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certified



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Preliminary version

Technical information

Change to RoHS-compliant
analog boards

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WARNING

The following risks result from improper implementation and from use of the board contrary to the regulations:



◆ Personal injury



◆ Damage to the board, PC and peripherals



◆ Pollution of the environment

◆ **Protect yourself, the others and the environment!**

◆ **Read carefully the safety precautions (yellow 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.

◆ **Used symbols:**



IMPORTANT!

Designates hints and other useful information.



WARNING!

It designates a possibly dangerous situation.

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

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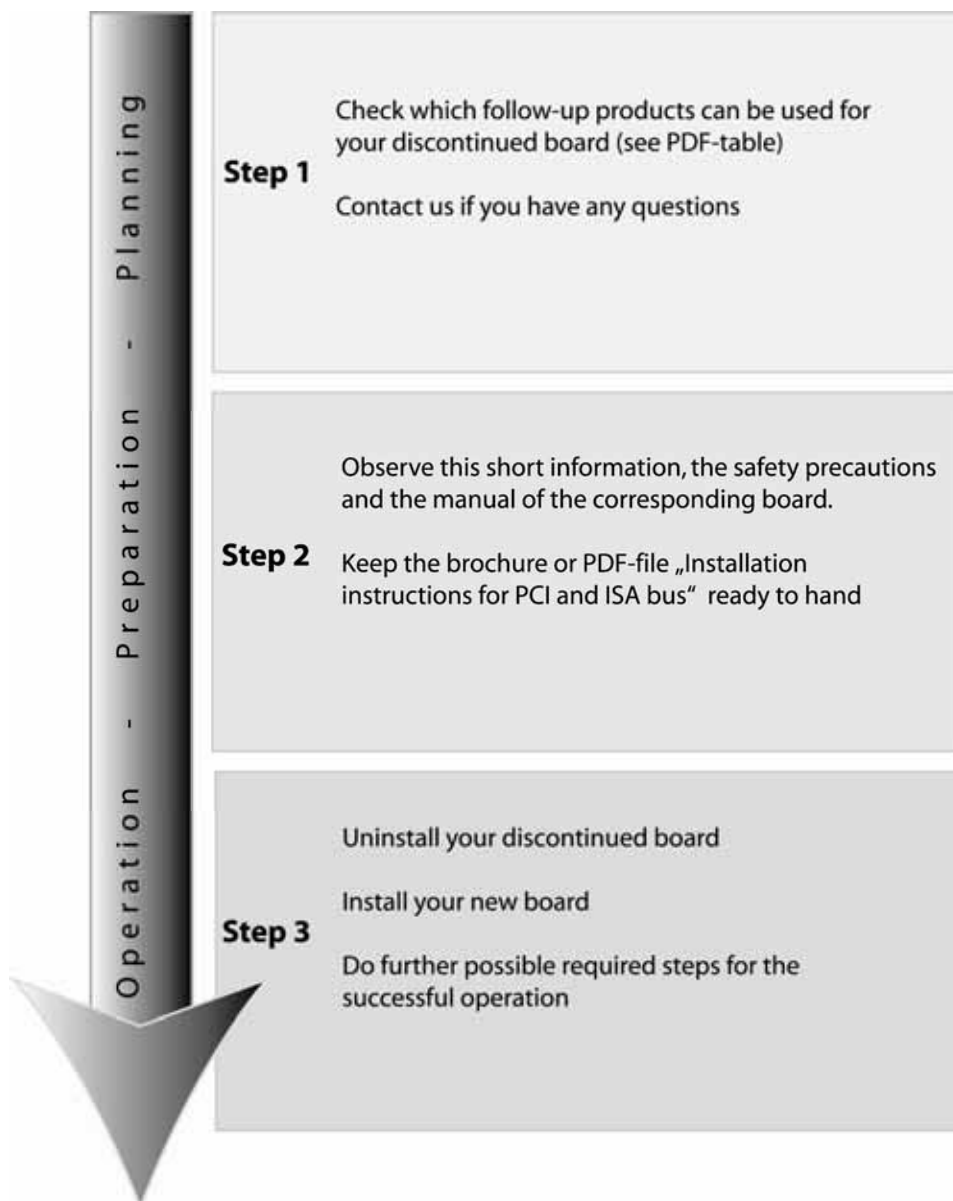
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1 OVERVIEW

Due to the RoHS-Directive (German ElektroG) several boards will not be available anymore . However, we offer follow-up products for most products (see PDF-table “Follow-up products”). In the following we want to inform you how to switch-over from the discontinued products to the new products.

There are three steps when switching to a new product – the present technical information supports you in „**Step 3**“.

Fig. 1-1: Overview –Change process



2 CHANGING ANALOG BOARDS

In the following chapters we will answer to the following questions:

- How do I switch over?
- What will be different during installation?
- Software compatibility?
- Function compatibility?
- Pin compatibility?

2.1 Basic steps

Table 2-1: Changing analog boards: Basic steps

Description	Further information
1. Uninstall your old board	Brochure „Installation instructions for PCI and ISA-bus“ chapter 7
2. Install your new board	Brochure „Installation instructions for PCI and ISA-bus“ chapter 3

◆ If you install your computer by an image, please create an image-CD.

2.2 Further information

2.2.1 PA 3000

You can switch from the analog input board **PA 3000** (ISA bus) either to the follow-up product **APCI-3010** or **APCI-3002** (PCI bus).

Versions:

PA 3000-16D2C (=16 diff. inp.; Option diff. inputs)	→	APCI-3002
PA 3000-16D2F (= 16 diff. Inp.; Option filter inputs)	→	APCI-3002
PA 3000-4 (= 4 diff. inp.)	→ or	APCI-3002 APCI- 3010-8
PA 3000-8 (= 8 diff. inp.)	→ or	APCI-3002 APCI-3010-16
PA 3000-16 (= 16 diff. inp.)	→	APCI-3002
PA 3000-8D2C (= 8 diff. Inp.; Option diff. inputs)	→ or	APCI-3002 APCI-3010-16
PA 3000-8D2F (= 8 diff. Inp.; Option filter inputs)	→ or	APCI-3002 APCI-3010-16

For changing please realize the basic steps as described in chapter 2.1.

After this step the boards differ from each other as follows:

Table 2-2: Changing the PA 3000: Further information

	PA 3000	APCI-3002	APCI-3010
Functionality	- ISA bus analog input board - Number of inputs (see versions)	- PCI bus analog input board - 16, 8 or 4 diff. inputs - Optical isolation - Automatic analog acquisition - 8 isolated I/O, 24 V	- PCI bus, analog input board - 16, 8 or 4 single-ended inputs or 8, 4 or 2 diff. inputs - Optical isolation - 4 dig. Inp./ 4 dig. outp., 24 V - 24 TTL I/O - Timer, counter
Connector	37-pin SUB-D male connector	37-pin SUB-D male connector Compatible	37-pin-SUB-D male connector Not compatible
IO mapping	Board address space: 8 x 8-bit	Board address space: 64 x 32-bit I/O 64 x 32-bit Memory Mapped 32-bit accesses I/O 32-bit accesses memory	Board address space: 64 x 32-bit I/O 64 x 32-bit Memory Mapped 32-bit accesses I/O 32-bit accesses Memory
Operating	16- and 32-bit available	32-bit available (16-bit possible on request)	32-bit available (16-bit possible on request)

	PA 3000	APCI-3002	APCI-3010
system			
Software compatibility (initialisation and function name)	i_PA3000_InitCompiler() i_PA3000_SetBoardInformation()... i_PA3000_Read1AnalogInput() i_PA3000_CloseBoardHandle()	i_ADDIDATA_OpenWin32Driver() ... b_ADDIDATA_Init1AnalogInput() b_ADDIDATA_Read1AnalogInput() b_ADDIDATA_CloseWin32Driver()	i_ADDIDATA_OpenWin32Driver() ... b_ADDIDATA_Init1AnalogInput() b_ADDIDATA_Read1AnalogInput() b_ADDIDATA_CloseWin32Driver()
Find further information in the manual	Description of the PA 3000 (see link in the bookmarks)	Description of the APCI-3002 (see link in the bookmarks)	Beschreibung der APCI-3010 (see link in the bookmarks)

2.2.2 PA 301

You can switch from the analog input board **PA 301** (ISA bus) to the follow-up product **APCI-3000** (PCI bus).

For changing please follow the basic steps as described in chapter 2.1.
After this step the boards differ from each other as follows:

Table 2-3: Changing the PA 301: Further information

	PA301	APCI-3000
Functionality	- ISA bus analog input board - 8 diff. inputs, 12-bit	- PCI bus analog input board - 12, 8 or 4 single-ended inputs or 8, 4 or 2 diff. inputs - Timer, counter, 24 TTL E/A
Connector	37-pin male connector	37-pin male connector Single-ended signal connection: The same Differential signal connection: Different
IO Mapping	Board address space: 16 x 8-bit I/O 8-and 16-bit accesses	Board address space: 64 x 32-bit I/O 64 x 32-bit Memory Mapped 32-bit Accesses I/O 32-bit Accesses Memory
Operating system	16- and 32-bit available	32-bit available (16-bit possible on request)
Software compatibility (initialisation and function name)	i_PA301_OpenFileAndInit() i_PA301_Read1AnalogInput16Bit()...	i_ADDIDATA_OpenWin32Driver() ... b_ADDIDATA_Init1AnalogInput() b_ADDIDATA_Read1AnalogInput() b_ADDIDATA_CloseWin32Driver()
Find further information in the manual	Description of the PA 301 (see link in the bookmarks)	Description of the APCI-3000 (see link in the bookmarks)

2.2.3 PA 310

You can switch from the multifunction board **PA 310** (ISA bus) to the follow-up product **APCI-3120** (PCI bus).

For changing please follow the basic steps as described in chapter 2.1. After this step the boards differ from each other as follows:

Table 2-4: Changing the PA 310; Further information

	PA 310	APCI-3120
Functionality	<ul style="list-style-type: none"> - ISA bus analog input board - 16 single-ended inputs - 8 diff. inputs - 8 analog outputs 	<ul style="list-style-type: none"> - PCI bus analog multifunction board - 16 single-ended inputs - 8 differential inputs - Optical isolation - Automatic analog acquisition - 8 digital I/O - Timer
Connector	37-pin SUB-D male connector	37-pin SUB-D male connector Not compatible
IO Mapping	Board address space: 16 x 8-bit	Board address space: 16 x 8-bit and 4 x 16-bit
Operating system	16- and 32-bit available	16- and 32-bit available
Software compatibility (initialisation and function name)	<ul style="list-style-type: none"> i_PA310_SetBoardInformation()... i_PA310_Read1AnalogInput() i_PA310_Write1AnalogInput() i_PA310_CloseBoardHandle() 	<ul style="list-style-type: none"> i_APCI3120_InitCompiler() i_APCI3120_CheckAndGetPCISlotNumber() i_APCI3120_SetBoardInformation() ... i_APCI3120_Read1AnalogInput() i_APCI3120_Write1AnalogValue() i_APCI3120_CloseBoardHandle()
Find further information in the manual	Description of the PA 310 (see link in the bookmarks)	Description of the APCI-3120 (see link in the bookmarks)

2.2.4 PA 3110

You can switch from the analog multifunction board **PA 3110** (ISA bus) either to the follow-up product **APCI-3120** or **APCI-3116**.

Versions:

PA 3110-16-4 (= 4 analog outputs) → **APCI-3120-16-4** or **APCI-3116-16-4**

PA 3110-16-8 (= 8 analog outputs) → **APCI-3120-16-8**

For changing please follow the basic steps as described in chapter 2.1.

After this step the boards differ from each other as follows:

Table 2-5: Changing the PA 3110: Further information

	PA 3110	APCI-3120	APCI-3116
Functionality	- ISA bus analog multifunction board - 16 single-ended inputs - 8 diff. inputs - Number of the outputs (see versions)	- PCI bus analog multifunction board - 16 single-ended-inputs - 8 diff. inputs - Optical isolation - Automatic analog acquisition - 8 digital I/O - Timer	- PCI bus analog multifunction board - 16 or 8 single-ended inputs - 8 or 4 diff. inputs - Optical isolation - 4 dig. inp., 4 dig. outp., 24 V - 24 TTL I/O - Timer, counter
Connector	37-pin SUB-D male connector	37-pin SUB-D male connector compatible	37-pin SUB-D male connector compatible
IO mapping	Board address space: 32 x 8-bit	Board address space: 16 x 8-bit and 4 x 16-bit	Board address space: 64 x 32-bit I/O 64 x 32-bit Memory Mapped 32-bit Accesses I/O 32-bit Accesses Memory
Operating system	16- and 32-bit available	16- and 32-bit available	16- and 32-bit available
Software compatibility (initialisation and function name)	i_PA3110_InitCompiler()... i_PA3110_SetBoardInformation()... i_PA3110_Read1AnalogInput() i_PA3110_Write1AnalogValue() i_PA3110_CloseBoardHandle()	i_APCI3120_InitCompiler() i_APCI3120_CheckAndGetPCISlotNumber() i_APCI3120_SetBoardInformation() ... i_APCI3120_Read1AnalogInput() i_APCI3120_Write1AnalogValue() i_APCI3120_CloseBoardHandle()	i_ADDIDATA_OpenWin32Driver() ... b_ADDIDATA_Init1AnalogInput() b_ADDIDATA_Read1AnalogInput() b_ADDIDATA_Init1AnalogOutput() b_ADDIDATA_Read1AnalogOutput() b_ADDIDATA_CloseWin32Driver()
Find further information in the manual	Description of the PA 3110 (see link in the bookmarks)	Description of the APCI-3120 (see link in the bookmarks)	Description of the APCI-3116 (see link in the bookmarks)

2.2.5 PA 350

You can switch from the analog output board **PA 350** (ISA bus) to the follow-up product **APCI-3500** (PCI bus).

For changing please follow the basic steps as described in chapter 2.1. After this step the boards differ from each other as follows:

Table 2-6: Changing the PA 350: Further information

	PA 350	APCI-3500
Functionality	- ISA bus analog output board - 4 outputs	- PCI bus analog output board - 4 outputs - Short-circuit protection , EMI-filter - 24 TTL E/A
Connector	37-pin SUB-D male connector	37-pin SUB-D male connector Not compatible
IO Mapping	Board address space: 16 x 8-bit	Board address space: 64 x 32-bit I/O 64 x 32-bit Memory Mapped 32-bit accesses I/O 32-bit accesses memory
Operating system	16- and 32-bit available	32-bit available (16-bit possible on request)
Software compatibility (initialisation and function name)	i_PA350_InitCompiler()... i_PA350_SetBoardInformation()... i_PA350_Write1AnalogOutputAndStrobe() i_PA350_CloseBoardHandle()	i_ADDIDATA_OpenWin32Driver() ... b_ADDIDATA_Init1AnalogOutput() b_ADDIDATA_Write1AnalogOutput() b_ADDIDATA_CloseWin32Driver()
Find further information in the manual	Description of the PA 350 (see link in the bookmarks)	Description of the APCI-3500 (see link in the bookmarks)

2.2.6 PA 3500

You can switch the analog output board **PA 3500** (ISA bus) either to the follow-up product **APCI-3501** or **APCI-3504** (PCI bus).

Versions:

PA 3500-4 (= 4 outputs)	→	APCI-3501-4
PA 3500-4C (= 4 current outputs)	→	APCI-3504-C
PA 3500-8 (= 8 outputs)	→	APCI-3501-8
PA 3500-8-2P-REV.B (= 8 outputs)	→	APCI-3501
PA 3500-8C (= 8 current outputs)	→	2 x APCI-3504-C

For changing please follow the basic steps as described in chapter 2.1.
After this step the boards differ from each other as follows:

Table 2-7: Changing the PA 3500: Further information

	PA 3500	APCI-3501	APCI-3504
Functionality	- ISA bus analog output board - 4 outputs, 14-bit	- PCI bus analog output board, 14-bit - Optical isolation - Watchdog - 4 digital I/O - APCI-3501-4 : 4 analog outputs - APCI-3501-8 : 8 outputs	- PCI bus analog output board, 12-bit - 8 analog outputs - Optical isolation
Connector	37-pin SUB-D male connector	37-pin SUB-D male connector Not compatible	37-pin SUB-D male connector Not compatible
IO Mapping	4 x 8-bit	16 x 8-bit	16 x 8-bit
Operating system	16- and 32-bit available	32-bit available (16-bit possible on request)	32-bit available (16-bit possible on request)
Software compatibility (initialisation and function name)	i_PA3500_InitCompiler()... i_PA3500_SetBoardInformation()... i_PA3500_Write1AnalogValue() i_PA3500_CloseBoardHandle()	i_ADDIDATA_OpenWin32Driver() ... b_ADDIDATA_Init1AnalogOutput() b_ADDIDATA_Write1AnalogOutput() b_ADDIDATA_CloseWin32Driver()	i_ADDIDATA_OpenWin32Driver() ... b_ADDIDATA_Init1AnalogOutput() b_ADDIDATA_Write1AnalogOutput() b_ADDIDATA_CloseWin32Driver()
Find further information in the manual	Description of the PA 3500 (see link in the bookmarks)	Description of the APCI-3501 (see link in the bookmarks)	Description of the APCI-3504 (see link in the bookmarks)

2.2.7 PA 358

You can switch the analog output board **PA 358** (ISA bus) either to the follow-up product **APCI-3500**, **APCI-3501** or **APCI-3504** (PCI bus).

Versions:

PA 358-4 (= 4 outputs)	→	APCI-3500 or APCI-3504
PA 358-4C (= 4 current outputs)	→	APCI-3504-C
PA 358-6 (= 6 outputs)	→	APCI-3501-8
PA 358-6C (= 6 current outputs)	→	2 x APCI-3504-C
PA 358-8 (= 8 outputs)	→	APCI-3501
PA 358-8C (= 4 to 8 outputs)	→	2 x APCI-3504-C

For changing please follow the basic steps as described in chapter 2.1.
After this step the boards differ from each other as follows (see Table 2-8).

Table 2-8: Changing the PA 358: Further information

	PA 358	APCI-3501	APCI-3504	APCI-3500
Functionality	- ISA bus analog output board, 14-bit - Number of outputs (see versions)	- PCI bus analog output board, 14-bit - Optical isolation - Watchdog - 4 digital I/O - APCI-3501-4 : 4 analog outputs - APCI-3501-8 : 8 outputs	- PCI bus analog output board, 12-bit - 8 analog outputs - Optical isolation	- PCI bus analog output board - 4 outputs - Short-circuit protection, EMI-filter - 24 TTL I/O
Connector	37-pin SUB-D male connector Not compatible	37-pin SUB-D male connector Not compatible	37-pin SUB-D male connector Not compatible	37-pin SUB-D male connector Not compatible
IO Mapping	16 x 8-bit	16 x 8-bit	16 x 8-bit	Board address space: 64 x 32-bit I/O 64 x 32-bit Memory Mapped 32-bit Accesses I/O 32-bit Accesses Memory
Operating system	16- and 32-bit available	32-bit available (16-bit possible on request)	32-bit available (16-bit possible on request)	32-bit available (16-bit possible on request)
Software compatibility (initialisation and function name)	i_PA358_SetBoardInformation() i_PA358_Write1AnalogValue() i_PA358_CloseBoardHandle()	i_ADDIDATA_OpenWin32Driver() ... b_ADDIDATA_Init1AnalogOutput() b_ADDIDATA_Write1AnalogOutput() b_ADDIDATA_CloseWin32Driver()	i_ADDIDATA_OpenWin32Driver() ... b_ADDIDATA_Init1AnalogOutput() b_ADDIDATA_Write1AnalogOutput() b_ADDIDATA_CloseWin32Driver()	i_ADDIDATA_OpenWin32Driver() ... b_ADDIDATA_Init1AnalogOutput() b_ADDIDATA_Write1AnalogOutput() b_ADDIDATA_CloseWin32Driver()
Find further information in the manual	Description of the PA 358 (see link in the bookmarks)	Description of the APCI-3501 (see link in the bookmarks)	Description of the APCI-3504 (see link in the bookmarks)	Description of the APCI-3500 (see link in the bookmarks)

2.2.8 PA 370

You can switch the analog output board **PA 370** (ISA bus) to the follow-up product **APCI-3701** (PCI bus).

Versions:

- PA 370-16** (= 16 inputs) → **APCI-3701-16**
- PA 370-8** (= 8 inputs) → **APCI-3701-8**

For changing please follow the basic steps as described in chapter 2.1. After this step the boards differ from each other as follows.

Table 2-9: Changing the PA 370: Further information

	PA 370	APCI-3701
Functionality	- ISA bus analog board for length measurement, 14-bit - Acquisition of 16 or 8 inductive displacement transducers	- PCI bus analog board for length measurement, 16-bit - Acquisition of 16 or 8 inductive displacement transducers - 16 digital inputs/outputs, isolate
Connector and accessories	PA 370-16: 50-pin SUB-D male connector Cable: ST370-16 Screw terminal panel: PX371-1x PA 370-8: 50-pin SUB-D male connector Cable: ST370-8 Screw terminal panel: PX371-8	APCI-3701-16: 50-pin SUB-D male connector Not compatible Cable: ST3701 Screw terminal panel: PX3701-16 Not compatible APCI-3701-8: 50-pin SUB-D male connector Not compatible Cable: ST3701 Screw terminal panel: PX3701-8 Not compatible
IO mapping	Board address space: 2 x 16-bit	Board address space: 2 x 16-bit
Operating system	16- and 32-bit available	32-bit available (16-bit possible on request)
Software compatibility (initialisation and function name)	i_PA370_InitCompiler() i_PA370_SetBoardInformation()... i_PA370_Read1AnalogInput() i_PA370_CloseBoardHandle()	i_ADDIDATA_OpenWin32Driver() ... b_ADDIDATA_InitTransducerChannel() b_ADDIDATA_Read1TransducerChannel() b_ADDIDATA_ReleaseTransducerChannel() b_ADDIDATA_CloseWin32Driver()
Find further information in the manual	Description of the PA 370 (see link in the bookmarks)	Description of the APCI-3701 (see link in the bookmarks)