MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Selected official pages for procurement and maintenance review

PRODUCT BRAND

Siemens

PRODUCT MODEL

6ES7184-0AA00-0XA0

Compact PROFIBUS Slave Interface. Source PDF pages: M1 pp. 181-182; M2 pp. 1,4,6-7,10,12-14. 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 18 July 1995; release V1.0; copyright 1996; M2 source pp. 1,4,6-7,10,12-14

Product-reference excerpts, not complete installation instructions. Exact hardware identity is bound by the catalog ordering table; the user-description number ending in -8BA0 identifies documentation. Host design and ASIC documentation remain necessary.

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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 184 PROFIBUS Interface Module

User Description Date July 18th, 1995

Order No. 6ES7 184-0AA00-8BA0

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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1 Product Features

The Interface Module IM 184 is a PROFIBUS DP slave module according to DIN E 19245 Part 3. To the customer, it offers the capability for bus connection of simple applications which can be implemented quickly and simply.

The bus connection is realized with ASIC LSPM2; the matching RS485 interface is on the module with isolation. The most important settings are lead to connectors, which makes it possible to operate the module at different settings.

The module is laid out for baudrates up to 12 MBaud, and it finds them autonomously.

The present description contains the technical data and the pin assignment for the IM 184. It is based on the user description LSPM2. It is also relevant to ASIC-specific data.

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2 Mechanical Concept

The interface module IM 184 provides simple connection capability to PROFIBUS DP. In addition to the ASIC LSPM2, the module in check card format also contains the entire, isolated RS485 interface, as well as LED displays for RUN, BUS-ERROR and DIAGNOSIS.

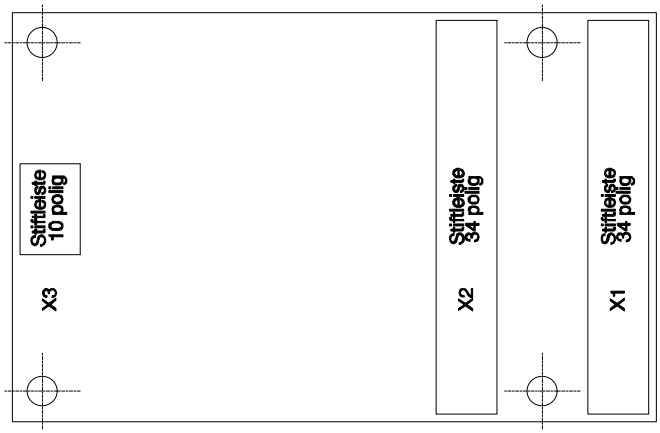
The mechanical diagram of the module is shown in Figure 1.

The size of the module is approx. 85 x 64 qmm. For mounting the module, 4 holes of 3.2mm are provided.

It is connected to the host with two 34-pole plug connectors, as well as with a 10-pole plug connector (stationary) for RS485. As an alternative, ribbon cables can be inserted here or a direct insertion (face to face) can be made. A shield terminal is not provided for; the user has to connect it directly at the 9-pole SUB-D connector.

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

The EEPROM is plugged into a DIP8 socket.



transl. of terms: **Stiftleiste** = plug connector}

- Figure 1 -

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3.2 Function Description

The following functionality is implemented on the module:

- For realizing the PROFIBUS interface with a maximum baudrate of 12 MBaud, an ASIC LSPM2 is used. An oscillator block 48 MHz for clock supply is permanently assigned to the LSPM2.
- The RESET is generated with a 7705 chip. The supply voltage applied via the host interface is monitored. At acceleration or undervoltage, RESET is being triggered. RESET can also be applied via the host connector.
- The RS485 interface is laid out isolated for 12 MBaud maximum. Fast, noise-free optocoplers and drivers are used. The signals of this interface are aplied to a 10-pole plug connector. For the isolation, a second, isolated supply voltage +5V is to be applied via a 34-pole connector of the host interface (generation on customer application). It is protected against pole reversal with a diode and is loaded with 200 mA maximum. A fuse is to be provided on the customer application. The PROFIBUS signals of the LSPM2 are not available at the host interface. The isolated supply voltage is also applied at the 10-pole connector.
- The supply voltage +5V for the module is also supplied via the host interface (2x34-pole plug connectors). It is protected against pole reversal with a diode. An exchangeable fuse is to be provided on the customer application.
- In addition, the ports A to E of the LSPM2 and the signal „Read/Write Consistenc“ are lead to the host interface. The ports A to D can be parameterized with jumpers.
- For reading out the PNO Identnumber and the station address, a serial EEPROM (64 x 16 bits) can be inserted into a socket. In addition, the serial interface is applied to the host interface, so that the user can externally connect a shift register or an EEPROM. The selection is made with a jumper. The base on the module IM 184 remains free. When connecting an EEPROM, it already has to contain the PNO number (preprogramming required). The signals of the serial interface are terminated on the module with pull-down resistors.
- The operating modes “diagnostic error” and “normal operation” of the LSPM2, as well as “Run” (RESET not active) are displayed with LEDs. These signals are also applied to the host connector so that LEDs can be triggered with series resistor externally. The driver capability is 10mA maximum.
- A total of 6 jumpers is provided. They are for assigning parameters to the ports (5 jumpers) and for selecting EEPROM/shift register (1 jumper). In addition, the signals “EEPROM/shift register”, “address change allowed”, as well as 5 lines for port parameterization are applied to the host interface, so that the user can specify the setting on his own module without having to insert jumpers on the IM184. They remain open in that case.
- Standards for wiring the IN/OUT signals of the LSPM2 which are directly applied to the host interface are to be found in the specifications or the user description for the LSPM2.
- The diagnostic port E is wired with pullups; so it won't generate a diagnosis if it is not connected.

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Type: Plug Connector 34-pole
Pos.-Nr.: X2

PIN	Signal	Type	PIN	Signal	Type
1	PD0	I/O	2	PD1	I/O
3	PD2	I/O	4	PD3	I/O
5	PD4	I/O	6	PD5	I/O
7	PD6	I/O	8	PD7	I/O
9	VCC	I	10	VCC	I
11	INTERCLK	O	12	INTERCS	O
13	GND	I	14	GND	I
15	INTERDI	I	16	INTERDOD	O
17	VCC	I	18	VCC	I
19	RWCONS	O	20	XRESET	I
21	XDIAERROR	O	22	XNORMOPER	O
23	RUN	O	24	XSREE	I
25	TYP0	I	26	TYP1	I
27	TYP2	I	28	TYP3	I
29	TYP4	I	30	ACA	I
31	VCC1	I	32	VCC1	I
33	GND1	I	34	GND1	I

Signal Name	Meaning
PD(7:0)	Data Port D
INTERCLK	Serial Interface Clock, clock sequences for EEPROM or SREG
INTERCS	Serial Interface Chip Select, selection of EEPROM or SREG
INTERDI	Serial Interface Data Input, input data from EEPROM or SREG
INTRDOD	Serial Interface Data Outload, data output channel to EEPROM or Parallel Load Signal for the SREG
XRESET	Reset Input of Host Interface, low-active, places the LSPM2 in a defined initial condition
RWCONS	Read/Write Consistency
XDIAERROR	Diagnostic Error, is set for external diagnosis, triggers a red LED (H3), low active
XNORMOPER	Normal Operation, operating mode display, triggers red LED (H2) if there is a bus error Low: parameter assignment message DA=TS was received (not in the case of broadcast messages), LED OFF High: after RESET and after each expiration of the watchdog timer of the LSPM2, LED ON
RUN	process is running, is triggering green LED (H1)
XSREE	Selection Shift Register or EEPROM High: EEPROM Low: SREG
TYP(4:0)	Type setting of ports A to D of the LSPM2 regarding quantity, I/O, with/without consistency, expanded diagnosis
ACA	Address Change Allowed, the EEPROM content can also be overwritten in the LSPM2 if No_Add_Chg_Bit is set
VCC	+5V, supply voltage for control electronics (LSPM2)
GND	Reference potential of control electronics (LSPM2)
VCC1	+5V, isolated supply voltage for RS485 interface
GND1	Reference potential of the isolated supply voltage for RS485 interface

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4.2 Connector BUS Interface (RS485)

Type: Plug Connector 10-pole
Pos. Nr.: X3

PIN	Signal	Type	PIN	Signal	Type
1	-	-	2	VCC1	O
3	-	-	4	-	-
5	RS485_B	I/O	6	RS485_A	I/O
7	RS485_RTS	O	8	-	-
9	GND1	O	10	-	-

Signal Name	Meaning
RS485_A, RS485_B, RS485_RTS	Differential signals A,B and transmit request (TTL)
VCC1, GND1	isolated supply voltage

The supply voltage VCC1 may be used for supplying external devices. The maximum load is 100 mA.
The plug connector is designed for connecting a ribbon cable to a 9-pole SUB-D socket.

4.3 Jumper Settings

Pos.-Nr.: X20

Pos. Nr.	Signal	Meaning if jumper is inserted
1-2	XSREE	Selection Shift Register, low; open: EEPROM, high
3-4	TYP0	Type Setting of the Ports A to D of the LSPM2, see I/O Interface (LSPM2 description)
5-6	TYP1	Type Setting of the Ports A to D of the LSPM2, see I/O Interface (LSPM2 description)
7-8	TYP2	Type Setting of the Ports A to D of the LSPM2, see I/O Interface (LSPM2 description)
9-10	TYP3	Type Setting of the Ports A to D of the LSPM2, see I/O Interface (LSPM2 description)
11-12	TYP4	Type Setting of the Ports A to D of the LSPM2, see I/O Interface (LSPM2 description)

These pins are wired with pull-upresistors and can be set to „0“ by pluging a jumper.

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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 cables, EMC is to be ensured.

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