M0006998B

SANMOTION

MOTION CONTROLLER

C

SX 210/A , SX 230/A

Serial Option Module

Project Engineering Manual

SANYO DENKI

E

ENGLISH

Notes on This Manual

At various points in this manual you will see notes and precautionary warnings regarding possible hazards. The meaning of the symbols used is explained below.

⚠ DANGER

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

⚠ WARNING

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

⚠ CAUTION

- **CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.**

CAUTION

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



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

Note

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

History

Modification from / to	Date	Modified pages	Description	Author
V1.0	300905		New	meis
V2.0	080606		Various changes	meis

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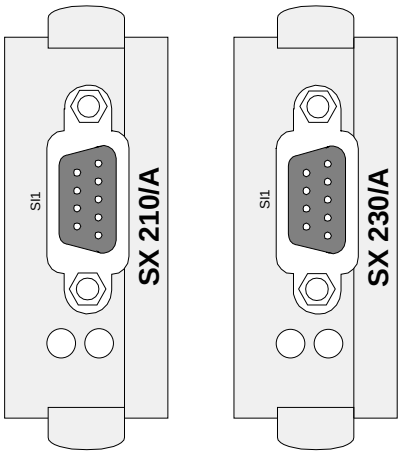
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1 Brief description

The SX 210/A (RS-232) and SX 230/A (RS-485/422) are serial interface option modules used for slot-into the CPU modules of the CP 23x variant.



SX 210/A, SX 230/A front view

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

2 General safety instructions

CAUTION
• **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.**

3 Configuration

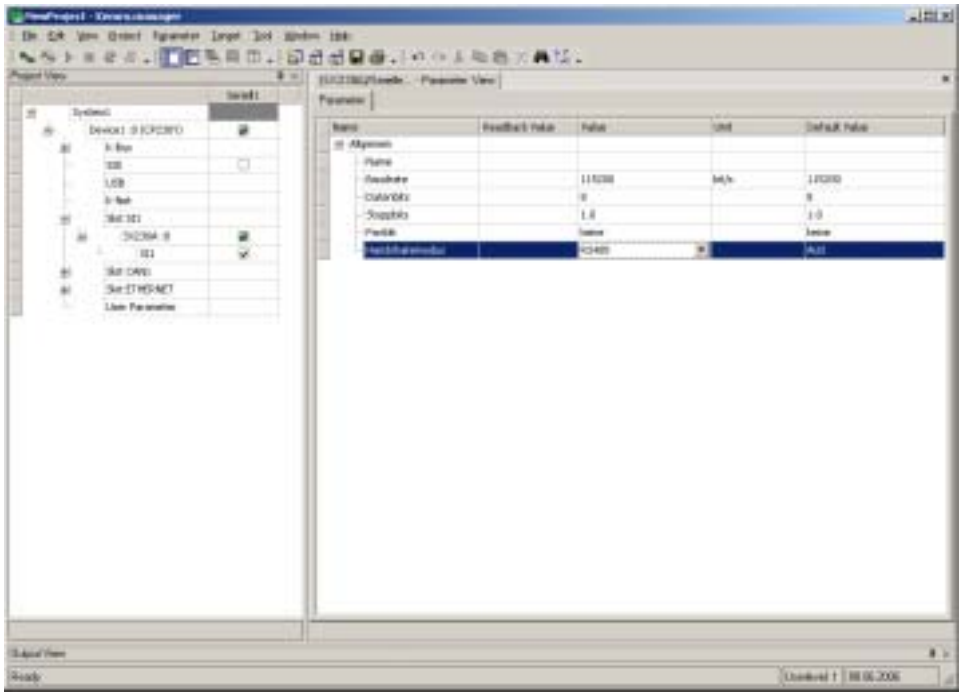
General information

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 SX 2x0/A:

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

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 SX 230/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 SX 230/A. The communication parameter can be specified here, the interface on the RS-422 or RS-485 can be configured under "Handshake mode".



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.

Creation of 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 SX 230/A in Onboard-Slot:

```
[IO.ONBOARD.SLOTSI:0]
[IO.ONBOARD.SLOTSI:0.SX230A:0]
name="SX230A"
```

Configuration of the serial interface SI0:

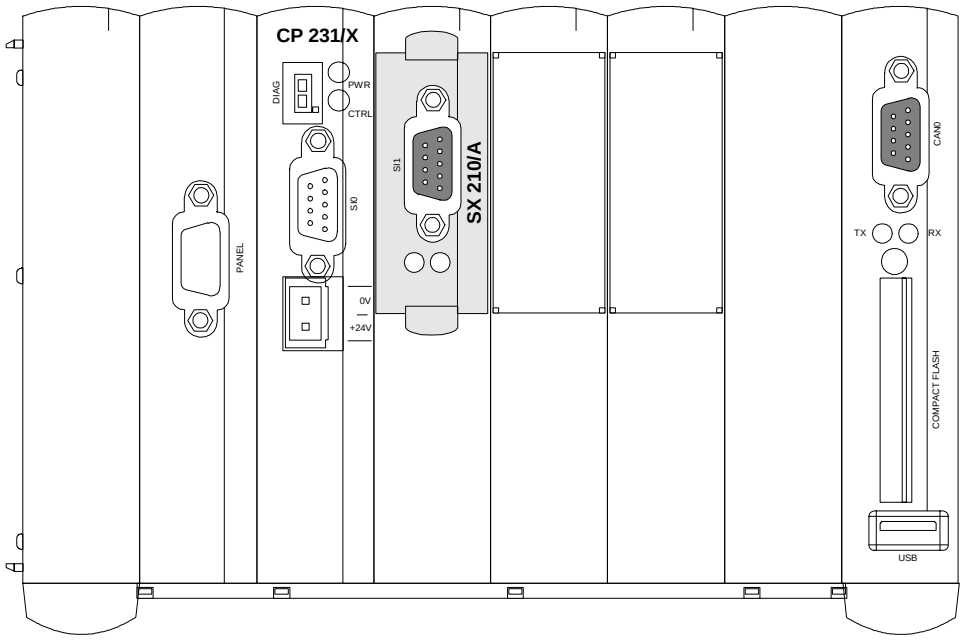
```
[IO.ONBOARD.SLOTSI:0.SX230A:0.SIO:0]
name="SI0"
baudrate=115200          // possible Baud rates:
                         // 1200, 2400, 4800, 9600, 19200
                         // 38400, 57600, 115200
dataBits=8               // possible specifications: 5, 6, 7, 8
stopBits=1.0             // possible specifications: 1.0, 2.0
parity="no"              // Parity:
                         // "no"      no parity
                         // "even"    even parity
                         // "odd"     odd parity
handshakeMode=3          // Handshake mode:
                         // 0 ... off
                         // 1 ... XON/XOFF
                         // 2 ... RTS/CTS
                         // 3 ... RS485
priorityServerTask=8
stackSizeServerTask=10000
```

IEC and teachtalk provide write/read functions for the data exchange. The assignment between the interface and the firmware function is created via the bus name ("SI0").

4 Installation instructions

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

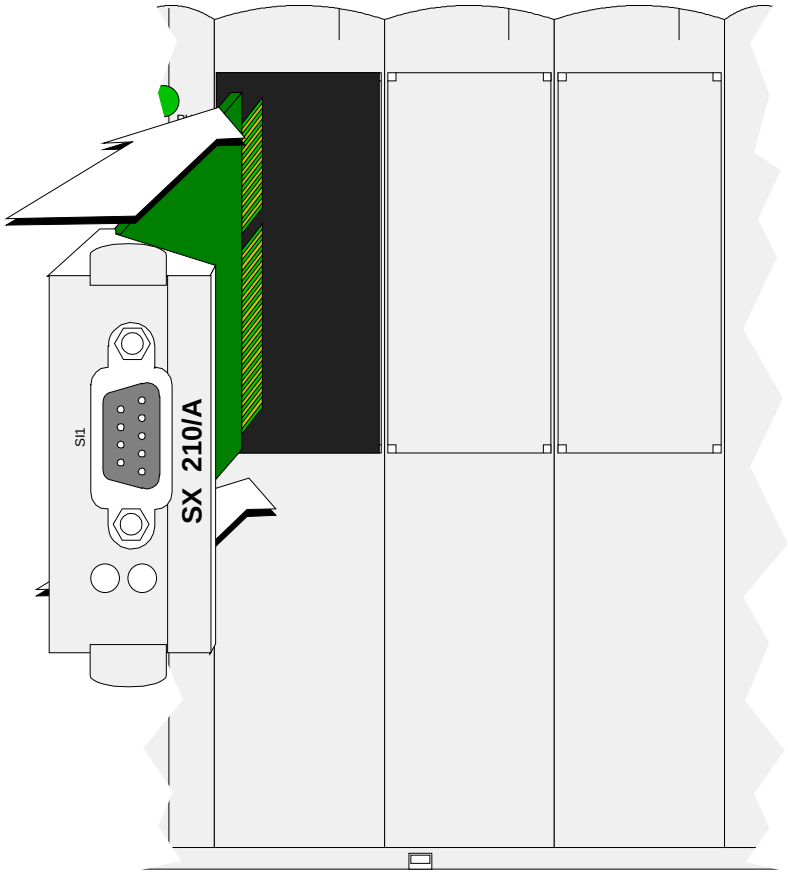
Example: Inserted in a CP 231/X



Note
*The option modules may **not** be plugged or removed, if the CP 23x switched on.*

Inserting option module into slot:

- Turn off power supply
- Remove cover
- Insert module in the right position (labeling "SX 210/A" to the right) into the left-hand slot.

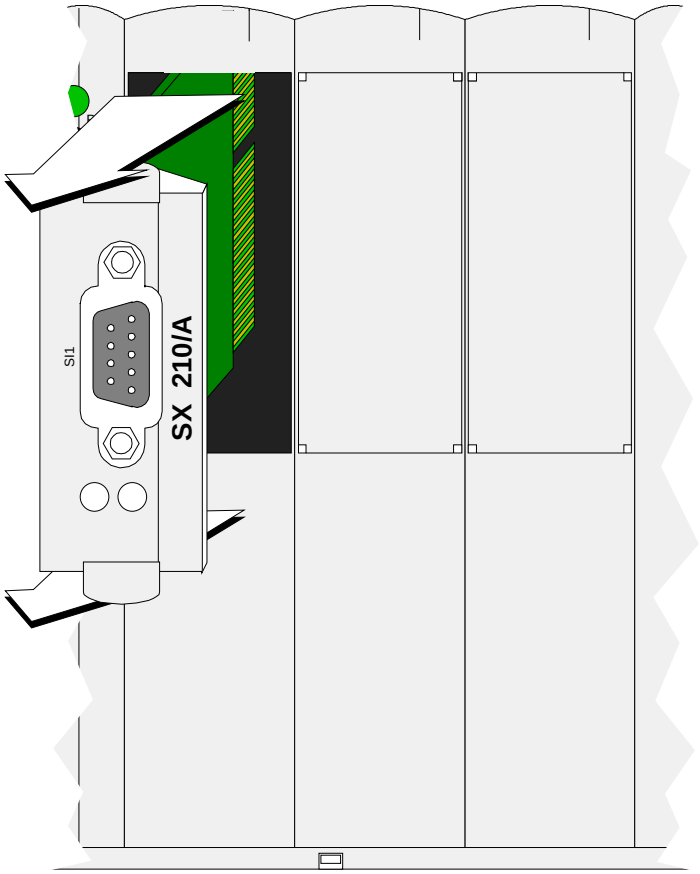


Inserting the SX 210/A option module

Removing an option module:

In reverse order:

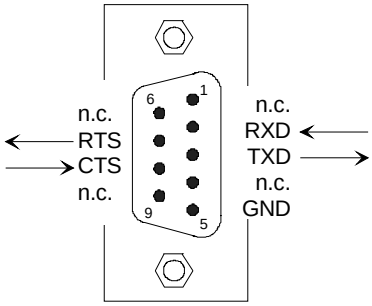
- Turn off power supply
- Pull module from the slot.
- Insert cover.



Removing the SX 210/A option module

5 Interface of the SX 210/A (RS-232)

Pin assignment



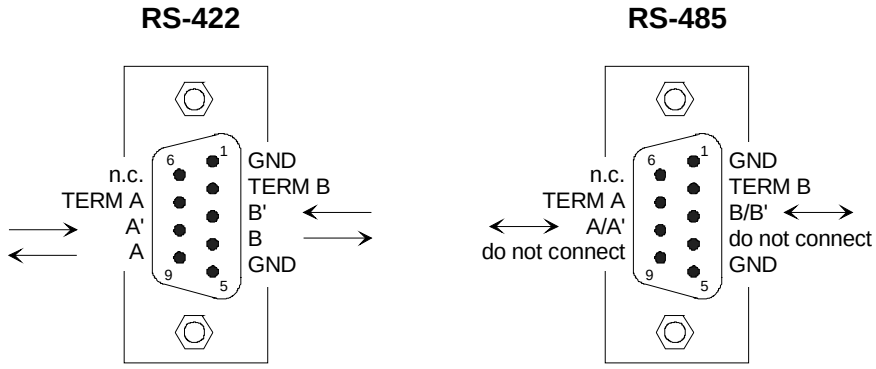
Assignment RS-232 interface, DSUB-plug connection seen from front

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

6 Interface of the SX 230/A (RS-485/422)

The SX 230/A can be configured via software on to the RS-422 or RS-485. (For further information see chapter "Configuration via SANMOTION C manager" and "Creation of cfg-files")

Pin assignment



n.c.: not connected

Assignment RS-422/RS-485, DSUB-plug connection seen from front

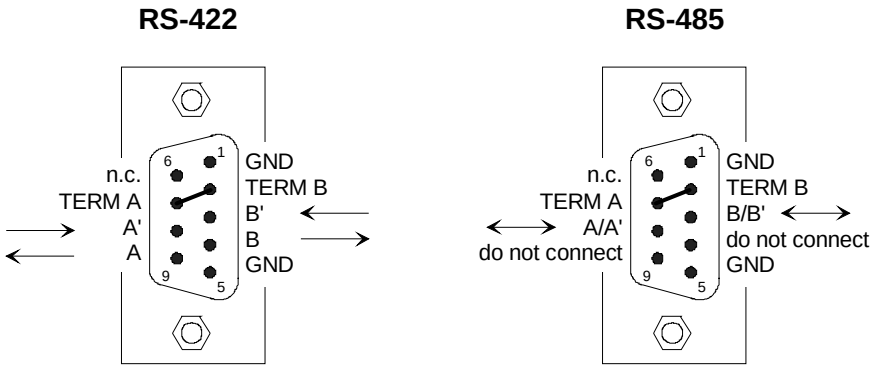
RS-422	Signal designation	PIN-No.	Input / Output
A	Transmit -	9	Output
A'	Receive -	8	Input
B	Transmit +	4	Output
B'	Receive +	3	Input
TERM A	Terminating resistor	7	---
TERM B	Terminating resistor	2	---
GND	Ground	1, 5	---

RS-485	Signal designation	PIN-No.	Input / Output
A / A'	Transmit / Receive -	8	Input or Output
B / B'	Transmit / Receive +	3	Input or Output
TERM A	Terminating resistor	7	---
TERM B	Terminating resistor	2	---
GND	Signal ground	1, 5	---

For further information: See "SANMOTION C automation system"

Line terminating board

To activate the bus terminating board at the last participant during RS-485 operation the pins 2 and 7 (TERM A, TERM B) must be connected.
During RS-422 operation pins 2 and 7 (TERM A, TERM B) must always be connected.



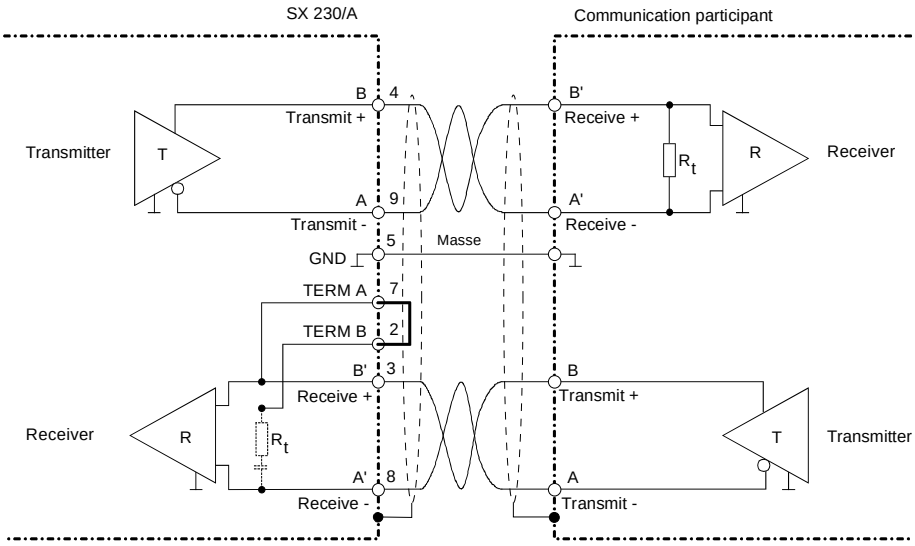
n.c.: not connected

RS-422/RS-485 with activated bus termination board

Example for connecting

The following connection examples show two possible configurations of the serial option module SX 230/A.

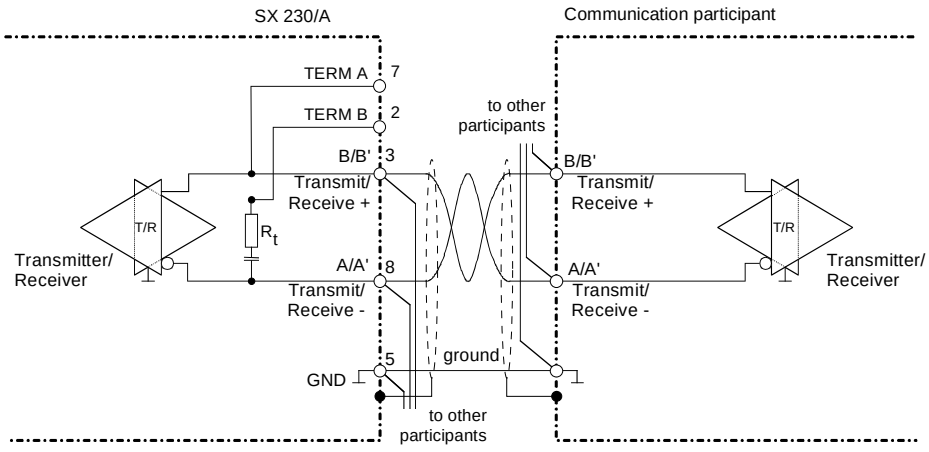
Example 1: RS-422 wiring connection at SX 230/A



T .... Transmitter R .... Receiver Rt .... Terminating resistor

Example 1: RS-422 interface

Example 2: RS-485 wiring connection at SX 230/A



T .... Transmitter R .... Receiver Rt .... Terminating resistor (if required)

Example 2: RS-485 interface

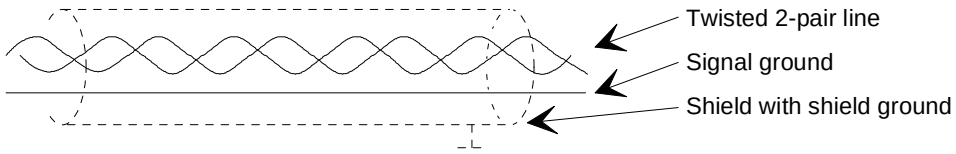
For both, RS-422 as well as for RS-485 applies: The maximum number of participants is limited to 32.

7 Wiring and shielding

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

For all serial interfaces holds true:
- Use shielded cables
- Contact shield directly at metallic interface plug casing

	Required line (must be shielded in all cases)	Take account of line termination
CL	Twisted paired wiring	no
RS-232	Standard line	no
RS-422 unidirectional	Twisted pair, with signal ground	yes
RS-422 bidirectional	2x twisted pair line + 1 signal ground	yes
RS-485	Twisted pair, with signal ground	yes



Structure of a shielded twisted pair line with signal ground

8 Technical data

Interface to CP23x

Interface type	3.3 V TTL output of the UART
Connection technology	CHAMP plug 30-pole
Power supply	5V

SX 210/A

Interface type	RS-232, 9-pole connector plug
Transmission media	shielded cable
Galvanic isolation	no
RS-232 Baud rates:	To be set via software (from 1200 Baud to 115000 Baud)

SX 230/A

Interface type	RS-485/422, 9-pole connector plug
Transmission media	shielded cable
Galvanic isolation	no
RS-485/422 Baud rates:	To be set via software (from 1200 Baud to 115000 Baud)
Switching between RS-485 and RS-422:	To be set via software

Mechanics

Structure	No casing; only front plate mounted on print
Ingress protection rating	If module is slotted into CP2xx/x, the CP23x/x fulfills IP20
Weight	31 g

Standards:

The module conforms to the following standards:

General information	
UL 508	UL – listed
Product standard for programmable controllers:	
IEC 61131-1:2003	General information
IEC 61131-2:2003	Hardware

Release
Revision A Aug.2005
Revision B Jul.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.