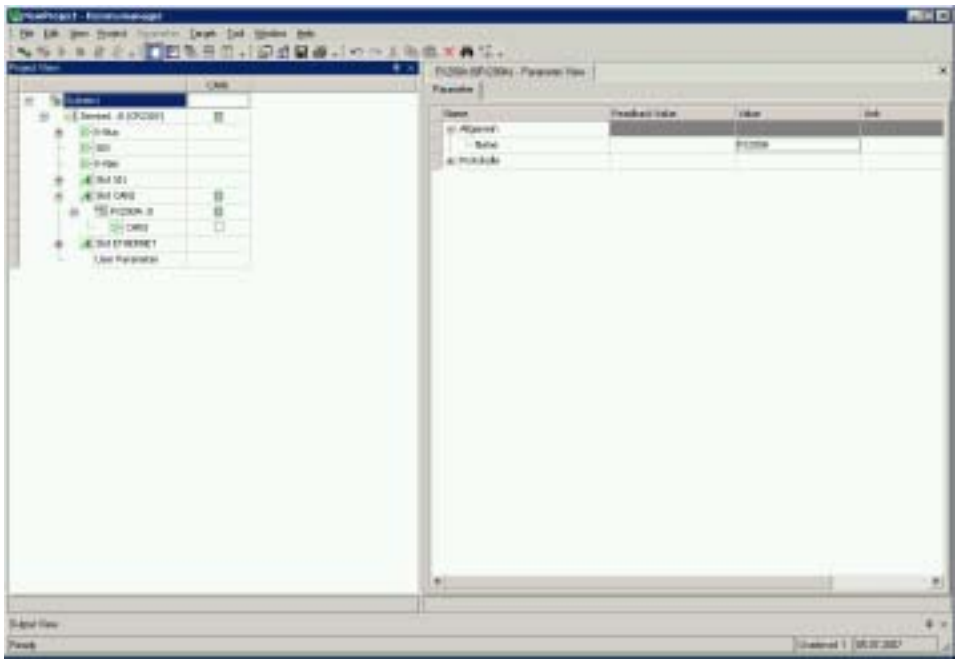
6.1 General information

For configuration, the SANMOTION C system requires data that are read out from the configuration data (*.cfg) during the start-up of a master module.
There are 2 possibilities how to configure the FX 200/A:

- Via SANMOTION C manager
- Through creation of cfg-files

6.1.1 Configuration via SANMOTION C manager

All modules of a system can be configured with the help of the SANMOTION C manager.
The example configuration has a FX 200/A plugged into a CP 230/Y.
The right side lists the details of the respective parameter, which in this case are the details of the FX 200/A.



Screenshot SANMOTION C manager with an example configuration

Once all modules have been specified in the system and after all parameters have been adjusted the SANMOTION C manager creates the necessary cfg-files.

6.1.2 Configuration via cfg-files

All .cfg-files must be located in the directory “\\application\control\config" and are read-in during the start-up of the control-CPU.

Example:

Configuration of the CP 230/Y:

```
[IO.ONBOARD]
name="CP230Y"
```

Configuration of the FX 200/A in Onboard-Slot:

```
[IO.ONBOARD.SLOTCAN:0]
[IO.ONBOARD.SLOTCAN:0.FX200A:0]
name="FX200A"
```

7 Disposal

7.1 Disposal of the module



- **The symbol with the crossed-out garbage can points out that electrical and electronic devices including their accessories should not be disposed of in the household garbage.**
- **Depending on their coding, the raw materials are recyclable. By disposing of such used devices correctly, you can ensure that they can be reused, their raw materials recycled or put to another use, and you will be making an important contribution to the protection of our environment!**

8 Technical data

Interface to CP 23x

Type of interface:	Media independent Interface
Connection technology:	CHAMP plug 30-pins
Power supply:	5 V
Module recognition:	YES (module inserted: YES/NO, no type recognized)

Interfaces

Baud rate:	125 kbit/s, 250 kbit/s, 500 kbit/s, 800 kbit/s, 1 Mbit/s
Termination resistance:	YES, connection of the TERM-pins in the connector plug
Galvanic isolation:	NO
Connection:	DSUB 9-pin connector plug
Signals:	2 LEDs: transmit ... yellow, receive … green

Mechanics

Structure:	No casing, only front plate mounted on print
Protection type:	If module is slotted into CP 23x, the CP 23x fulfills IP20
Weight:	27 g

9 EC-directives and standards

9.1 EC Directives

Directive 2004/108/EEC	EMC-directive
Directive 2002/95/EC	RoHS-Directive

9.2 Standards

The following, legally non-binding European standards, were applied in order to check that the SANMOTION C System conforms with the Directives.

9.2.1 General procedures and safety principals

EN 61131-1:2003	Stored Program Controls - Part 1

9.2.2 EMC guidelines

EN 61131-2:2003	Stored Program Controls - Part 2
EN 61000-4-2	Interference resistance tests
CISPR 11	EFI emission – field strength / voltage
EN 61800-3:2000	Torque-adjustable electrical drives (EMC product standard)

9.2.3 Electrical safety and fire protection

EN 61131-2:2003	Stored Program Controls - Part 2

9.2.4 Requirements on environment and ambience conditions

EN 61131-2:2003	Stored Program Controls - Part 2
IEC 721-2-1	Classification of environmental conditions
IEC 60068-2-6	Vibration, Test FC
IEC 60068-2-27	Shock

9.3 Standards for the American market

9.3.1 UL test for industrial control equipment

UL 508, 2001	Industrial Control Equipment

Release
Revision A Aug.2005
Revision B May.2008

Precautions For Adoption

⚠Cautions

The possibility of moderate or minor injury
and the occurrence of physical damage are assumed
when the precautions at right column are not observed.
Depending on the situation,
this may cause serious consequences.
Be sure to follow all listed precautions.

⚠Cautions

- Be sure to read the instruction manual before using this product.
- Take sufficient safety measures and contact us before applying this product to medical equipment that may involve human lives.
- Contact us before adapting this product for use with equipment that could cause serious social or public effects.
- The use of this product in high motion environments where vibration is present, such as in vehicles or shipping vessels, is prohibited.
- Do not convert or modify any equipment components.

* Please contact our Business Division for questions and consultations regarding the above.

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*Remarks : Specifications Are Subject To Change Without Notice.