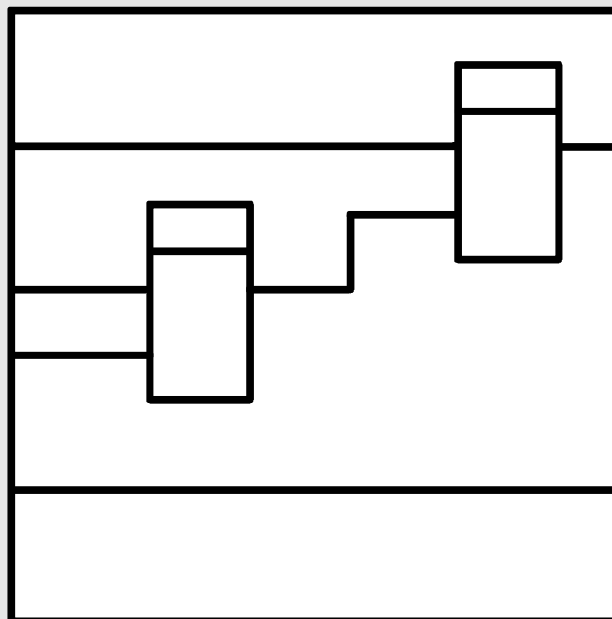


SIMADYN D Digital Control System

User Manual

Interface module SE47.1



User Manual, Interface module SE47.1

Edition		Edition status
1	Interface module SE47.1	04.91
2	Interface module SE47.1	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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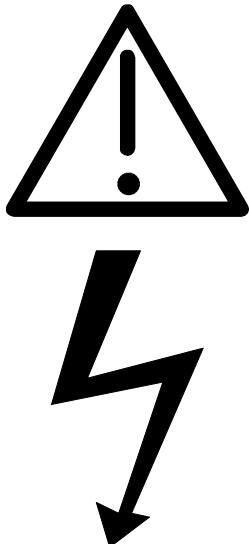
NOTE!

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, commitment 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

	WARNING!
	<p>Electrical equipment has components which are at dangerous voltage levels.</p> <p>If these instructions are not strictly adhered to, severe bodily injury and material damage can result.</p> <p>Only appropriately qualified personnel may work on this equipment or in its vicinity.</p> <p>This personnel must be completely knowledgeable about all the warnings and service measures according to this User Manual.</p> <p>The successful and safe operation of this equipment is dependent on proper handling, installation, operation and maintenance.</p>

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.

	CAUTION!
	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).

	WARNING!
	<p>Hazardous voltages are present in this electrical equipment during operation.</p> <p>Non-observance of the safety instructions can result in severe personal injury or property damage.</p> <p>It is especially important that the warning information in all of the relevant Operating Instructions are strictly observed.</p>

1. Description

The bus interface module (BIM) SE 47.1 order no. : 6DD1681-0EH1 is an interface module designed for the communication of DUST 4 in the SIMADYN D control system.

BIM FUNCTION

1. A Manchester Encoder/Decoder MED implements :
 - a) the synchronization, i.e. generating the data transfer clock
 - b) the conversion of the SCC data format, NRZ code, in manchester code and back.
2. The RTS signal, software controlled, switches the bus accessing.
3. The interface IC's, designed to RS485 specification, convert the MED input/output signals to the signal format of the transmission path.
4. A counter, triggered by an encoder clock, monitors the telegram length.

Each BIM is connected to a DUST 4 partner via a plug connector cable, in which the data, the control signals and 5V power supply are transmitted. The transfer path consists of bus cables and plug connectors with which the BIM's are inter-connected. The first and last BIM in the system are terminated with a plug containing a terminating resistance.

2. Design

- * Casing (support element), snap-on rail mounting
- * Metal cover as fault protection
- * Screen connection
 - M3 threaded bolts
- * SUB-D - socket strips
 - 25 pin, for the plug connection to the processor board.
 - 2x9 pin, for the plug connection to the serial bus.
- * Indicators , LED's :
 - red (receive)
 - green (transmit)
- * HF-Transformers for voltage isolation between SIMADYN D and the transfer path

3. Application Notes

To be used:

for the partner:	Interface SS3:RS485	order no.6DD1688-1AC0
as connection from BIM to the partner:	cable SC27:RS485	order no.6DD1684-0CH0
for the serial bus :	1. Parts sets SUB-D 9pin SM5:pins	order no.6DD1680-0AF0
	2. Terminating plug SM6	order no.6DD1680-0AG0
	3. cable Data , limit values	Example *)

External diameter	8mm, maximum (because of casing)	6,6mm
Screen	total screen	total screen
Conductors	1 twisted pair	2 twisted pairs
Conductor diameter	0,8mm, maximum (solder connection)	0,32mm [AWG 28]
Wave impedance	100.....150 Ohm	120 Ohm

*)low loss cable for EIA RS485 applications, BELDEN ELECTRONICS, cable no. 8132

4. Technical Specification

INSULATION GROUP	acc. VDE 0110 / 1.89 for contamination grade 2		
AMBIENT TEMPERATURE	0 to 55 deg. C		
STORAGE TEMPERATURE	-40 to 70 deg. C		
HUMIDITY CLASS	F acc. DIN 40040		
PROTECTION TYPE	IP00 acc. DIN 40050		
MECHANICAL STRESS	acc. SN 29010 class 12		
PACKAGING SYSTEM	snap-on rail mounting		
DIMENSIONS	135 x 77 x 58.5 (mm)		
WEIGHT	165 gr.		
ELECTRICAL DATA	min.	typ.	max.
SUPPLY			
- VOLTAGE DC (U _v) :	4,75 V	5 V	5,75 V
- CURRENT	250 mA		
INPUTS			
- VOLTAGE	- 7		+ 12 V
- SENSITIVITY	± 200 mV		
- HYSTERESIS	50 mV		
- RESISTANCE	12 K		
OUTPUTS			
- VOLTAGE with load	± 1,5 V	without load	± U _v
- RESISTANCE		54 R	
- SHORT CIRCUIT CURRENT			500mA
DATA RATE	*)		1 MBit/s
TOTAL LENGTH OF THE BUS CABLE	*)		200 m
NUMBER OF PARTNERS			32

*)/1/ Guide lines for the selection of cables are available in section A2.

/2/ shows in section 9.2 typical values for the cable lengths dependent upon the transmission speed (example : telephone cable).

5. Plug Connector Allocation

5.1. Allocation of the 25 pin SUB D socket strip X1

Pin	Designation	Pin	Designation
1	NC not connected	14	*RTS (-)
2	*RTS (+)	15	*TRxC(-) Transmit/Receive Clock
3	*TRxC(+) Transmit/Receive Clock	16	NC
4	NC	17	TxD (-) Transmit Data
5	TxD (+) Transmit Data	18	M Ground
6	*RTxC(+) Receive/Transmit Clock	19	*RTxC(-) Receive/Transmit Clock
7	*DCD (+) Data Carrier Detect	20	*DCD (-) Data Carrier Detect
8	RxD (+) Receive Data	21	RxD (-) Receive Data
9	M Ground	22	P5 Supply 5 V
10	NC	23	P5 Supply 5 V
11	NC	24	NC
12	NC	25	NC
13	NC		

5.2. Allocation of the 9 pin SUB D socket strips X2,X3

Pin	Designation	Pin	Designation
1	Signal A (Pin 1 & 2 connected)	6	Signal B (Pin 6 & 7 connected)
2	Signal A	7	Signal B
3	5 V (via resistance 1k2)	8	Ground (via resistance 1k2)
4	NC	9	Screen
5	Screen		

6. Terms/Abbreviations

BIM	Bus interface module
DUST	Data transmission control
MED	Manchester Encoder and Decoder
NRZ	Non Return to Zero
SCC	Serial Communication Controller
Partner on the communication participating processor board	

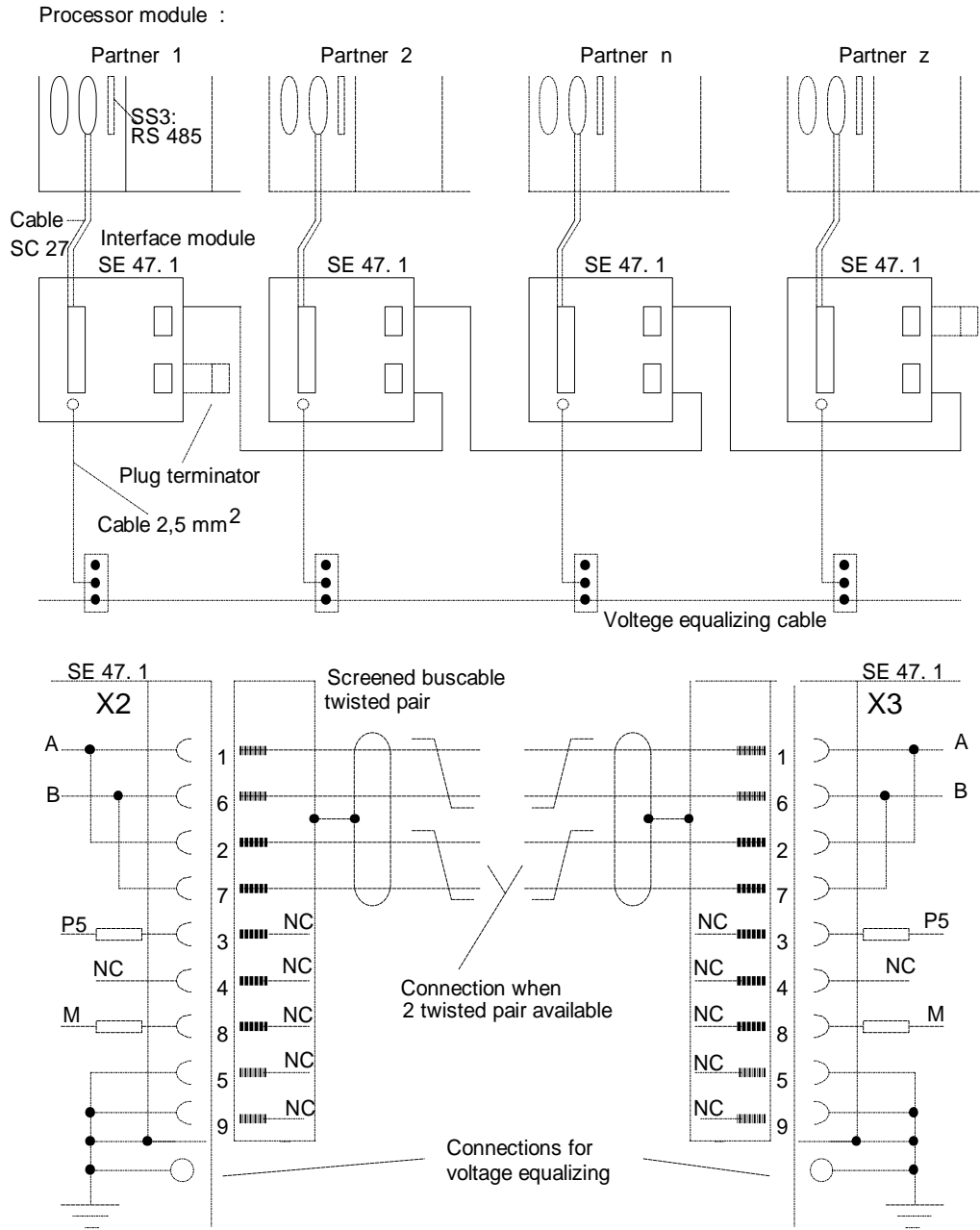
7. Literature

- /1/ EIA RS485 Version: April 83
Electrical Characteristics of Generators and Receivers
of use in Balanced Digital Multipoint Systems
- /2/ DIN 66 259 Teil 3: Maerz 1983
Elektrische Eigenschaften der Schnittstellenleitungen
Doppelstrom, symmetrisch, bis 10 Mbit/s

8. Appendices

Application notes

Appendix 1



Overview block diagram

3GE 465 681 9047.10 SU

Dimension Drawing & Connector Allocation table

3GE 465 681 9047.10 MB

9. 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.

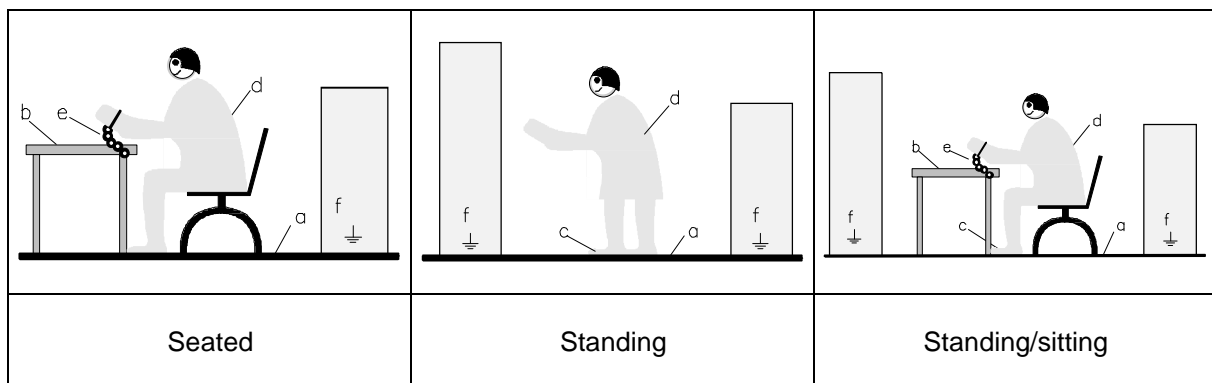
Boards and components should only be stored and transported in conductive packaging (e.g. metalized plastic boxes, metal containers).

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.

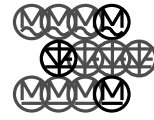
The necessary ECB protective measures are clearly shown in the following diagram.

a = Conductive floor surface
b = ECB table
c = ECB shoes

d = ECB overall
e = ECB chain
f = Cubicle ground connection



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