Kemro

SX 210/A
Serial option module
Project engineering manual V2.04

Translation of the original instructions

KEBA

Automation by innovation.

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Record of Revision

Version	Date	Change in chapter	Description	changed by
1.00	09-2005		Newly created	meis
2.00	06-2006		Various changes	meis
2.01	04-2007		New structuring of the project engineering manual	meis
2.02	09-2008		Various changes	kalt
2.03	08-2010	EC directives and standards, Savety notes, Declaration of conformity	updated	hasl
2.04	08-2011	Introduction	Hint "not for end customers" added, various minor updates.	fstl

Table of Contents

1 Introduction

1.1 Purpose of the document

This document describes the structure of the SX 210/A
(serial 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 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: ● working mode of a PLC, ● safety regulations, ● the application.
Operator	Basic technical training (Vocational high school, engineering degree or corresponding professional experience). Knowledge in: ● 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: ● working mode of a PLC, ● safety regulations, ● working mode of machine or plant, ● diagnosis possibilities, ● systematic error analysis and rectification.

1.3 Intended use

The SX 210/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 SX 210/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.

1.4 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 SX 210/A
- Use of the option module in CPU modules
- Description of interface including EMC measures
- 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	• 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	• 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 it's 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 SX 210/A is a serial option module (RS-232-C) for slotting in CPU modules of the type CP 23x/x or CP 25x/x.

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
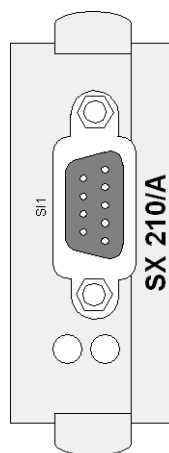
Fig.3-1:   SX 210/A front view

4   Installation instructions

The module has been designed for operation with a CP 23x/x or CP 25x/x. It is inserted into **left** slot.
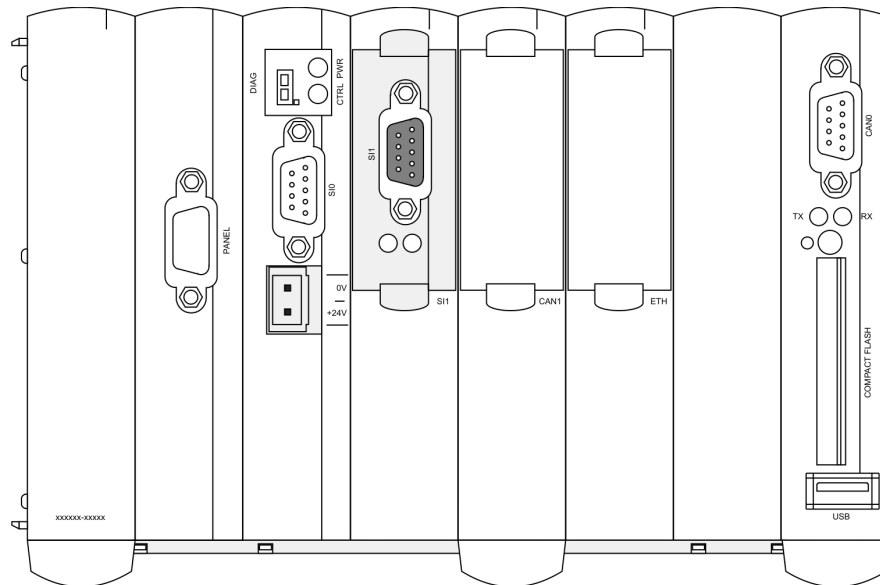
Fig.4-1:   Use in a CP module

Information

The option modules may not be plugged or removed, if the CPU module switched on.

4.1   Inserting an option module into slot

1)   Turn off the power supply.
2)   Remove dummy module.
3)   Insert module in the correct position (labeling "SX 210/A" right) into the left slot.

Fig.4-2:   Inserting the SX 210/A option module

4.2 Removing an option module

1) Turn off the power supply.

2) Pull module from the slot.

3) Insert dummy module

Fig.4-3: Removing the SX 210/A option module

5 Connections and wiring

5.1 General information on wiring and shielding

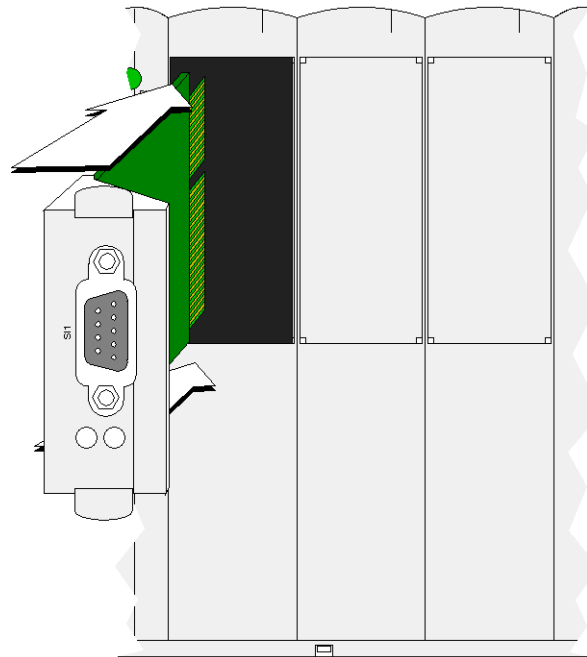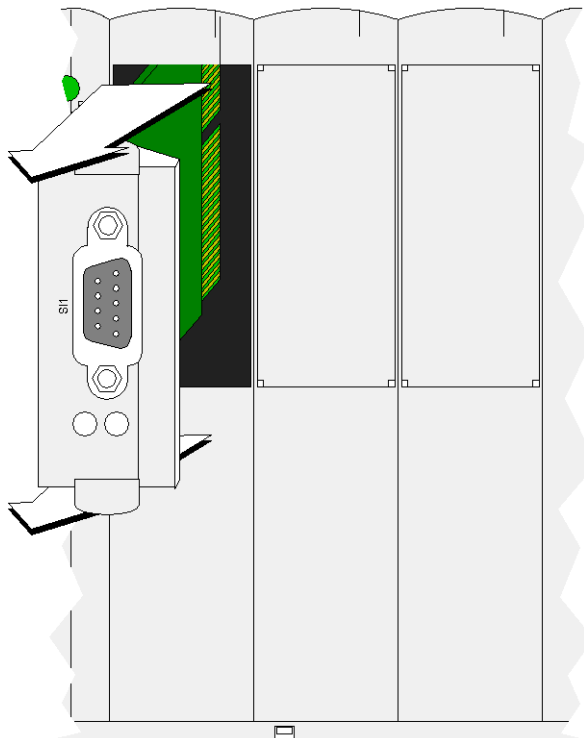This section covers issues that concern in particular the serial interface connections.

The following is valid for all serial interfaces:

● Use shielded cables

● Contact shield directly at metallic interface plug casing

	Required cable (must be shielded in all cases)	**Take account of cable termination**
Current loop	Twisted paired wiring	No
RS 232 C	Twisted pair, with signal ground	No
RS-422-A unidirectional	Twisted pair, with signal ground	Yes
RS-422-A bidirectional	2x twisted pair line with 1 signal ground	Yes
RS-485-A	Twisted pair, with signal ground	Yes
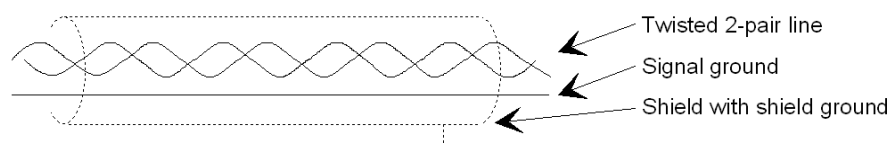
Fig.5-1:   Structure of a shielded twisted pair line with signal ground

5.2 RS-232-C interface

5.2.1 Pin assignment

The module is connected to the bus with a 9-pole DSUP male connector.
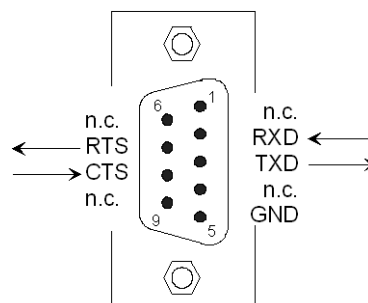
Fig.5-2:   Assignment RS-232-C interface, DSUB-plug connection seen from front

Pin no.	Signal designation		Input / Output
2	RXD	Receive Data	Input
3	TXD	Transmit Data	Output
5	GND	ground	---
7	RTS	Request To Send	Output
8	CTS	Clear To Send	Input

5.2.2 Cable and plug specification

See System manual.

5.3 EMC and wiring guidelines

Pay attention from the outset to careful wiring and shielding.

Further information: See system manual.

6   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.

7   Operating behavior

7.1   Start-up after Power-On

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

7.2   Reset

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

8   Disposal

8.1   Disposal of the module

CAUTION

Please observe the regulations regarding disposal of electric appliances and electronic devices!

- ● The symbol with the crossed-out waste container means that electrical and electronic devices including their accessories must not be disposed of in the household garbage.

- ● The materials are recyclable in accordance with their labeling. You can make an important contribution to protecting our environment by reusing, renewing and recycling materials and old appliances.

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:	3.3 V TTL output of the UART
Connection:	CHAMP plug 30-pole
Power supply:	5V
Module recognition:	YES (Module given, YES/NO, no type recognized)

9.3 Serial interface

Interface type:	RS-232-C, 9-pole pin plug
Transmission media:	Shielded cable
Galvanic isolation:	No
RS-232-C baud rates:	To be set via software (from 1200 Baud to 115000 Baud)

9.4 Mechanics

Structure:	No casing; only front plate mounted on print
Protection class:	If module is slotted into control system, control system fulfills IP20
Weight:	31 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

> *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

10.2.3 Electrical safety and fire protection

EN 61131-2:2007	Programmable controllers - Part 2

10.2.4 Environmental and surrounding conditions

EN 61131-2:2007	Programmable controllers - Part 2

10.3 Standards for the American market

10.3.1 UL test for industrial control equipment

UL 508, 2005	Industrial Control Equipment

11 Declaration of conformity

KEBA

EC Declaration of Conformity

CE

KEBA AG
Gewerbepark Urfahr
4041 Linz
AUSTRIA

Document No.: 64168/CE/2

We declare that the following product(s)

Name of product: **SX 2x0**

Variants: **SX 210/A, SX 220/A, SX 230/A**

From: revision 00 (Mat.Nr. 74570), revision 01 (Mat.Nr. 75448)
revision 01 (Mat.Nr. 76783), revision 01 (Mat.Nr. 76784)
revision 06 (Mat.Nr. 64168), revision 01 (Mat.Nr. 68793)
revision 07 (Mat.Nr. 64170), revision 04 (Mat.Nr. 68288)
revision 04 (Mat.Nr. 68289)

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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