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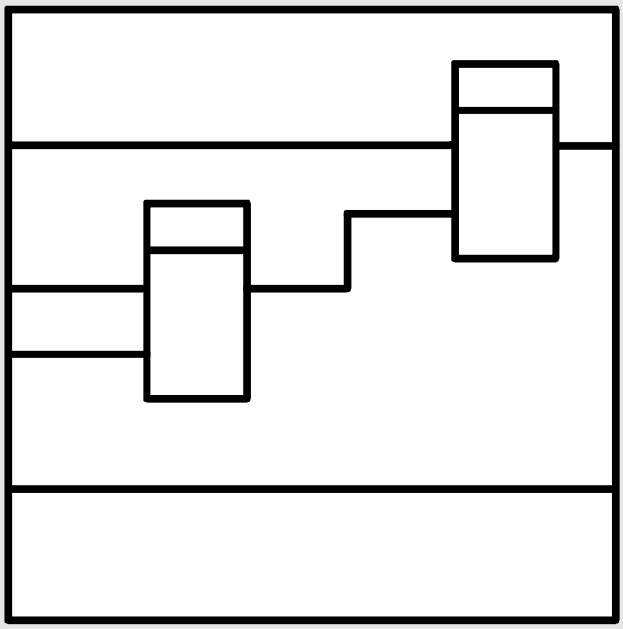
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Find the *Siemens 6DD1688-0AD0* at our website: *Click HERE*

SIMADYN D
Digital Control System

User Manual

Interface board SS4



Edition 05.95

DK-Nr. 247341

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User Manual, Interface board SS4

Edition		Edition status
1	Interface board SS4	08.94
2	Interface board SS4	05.95

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We have checked the contents of this Manual to ensure that they coincide with the described hardware and software. However, deviations cannot be completely ruled-out, so we cannot guarantee complete conformance. However, the information in this document is regularly checked and the necessary corrections included in subsequent editions. We are thankful for any recommendations or suggestions.

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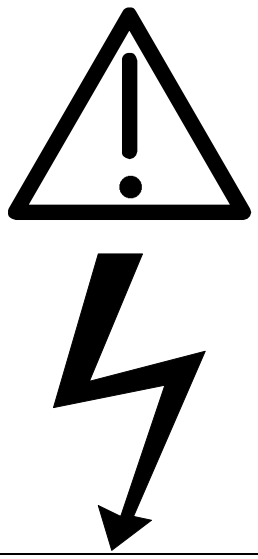
N O T E !

The information in this Manual does not purport to cover all details or variations in equipment, nor to provide for every possible contingency to be met in connection with installation, operation or maintenance.

Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, please contact your local Siemens office.

Further, the contents of this Manual shall not become a part of or modify any prior or existing agreement, committment or relationship. The sales contract contains the entire obligation of Siemens. The warranty contained in the contract between the parties is the sole warranty of Siemens. Any statements contained herein do not create new warranties nor modify the existing warranty.

Warning information



W A R N I N G !

Electrical equipment has components which are at dangerous voltage levels.

If these instructions are not strictly adhered to, severe bodily injury and material damage can result.

Only appropriately qualified personnel may work on this equipment or in its vicinity.

This personnel must be completely knowledgeable about all the warnings and service measures according to this User Manual.

The successful and safe operation of this equipment is dependent on proper handling, installation, operation and maintenance.

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Definitions

* **QUALIFIED PERSONNEL**

For the purpose of this User Manual and product labels, a „Qualified person“ is someone who is familiar with the installation, mounting, start-up and operation of the equipment and the hazards involved. He or she must have the following qualifications:

1. Trained and authorized to energize, de-energize, clear, ground and tag circuits and equipment in accordance with established safety procedures.
2. Trained in the proper care and use of protective equipment in accordance with established safety procedures.
3. Trained in rendering first aid.

* **DANGER**

For the purpose of this User Manual and product labels, „Danger“ indicates death, severe personal injury and/or substantial property damage will result if proper precautions are not taken.

* **WARNING**

For the purpose of this User Manual and product labels, „Warning“ indicates death, severe personal injury or property damage can result if proper precautions are not taken.

* **CAUTION**

For the purpose of this User Manual and product labels, „Caution“ indicates that minor personal injury or material damage can result if proper precautions are not taken.

* **NOTE**

For the purpose of this User Manual, „Note“ indicates information about the product or the respective part of the User Manual which is essential to highlight.



C A U T I O N !

This board contains components which can be destroyed by electrostatic discharge. Prior to touching any electronics board, your body must be electrically discharged. This can be simply done by touching a conductive, grounded object immediately beforehand (e.g. bare metal cabinet components, socket protective conductor contact).



W A R N I N G !

Hazardous voltages are present in this electrical equipment during operation.

Non-observance of the safety instructions can result in severe personal injury or property damage.

It is especially important that the warning information in all of the relevant Operating Instructions are strictly observed.

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1. Ordering information

SS4: 6DD1688-0AD0	Interface board SS4

2. Description

Board SS4 is an interface board for DUST protocols. Corresponding to the specific configuration, it is inserted in one of the three CS7 module slots. A maximum of three boards per carrier module can be inserted.

The interface board has two serial interfaces. The configured DUST protocol can run on one interface, and the second interface is used as service interface. The hex monitor runs on this interface in the background. Both interfaces are available at the 26-pin sub D socket connector X5.

The following protocols can be configured on the DUST interface:

DUST1

Both interfaces are RS232 (V24). If another physical interface is required for the DUST protocol, an adaption to the 40-pin X51 connection can be realized by using an interface hybrid. If handshake signals are required for operation via the RS232 interface, the S2 interface hybrid must be inserted. In this case, there is a different pin assignment at connector X5 than for the standard RS232 interface.

The connection to the carrier module is realized via the parallel CS7-SS4/SS5 interface at the 48-pin plug connector X1. In addition to the data-, address- and control bus, this connection is used to establish the +5V, +15V and -15V board power supplies. Data transfer with the processor boards is realized via a 16-kbyte dual port RAM, which is located on the carrier module.

A double test socket and double LED, assigned to each slot, are provided on the carrier module.

The LEDs have the following function:

LEDs		Function
H10 / H20 / H30	H11 / H21 / H31	
dark	dark	Processor not initialized
flashing	flashing	RAM test fault
flashing	dark	SS4 initialized, waits for initialization from the host
lit	dark	DUST initialized
lit	lit	Data transfer running
dark	lit	Software error

In addition to the reset function using the power supply, a local reset can be initiated by short-circuiting the two test sockets at the processor of the appropriate interface board. This function has no effect on the remaining subrack sections. It is necessary for testing the software and troubleshooting; during standard operation, it is not permissible that a reset is initiated at these sockets.

Four LEDs on the interface module indicate the signal level of the send- and receive channels of the two serial interfaces. They are used for troubleshooting and start-up and are not externally visible under standard operating conditions with the board inserted. They have the following function:

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LED		Function
H1	Dark/lit: flickers/glows:	Hex monitor not transmitting Hex monitor transmitting
H2	Dark/lit: flickers/glows:	Hex monitor not transmitting Hex-monitor transmitting
H3	Dark/lit: flickers/glows:	DUST interface not transmitting DUST interface transmitting
H4	Darl/lit: flickers/glows:	DUST interface not receiving DUST interface receiving

The 80-pin test connector X20 on the board is used for hardware diagnostics with a logic analyser.

The hardware functioning is monitored using a watchdog.

3. Board design

The boards provides the following hardware components.

Processor 80C186 (32 MHz)
EPROM (256 kbyte) with firmware
Local processor RAM (64 kbyte)
Parallel interface to the carrier module
Two serial RS232 interfaces
Slot for hybrid interface circuit
Watchdog for NMI monitoring
LEDs for displaying the level of the serial receive- and transmit channels
Diagnostics connector for the logic analyser
Diagnostics using the Hex monitor

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4. Serial interfaces

4.1. DUST interface

The DUST interface is RS232 (V24) as standard. If a different physical interface is required, this can be implemented by using a SIMADYN D interface hybrid circuit. The appropriate module is inserted in the 40-pin socket X51.

The following physical interfaces are possible:

Physical interface	Interface hybrid
RS232	Standard version
RS232 (with handshake)	Interface hybrid, SS2
20 mA (TTY)	Interface hybrid, SS1
RS485	Interface hybrid, SS3

Caution:

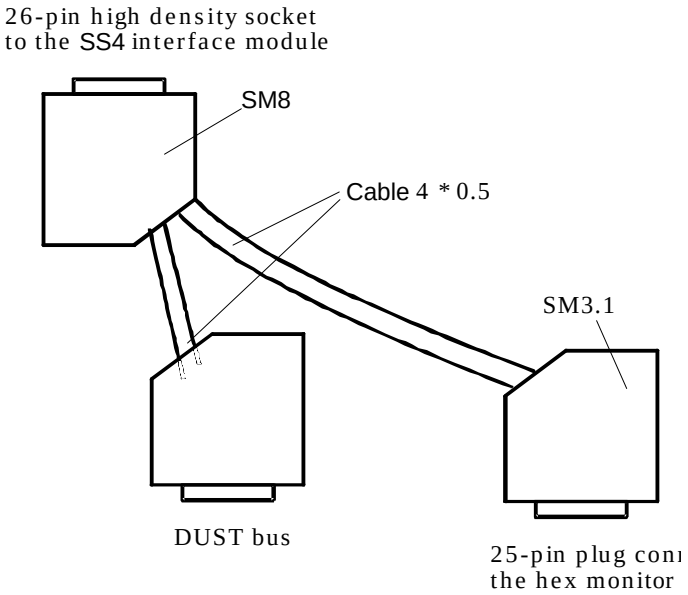
Observe the mounting position

4.2. Monitor interface

Parallel to the configured DUST interface, the Hex monitor runs in the background on the SS4. It can be used for troubleshooting. This interface is at the same connector as the DUST interface for space reasons.

If both interfaces are to be used, the user must create an adapter. In addition to the DUST cable, a second cable with the appropriate connector for the service unit monitor interface is also connected at connector X5 on the housing (Fig. 1).

The monitor interface is a RS232 interface and cannot be modified.



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Fig. 1: Connecting a configured DUST interface and monitor interface at connector X5.

5. Connecting cables

5.1. DUST interface

Cables must be assembled according to the following diagrams when connecting the interface module to a PG685, PG750, PG770 operator control unit. SIMADYN D has no pre-assembled cables in its product spectrum. The SM8 parts set is required to connect to the interface module, and for the connection to the communications partner, the appropriate parts set for the particular connector size. A 4-core screened round cable is required (e.g. LICYC 4*0.5, Messrs. Metrofunk)

If the PG750/770 is operated as passive current interface (TTY), switches S3/2 and S3/3 must be opened in the unit. For more detailed information refer to the system manual PG750/770 (Order No.: C79000-B8500-C630-D2).

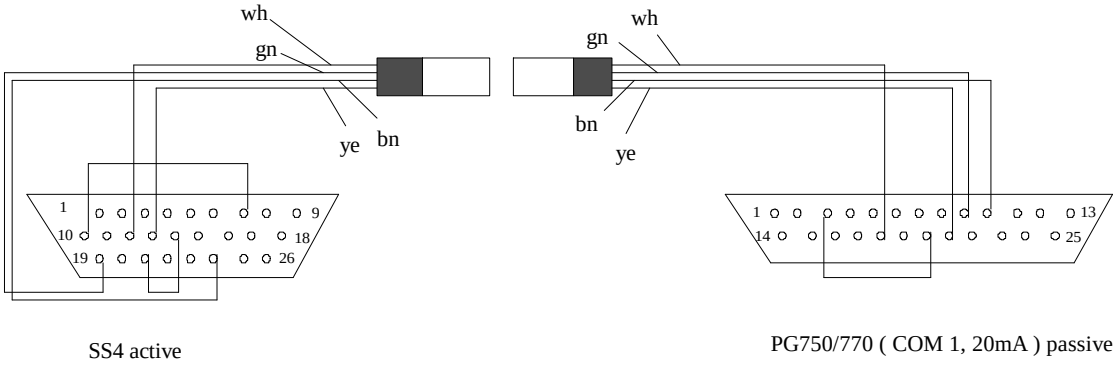


Fig. 2: SS4 at PG750/770 (COM1) via the 20mA interface

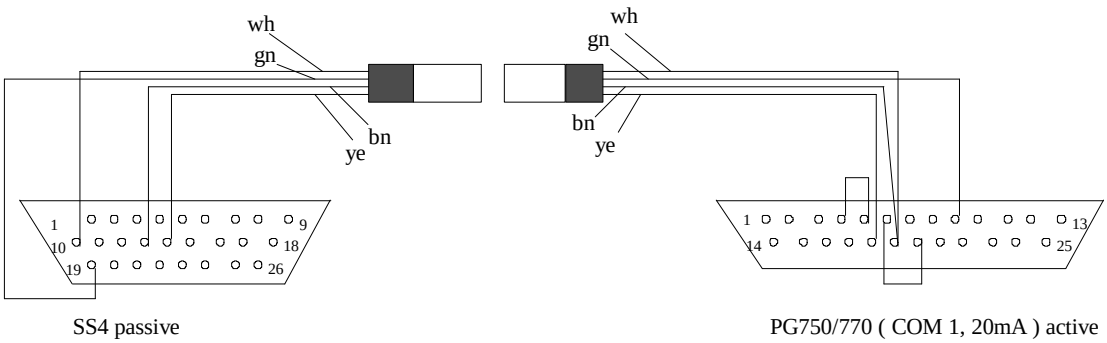


Fig. 3: SS4 at PG750/770 (COM1) via the 20mA interface

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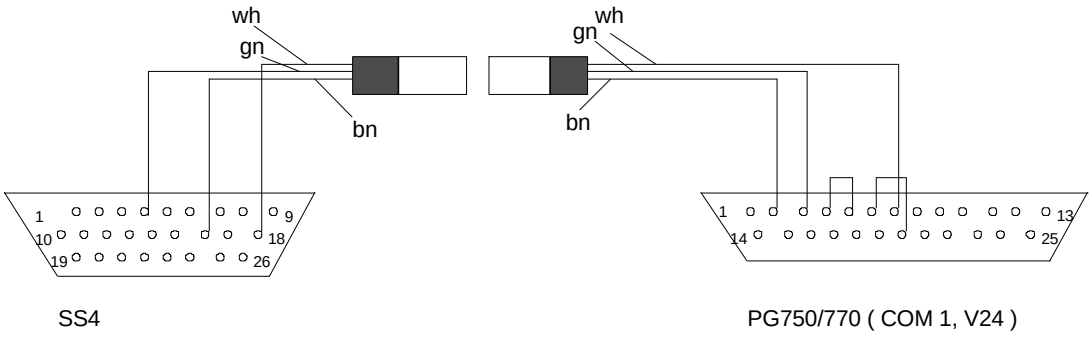


Fig. 4: SS4 at PG750/770 (COM1) via the V24 interface

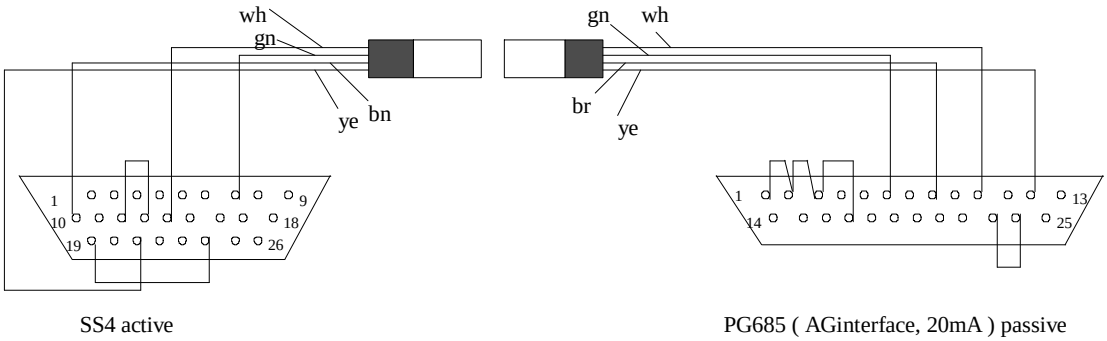


Fig. 5: SS4 at PG685 (PLC interface) via the 20mA interface

5.2. Monitor interface

The connection at connector X5 must be realized in the same connector housing as for the DUST interface. The cable must be assembled according to the following diagram. SIMADYN D has no pre-assembled cables in its product spectrum.

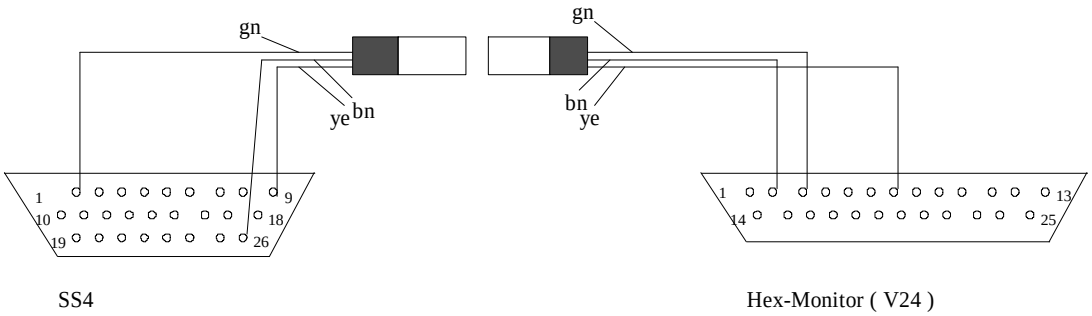


Fig. 6: Pin assignment of the monitor interface

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6. Applications

The interface board can be configured at any of the CS7 carrier module slots. Up to three interface boards per CS7 can be configured. The sequence is irrelevant.

To ensure perfect operation, the board must screwed to the guiderails, even during start-up.

If the board is inserted in an adapter, the front panel must be connected with the housing through a short cable.

It is not permissible that the board is inserted or withdrawn under voltage.

When calculating the total current drain of the board, the current drain of the inserted interface board must be added to the SS4 values.

7. Screening

The bus cable screen should be grounded through a large surface area. The cable screens must be connected to the grounding bar where the cable enters the cubicle. Further, the screen must be connected to the connector housing. The connector is screwed to the boards.

The SIMADYN D EMC and installation guidelines are valid.

8. Additional components

Designation	Order No.
CS7 carrier module	6DD1662-0AB0
Interface hybrid circuit SS1 (20mA)	6DD1688-0AA0
Interface hybrid circuit SS2 (RS232)	6DD1688-0AB0
Interface hybrid circuit SS3 (RS485)	6DD1688-0AC0
Parts set SM8 (26-pin, high density)	6DD1680-0AJ0
Parts set SM1.1 (15-pin, plug)	6DD1680-0AB1
Parts set SM3.1 (25-pin, plug)	6DD1680-0AD1
Parts set SM5 (9-pin, plug)	6DD1680-0AF0

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9. Technical data

INSULATION GROUP DC	A acc. to VDE 0110 Para. 13, Group 2 at 24V DC, 15V DC, 5V
AMBIENT TEMPERATURE	0 to +55 degrees C with natural air cooling
STORAGE TEMPERATURE	-40 to + 70 degrees C
HUMIDITY CLASS	F acc. to DIN 40040
ALTITUDE RATING	S acc. to DIN 40040
MECHANICAL STRESSING	Installation in permanent but not necessarily vibration-free equipment
PACKAGING SYSTEM	Inserted in a CS7 carrier module slot CS7
DIMENSIONS	184 * 65 mm
WEIGHT	0.5 kg
CURRENT DRAIN	P5 0.4 A P15 20 mA N15 20 mA

10. Interface connector assignment

10.1. Serial interfaces X5

X5 (26-pin SUB D socket connector, high density)

Pin	RS232 standard interface	RS232 with handshake	20 mA	RS485	RS232 (Hex monitor)
1	----	----	----	----	TxD
2	----	TxD	----	+RTS	----
3	----	RxD	----	+TRxD	----
4	TxD	----	----	----	----
5	----	CTS	----	+TxD	----
6	----	DCD	----	+RTxC	----
7	----	GND	+Iq2	+DCD	----
8	----	DCD	----	+RxD	----
9	GND	GND	GND	GND	GND
10	----	----	+TxD	----	----
11	P15	P15	P15	P15	P15
12	----	----	+Iq1	----	----
13	----	RTS	+RxD	----	----
14	----	----	-RxD	-RTS	----
15	----	RTxC	----	-TRxC	----
16	RxD	----	----	----	----
17	----	RTxC	----	-TxD	----
18	GND	GND	GND	GND	GND
19	----	----	-TxD	-RTxC	----
20	----	DTR	----	-DCD	----
21	----	----	-Iq1	-RxD	----
22	P5	P5	P5	P5	P5
23	P5	P5	P5	P5	P5
24	----	TRxC	-Iq2	----	----
25	N15	N15	N15	N15	N15
26	----	----	----	----	RxD

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10.2. Parallel interface CS7 - SS4/SS5

X1 (48-pin plug connector)

Pin	A	B	C
1	P5	P5	L_LOCK
2	AB1	AB2	AB3
3	AB4	AB5	AB6
4	AB7	AB8	AB9
5	AB10	AB11	AB12
6	L_RESET	CTCLK	AB13
7	DB0	DB1	DB2
8	DB3	DB4	DB5
9	DB6	DB7	DB8
10	DB9	DB10	DB11
11	DB12	DB13	DB14
12	DB15	L_DEN	L_CSMSB
13	L_INTDPR	DT_L_R	L_CSLSB
14	L_RDYDPR	L_LED1	L_LED2
15	P15	N15	L_INTUHR
16	M5	M5	M5

11. STRUC L mask of board SS4 in the master program

```
        STRUC L mask

100           :SS4                        "Interface board DUSTn"
101     ************************************************************************
```


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12. Others

12.1. Attachments

12.1.1. Block diagram

Block diagram	Fig. 7

12.1.2. Layout diagram

Layout diagram	2SE.465 688.9003.00 AO

12.1.3. Dimension drawing

Dimension drawing	3SE.465 688.9003.00 MB

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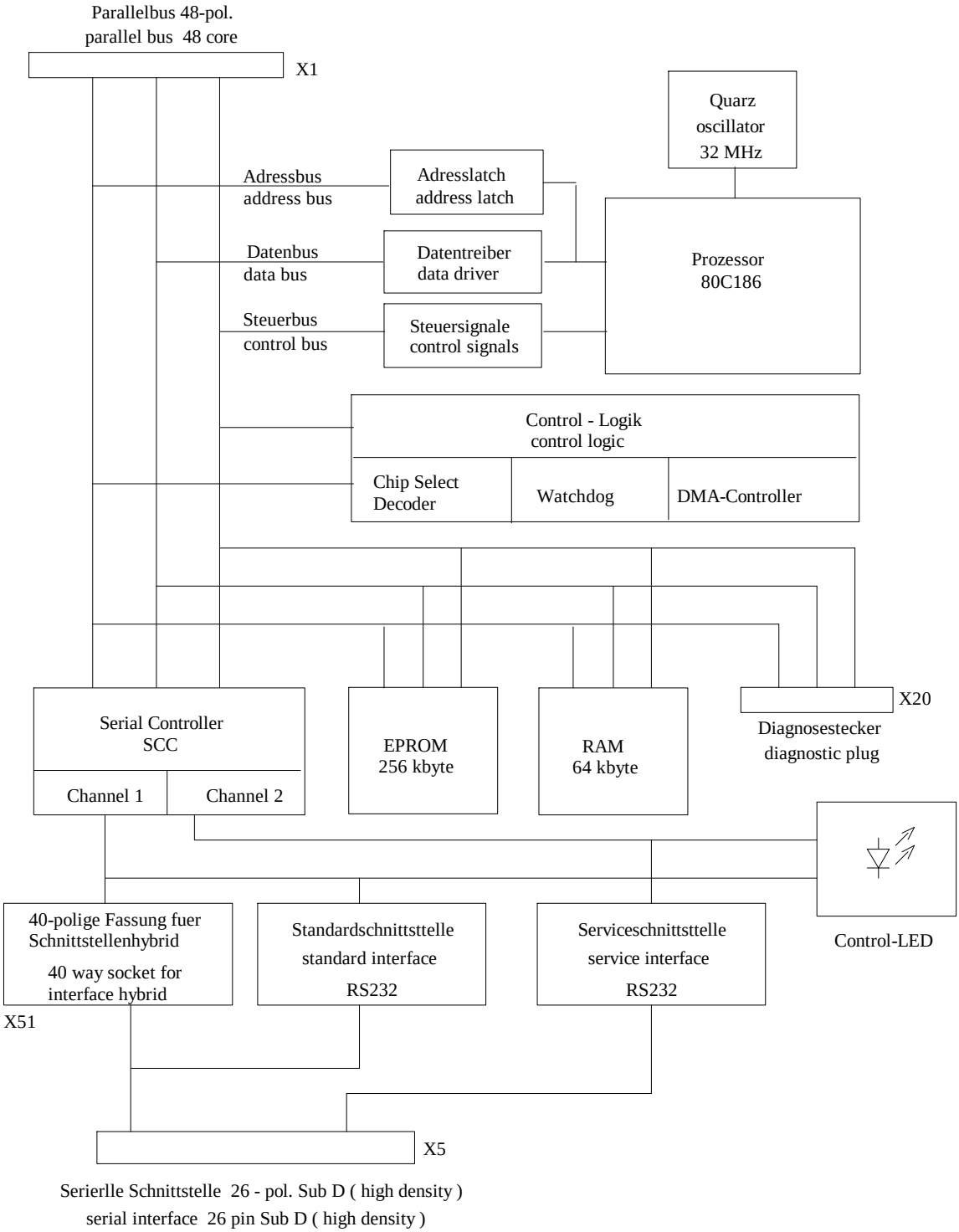


Fig. 7: SS4 block diagram

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13. ECB instructions

Components which can be destroyed by electrostatic discharge (ECB)

Generally, electronic boards should only be touched when absolutely necessary.

The human body must be electrically discharged before touching an electronic board. This can be simply done by touching a conductive, grounded object directly beforehand (e.g. bare metal cubicle components, socket outlet protective conductor contact.

Boards must not come into contact with highly-insulating materials - e.g. plastic foils, insulated desktops, articles of clothing manufactured from man-made fibers.

Boards must only be placed on conductive surfaces.

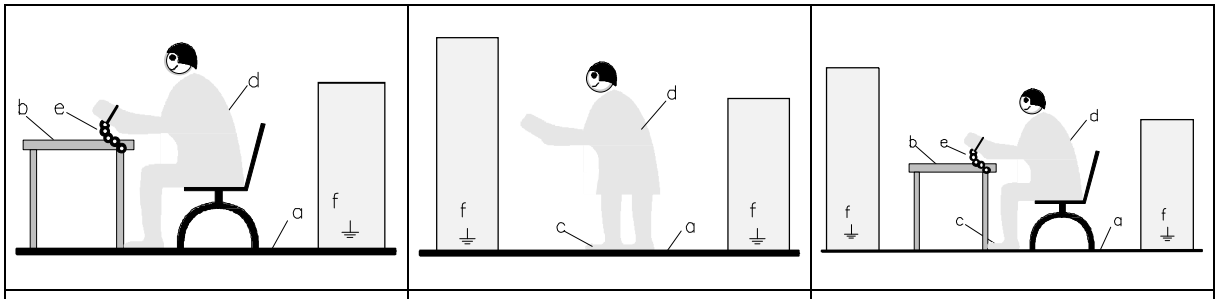
When soldering, the soldering iron tip must be grounded.

Boards and components should only be stored and transported in conductive packaging (e.g. metalized plastic boxes, metal containers).

If the packing material is not conductive, the boards must be wrapped with a conductive packing material, e.g. conductive foam rubber or household aluminum foil.

The necessary ECB protective measures are clearly shown in the following diagram.

a = Conductive floor surface
b = ECB table
c = ECB shoes
d = ECB overall
e = ECB chain
f = Cubicle ground connection

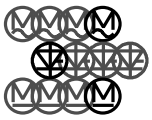


Seated	Standing	Standing/sitting

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