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Attention!
Product discontinuation
due to EC RoHS directive
More info: www.addi-data.com



Technical description

ADDICOM PA 7300

1-port serial interface

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- if the board has not been used for the intended purpose
- improper installation, operation and maintenance of the board
- if the board has been operated with defective safety devices or with not appropriate or nonfunctioning safety equipment
- nonobservance of the instructions concerning: transport, storage, inserting the board, use, limit values, maintenance, device drivers
- altering the board at the user's own initiative
- altering the source files at the user's own initiative
- not checking properly the parts which are subject to wear
- disasters caused by the intrusion of foreign bodies and by influence beyond the user's control.

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- this software can only be used for configuring ADDI-DATA boards.
- copying the software is forbidden (except for archiving/ saving data and for replacing defective data carriers)
- deassembling, decompiling, decoding and reverse engineering of the software are forbidden.
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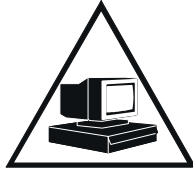
The original version of this manual is in German. You can obtain it on request.

WARNING

In case of wrong uses and if the board is not used for the purpose it is intended for:



people may be injured



the board, PC and peripheral may be destroyed



the environment may be polluted

★★★ Protect yourself, the others and the environment ★★★

- **Do read the safety leaflet!**

If this leaflet is not with the documentation, please contact us and ask for it.

- **Observe the instructions of the manual!**

Make sure that you do not forget or skip any step. We are not liable for damages resulting from a wrong use of the board.

- **Symbols used**



WARNING!

It designates a possibly dangerous situation.

If the instructions are ignored **the board, PC and/or peripheral may be damaged.**



IMPORTANT!

designates hints and other useful information.

- **Any question?**

Our technical support is at your disposal



Declaration of Conformity

This declaration is valid for the following product:

ADDICOM PA 7300
1-port serial interface with/without galvanic separation
plug & play, modular structure through SI modules

It is made by

ADDI-DATA GmbH
Meß- und Steuerungstechnik
Dieselstraße 3
D-77833 Ottersweier

in sole responsibility and is valid on the understanding that the product is competently installed, used and maintained, according to the respective security regulations as well as to the manufacturer's instructions regarding its intended use.

This declaration states that the product complies with following EC Directives:

- **EWGRL 336/89 of 3.05.1989**
- **EWGRL 31/92 of 28.04.1992**
- **EWGRL 68/93 of 22.07.1993**

This declaration is valid for all units manufactured according to the manufacturing references listed in the form TD7300.020.

Following norms have been applied to test the product regarding electromagnetic compatibility:

- **EN55011/03.91**
- **EN55022/08.94**
- **EN50082-2/03.95**

We point out that

- the conformity and herewith the permission of use expire if the user alters the product without consulting with the manufacturer.
- non-skilled users are to have the operational area of the product and the requirements resulting from it checked prior to putting into operation.
- by using this product in appliances coming under the EC EMC Directive, the user is to make sure they are conform to its regulations prior to putting into operation.
- by using this product in machines / installations coming under the EU Machine Directive, the user is to make sure they are conform to its regulations prior to putting into operation.

A copy of the EMC tests is at your disposal on request.

15 October 1995

Legally valid signature of the manufacturer

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1 INTENDED PURPOSE OF THE BOARD

The board **PA 7300** provides the personal computer (PC) with an asynchronous serial interface for the communication with external devices.

The operating mode depends on the version of the basic board PA7300 and on the SI modules installed.

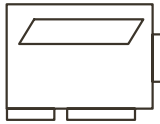
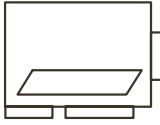
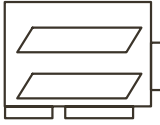
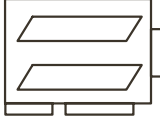
The operating modes have different features regarding electromagnetic compatibility.

The board is to be used in a free PC ISA slot. The PC is to comply with the EU directive 89/336/EEG and the specifications for EMC protection.

Products complying with these specifications bear the  mark.

The board supports serial communication through an asynchronous serial port. The following table shows the recommended combinations of the basic board PA7300 with the following SI modules:

Fig. 1-1: Combination of the basic board with SI modules

PA7300	Combination of the basic board with modules
	PM232 or PM232-G
	Either PM422 or PM422-G PM485 or PM485-G PMTTY
	PM232 + either PM422 or PM485
	PM232-G + either PM422-G, PM485-G PMTTY

The intended purpose of the board depends on the operating mode used.

Table 1-1: Intended purpose depending on the operating mode

Module ¹	Operating mode	Port configuration	Distance between transmitter and receiver ²	Environment
PM232	RS232	modem control signals connected on the board or externally to the connector	30 m	industry
PM232-G	RS232	modem control signals connected on the board or externally to the connector	30 m	noisy industrial environment
PMTTY	20 mA Current loop	current flows in rest state	1 km	very noisy industrial environment
PM422	RS422		1.2 km	noisy industrial environment
PM422-G	RS422		1.2 km	very noisy industrial environment
PM 485	RS485	automatic transmitter control	200 m	industry
		transmitter control DTR, RTS or databit	1.2 km	noisy industrial environment
PM485-G	RS485	automatic transmitter control	200 m	industry
		transmitter control DTR, RTS or databit	1.2 km	very noisy industrial environment

Connection to the peripheral

with a shielded cable, twisted in pairs.

Connect the peripheral cable so that the differential lines described in the connector pin assignment with "+" and "-" are twisted in pairs.

Operating mode RS232: the signal lines are to be twisted in pairs with GND.

The housing of the peripheral connector

- is to be firmly screwed together with the shield of the cable
- is to assure a low-resistance connection ($< 100 \text{ m}\Omega$) between the shield and the housing of the PC.

The shield of the cable is to be earthed on both ends.

The use of the board according to its intended purpose includes observing all advices given in this manual and in the safety leaflet. Uses beyond these specifications are not allowed. The manufacturer is not liable for any damages which would result from the non-observance of this clause.

¹ **PMxxx-G:** ex. PM232-G means module for the mode RS 232 with option G (galvanic isolation)

PMTTY means module for the mode 20 mA current loop. It is isolated as a standard

² The max. lengths are for standard interface cables

1.1 Limits of use

The use of the board in a PC could change the PC features regarding noise emission and immunity. Increased noise emission or decreased noise immunity could result in the system not being conform anymore.

If the basic board PA7300 is used with galvanically separated SI modules, then the creeping distance of 3.2 mm to the RS232 peripheral lines which are not galvanically separated is not ensured anymore.

Our boards are not to be used for securing emergency stop functions.

The emergency stop functions are to be secured separately.
This securing must not be influenced by the board or the PC.

Make sure that the board remains in the protective blister pack **until it is used**.

Do not remove or alter the identification numbers of the board.
If you do, the guarantee expires.

2 USER

2.1 Qualification

Only persons trained in electronics are entitled to perform the following tasks:

- Installation,
- putting into operation,
- use,
- maintenance.

2.2 Personal protection

Consider the country-specific regulations about

- the prevention of accidents
- electrical and mechanical installations
- radio interference suppression.

3 HANDLING THE BOARD

Fig. 3-1: Wrong handling

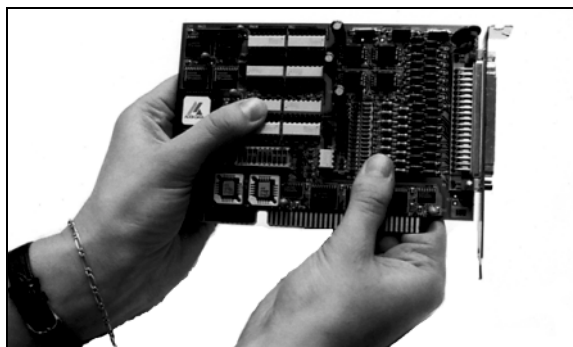
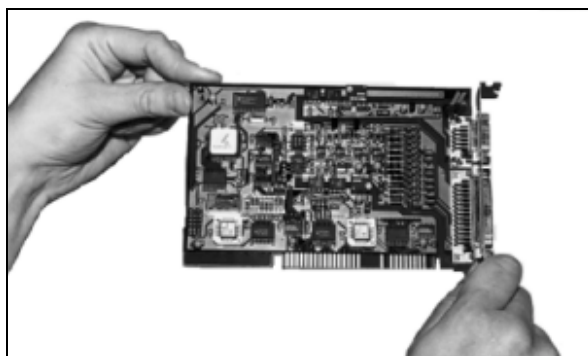


Fig. 3-2: Correct handling



4 TECHNICAL DATA

4.1 Electromagnetic compatibility (EMC)

The board has been subjected to EMC tests in an accredited laboratory in accordance with the norms EN50082-2, EN55011, EN55022.

The board complies with the limit values set by the norm EN50082-2 as follows:

	<u>True value</u>	<u>Set value</u>
ESD	4 kV	4 kV
Fields	10 V/m	10 V/m
Burst	4 kV	2 kV
Conducted radio interferences	10 V	10 V



WARNING!

The EMC tests have been carried out in a specific appliance configuration. We guarantee these limit values **only** in this configuration.

Consider the following aspects:

- Use properly shielded lines
- your test program must be able to detect operation errors.
- **your system must be set up** so that you can find out what caused errors.

4.2 Physical set-up of the board

The board is assembled on a 2-layer printed circuit card.

Approximate card dimensions
(with components)
with SI modules

Length: 125 mm
Max. height: 18 mm
Breadth: 76 mm

Weight:

Max. 108 g

Installation in:

AT slot

Connection to the peripheral:

25-pin SUB-D male connector

4.3 Limit values

Operating temperature: 0 to 60°C
Storage temperature: -25 to 70°C
Relative humidity: 30% to 99% non condensing

Minimum PC requirements:

- operating system: MS DOS 3.3 or >
Windows 3.1
- bus speed: 8 MHz

Energy requirements:

- operating voltage of the PC: 5V ± 5%
- current consumption in mA(without load): typ. See table ± 10%

	PA7300
+ 5 V from PC	63 mA ^❶

❶ Add to this data the current consumption of the used modules according to following table.

	PMxxx ¹	PMxxx-G
RS232	21 mA	48 mA
RS422	5 mA	42 mA
RS485	5 mA	53,5 mA
20mA	51 mA	-

¹ Module **PMTTY (20 mA)** is isolated as a standard.

PM232	CCITT recommendation.....	V.24
	US norm EIA	RS232
	max. transfer rate	112 kBd
PM232-G	CCITT recommendation.....	V.24
	US norm EIA	RS232
	max. transfer rate	19200 Bd
	Creeping distance	3.2 mm
	Test voltage.....	1000 VAC
PM422, PM485	CCITT recommendation.....	V.11
	US norm EIA	RS422, RS485
	Transil diodes:	
	Absorption power 1ms.....	400 W
	Breakdown voltage	+/- 6,5 V
	max. transfer rate	112 kBd
	max. transfer rate on request ❶	1 MBd
	Short circuit protection	PTC
PM422-G, PM485-G	CCITT recommendation.....	V.11
	US norm EIA	RS422, RS485
	Transil diodes	
	Absorption power 1 ms.....	400 W
	Breakdown voltage	± 6,5 V
	max. transfer rate	112 kBd
	max. transfer rate on request ❶	1 MBd
	Short circuit protection	PTC
	Creeping distance	3.2 mm
	Test voltage.....	1000 VAC

❶ The standard basic board has a transfer rate of 112 kBd. If you wish to transmit at 1MBaud, then the basic board has to be configured again by our services.

1MBd configuration: Please consider that the divider factors for programming the transfer rate do not comply with the PC standard anymore. The 1M Bd transfer rate can only be programmed with the device drivers delivered with the board.

RS 485: transfer at 1 MBaud only works when the transmitter is controlled through DTR, RTS or data bit.

PMTTY	20mA Current Loop	
	max. transfer rate	19200 Bd
	Transil diodes:	
	Absorption power 1ms.....	300 W
	Breakdown voltage	+/- 26 V
	Creeping distance	3.2 mm
	Test voltage.....	1000 VAC

5 INSTALLATION

i**IMPORTANT!**

If you want to install simultaneously **several** ADDI-DATA Plug & Play boards, consider the following procedure.

- **Install and configure** the boards one after the other.
You will thus avoid configuration errors.
1. Switch off the PC
 2. Install the **first** board
 3. Start the PC
 4. Install the software (once is enough)
 5. Configure the board

 6. Switch off the PC
 7. Install the **second** board
 8. Start the PC
 9. Configure the board

etc

You will find additional information to these different steps in the sections 5.1 to 5.4.

i**IMPORTANT!**

You have installed already **one or more** ADDI-DATA Plug & Play boards in your PC, and you wish to install **an additional** board?

Proceed as if you wished to install one single board.

5.1 Inserting the board

i**IMPORTANT!**

Do observe the *safety instructions*.

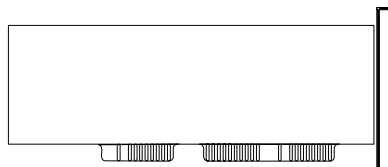
5.1.1 Opening the PC




- Switch off your PC and all the units connected to the PC.
- Pull the PC's mains plug from the socket.
 - Open your PC as described in the manual of the PC manufacturer.

5.1.2 Selecting a free slot

Two types of ISA slots are available: XT and AT.

Fig. 5-1: Types of slots



AT =  + 
XT = 

If necessary, the board can also be used in EISA slots under certain conditions.

See in the PC manual which types of slots are free.

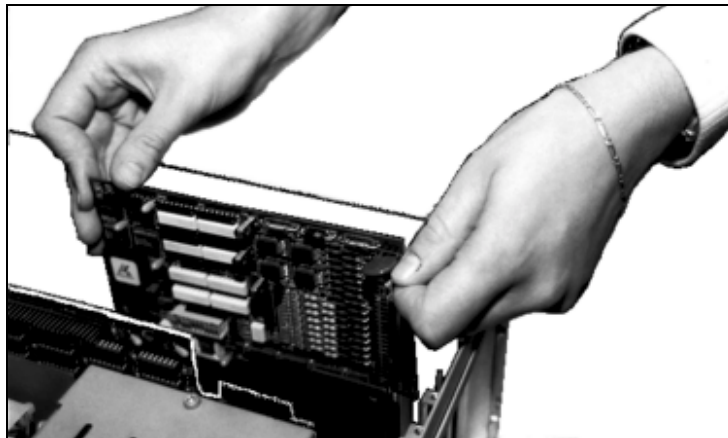
1. **Decide** in which type of slot to insert the board.
2. **Remove the back cover of the selected slot** according to the instructions of the PC manufacturer. Keep the back cover. You will need it if you remove the board.
3. **Discharge yourself from electrostatic charges.**
4. **Take the board out of its protective blister pack.**

Fig. 5-2: Opening the protective blister pack

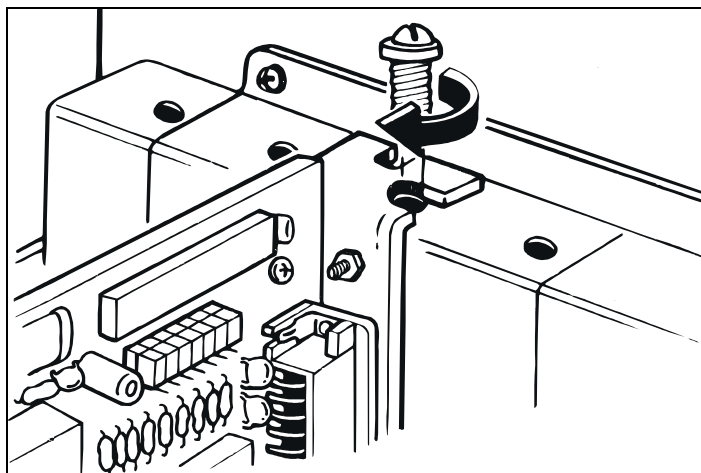


5.1.3 Plugging the board into the slot

- **Discharge yourself from electrostatic charges.**
- **Insert the board vertically into the chosen slot.**

Fig. 5-3: Inserting the board

- **Fasten the board** to the rear of the PC housing with the screw which was fixed on the back cover.

Fig. 5-4: Fastening the board at the back cover

- **Tighten all the loosen screws.**

5.1.4 Closing the PC

- **Close your PC** as described in the manual of the PC manufacturer.

5.2 Installing the software

The board is supplied with a CD-ROM.

The CD contains:

- ADDIREG for Windows NT 4.0 and Windows 95,
You can also download the ADDIREG program from Internet.
- Standard software for the ADDI-DATA boards:
 - 16-bit for MS-DOS and Windows 3.11
 - 32-bit for Windows NT/95.

5.2.1 Software installation under MS-DOS and Windows 3.11

- Copy the contents of PA7300\16bit on a diskette.
If several diskettes are to be used, the directory content is stored in several sub-directories (Disk1, Disk2, Disk3...).
- Insert the (first) diskette into a driver and change to this drive.
- Enter <INSTALL>.

The installation program gives you further instructions.

5.2.2 Software installation under Windows NT / 95

- Select the directory PA7300\32bit\Disk1.
- Start the setup program "setup.exe" (double click)
- Select one of the 3 parameters
 - 1- typical
 - 2- compact
 - 3- custom

Proceed as indicated on the screen and read attentively the "Software License" and "Readme".

In "custom", you can select your operating system.

The installation program gives you further instructions.

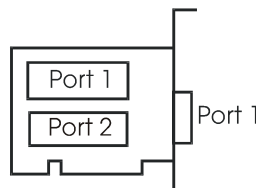
5.3 Configuring the board with ADDISET

5.3.1 Load ADDISET

In the directory ADDISET, type <ADDISET>.

The parametering program for the board **PA 7300** is loaded.

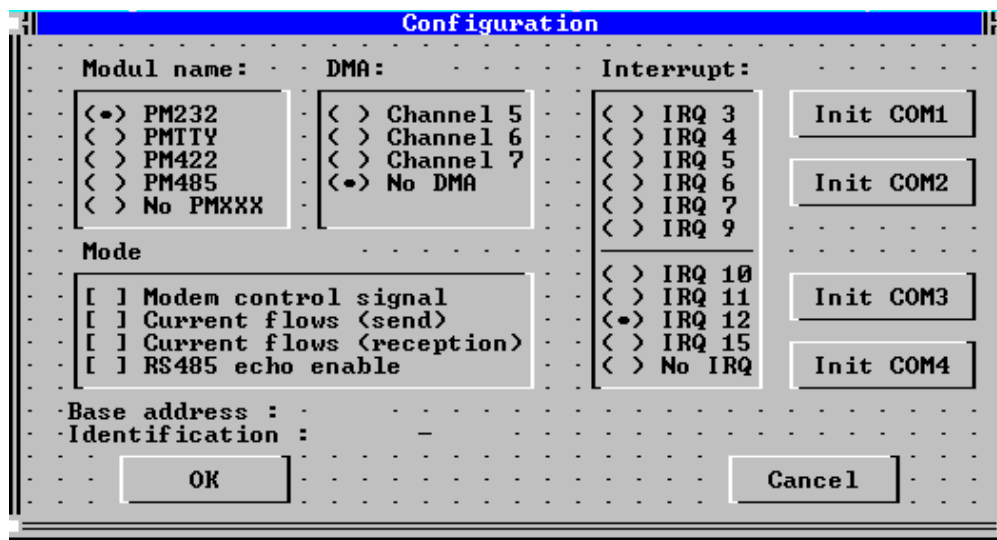
ADDISET lists automatically all the plug & play ADDI-DATA boards which are plugged in your PC. They appear in the board list in the order in which they have been detected by the chain of characters identifying the board. Port 1 is detected before Port 2.



Make sure that ADDISET has detected all the boards.

You move the cursor on the port you wish to configure. It is highlighted. Click on the button **Configuration** and the following dialog box appears:

Fig. 5-5: Dialog box Configuration



i

IMPORTANT!

When configuring a Plug & Play board make sure that no other Plug & Play board is active.

Network boards: a plug & play network board should not be coupled to a network, when an ADDI-DATA plug & play board is being configured. This may cause the PC being unstable.

5.3.2 Configuration

Configuring the base address and the interrupt line

Select a free base address and if necessary a free interrupt line.

Configuring the ports at COM1, 2, 3 or 4

Klick on the wished button (**Init COM1-2-3 or -4**)

The related interrupt line and base address will be selected.

If the base address or the interrupt line is already used, the button will be disabled.

(The base address can only be detected for plug & play boards).

Configuring interface parameters

ADDISET recognizes automatically the operating mode with which the board is equipped. The operating mode is shown under **Module name** and **Mode** of the dialog box **Configuration** (see fig. 5-5).

You can not change the operating mode with ADDISET, since it depends exclusively on the chosen hardware (**Module name**).

Some operating modes allow various settings. You can change them in **Mode** as follows.

RS 232

Modem Control signals

Connect the modem control signals with "[X] Modem control signal ...", if they are not used for the communication with the peripheral.

RS 485

Echo

The setting "[X] RS 485 echo enable.." allows to monitor transmitted data.

20 mA current loop - rest state

Transmitter / receiver current in rest state on/off (current flows)

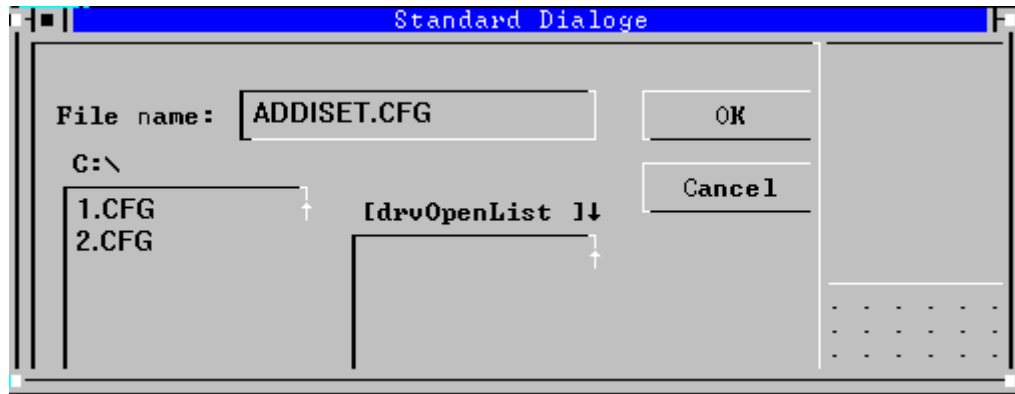
The communication only works if the transmitter and the peripheral receiver have switched the rest state current on or off.

We advise to switch the rest state current on with "[X] Current flows ...".

The system is then able to detect a line interruption.

5.3.3 Storing the configuration

You store the configuration with the option **Save** or **Save as** from the **File** Menu. You can create several configuration files



5.3.4 Define the "boot file" (initialization file)

You define the configuration file you have stored before as a "boot file" (command **Set Boot file** from Menu **Option**).

Thus when the PC will be rebooted:

- the configuration file will be called up automatically in the batch file AUTOEXEC.BAT.
- and the board will be configured in accordance with the configuration file which has been defined as the boot file.

You enter the path of the boot file with the command **Set environment**. In the left corner below appears the name of the boot file.

Batch file AUTOEXEC.BAT

You type ADDISET in file AUTOEXEC.BAT as follows:

```
ADDISET /I
```

With this call the board will be configured in accordance with the configuration file which has been defined as the boot file.

i

IMPORTANT!

File AUTOEXEC.BAT: Make sure to type the ADDISET command at the **beginning** of the batch file.

5.3.5 Modifying the configuration after having booted the PC

You call up ADDISET with the configuration file as a parameter :

```
ADDISET < file name> /I
```

Ex.

```
ADDISET 1.CFG /I
```

```
ADDISET 2.CFG /I
```

5.3.6 Quit ADDISET

Before quitting ADDISET, verify that the name of the wished boot file appears.

5.4 Testing the functions with ADDIMON

- Insert the board in your PC
- Connect the board to its communication partner or use a short circuit connector to make the board communicate with itself.
- Load ADDIMON
- Set the transfer parameters of the board
- Start transfer

5.4.1 Hotline protocol, faster technical support

- Insert the board in your PC
- Load ADDIMON
- If you have a problem
 - Fill out the hotline protocol
 - Print the hotline protocol and send it to our technical support
 - In this way, we can answer your questions even faster and with more accuracy

5.5 Board configuration with ADDIREG

The ADDIREG registration program is a 32-bit program for Windows NT 4.0/ 95. The user can register all hardware informations necessary to operate the ADDI-DATA PC boards.



IMPORTANT!

If you use one or several resources of the board, you cannot start the ADDIREG program.

5.5.1 Program description



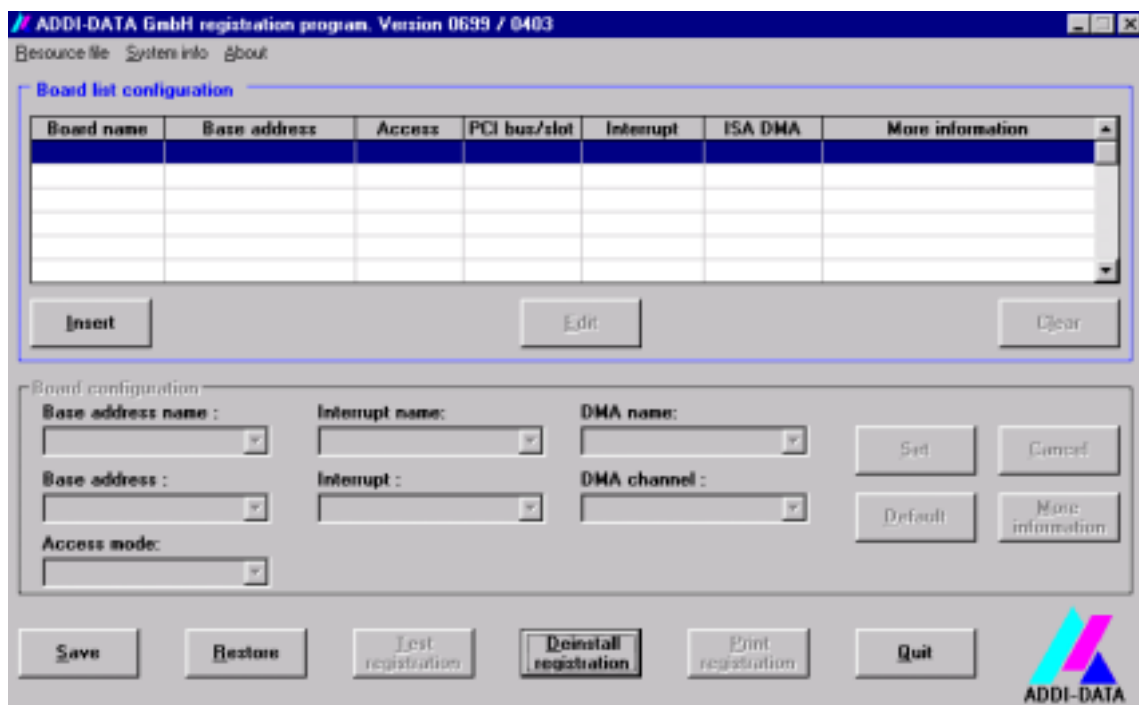
IMPORTANT!

Insert the ADDI-DATA boards to be registered before starting the ADDIREG program.

If the board is not inserted, the user cannot test the registration.

Once the program is called up, the following dialog box appears.

Fig. 5-6: ADDIREG registration program



Screen explanation:

Table:

The table in the middle lists the registered boards and their respective parameters.

Board name:

Names of the different registered boards (eg.: APCI-3120).

When you start the program for the first time, no board is registered in this table.

Base address:

Selected base address of the board.

i

IMPORTANT!

The base address selected with the ADDIREG program must correspond to the one set through DIP-switches.

Access:

Selection of the access mode for the ADDI-DATA digital boards.
Access in 8-bit or 16-bit.

PCI bus / slot:

Used PCI slot. If the board is no PCI board, the message "NO" is displayed.

Interrupt:

Used interrupt of the board. If the board uses no interrupt, the message "Not available" is displayed.

i

IMPORTANT!

The interrupt selected with the ADDIREG program must correspond to the one set through DIP-switches.

ISA DMA:

Indicates the selected DMA channel or "Not available" if the board uses no DMA.

More information:

Additional information like the identifier string (eg.: PCI1500-50) or the installed COM interfaces.

Text boxes:

Under the table you will find 6 text boxes in which you can change the parameters of the board.

Base address name:

When the board operates with several base addresses (One for port 1, one for port 2, etc.) you can select which base address is to be changed.

Base address:

In this box you can select the base addresses of your PC board. The free base addresses are listed. The used base addresses do not appear in this box.

Interrupt name:

When the board must support different interrupt lines (common or single interrupts), you can select them in this box.

Interrupt:

Selection of the interrupt number which the board uses.

DMA name:

When the board supports 2 DMA channels, you can select which DMA channel is to be changed.

DMA channel:

Selection of the used DMA channel.

Buttons:**Edit ¹:**

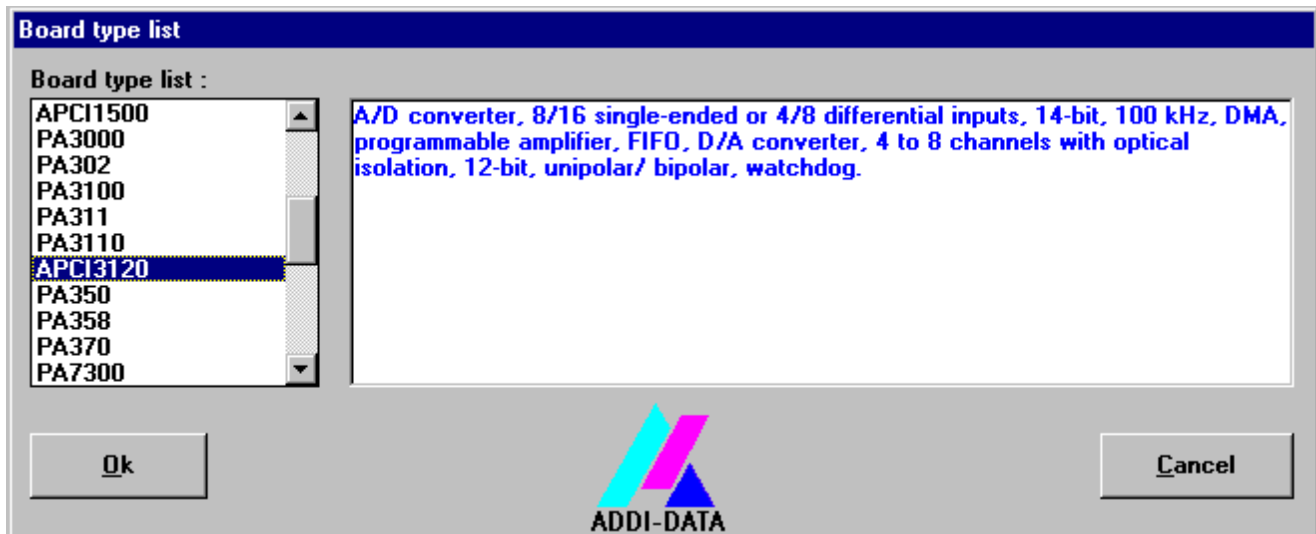
Selection of the highlighted board with the different parameters set in the text boxes. Click on "Edit" to activate the data or click twice on the selected board.

Insert:

When you want to insert a new board, click on "Insert". The following dialog window appears:

¹ "x": Keyboard shortcuts; e.g. "Alt + e" for Edit

Fig. 5-7: Configuring a new board



All boards you can registrate are listed on the left. Select the wished board. (The corresponding line is highlighted).

On the right you can read technical informations about the board(s).

Activate with "OK"; You come back to the former screen.

Clear:

You can delete the registration of a board. Select the board to be deleted and click on "Clear".

Set:

Sets the parametered board configuration. The configuration should be set before you save it.

Cancel:

Reactivates the former parameters of the saved configuration.

Default:

Sets the standard parameters of the board.

More information:

You can change the board specific parameters like the identifier string, the COM number, the operating mode of a communication board, etc...

If your board does not support these informations, you cannot activate this button.

Communication boards:

The following figure is the example of 4 serial interfaces.

Fig. 5-8: Communication board

The screenshot shows a dialog box titled "Serial-4 Information". It contains four configuration panels for serial ports 1 through 4. Each panel has a "PA7500" dropdown menu (set to COM1, COM2, COM3, and COM4 respectively), a "Modul selection" dropdown menu (set to PM232-G for ports 1 and 2, and PM485-G for ports 3 and 4), and four checkboxes: "Modem control signal", "Current flows (send)", "Current flows (reception)", and "RS485 echo enable". All checkboxes are currently unchecked. At the bottom of the dialog are "Ok" and "Cancel" buttons.

If you use the standard driver for Windows, you can select the COM number.

If you use the ADDI-DATA driver, you can select the identifier string for each module.

Several options like "Module selection" and the different parameters can only be activated if the functions are available.

Save:

Saves the parameters and registers the board.

Restore:

Reactivates the last saved parameters and registration.

Test registration:

Controls if there is a conflict between the board and other devices.

A message indicates the parameter which has generated the conflict. If there is no conflict, "OK" is displayed.

Deinstall registration:

Deinstalls the registrations of all board listed in the table.

Print registration:

Prints the registration parameter on your standard printer.

Quit:

Quits the ADDIREG program.

5.5.2 Registrating a new board

i

IMPORTANT!

To registrate a new board, you must have administrator rights. Only an administrator is allowed to registrate a new board or change a registration.

- Call up the ADDIREG program. The figure X-X is displayed on the screen. Click on "Insert". Select the wished board.
- Click on "OK". The default address, interrupt, and the other parameters are automatically set in the lower fields. The parameters are listed in the lower fields. If the parameters are not automatically set by the BIOS, you can change them. Click on the wished scroll function(s) and choose a new value. Activate your selection with a click.
- Once the wished configuration is set, click on "Set".
- Save the configuration with "Save".
- You can test if the registration is "OK".
This test controls if the registration is right and if the board is present. If the test has been successfully completed you can quit the ADDIREG program. The board is initialised with the set parameters and can now be operated.

In case the registration data is to be modified, it is necessary to boot your PC again. A message asks you to do so. When it is not necessary you can quit the ADDIREG program and directly begin with your application.

5.5.3 Changing the registration of a board

i

IMPORTANT!

To change the registration of a board, you must have administrator rights. Only an administrator is allowed to registrate a new board or change a registration.

- Call up the ADDIREG program. Select the board to be changed. The board parameters (Base address, DMA channel, ..) are listed in the lower fields.
- Click on the parameter(s) you want to set and open the scroll function(s).
- Select a new value. Activate it with a click. Repeat the operation for each parameter to be modified.
- Once the wished configuration is set, click on "Set".
- Save the configuration with "Save".
- You can test if the registration is "OK".
This test controls if the registration is right and if the board is present. If the test has been successfully completed you can quit the ADDIREG program. The board is initialised with the set parameters and can now be operated.

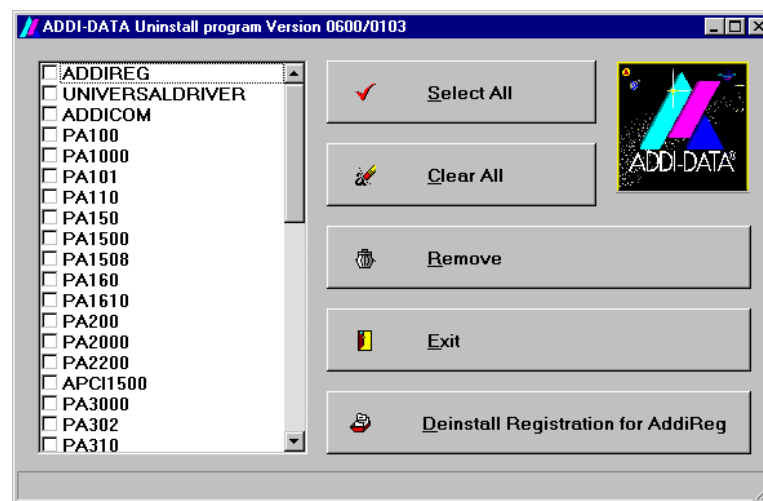
In case the registration data is to be modified, it is necessary to boot your PC again. A message asks you to do so. When it is not necessary you can quit the ADDIREG program and directly begin with your application.

5.5.4 Removing the ADDIREG program

The ADDI_UNINSTALL program is delivered on the CD-ROM.

- Start the ADDI-UNINSTALL program.

Fig. 5-9: The ADDI-UNINSTALL program



- Click on "Deinstall registration for AddiReg".
- Proceed as indicated until the complete removal of ADDIREG. The ADDIREG entries in the Windows registry are deleted.

5.6 Error analysis per Internet

Do not hesitate to visit us or e-mail your questions.
Our Internet page is accessed:

- per e-mail: info@addi-data.de or hotline@addi-data.de
- per Internet : <http://www.addi-data.de>. or <http://www.addi-data.com>

Free driver downloads

You can download the latest version of the device driver for the board PA 7300 from the Internet.

5.7 Operating systems with Plug & Play functions

Windows 95, Windows NT

Presetting after RESET	
RS 232	modem control signals external on connector
RS 485	without echo automatic transmitter control
TTY	with receiver and transmitter rest state current

6 CONNECTING THE PERIPHERAL

6.1 Connector pin assignment

Fig. 6-1: 25-pin SUB-D male connector

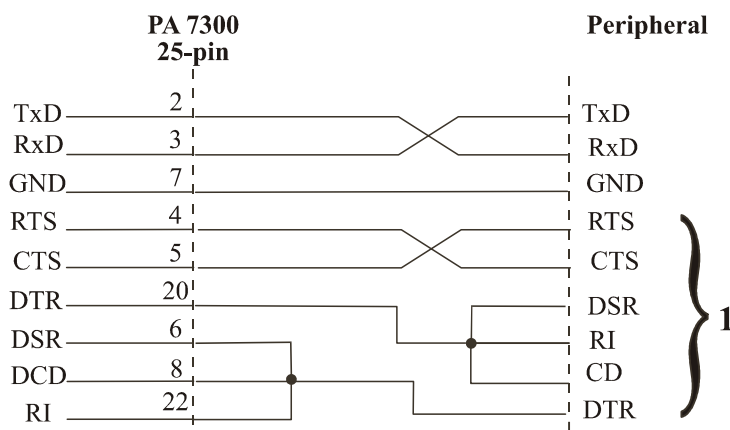
USER DESCRIPTION	NAME	PINS	NAME	USER DESCRIPTION
	RT	13		
	-Tx-CL-DATA	12	-RCV-CL-DATA	
	+Tx-CL-DATA	11	Tx+	
	GNDIsola	10	Tx-	
	Current Source Out 1	9	RI	
	DCD	8	not connected	
	SGND	7	DTR	
	DSR	6	not connected	
	CTS	5	+RCV-CL-DATA	
	RTS	4	Rx+/Tx+	
	RxD	3	Rx-/Tx-	
	TxD	2	Current Source Out 2	
	not connected	1	RT connection	

Pin	Signal	Bedeutung / Meaning	Mode
1			RS 232
2	TxD	Transmitted Data	
3	RxD	Received Data	
4	RTS	Request to Send	
5	CTS	Clear to Send	
6	DSR	Data Set Ready	
7	SGND	Signal Ground RS232	
8	DCD	Data Carrier Detect	
20	DTR	Data Terminal Ready	
22	RI	Ring Indicator	
24	Tx+	RS 422 Transmit	RS 422/485
23	Tx-	RS 422 Transmit	
17	Rx+ / Tx+	RS 422 Receive / RS 485 Transmit & Receive	
16	Rx- / Tx-	RS 422 Receive / RS 485 Transmit & Receive	
14	RT connection	100 or 120 Ω	
13	RT		
21	not connected		
19	not connected		
10	GNDISOLA		20mA Current Loop
11	+Tx-CL-DATA		
12	-Tx-CL-DATA		
18	+RCV-CL-DATA		
25	-RCV-CL-DATA		
9	Current Source Out 1		
15	Current Source Out 2		

6.2 Connection examples

6.2.1 Cabling RS232

Fig. 6-2: Cabling RS232

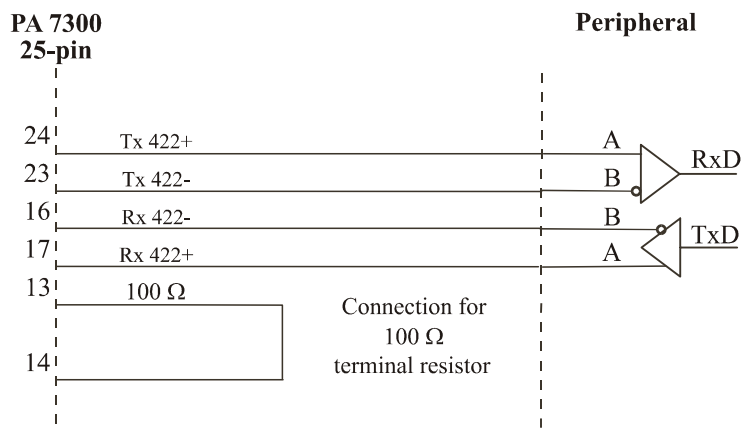


- 1 The connections are not necessary when the modem control signals are connected on the board (See chapter 5 *Installation*).

6.2.2 Cabling RS422

Terminal resistor: 100 Ω

Fig. 6-3: Cabling RS422



6.2.3 Cabling RS485

Terminal resistor: 120 Ω

Fig. 6-4: Cabling RS485

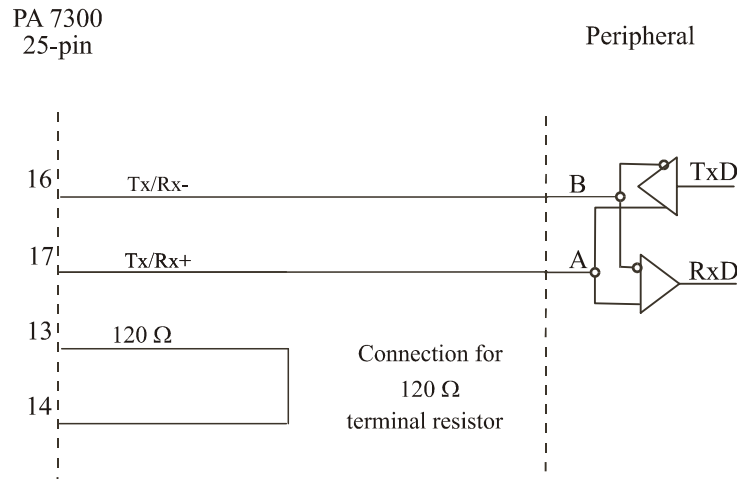
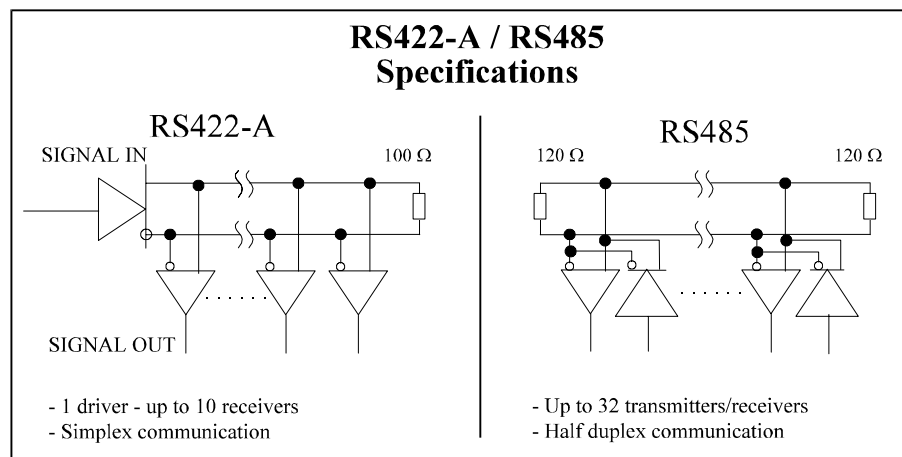


Fig. 6-5: Multipoint system



6.2.4 Cabling 20 mA Current Loop

Active / passive : When a transmitter and a receiver communicate, one of them has to supply the necessary current. If the transmitter supplies the current, it is active. The receiver is passive.

In reverse, if the receiver supplies the current, it is active.

Fig. 6-6: Active transmission / active reception

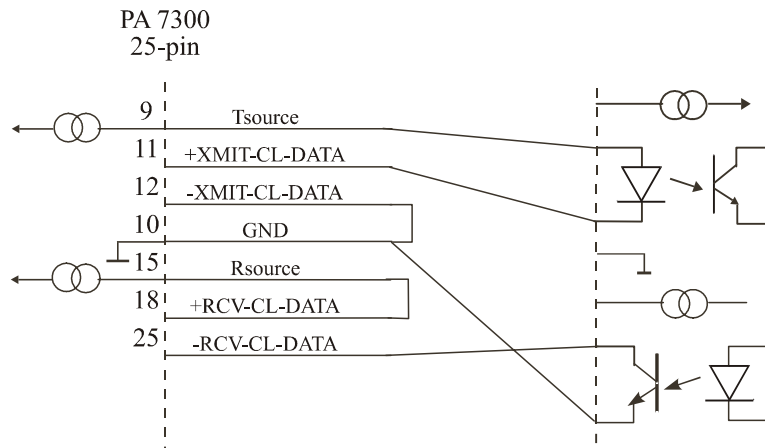


Fig. 6-7: Active transmission / passive reception

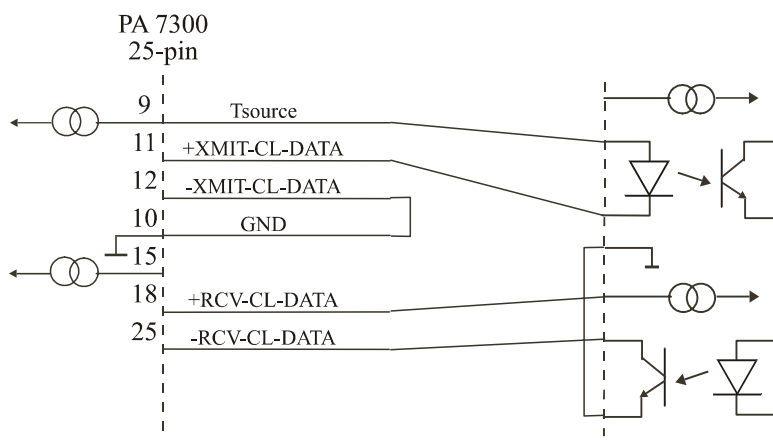


Fig. 6-8: Passive transmission / active reception

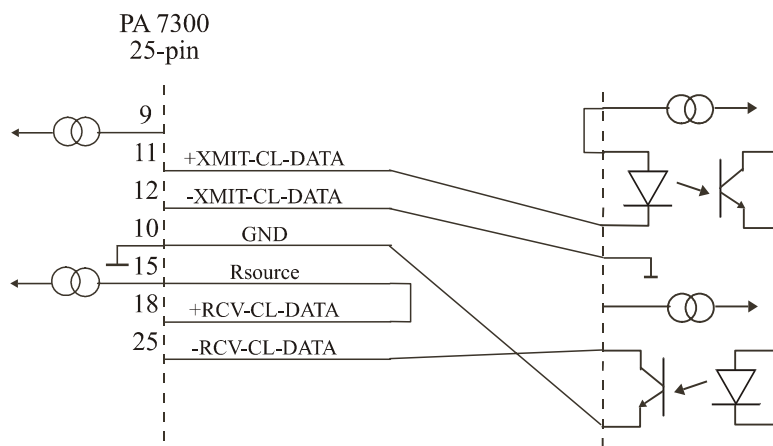
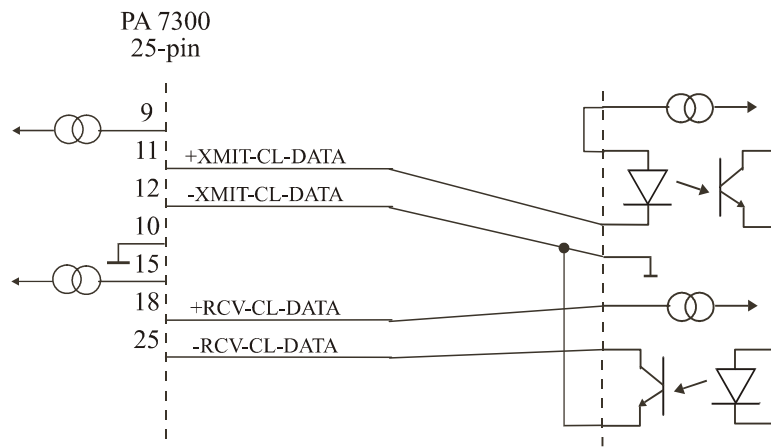
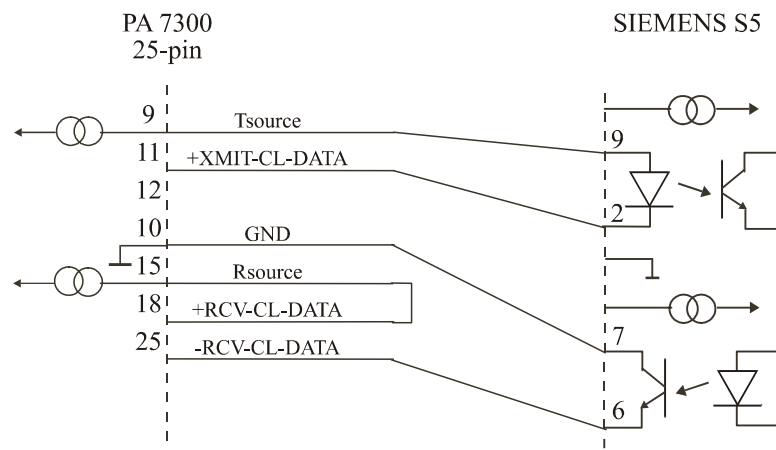


Fig. 6-9: Passive transmission / passive reception**Fig. 6-10: Connection to a Siemens S5 SPS**

7 REPLACING THE SI MODULES

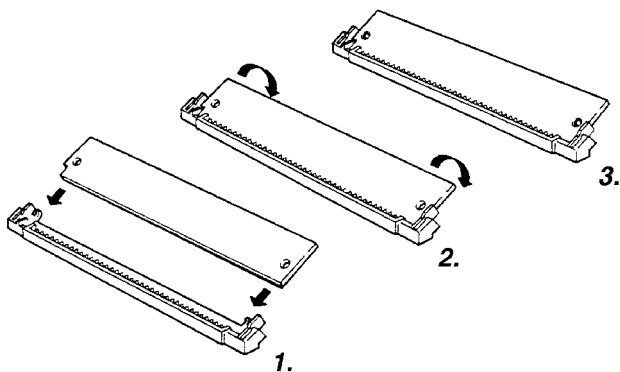
i

IMPORTANT!

We advise you to send us the board if a module is to be replaced.
If you wish to effect the replacement yourself, consider the following:

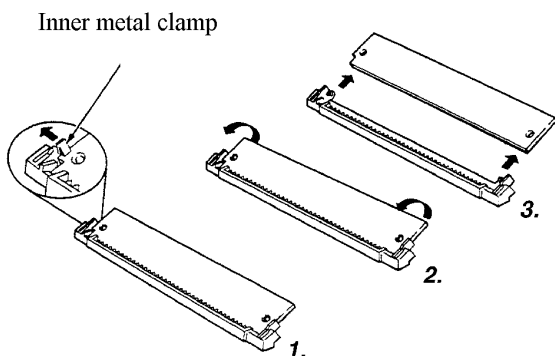
- Do observe the *Security advices*
- Insert/remove the module carefully according to the following illustrations.

Fig. 7-1: Inserting a SI module



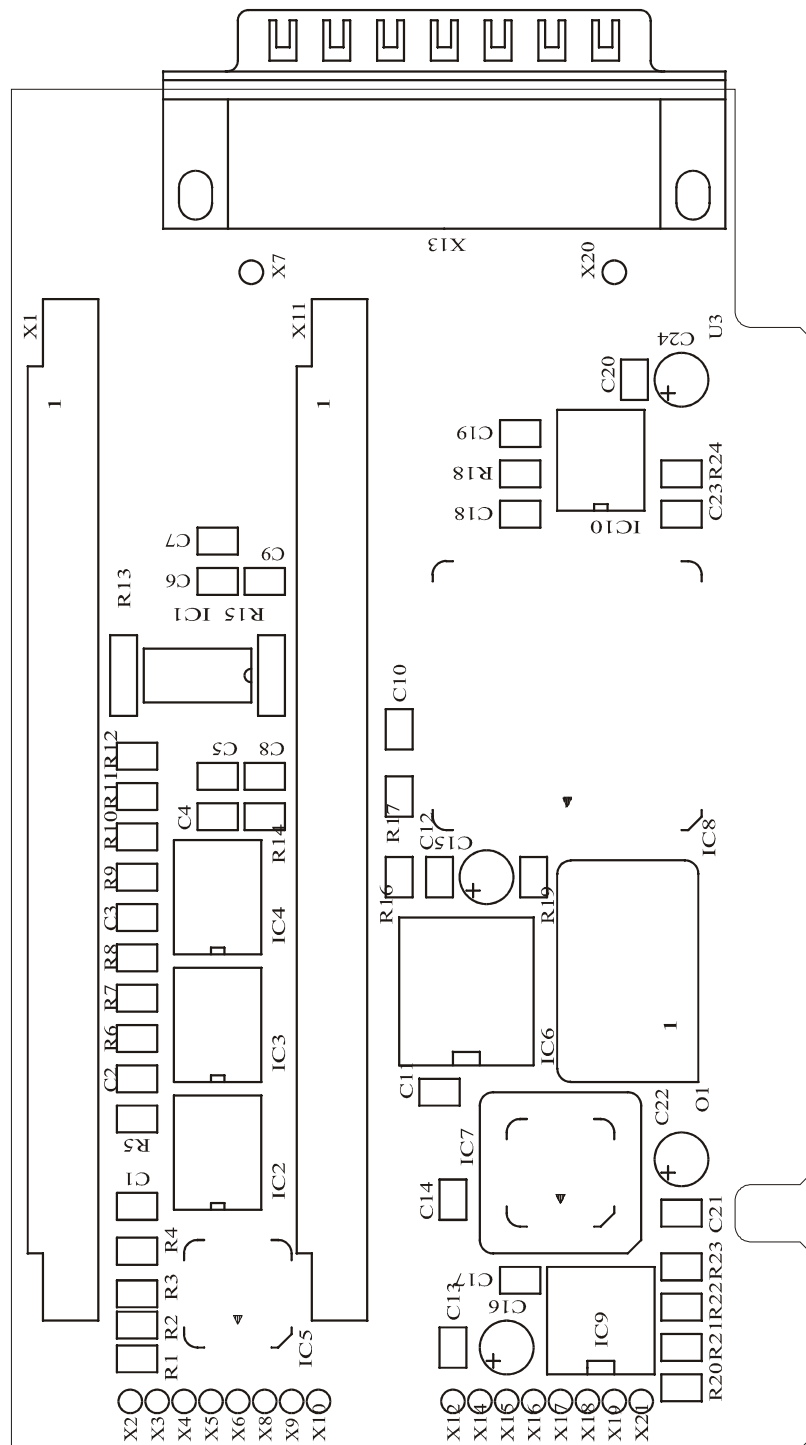
1. Hold the SI-Module so that its connector is directed toward the guide rail in the centre of the socket.
2. Pull the SI-Module downward until it clicks in place.
3. The SI-Module is installed on the board.
If the module is not properly installed, take it out and install it again.

Fig. 7-2: Removing a SI module



1. Bend the inner metal clamp carefully apart, until the Si-Module can be removed from the socket.
2. Remove the SI-Module from the socket

Fig. 7-3: Component scheme of the basic board



8 DEVICE DRIVER

To install the ports of the **PA 7300** please use the standard drivers which are delivered with Windows NT 4.0. You can read additional information about the Windows API functions for the settings and the use of the serial interfaces in:

„SERIAL COMMUNICATION in WIN32“

Moreover you will find application examples in Delphi 2.0 and VC ++ 5.0.

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