

# **Installation manual**

## **iGuard<sup>®</sup>**

**The digital video recording system**

Rev. 2.50

Status: December 2004

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## **Preface**

We have taken every possible care in preparing this manual. Nevertheless, we are unable to provide any guarantee with regard to content, entirety or quality of the details contained in this manual. The contents of this manual are revised regularly and brought up to latest standards. Furthermore, we are also unable to guarantee that the product will operate fault-free even if the specifications and recommended system configuration are observed.

Under no circumstances whatsoever are we able to guarantee that a specific application objective can be achieved with the purchase of this product.

Liability for immediate damages, subsequent damages and damages to others resulting from the purchase of this product is excluded within the terms of existing legislation. Liability under any circumstances is restricted to the product price.

Furthermore we exclude any liability for any possible increase in telephone costs due to unwanted connections during the use of iGuard® RemoteView and/or iGuard®.

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### **Copyright**

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IDS Imaging Development Systems GmbH grants the purchaser the right to use the software herewith. Copying the software in any form whatsoever, with the exception of a backup copy, is strictly forbidden.

Use MJPEG-Codec from MainConcept GmbH Aachen (© 1999 MainConcept GmbH) for video compression if using a FALCON series framegrabber.

### **Security**

We mention that the content of this manual is not a part of an earlier treatment. All guarantees are based on your license treatment, when you bought the system. If you need further information or if you have special problems which are not mentioned in this manual, you can contact your installer, or the address listed below.

The installation and maintenance must be done by qualified personell.

The correct and secure function of this system is based on careful transport, correct storing, installation and maintenance.

### **Data Security**

You can also store data of persons. Please take care of legilative order concerning data security.

The system and any storage media as floppy-discs, CDs,, removable disks etc. should also only be reachable for you or authorised persons..

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### **Environment**

Please take care of the correct use of this system. Otherwise guarantee cannot be granted.

Take care of direct sun-, wetness- and shock-protection.

The following environment is necessary:

#### Use:

Temperature: 0° C to 60° C

#### Non use:

Temperature: -20° C to 80° C

### **Installation and maintenance**

The installation, maintenance and perhaps repairing must be done by qualified personell.

### **Trademarks**

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### **Contacting us**

Visit our web site where you will find all the latest drivers and information about our software and hardware products as well as our partners and distributors.

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# 1 Introduction

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Thank you for your decision to purchase iGuard®. iGuard® is a digital video recording system for the surveillance of rooms, premises, buildings, production workshops, critical public areas or any outdoor areas where security is important. Recording is possible with up to 32 cameras at the same time. A simultaneous display of all cameras for live surveillance is possible at the same time as recording. You bought a professional product based on a high quality standard. iGuard itself is one of only a few applications in its price/performance class which can be acquired to build an own DVR.

Basically the system allows two different operational recording modes which may also be combined with each other:

- Longtime recording analogous to the operation of a standard video recorder, which however has an option for recording of only motion pictures
- event-triggered recording, that is the recording of alarms with their pre-history via a ring buffer

In case of event-triggered recording the system is controlled through digital inputs which can be connected with any form of event triggering sensors. In addition, the system allows a logical operation of external sensors with an internal generated digital input. Motion detection with the connected cameras which then operate as video sensors is already integrated into the software.

This means that the system is fully customisable so to speak and allows a definition of all forms of alarm scenarios according to date, time, connected periphery, ambient conditions and plausibility routines. External reactions to occurring alarms are controlled through digital outputs.

Additional iGuard supports the PTZ of some the most popular suppliers like Panasonic, Pelco, Sensormatic and Sony. The Audio recording of one channel can be done over the build in sound card.

With iSearch iGuard supports you in searching scenes and movings inside recorded images. An optimised possibility to transfer data over ISDN and LAN as well as Multi Client functionality and Triplex mode are build in features inside iGuard.

iGuard® therefore offers the best possible customisation to your application, both with regard to your various different alarm triggers such as for instance cameras, light barriers etc., and also in case of alarms to control your various external devices such as for instance sirens, alarm systems, lighting etc.. By defining different alarm scenarios, you also have the opportunity to adjust the video recording to the actual surveillance task in question and thereby maximise the performance of your system.

In addition, iGuard® possesses a well-planned user administration. By issuing a total of 8 user rights, it allows for each user to have access to certain functions on an individual basis according to his/her range of tasks; such access may also be

denied to others. This enables you to make the best possible adjustment to your particular requirements.

Finally, iGuard® is developed in terms of clarity and comprehensibility of the windows and dialogues. Most buttons are provided with easy to understand symbols that are placed at suitable points within the window. This allows for intuitive operation of the program. However, if questions do arise, a powerful online help is available at any time.

The delivery includes, free of charge, the iGuard® RemoteView and iGuard® Player programs in addition to the iGuard® program itself. Using iGuard® RemoteView, you have the opportunity to remote access (via LAN or ISDN) the system in order to revise the recorded videos. Here iGuard® RemoteView functions as a client accessing iGuard® as a server. When operating iGuard® with separate hard discs, iGuard® RemoteView enables you to carry out local playback on an external PC. iGuard® Player gives you the capability to replay video recordings or exported AVI sequences.

We would like to wish you every success with this product. Please do not hesitate to contact us as manufacturer or your individual installer at any time if you have any further questions.

**About this manual:**

A complete version of this manual can be found in Adobe Acrobat format (PDF) on the iGuard® CD. This is the most recent version, unless changes have been made after the printing of this manual. All subsequent alterations have been included as far as possible.

## 2 Prerequisites

### 2.1 Operating system

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iGuard® was developed for operation with Microsoft Windows 2000® and Windows XP®. The desktop resolution must be at least 1024x768 pixel with 15/16-bit colour resolution. We recommend a resolution of at least 1280x1024 with 15/16-bit colour resolution.

The additional programs iGuard® RemoteView and iGuard® Player can be operated in Windows 2000® and Windows XP®.

The operating systems Windows 95/98, Windows ME and Windows NT will no longer be supported.

### 2.2 Hardware

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In iGuard®, dependant on the system, the PIRANHA III video compression board resp. FALCONplus or FALCONquattro frame grabber of the IDS Imaging Development Systems GmbH is used.

The video data is stored on local hard disks. The use of removable hard discs is possible, too. The direct storage on removable media as DVD-RAM, DVD-/R, DVD-/RW, CD-R/W is possible since version 2.45 (see user manual for details).

The Hardware-drivers support an Interrupt-Sharing with other devices (therefore the driver of the other device must support an Interrupt-Sharing as well):

**Harddisc compression:** There is no use of harddisc compression. First, the image data is already compressed, and besides, the additionally gained memory wouldn't justify the performance forfeit (the compression affects the harddisc access speed).

For the use of a telecommunication via ISDN we recommend to use ISDN boards of AVM: FRITZ! PCI or FRITZ! USB 2.0. In case of questions concerning the installation of these boards please apply to the manufacturer.

#### **FALCON attributes**

The following restrictions apply for operating FALCON:

- The graphics card must include DirectDraw support with the required DirectDraw functions. There is no software emulation of the DirectDraw functions. With regard to DirectDraw functions, it should be noted that they depend not only on the graphics hardware used but also very specifically on the graphics driver being used. The drivers of the same graphics card can offer different DirectDraw support with different operating systems or different driver versions. For this reason, IDS is unable to guarantee perfect functioning with all available graphics cards on the market. Although iGuard® checks whether the graphics driver provides all the necessary DirectDraw functions, it is possible that a graphics driver registers

a DirectDraw function which it is not really able to provide or not with the required performance.

- The necessary computer output is greater than with a PIRANHA system because the compression of the images has to be carried out by the computer CPU. A computer with an elementary frequency  $\geq 2,0$  GHz should be used.

The following attributes apply for operating a FALCON:

Operating mode	Images/s per camera	Images/s total
1 FALCONplus + 2 to 4 cameras	3 to 6	12
2 FALCONplus + 2 cameras (per FALCON 1 camera)	25	50
2 FALCONplus + 2 to 4 cameras per FALCONplus	3 to 6	24
1 FALCONquattro up to 4 cameras	25	100
1 FALCONquattro > 4 cameras	3 to 25	48 to 87

Table 1: Attributes for operating with FALCON

## 2.3 Resolution and file format

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The files stored by iGuard® have the extension .IGD and are compliant to the AVI-fileformat. The resolution of the stored images is (by using normal resolution) 384x288 Pixel (FALCON) alternatively 352x288 Pixel (PIRANHA III) and (by using high resolution) 768x288 Pixel (FALCON) alternatively 704x288 Pixel (PIRANHA III).

## 3 Hardware Installation



### Note!

If using Windows 2000® or Windows XP® the software should be installed completely (see 4 [Software Installation](#)) before installing the hardware.



### Warning! Static electricity!

Make sure that you discharge to earth any static electricity in your body before working on the inside of the PC. Failure to do so can result in an electrical discharge destroying hardware components.

## 3.1 PIRANHA III

### 3.1.1 Board installation

This chapter describes the installation of the PIRANHA in your system. First of all, please switch off your system before installing a PIRANHA. In order to prevent any destruction of electronic components on the board, please touch the system housing first to discharge any existing electrical loads. The installation of the PIRANHA is very easy. Please proceed as following:

- Pull out the mains plug. When using ATX motherboards, it is possible that the PCI-bus is still live after switching off the system. Plugging in or removing boards in this state can result in the motherboard and/or the PIRANHA being destroyed.
- Open the housing.
- Remove the cover of a 32 bit PCI slot not in use which has bus mastering function. See the manual of your motherboard to find out which slot has bus mastering function.
- Insert the PIRANHA in the free PCI slot of your system. The board was designed so that the PIRANHA can be inserted into slots which are normally available for short plug-in boards. Make sure that your PIRANHA does not come into contact with any electric components such as plug pins or components of the system.



### Static electricity - leakage current!

Avoid contact with any components, circuit-board conductors and plug pins! There is a danger of components being destroyed by the discharge of static electricity!

Condensation can form on the surface of the board following transportation of the PIRANHA - particularly with cold outside temperatures - leading to leakage current and malfunctions as a result. Allow the PIRANHA to warm up to room temperature first before putting it into operation.

- Fasten the slot cover of the PIRANHA in place with a screw.
- Check again that the board is inserted correctly into the system slot.
- Close the housing.
- Connect the video sources through a cable rack (break-out cable, optional extra) or using the BNC connection on the PIRANHA.

Up to 32 composite video sources and up to 2 video monitors can be connected to the PIRANHA III . Connection is carried out using two 26-pin D-Sub sockets for the first 16 inputs and the 2 outputs. To connect the inputs 17 to 32 an extension board is necessary. Video connecting cables of all designs can also be obtained from IDS Imaging Development Systems GmbH.

Make sure that the cables are wired up correctly when connecting your video sources.

#### Recommended slots

We recommend inserting the board in PCI slot 2 or 3. Check for sure in the manual of your PC or motherboard that the PCI slot you use has bus mastering function.

#### BIOS settings

Check the settings of your BIOS to make sure that the bus mastering function is switched on for the selected slot. If you cannot find any such setting in your BIOS, it can be assumed that the bus mastering function is always switched on. If your BIOS also allows PCI specification selection, make sure that you use PCI specification 2.1.

#### Motherboard chip sets

We advise against using Intel chip sets i810, i815 and i820 when using PIRANHA III because these chip sets have a below-average PCI performance and partly do not fulfil the requirements of PCI specification 2.1.

### 3.1.2 Video connecting cable (available as option)

The following figure shows the standard video connecting cable for 8 composite video inputs and 2 composite video outputs.

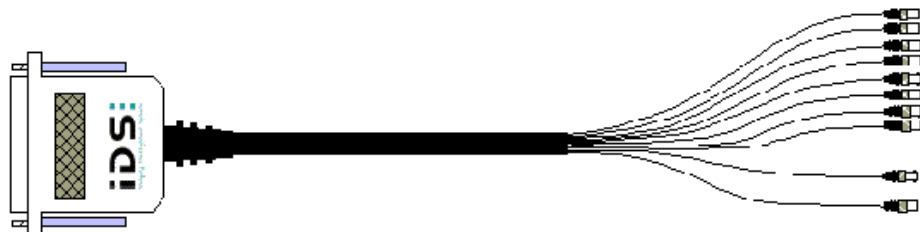


Figure 1: Video connecting cable PIRANHA III

A further break out cable can be connected to the PIRANHA III for the cameras 9 to 16. The cable setup is similar, but with the two video outputs missing.

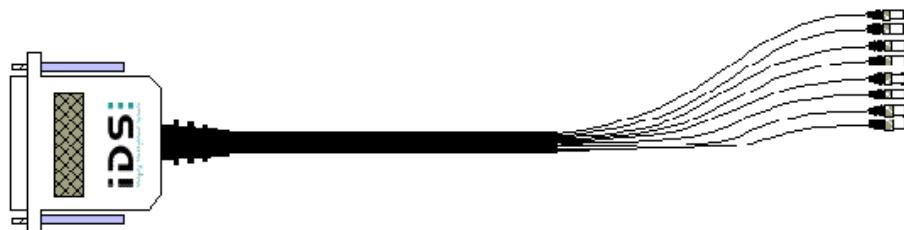


Figure 2: Video connecting cable for PIRANHA III (video inputs 9-16)



## 3.2 FALCONplus/FALCONquattro

When installing the FALCONplus/FALCONquattro, make sure that the driver of a TV tuner board (e.g. WinTV from Hauppauge) or a comparable multimedia board with a Bt848 or Bt878 chip has been removed completely beforehand from your computer. The drivers of various other suppliers overwrite part of the EEPROM of the FALCONplus/FALCONquattro board immediately after they are started without checking beforehand whether the installed board comes from another manufacturer. The result is the FALCON driver can no longer recognise the board. Reprogramming the EEPROM can only be carried out by IDS GmbH at a charge!

For this reason, parallel operation of multimedia boards from other manufacturers with the FALCON board is not possible!

### 3.2.1 Board installation

This chapter describes the installation of the FALCONplus/FALCONquattro in your system. Please turn your system off before carrying out installation. In order to prevent any destruction of electronic components on the p.c. touch the housing to discharge any static electricity in your body by feeding it away through the housing. The installation is very easy. Please observe the following steps:

- Pull out the mains plug. When using ATX motherboards, it is possible that the PCI-bus is still live after switching off the system. Plugging in or removing boards in this state can result in the motherboard and/or the FALCONplus/FALCONquattro being destroyed.
- Open the housing.
- Remove the cover of a PCI slot not in use which has bus mastering function. See the manual of your motherboard to find out which slot has bus mastering function.
- Insert the FALCONplus/FALCONquattro in the free PCI slot of your system. The board was designed so that the FALCON can be inserted into slots which are normally available for short plug-in boards. Make sure that your FALCON does not come into contact with any electric components such as plug pins or components of the system or touch the neighbouring board.

#### Static electricity - leakage current

Avoid contact with any components, circuit-board conductors and plug pins! There is a danger of components being destroyed by the discharge of static electricity!



Condensation can form on the surface of the board following transportation of the FALCON - particularly with cold outside temperatures - leading to leakage current and malfunctions as a result. Allow the FALCON to warm up to room temperature first before putting it into operation.

- Fasten the slot cover of the FALCON in place with a screw.
- Check again that the board is inserted correctly into the system slot.
- Close the system.
- Connect the video sources using the BNC as well as additionally via video extension boards and breakout cables or FALCONquattro (see 5.4 Video extension boards (optionally available)).

### Recommended slots

We recommend inserting the board in PCI slot 2 or 3. Check for sure in the manual of your PC or motherboard that the PCI slot you use has bus mastering function.

### BIOS settings

Check the settings of your BIOS to make sure that the bus mastering function is switched on for the selected slot. If you cannot find any such setting in your BIOS, it can be assumed that the bus mastering is always switched on. If your BIOS also allows PCI specification selection, make sure that you use PCI specification 2.1.

## 3.2.2 Multi-board support

---

### Board-ID

With multi-board support of the FALCON, make sure that each board can be addressed individually. Each board has a clearly defined identification number (*BoardID*) for this purpose so that it can be identified. The BoardID is set to 1 as standard. If several boards are being used in a system, the boards will have to be allocated individual board ID's. This assignment is carried out using the IDSID.EXE program.

When allocating the board ID's, it is advisable to make a note of the boards' serial numbers in the order of their installation (from right to left or similar).

iGuard® always requires a FALCON with BoardID 1 and with multi-board support additional FALCON's with rising uninterrupted board ID's (2, 3, 4).

Important: If an optocoupler board is being connected, it can only be connected to the FALCON with board ID 1!

The board ID's are assigned appropriate serial numbers using the IDSID.EXE program. In the dialogue box shown below, select a board in the *Select board* input field, enter the appropriate board ID and save the entry with the *Set ID* touch button.

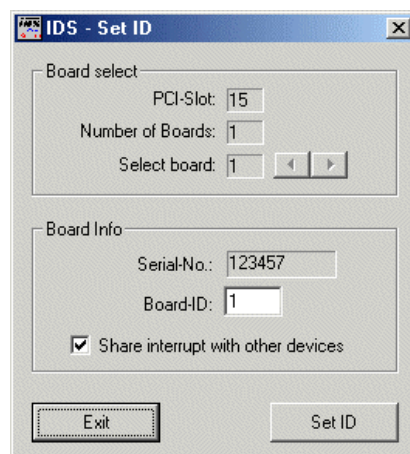


Figure 3: Set ID

**Board select section**

- **PCI-Slot**  
States the number of the PCI-Slots where the corresponding FALCON board has been inserted. The numbering of the PCI slot depends on the mainboard of your computer and does not necessarily start with us (a system with 4 PCI slots, for instance, usually does not have PCI slot numbers 1-4 but numbers such as 14-17!!!).
- **Number of Boards**  
Specifies the number of available FALCON boards.
- **Select board**  
Selects one of the available FALCON boards. Its data is contained in the BOARDINFO section. A board can be selected using the two touch buttons.

**Board Info section**

- **Serial-No.**  
Shows the 6 digit serial number stored in the board's EEPROM.
- **Board-ID**  
Identification number of this board. The number identifies a specific board if multiple board operation is being used. The standard value for a board ID is 1. Alphanumerical figures or negative numbers are not permitted. Value range of the board ID: [1...254].

**IDS info**

The screenshot shows a window titled "IDS-Info" with a close button (X) in the top right corner. The window is divided into three sections:

- Board select:** Contains three input fields: "PCI-Slot:" with the value "9", "Number of Boards:" with the value "1", and "Select board:" with the value "1". To the right of the "Select board:" field are two arrow buttons (left and right).
- Board info:** Contains six input fields: "Serial-No.:" with the value "150172", "Manufacturer:" with the value "FALCON+ - IDS GmbH", "Boardrevision:" with the value "V3.00", "Date of QC:" with the value "08.03.2001", "Board-ID:" with the value "1", and "Board-Type:" with the value "Falcon+".
- Version info:** Contains three input fields: "falcon.dll:" with the value "4.00.0006", "falcon.sys:" with the value "4.00.0006", and "idshook.dll:" with the value "4.00.0006".

An "OK" button is located at the bottom right of the window.

Figure 4: IDS info

#### Board select section

- PCI-Slot  
States the number of the PCI-Slots where the corresponding FALCON board has been inserted. The numbering of the PCI slot depends on the mainboard and does not necessarily start with 1 (a system with 4 PCI slots, for instance, usually does not have PCI slot numbers 1-4 but numbers such as 14-17!!!).
- Interrupt  
States the interrupt occupied by the selected board.
- Number of Boards  
Specifies the number of available FALCON boards.
- Select board  
Selects one of the available FALCON boards. Its data is contained in the BOARDINFO section. A board can be selected using the two touch buttons.

#### Board info section

- Serial-No.  
Shows the serial number stored in the board's EEPROM. This is a 6 digit serial number.
- Manufacturer  
Details of the manufacturer of the board.
- Board revision  
The current hardware revision of the board.
- Date of QC  
Date of final test (quality control) of the board.
- Board-ID  
Identification number of this board. Boards can be differentiated and selected individually using this number if running with multiple board operation. The ID can be defined by the user (program: IDSID.EXE). The standard value for board ID's is 1.
  - Board-Type  
Type number of the board.

#### Version info section

<i>falcon.dll</i>	Version info of the API programming DLL
<i>falcon.sys</i>	Version info of the system driver
<i>falchook.dll</i>	Version info of the hook DLL

### 3.3 Optocoupler board (available as option)

---

An optocoupler board can also be purchased as an optional extra to the PIRANHA III resp. FALCONplus and FALCONquattro and allows the connection of alarms for event controlled recording and the control of switch outputs as a reaction to alarms (cp. 9.4 *Steckerbelegung Video Out Board (VOB)*).

A ribbon cable is included with the optocoupler board for connection of one of the PIRANHA/FALCON boards with the optocoupler board. The optocoupler board does not require a plug-in slot in the system. Next to the slots, there's an unused panel in the system housing. Remove the panel and connect the optocoupler board there. Trigger signals and the digital inputs/outputs are connected using the provided 25-pin DSUB plug to J4 (cf. *Figure 5: PIRANHA with connected optocoupler board*). The Figure below shows the PIRANHA with optocoupler board and ribbon cable connected.

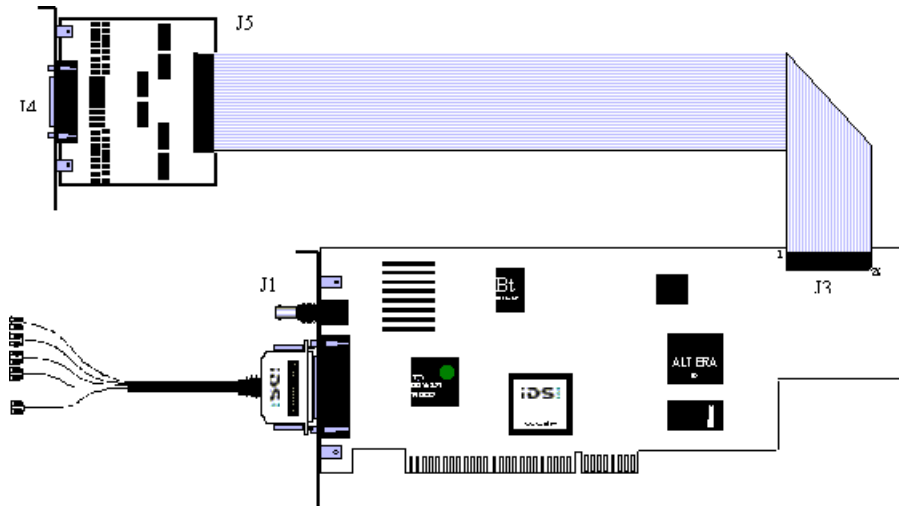


Figure 5: PIRANHA with connected optocoupler board

## 4 Software Installation

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**Note!**

If using Windows 2000® or Windows XP®, the software should be installed completely before installing the hardware (FALCON).

If the hardware does not function properly after installing the software, remove manually all unknown multimedia devices from the device manager. When the computer is started again, the hardware being used should be detected and started correctly.

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### 4.1 iGuard® Installation

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In order to install the soft- and hardware in Windows NT 4.0®, simply start the iGuard® installation program **setup.exe** in the root directory of the supplied CD. The installation program will start automatically when the CD is inserted if your operating system has the appropriate configuration.



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**Note!**

Administrator rights are necessary to install the frame grabber within Windows 2000® and Windows XP®. This applies to both new installations as well as for any subsequent driver update.

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You have several possible methods of installation available, depending on whether you wish to install iGuard® and/or iGuard® RemoteView or iGuard® Player. User defined installation is of course also possible. The following 5 installation versions can be selected:

**PIRANHA III:**

*PIRANHA III* installation is the installation of iGuard® as server with the *PIRANHA III* board as hardware installed. The iGuard® RemoteView program (client) is not installed in this version. Apart from iGuard®, the online help, the configuration files and the documentation are installed. The *PIRANHA III* driver, *PIRANHA III* tools as well as the iGuard® Player and the Software Codec are also installed.

**FALCON (FALCONplus/FALCONquattro)**

The installation *FALCON* corresponds with an installation of iGuard® as server with *FALCON* as hardware components. The iGuard® RemoteView program (client) is not installed in this case. The online help, configuration files and documentation are installed along with iGuard®. The installation of the *FALCON* drivers, *FALCON* tools, iGuard® Player and software codecs also takes place.

**Demo**

In case of an installation as a demo version, iGuard® is installed with the configuration files, the hardware simulation, iGuard® RemoteView and iGuard Player®. Online help and documentation are also installed. As no *PIRANHA* drivers are installed, recording and operation are not possible. iGuard® can only be used as a simulation or demo program.

### RemoteView Module

This installation version is intended for setting up an external client for the revision of recorded video data. In this version iGuard® RemoteView, iGuard® Player and the Software Codec are installed.

### User defined

In the user-defined installation you are able to decide which components you wish to install or not. Components to be installed must be given a control tag. User defined installation should only be undertaken after careful consideration.

When installing the PIRANHA drivers you will be asked which card is being used. In your reply state which kind of PIRANHA resp. FALCON board you are using. The corresponding drivers will then be installed; the names of the files will in all cases remain the same.



#### Note!

Should individual components of the software be damaged at a later date, it may be possible to attempt to repair these. The "Repair" option will appear for this purpose after starting **setup.exe**. This will have the effect of re-installing every files that have been installed during the first installation. It should be noted that existing files may be overwritten in this procedure!

iGuard® is distributed with several language versions. For some of them there is no online help available so far. The installation program installs all languages and automatically uses the language which was specified in the system settings by country. The English language version is selected automatically if the chosen language is not available.

Further languages are intended for subsequent versions, or these can, as soon as other languages are available, be downloaded from [www.iguard.de](http://www.iguard.de).

The following programm- and data base files can be found after the installation and initial startup of iGuard® within the installation directory on your system:

Files	Description
iGuard.dat	Configuration file including the settings of the application, the used hardware and the configured scenarios
iGuardUsers.dat	Configuration file including the settings of the user administration
iGuard_deu.pdf	German user manual
iGuard_enu.pdf	English user manual
IGuard_install_deu.pdf	German installation manual
IGuard_Install_enu.pdf	English installation manual
addresses.tbk	Telephone book of iGuard® RemoteView
iGuard_Messages.VDB	Data base file including the logbook entries
iGuard_Record.VDB	Data base file for the recorded video data
iGuardPowerFailure.exe	Program for automatic closing of iGuard® and shutting down the operational system thereafter in case of a power failure. This is called up by the software of the UPS (uninterrupted power supply)

APIPlay.exe	Program for playing exported AVI-files via the PIRANHA for recording on analog video recorders
-------------	--

Table 2: Installed Program- and Data base files in Windows

### Checking installation under Windows 2000® and Windows XP®:

Please check the following points

- Was your video capture hardware recognised as PIRANHA or FALCON? The following entry must be displayed in the device manager: IDS PIRANHA or IDS FALCON in sub-directory "Audio, video and game controllers".

If an error has occurred while integrating into Windows, it is possible that the PIRANHA or FALCON has been entered in another directory "Other components" or "Unknown devices" as video controller or multimedia device. In this case, proceed as follows:

- Delete the entry and close the dialogue box
- Start the PC again
- Upon re-starting, Windows detects the PIRANHA or FALCON as a new board. It should now be registered as described above.
- Has an interrupt conflict occurred?  
You will find the interrupt assignment in the device manager of your operating system.



#### NOTE:

Double assignment of interrupts is not always recognised by Windows as a conflict. The PIRANHA or FALCON should not operate with a shared IRQ and should be assigned its own interrupt wherever possible. With ACPI-based systems, however, this is not always possible. For a non-ACPI-based installation of the operating system, press the F5 key when Windows 2000 Setup is displayed and then select the "Standard PC" option.

If the PIRANHA or FALCON has not been assigned its own Interrupt, you will have to change the assignment:

- Interrupts can only be changed in BIOS or by changing slots. We recommend assigning the PIRANHA or FALCON one of the interrupts 9, 10 or 11 or using the PCI slot 2 or 3.
- Further help for changing the interrupt can be found in your manuals for Windows and your PC or motherboard. There you will often find a table with a summary of the PCI slots and their interrupt assignment.



#### NOTE:

The Windows-2000/XP drivers of the PIRANHA or FALCON are not certified by Microsoft. The user must have administrator rights to install the driver. In addition, the operating system must be configured so that it accepts non-certified drivers.

The Windows-2000/XP drivers of the PIRANHA do not support the suspend and hibernate mode. Starting and ending the driver is not possible either in the device manager without ending the operating system as well..



## 4.2 Harddisc DMA (direct memory access):

---

Digital video recording is to be regarded as equivalent to a high occurrence of data. It is imperative that hard discs with DMA capability be used with the hard disc controller of the main board operating in DMA mode so that the image data can be stored on the hard disc at sufficient speed.

Fundamentally, we recommend installing the mainboard manufacturer's latest chip set driver.

Image errors or omissions or other losses of performance noticed while operating iGuard® can be an indication of not only insufficient computer capacity or lack of RAM but also an insufficient data transfer rate from or to the hard disc.

In Windows 2000® or Windows XP® the operating system normally ensures that DMA is used for the transfer of data from or to the hard disc.

We recommend using fast SCSI hard discs (U2W or U160) or fast IDE hard discs (UDMA) with a speed of at least 7200 rpm for maximum performance and maximum data throughput. When using these hard discs, make sure adequate cooling is provided because hard discs with speeds of 7200 rpm and more reach fairly high operating temperatures.

## 5 Hardware Description

### 5.1 PIRANHA III

All technical data and pin assignments of the PIRANHA III board can be seen in the appendix (see 9.2 *Pin assignment of the PIRANHA III*).

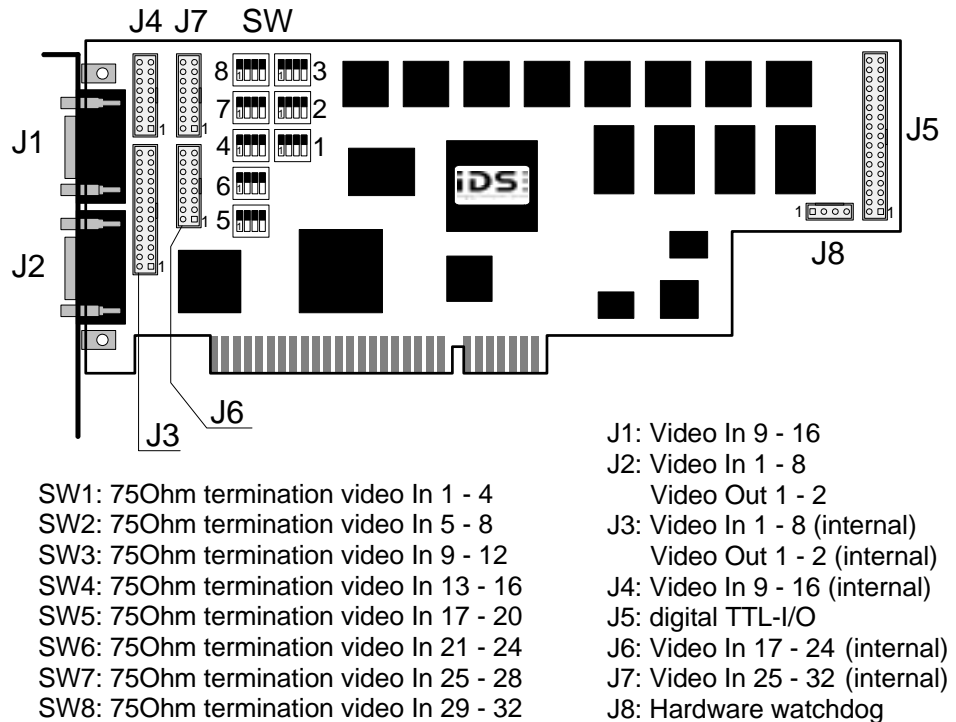


Figure 6: PIRANHA III

#### 5.1.1 Video Recording

Using the PIRANHA III card enables you to connect up to 32 video sources instead of 8 as with the PIRANHA board. This provides the capacity to record considerably more video sources, although all cameras must be of the same video standard (e.g. PAL or NTSC). Connection to the video sources is via the *video connecting cable* described in corresponding paragraph 3.1.2 *Video connecting cable (available as option)*. Using 8 A/D converters with PIRANHA III also unsynchronised cameras can be recorded with full performance.

When having connected 1 to 8 cameras we recommend to use wether only the inputs 1 to 8 or only the inputs 9 to 16.

### 5.1.2 Switching rate

---

Noticeably greater switching rates can be achieved using PIRANHA III. These can amount up to 50 switches per second. The main reason for this high switching rate is that PIRANHA III has a total of 8 A/D converters and can therefore convert 8 pictures simultaneously instead of just one.

### 5.1.3 Video outputs

---

PIRANHA III also provides two independent 50 Hz/60 Hz video outputs. These should be connected to inputs of the same video standard (e.g. PAL), as otherwise it will not be possible to operate these video outputs.

### 5.1.4 Signal inputs

---

The PIRANHA III has 16 TTL trigger inputs (5V-24V in connection with the opto-coupler board) for controlling event-triggered recording. These trigger inputs are edge triggered. The trigger edge where the trigger event is to be triggered can be selected per software.

### 5.1.5 Digital inputs and outputs

---

The PIRANHA III has 8 digital inputs and outputs for controlling external events.

### 5.1.6 Hardware-Watchdog

---

The PIRANHA III board has an integrated hardware watchdog according to model. The watchdog represents a timer which closes a relay contact after a preset running time. The timer is constantly restarted by the iGuard<sup>®</sup> software in the normal operating mode so that it never runs out. If the system gets into a state where it no longer reacts and, consequently, a watchdog timer restart can no longer be carried out, the watchdog timer is activated, closes the relay contact and initiates a new start via the reset cable.

If there's a reset button on your PC housing, this button is connected with the PIRANHA III board instead of the mainboard (pins 1 and 2 on socket J8). A cable is connected to pins 3 and 4 of socket J8 which is connected to the reset socket of the mainboard. In this way, the reset button is looped through the PIRANHA III board to the mainboard and therefore remains in function. Both pairs of pins, 1/2 and 3/4 on the J8, have an identical function as such.

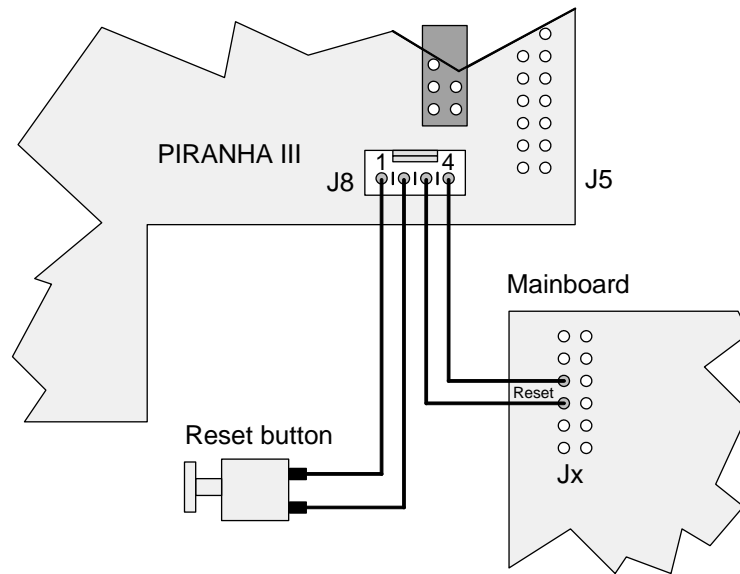


Figure 7: Circuit of the watchdog adapter

## 5.2 FALCONplus

This chapter describes the hardware of the FALCONplus. It includes an explanation of interrelationships with a fundamental description of video recording. In addition, all relevant differences in comparison with the other FALCON boards are explained.

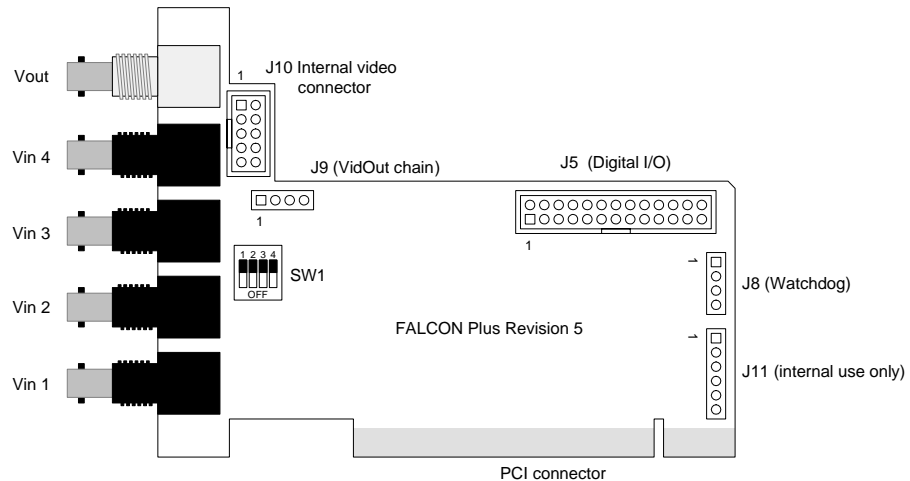


Figure 8: FALCONplus

	Plug connection	Signals
J5	26 pin pole-type	8 digital TTL-I/O, 4 trigger inputs each
Vin1...Vin4	BNC sockets	Video inputs 1– 4
Vout	BNC socket (white)	Video output

Table 3: FALCONplus plug connectors

Pin assignment of J5 is described in section 9.3.1 FALCONplus plug connectors.

### 5.2.1 Digital TTL-I/O inputs

With FALCONplus there is the possibility of connecting up to 12 digital inputs (4 of which trigger inputs) and 8 digital inputs through the J5 26-pin pole-type plug connector on the FALCONplus board for controlling the video recordings. Eight digital outputs are also provided as alarm outputs. A matching optocoupler board can also be purchased as optional extra for connecting the digital inputs and outputs. Further details about the *optocoupler board* can be found in the corresponding chapter 9.4 Steckerbelegung Video Out Board (VOB).

## 5.2.2 Video recording

---

With the FALCONplus board, you have the possibility of connecting up to 4 video sources if using one FALCONplus and up to 16 if using up to 4 FALCONplus. All cameras, however, must have the same video standard (e.g. PAL or NTSC).

When using n FALCONplus and n cameras we recommend to assign one camera to each FALCONplus to record 100 frames per second.

## 5.2.3 Switchover speeds

---

Up to 12 switchovers per second can be achieved with the FALCONplus in Multiplex mode. This figure applies separately to each FALCONplus if using more than one FALCONplus.

You can find a summary of switchover times for different operating modes in the table below.

Operating mode	1x FALCONplus		4x FALCONplus	
No. of cameras	1	2...4	4	Up to 16
Switchover speed	25	12.5	Up to 100	Up to 50

Table 4: FALCONplus switching rates

## 5.2.4 Multiple board support

---

The FALCON driver can support 4 FALCONplus cards at the same time. There is no multiple board support with other cards (PIRANHA III or FALCONquattro).

## 5.2.5 Video Output

---

With the FALCONplus Rev. 5 every video input can be through-connected to the video output. The video output is separated compared to the video input and has got an own 75 Ohm video buffer.

## 5.2.6 Switchable 75 $\Omega$ termination

---

The 75 Ohm termination of each of the four video inputs can be switched on/off by the on board DIP switch. The default setting is ON.

## 5.2.7 Video Daisy Chain

---

In a multiple board mode there is a video daisy chain available which gives the possibility to connect every video input (up to 16) to the video output.

The following figure shows the board-to-board connection of the video outputs with one shielded cable only. There is no limitation in cascading boards.

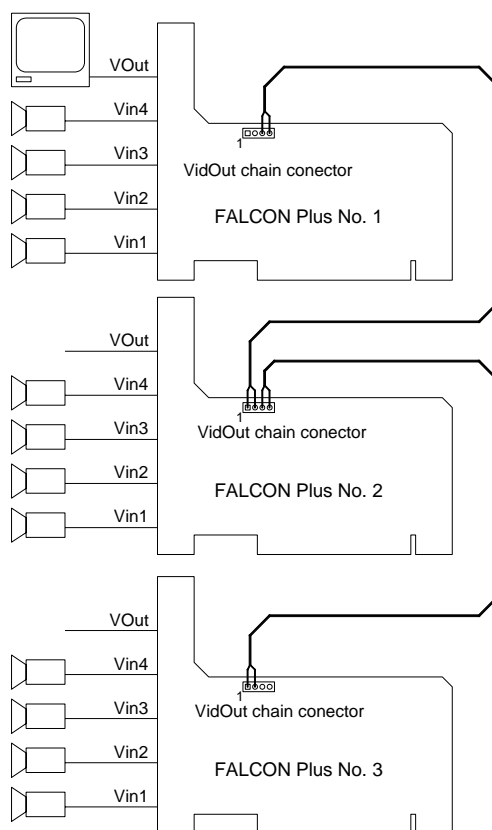


Figure 9: FALCONplus Video Daisy Chain

### 5.2.8 Hardware Watchdog

The FALCONplus Rev. 5 has a onboard hardware watchdog. After a programmable time delay a relay contact is activated (normally-open contact) if the application do not retrigger the watchdog. After connecting the relay contact with the reset input of the PC mainboard the whole system can be rebooted.

### 5.2.9 Accessories

- Reset Cable for watchdog
- VidOut chain cable for video output daisy chain.
- Opto IO board (option)

### 5.3 FALCONquattro

In this section the hardware of the FALCONquattro is described, the latest and most powerful member of the FALCON family. The connectors and a fundamental description of image acquisition is given here. In addition, all relevant differences in comparison with the other FALCON boards are explained.

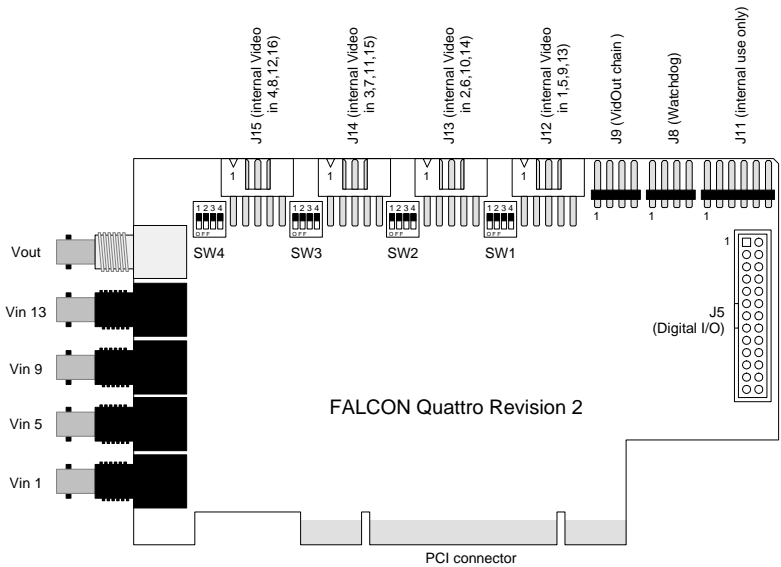


Figure 10: FALCONquattro

	Plug connection	Signals
J12	10 pin pole-type	Video inputs 1/5/9/13 (via video extension board) or via the BNC sockets
J13	10 pin pole-type	Video inputs 2/6/10/14 (via video extension board)
J14	10 pin pole-type	Video inputs 3/7/11/15 (via video extension board)
J15	10 pin pole-type	Video inputs 4/8/12/16 (via video extension board)
J5	26 pin pole-type	8 digital TTL-I/O, 8 trigger inputs each
	BNC sockets	Video inputs 1/5/9/13 (or via connector J1) and Video out (white)

Table 5: Plug connector chart FALCON

Pin assignment of J5 is described in section 9.3.2 FALCONquattro pin assignment.

#### 5.3.1 Video recording

FALCONquattro supports all usual monochrome and color cameras with composite video outputs. These are highly exact digitized and transferred into the PC. The max. possible resolution amounts to 768 x of 288 pixels in PAL. The FALCON driver supports also the independent switching of the video inputs in a desired order.



Up to 16 composite video sources can be connected to the FALCONquattro. The connection of the video inputs 1,5,9 and 13 is made via 4 BNC sockets on the slot or via socket J1. The twelve other video inputs can be connected via an external video extension board on sockets J2 to J4 (see 5.4 [Video extension boards \(optionally available\)](#)).

Compared to FALCONplus, FALCONquattro does not only have one video encoder, but four. So, having four video encoder chips on the board and without switching via a multiplexer as with FALCONplus, FALCONquattro makes up to 4 camera images simultaneously available within 40 ms (with 50 Hz cameras).

### 5.3.2 Digital TTL I/O

---

FALCONquattro has 8 digital inputs, 4 trigger inputs and 8 digital outputs. To connect the digital inputs/outputs optionally a optocoupler board can be purchased. You can find details regarding the *optocoupler board* in the corresponding chapter 9.5.1 [Connecting the frame grabber](#).

### 5.3.3 Video Output

---

With the FALCONplus Rev. 5 every video input can be through-connected to the video output. The video output is separated compared to the video input and has got an own 75 Ohm video buffer.

### 5.3.4 Switchable 75 $\Omega$ termination

---

The 75 Ohm termination of each of the four video inputs can be switched on/off by the on board DIP switch. The default setting is ON.

### 5.3.5 Hardware Watchdog

---

The FALCONplus Rev. 5 has a onboard hardware watchdog. After a programmable time delay a relay contact is activated (normally-open contact) if the application do not retrigger the watchdog. After connecting the relay contact with the reset input of the PC mainboard the whole system can be rebooted.

## 5.4 Video extension boards (optionally available)

Additionally, for FALCONquattro video extension boards are available to make the internal possibilities of video connection externally available.

### 5.4.1 Video extension board IS-SLOT-4 (for FALCONquattro only)

For connection of further 4 video sources the external video extension board IS-SLOT-4 is available. It can be attached at plug J1 to J4 by means of a flat ribbon cable with the socket J 11 at ist end. Connect the signified area of socket J 11 with the1 signified on the board belonging to the connector J1 to J4. Video sources can be connected via BNC sockets.

Following figure shows the video extension board with flat ribbon cable for connection of further 4 video sources via BNC sockets.

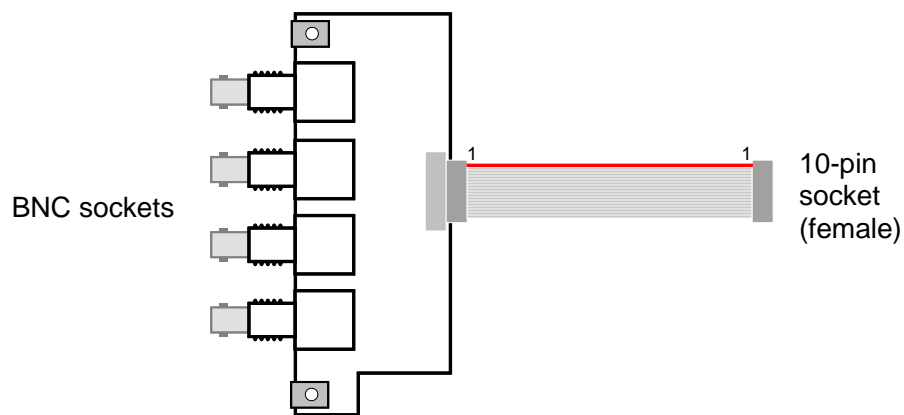


Figure 11: Video extension board with 4 BNC sockets (IS-SLOT-4)

Pin assignment of J11 is described in the appendix (see 9.6.1 Video extension board IS-SLOT-4 (for FALCONquattro)).

### 5.4.2 Video extension board IS-SLOT-D26 (for PIRANHA III and FALCONquattro)

Alternatively up to 16 video sources can be attached with video extension board IS-SLOT-D26 in connection with two video connecting cables (see 5.5 Video connecting cables (available as option)) via BNC sockets on FALCONquattro. Connection to FALCONquattro is made by 4 flat ribbon cables, whose 10-pin plugs (like plug J11) are attached to the plugs J1 to J4 of the FALCONquattro. At the bracket of the extension board there are two 26 pin DSUB sockets, each socket can be connected with one video connecting cable for 8 video inputs. Following figure shows the video extension board with DSUB sockets and flat ribbon cables.

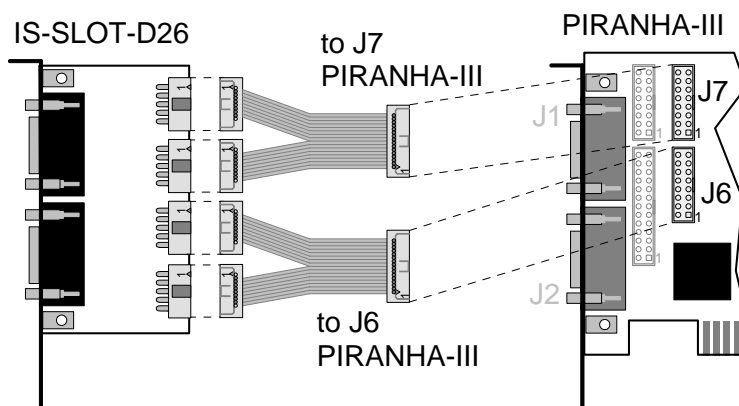


Figure 12: Video extension board IS-SLOT-D26 with PIRANHA III

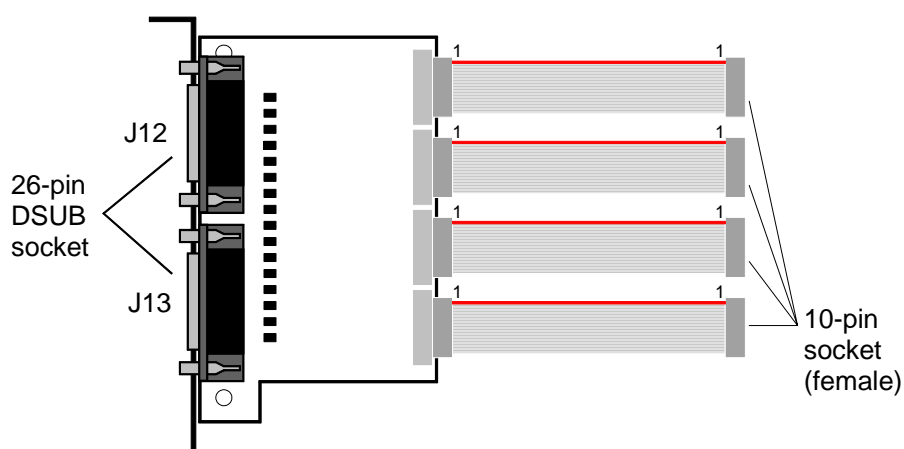


Figure 13: Video extension board IS-SLOT-D26 for FALCONquattro

The pin assignment of J12 and J13 are described in the appendix (see paragraph 9.6.2 Video extension board IS-SLOT-D26 (for PIRANHA III and FALCONquattro)).

## 5.5 Video connecting cables (available as option)

---

For connecting video sources to the FALCONquattro via the extension boards with DSUB sockets break out cables are required. These are connected to the DSUB sockets of the respective extension board. Each cable possesses eight BNC sockets each for one video source.

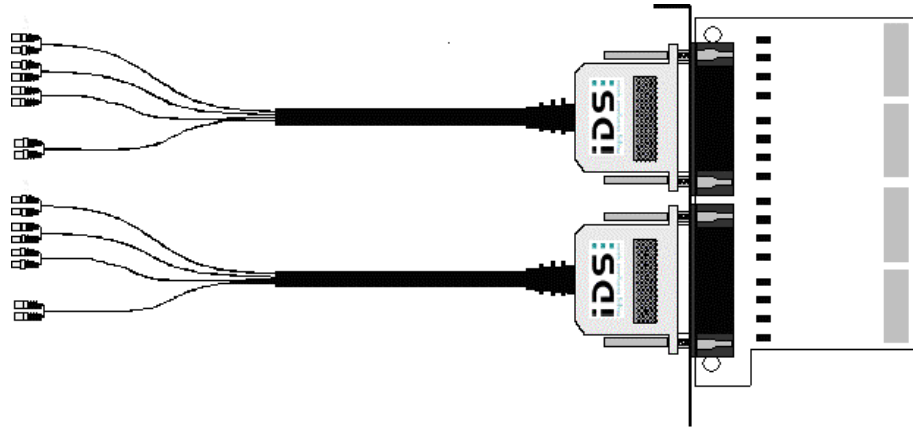


Figure 14: Video extension board with 2 video connecting cables

## 6 iGuard video out board (optional for PIRANHA III)

### 6.1 Function and compatibility

The Video Out Board (VOB) is a video crossbar and provides four video outputs which can be connected as required. The PIRANHA III is connected to the VOB by appropriate ribbon cable. Attention must also be paid to terminal settings for channels. Operation of several VOB's is not supported.

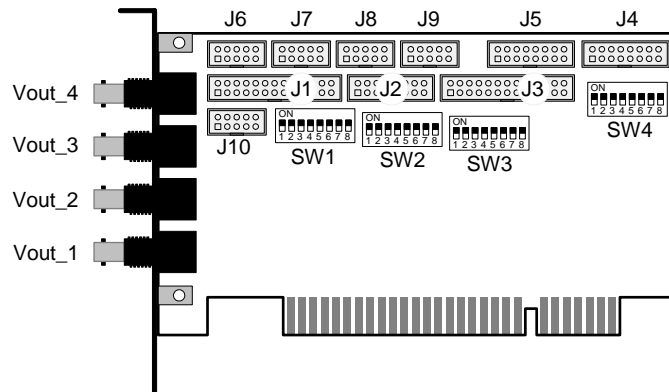


Figure 15: Video out board

### 6.2 DIP-switch settings (terminal settings)

Setting terminals for video channels is usually carried out on the PIRANHA III. Terminal setting is relocated if using a VOB. This means that the terminal setting has to be switched off on the PIRANHA III board and switched on on the VOB.

The DIP switch settings are then as follows:

On the PIRANHA III, all connected channels to "OFF":

(The exact location of the switch banks is recorded in section: 9 [Appendix](#).)

On the VOB:

SW1	SW2	SW3	SW4
Video 1-8	Video 9-16	Video 17-24	Video 25-32
ON	ON	ON	ON

Table 6: VOB DIP switches

VOB default settings: all OFF

## 6.3 Driver installation

In order to install the VOB drivers, you will have to accomplish the standard installation of the PIRANHA board or activate the "VOB" option in the *User-defined Setup* under "Hardware drivers". The VOB is then ready for operation after restarting the system.

VOB drivers can also be installed at a later date. To do so, insert the iGuard setup CD and start **setup.exe**. Select the "Alter program" option in the "Welcome" dialog of the setup and mark the option "VOB" under "Hardware drivers" in the following dialog. The drivers are then installed and the system will have to be restarted.

With Win2000 and WinXP, the operating system detects an unknown PCI device when the Watchdog card has been installed if the drivers were not installed before installing the board (s.o.). If no drivers have been installed yet, abort the hardware detection, install the drivers and restart Windows.

If the drivers have been installed, Windows recognizes the board immediately upon restarting, installs the drivers and starts them.

## 6.4 Connecting cables

Please connect the ribbon cable that is necessary for connecting the PIRANHA board as follows:

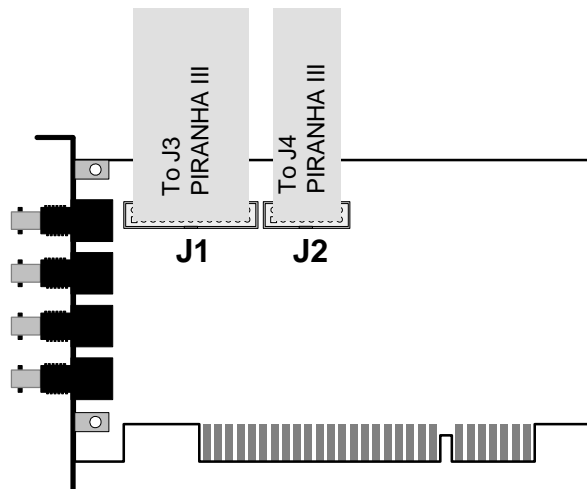


Figure 16: VOB to one PIRANHA III with 16 channels

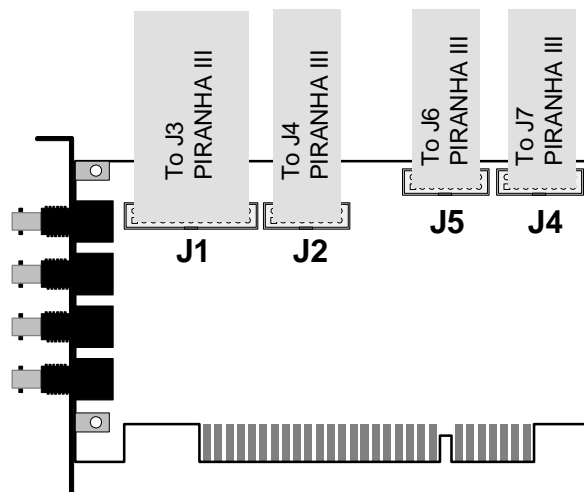


Figure 17: VOB to one PIRANHA III with 32 channels

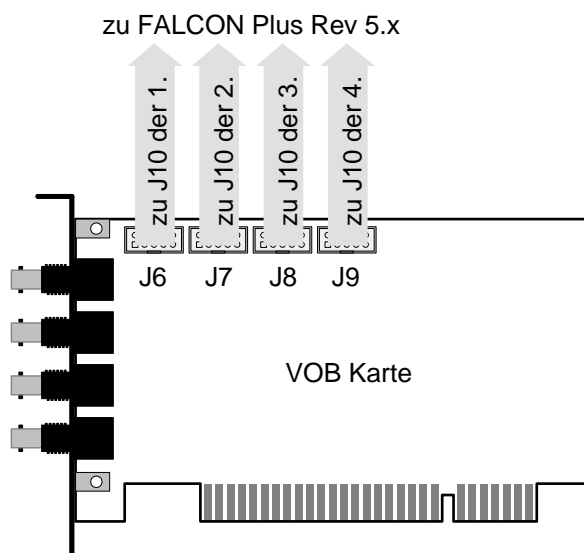


Figure 18: VOB to 1 ... 4 FALCONplus

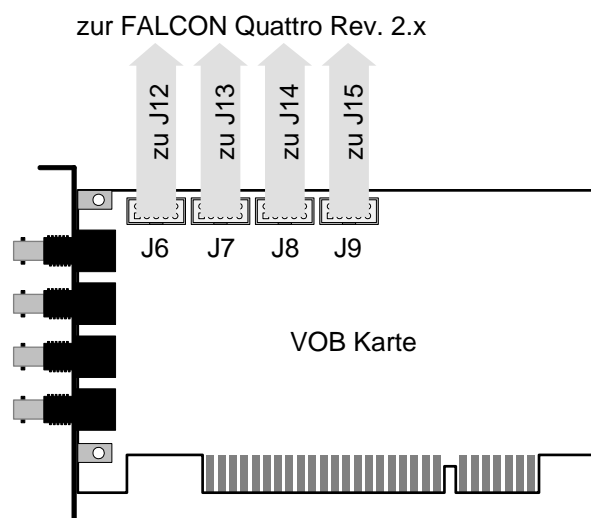


Abbildung 1: VOB to one FALCONquattro



## 7 iGuard® Hardware Watchdog (for systems with older FALCON boards)

### 7.1 IM-WDOG1

A watchdog card can also be integrated into iGuard®. This has the product number of IM-WDOG1.

When the program is started, iGuard® searches whether the drivers for this card are present in the system and whether the card drivers are installed and started. If this is the case, the card is used automatically when iGuard® is started.

The card is triggered every 60 seconds by iGuard® and set to a timeout of 4.47 minutes.

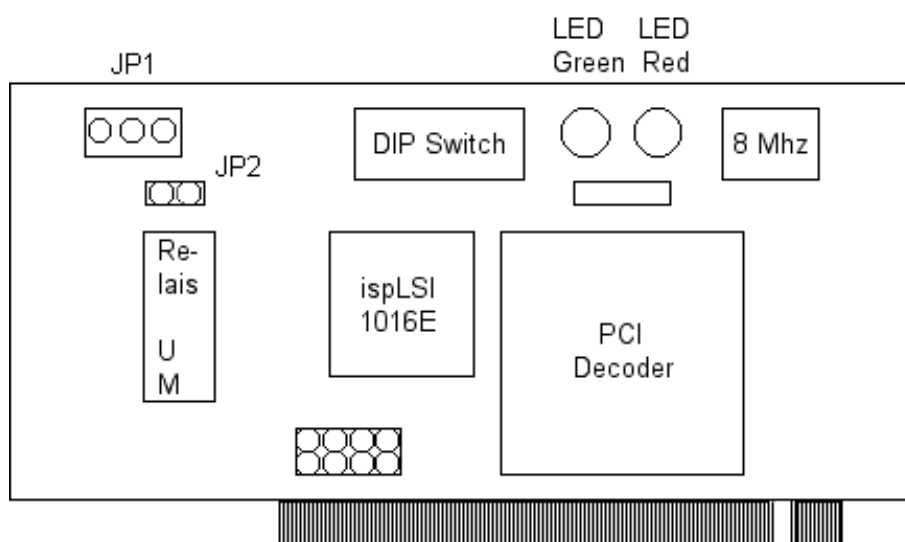


Figure 19: Watchdog-card

The green LED lights up as soon as the card is initialised and "primed". The red LED lights up if a timeout has occurred.

#### 7.1.1 Position of the DIP-switches

SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
ON	ON	ON	OFF	ON	OFF	ON	ON

Table 7: Position of the DIP-switches

SW1:	Operating mode
ON:	normal (make contact if time exceeded)
OFF:	inverse
SW2, SW3:	relais pickup
ON, ON:	500 ms
ON, OFF:	2s
OFF, ON:	8s
OFF, OFF:	infinite

Table 8: Description of the DIP switches SW1 – SW3



**NOTE:**

The DIP-switches SW4-SW8 must not be changed.

## 7.1.2 Driver Installation

### Installation

To install the IM-WDOG1 drivers, activate the "IM Watchdog" option in the *user-defined Setup* under "Hardware drivers". The hardware watchdog is ready for operation after re-starting the system.

Later installation of the watchdog card drivers is also possible. To do so, insert the iGuard® setup CD and start **setup.exe**. Select the option "Change program" in the setup "Welcome" dialogue and mark the "IM Watchdog" option in the following dialogue under "Hardware drivers". This installs the drivers and the system has to be started again.

In Win2000 and WinXP, the operating system detects an installed watchdog card as an unknown PCI device if the drivers were not installed before installing the card (see above). If no drivers have been installed, you should abort hardware detection, install the drivers and start Windows again.

If the drivers have been installed, Windows recognises the card at once as a WDOG1/2/N card and installs the drivers and starts them.

### Connecting the reset line

The plug of the reset button on the housing (if there is one) is connected to the Watchdog card (JP2) instead of the mainboard. A cable which is connected to the reset button connection of the mainboard is connected to the JP1 (see [Figure 19: Watchdog-card](#)). This retains the function reset button on the housing.

## 8 iGuard® UPS operation

### 8.1 Preconditions

---

If iGuard® is being operated with a UPS (uninterruptable power supply), you can use the **iGuardPowerFailure.exe** program in order to terminate iGuard® under controlled conditions in the event of a power failure and record information about the power failure in the logbook.

In this case, the UPS being used has to be equipped with a software which starts an external program in the event of a power failure.

The IM-USV450Q, IM-USV700Q or IM-USV1250Q are supplied with the "DataWatch" software and have this capability.

### 8.2 Installation of iGuardPowerFailure.exe

---

The **iGuardPowerFailure.exe** program is included with the installation package though it is not installed as a standard. If you require this program, you can either install it by user definition or upon successful completion of program installation, call up **setup.exe** again from the iGuard® CD, select the "Change program" option and mark "iGuard®-Shutdown-Software application".

### 8.3 Call-up parameters for iGuardPowerFailure.exe

---

The **iGuardPowerFailure.exe** program evaluates various command line parameters.

- 1  
UPS signals a power failure. An entry is made in the log-book.  
Example: "iGuardPowerFailure.exe 1"
- 2 or call-up without parameters  
iGuard® is terminated immediately.  
Example: "iGuardPowerFailure.exe 2"
- 0  
Message that the power supply is present again. iGuard® is not terminated.  
Example: "iGuardPowerFailure.exe 0"

### 8.4 Configuration of the "DataWatch" software of online UPS in Windows

---

Proceed as follows to configure the "DataWatch" software in Windows:

- 1) Install "DataWatch", connect with UPS using a serial cable.
- 2) Start "UPSman configuration" (Start => Program => DataWatch Pro).
- 3) Select correct COM-Port.
- 4) Select "Advanced User".
- 5) Carry out following settings in "Files":

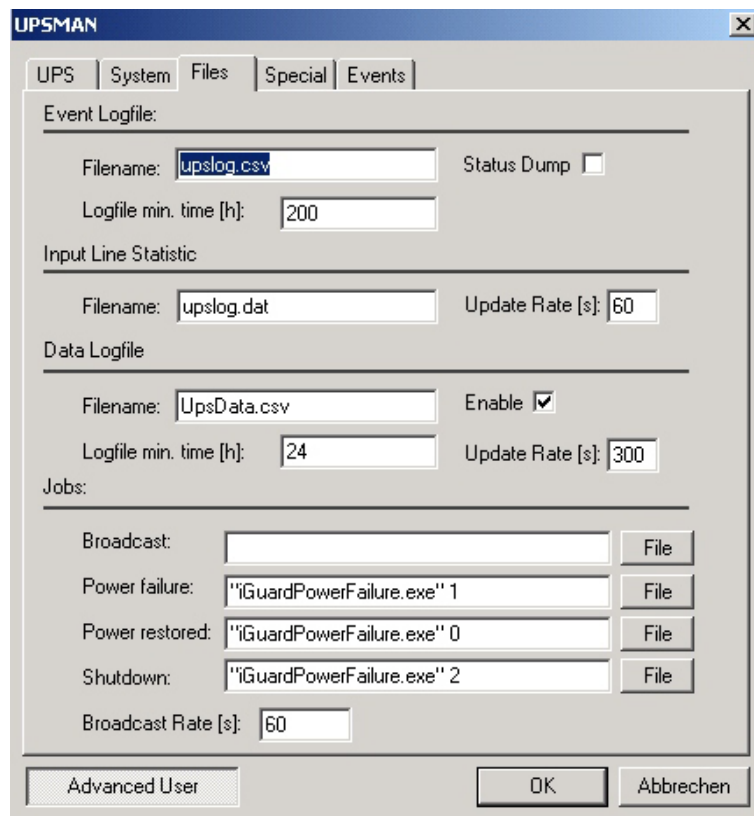


Figure 20: Configuration of the "DataWatch" software of online UPS

Power failure: „C:\Program\intermedia-x\  
iGuard@iGuardPowerFailure.exe 1“  
Power restored: „C:\Program\intermedia-x\  
iGuard@iGuardPowerFailure.exe 0“  
Shutdown: „C:\Program\intermedia-x\  
iGuard@iGuardPowerFailure.exe 2“

Select the path details (in this case: C:\Program\intermedia-x\iGuard®) according to your installation.

You have to configure the UPS so that the operating sytem shuts down the operating system in the event of a power failure, switches off (230V switches off) the system and switches it on again (230V switches on).

You will have to configure the system in BIOS so that it automatically switches on and starts the operating system as soon as the 230V power supply is present. The BIOS must support this function. If not, the system is not suitable for an automatic restart after a power failure.

You will have to configure the operating system so that a login takes place automatically after a new start (see TweakUI tool for Windows NT) and iGuard® is started automatically (entry in "Autostart"- folder).

iGuard® should be configured so that the recording is started automatically when the program is started.

The "UPS shutdown" must be activated so that the UPS can switch the 230V supply to the system off and back on again.

In the following example, the UPS switches off the power supply to the system 180 seconds after the operating system has shut down and back on again after another 60 seconds – however, at the earliest as soon as the electrical circuit is OK again.

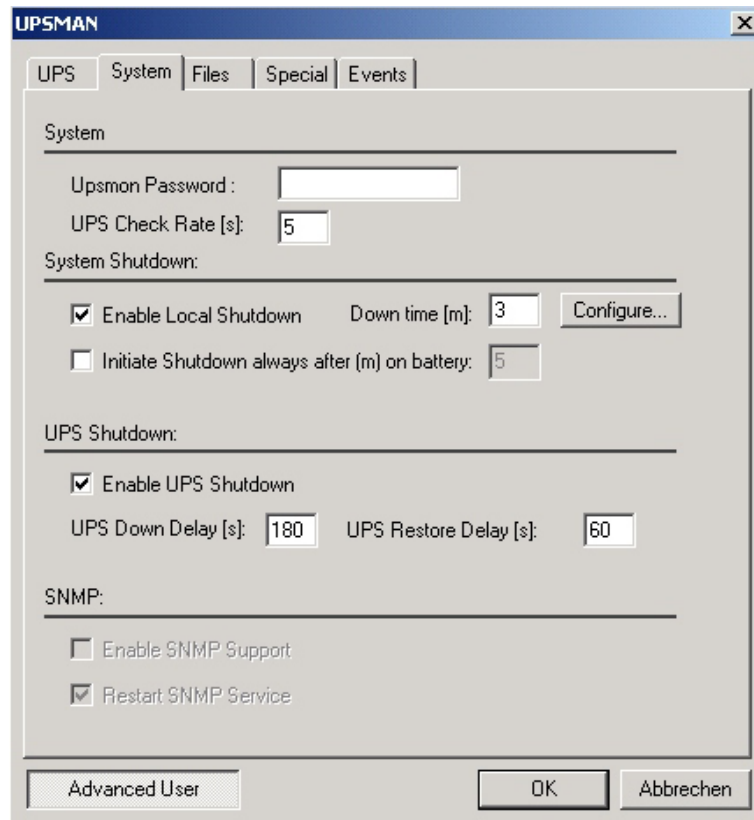


Figure 21: Configuration of the power supply to the system in Datawatch



## 9 Appendix

### 9.1 Technical details of the PIRANHA III

<i>Colour resolution:</i>	Video digitisation and compression are always in YUV 4:2:2 True Colour Format. Graphical representation on the VGA card can be in 15 bit, 16 bit (Hi-Colour), 24 bit True Colour (16.7 million colours) or 32 bit True Colour mode.
<i>Video input:</i>	up to 32 external composite inputs. YC signals are not supported.
<i>Video output:</i>	2 outputs: CVBS. YC signals are not supported.
<i>Video standards:</i>	PAL, NTSC
<i>Video scanning frequency:</i>	PAL: 13,5 MHz NTSC: 13,5 MHz
<i>A/D-conversion:</i>	PAL: 1/50 s (20 ms) per field NTSC: 1/60 s (16,7 ms) per field
<i>Geometrical resolution:</i>	PAL: 704x576 pixel with 2 fields NTSC: 704x480 pixel with 2 fields

Table 9: Technical Details of the PIRANHA III

### 9.2 Pin assignment of the PIRANHA III

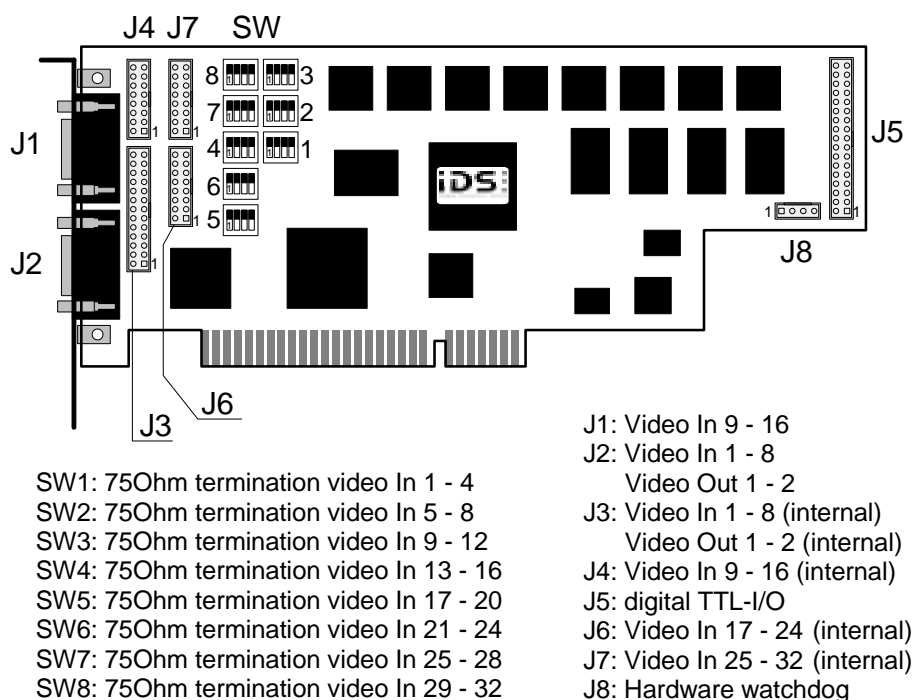


Figure 22: Pin assignment of the PIRANHA III

### 9.2.1 J1 (Video In/Out)

---

Pin	Assignment	Pin	Assignment
1	VIN 9	14	GND
2	VIN 10	15	GND
3	VIN 11	16	GND
4	VIN 12	17	GND
5	VIN 13	18	GND
6	VIN 14	19	VOUT 1
7	VIN 15	20	GND
8	VIN 16	21	GND
9	nc	22	VOUT 2
10	GND	23	GND
11	GND	24	GND
12	GND	25	nc
13	GND	26	+12V

Table 10: Pin assignment J1 (for PIRANHA III)

### 9.2.2 J2 (Video In/Out)

---

Pin	Assignment	Pin	Assignment
1	VIN 1	14	GND
2	VIN 2	15	GND
3	VIN 3	16	GND
4	VIN 4	17	GND
5	VIN 5	18	GND
6	VIN 6	19	VOUT 1
7	VIN 7	20	GND
8	VIN 8	21	GND
9	nc	22	VOUT 2
10	GND	23	GND
11	GND	24	GND
12	GND	25	nc
13	GND	26	+12V

Table 11: Pin assignment J2 (for PIRANHA III)



### 9.2.3 J3 Video (In/Out)

Pin	Assignment	Pin	Assignment
1	GND	14	VIN 7
2	VIN 1	15	GND
3	GND	16	VIN 8
4	VIN 2	17	GND
5	GND	18	GND
6	VIN 3	19	GND
7	GND	20	VOUT 1
8	VIN 4	21	GND
9	GND	22	GND
10	VIN 5	23	GND
11	GND	24	VOUT 2
12	VIN 6	25	GND
13	GND	26	GND

Table 12: Pin assignment J3 (for PIRANHA III)

### 9.2.4 J4 (Video In/Out)

Pin	Assignment	Pin	Assignment
1	GND	9	GND
2	VIN 9	10	VIN 13
3	GND	11	GND
4	VIN 10	12	VIN 14
5	GND	13	GND
6	VIN 11	14	VIN 15
7	GND	15	GND
8	VIN 12	16	VIN 16

Table 13: Pin assignment J4 (for PIRANHA III)

### 9.2.5 J6 (Video In/Out)

---

Pin	Assignment	Pin	Assignment
1	GND	9	GND
2	VIN 17	10	VIN 21
3	GND	11	GND
4	VIN 18	12	VIN 22
5	GND	13	GND
6	VIN 19	14	VIN 23
7	GND	15	GND
8	VIN 20	16	VIN 24

Table 14: Pin assignment J6 (for PIRANHA III)

### 9.2.6 J7 (Video In/Out)

---

Pin	Assignment	Pin	Assignment
1	GND	9	GND
2	VIN 25	10	VIN 29
3	GND	11	GND
4	VIN 26	12	VIN 30
5	GND	13	GND
6	VIN 27	14	VIN 31
7	GND	15	GND
8	VIN 28	16	VIN 32

Table 15: Pin assignment J7 (for VCB III)

### 9.2.7 SW1 – SW8 (75 ohms terminated)

---

SW1	75 ohms terminated
Dipsw	Assignment
1	VIN 4
2	VIN 3
3	VIN 2
4	VIN 1

Table 16: SW 1 (for PIRANHA III)

SW2	75 ohms terminated
Dipsw	Assignment
1	VIN 8
2	VIN 7
3	VIN 6
4	VIN 5

Table 17: SW 2 (for PIRANHA III)

SW3	75 ohms terminated
Dipsw	Assignment
1	VIN 9
2	VIN 10
3	VIN 11
4	VIN 12

Table 18: SW 3 (for PIRANHA III)

SW4	75 ohms terminated
Dipsw	Assignment
1	VIN 13
2	VIN 14
3	VIN 15
4	VIN 16

Table 19: SW 4 (for PIRANHA III)

SW5	75 ohms terminated
Dipsw	Assignment
1	VIN 20
2	VIN 19
3	VIN 18
4	VIN 17

Table 20: SW 5 (for PIRANHA III)

SW6	75 ohms terminated
Dipsw	Assignment
1	VIN 24
2	VIN 23
3	VIN 22
4	VIN 21

Table 21: SW 6 (for PIRANHA III)

SW7	75 ohms terminated
Dipsw	Assignment
1	VIN 25
2	VIN 26
3	VIN 27
4	VIN 28

Table 22: SW 7 (for PIRANHA III)

SW8	75 ohms terminated
Dipsw	Assignment
1	VIN 29
2	VIN 30
3	VIN 31
4	VIN 32

Table 23: SW 8 (for PIRANHA III)

### 9.2.8 J5 (Digital I/O)

Pin	Assignment	Pin	Assignment
1	DigIn_1	18	TrigIn_2
2	DigIn_2	19	TrigIn_3
3	DigIn_3	20	TrigIn_4
4	DigIn_4	21	TrigIn_5
5	DigIn_5	22	TrigIn_6
6	DigIn_6	23	TrigIn_7
7	DigIn_7	24	TrigIn_8
8	DigIn_8	25	TrigIn_9
9	DigOut_1	26	TrigIn_10
10	DigOut_2	27	TrigIn_11
11	DigOut_3	28	TrigIn_12
12	DigOut_4	29	TrigIn_13
13	DigOut_5	30	TrigIn_14
14	DigOut_6	31	TrigIn_15
15	DigOut_7	32	TrigIn_16
16	DigOut_8	33	GND
17	TrigIn_1	34	+5V

Table 24: J5 (for PIRANHA III)

### 9.2.9 J8 (Hardware Watchdog)

J8	Watchdog Reset
Pin	Assignment
1, 2	Relay contacts (shutter)
3,4	Relay contacts (shutter)

Table 25: J8 (Hardware watchdog for PIRANHA III)

## 9.3 FALCONplus/FALCONquattro board technical data

<b>Colour resolution:</b>	Video recording and compression is always in YUYV format. Pictorial representation on the VGA card can be in 15-Bit, 16-Bit (Hi-Color), 24-Bit True Color (16.7 million colours), or 32-Bit True Color mode.
<b>Video input:</b>	FALCONplus 4 composite video inputs FALCONquattro up to 16 composite Video inputs
<b>Video output:</b>	1 composite video output
<b>Video standards:</b>	PAL, NTSC, CCIR, RS170, SECAM
<b>Video scanning rate:</b>	PAL: 14.75 MHz NTSC: 12.27 MHz
<b>A/D conversion:</b>	PAL: 1/50 s (20 ms) per field NTSC: 1/60 s (16.7 ms) per field
<b>Geom. resolution:</b>	PAL: 768 x 576 pixel with 2 fields NTSC: 640 x 480 pixel with 2 fields
<b>Power consumption:</b>	FALCONplus +5V 275mA +12V 75mA -12V 75mA FALCONquattro: +5V 1060mA +12V 45mA -12V 45mA

Table 26: Technical Details of the FALCONplus/FALCONquattro

### 9.3.1 FALCONplus plug connectors

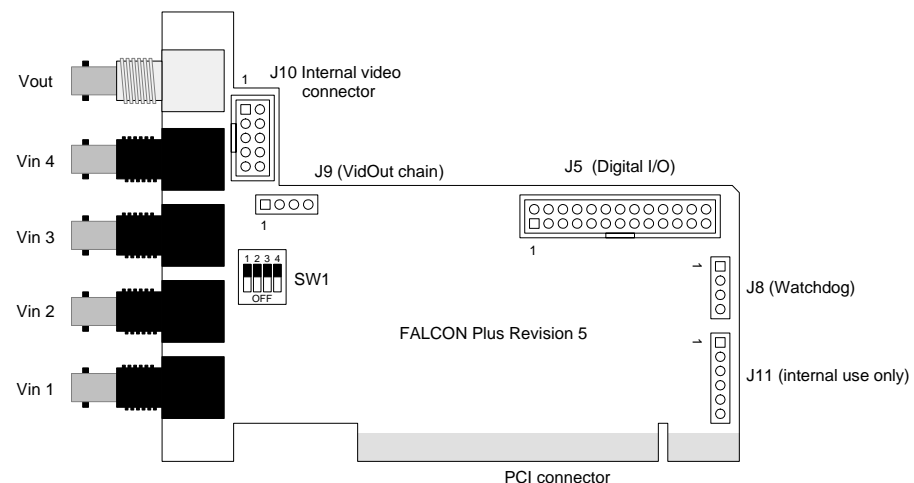


Figure 23: FALCONplus plug connectors

**Pin assignment of J5:**

Pin	Assignment	Pin	Assignment
1	Digital Input 1	14	Digital Output 6
2	Digital Input 2	15	Digital Output 7
3	Digital Input 3	16	Digital Output 8
4	Digital Input 4	17	Reserviert
5	Digital Input 5	18	Reserviert
6	Digital Input 6	19	Trigger Input 1
7	Digital Input 7	20	Trigger Input 2
8	Digital Input 8	21	Trigger Input 3
9	Digital Output 1	22	Trigger Input 4
10	Digital Output 2	23	GND
11	Digital Output 3	24	reserviert
12	Digital Output 4	25	reserviert
13	Digital Output 5	26	VCC (+5V)

Table 27: Pin assignment J5 (for FALCONplus)

**SW1 – 75Ω Termination**

SW1	75Ω Signal termination Video In 1 - 4
Typ	quad DIP switch
Switch	Assignment
1	for Vin_1
2	for Vin_2
3	for Vin_3
4	for Vin_4

Table 28: Assignment SW1 Termination (for FALCONplus)

**J8 (Hardware Watchdog)**

J8	Watchdog Reset
Pins	Assignment
1, 2	Relay contact (Shutter)
3,4	Relay contact (Shutter)

Table 29: J8 (Hardware Watchdog for FALCONplus)

9.3.2 FALCONquattro pin assignment

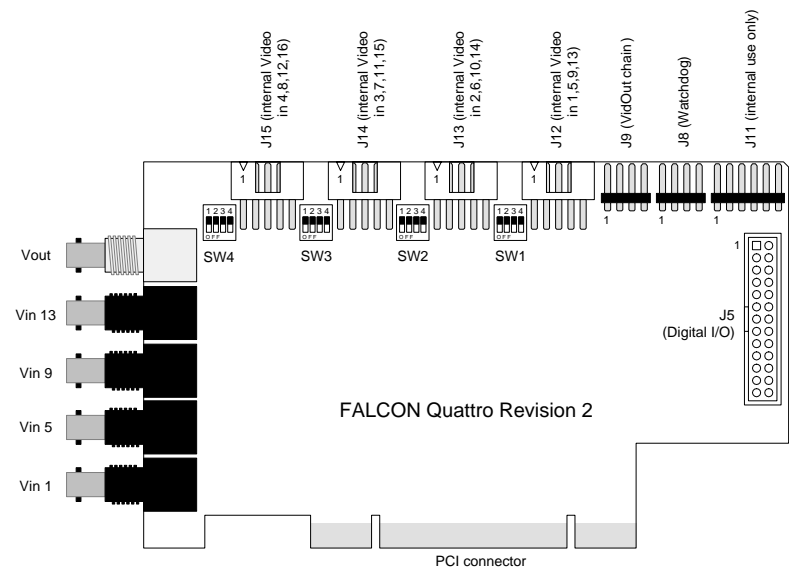


Figure 24: Pin assignment FALCONquattro

Pin assignment of J12 (video inputs 1/5/9/13):

Pin	Assignment	Pin	Assignment
1	GND	6	GND
2	GND	7	VIN 9 (Video In 9)
3	VIN 1 (Video In 1)	8	GND
4	GND	9	VIN 13 (Video In 13)
5	VIN 5 (Video In 5)	10	GND

Table 30: Pin assignment J1 (for FALCONquattro)

Pin assignment of J13 (video inputs 2/6/10/14):

Pin	Assignment	Pin	Assignment
1	GND	6	GND
2	GND	7	VIN 10 (Video In 10)
3	VIN 2 (Video In 2)	8	GND
4	GND	9	VIN 14 (Video In 14)
5	VIN 6 (Video In 6)	10	GND

Table 31: Pin assignment J2 (for FALCONquattro)



**Pin assignment of J14 (video inputs 3/7/11/15):**

Pin	Assignment	Pin	Assignment
1	GND	6	GND
2	GND	7	VIN 11 (Video In 11)
3	VIN 3 (Video In 3)	8	GND
4	GND	9	VIN 15 (Video In 15)
5	VIN 7 (Video In 7)	10	GND

Table 32: Pin assignment J3 (for FALCONquattro)

**Pin assignment of J15 (video inputs 4/8/12/16):**

Pin	Assignment	Pin	Assignment
1	GND	6	GND
2	GND	7	VIN 12 (Video In 12)
3	VIN 4 (Video In 4)	8	GND
4	GND	9	VIN 16 (Video In 16)
5	VIN 8 (Video In 8)	10	GND

Table 33: Pin assignment J4 (for FALCONquattro)

**Pin assignment of J5 (trigger inputs):**

Pin	Assignment	Pin	Assignment
1	Digital Input 1	14	Digital Output 6
2	Digital Input 2	15	Digital Output 7
3	Digital Input 3	16	Digital Output 8
4	Digital Input 4	17	Trigger Input 5
5	Digital Input 5	18	Trigger Input 6
6	Digital Input 6	19	Trigger Input 1
7	Digital Input 7	20	Trigger Input 2
8	Digital Input 8	21	Trigger Input 3
9	Digital Output 1	22	Trigger Input 4
10	Digital Output 2	23	GND
11	Digital Output 3	24	Trigger Input 7
12	Digital Output 4	25	Trigger Input 8
13	Digital Output 5	26	VCC (+5V)

Table 34: Pin assignment J5 (for FALCONquattro)

**J8 (Hardware Watchdog)**

J8	Watchdog Reset
Pins	Assignment
1, 2	Relay contact (Shutter)
3,4	Relay contact (Shutter)

Table 35: J8 (Hardware Watchdog for FALCONquattro)

## 9.4 Steckerbelegung Video Out Board (VOB)

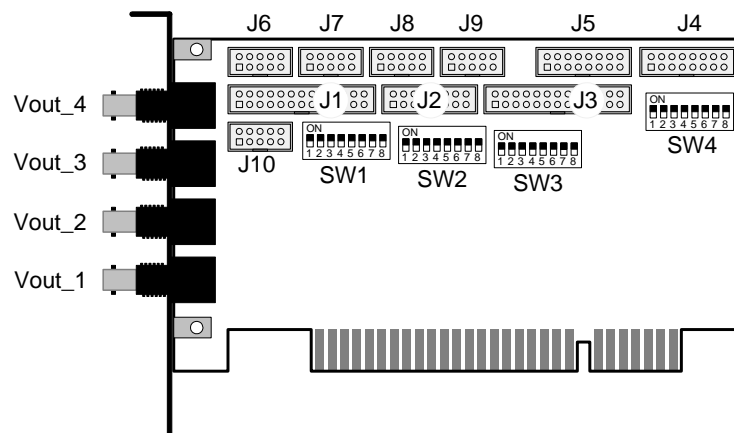


Figure 25: Pin assignment VOB

### Pin assignment of J1 (Videoinputs 1 to 8)

Pin	Assignment	Pin	Assignment
1	GND	14	Vin 7
2	Vin 1	15	GND
3	GND	16	Vin 8
4	Vin 2	17	GND
5	GND	18	nc
6	Vin 3	19	nc
7	GND	20	nc
8	Vin 4	21	nc
9	GND	22	nc
10	Vin 5	23	nc
11	GND	24	nc
12	Vin 6	25	nc
13	GND	26	nc

Table 36: Pin assignment of J1 (VOB)

**Pin assignment of J2 (Videoinputs 9 to 16)**

Pin	Assignment	Pin	Assignment
1	GND	9	GND
2	Vin 9	10	Vin 13
3	GND	11	GND
4	Vin 10	12	Vin 14
5	GND	13	GND
6	Vin 11	14	Vin 15
7	GND	15	GND
8	Vin 12	16	Vin 16

Table 37: Pin assignment of J2 (VOB)

**Pin assignment of J3 (Videoinputs 17 to 24)**

Pin	Assignment	Pin	Assignment
1	GND	14	Vin 23
2	Vin 17	15	GND
3	GND	16	Vin 24
4	Vin 18	17	GND
5	GND	18	nc
6	Vin 19	19	nc
7	GND	20	nc
8	Vin 20	21	nc
9	GND	22	nc
10	Vin 21	23	nc
11	GND	24	nc
12	Vin 22	25	nc
13	GND	26	

Table 38: Pin assignment of J3 (VOB)

**Pin assignment of J5 (Videoinputs 17 to 24)**

Pin	Assignment	Pin	Assignment
1	GND	9	GND
2	Vin 17	10	Vin 21
3	GND	11	GND
4	Vin 18	12	Vin 22
5	GND	13	GND
6	Vin 19	14	Vin 23
7	GND	15	GND
8	Vin 20	16	Vin 24

Table 39: Pin assignment of J5 (VOB)

**Pin assignment of J4 (Videoinputs 25 to 32)**

Pin	Assignment	Pin	Assignment
1	GND	9	GND
2	Vin 25	10	Vin 29
3	GND	11	GND
4	Vin 26	12	Vin 30
5	GND	13	GND
6	Vin 27	14	Vin 31
7	GND	15	GND
8	Vin 28	16	Vin 32

Table 40: Pin assignment of J4 (VOB)

**Pin assignment of J6 (Videoinputs 1,5,9 and 13)**

Pin	Assignment	Pin	Assignment
1	GND	6	GND
2	GND	7	Vin 9
3	Vin 1	8	GND
4	GND	9	Vin 13
5	Vin 5	10	GND

Table 41: Pin assignment of J6 (VOB)

**Pin assignment of J7 (Videoinputs 2,6,10 and 14)**

Pin	Assignment	Pin	Assignment
1	GND	6	GND
2	GND	7	Vin 10
3	Vin 2	8	GND
4	GND	9	Vin 14
5	Vin 6	10	GND

Table 42: Pin assignment of J7 (VOB)

**Pin assignment of J8 (Videoinputs 3,7,11 and 15)**

Pin	Assignment	Pin	Assignment
1	GND	6	GND
2	GND	7	Vin 11
3	Vin 3	8	GND
4	GND	9	Vin 15
5	Vin 7	10	GND

Table 43: Pin assignment of J8 (VOB)

**Pin assignment of J9 (Videoinputs 4,8,12 and 16)**

Pin	Assignment	Pin	Assignment
1	GND	6	GND
2	GND	7	Vin 12
3	Vin 4	8	GND
4	GND	9	Vin 16
5	Vin 8	10	GND

Table 44: Pin assignment of J9 (VOB)

**SW1 – SW4 (75Ω Terminierung)**

Switch	Assignment
1	Termination for Vin 1
2	Termination for Vin 2
3	Termination for Vin 3
4	Termination for Vin 4
5	Termination for Vin 5
6	Termination for Vin 6
7	Termination for Vin 7
8	Termination for Vin 8

*Table 45: SW1 (Termination for Vin 1 to Vin 8)*

Switch	Assignment
1	Termination for Vin 9
2	Termination for Vin 10
3	Termination for Vin 11
4	Termination for Vin 12
5	Termination for Vin 13
6	Termination for Vin 14
7	Termination for Vin 15
8	Termination for Vin 16

*Table 46: SW2 (Termination for Vin 9 to Vin 16)*

Switch	Assignment
1	Termination for Vin 17
2	Termination for Vin 18
3	Termination for Vin 19
4	Termination for Vin 20
5	Termination for Vin 21
6	Termination for Vin 22
7	Termination for Vin 23
8	Termination for Vin 24

*Table 47: SW3 (Termination for Vin 17 to Vin 24)*

Switch	Assignment
1	Abschluss für Vin 25
2	Abschluss für Vin 26
3	Abschluss für Vin 27
4	Abschluss für Vin 28
5	Abschluss für Vin 29
6	Abschluss für Vin 30
7	Abschluss für Vin 31
8	Abschluss für Vin 32

Table 48: SW1 (Termination for Vin 25 to Vin 32)



## 9.5 Optocoupler-boards for PIRANHA III, FALCONplus, FALCONquattro (optional)

The inputs switch voltages between 5V and 24V, the outputs are switching the attached device to ground. All outputs can handle a maximum of 100 mA. The fuse protection is realized with a reversible fuse. All inputs are short-circuit proofed. For attaching inductive devices, we advice the use of protective circuits. The optocoupler boards do not need necessarily a PC Slot. We recommend to use a free Slot.

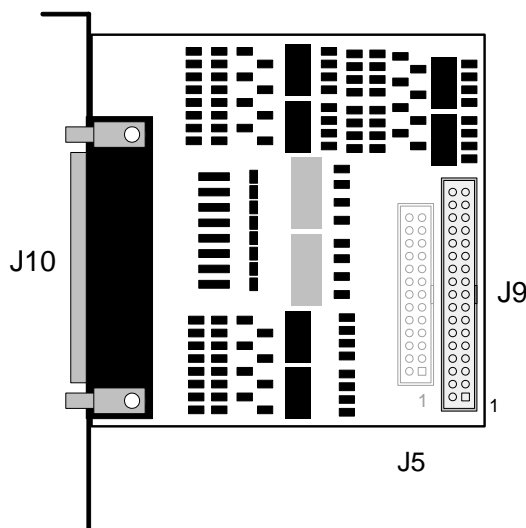


Figure 26: Optocoupler-board OPTO I/O II for PIRANHA III, FALCONplus/duo/quattro

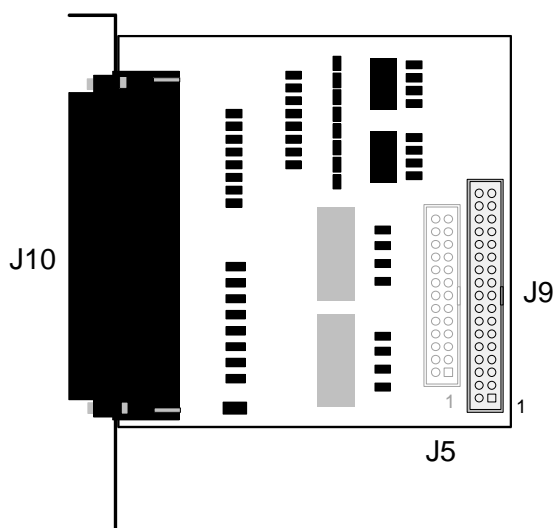
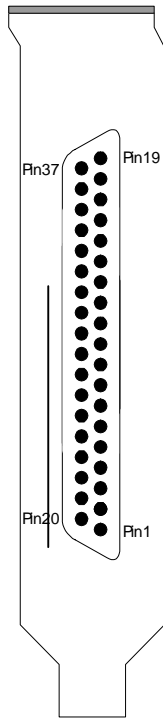


Figure 27: Optocoupler-board OPTO I/O III for PIRANHA III, FALCONplus/duo/quattro

### 9.5.1 Connecting the frame grabber

Via J5 (FALCON Family) and the 24 pin ribbon cable resp. J9 (PIRANHA III) and the 36 pin ribbon cable the optocoupler-extensionboard is connected to the specific frame grabber.

## 9.5.2 37pin Sub-D Interface (J10) of the OPTO I/O II

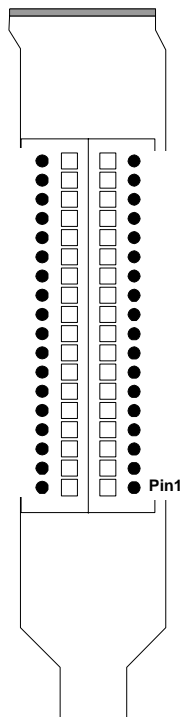


Pin	Assignment	Pin	Assignment
1	Digital Input 1	20	Digital Input 2
2	Digital Input 3	21	Digital Input 4
3	Digital Input 5	22	Digital Input 6
4	Digital Input 7	23	Digital Input 8
5	GND	24	GND
6	Alarm output 1	25	Alarm output 2
7	Alarm output 3	26	Alarm output 4
8	Alarm output 5	27	Alarm output 6
9	Alarm output 7	28	Alarm output 8
10	GND	29	GND
11	Alarm input 1	30	Alarm input 2
12	Alarm input 3	31	Alarm input 4
13	Alarm input 5	32	Alarm input 6
14	Alarm input	33	Alarm input 8
15	Alarm input 9 *	34	Alarm input 10 *
16	Alarm input 11 *	35	Alarm input 12 *
17	Alarm input 13 *	36	Alarm input 14 *
18	Alarm input 15 *	37	Alarm input 16 *
19	GND		

\* with PIRANHA III only

Table 49: Pinassignment J10 of the OPTO I/O II

### 9.5.3 36 pin adapter bushing (J10) of the OPTO I/O III



Pin	Assignment	Pin	Assignment
36	GND	35	Power IN (max. 24V)
34	GND	33	Digital Input 4
32	GND	31	Digital Input 3
30	GND	29	Digital Input 2
28	GND	27	Digital Input 1
26	GND	25	Alarm input 4
24	GND	23	Alarm input 3
22	GND	21	Alarm input 2
20	GND	19	Alarm input 1
18	GND	17	Alarm output 8
16	GND	15	Alarm output 7
14	GND	13	Alarm output 6
12	GND	11	Alarm output 5
10	GND	9	Alarm output 4
8	GND	7	Alarm output 3
6	GND	5	Alarm output 2
4	GND	3	Alarm output 1
2	GND	1	Power IN (max. 24V)

Table 1: Pinassignment J10 of the OPTO I/O III



**NOTE:**

For correct support of the OPTO I/O III in iGuard® it is necessary to edit „pirmcr.ini“. The file is located in the windows directory ( C:\windows\ resp. C:\winnt\ ). Open the file with an editor (e.g. the Windows editor in the Programs-Accessories Folder) and add in the next free line „Bundle=1“. Save the file and restart iGuard® if necessary.

#### 9.5.4 Input circuit OPTO I/O II and III

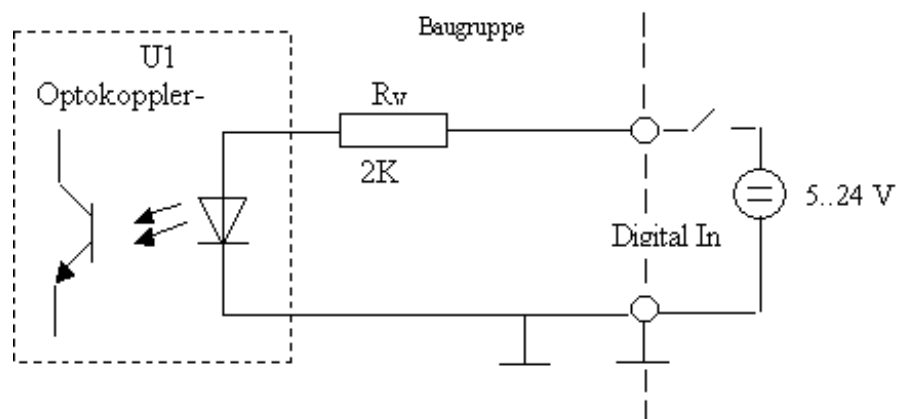


Figure 28: Optocoupler-Input circuit

#### 9.5.5 Output circuit of the OPTO I/O II

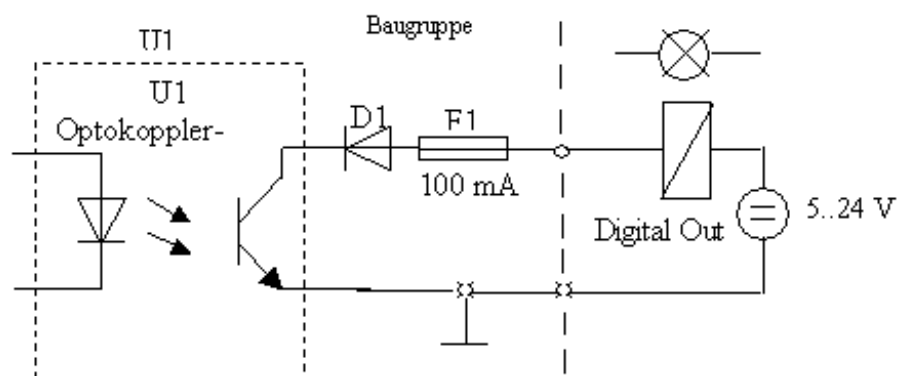


Figure 29: Optocoupler-output circuit of the OPTO I/O II

#### 9.5.6 Output circuit of the OPTO I/O III

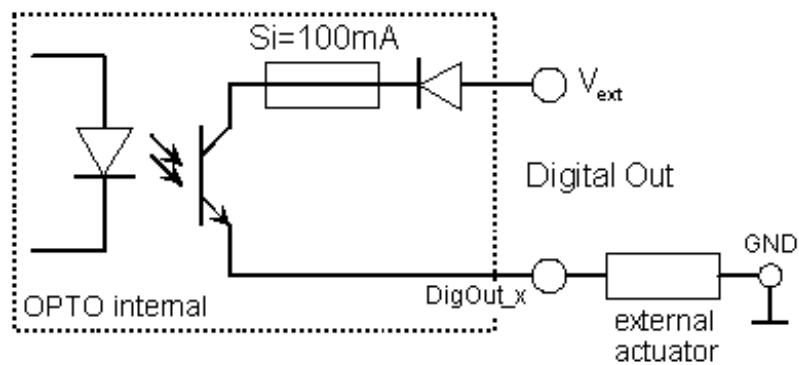


Figure 30: Optocoupler-output circuit of the OPTO I/O III

### 9.5.7 Optocoupler boards technical Data

#### Alarm inputs

Number of Trigger-resp. Alarm inputs:	OPTO I/O II: 16 OPTO I/O III: 4
Trigger edge:	positive oder negative
Activating Interrupts:	Yes
Voltage range:	5 to 24 V DC
Input current:	12 mA (typical.)
Galvanic separation:	Up to 300 V

Table 50: Technical Details of the optocuppler boards, alarm inputs

#### Digital Inputs:

Number of digital Inputs:	OPTO I/O II: 8 OPTO I/O III: 4
Activating Interrupts:	No
Voltage range:	5 to 24 V DC
Input current:	12 mA (typical)
Galvanic separation:	Up to 300 V

Table 51: Technical Details of the optocuppler boards, digital inputs

## 9.6 Pin assignments of the video extension boards

### 9.6.1 Video extension board IS-SLOT-4 (for FALCONquattro)

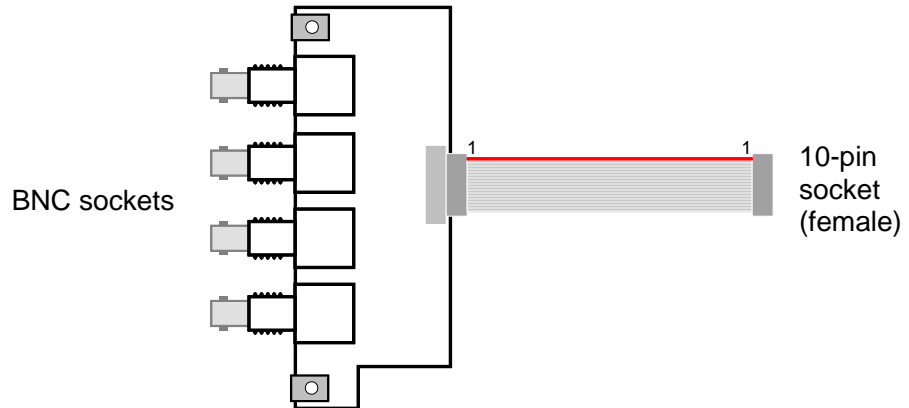


Figure 31: Video extension board with 4 BNC sockets (IS-SLOT-4)

#### Pin assignment of J11 (extension board, 10 pin DSUB socket):

Pin	Assignment	Pin	Assignment
1	GND	6	GND
2	GND	7	VIN 3 (Video In 3)
3	VIN 1 (Video In 1)	8	GND
4	GND	9	VIN 4 (Video In 4)
5	VIN 2 (Video In 2)	10	GND

Table 52: Pin assignment J11 (video extension board IS-SLOT-4t)

### 9.6.2 Video extension board IS-SLOT-D26 (for PIRANHA III and FALCONquattro)

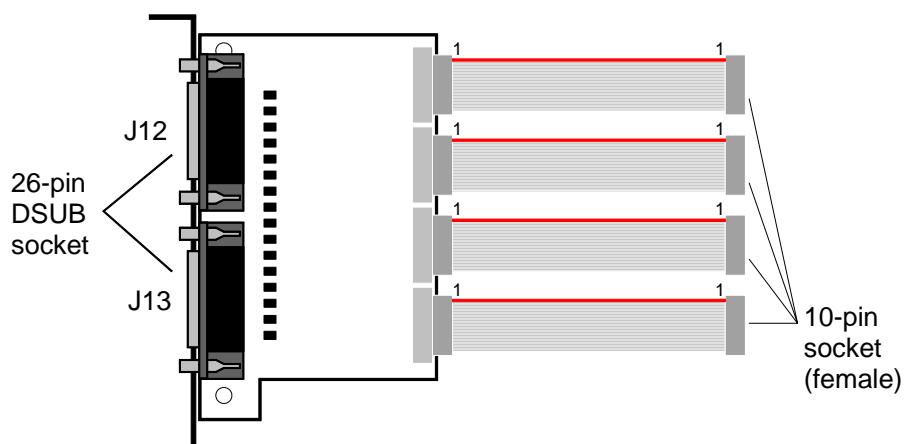


Figure 32: Video extension board with DSUB sockets (IS-SLOT-D26)

#### Pin assignment of J12 (extension board, 26 pin DSUB socket):

Pin	Assignment	Pin	Assignment
1	VIN 1 (Video In 1)	14	GND
2	VIN 5 (Video In 5)	15	GND
3	VIN 2 (Video In 2)	16	GND
4	VIN 6 (Video In 6)	17	GND
5	VIN 3 (Video In 3)	18	GND
6	VIN 7 (Video In 7)	19	nc
7	VIN 4 (Video In 4)	20	nc
8	VIN 8 (Video In 8)	21	GND
9	nc	22	nc
10	GND	23	nc
11	GND	24	GND
12	GND	25	nc
13	GND	26	nc

Table 53: Pin assignment J12 (video extension board IS-SLOT-D26)

**Pin assignment of J13 (extension board, 260 pin DSUB socket):**

Pin	Assignment	Pin	Assignment
1	VIN 9 (Video In 9)	14	GND
2	VIN 13 (Video In 13)	15	GND
3	VIN 10 (Video In 10)	16	GND
4	VIN 14 (Video In 14)	17	GND
5	VIN 11 (Video In 11)	18	GND
6	VIN 15 (Video In 15)	19	nc
7	VIN 12 (Video In 12)	20	nc
8	VIN 16 (Video In 16)	21	GND
9	nc	22	nc
10	GND	23	nc
11	GND	24	GND
12	GND	25	nc
13	GND	26	nc

*Table 54: Pin assignment J13 (video extension board IS-SLOT-D26)*



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