



User Manual

Industrial PCs

OPC6315



the rugged world of IT®

Product Portfolio



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ABOUT US

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As a supplier of high tech equipment, ads-tec supports large enterprises and globally operating groups of companies with state-of-the-art technology, know how that is always up to date and delivery of comprehensive services in the area of automation, data and system technology.



ads-tec puts entire solutions for automation into practice - from the planning to the commissioning - and has particularly specialised in manipulation and material manipulation technology.



The Data Technology division develops and manufactures PC based solutions and holds a wide range of industrial PCs, thin clients and embedded systems available.



ads-tec has specialised in the adaptation and optimisation of operational systems and develops software tools to complement the offered hardware platforms.

1 REMARKS

1.1 RELEVANT DATA COMMUNICATION WITH THE DEVICE

The following documents are essential for setting up and operating this device:

USER MANUAL (THIS DOCUMENTATION):

Contains information for installation, commissioning and operating the device along with technical data of the device hardware.

SERVICE CD:

Contains drivers and the user manual.



Note:

There is a file "Drivers-xx.pdf" in the root directory of the CD. It contains an overview of the drivers available on the service CD in table form. In order to open this file, you can either use the manual function or use the menu item "Which driver for which device" in the CD menu. The CD menu automatically starts if the autostart option for removable media is activated.

1.2 EXPLANATION OF USED SYMBOLS



Warning:

The "Warning" symbol refers to activities, which could cause personal injury or damage to the hardware and software!



Note:

The "Note" symbol describes conditions, which unconditionally have to be observed in order to ensure trouble-free operation. Additionally, hints and advice for the efficient use of this device and for software optimisation are given using this symbol.

1.3 DATA, FIGURES AND MODIFICATION

All texts, data and figures are non-binding. All these materials are subject to modification due to technological progress. Our products comply with all provisions and requirements of the legislation at that point in time when the products leave our company premises. The operator/operating company bears sole responsibility for the compliance with any consecutive new technological development or adherence to any consecutive new legislative provision, as well as for the observance of their obligation as the operator/operating company.

1.4 TRADE MARKS

We would like to emphasize that all names of hardware and software products used in this documentation, as well as all brand names of corresponding companies are subject to the general copyrights of the intellectual property in terms of trademarks, brand names and patents.

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Any other national and international trademarks and product names shall hereby also be recognised.

1.5 COPYRIGHTS

This manual including the contained figures is protected by the copyright law. Any use of this manual by a third party in non-compliance with the international copyright law shall hereby be prohibited. Any reproduction, translation and electronic or photographic archiving or modification requires previous written agreement by ads-tec GmbH.

In the event of any non-compliance, you shall be obliged to compensation of damages.

1.6 ENVIRONMENTAL CONDITIONS

The device may be operated under the following conditions. Failure to observe these specifications will terminate any warranty for this device. Ads-tec cannot be held liable for any damages arising due to improper use and handling. Technical data refer to the front and rear of this device.

- Temperature for devices including a fan
 - in operation 5 ... 45°C
 - for storage -20 ... 60°C
- Temperature for devices without a fan
 - in operation 5 ... 40°C
 - for storage -20 ... 40°C
- Humidity:
 - In operation 10 ... 85% without condensate
 - For storage 10 ... 85% without condensate
- Vibration resistance
 - In operation 1 G, 10 ... 500 Hz
(DIN EN 60068-2-6)
- Shock resistance
 - In operation 5 G, with a half-wave of 30 ms duration
(DIN EN 60068-2-27)

1.7 STANDARDS

This device complies with the requirements and protective aims of the following EC regulations:

- This device meets the test requirements for granting the CE sign and according to the European test standards EN 61000-6-4 and EN 61000-6-2.
- This device complies with the test requirements in accordance with EN 60950 (VDE0805, IEC950) "Safety of Information Technology Equipment"
- The device meets the EN 60068-2-6 standard test requirements (sinus excitation).
- The device meets the EN 60068-2-27 standard test requirements (shock resistance test).



Note:

A respective conformity declaration for the authority in charge is available at the manufacturer and may be viewed on request.

All connected components, as well as cable connections must also meet these requirements for compliance with the EMC legislation. For this reason, screened bus and LAN cables including screened connectors must be used and installed according to the instructions in this user manual.

1.8 SCOPE OF DELIVERY

Please check that all of the following components are contained in the packaging:

- 1 x device
- With 230 V AC devices: Power cable including standard power plug for non-heated devices
- With 24 V DC devices: 3-pin COMBICON plug from Phoenix Contact: COMBICON MC 2,5/3-STF-5,08 (already plugged in the device socket)
- Installation kit for installation

Optional delivery scope

- Operating system

2 OPERATING INSTRUCTIONS

This device contains electrical voltages and extremely sensitive components. User intervention is restricted to plugging in additional cards only. The manufacturer or a service partner authorised by the manufacturer should be consulted if you plan to make further modifications. For this type of work, the device must be switched off at the mains and the power lead must be disconnected. Suitable measures for avoiding electrostatic discharge towards parts of the components when touching the equipment must be taken. If the device is opened by an unauthorised person, hazards for the user might arise and any warranty claim will cease.

General instructions:

- All users must read this manual and have access to it at all times.
- Installation, commissioning and operation may only be carried out by trained and qualified staff.
- The security instructions and the manual itself must be observed by all persons who work with this device.
- At the location of use the valid guidelines and regulations for accident prevention must be observed.
- The manual contains the most important instructions on how to use this device in a safe way.
- Appropriate storage, proper transport, installation and commissioning, as well as careful operation are prerequisites for ensuring safe and proper operation of the device.

**Warning:**

Any leads (e.g. power leads, interface cables) may only be connected if the device is switched off in order to avoid damaging the device.

2.1 OPERATING LOCATION

The control system is designed for use inside a switching cabinet. You must ensure compliance with the specified environmental conditions. Using the device in non-specified environments, for example on board ships, or in areas that might contain explosive gases, or in extreme heights is prohibited.

**Warning:**

The device may only be switched on after acclimatising to the ambient temperature in order to avoid condensate accumulation. The same applies if the device has previously been exposed to extreme temperature variations.

To avoid overheating: The device must not be exposed to direct radiation by sunlight or any other light or heat source.

If the device is integrated in a panel, casing or similar enclosures, you must ensure that no heat accumulation builds up. The maximum permissible environmental temperature must never be exceeded.

2.2 DAMAGE DUE TO IMPROPER USE

If the control system shows any obvious damage, e.g. caused by improper operating or storage conditions or by improper use or handling, the device must put out of operation immediately and protected from any accidental switch-on.

2.3 WARRANTY / REPAIR

During the warranty period, any repair must be carried out by the manufacturer or by persons duly authorised by the manufacturer, only.

3 INSTALLATION

3.1 INSTALLATION OPTION

This device is intended for integration into switch panels or switching cabinets. In order to allow for a safe installation and operation (connector access), these switch panels or control desks must be accessible from the back. The device can be integrated into switching cabinets with a wall thickness of 2..6 mm. We recommend **a minimum of 3 mm for** correct installation with an **IP65 front** protection class.

**Warning:**

To avoid overheating in operation: The device must not be exposed to direct radiation by sunlight or any other light or heat source.

If the device is integrated in a panel, casing or similar enclosures, you must ensure that no heat accumulation builds up. The maximum permissible environmental temperature must never be exceeded.

Devices including a data drive must only perpendicularly be integrated. Any deviation must be agreed with ads-tec.

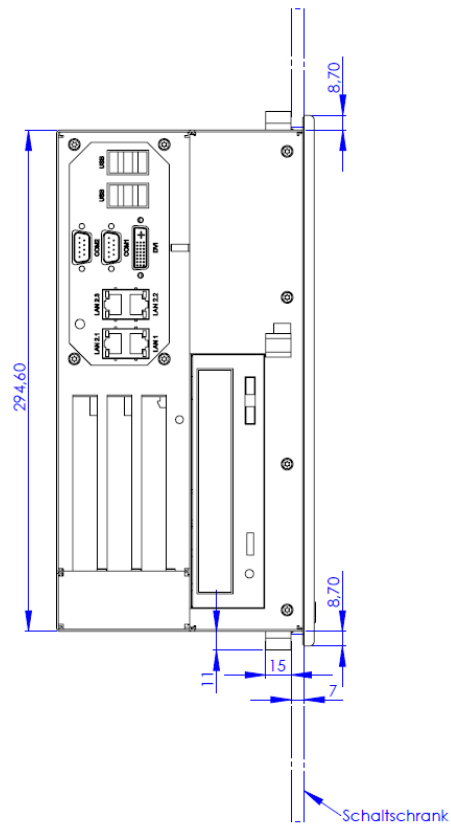
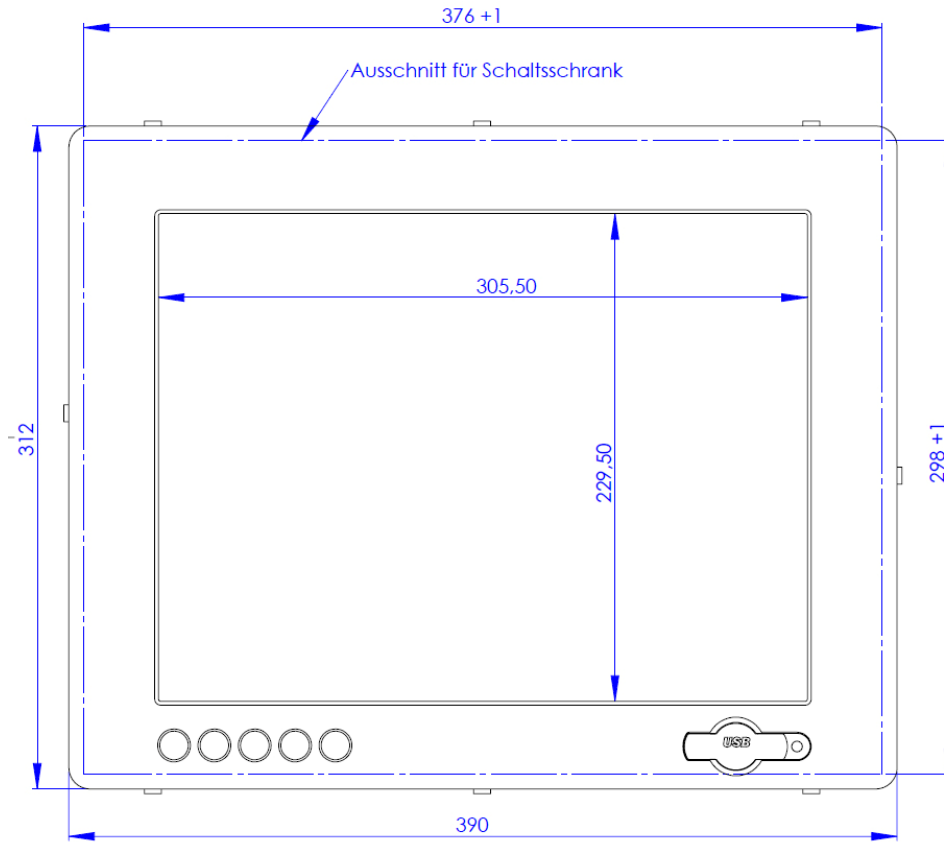
The IP65 protection class is only achieved after correct installation.

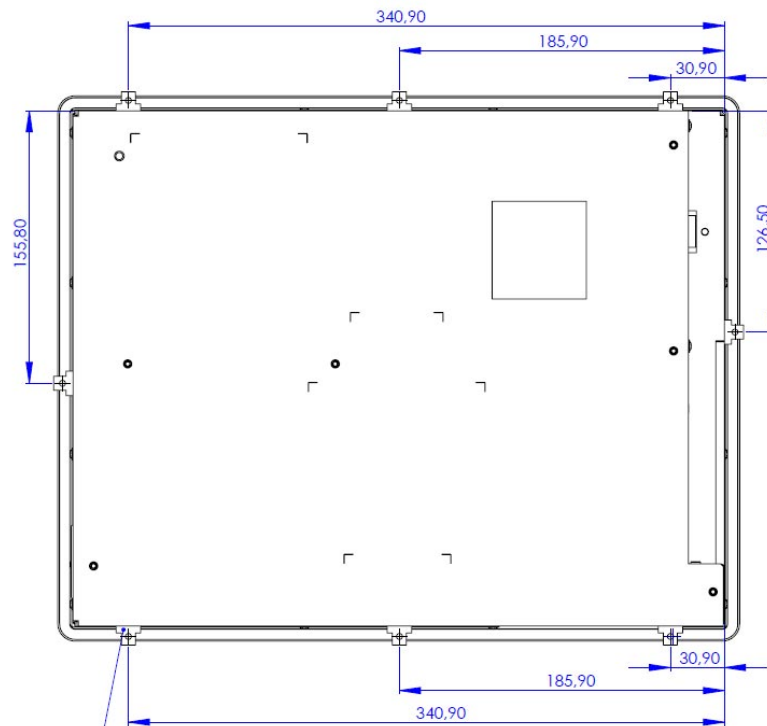
If the device is delivered with a CD/DVD-ROM drive, sufficient space (approx. 130mm) must be provided on the left-hand side if you look at the device from the front, in order to allow proper opening of the drive.

**Note:**

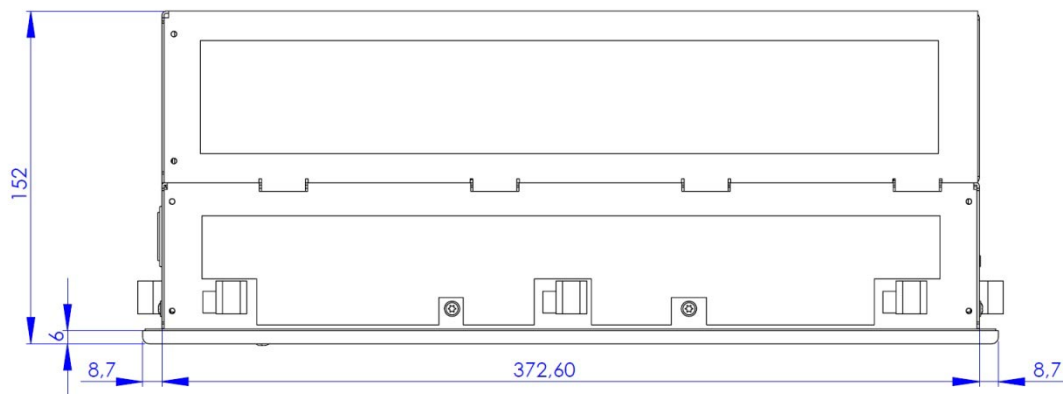
When selecting the enclosure for integration, the power dissipation total of the system including that of all integrated PCB boards must be taken into account. The enclosure must be calculated in such a way that the maximum environmental temperature is not exceeded in any case.

3.2 LAYOUT FOR DEVICE INSTALLATION





Spannklotz für Befestigung



3.3 ORDER OF INSTALLATION

- Produce the recess in the switch panel or door of the switching cabinet in accordance with the installation layout.
- Slide the device from the front into the created recess (set switch to medium position with an OPC including a 24 V DC ON/OFF switch).
- Insert the fastening screws including slot-nuts into the slot provided for it in the sheet metal cover and tighten the screws evenly (maximum torque of 25 Ncm) until the front panel covers the recess properly and tightly.

**Warning:**

The PC must be switched off before connecting or disconnecting any cables in order to prevent damage to the electronics!

The device may only be switched on after acclimatising to the ambient temperature in order to avoid condensate accumulation.

Make sure to meet the permissible voltage requirements for this device.

After switching off and before switching on you must wait for at least 5 seconds.

**Note:**

The device is connected with the power supply network by using the enclosed power cable or by using a lead-through terminal incl. a screw connection. Establishing a separate earthing connection is not required since the earthing is done via the protective earth connection of the device plug / power supply connector. If additional earthing is provided, a wire cross section of at least 2.5mm² must be used.

4 INSTALLATION OF BOARDS

4.1 NOTES TO BE OBSERVED BEFORE INSTALLATION

PCI bus boards, e.g. network or fieldbus boards can be installed in this device. The slots are accessible once the rear cover has been removed. In order to do this, you'll have to remove the screws from the rear of the control system.

The OPC6115 device version has one slot for a PCI board, whereas the OPC6315 equipment version has two free slots for PCI, and one free slot for PCI Express® boards.



Warning:

Including the connected external consumers and the internally connected PCI/PCIe consumers, the maximum load must in total never exceed a value of 40W!



Warning:

The components included in this device are highly sensitive products, which could be destroyed or the function of which might be affected in the event of improper handling. The same applies to the PC plug-in boards which are to be installed. Suitable measures for avoiding electrostatic discharge towards parts of the components when touching the equipment must therefore unconditionally be taken.

4.2 INSTALLATION OF ADDITIONAL BOARDS

- Switch this device and all units connected to the PC off, and disconnect them from the power supply.
- Remove the screws from the cover of the device by using a suitable screwdriver and carefully remove the cover.



Warning:

The cover might be connected with a protective earth connection by disconnectable plug-in connectors!

Therefore, do not remove with a swift move but carefully.

- Discharge any electrostatic charges appropriately by suitable measures only (see above), remove the board from the packaging, push it in the slot and screw it to the board retainer profile.
- If it was disconnected, reconnect the protective earth connector and put the cover on top by observing the position of the side tabs, if required.
- Reinstall all screws of the cover.

5 COMMISSIONING



Warning:

The PC must be switched off before connecting or disconnecting any cables in order to prevent damage to the electronics!

The device may only be switched on after acclimatising to the ambient temperature in order to avoid condensate accumulation.

Make sure to meet the permissible voltage requirements for this device.

After switching off and before switching on you must wait for at least 5 seconds.

5.1 AVAILABLE INTERFACES

The devices have the following interfaces by default:



Note:

The screen of a data cable must always be connected with the connector housing (EMC).

Under the embedded operating system, interfaces must explicitly be enabled and required drivers must be installed in order to be able to use them.

5.2 CABLE INSTALLATION

The power supply plug as well as the interfaces of this device are installed at the side of case. The free slots and the drives of this device are also located in the same place.

5.3 ORDER OF STEPS DURING COMMISSIONING

- With 230 V AC devices: Plug the power supply cable into the power socket for non-heated appliances and connect with the power socket
- With 24 V DC devices: Connect the power supply cable with the terminals by using cable end sleeves
- Connect cable for serial / parallel data transmission and fasten the screws between the connector plug and socket
- Plug in all other required cables and protect from accidental disconnection

5.4 CHECK FOR OPERATIONAL READINESS

Check the device for any hidden damage potentially caused by improper transport, operating or storage conditions or by improper use or handling (e.g. smoke development from the device, etc.). If any damage is detected, the device must be put out of service immediately and protected from accidental switch-on.

6 OPERATION

6.1 FRONT CONTROL KEYS

Depending on the device equipment version, an operating system (Windows CE.net, Windows XP embedded or Windows XP Prof.) and a soft keyboard are already installed ex factory. The keys on the front panel are occupied with the following functions by a specific driver in the soft keyboard:



Level 1:

Activate and deactivate the soft keyboard for letter/character input using the touch screen.

Level 2:

The volume can be increased with devices equipped with an audio output



Level 1:

Change task (Alt+ESC) in Windows.

Level 2:

The volume can be decreased with devices equipped with an audio output.



Level 1:

Not connected

Level 2:

Increase display brightness



Level 1:

Right mouse-key function

Level 2:

Decrease display brightness



Shift key (SHIFT) for activating the second keyboard level. This key must be pressed simultaneously with the desired function key



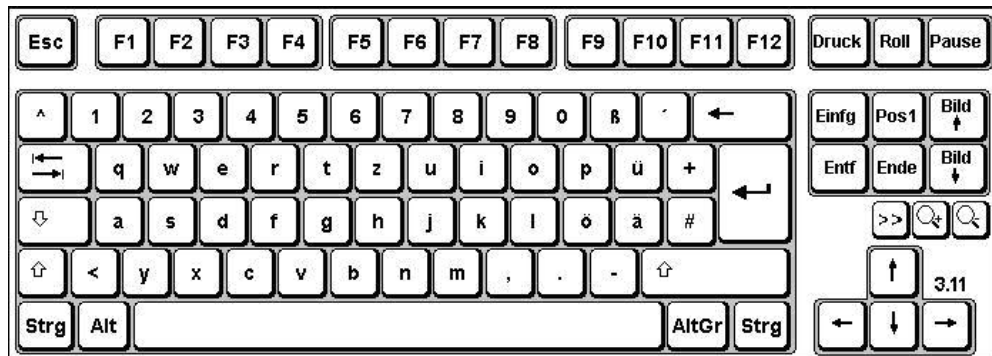
Note:

If the software keyboard is not installed, only the functions for display settings and volume control are active. The controller display will not be output on the display, in this case.

The key functions can be modified in accordance with customer specific requirements. Above described functions are pre-set ex works.

6.2 SOFT KEYBOARD

If an operating system is installed ex works, the soft keyboard is also preinstalled. If the operating system is delivered separately with the device, the soft keyboard must also be installed on site. By using the soft keyboard, data can be entered via the touch screen like with an external keyboard.



HOW TO OPERATE THE SOFT KEYBOARD FROM VERSION 3.11:



Activate and deactivate the soft keyboard for letter/character input using the touch screen



Switches numeric keys on and off (only if numeric keys are visible)



Switching between different representations (Alphanumeric keys → Numeric keys → Function key bar)



Soft keyboard representation, zoom in



Soft keyboard representation, zoom out



Note:

If a function is to be activated, which requires pressing two keys at the same time (e.g. Alt + F4), these keys have to be pushed one after another at the soft keyboard, and the special keys Shift, Alt and Ctrl must always be pushed first.

Due to differences in programming of a large variety of software, we cannot ensure that the soft keyboard works properly with all software programmes.

When deactivating the soft keyboard, the previously active state (alphanumeric / numeric keys or function keys) will be stored and will be displayed when re-activating the keyboard.

6.3 STATUS INDICATORS

SYS LED (BICOLOURED)

Depending on the colour and type of flashing, different device states are displayed by the SYS LED.

The following signals are displayed:

- LED lights green The device is ready for operation (Power ON).
- LED is off The device is switched off. (POWER OFF)

6.4 TOUCH SCREEN

The control system is equipped with a touch screen monitor. The touch screen monitor is internally connected with a serial interface port. The driver software required for using the touch screen is integrated in the corresponding operating system, or can alternatively be installed from the enclosed service CD.

7 INTERFACES

7.1 INTERFACE SETUP

INTERFACE	IRQ	ADDRESS
COM1	4	3F8h
COM2	3	2F8h

The interfaces are arranged on the left-hand side of the case (seen from the front). All interfaces are labelled. The power plug (for non-heated appliances) or the lead-through terminal for the power supply is located on the right-hand side of the control system.



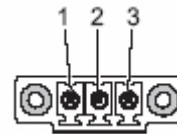
Note:

When using the Windows CE.net embedded operating system, the communication interface ports (COM, USB, etc.) must explicitly be released for use and the appropriate drivers be installed in order to allow their use!

7.2 24 V DC POWER SUPPLY

This power supply is provided to the device by using a lead-through terminal with a screw connection. (The figure shows the socket inside the device)

PIN NUMBER	SIGNAL NAME
1	24 V DC
2	PE
3	0 V DC



Technical data of the power adapter

- Power consumption: Max. 150 Watts
- Input voltage: 19..30 VDC
- Current consumption: 8.5A (24 VDC)
- Max. switch-on current: 18A

7.3 115/230 V AC POWER SUPPLY

The voltage is supplied through a rubber connector.
 . The enclosed cable should be used for connecting the device.



Technical data of the power adapter

- Power consumption: Max. 150 Watts
- Input voltage: 100...240 V AC
- Current consumption: 1.3A (115V) / 0.7A (230V)
- Max. switch-on current: 30A (115V) / 60A (230V)



Note:

The typical power consumption of this device is indicated in the "Technical details" chapter.

7.4 USB CONNECTIONS

The USB interfaces are used for connecting peripherals with USB connection. The interface complies with the USB 2.0 standard.

PIN NUMBER	SIGNAL NAME
1	VDC
2	D -
3	D+
4	GND



Note:

The USB interfaces can be locked by using the "Lock USB" software tool.

USB CONNECTION IN THE FRONT PANEL

One USB interface can be accessed from the front. The interface is located under a plastic cover underneath the display. The cover has a tab on the right-hand side, which is used for opening. The plastic cover of the USB interface must be returned in protective position after use.

7.5 NETWORK CONNECTION (RJ45)

If the drivers required for functioning are installed on the device, the control system may be integrated in an Ethernet network supporting the 10/100/1000 Mbit standard by using the corresponding network cable via the Ethernet 10/100/1000 BaseT network connector. Specifications of this network topology must be observed in this case. You can install the drivers required for functioning from the enclosed service CD or from our website (www.ads-tec.de), should they not be installed on the device.

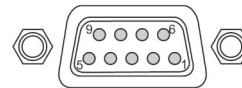
PIN NUMBER	SIGNAL NAME
1	TX +
2	TX -
3	RX +
4	NC
5	NC
6	RX -
7	NC
8	NC



7.6 SERIAL COM INTERFACE (RS232)

The serial interface is also used for digital data transmission. The RS232 interface can be connected by using a commercially available 9-pin SUB-D cable.

PIN NUMBER	SIGNAL NAME
1	DCD
2	RxD
3	TxD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI



Note:
This interface is not electrically isolated.

7.7 OPTIONAL USB CONNECTION IN THE FRONT PANEL

As an option, a USB interface with front access can be provided. The interface is then located under a plastic cover on the right-hand side underneath the display. The cover has a tab on the right-hand side, which is used for opening. The plastic cover must carefully be returned into the protective position after use, since proper IP65 protection for the front panel cannot be ensured otherwise.

7.8 EXTERNAL DRIVES

By default, there are already removable media (CD/floppy disk) integrated in the device. Should an external drive be required in spite of this, it can be connected with the USB interface.



Warning:

Connecting or disconnecting external drives during operation is not admissible, since it cannot be excluded that the drive might be in use while connecting or disconnecting it. Data loss might result in the event of non-compliance!

7.9 DVI INTERFACE

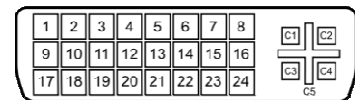
The DVI interface is used for transmission of analogue and digital video signals. A standard DVI-I cable is required for connecting a digital monitor. VGA monitors can also be connected without any problem if a DVI-VGA adapter is used.



Note:

The interface is a DVI-I single link interface. Signals are transmitted in an analogue and digital way.

PIN NUMBER	SIGNAL NAME
1	TMDS Data2-
2	TMDS Data2+
3	TMDS Data2/4 Shield
4	N/C
5	N/C
6	DDC Clock [SCL]
7	DDC Data [SDA]
8	Analogue vertical sync
9	TMDS Data1-
10	TMDS Data1+
11	TMDS Data1/3 Shield
12	N/C
13	N/C
14	+5V Power
15	Ground (for +5V)
16	Hot Plug Detect
17	TMDS Data0-
18	TMDS Data0+
19	TMDS Data0/5 Shield
20	N/C
21	N/C
22	TMDS Clock Shield
23	TMDS Clock+
24	TMDS Clock-
C1	Analogue Red
C2	Analogue Green
C3	Analogue Blue
C4	Analogue Horizontal Sync
C5	Analogue GND Return: (analogue R, G, B signal)



8 DRIVES

8.1 HARD DRIVES / COMPACT FLASH DRIVE (IDE INTERFACE)

The storage medium is selected according to the customer requirements. The following options are available for storage:

SSD Flash memory: A SSD flash memory with a storage capacity of at least 1-8 GB is used. Its capacity depends on the desired operating system and the additional programmes to be installed.

Hard disk: **OPC6115**
A 2.5" hard disk with at least 120 GB (SATA) is used. On delivery, the hard disk is formatted in NTFS format (Windows Standard).

OPC6315
A 3.5" hard disk with at least 160 GB (SATA) is used. On delivery, the hard disk is formatted in NTFS format (Windows Standard).



Note:

Recommendation for the choice of storage medium with a basic installation:

SSD Flash memory: Windows CE / Windows XP embedded

Hard disk: Windows XP Professional / Windows 7

9 SOFTWARE & DRIVER INSTALLATION

The device will be delivered with a pre-installed Windows / Linux operating system depending on what the customer wants. The drivers required for this are already installed and the operating system will be enabled by entering the licence information. Should an initial installation be required, please follow the following steps. With a newer operating system like Windows XP, the network card and graphics card will properly be recognised during the initial installation, so that only the touch screen driver and the soft keyboard must be installed separately.

**Note:**

If the hard drive was formatted, the operating system can be reinstalled by using one of the existing interfaces.

An external keyboard is required for installation.

9.1 INSTALLING THE OPERATING SYSTEM

The device does not have any integrated CD drive. The installation of the operating system can therefore only be carried out by using the USB interface.

Procedure for installation:

- The boot drive in the system Bios must be switched to USB in order to be able to boot the device from the USB interface.
- Restart the device and insert a Windows CD.
- Install Windows and set up the basic data.
- With devices including touch screens, the touch screen driver as well as the soft keyboard should be installed in order to ensure their full functionality.

With Windows CE or Windows XP embedded, a complete image can also be installed by using a USB stick.

9.2 TOUCH SCREEN DRIVER INSTALLATION

**Note:**

When installing the driver, you'll have to take in account that the touch screen monitor is internally connected via the USB interface!

The installation has to be carried out as described below:

- Switch on PC and boot.
- Access the service CD by using the Explorer and start the Installer file in the TouchScreen folder.
- Follow the on-screen instructions and acknowledge the licence terms and conditions.
- Once the installer has completed the installation, shut down the computer and restart it subsequently.
- After restarting the touch screen monitor has to be calibrated. If the driver does not automatically start, activate the setup menu via "**Start => Settings => Control panel => Elo Touchscreen**".
- Via the "**Calibration data**" menu, calibrating the touch screen monitor can be started, and the crosses appearing in a succession on the monitor have to be pushed for calibration. If the cursor position perfectly matches the touch point of your finger, you can exit this control menu by pushing "**OK**".

9.3 SOFT KEYBOARD

The soft keyboard must be installed from the enclosed service CD in order to ensure usability of the 5 keys (except for the VMT series, there you have 6 keys) underneath the monitor. The installation has to be carried out as described below:

- Plug in connector of external drive at the device
- Switch on PC, insert driver CD into drive after booting
- Start installer from the service CD
- Follow on-screen instructions, install the driver, select the language and confirm the restart of the computer.

**Note:**

You can make further changes to the basic settings of the soft keyboard, if required. More information about this topic you'll find in the "Readme" file in the installation folder for the soft keyboard!

10 TECHNICAL DETAILS

10.1 DISPLAY DATA

Display	15" TFT, 1024 x 768 pixels
Display colours	16.1 million colours at max
Touch screen	Resistive industrial touch screen monitor

10.2 COMPUTER DATA

This device can be equipped with the following adsX² modules ex works:

Processor	Celeron® 1.2 GHz ULV (Dual Core) / Core™2 Duo 2.26 GHz 1GB - 4GB DDR3 RAM Intel GMA X4500 integrated in Intel® GS45
Graphic memory	A max. of 256 MB shared memory
Mass storage device	3.5" hard disk with a minimum of 160 GB (SATA); Alternative: 1x SSD Flash (1-8 GB)
Interface	1x COM 1, 1x COM 2 (RS232), 1x DVI-I, 6x USB 2.0,
Network	1x Ethernet (10/100/1000 Mbit) RJ 45 3x Ethernet (10/100/1000 MBit) RJ 45 via managed switch
Slot	2x PCI 1x PCI Express® (1 lane)

10.3 GENERAL DATA

External dimensions:	390 mm x 312 mm x 152 mm (W x H x D)
Match dimensions for panel integration	376 mm x 299 mm (W x H)
Weight	Approx. 7.5 Kg
Protection class	IP 65 for the front
Power consumption	150 Watts (typical) Including the externally connected USB consumers and the internally connected PCI/PCIe consumers, the maximum load must in total never exceed a value of 40W!

11 SERVICE AND SUPPORT

ads-tec and its partner companies offer your customers a comprehensive service and support, which ensures availability of a fast and competent support with respect to all upcoming questions related to ads-tec products or assemblies.

Since the devices manufactured by ads-tec are also used by associate companies, these devices might be configured in customer specific ways. Should any questions arise with respect to these specific configurations and software installations, they can only be answered by the system manufacturer.

For devices not directly purchased from ads-tec we don't deliver any support. The support is delivered by our associate companies in these cases.

11.1 ADS-TEC SUPPORT

The ads-tec support team is available for phone calls from direct clients from Monday to Friday from

8:30 AM to 5:00 PM by using the following phone number:

Phone: +49 711 45894-500

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