

Kemro
FX 200/A
CAN option module
Project engineering manual V1.06

Translation of the original instructions

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1.01	05-2004		Various changes	meis
1.02	04-2006	Front view	updated	meis
1.03	07-2007		New structuring of the project engineering manual	meis
1.04	01-2008		Graphics updated	meis
1.05	08-2010	Safety notes, EC directives and standards, Declaration of conformity	update to EN 61131-2:2007	hasl
1.06	08-2011	Introduction	Hint "not for end customers" added, various minor updates.	fstl

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1 Introduction

1.1 Purpose of the document

This document describes the structure of the FX 200/A (CAN option module).

Information

This manual is not adressed to end costumers! Necessary safety notes for the end costumer have to be taken into the costumer manual in the respective national language by the machine builders and system providers.

1.2 Intended use

The FX 200/A was developed for control applications in industrial machines. The typical applications areas include injection molding machines, robots, presses, machine tools and similar.

The FX 200/A may only be used for the types of use described in the technical descriptions and only in conjunction with recommended/approved third-party equipment/installations.

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

1.3 Preconditions

This document contains information for persons with the following skills:

Target group	Knowledge and skills pre-requirement
Project engineer	Basic technical training (University of Applied Science/University level, engineering degree or corresponding professional experience). Knowledge in: <ul style="list-style-type: none"> • working mode of a PLC, • safety regulations, • the application.
Operator	Basic technical training (Vocational high school, engineering degree or corresponding professional experience). Knowledge in: <ul style="list-style-type: none"> • safety regulations, • working mode of machine or plant, • principal functions of the application, • system analysis and troubleshooting, • setting options at the operating installations.
Service technician	Basic technical training (Vocational high school, engineering degree or corresponding professional experience). Knowledge in: <ul style="list-style-type: none"> • working mode of a PLC, • safety regulations, • working mode of machine or plant, • diagnosis possibilities, • systematic error analysis and rectification.

1.4 Notes on this document

This manual is integral part of the product. It is to be retained over the entire life cycle of the product and should be forwarded to any subsequent owners or users of the product.

1.4.1 Contents of the document

- Description of the CAN option module FX 200/A
- Use of the option module in CPU modules
- Description of interface including EMC measures
- Configuration of the option module
- Technical data

1.5 Documentation for further reading

The following documents are to be observed depending on the system solution used:

If you are using the KeStudio U2 tool suite:

Doc.No.	Name	Target group
DE: 65352 EN: 65353	K2-200 automation system manual	<ul style="list-style-type: none"> • Project engineer • Electrician • Programmer • Commissioning foreman • Service technician

If you are using the KeStudio U3 tool suite:

Doc.No.	Name	Target group
DE: 1000868 EN: 1000869	System manual Kemro automation system	<ul style="list-style-type: none"> • Project engineer • Electrician • Programmer • Commissioning foreman • Service technician

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 will result in death or serious bodily injury if the corresponding precautions are not taken.
-



WARNING!

- indicates a potentially hazardous situation which can result in death or serious bodily injury if the corresponding precautions are not taken.
-



CAUTION!

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

CAUTION

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



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

Information

Useful practical tips and information on the use of equipment are identified by the "Information" symbol. They do not contain any information that warns about potentially dangerous or harmful functions.

2.2 General safety instructions



WARNING!

- It is absolutely essential to observe the safety instructions in the system manual.
 - The module is defined as "open type equipment" (UL508) or as "offenes Betriebsmittel" (EN 61131-2) and must therefore be installed in a control cabinet.
-

CAUTION

Improper use of the assembly or the control system leads to irreparable damage!

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



When removed from its casing this module is sensitive to electrostatic discharge. Before handling the modules touch a grounded metal object in order to discharge any static electricity from your body.

3 Description of the module

The FX 200/A is an option module to be slotted into a CPU module. The FX 200/A CAN option module contains the CAN-connection for the CAN controller integrated into the CPU.

Information

The module's functionality is only guaranteed if used within a CP 23x/x or CP 25x/x. The module is not designed for connection with foreign modules.

3.1 Front view

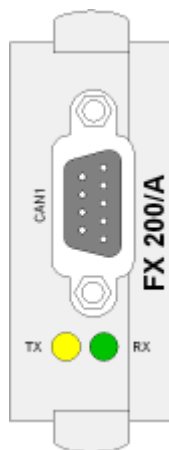


Fig.3-1: FX 200/A front view

4 Installation instructions

The module has been designed for operation with a CP 23x/x or CP 25x/x. It is inserted into **center** slot.

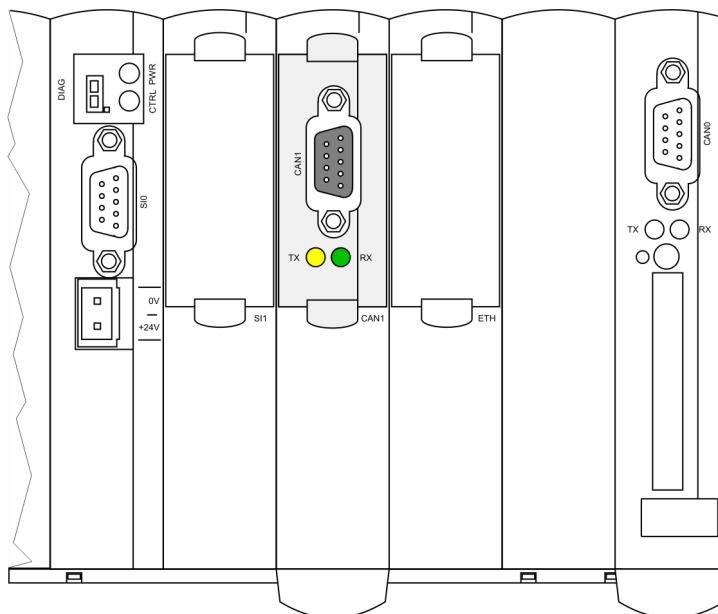


Fig.4-1: FX 200/A inserted in CPU module

Inserting an option module into slot

- 1) Turn off power supply
- 2) Remove dummy module
- 3) Insert module in the right position (labeling of option module must on the right) into the intended position (see image).

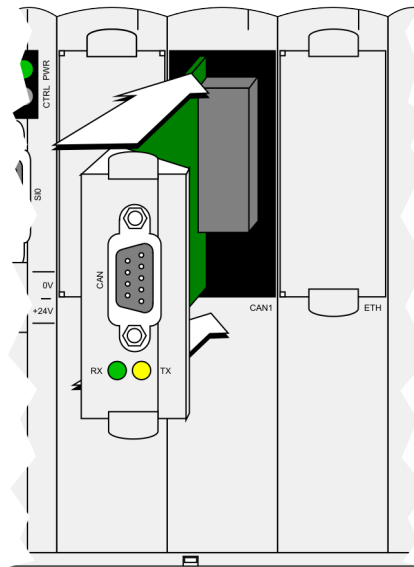


Fig.4-2: Inserting the option module in CP 23x/x module

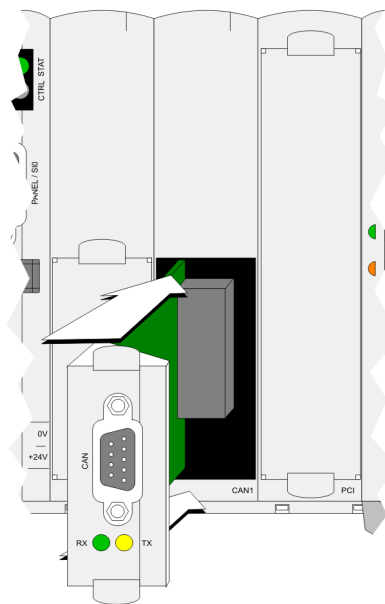


Fig.4-3: Einsetzen des Optionsmoduls in CP 25x Baugruppe

Removing an option module

- 1) Turn off power supply
- 2) Pull the module out of the slot

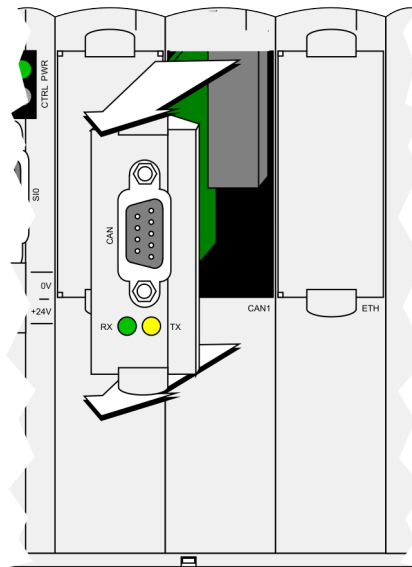


Fig.4-4: Removing the option module from CP 23x/x module

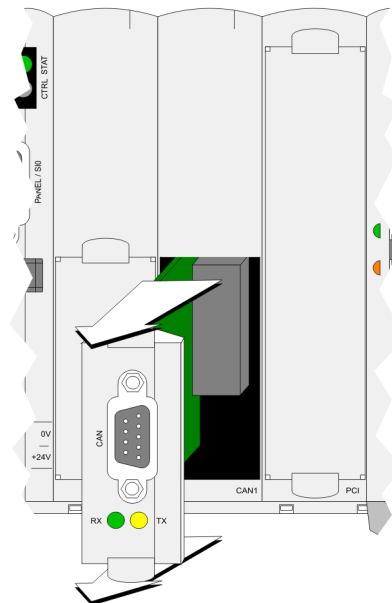


Fig.4-5: Removing the option module from CP 25x/x module

- 3) Insert dummy module.

5 Displays and operating elements

5.1 CAN Status LEDs

The module has two CAN Status LEDs (RX- and TX-LEDs) per CAN interface, which are activated from the Microcontroller.

Display	Significance
RX-LED (green)	briefly lights up on receipt of a CAN-message.
TX-LED (yellow)	briefly lights up on transmission of a CAN-message.

6 Connections and wiring

6.1 CAN interface

6.1.1 Pin assignment, connection example

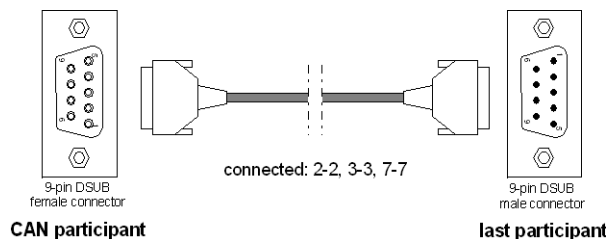


Fig.6-1: CAN connection at the module: 9-pole D-SUB male connector

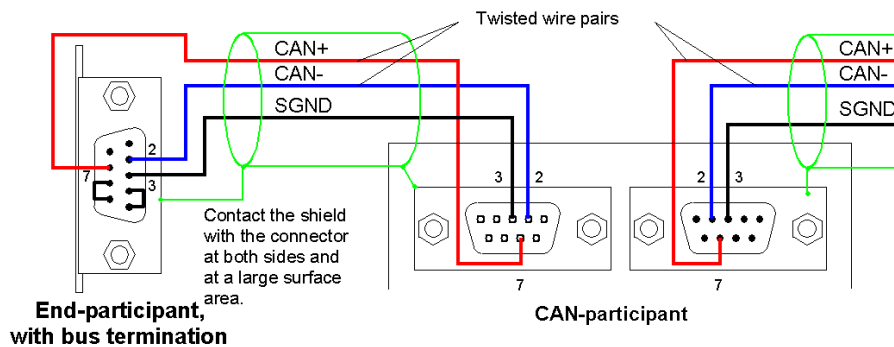


Fig.6-2: Connection example for CAN circuit

Information

Both SGND (Signal Ground) and GND (optional ground) connections are connected internally. The designation was selected to correspond with the standard CiA (CAN in Automation).

Further information: See system manual.

6.1.2 CAN bus termination

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

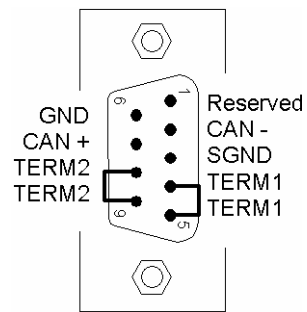


Fig.6-3: CAN interface with activated bus termination

6.1.3 Cable and plug specification

Further information: See system manual.

6.2 EMC and wiring guidelines

Pay attention from the outset to careful wiring and shielding.

Further information: See system manual.

7 Configuration

General information

A Kemro system needs data for the configuration of system performance, its I/O-devices and interfaces. The system reads this data during the start-up operation and allocates them to its components and devices.

Configuration data is created by included configuration tools or by editing configuration files.

For further information to the configuration see the documentation of the included configuration tool.

8 Operating behavior

8.1 Start-up after Power-On

The module is passive and is configured and activated through the HOST.

8.2 Reset

The module can be reset by the HOST without the HOST itself having to be reset.

9 Technical data

9.1 Environmental conditions

Operating temperature:	+5 °C to +55 °C
Storage temperature:	-40 °C to 70 °C
Relative humidity of air:	10 % to 95 % (non condensing)
Vibration resistance:	according to EN 61131-2:2007
Shock resistance:	according to EN 61131-2:2007

9.2 Interface to CPU module

Interface type:	Media Independent Interface
Connection:	CHAMP plug 30-pole
Power supply:	5V
Module recognition:	YES (Module given, YES/NO, no type recognized)

9.3 CAN interface

Baud rate:	125 kbit/s, 250 kbit/s, 500 kbit/s, 800 kbit/s, 1 Mbit/s
Terminating resistor:	YES, can be bridged in plug
Galvanic isolation:	NO
Connection:	DSUB 9-pin pin plug
Signaling:	2 LEDs: yellow...transmit, green...receive

9.4 Mechanics

Structure:	No casing; only front plate mounted on print
Protection class:	If module is slotted into CPU module, CPU module fulfills IP20
Weight:	27 g

10 EC directives and standards

10.1 EC directives

Guideline 2004/108/EG	EC guideline on electromagnetic compatibility
Guideline 2002/95/EG	RoHS guideline

10.2 Standards

To check the conformity of the system with the directives, the following non-binding legal European standards were applied:

10.2.1 General procedures and safety principles

EN 61131-1:2003	Programmable controllers - Part 1
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Information

This product was developed for the use in industrial areas and can cause radio interference when used in residential areas.

10.2.2 EMC guideline

EN 61131-2:2007	Programmable controllers - Part 2
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10.2.3 Electrical safety and fire protection

EN 61131-2:2007	Programmable controllers - Part 2
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10.2.4 Environmental and surrounding conditions

EN 61131-2:2007	Programmable controllers - Part 2
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10.3 Standards for the American market

10.3.1 UL test for industrial control equipment

UL 508, 2005	Industrial Control Equipment
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11 Declaration of conformity



EC Declaration of Conformity



KEBA AG
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4041 Linz
AUSTRIA

Document No.: 75471/CE/1

We declare that the following product(s)

Name of product: FX 2xx
 Variants: FX 200/A, FX 271/A, FX 271/B
 From: revision 00 (Mat.Nr. 74569)
 revision 01 (Mat.Nr. 76789)
 revision 03 (Mat.Nr. 76788)
 revision 04 (Mat.Nr. 64173)
 revision 02 (Mat.Nr. 75471)
 revision 02 (Mat.Nr. 75482)
 revision 02 (Mat.Nr. 68284)

is/are in conformity with the essential requirements of the following European Council Directive(s):

∞ EC-Directive relating to electromagnetic compatibility 2004/108/EC

Conformity to the directive 2004/108/EC is assured by the compliance with the applicable parts of the following harmonized european standards:

∞ EN 61131-2:2007

Important notes:

Any modification on the product(s), that is performed without KEBA's consent will render this declaration invalid.

This declaration certifies the conformity with the directives mentioned, but does not imply any warranty of the features of the product(s).

The safety instructions contained in the documentation supplied with the product(s) must be followed.

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