

13.4 IF 962-COM Interface Submodule for M7-300/400; (6ES7962-3AA00-0AC0)

Characteristics

The IF 962-COM interface submodule is used to connect devices with a serial port. It contains two serial AT-compatible ports (COMa, COMb).

Up to four COM ports can be accessed on AT I/O addresses in one programmable module using standard PC drivers. This also includes COM ports located on the programmable module itself and those located on expansions. The IF 962-LPT interface submodules can be operated in the AT-compatible address area and, if special drivers are used, also in the M7-300/400-reserved address area.

Connector X1 corresponds to the COMa port, connector X2 to the COMb port. The signal levels are defined in accordance with RS232C.

The cable length on the IF 962-COM interface submodule should not exceed approximately 10 m.

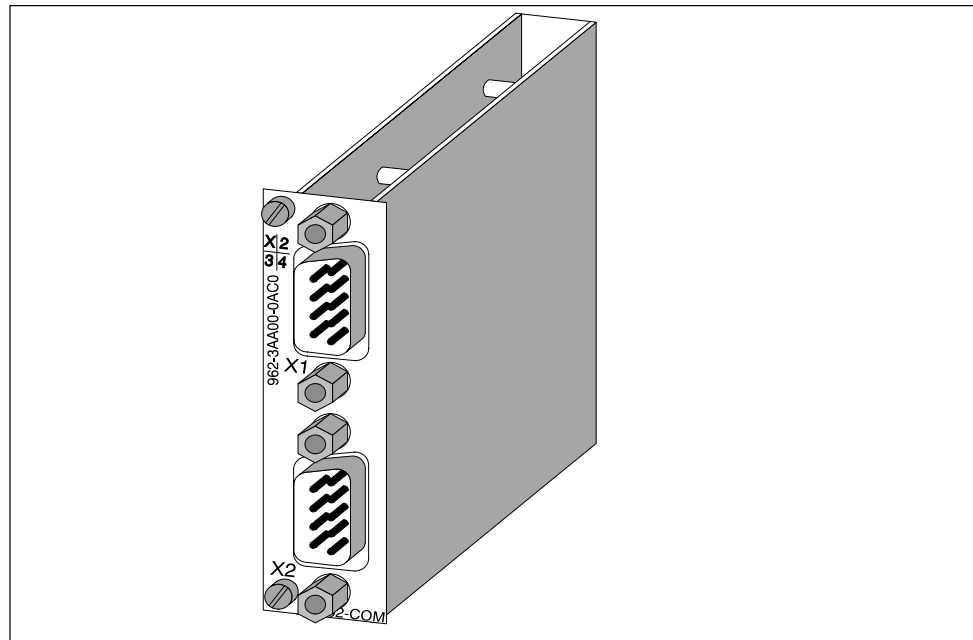


Figure 13-3 IF 962-COM Interface Submodule

What Can be Connected to the Ports?

All devices with an RS232 interface such as:

Printers, modems, terminals, etc.

13.4.1 Pin Assignments

Socket X1, X2 COMa, COMb

Table 13-8 Socket X1, X2 IF 962-COM (9-Pin Sub D Plug Connector)

1	DCD	Receive signal level	Input
2	RxD	Receive data	Input
3	TxD	Transmitted data	Output
4	DTR	Data terminal ready	Output
5	Signal GND	Operational ground (GND _{int})	–
6	DSR	Data set ready	Input
7	RTS	Request to send	Output
8	CTS	Clear to send	Input
9	RI	Ring indicator (incoming call)	Input

Note

Operational ground (signal GND) at the COMa or COMb ports is referenced to internal ground.

Suitable measures may be required on the process side to avoid ground loops.

13.4.2 Addressing and Interrupts

Addressing

The IF 962-COM interface submodule can be addressed in the following two ways:

- In the AT-compatible I/O address area
- In the M7-300/400-reserved I/O address area (from C000_H).

Addressing in the AT-Compatible I/O Address Area

The COM ports can be operated in the AT-compatible I/O address area. The settings are made in the BIOS Setup. You can see the addresses that can be set in the BIOS Setup from the following table.

Table 13-9 Addressing the COM Ports in the AT-Compatible Address Area

Name	I/O Address	Remarks
*)	03F8 _H to 03FF _H	Automatically configured by the BIOS and can be set in the BIOS setup.
	02F8 _H to 02FF _H	
	03E8 _H to 03EF _H	
	02E8 _H to 02EF _H	
—	0380 _H to 0387 _H	
—	0280 _H to 0287 _H	
*) The BIOS searches the addresses in the order 03F8 _H , 02F8 _H , 03E8 _H and 02E8 _H and assigns COM1, COM2, COM3 and COM4 in ascending order. There is no fixed assignment of the I/O addresses to COMx. For example, if only one COM port is detected at address 12E8 _H , this will be COM1.		

Example of Setting an AT-Compatible I/O Address

In the following example, the I/O addresses 03F8_H (COM1) for COMa and 02F8_H (COM2) for COMb are to be set in the BIOS setup. Proceed as follows to do this:

1. Select the "IF Modules" page in the BIOS setup.
2. Enter the submodule receptacle number of the interface submodule in "Select Module #".
3. Enter the offset address for the configuration register of the interface submodule "00_H" at "Config.Index".
4. Enter "36_H" at "Value". This value is then written into the configuration register (see also Table 13-13).
5. Press the OK button.

Addressing in the M7-300/400-Reserved I/O Address Area

Regardless of possible addresses in the AT-compatible I/O address area, the IF 962-COM interface submodule can be addressed in this reserved address area.

The base address depends on the interface submodule slot in the expansion module or the programmable module. See the descriptions “M7-300 Expansions”, “M7-400 Expansions” or the description of the M7-400 programmable modules for the slot-dependent base address of the interface submodule.

The I/O address is the sum of the base address and the offset address.

The registers and their meanings and the offset addresses are described below.

Table 13-10 Offset Address Assignments for the IF 962-COM Interface Submodule

Offset Address	Function	Remarks
00 _H	Configuration register	Read/write
08 _H - 0F _H	UART 16C552 parallel port	Unused
10 _H - 17 _H	COMa UART 16C552	Read/write
18 _H - 1F _H	COMb UART 16C552	Read/write

Configuration Register

The BIOS setup defines in which AT-compatible I/O address area the COM interface is to be operated or whether it is only to be operated in the reserved I/O address area and this information is stored in the configuration register. Tables 13-11 to 13-13 give you an overview of the possible settings in the configuration register.

Table 13-11 Offset Address for the Configuration Register (IF 962-COM)

Offset Address	Function	Remarks
00 _H	Configuration register	Read/write

Table 13-12 Meaning of the Data Bits in the Configuration Register (IF 962-COM)

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Addressing type COM b			0	Addressing type COM a		

Table 13-13 Meaning of the Addressing Type Bits in the Configuration Register (IF 962-COM)

I/O Address	Addressing Type COM b/a		
	Bit 6/2	Bit 5/1	Bit 4/0
Addressing only possible in the reserved I/O address area (from C000 _H) (default)	0	0	0
280 _H	0	0	1
2E8 _H	0	1	0
2F8 _H	0	1	1
380 _H	1	0	0
3E8 _H	1	0	1
3F8 _H	1	1	0
0	1	1	1

Note

The AT-compatible I/O address can only be set **once** for each COM port of an automation computer (including those permanently installed in a programmable module).

COM Ports

The COM ports (COMa and COMb) of the UART 16C552 can be addressed from offset addresses 10_H or 18_H in accordance with component specification 16C552.

Data Formats

The following data formats can be set in the IF 962-COM interface submodule:

Data bits: 5 bits, 6 bits, 7 bits, 8 bits

Parity: Even, odd, disable

Stop bit: 1 bit, 1.5 bits, 2 bits

Transmission Speed

The following transmission speeds (transmission rates) can be set in the IF962-COM interface submodule:

AT-compatible transmission speeds and transmission speeds up to 115.2 Kbps.

Note

Please note that a safe level of transmission speed depends on factors such as cable length, cable type, and environmental interference.

Interrupt Request

The interface submodule supplies an interrupt request (IRQa and IRQb) for each serial port.

You can define the assignment of the interrupt requests IRQa and IRQb to the appropriate processor interrupt requests in the BIOS Setup.

Table 13-14 Interrupt Assignments of the IF 962-COM Interface Submodule

Interrupt Source of the Interface Submodule		ISA Interrupt
COM a	IRQ a	Can be set in the BIOS setup
COM b	IRQ b	

Default settings in the BIOS are: IRQ 4 for COM1 and IRQ3 for COM2.

Submodule ID

The IF 962-COM interface submodule has the submodule ID **41_H**.

13.4.3 Technical Specifications

Technical Specifications

The IF 962-COM interface submodule receives its supply voltage from the M7-400 programmable modules or from the M7-300/400 expansion modules. The current consumption given in the technical specifications is the consumption required for dimensioning the power supply, that is, the current consumption is referenced to 24 V in the M7-300 and to 5 V in the M7-400.

6ES7962-3AA00-0AC0	
Technical Specifications	
Supply voltage	Supplied from the M7-400 programmable modules or from the M7-300/400 expansion modules
Current consumption in the M7-300 (for dimensioning the 24 V current supply)	0.04 A
Current consumption in the M7-400 (for dimensioning the 5 V current supply)	0.1 A
Submodule ID	41 _H
Power losses	0.5 W
Dimensions	
W x H x D (mm)	18.2 x 67 x 97
Weight	0.080 kg