



Instructions for Use

vicosys[®] 6300

Multi-Camera System

Impress

Publisher / Manufacturer	Vision & Control GmbH Mittelbergstraße 16 98527 Suhl, Germany Telephone: +49 (0) 3681 7974-0 Telefax: +49 (0) 3681 7974-33 <i>www.vision-control.com</i>
Name of the document	999.995.428.10-en-2.1
Date of first issue	09.05.2022
Date modified	03.06.2022
Copyright	© Vision & Control GmbH 2022

Copyright

It is forbidden to pass this document on to third parties, reproduce and communicate its contents in as far as this has not been expressly authorized. Offenders will be liable for damages.

All rights are reserved with respect to patent, utility sample and design patent registrations, as well as for rights of use within the scope of copyright.

vicotar[®], vicolux[®], pictor[®], vicosys[®] and vcwin[®] are registered trademarks of Vision & Control GmbH.

The products and brand names of other manufacturers or suppliers are mentioned for information only.

Validity

These instructions for use are valid for the following device as well as the derived device configurations.

Device	Description	Order no.
vicosys 6300 Basic	PC-based multi camera system, including operating	4-21-185
Device	software vcwin pro, configurable	

Device configurations

The vicosys 6300 consists of the basic device with software as well as optional components and optional software. The Device is assembled and configured by the manufacturer according to the selected components.

The device has two slots for expansion cards.

Only one camera card, one I/O process interface and one fieldbus interface can be selected at a time.

Camera interface

Designation	Description	Order no.
Camera interface	4 Port Gigabit Ethernet PoE, for connecting Gig-E	4-21-178
4 x GigE	vision cameras, incl. assembly	

I/O process interface

Designation	Description	Order no.
Digital I/O card	16 in-/ 16 outputs, Open Emitter (PNP), Model: APCIe-1500	4-21-170
Digital I/O card	16 in-/ 16 outputs, Open Collector (NPN),	4-21-171
ADLINK	Model: LPCIe-7230	

Fieldbus interface

Designation	Description	Order no.
PROFINET card	Integration of a PROFINET interface,	4-21-175
HILSCHER	Model: CIFX 50E-RE, inclusive software-license and assembly	

Optional software

Designation	Description	Order no.
Thermal imaging	License for multi-camera system vicosys	4-20-209
functions		
Asynchronous	License for multi-camera system vicosys	4-20-210
processes		
Halcon	License for multi-camera system vicosys	3-90-032

Optional hardware configuration

Designation	Description	Order no.
Fanless option	Configuration of the vicosys 6300 to a fanless system, restricted operating temperature range (10 °C to 35 °C)	4-21-186

Table of Contents

1 Important Information	6
1.1 Information about the Instructions of Use	6
1.2 Intended Use	6
1.3 Improper Use	6
1.4 Qualified Personnel	7
1.5 Warranty and Liability	7
2 Safety	8
2.1 Presentation of Safety Instructions	8
2.2 Safe Handling of the Device	8
3 Scope of Delivery and Accessories	9
3.1 Scope of Delivery	9
3.2 Accessories	9
4 Device Description	11 14
4.1 Device views	 4
4.2 Interfaces and Connectors	12
4.3 Display and Operating Liements	ے ا 13
4.5 Technical Drawings	13 14
5 Technical Data	16
5.1 General Parameters	16
5.2 Electrical Parameters	16
5.3 Conditions for Operation. Storage and Transport.	17
5.4 Interfaces	17
5.4.1 Ethernet interfaces	17
5.4.2 RS232 interfaces	18
5.4.3 USB interfaces	18
5.5 Expansion Cards	19
5.5.1 Camera interface: 4-port Gigabit Ethernet	19
5.5.2 Digital I/O card ADDI-DATA	20
5.5.2.1 Digital input channels	20
5.5.2.2 Digital output channels	21
5.5.3 Digital I/O card ADLINK	22
5.5.3.1 Digital input channels	22
5.5.3.2 Digital output channels	24
5.5.4 PROFINET card HILSCHER	25
6 Commissioning	26
6.1 Unpacking	26
6.2 Mounting	26
6.3 Connecting	28
6.3.1 Connect the Ethernet Interfaces.	28
6.2.2 Connect a manitar	20
6.3.4 Connect the cameras	20
6.3.5 Connect the digital I/O interface (Digital I/O card ADDIDATA)	29 30
6.3.6 Connect the digital I/O interface (Digital I/O card ADDIDATA)	30
6.3.7 Connect the supply voltage and start the device	32
6.4 Creating a connection	35
6.4.1 Create a LAN connection / direct connection	
6.4.2 Create a serial connection	36
7 Operation	37
7.1 Switching On and Off	37
7.2 Operation via Software	37

8 Maintenance and Service	
8.1 Maintenance	
8.2 Service	
9 Disposal	
•	

Table of Figures

Image 1:	Device views	.11
Image 2:	Basic device: interfaces and connectors	.11
Image 3:	Basic Device: Display and Operating Elements	.12
Image 4:	Type plate	. 13
Image 5:	Technical drawing vicosys 6300	.14
Image 6:	Technical drawing vicosys 6300 mounting plates	15
Image 7:	Basic device: Ethernet interfaces	.17
Image 8:	Basic device: RS232 interfaces	18
Image 9:	Basic device: USB interfaces	. 19
Image 10:	Expansion "Camera interface 4 x GigE"	.19
Image 11:	Expansion "Digital I/O card ADDI-DATA"	.20
Image 12:	Schematic layout of digital input channels 1 to 16	.20
Image 13:	Schematic layout of digital output channels 1 to 16	21
Image 14:	Expansion "Digital I/O card ADLINK"	.22
Image 15:	Schematic layout of digital input channels 1 to 8	22
Image 16:	Schematic layout of digital input channels 9 to 16	.22
Image 17:	Schematic layout of digital output channels	.24
Image 18:	Expansion "PROFINET card HILSCHER"	25
Image 19:	Operating voltage supply	.34

1 IMPORTANT INFORMATION

1.1 Information about the Instructions of Use

This document contains technical information, important instructions for correct installation, commissioning and use, as well as product information which were up-to-date at the time of going to press.

Using this document makes it easier for you to familiarise yourself with the device and avoid malfunctions caused by improper operation.

The instructions of use and the local regulations and rules must be followed.

To ensure a save and proper application, please read the instructions of use carefully and keep them for future reference.

1.2 Intended Use

The device is intended exclusively for use as a machine vision system for industrial image processing in automation technology.

It is intended for use in a confined environment.

The device is not suitable for use in potentially explosive areas.

The device may only be used if it is in technically faultless condition and only for its intended purpose, and only in accordance with the specifications in this instructions of use by authorised operative personnel, who are aware of the safety rules and hazards.

If the device is planned to be used for any other purpose or in a different environment, the express authorisation of the manufacturer must be obtained in advance. Any modifications or adaptations required may only be made by the manufacturer.

1.3 Improper Use

All unintended use and all device-related activities not described in these instructions of use is to be deemed as unauthorised misuse outside the legal limits of indemnity of the manufacturer.

Reasonably foreseeable misuse is:

- Non-compliance with the instructions for use,
- Faulty operation,
- Operating by personnel not qualified or instructed,
- · Operating the device if it is not in a proper technical condition,
- Operating the device in ambient conditions differing from the corresponding specifications in the instructions of use
- Operating the device with voltages differing from the corresponding specifications in the instructions of use,
- · Using spare parts which are not original parts from the manufacturer,
- Using incompatible accessory components,
- Improper maintenance and repair works,
- Unauthorised modifications to the device.

1.4 Qualified Personnel

The device may only be assembled, commissioned, operated, maintained, installed, set up, cleaned, repaired and transported by qualified skilled personnel.

A qualified person is deemed to be someone who has been trained and instructed for his/ her activities with the device, and who has proven his/her capability to the purchaser. The operating personnel must be authorised by the purchaser for those activities at the device.

For the installation and operation of the device, the skilled personnel must know and comply with the applicable guidelines and standards for handling control equipment, electrical installations and working materials.

1.5 Warranty and Liability

The contents of this document have been checked carefully and correspond to current legislation and best practise at the time of going to press.

However, the manufacturer shall not be liable for any damage arising from the use of this edition of the manual, and rejects any warranty derived therefrom.

Within the bounds of the legal requirements, the manufacturer shall only be responsible for the technical safety characteristics of the device if the maintenance, repairs and modifications to the device are performed by himself or by authorised skilled personnel in accordance with his instructions.

Loss of warranty

The manufacturer shall accept no liability or warranty in the event of improper use, opening of the device or incorrect maintenance.

2 SAFETY

2.1 Presentation of Safety Instructions

Each safety instruction is introduced by a key word and colour highlighted.

The key word indicates the degree of danger. The danger and its cause are described, and then the measures to prevent conceivable consequences of the danger. These measures must be taken.

🚹 DANGER

Indicates an imminent danger with high risk, resulting in severe injuries or death if not avoided.

🚹 WARNING

Indicates a hazardous situation with medium risk, possibly resulting in severe injuries or death if not avoided.

A CAUTION

Indicates a hazardous situation with low risk, resulting in minor or medium injuries if not avoided.

NOTICE

Indicates a situation that may result in property damage.

Risk of injury due to electric shock.

2.2 Safe Handling of the Device

Read the following applicable safety instructions carefully and completely. Follow the instructions for your own safety, the safety of other people, and to avoid damage to the device and the connected technical equipment. Hazards going beyond the general safety instructions are referred to separately at the relevant points in this manual.



 Before starting work on the device, disconnect it from the operating voltage supply.

• Follow all applicable safety regulations for the preparation and operation of electrical devices.

3 SCOPE OF DELIVERY AND ACCESSORIES

3.1 Scope of Delivery

Designation	Quantity
Device vicosys 6300 (configured)	1 x
Operating voltage plug	1 x
Mounting plate in Z-shape wide	1 x
Mounting plate in Z-shape narrow	3 x
USB stick with:	1 x
 Operating software vcwin Instructions for Use vicosys 6300 as PDF Instructions for Use vcwin as PDF SDDML and EDS files 	
Instructions for Use vicosys 6300	1 x

3.2 Accessories

On the following pages you will find an overview of all available accessories.

For more detailed technical information on the accessories, please refer to the data sheets in the product catalog under *www.vision-control.com*.

Power supply

Designation	Description	Order no.
Power supply	Compact switching power supply 24 V / 120 W for	4-40-218
24V/120W/5A	mounting on a 35 mm DIN rail TS35	

Cameras

Designation	Description
GigE Vision	Cameras with different resolutions and specifications (monochrome /
cameras	colour / NIR) according to the requirements

Accessories for the option Digital I/O card ADDI-DATA

Designation	Description	Order no.
Terminal Board	D-Sub terminal board with LEDs, for DIN rail mounting,	4-40-268
PX901-DG	with screw terminal strips for connecting sensors, actuators or similar to the I/O expansion card of the device	
WAGO transfer	Transfer device 37-pole with Sub-Min-D female connector	4-40-269
device D-Sub	strip for connecting sensors, actuators or similar to the I/O	
	expansion card of the device	
I/O cable with	Cable for connecting the terminal board PX901-DG to the	4-40-266
2 x D-Sub	ADDIDATA expansion card APCIe-1500, length: 2 m	
I/O cable with	Cable for direct connection of PLC inputs and outputs to	
1 x D-Sub	the I/O expansion card	
	Length: 2 m	4-40-267
	Length: 5 m	4-40-273
	Length: 10 m	4-40-274

Designation	Description	Order no.
Terminal Board DIN-50S-01	Terminal board with a 50-pin SCSI-II connector for DIN rail mounting for connecting sensors, actuators or similar to the I/O expansion card of the device	4-40-288
I/O cable ACL-10250-1	Cable for connecting the I/O card LPCIe-7230 with the terminal board DIN-50S-1, length: 2 m	4-40-289

Accessories for the option Digital I/O card ADLINK

4 DEVICE DESCRIPTION

4.1 Device Views



Image 1: Device views

- (1) Heat sink
- (2) Side panel left
- (3) Interfaces and Connectors
- (4) Ventilation opening front

4.2 Interfaces and Connectors

- (5) Side panel right
- (6) Ventilation opening back
- (7) Type plate
- (8) MAC address (optional)



Image 2: Basic device: interfaces and connectors

- (1) 2 x Gigabit Ethernet
- (2) 8 x USB
- (3) 2 x RS232
- (4) 1 x VGA / 1 x HDMI

- (5) 1 x Housing ground
- (6) Operating voltage input
- (7) Process interface (optional)
- (8) Camera interface (optional)

4.3 Display and Operating Elements





(1) Display Elements (2) Operating Elements

Display Elements

Pos.	Designation	Description	Status
1	TX1/RX1	COM1 LED for monitoring the data transmission status	Green: flashes when data is being transferred Green: flashes when data is being transferred
	TX2/RX2	COM2 LED for monitoring the data transmission status	Green: flashes when data is being transferred Green: flashes when data is being transferred
	Hard disk	Displays the status of the hard disk	Orange: Data access Off: no access
2	PWR	Displays the status of the device	Off: no operating voltage Green: operating voltage applied, device is running Red: operating voltage applied, device is off or in idle state

Operating Elements

Pos.	Designation	Description	
2	PWR	Power button: Turns the device on and off.	

4.4 Notices on the device

The following notes are located on the back of the device:

Type plate



Image 4: Type plate

- (1) Serial number as 2D Data Matrix code
- (2) Serial number as plain text
- (3) Manufacturer information
- (4) Device designation
- (5) Version number

MAC address

For the "PROFINET card HILSCHER" configuration, there is a label with the MAC address of the Profinet card next to the type plate.

4.5 Technical Drawings

Basic Device vicosys 6300



Image 5: Technical drawing vicosys 6300

Mounting Plates





Image 6: Technical drawing vicosys 6300 mounting plates

5 TECHNICAL DATA

5.1 General Parameters

Parameter	Characteristic	
Туре	Compact multi-camera system for wall mounting	
Housing material	Galvanized sheet steel, varnished on the outside	
Housing dimensions	W x H x D: 192 mm x 123 mm x 230 mm	
Cooling	Fan (active) / Air filter	
Weight	Approx. 4.8 kg	
Degree of protection	IP 20	
Safety class	Class III, safety extra low voltage (SELV)	
Certificate	CE, FCC	

Parameter	Characteristic		
Processor	Intel® Core™ i3-9100TE (6 MB Cache, up to 3.20 GHz)		
Main memory	8 GB, DDR4, 2400MHz		
SSD	32 GB (of which approx. 3 GB reserved)		
Communication interfaces	LAN 1: Ethernet 10/100/1000 Mbit LAN		
	LAN 2: Ethernet 10/100/1000 Mbit direct connection		
	6 x USB 3.1 and 2 x USB 3.0		
	2 x RS232 process communication / data transfer		
Camera interface (1)	LAN 2: 1 x GigE Vision - no PoE		
Expansion card	4 x GigE Vision with PoE		
Camera interface			
Expansion card	Digital I/O card ADDI DATA, 16 IN/ 16 OUT, PNP		
process interface	Digital I/O card ADLINK, 16 IN/ 16 OUT, NPN		
Expansion card field bus	PROFINET card HILSCHER, Model: CIFX 50E-RE		
Video out	VGA, HDMI		

⁽¹⁾ When using the camera interface, the communication interface for the direct connection is deactivated.

5.2 Electrical Parameters

Parameter	Min	Nom	Max
Operating voltage U_o	12 V DC	24 V DC	36 V DC
Power consumption at U_0 = 24 V DC			
vicosys 6300 Basic Device			32 W
Expansion card - camera card			60 W
Expansion card - process interface			15 W
Power consumption P_{tot} at U_0 = 24 V DC			
vicosys 6300			116 W

5.3 Conditions for Operation, Storage and Transport

Observe the specified ambient conditions when transporting and storing the device.

For accessories, connected devices and components observe the specific information in the associated instructions for use.

Ambient Conditions

	Operation	Storage / Transport
Temperature	10 °C to 48 °C	-20 °C to 60 °C
	10 °C to 35 °C (without fan)	
Air humidity	10 % to 85 %	10 % to 95 %
Condensation water	not permissible	not permissible

5.4 Interfaces

5.4.1 Ethernet interfaces

The device has two Ethernet interfaces:



Image 7: Basic device: Ethernet interfaces

(1) LAN 1

(2) LAN 2

Characteristics

- LAN: 10/100/1000 Mbps
- Ethernet interface 1 (LAN 1):
 - Integration of the device in a LAN, suitable for process communication as well as parametrisation with the operating software vcwin.
- Ethernet interface 2 (LAN 2):
 - Connection of a GigE vision camera. The interface is not PoE capable. The camera must be supplied with power externally
 - ° Direct connection to a PC running the operating software vcwin (service connection).

Status indicators

LED	Colour	Status	Description
LED 1	Green	Off No data transmission	
		On	Send / Receive data
LED 2	Orange	Off	Operation as 10 Mbps connection
		On	Operation as Gigabit connection (1000 Mbit/s)

5.4.2 RS232 interfaces

The device has two RS232 interfaces:



Image 8: Basic device: RS232 interfaces

(1) Serial 1 (2) Serial 2

Characteristics Serial / RS232

- Serial communication to the process computer.
- Serial communication with peripheral devices.
- The baud rate is set in the factory to 9.600 kbit/s. The baud rate can be adjusted with the operating software vcwin.

Parameter

Min	Nom	Max
9.6 kBit/s (1)		115.2 kBit/s
	8	
	1	
	None	
	None	
	Non-existent	
	Min 9.6 kBit/s (1)	Min Nom 9.6 kBit/s (1) 8 1 8 None None None None None-existent Non-existent

¹⁾ Factory setting

5.4.3 USB interfaces

NOTICE

Overheating due overload

- Each USB port can deliver a maximum output current of 900 mA.
- Ports 1/2, 3/4, 5/6 and 7/8 are each secured with 1800 mA.

ADVICE

Data loss due to incorrect disconnecting of devices!

- Always unmount USB storage devices before switching off or disconnecting.
- Unmount in vcwin: Using the instruction **External Storage Device** - **Unmount USB Device**.

The device has 6 USB 3.1 ports and two USB 3.0 ports.



Image 9: Basic device: USB interfaces

(1) 6 x USB 3.0 (2) 2 x USB 3.1

Characteristics

- Archiving of images on USB storage devices (USB sticks or USB hard drives with the file system FAT32).
- Performing updates, backups or restores by means of the vicostick (accessories).

5.5 Expansion Cards

5.5.1 Camera interface: 4-port Gigabit Ethernet

In the "Camera interface 4 x GigE" configuration, the device has four GigE vision interfaces.



Image 10: Expansion "Camera interface 4 x GigE"

(1) 4 x GigE Vision interfaces

Characteristics

- LAN: 10/100/1000 Mbps
- Connection: 4 port / 4 x RJ45
- Power supply via PoE: yes

Status indicators

LED	Colour	Status	Description	
PoE	Red	Off	Power over Ethernet off	
		On	Power over Ethernet on	
Active/Link	Green	Off	Port disconnected / not connected	
		On	Port connected, no data transmission	
		Flashing	Port connected, Send / Receive data	
Speed LED	Orange	On	10 / 100 Mbps	
	Green	On	1000 Mbps	

5.5.2 Digital I/O card ADDI-DATA

The device has an external digital I/O interface 16 IN / 16 OUT, PNP for the configuration "Digital I/O card ADDI-DATA".



Image 11: Expansion "Digital I/O card ADDI-DATA"

(1) Digital I/O card ADDI DATA, 16 IN/ 16 OUT, PNP

Characteristics

- Installed by manufacturer
- PNP-Open Collector
- Connector: 37-pin D-Sub connector

5.5.2.1 Digital input channels



Image 12: Schematic layout of digital input channels 1 to 16

Characteristics

- Polarity protection
- Galvanic decoupled
- · Inputs have ESD protection and interference signal filter
- The input channels have a common GND connection (GND-IN)

Parameter

Parameter	Min	Nom	Мах
Number of inputs			16
Input voltage + VIN (DC)	0 V	24 V	30 V ⁽¹⁾
Input voltage "Low"	0 V		14 V
Input voltage "High"	19 V		30 V
Input current V _{in} = 24 V		2 mA	
Input frequency at V _{in} = 24 V			5 kHz
Galvanic decoupling		present	

⁽¹⁾ Higher input voltages destroy the respective input channel

5.5.2.2 Digital output channels



Image 13: Schematic layout of digital output channels 1 to 16

Characteristics

- Galvanic decoupled
- Overload protection (short circuit / overtemperature)
- Output current limit via polyswitch fuse
- Supply voltage monitoring
- Output channels as high-side driver (high-active)
- The output channels are supplied by the operating voltage + VDD
- ESD protection and output signal filter
- The output channels have a common GND connection (GND-OUT)

Parameter

Parameter	Min	Nom	Max
Number of outputs			16
Operating voltage + VDD (DC)	11 V ⁽¹⁾	24 V	36 V
Output current per output			500 mA
Output current for 8 outputs			1.5 A
Short circuit current / output (2)		1,5 A	
Turn-on time ⁽³⁾		50 µs	
Turn-on time ⁽³⁾		75 µs	
Galvanic decoupling		present	

⁽¹⁾ Supply voltage < 7 V leads to an switch-off of all output channels

 $^{(2)}$ $\,$ at pulse current, at 24 V and R_{last} < 0.1 Ω

 $^{(3)}$ at I_{out} = 0.5 A and ohmic load

5.5.3 Digital I/O card ADLINK

The device has an external digital I/O interface 16 IN / 16 OUT, NPN for the configuration "Digital I/O card ADLINK".



Image 14: Expansion "Digital I/O card ADLINK"

(1) Digital I/O card ADLINK, 16 IN/ 16 OUT, NPN

Characteristics

- Installed by manufacturer
- NPN-Open Collector
- Connector: 50-pin SCSI-II Connector

5.5.3.1 Digital input channels

Digital input channels 1 to 8



Image 15: Schematic layout of digital input channels 1 to 8

Characteristics

- Non-polarised
- Galvanic decoupled among each other
- · For each input channel, both input signals are lead out to the connector

Digital input channels 9 to 16



Image 16: Schematic layout of digital input channels 9 to 16

Characteristics

- Non-polarised
- Galvanic decoupled
- For each input channel, an input signal and an input signal for all input channels (9 to 16) are lead out to the connector

Parameter

Parameter	Min	Nom	Мах
Number of inputs			16
Input voltage + VIN (DC)	0 V	24 V	24.5 V (1)
Input voltage "Low"	0 V		1.5 V
Input voltage "High"	5 V		24 V
Input current "Low"	0 mA		1.5 mA
Input current "High"	4.2 mA		20 mA
Input resistance		1.2 kΩ /	
		0.5 W	
Switching frequency	0 Hz		10 kHz
Galvanic decoupling		present	

⁽¹⁾ Higher input voltages destroy the respective input channel

5.5.3.2 Digital output channels



Image 17: Schematic layout of digital output channels

Characteristics

- Galvanic decoupled
- Output channels as NPN open-collector outputs (low-active) with integrated free-wheeling diode
- The output channels are supplied by the supply voltage + VDD / GND
- The output channels have a common GND connection (GND-OUT)

Parameter

Parameter	Min	Nom	Max
Number of outputs			16
Operating voltage + VDD (DC)	5 V	24 V	35 V
Output current per output (1)			500 mA
Output current of all outputs (2)			370 mA
Output current of all outputs ⁽³⁾			130 mA
Galvanic decoupling		present	

⁽¹⁾ Duty cycle: unlimited "On", single output channel

- ⁽²⁾ Duty cycle: max. 25 ms "ON", all 16 output channels simultaneously, duty factor (ON: OFF): 1 : 9
- ⁽³⁾ Duty cycle: max. 25 ms "ON", all 16 output channels simultaneously, duty factor (ON: OFF): 1 : 1

5.5.4 PROFINET card HILSCHER

In the configuration "PROFINET card HILSCHER", the device has a PROFINET interface for process data exchange in a PROFINET network.



Image 18: Expansion "PROFINET card HILSCHER"

(1) PROFINET card HILSCHER, Model: CIFX 50E-RE

Characteristics

- PROFINET IO Device
- Conformance Class CC_B
- Net Load Class III
- PROFINET RT

Status indicators

LED	Colour	Status	Description	
SYS	Green	On	Operating system running	
	Green / Yellow	Flashing Second stage bootloader is waiting for firmware		
	Yellow	On Bootloader netX (= romloader) is waitin second stage bootloader		
		Off	Power supply for the device is missing or hardware defect	
SF	Red	Off	No error	
System		Flashing	DCP signal service is initiated via the bus	
Failure		On	Watchdog timeout; channel, generic or extended diagnosis present; system error	
BF	Red	Off	No error	
Bus Failure		Flashing	No data exchange	
		On	No configuration; or low speed physical link; or no physical link	
Link	Green	On	The device is linked to the Ethernet	
Ch0 / Ch1		Off	The device has no link to the Ethernet	
RX / TX Ch0 / Ch1	Yellow	Flickering (load dependant)	The device sends/receives Ethernet frames	
		Off	The device does not send/receive Ethernet frames	

6 COMMISSIONING

6.1 Unpacking

NOTICE

Damage or destruction of the device caused by condensation and large temperature differences!

- Do not subject the device to large temperature fluctuations.
- After storage and transport, allow the device to adjust slowly to the ambient temperature at the place of use.
- 1. Opening the carton: carefully cut open the adhesive tape with a suitable tool (knife or similar).
- 2. Remove the diaphragm cover.
- 3. Remove the device from the carton.
- 4. Keep packing material or dispose it.

6.2 Mounting

NOTICE

Installation and connection operations may only be performed in the off and de-energised state.

NOTICE

Damage or destruction caused by overheating.

- Do not cover the device. Do not operate the device packed.
- Leave sufficient room for air circulation.
- Do not cover the fan.
- Operate the device in ambient conditions according to the specifications in these instructions of use.

Wall and table mounting

The device is designed for wall and table mounting. Note the installation positions.

The scope of delivery includes mounting plates that can be attached to the holes.

Requirements for mounting

- Use the mounting holes provided on the sides of the device for mounting.
- Screw the device to the mounting plates on suitable mounting surfaces.
- Do not block the ventilation openings or the heat sink of the device.
- Keep sufficient space for connecting the connectors on the front side.

Mounting right side





Mounting rear side



Mounting bottom side



6.3 Connecting

NOTICE

Installation and connection operations may only be performed in the off and de-energised state.

NOTICE

Cable damage

- Comply with the specified minimum bending radius.
- Cables must generally be mounted with a strain relief clamp.
- Use cables corresponding to the specification (see data sheet).

6.3.1 Connect the Ethernet interfaces

Connect the device with the LAN via Ethernet cable.

Use the Ethernet interface LAN 1 for process communication and parametrisation.

Use the Ethernet interface LAN 2 for direct connection to a PC.

6.3.2 Connect the RS232 interface

For serial communication, connect the device to the process environment using an RS232 cable.

6.3.3 Connect a monitor

A monitor can be connected to the device to display the boot process or the outputs of a test program. Use the VGA or HDMI port for this purpose.

6.3.4 Connect the cameras

The device has a GigE Vision port (LAN2). This port do not provide supply voltage for cameras. An external power supply is required to operate the camera. Connect these according to manufacturer's specifications.

The ports of the optional camera card provide a supply voltage for cameras via PoE. If the connected camera does not support PoE, an external power supply is required. Connect these according to manufacturer's specifications.

Connect the cameras to the corresponding ports.

Use of switches

By using a Gigabit Ethernet switch up to 8 cameras can be connected to the device. However, in this process the bandwidth is divided between the cameras used, so the full frame rat may not be possible.

ADVICE

Requirements of the switch

- Support for Jumbo Frames
- A minimum of 64 kB buffer available per port

Line scan cameras

ADVICE

Line scan cameras must be operated alone at one port.

6.3.5 Connect the digital I/O interface (Digital I/O card ADDIDATA)

NOTICE

Damage of the outputs through inductive loads

 With induced loads the outputs have to be switched with a free-wheeling diode antiparallel to the load.

NOTICE

Destruction caused by potential differences

 The ground potential (GND) of the digital inputs and outputs of the device must be connected to the ground potential (GND) of the control voltage of the device to be controlled.

Connecting

The components required for connection are available as accessories. "Accessories for the option Digital I/O card ADDI-DATA"

Connect the 37-pin D-Sub connector of the unit's I/O expansion card to the process environment using one of the following two variants:

- I/O cable with 2 x D-Sub sockets and terminal board
- I/O cable with 1 x D-Sub socket and open cable end

Pin assignment

	1			
Digital Input 1	(1)		(20)	Digital Input 2
Digital Input 3	(2)	0 X	(21)	Digital Input 4
Digital Input 5	(3)	0 2	(21)	Digital Input 6
Digital Input 7	(4)	\circ		
Digital Input 9	(5)	õ Õ	(23)	Digital Input 8
Digital Input 11	(0)	XO	(24)	Digital Input 10
	(6)	20	(25)	Digital Input 12
Digital Input 13	(7)	0 ō	(26)	Digital Input 14
Digital Input 15	(8)	0 Ă	(27)	Digital Input 16
24 V external outputs	(9)	0 X	(28)	24 V external outputs
0 V external inputs	(10)	0 2	(20)	
Digital Output 1	(11)	οV	(29)	
Digital Output 3	(12)	õ Õ	(30)	Digital Output 2
Digital Output 5	(12)	XO	(31)	Digital Output 4
	(13)	20	(32)	Digital Output 6
Digital Output 7	(14)	U Ō	(33)	Digital Output 8
Digital Output 9	(15)	0 Ă	(34)	Digital Output 10
Digital Output 11	(16)	0 X	(35)	Digital Output 12
Digital Output 13	(17)	0 2	(30)	Digital Output 12
Digital Output 15	(18)	ō Ū	(36)	
Diagnose Output	(10)	ăΟ.	(37)	Digital Output 16
Diagnose Output	(19)		-	

Description of the Pin assignment

Pin	Cable colour	Designation	Description
1	White	IN-1	Digital input channel 1
2	Green	IN-3	Digital input channel 3
3	Grey	IN-5	Digital input channel 5
4	Blue	IN-7	Digital input channel 7
5	Black	IN-9	Digital input channel 9
6	Pink-grey	IN-11	Digital input channel 11
7	White-green	IN-13	Digital input channel 13
8	White-yellow	IN-15	Digital input channel 15
9	White-grey	VDD	+24 VDC supply voltage - digital output channels
10	White-pink	GND-IN	Common GND interface - digital input channels
11	White-blue	OUT-1	Digital output channel 1
12	White-red	OUT-3	Digital output channel 3
13	White-black	OUT-5	Digital output channel 5
14	Grey-green	OUT-7	Digital output channel 7
15	Pink-green	OUT-9	Digital output channel 9
16	Green-blue	OUT-11	Digital output channel 11
17	Green-red	OUT-13	Digital output channel 13
18	Green-black	OUT-15	Digital output channel 15
19	Grey-blue	-	Do not use
20	Brown	IN-2	Digital input channel 2
21	Yellow	IN-4	Digital input channel 4
22	Pink	IN-6	Digital input channel 6
23	Red	IN-8	Digital input channel 8
24	Violet	IN-10	Digital input channel 10
25	Blue-red	IN-12	Digital input channel 12
26	Brown-green	IN-14	Digital input channel 14
27	Yellow-brown	IN-16	Digital input channel 16
28	Grey-brown	VDD	+24 VDC supply voltage - digital output channels
29	Pink-brown	GND-OUT	Common GND interface - digital output channels
30	Brown-blue	OUT-2	Digital output channel 2
31	Brown-red	OUT-4	Digital output channel 4
32	Brown-black	OUT-6	Digital output channel 6
33	Yellow-grey	OUT-8	Digital output channel 8
34	Yellow-pink	OUT-10	Digital output channel 10
35	Yellow-blue	OUT-12	Digital output channel 12
36	Yellow-red	OUT-14	Digital output channel 14
37	Yellow-black	OUT-16	Digital output channel 16

6.3.6 Connect the digital I/O interface (Digital I/O card ADLINK)

NOTICE

Destruction caused by potential differences

• The ground potential (GND) of the digital inputs and outputs of the device must be connected to the ground potential (GND) of the control voltage of the device to be controlled.

Connecting

The components required for connection are available as accessories. "Accessories for the option Digital I/O card ADLINK"

- 1. Connect the I/O cable ACL-10250-1 to the SCSI-II connector of the expansion card.
- 2. Connect the other end of the cable to the DIN-50S-01 connection board.
- 3. Connect the ground potential (GND) of the digital inputs and outputs of the device with the ground potential (GND) of the control voltage of the device to be controlled.
- 4. Connect the digital I/Os of the unit to be controlled to the DIN-50S-01 connection board.

Pin assignment

		\frown		
VDD	(1)	(00)	(26)	VDD
EICOM	(2)	00	(27)	ISO5V
EICOM	(3)	00	(28)	EICOM
EICOM	(4)	00	(29)	EICOM
IDO_7	(5)	00	(30)	IDO_14
IDO_6	(6)	00	(31)	IDO_15
IDO_5	(7)	00	(32)	IDO_12
IDO_4	(8)	00	(33)	IDO_13
IDO_3	(9)	00	(34)	IDO_10
IDO_2	(10)	00	(35)	IDO_11
IDO_1	(11)	00	(36)	IDO_8
IDO_0	(12)	00	(37)	IDO_9
IDI_3H	(13)	00	(38)	IDI_7H
IDI_3L	(14)	00	(39)	IDI_7L
IDI_2H	(15)	00	(40)	IDI_6H
IDI_2L	(16)	00	(41)	IDI_6L
IDI_1H	(17)	00	(42)	IDI_5H
IDI_1L	(18)	00	(43)	IDI_5L
IDI_0H	(19)	00	(44)	IDI_4H
IDI_0L	(20)	00	(45)	IDI_4L
IDI_11	(21)	00	(46)	IDI_15
IDI_10	(22)	00	(47)	IDI_14
IDI_9	(23)	00	(48)	IDI_13
IDI_8	(24)	00	(49)	IDI_12
EOGND	(25)	00	(50)	EOGND
		、ノ		

Description of the Pin assignment

Din	Decignation	Description
F III		
ן ר		+24 VDC supply voltage - digital outputs
2	EICOM	Common ground or signal - input channels 9 to 16
3	EICOM	Common ground or signal - input channels 9 to 16
4	EICOM	Common ground or signal - input channels 9 to 16
5	IDO_7	Digital output channel 8
6	IDO_6	Digital output channel 7
7	IDO_5	Digital output channel 6
8	IDO_4	Digital output channel 5
9	IDO_3	Digital output channel 4
10	IDO_2	Digital output channel 3
11	IDO_1	Digital output channel 2
12	IDO_0	Digital output channel 1
13	IDI_3H	Digital input channel 4 - high
14	IDI_3L	Digital input channel 4 - low
15	IDI_2H	Digital input channel 3 - high
16	IDI_2L	Digital input channel 3 - low
17	IDI_1H	Digital input channel 2 - high
18	IDI_1L	Digital input channel 2 - low
19	IDI_0H	Digital input channel 1 - high
20	IDI_0L	Digital input channel 1 - low
21	IDI_11	Digital input channel 12
22	IDI_10	Digital input channel 11
23	IDI_9	Digital input channel 10
24	IDI_8	Digital input channel 9
25	EOGND	GND supply voltage - digital outputs
26	VDD	+24 VDC supply voltage - digital outputs
27	ISO5V	Galvanic decoupled 5V output
28	EICOM	Common ground or signal - input channels 9 to 16
29	EICOM	Common ground or signal - input channels 9 to 16
30	IDO 14	Digital output channel 15
31	IDO 15	Digital output channel 16
32	IDO 12	Digital output channel 13
33	IDO 13	Digital output channel 14
34	IDO 10	Digital output channel 11
35	IDO 11	Digital output channel 12
36	IDO 8	Digital output channel 9
37	IDO 9	Digital output channel 10
38	IDI 7H	Digital input channel 8 - high
39	IDI 7L	Digital input channel 8 - low
40	IDI 6H	Digital input channel 7 - high
41	IDI 6L	Digital input channel 7 - low
42	IDI 5H	Digital input channel 6 - high
43	IDI 5L	Digital input channel 6 - low
44	IDI 4H	Digital input channel 5 - high
45	IDI 4L	Digital input channel 5 - low
46	IDI 15	Digital input channel 16
47	IDI 14	Digital input channel 15
48	IDI 13	Digital input channel 14
49	IDI 12	Digital input channel 13
50		GND supply voltage - digital outputs

6.3.7 Connect the supply voltage and start the device

NOTICE

Destruction caused by potential differences.

• Ensure that the device is properly grounded (equipotential bonding).

Connect the supply voltage

The voltage is supplied via the 4-pin operating voltage connector (scope of delivery) on the device.



Image 19: Operating voltage supply

- (1) Grounding screw with washer (housing ground)
- (2) 4-pin operating voltage connector
- 1. Ensure that the supply voltage is switched off.
- 2. Connect the positive voltage (plus) to +V $_{DC}$ and the negative voltage (ground) to GND.
- 3. Connect the housing ground.
- 4. Plug the operating voltage connector to the device and tighten the screws.

	Pin	Signal	Description
	1	GND	Ground
2	2	+V _{DC}	Supply voltage
	3	+V _{DC}	Supply voltage
4	4	GND	Ground

Gerät einschalten

- 5. Switch on the supply voltage.
- → The device boots automatically.

ADVICE

Before switching on the unit, connect a monitor to one of the monitor interfaces. You can observe the booting process.

6.4 Creating a connection

The devices is configured and parametrised with the operating software vcwin. The current version can be found on the homepage *http://www.vision-control.com/products* in the path **Vision Systems > Operating Software**.

The Software must be installed on the PC.

Start and terminate vcwin

The vcwin software is started by either double-clicking on the vcwin icon or from the Windows start menu by calling **Start > Programs > Vision & Control GmbH > vcwin > Vision & Control vcwin**. Terminate vcwin with ALT+F4 or with the menu item **File > Exit**.

Choose the interface in vcwin

After having started vcwin, you should choose the port to which the vision system is connected by calling **Communication > Interface** from the menu.

Connecting the device with vcwin

Connect the device by calling **Communication > Connect**.

6.4.1 Create a LAN connection / direct connection

- 1. Start the operating software vcwin on the PC.
- 2. Open the window Communication Parameters by calling Communication> Interface.

The settings made here are used during each connection setup.

	(3)
Kommunikationsparameter	
Auswahl RS232 TCP/V USB Simulator	
Name: vicosys249 rc012-987654721 Einfügen	6
IP-Adresse: 10 . 11 . 22 . 103	
Port-Nr: 8500	(4)
Aktuelles BV-System:	
vicosys249 rc012-987654321	
OK Abbrechen	5

- 3. Switch to the TCP/IP tab.
- 4. With the [Search] button, all available devices, on the same subnet, are displayed (UDP broadcast to all participants).
- 5. Select the appropriate device.
- 6. Optionally, you can also enter the name and IP address of your device.
- 7. Click the [OK] button to accept the values.

ADVICE

Factory setting: The device searches for a DHCP server during initialization in the LAN. If no DHCP server is available, a static IP address is used (default: 192.168.3.180).

If the device cannot be found, a monitor can be connected and the IP can be read off during initialization.

The settings can be changed via vcwin.

ADVICE

The search function in the TCP/IP tab of the dialogue Communication Parameters only detects devices in the same subnet. For devices in different subnets, the configuration data must be entered manually.

6.4.2 Create a serial connection

The Serial interface on the device is used for serial communication.

- 1. Connect the device directly to the PC using a RS232 cable.
- 2. Start the operating software vcwin on the PC.

Configure the interface by calling **Communication > Interface** in the menu.



- 3. Switch to the RS232 tab.
- 4. Select the COM interface of your computer.
- 5. Set the baud rate to 9600. Once connected, the baud rate can be adjusted.
- 6. Deactivate RTS/CTS (Hardware handshake of the RS232 interface).
- 7. Click the [OK] button to accept the values.

7 OPERATION

7.1 Switching On and Off

Switching On

The unit switches on automatically when the supply voltage is switched on.

If the supply voltage is already on, the unit can be switched on by pressing the PWR key.

Switching Off

The unit is switched off by switching off the supply voltage.

If the supply voltage is not to be switched off, the unit can be switched off by pressing the PWR key.

7.2 Operation via Software

ADVICE

Creating and managing programs are performed using the operating software vcwin.

The vcwin Instructions for Use is included on the USB stick (scope of delivery).

Further information on the use of the software can be found on the homepage *http://www.vision-control.com/products* in the path **Vision Systems > Operating Software**.

8 MAINTENANCE AND SERVICE

8.1 Maintenance

The device is maintenance-free. Depending on the operating environment, it may have to be cleaned.

Cleaning the outside

- The housing can be cleaned according to the conditions applicable to the given protection class.
- Clean the outside with a damp cloth.
- Remove excessive dirt with an approved varnished steel sheet cleaner. Refer to the instructions of the cleaner.
- Cleaners must not be applied directly to the housing, and the housing must not be bathed.
- The interfaces must be clean and dry before the device is connected and put into operation.

8.2 Service

Technical Support

Please contact our technical support if you have any technical questions concerning our products.

We will be glad to be of service:

Monday to Thursday 8:00 to 17:00, and Friday 8:00 to 15:00.

Vision & Control GmbH

Mittelbergstraße 16

98527 Suhl, Germany

Phone: +49 (0) 3681 7974-0

www.vision-control.com

Defective device

If the device has a defect, the manufacturer can repair or exchange it. Please contact your local sales partner or technical support.

9 DISPOSAL

The device and its accessories and packaging must be sent to environmentally compatible recycling.

Do not throw electrical devices or tools into the household waste!



According to European Directive 2012/19/EU on waste electrical and electronic equipment and its implementation in national law, unusable electric tools must be collected separately, and sent to environmentally compatible recycling.

Disposal, including that of individual components, must also always be in a way that does not harm the environment, which means it must be done in accordance with the currently valid legal regulations.

Please contact the manufacturer, your local specialist dealer or the relevant national authority for the proper disposal of old devices.

The electrical and electronic components must be sent to a specialist recycling company or to the manufacturer for proper disposal.

Batteries and rechargeable batteries must not be disposed of with household waste. To recycle them or dispose of them as hazardous waste, use the public collection points or contact the manufacturer in this regard.

Vision & Control GmbH Mittelbergstraße 16 98527 Suhl, Germany Telephone +49 (0) 3681 7974-0 Telefax: +49 (0) 3681 7974-33 www.vision-control.com



ISO 9001:2015