MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Selected official pages for procurement and maintenance review

PRODUCT BRAND

Siemens

PRODUCT MODEL

6ES7183-0AA01-0XA0

PROFIBUS DP Slave Interface. Source PDF pages: M1 pp. 181-182; M2 pp. 1,4,6-7,10,15,17. Adjacent model text on shared pages is outside this product reference.

OFFICIAL SOURCE

IK PI 2005 - PROFIBUS Technology Components: Interface modules; IK PI 2005; printed pp.5/181-5/182

Original Siemens documentation (third-party-hosted copy)

Siemens 1 August 1996; release V1.1; copyright 1997; M2 source pp. 1,4,6-7,10,15,17

Catalog product reference, not installation instructions. Includes architecture, technical data and exact ordering numbers. Actual firmware, host design and configuration require separate verification.

AMIKON PRODUCT SUPPORT

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Amikon Limited prepared this independent reference package. Selected manufacturer pages follow with their original content and pagination visible.

Application

The PROFIBUS DP interface modules make it easy to connect devices to PROFIBUS DP. They are based on the described ASICs from the Siemens AG. The interface modules can be used for a data transmission rate of up to 12 Mbit/s.

Various interface modules are available for different functional requirements and applications.

Interface modules for master:

- IM 180 to connect a field device to PROFIBUS DP in the form of a master
- IM 181 PC carrier board to adapt the IM 180 to the ISA bus of a PC

Interface modules for slaves:

- IM 182-1PC slave board to connect AT-compatible PCs as DP slaves
- IM 183-1 to connect a field device to the PROFIBUS DP as a slave
- IM 184 to connect a simple third-party device to the PROFIBUS DP as a slave

Design

IM 180 interface module

The IM 180 interface module consists primarily of an 80C165 microprocessor, an ASPC 2 ASIC, an OTP-EEPROM and RAM.

A dual port RAM interfaces the module to the host system.

IM 181-1 PC carrier board

The IM 181 -1 PC carrier board is used to accommodate the IM 180 if this is to be operated in a PC system with ISA bus.

Drivers for Windows NT and demo software are available as accessories to demonstrate incorporation of the IM 180/IM 181 -1 into the DOS environment.

IM 182-1 PC slave board

The single PC slave card (ISA bus) IM 182-1 is based on the ASIC SPC 3. It contains all physical bus components. A 9-pin Sub-D plug is used for connection to PROFIBUS DP. The firmware of the SPC 3 can be used in the PC as an accessory. The 1.5 KB RAM of the SPC 3 forms the interface to the host system. A driver for Windows NT is also available.

IM 183-1 interface module

The IM 183-1 interface module consists primarily of the SPC 3 ASIC, the 80C32 microprocessor, an OTP EEPROM as well as an RS 485 interface for connection to the PROFIBUS DP.

An additional RS 232 interface is located on the module.

IM 184 interface module

The IM 184 interface module consists primarily of the LSPM 2 ASIC, OTP EEPROM memory as well as an RS 485 interface for connection to the PROFIBUS DP.

The IM 184 can provide 32 input/output bit.

For further details, see the product brief "PROFIBUS Technology Components", Order No.: 6ZB5310-0CT01-0BA7.

Manuals for PROFIBUS DP interface modules are available for free in the Internet.

Additional information can be found in the Internet under:



http://www.ad.siemens.de/csi/dp

(German)

- Distributed I/Os
- Others
- Technology components, manuals

Additional information can be found in the Internet under:



http://www.ad.siemens.com/csi_e/dp

(English)

- Distributed I/O
- Others
- Development components, manuals

Interface modules

Technical specifications

PROFIBUS DP interface modules

Interface modules	IM 180	IM 181	IM 182-1	IM 183-1	IM 184
Area of application	Master applications	Carrier board for IM 180 interface module	Slave applications	Slave applications	Simple slave applications
Data transmission rate, max.	12 Mbit/s	-	12 Mbit/s	12 Mbit/s	12 Mbit/s
Protocols	PROFIBUS DP	-	PROFIBUS DP	PROFIBUS DP	PROFIBUS DP
ASIC	ASPC 2	-	SPC 3	SPC 3	LSPM 2
Microprocessor	80C165 (40 MHz)	-	Processor of the PC/PG	80C32 (20 MHz)	Not necessary
Firmware size	80 KB	-	4 to 24 KB (incl. test program)	4 to 24 KB (incl. test program)	Not necessary
RAM configuration	2 x 128 Kbyte	-	-	32 KB SRAM; 64 KB EPROM	-
Host interface	Dual port RAM	-	-	-	-
Permissible environmental temperature	0 to +70 °C	-	0 to + 60°C	0 to +70 °C	0 to +70 °C
Power supply	5 V DC	-	5 V DC	5 V DC	5 V DC
Power consumption, typ.	250 mA	-	250 mA	250 mA	150 mA
Board size in mm	100 x 100 mm	168 x 105 mm	168 x 105 mm	86 x 76 mm	85 x 64 mm

Ordering data

Ordering data	Order No.
SIMATIC S5/S7 IM 180 master module For PROFIBUS DP, max. 12 Mbit/s	**6ES7 180-0AA00-0XA0**
IM 181 PC carrier module for IM 180 max. 12 Mbit/s	**6ES7 181-0AA01-0XA0**
SIMATIC S5/S7 IM 182-1 PC slave board For PROFIBUS DP, max. 12 Mbit/s	**6ES7 182-0AA01-0XA0**
SIMATIC S5/S7 IM 183-1 slave module For PROFIBUS DP, max. 12 Mbit/s	**6ES7 183-0AA01-0XA0**
SIMATIC S5/S7 IM 184 slave module For PROFIBUS DP, max. 12 Mbit/s	**6ES7 184-0AA00-0XA0**
Accessories	
Demonstration software Demonstration of the supply to the DPR interface of the IM 180/IM 181 under MS-DOS	**6ES7 195-2AA00-0XA0**
Windows NT driver for IM 180 and IM 182	**6ES7 195-2AC00-0XA0**

SIMATIC NET

IM 183-1 PROFIBUS Interface Module

User Description Date Aug. 01ST, 96

Order No. 6ES7 183-0AA01-8BA0

Liability Exclusion
We have tested the contents of this document regarding agreement with the hardware and software described. Nevertheless, deviatations can't be excluded, and we are not guaranteeing complete agreement. The data in this document is checked periodically, however. Necessary corrections will be contained in subsequent versions. We gratefully accept suggestions for improvement.

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Subject to technical changes.

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1 Product Features

The IM 183-1 makes a customer-specific connection to a PROFIBUS DP network possible. The PROFIBUS interface is realized on the module through the SPC3, and the matching RS485 interface with isolation.
The basis is the user description of the ASIC used. This description is also relevant to the ASIC-specific data.

The board serves as hardware platform for firmware tests and customer demonstration, as well as as module in customer-specific systems.

Conditioned, above all, by the use of the ASIC SPC3, and the omission of the Dual Port RAM, there is no software compatibility with IM 318M. The connector pin assignment for RS232, RS485 and host-bus is largely retained. Likewise, the memory distribution for the program memory won't be changed. The memory distribution for the data memory, as well as the CS areas have to be adapted to the requirements of the SPC3.

The baudrate for RS485 is, in accordance with the ASIC used, up to 12 MBaud with SPC3.

The operating temperature range of the components used is 0º ... +70ºC.

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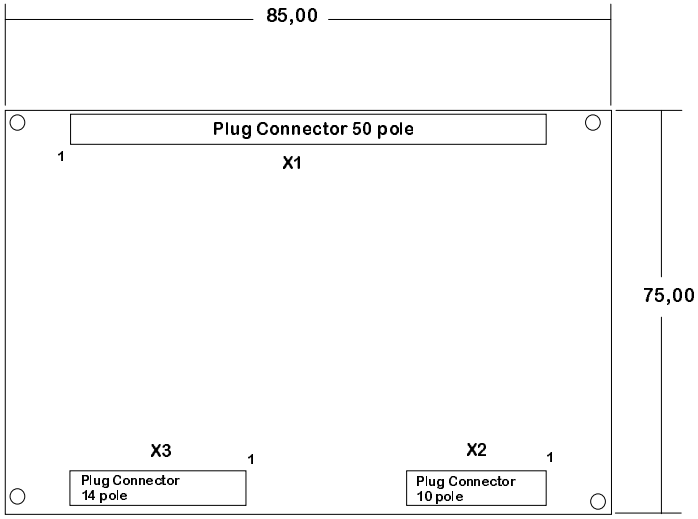
2 Mechanical Concept

The mechanical diagramatical representation of the module is shown in Figure 1.

The termination system consists of a 50-pole plug connector to the host bus, a 14-pole plug connector (stationary) for RS232, as well as a 10-pole plug connector (stationary) for RS485. These plug connectors are designed as connectors for connecting ribbon cables. A shield connection is not provided; the user has to lead it off directly at the 9-pole SUB-D connector.

The printed board is mounted on both sides with components (solder side only with SMD components).

For the EPROM, a 28-pole DIL socket is provided.



- Figure 1 -

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3.2 Function Description

The following functionality is realized on the module:

- Processor 80C32/20 MHz
- 32 KB SRAM
- 32 KB and 64 KB EPROM, can be switched with jumper
- Oscillator Block, 20 MHz for the clock supply of the processor
- Address Latch Register for A (7:0)
- CS Decoder for the upper address bits A (15:12)
- Watchdog and RESET are generated with MAX705 block. The watchdog time is permanently set. The supply voltage fed in via the host interface is monitored. The watchdog can be switched off with a jumper.
- ASIC SPC3 for realizing the PROFIBUS interface with a maximum baudrate of 12 MBaud. An oscillator block 48 MHz for clock supply is permanently assigned to the SPC3.
- The SPC3 is reset with software, as is the case for IM318M (Port P3.4)
- The RS485 interface is laid out isolated for 12 MBaud maximum. Fast, noise-free opto-couplers and drivers are used. The signals of this interface are applied to a 10-pole plug connector. For isolation, a second, isolated supply voltage +5V is to be supplied via the 50-pole host interface (generation on the customer application). It is protected against pole reversal with a diode, and is loaded with 100 mA maximum. A fuse is to be provided on the customer application. The PROFIBUS signals of the ASIC are not available at the host interface.
- For the RS232 interface, the internal UART of the 80C32 is used. The signals are being driven and are applied to a 14-pole plug connector. In addition, the UART signals are applied to the host interface. The RS232 driver can be disabled via the Port P3.5 (low level).
- The supply voltage +5V for the module is supplied via the host interface (50-pole plug connector). It is protected against pole reversal with a diode. An exchangeable fuse is to be provided on the customer application. The address-/data bus and relevant control signals, as well as the port bits of the 80C32 are applied parallel to the plug connector. Since these signals are not additionally driven, connection lines are to be kept extremely short, or are to be driven externally. The signals are terminate with pull-up resistors.

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4.2 Software Interfaces

4.2.1 Memory Distribution

When accessing the bus, the processor distinguishes physically between data- and program memory, determined by the signal XPSEN. A differentiation between data memory and I/O area is not supported. In the 80C32 mode, SPC3 themselves generate the CS signal from the upper address bits internally. The start address of the SPC3 is permanently implemented with 0000H. The start address of the SRAM is therefore placed on 8000H. The address bit AB12 is inverted at the input of the ASIC, so that the start address is actually on 1000H. From the view of the processor, the SPC3 occupies an address space of 1.5 Kbyte.

Program Memory:

Address Area	Memory Size
FFFFH	32k x 8
8000H	
7FFFH	32k x 8
0000H	

Variants:

- 32 kB EPROM, mirrored
  Because of the incomplete address coding, the processor will find the same memory content in the area 0000H to 7FFFH as in the area 8000 to FFFFH.
- 64 kB EPROM in the area 0000H to FFFFH.

Switching takes place on the board with jumper:
- 1-2 64 kByte
- 2-3 32 kByte

Data Memory and CS Signal:

Address Area	Memory Size	Function
FFFFH 8000H	32 k x 8	SRAM
7FFFH 4000H	16 k x 8	free
3FFFH 3000H	4 k x 8	XCS2 (I/O for Host Interface
2FFFH 2000H	4 k x 8	XCS1 (I/O for Host Interface
1FFFH 1600H 15FFH 1000H	4 k x 8 (1,5 k x 8)	ASIC-Area (Area for SPC3)
0FFFH 0000H	4 k x 8	free

The CS signals are generated for accesses to the data memory as well as the program memory. Therefore, they are only valid with the R/W signal.

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5 EMC Concept

The shield is connected externally in the application of the module (for example, on the casing). The RS485 interface is designed isolated.
In addition, the user has to take note that the ribbon cable for the bus connection is to be kept as short as possible. When arranging the wires, EMC is to be ensured.

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