

» User's Guide «



V Panel Express (SC)

User's Guide (Version 1.00)
1053-5391

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1. Table of Contents

1. Table of Contents	1
1.1. Table of Figures	2
2. Introduction	4
2.1. Symbols used in this Guide	5
3. Important Instructions	6
3.1. Note on the Warranty	6
3.2. Exclusion of Accident Liability Obligation	6
3.3. Liability Limitation / Exemption from the Warranty Obligation	6
4. General Safety Instructions for IT Equipment	7
4.1. Electrostatic Discharge (ESD)	9
4.1.1. Grounding Methods.....	9
4.2. Instructions for the Lithium Battery.....	9
5. Electromagnetic Compatibility	10
5.1. Electromagnetic Compatibility EU (Class B Device).....	10
5.2. FCC Statement (USA).....	10
5.3. EMC Compliance (Canada)	10
6. Scope of Delivery	11
6.1.1. Optional Parts	11
6.2. Type Label and Product Identification	11
7. Product Description	12
7.1. Front Side View	14
7.1.1. USB Interface Connector on the Front Side	14
7.1.2. Front Plate Versions	14
7.1.3. Display with Touch Screen	15
7.2. Bottom Side (with Interfaces).....	16
7.2.1. DC-IN Power Connector	17
7.2.2. Power Button	17
7.2.3. Grounding Screw (M4) with lock Washers.....	17
7.2.4. LED Control Indicators	18
7.2.5. CompactFlash™ Slot (with optional installed CF Card)	18
7.2.6. Interfaces	19
7.2.7. Removable HDD Drive Tray (with optional installed HDD).....	20
7.3. Left and Right Side View	21
7.4. Top Side	22
7.5. Rear Side	23
7.6. Integrated ETXCOMexpress® Module.....	24
7.6.1. Fuse	24
7.7. PCIe Riser Card.....	24
8. Accessing Internal Components	25
8.1. Installing/Removing the Expansion Cards	25
8.2. Replacing the Removable HDD Tray.....	27
8.3. Replacing the Lithium Battery.....	29
8.4. Replacing the Fuse	30

9. Installation Instructions	31
10. Starting Up	34
10.1. Connecting to Power.....	34
10.1.1. DC Connection	34
10.1.2. Connecting to AC Power Source via the AC/DC Adapter	35
10.2. Operating System and Hardware Component Drivers	36
10.2.1. Hints for the Installation of the ELO Touch Screen Controller Driver.....	36
10.2.2. Display Brightness Adjusting	39
11. Maintenance and Prevention	40
11.1. Touch Screen Care and Cleaning.....	40
12. Main Specifications	41
12.1. Electrical Specifications	42
12.1.1. Electrical Specifications for the AC/DC Adapter.....	42
12.2. Mechanical Specifications.....	42
12.3. Environmental Specifications	43
12.4. CE Directives and Standards	44
13. Technical Appendix - Interfaces	45
13.1. Power Connector.....	45
13.2. USB Port.....	45
13.3. Serial Port (COM1, COM2) RS232	45
13.4. DVI-I Connector (Single Link).....	46
14. Technical Support	47
14.1. Returning Defective Merchandise	47

1.1. Table of Figures

Fig. 1: Bottom view	13
Fig. 2: Right view	13
Fig. 3: Frontal view.....	13
Fig. 4: Left view	13
Fig. 5: Top view.....	13
Fig. 6: Rear view	13
Fig. 7: Frontal view of the V Panel Express system (shown with a 12.1" display);	14
Fig. 8: V Panel Express (interface side)	16
Fig. 9: Detail of the DC Power connector shown without Phoenix terminal	17
Fig. 10: Power button and LED indicators.....	17
Fig. 11: Power LEDs and Error Codes	18
Fig. 12: Detail with drive tray for SATA HDD (shown with opened removable HDD drive tray)	20
Fig. 13: Left side, shown as a V Panel Express 121 system.....	21
Fig. 14: Right side, shown as a V Panel Express 121 system.....	21
Fig. 15: Top side (shown as a V Panel Express 121 system)	22

Fig. 16: Rear side, shown as V Panel Express 121 system.....	23
Fig. 17: Fuse, label for fuse value and Lithium battery location	24
Fig. 18: Open the access door of the V Panel Express System	26
Fig. 19: Opened access door (systemis shown with riser card for up to 2x PCIe x1 expansion slots)	26
Fig. 20: Detail: removable HDD tray of the system	27
Fig. 21: Rear side of the removed HDD tray	27
Fig. 22: Left side of the HDD tray	27
Fig. 23: Removed HDD tray	27
Fig. 24: Right side of the HDD tray	27
Fig. 25: Removed HDD tray with installd HDD (SATA0)	27
Fig. 26: Removed HDD tray without HDD	27
Fig. 27: Detail of the V Panel Express – OPERATOR ACCESS AREA	29
Fig. 28: Label for Lihithium battery	29
Fig. 29: Label for fuse.....	30
Fig. 30: Detail top side: Systems delivering status with mounted clamps (shown as a detail of a17" display box enclosure)	31
Fig. 31: Detai top sidel: Systems without mounting clamps (shown as a detail of a17" display box enclosure)	31
Fig. 32: Panel mounting for V Panel Express systems	32
Fig. 33: DC-connector (without Phoenix plug terminal).....	34
Fig. 34: DC-Phoenix plug terminal (AWG 18)	34
Fig. 35: External AC/DC adapter (Option)	35
Fig. 36: About touch screen utility	37
Fig. 37: About touch screen controller.....	37
Fig. 38: Display selection	38
Fig. 39: Select 4-25 point calibration type.....	38
Fig. 40: Tap each of the 4 red calibration points (shown the first)	38
Fig. 41: Calibration point is OK; (shown the last point only).....	38
Fig. 42: Four point calibration completed.....	38

2. Introduction

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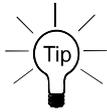
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2.1. Symbols used in this Guide

Symbol	Meaning
	This symbol indicates the danger of injury to the user or the risk of damage to the product if the corresponding warning notices are not observed.
	This symbol indicates that the product or parts thereof may be damaged if the corresponding warning notices are not observed.
	This symbol indicates general information about the product and the user manual.
	This symbol indicates detail information about the specific product configuration.
	This symbol precedes helpful hints and tips for daily use.

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3. Important Instructions

This chapter contains safety instructions which must be observed when using the V Panel Express.

The manufacturer’s instructions provide useful information on your V Panel Express.

3.1. Note on the Warranty

Due to their limited service life, parts which by their nature are subject to a particularly high degree of wear (wearing parts) are excluded from the warranty beyond that provided by law. This applies to batteries, to the display backlighting, for example.

3.2. Exclusion of Accident Liability Obligation

Kontron Europe shall be exempted from the statutory accident liability obligation if the user fails to observe the safety instructions.

3.3. Liability Limitation / Exemption from the Warranty Obligation

In the event of damage to the device caused by failure to observe the hints in this manual and eventually on the device (especially the safety instructions included in the chapter “General Safety Instructions for IT Equipment”), Kontron Europe shall not be required to honor the warranty even during the warranty period and shall be exempted from the statutory accident liability obligation.



4. General Safety Instructions for IT Equipment

Please read this chapter carefully and observe the instructions for your own safety and correct use of the device.

The chapter also contains information on approval and interference suppression of your device.

The device has been built and tested by Kontron Europe in accordance to EN 60950-1 and left the company in a perfectly safe condition.

In order to maintain this condition and ensure safe operation, the user must observe the instructions and warnings on the device and in the manual.

- The device must be used in accordance with the instructions for use.
- The electrical installations in the room must correspond to the requirements of the respective regulations.
- Take care that there are no cables, particularly power cables, in areas where persons can trip over them.
- Do not use a power cable in sockets shared by a number of other power consumers. Do not use an extension cable.
- The unit is only completely disconnected from the DC main power source, when the DC power cord is disconnected either from the power source or the unit. Therefore, the DC power cord and its connectors must always remain easily accessible.
- Even if the system is turned off via the power buttons there is still a standby-voltage of 5 V on the baseboard. The system is not completely disconnected from the mains power supply by turning off via the power button.

Hints for DC power connection:

The device must be connected only to a LPS (Limited Power Supply) DC mains power supply complying with the requirements of EN 60950-1. The DC main power supply should be able to be switched off and on via disconnecting device (UL-listed).

The unit is only completely disconnected from the DC mains power supply, when the DC power cord is disconnected either from the power source or the unit. Therefore, the DC power cord and its connectors must always remain easily accessible.

Hints for optional AC power connection:

Use only a LPS (Limited Power Supply) power supply complying with the requirements of EN 60950-1 to connect the system to an AC power source. The main power cable of the optional external LPS power supply serves as disconnecting device. For this reason the outlet of the AC power source must be located near to the device and be easily accessible.

- Do not place the device in direct sunlight, near heat sources or in a damp place. Make sure the device has adequate ventilation.
- Only devices and components which fulfill the requirements of an SELV circuit (safety extra low voltage) in accordance with EN60950-1 may be connected to the interfaces of the system.
- All plugs on the connection cables must be screwed or locked to the housing.
- The device is designed to be mounted and operated only in the position described in this document.
- Repairs may only be carried out by a person authorized by Kontron Europe.
- Maintenance or repair on the open device may only be done out by qualified personnel authorized by Kontron Europe which is aware of with the associated dangers.
- The device may only be opened for the installation and removal of PCI/PCIe cards in accordance with the description in this manual. These procedures have to be carried-out only by qualified specialist personnel.
- If extensions are made to the device the legal stipulations and the device specifications must be observed.

- ❑ The device must be turned off and disconnected from the main power source, before installation and removal of any PCIe and CompactFlash™ card.
- ❑ The mounting and operation of the V Panel Express is the vertical position with the interfaces downwards.
- ❑ Only original accessories approved by Kontron Europe may be used.
- ❑ The DC-input must fulfill SELV requirements of EN60950-1 standard.
- ❑ It must be assumed that safe operation is no longer possible,
 - if the device has visible damage or
 - if the device no longer functions.In these cases the device must be shut down and secured against unintentional operation.



4.1. Electrostatic Discharge (ESD)

A sudden discharge of electrostatic electricity can destroy static-sensitive devices or micro-circuitry. Therefore proper packaging and grounding techniques are necessary precautions to prevent damage. Always take the following precautions:

1. Transport boards in ESD-safe containers such as boxes or bags.
2. Keep electrostatic sensitive parts in their containers until they arrive at the ESD-safe workplace.
3. Always be properly grounded when touching a sensitive board, component, or assembly.
4. Store electrostatic-sensitive boards in protective packaging or on antistatic mats.

4.1.1. Grounding Methods

The following measures help to avoid electrostatic damages to the device:

1. Cover workstations with approved antistatic material. Always wear a wrist strap connected to workplace as well as properly grounded tools and equipment.
2. Use antistatic mats, heel straps, or air ionizers for more protection.
3. Always handle electrostatically sensitive components by their edge or by their casing.
4. Avoid contact with pins, leads, or circuitry.
5. Turn off power and input signals before inserting and removing connectors or connecting test equipment.
6. Keep work area free of non-conductive materials such as ordinary plastic assembly aids and styrofoam.
7. Use field service tools such as cutters, screwdrivers, and vacuum cleaners which are conductive.
8. Always place drives and boards PCB-assembly-side down on the foam.

4.2. Instructions for the Lithium Battery

The implemented ETX baseboard is equipped with a Lithium battery. For the replacing of this battery please observe the instructions described in the section 8.3 “Replacing the Lithium Battery”.

	<p>Caution</p> <p>Danger of explosion when replacing with wrong type of battery. Replace only with the same or equivalent type recommended by the manufacturer. The lithium battery type must be UL recognized.</p>
	<p>Do not dispose of lithium batteries in general trash collection. Dispose of the battery according to the local regulations dealing with the disposal of these special materials, (e.g. to the collecting points for dispose of batteries).</p>

5. Electromagnetic Compatibility

5.1. Electromagnetic Compatibility EU (Class B Device)

This product is intended only for use in industrial areas. The most recent version of the EMC guidelines (EMC Directive 2004/108/EC) and/or the German EMC laws apply. If the user modifies and/or adds to the equipment (e.g. installation of add-on cards) the prerequisites for the CE conformity declaration (safety requirements) may no longer apply.

5.2. FCC Statement (USA)

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

5.3. EMC Compliance (Canada)

The method of compliance is self-declaration to Canadian standard ICES-003:

(English): This Class A digital apparatus complies with the Canadian ICES-003.

(French): Cet appareil numérique de la class A est conforme à la norme NMB-003 du Canada.

6. Scope of Delivery

Please check that your package is complete, and contains the items below (according to the ordered unit configuration). If you discover damaged or missing items, please contact your dealer.

- V Panel Express (configuration delivered as ordered)
- General Safety Instruction for IT Equipment

	<p>V Panel Express system in the configuration ordered:</p> <ul style="list-style-type: none"> • V Panel Express 121 • V Panel Express 150 • V Panel Express 170 • V Panel Express 190 <p>Note: the mounting clamps are delivered not assembled.</p>
	<p>Phoenix Power Plug Terminal</p>
	<p>Stylus (Touch Pen)</p>
	<p>8x Mounting Clamp with Allen Screws for the following systems: V Panel Express 150, V Panel Express 170 and V Panel Express 190</p> <p>6x Mounting Clamp with Allen Screws for V Panel Express 121</p> <p>Note: the mounting clamps are delivered not assembled.</p>

6.1.1. Optional Parts

- CF card (Type I)
- External power supply (refer to Fig. 35)
- 19" rackmount kit (refer to www.kontron.com / V Panel Express 121 or 150 / Downloads/Mechanical Drawings)

6.2. Type Label and Product Identification

The type label with the corresponding Kontron product part number is at the rear right hand side of the system.

System	Product Part Number	Product Identification
V Panel Express 121	2-A0HW-xxxx	for V Panel Express with 12.1" display and ETXexpress-SC Module
V Panel Express 150	2-A0HX-xxxx	for V Panel Express with 15" display and ETXexpress-SC Module
V Panel Express 170	2-A0HY-xxxx	for V Panel Express with 17" display and ETXexpress-SC Module
V Panel Express 190	2-A0HZ-xxxx	for V Panel Express with 19" display and ETXexpress-SC Module

On the type label of your system, the "xxxx" group is replaced by arabic numerals combination according to the ordered system configuration.

7. Product Description

The V Panel Express is an industrial machine designed for high industrial application. The V Panel Express is a workstation system with integrated touch screen display available in display sizes of 12.1", 15", 17" or 19". The system is designed for:

- Installation in an instrument panel or other cabinets
- Installation by a VESA 75/100 compliant mounting system
- Installation in a 19" rack by use of the optional "rackmount kit" (V Panel Express 121 and 150 only)



All versions are suitable for installation in an instrument panel or other cabinet.

V Panel Express systems will be mounted in an instrument panel or other cabinets using the corresponding supplied mounting clamps.

Only V Panel Express 121 and 150 can be installed into a 19" rack using the optional "rackmount kit".

The hardware of the V Panel Express system can be flexibly configured corresponding to customized requirements. The rugged design offers excellent mechanical stability. The V Panel Express provides the demanding characteristics required for a computer that is very suitable for using in harsh industrial environment.

The system accommodates a new processor platform based on ETX COMexpress® SCT2 module. Only one DDR3 SO-DIMM sockets (from two) is accessible for up to 8 GB memory size (2, 4, 8GB, dual channel DDR3 ECC memory modules are supported).

An installed PCIe riser card allows unit expansion up to two PCIe x1 cards.

Depending on the system configuration ordered, the V Panel Express can be equipped optionally with following external accessible drives:

- up to two 2.5" SATA (I or II) HDD/SSD (installed into a removable drive tray) and
- one Compact Flash™-card, type I.

The power button, the Reset button, the LED control indicators and user interfaces such as DVI-I/VGA, USB (2.0) LAN ports (10/100/1000 Mbps) and serial ports (RS232) are accessible on the bottom (rear) side of the system.

The V Panel Express is a fanless system. The cooling of the unit is performed by the heat sink surface of the chassis (rear side).

The V Panel Express is designed to be connected to a +24VDC (+/-20%) mains power supply (limited power supply) using the DC power terminal (included). Please observe the hints in chapter 10.1.1 "DC Connection". In order to connect the system to an AC mains power source can be ordered the optional external AC/DC adapter (limited power supply).



When powering on the V Panel Express, make sure that the air intake and exhaust openings are not obstructed.

The V Panel Express system is designed to comply with IP65 Protection class at the front side.

The V Panel Express systems only comply with IP65 protection class at the front side, if the front side USB connector is covered by the elastic captive rubber coat.

The access door and HDD drive tray must be secured by the captive knurled screws during operation.

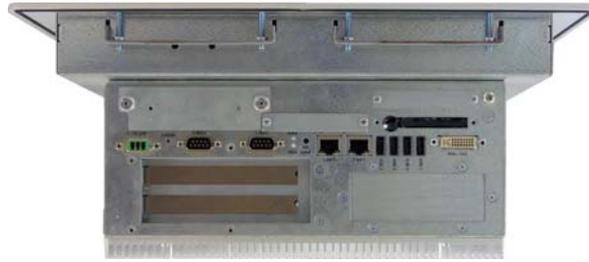


Fig. 1: Bottom view



Fig. 2: Right view

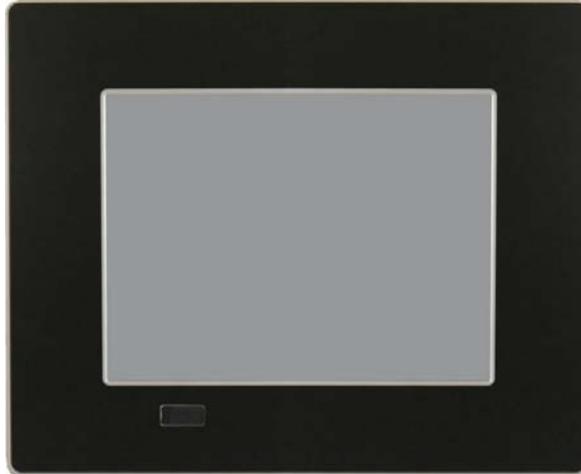


Fig. 3: Frontal view



Fig. 4: Left view



Fig. 5: Top view

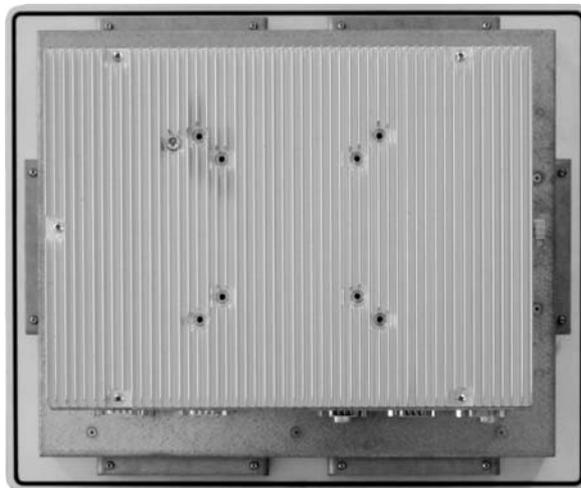


Fig. 6: Rear view

In these pictures (Fig. 1 up to Fig. 6) the system is shown as a V Panel Express i7 121 unit.

7.1. Front Side View

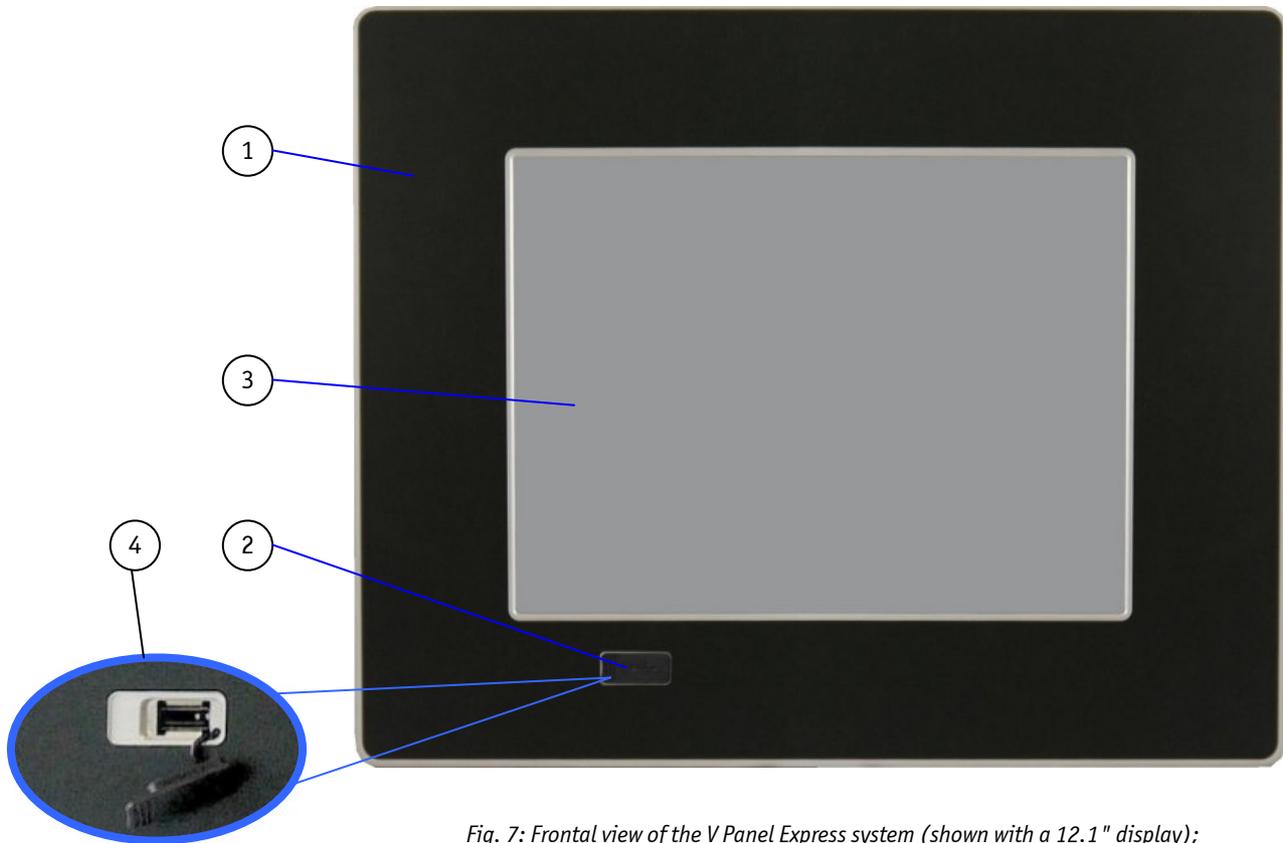


Fig. 7: Frontal view of the V Panel Express system (shown with a 12.1" display);

- | | |
|---|---|
| <p>1 Front plate</p> <p>2 Covered (rubber coat) USB interface</p> | <p>3 12.1"/15"/17"/19" TFT display (LED backlight) with touch screen (shown as a 12.1" display)</p> <p>4 Detail with removed rubber coat of the USB interface</p> |
|---|---|

7.1.1. USB Interface Connector on the Front Side

This connector USB 2.0 allows you to connect different USB-compatible devices to the V Panel Express system. The USB connector is covered by an elastic captive rubber coat. The rubber coat prevents the penetration of fluid if no device is connected.



The V Panel Express only complies with IP65 protection class at the front side, if the front side USB connector is covered by the elastic captive rubber coat.

7.1.2. Front Plate Versions

All versions are suitable for installation in an instrument panel or other cabinet. At the front side are located:

- ❑ Front plate (aluminum front plate with polyester front foil).

Depending on the size of the integrated display (12.1"/15"/17"/19"), the outline dimensions of display unit are: (refer also to the section 12.2 "Mechanical Specifications").

7.1.3. Display with Touch Screen

Depending on the ordered V Panel Express system the built-in display is a 12.1"/15"/17"/19" size TFT display with corresponding resistive touch screen. The touch screen is USB connected.

For technical specification of the built-in display refer to the chapter 12 “Main Specifications”.

The display is equipped with a resistive touch screen. The touch screen offers the same degree of user comfort as the mouse buttons. A stylus is supplied for touch screen operation.

The surface of the display is also mechanically protected through the touch screen. The touch screen (USB connected) registers contacts of a finger or a pen and allows moving the mouse pointer. Use a stylus (included) for best results. This functions only under integration of the necessary software. You get the corresponding touch screen driver for your operating system, installed on your V Panel Express system (refer to section 10.2 “Operating System and Hardware Component Drivers”. For recalibration of the touch if necessary, please observe the subsection 10.2.1.3.



Do not use a hard or a pointed object (like screw drivers) to operate the touch screen, since it can damage the touch screen surface.

The front panel and the touch screen are covered by a plastic overlay and care should be taken when cleaning it (see the section 11.1 “Touch Screen Care and Cleaning”).

7.2. Bottom Side (with Interfaces)

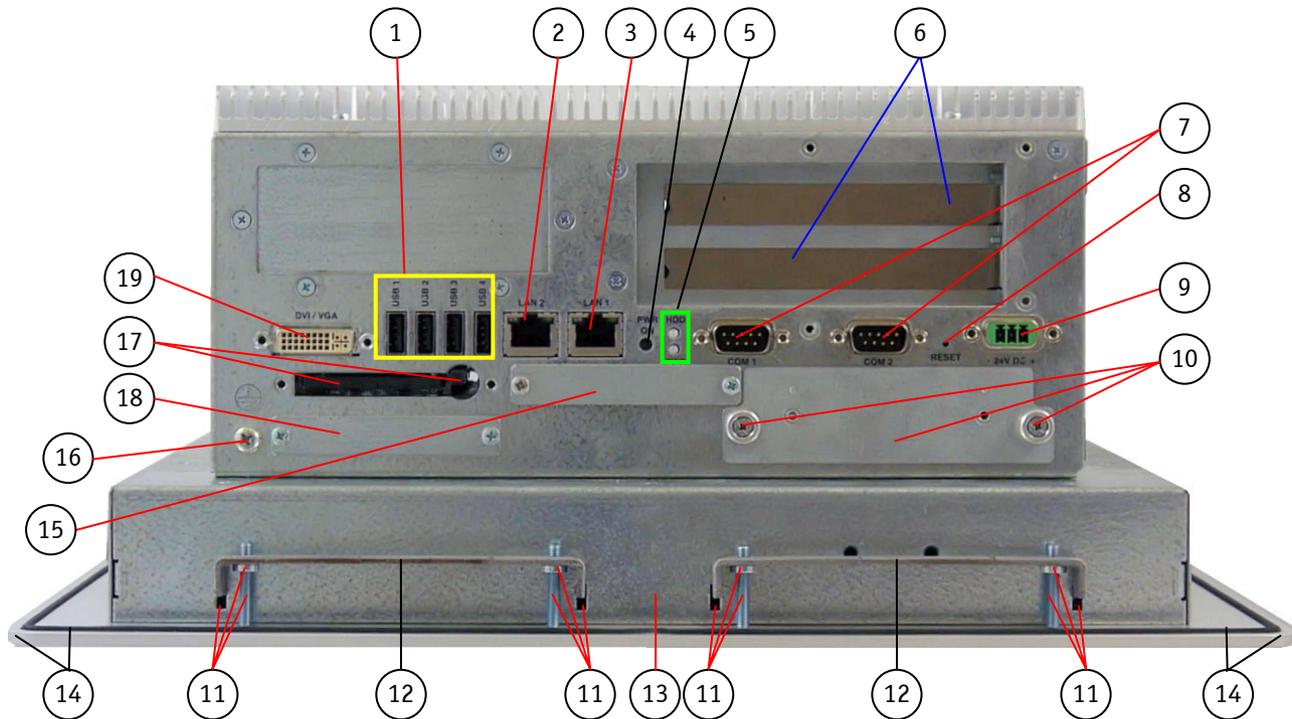


Fig. 8: V Panel Express (interface side)

- | | |
|---|--|
| 1 4x USB (2.0) connector | 11 Mounting slots and screws with installed mounting clamp |
| 2 LAN2 interface connector | 12 Mounting clamp |
| 3 LAN1 interface connector | 13 Display enclosure |
| 4 Power button | 14 Front panel with seal on the rear side |
| 5 LED control indicators | 15 CF1 slot (<u>not supported; the base board is not equipped with the second CF-socket</u>) |
| 6 2x Free expansion slots for PCIe x1 cards (half size) | 16 Screw used for grounding |
| 7 COM1 (RS232) and COM2 (RS232) serial ports | 17 CF2 slot with eject button (shown with installed CF card (type I) (option)) |
| 8 RESET button | 18 Covered slot (not equipped) |
| 9 DC power plug (for 24 VDC) | 19 DVI-I/VGA connector |
| 10 HDD drive tray with knurled screws | |



Note for mounting clamps:

The V Panel Express 121 system will be secured into an instrument panel or cabinet:

- at the top and bottom side: with two mounting clamps on each side and
- at the left and right side with only one mounting clamp on each side as shown in (Fig. 13 and Fig. 14, pos 8).

The V Panel Express 150/170/190 system will be secured into an instrument panel or cabinet

- on each side with two mounting clamps.

7.2.1. DC-IN Power Connector

The V Panel Express system is supplied with the 3-pin Phoenix power connector terminal (Fig. 34). The DC Power connector (Fig. 8, pos. 9 and Fig. 9) provides the power connection of the V Panel Express system to the main power source via a DC power cable (not included) or the AC/DC adapter (not included; refer to the subsection 6.1.1 “Optional Parts”). For pin-assignment of this connector refer to the section 13.1 “Power Connector”.



Fig. 9: Detail of the DC Power connector shown without Phoenix terminal

7.2.2. Power Button

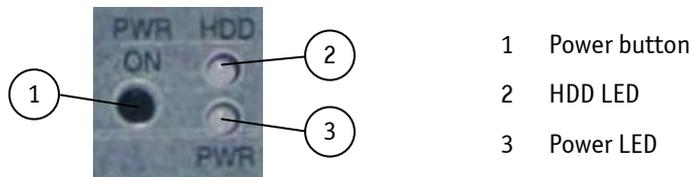


Fig. 10: Power button and LED indicators

The power button “PWR ON” (Fig. 10, pos. 3) is located on the bottom side of the system (Fig. 8, pos. 4).

Press this button in order to turn the system on or off. The power button behavior can be set in the BIOS Setup: Restore AC power loss/Option settings: Power on/Power off/Last State). The system is delivered with the default settings.



Even when the system is turned off via the power button there is still a standby-voltage of 5 V on the baseboard. The system is not completely disconnected from the main power supply by turning off via the power button.

Hints for DC power connection:

The device must be connected only to a LPS (**L**imited **P**ower **S**upply) DC mains power supply complying with the requirements of EN 60950-1. The DC main power supply should be able to be switched off and on via a 2-pole isolating switch (UL listed).

The unit is only completely disconnected from the DC main power supply, when the DC power cord is disconnected either from the DC main or the unit. Therefore, the DC power cord and its connectors must always remain easily accessible.

Hints for AC power connection:

Use only a LPS (**L**imited **P**ower **S**upply) power supply complying with the requirements of EN-60950-1 to connect the system to an AC power source. The main power cable of the optional external LPS power supply serves as disconnecting device. For this reason the outlet of the AC power source must be located near to the device and be easily accessible.

7.2.3. Grounding Screw (M4) with lock Washers

The chassis of the V Panel Express system must be grounded by establishing a **large-area contact** between the grounding screw M4x19 (DIN7985) with 2x lock washer M4 (DIN6797) (Fig. 8, pos. 16), and an appropriate grounding connection point. The minimum cross section of the grounding conductor is 1mm² (AWG 18).

7.2.4. LED Control Indicators

The V panel Express is equipped with two LED indicators (Fig. 10, pos. 2 and 3) (bottom, rear side, Fig. 8, pos. 5).

Power LED	Lights up green when the system is powered on via the power button.
	Lights up red when the system is in standby (depends on the behavior of the power button (BIOS Setup setting)).
HDD LED	Lights up red for hard disk activity.

7.2.4.1. Power LED Error Codes

The power LED (Fig. 10, pos. 3) shows the on/off state of the system and four important malfunction conditions of the system:

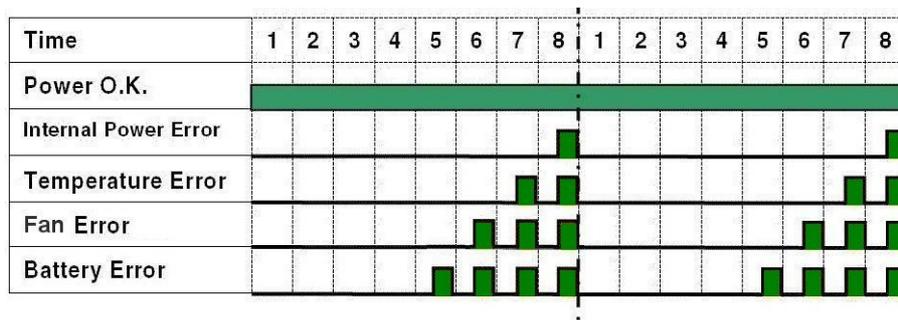


Fig. 11: Power LEDs and Error Codes

These errors will be notified by the blinking of the Power LEDs and by a beeper. The following illustration shows the blink for different conditions.

The audible warning signal is in an inverted phase to the LED blinking (Power O.K. without beep).

If more than one malfunction condition occurs simultaneously, only the highest priority error code will be shown.

The priority order is:

1. most Voltage Error
 2. less Temperature Error
 3. less Fan Error
 4. at least Battery Error
- If more than one error occurs at the same time, only the error with the highest priority will be displayed.

7.2.4.2. Reset Button

To restart the system, e.g. after a system hang-up, press the “RESET” button (Fig. 8, pos. 8). The system restarts automatically; you don’t have to switch the computer off and on.



During a reset all data in the main memory will be erased.

7.2.5. CompactFlash™ Slot (with optional installed CF Card)

The V Panel Express is equipped with a bottom side accessible CompactFlash™ slot with eject button (Fig. 8, pos. 18). The CF slot will accept only CF cards type I. The second CF slot (Fig. 8, pos. 15) is not equipped with the on board CF-socket.



The system must be powered down before the Compact Flash™ card can be installed or removed.



The CF slots (CF1 always or/and CF2 without installed CF card) are covered by a slot cover as shown in Fig. 8, pos. 15.

7.2.6. Interfaces

7.2.6.1. USB 2.0 Connectors

The system is equipped at the front side with 4x USB 2.0 interface connectors (Fig. 8, pos. 1). These connectors provide connections for USB-compatible devices.

7.2.6.2. DVI-I Interface Connector

The DVI-I interface (Single Link) (Fig. 8, pos. 19) supports both digital and analog connections. Digital devices can be connected directly to this interface of the V Panel Express. Analog devices should be connected to this interface via a DVI to VGA adapter (not included).

7.2.6.3. Ethernet Interface Connectors

These interface connectors (Fig. 8, pos. 2 and 3) are provided as RJ45 sockets with integrated LEDs.

Ethernet Port	Data Transfer Rate for System Configuration with:
	ETX COM Exptess Module
LAN1	10/100/1000 Mbps
LAN2	10/100/1000 Mbps

LAN1 LED States:

Left LED State	Link Speed	Right LED State	Link Activity State
Off	10 Base-T	Green (flashing)	Link active
Green (constant on)	100 Base-T	Green (flashing)	Link active
Orange (constant on)	1000 Base-T	Green (flashing)	Link active

LAN2 LED States:

Left LED State	Link Speed	Right LED State	Link Activity State
Off	10 Base-T	Green (flashing)	Link active
Green (constant on)	100 Base-T	Green (flashing)	Link active
Orange (constant on)	1000 Base-T	Green (flashing)	Link active

7.2.7. Removable HDD Drive Tray (with optional installed HDD)

The V Panel Express can be equipped with a removable drive tray (Fig. 8, pos. 10) for up two 2.5" SATA HDD/SSD. The drive cage is secured to the system with a knurled screw; (refer also to detail shown in Fig. 12).

It is allowed to remove/replace the hard disk while the system is powered-up.



In order to prevent the loss of data do not remove the hard disk during HDD read or write activities.

It is allowed to operate the system only with closed HDD drive tray and secured by the knurled screws.

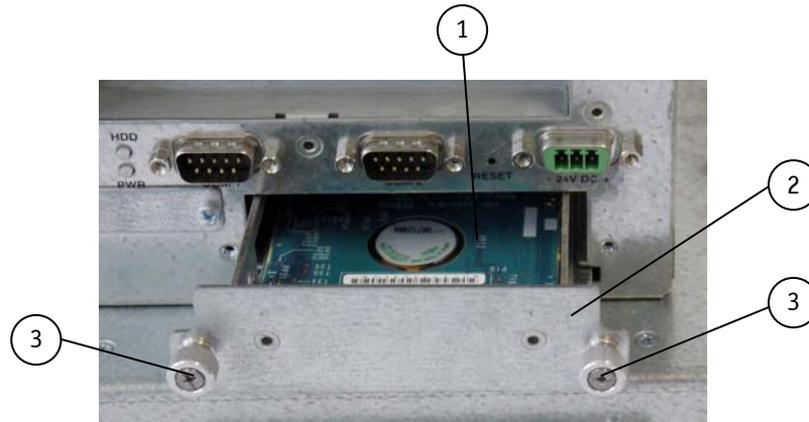


Fig. 12: Detail with drive tray for SATA HDD (shown with opened removable HDD drive tray)

- 1 2.5" SATA hard disk
- 2 Removable HDD drive tray (opened)
- 3 Knurled screws of the HDD drive trays

7.3. Left and Right Side View



When powering on the V Panel Express, make sure that the air intake and exhaust openings are not obstructed.

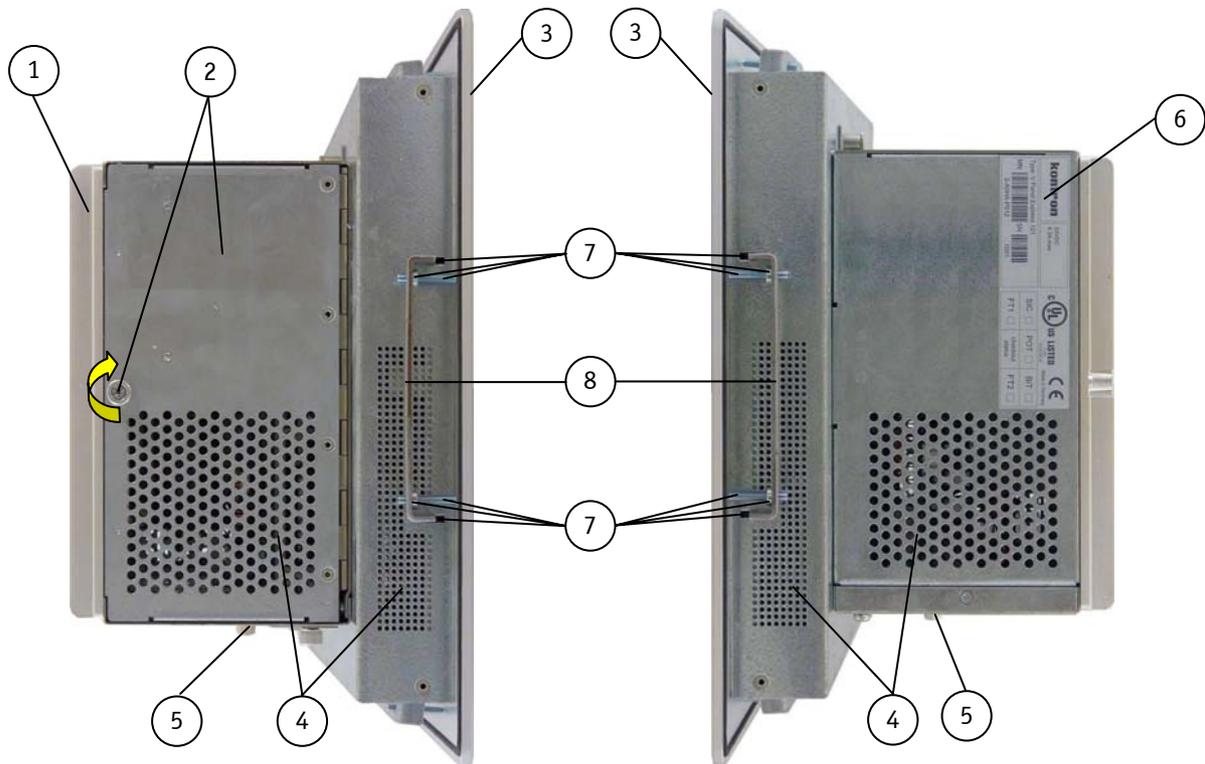


Fig. 13: Left side, shown as a V Panel Express 121 system

Fig. 14: Right side, shown as a V Panel Express 121 system

Legend for Fig. 13 and Fig. 14:

- | | | | |
|---|---|---|--|
| 1 | Heat sink with VESA 75/100 mounting holes | 6 | Type label |
| 2 | Access door with knurled screw | 7 | Mounting slots with installed mounting clamp and Allen Screw |
| 3 | Front panel with display | 8 | Mounting clamp (refer to the note below) |
| 4 | Air intake openings | | |
| 5 | Interface side (bottom) | | |

At the left side is situated the expansion card access door (Fig. 13, pos. 2) secured with a knurled screw. When opening this access door you have access to the free card slots of the raiser card installed onto the ETX baseboard. Install the expansion cards as described in the section 8.1 “Installing/Removing the Expansion Cards”.



Note for mounting clamps:

The V Panel Express 121 system will be secured into an instrument panel or cabinet:

- at the top and bottom side: with two mounting clamps on each side and
- at the left and right side with only one mounting clamp on each side as shown in (Fig. 13 and Fig. 14, pos 8).

The V Panel Express 150/170/190 system will be secured into an instrument panel or cabinet:

- with two mounting clamps on each side.

7.4. Top Side

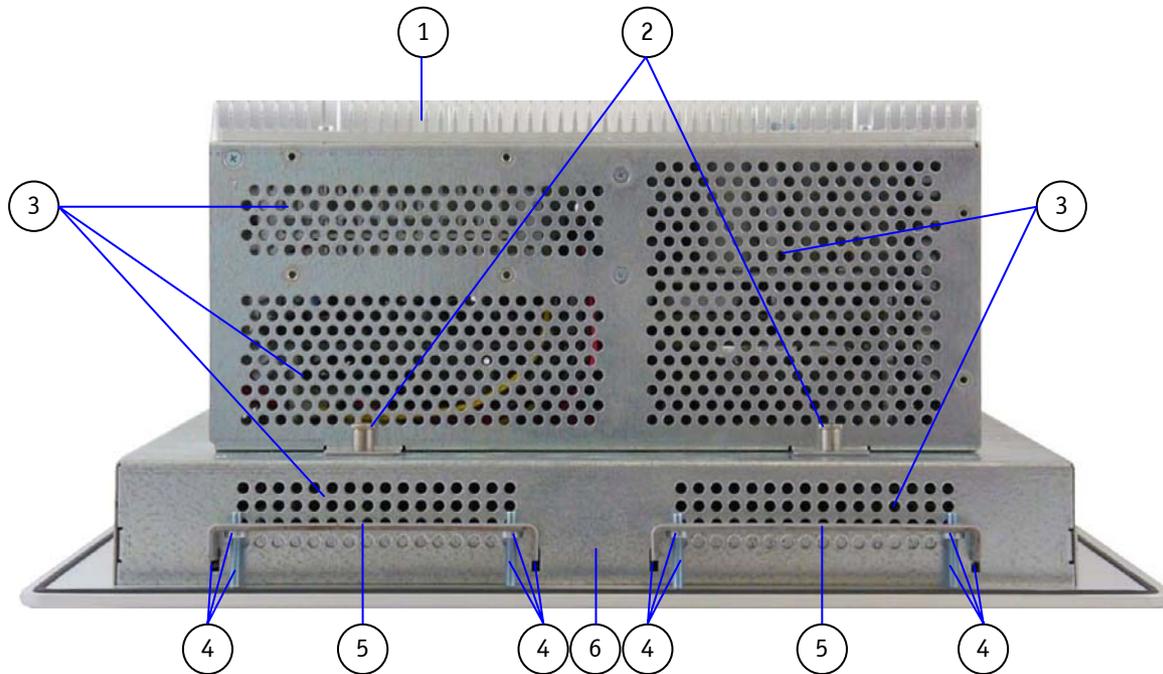


Fig. 15: Top side (shown as a V Panel Express 121 system)

- | | |
|---|--|
| 1 Heat sink with VESA 75/100 mounting holes | 4 Mounting slots with installed mounting clamp and Allen Screw |
| 2 Screws for securing the PC unit to the display unit | 5 Mounting clamp (refer to the note below) |
| 3 Air exhaust openings | 6 Display enclosure |



When powering on the V Panel Express, make sure that the air intake and exhaust openings are not obstructed.



Note for mounting clamps:

The V Panel Express 121 system will be secured into an instrument panel or cabinet:

- at the top and bottom side: with two mounting clamps on each side (Fig. 15, pos. 5) and
- at the left and right side with only one mounting clamp on each side as shown in (Fig. 13 and Fig. 14, pos 8).

The V Panel Express 150/170/190 system will be secured into an instrument panel or cabinet:

- with two mounting clamps on each side.

7.5. Rear Side

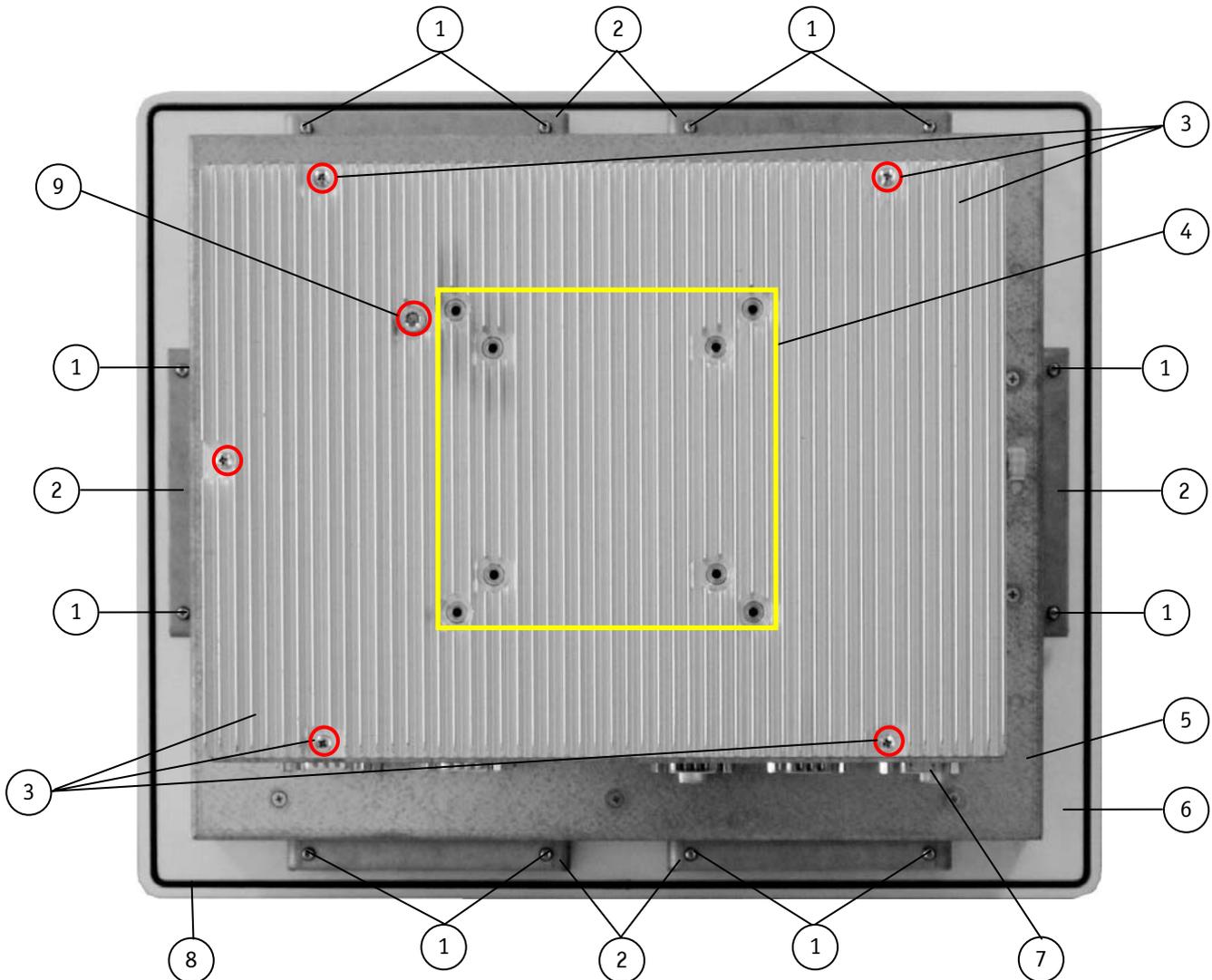


Fig. 16: Rear side, shown as V Panel Express 121 system

- | | |
|---|---|
| 1 Allen Screws for securing the system with mounting clamps to a mounting panel | 5 Rear side of the display enclosure |
| 2 Mounting clamp | 6 Rear side of the front plate |
| 3 Phillips screws that secure the heat sink to the chassis of the PC Box | 7 Interface side of the PC Box |
| 4 VESA® 75/100 compliant mounting holes | 8 Rubber seal (gasket) |
| | 9 Allen screw that allows to secure the two cylindrical bars into the proper position for heat transfer (do not remove) |



Please do not remove the screws marked with red (Fig. 16, pos. 3 and 9).



Note for mounting clamps:

The V Panel Express 121 system will be secured into an instrument panel or cabinet:

- at the top and bottom side: with two mounting clamps on each side (Fig. 15, pos 5) and
- at the left and right side with only one mounting clamp on each side as shown in (Fig. 16, pos 2).

The V Panel Express 150/170/190 system will be secured into an instrument panel or cabinet:

- with two mounting clamps on each side.

7.6. Integrated ETXCOMexpress® Module

Depending on the ordered system configuration, your V Panel Express i7 accommodates an ETX baseboard with an ETX COM SC module.



Refer to the information and technical data in the user manual of the installed baseboard and ETXexpress™ COM SC Module.

The user’s manual of the installed board can be downloaded from our web site www.kontron.com. Search for the name of the installed board.

7.6.1. Fuse

The installed ETX baseboard is fitted with a 10 A time-lag fuse (refer to Fig. 17, pos. 1) that protects the system and its components against over-currents and short-circuits.

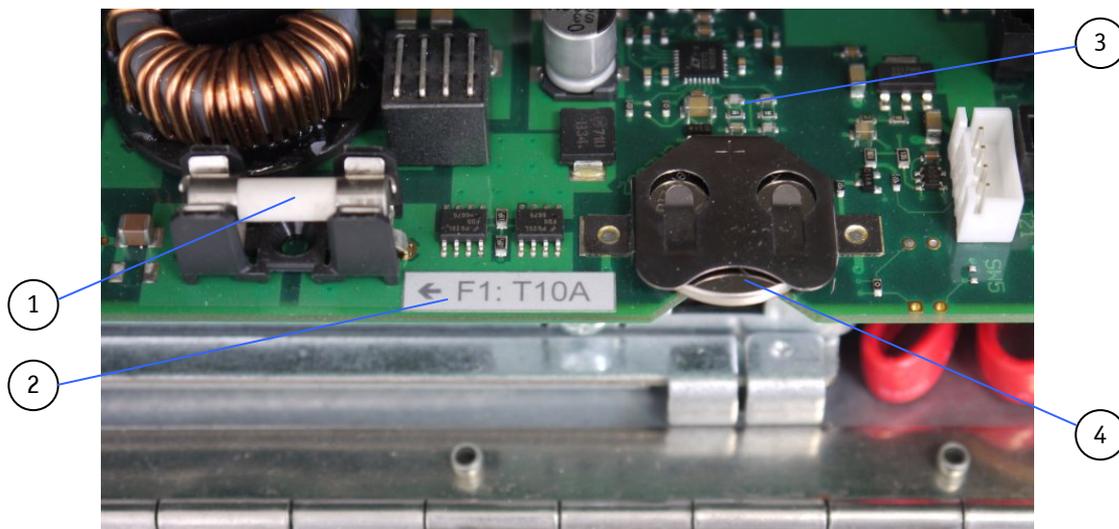


Fig. 17: Fuse, label for fuse value and Lithium battery location

- | | | | |
|---|-----------------------------------|---|-----------------------|
| 1 | 10 A time-lag fuse | 3 | ETX Express baseboard |
| 2 | Label for fuse value and location | 4 | Lithium battery |

The system is delivered with inserted fuse (10A time-lag, 5 x 20 mm). When the system is inoperable the fuse has to be checked and, if necessary replaced as described in the section 8.4 “Replacing the Fuse”.

7.7. PCIe Riser Card

The V Panel Express i7 can be extended or with up to 2x PCIe x1 additional cards, depending on the system configuration ordered. You can expand your system with extension cards as half size length.



To expand your system with additional cards (PCIe x1), please observe the power consumption specified in the section 8.1 “Installing/Removing the Expansion Cards”. The power consumption of each additional card does not exceed 10 W. (Tested with PCIe x1 LAN card).

8. Accessing Internal Components

This section contains important information that you must read before accessing the internal components. You must follow these procedures properly when installing, removing or handling any board.

Please consider following instruction when you install (or remove) expansion cards.



The HDD, the expansion cards, the fuse and the Lithium battery are located in an “OPERATOR ACCESS AREA”. The area behind the access door (Fig. 13, pos. 2) designed as “OPERATOR ACCESS AREA” may only be opened for installing/removing of HDDs, expansion cards, or checking/replacing the fuse, or replacing the Lithium battery by qualified specialist personnel according to the description in this user’s guide. Please observe the labels (Fig. 27, pos. 3 and pos. 6).

The PC Box may only be opened in accordance with the description in this user’s manual for:

- Installation and removal of HDDs
- Installation and removal of PCIe expansion cards
- Replacing of the Lithium battery
- Checking and/or replacing of the fuse

These procedures have to be carried-out only by qualified specialist personnel.

To expand your system with additional cards, please take care that each additional card should not exceed a power consumption of 10 W.

The access door and HDD drive tray must be secured by the captive knurled screw during operation.



Please consult the documentation provided by the manufacturer of the expansion card for instructions before attempting to install/remove an expansion card into/from the V Panel Express.



Please observe the safety instruction for handling assemblies with static sensitive device. Failure to take heed of this warning instruction can result in damage to the device.

8.1. Installing/Removing the Expansion Cards

The expansion cards for the performance extension of your system can be installed into the free slots of the riser card. Please consider following instruction when you install (or remove) expansion cards. It is recommended to expand your system with additional PCI cards before it is installed on a panel or into an industrial cabinet.

1. Close all applications; shut down the system properly and disconnect the power cord from the power source. Disconnect all peripherals.
2. The V Panel Express system should lay on a flat, clean surface with the front panel downwards. (Make sure that the display surface is protected against scratching and damage).
3. Loosen the knurled screw on the left side of the unit that secures the access door (refer to Fig. 18, pos. 1 and pos. 2) and open access door.
4. To remove/install an expansion card, you have to remove the corresponding expansion card/slot bracket. Loosen the corresponding fastening screw on the internal side, which secures the slot bracket and remove it. Retain the screws for later use
5. Insert/remove the expansion card into/from the slot of the riser card (Fig. 19, pos.4).
6. If you have removed an expansion card, re-insert a slot bracket.
7. Secure the bracket (slot bracket or card bracket) to the chassis with the fastening screw.
8. Close the access door and secure it with the knurled screw.

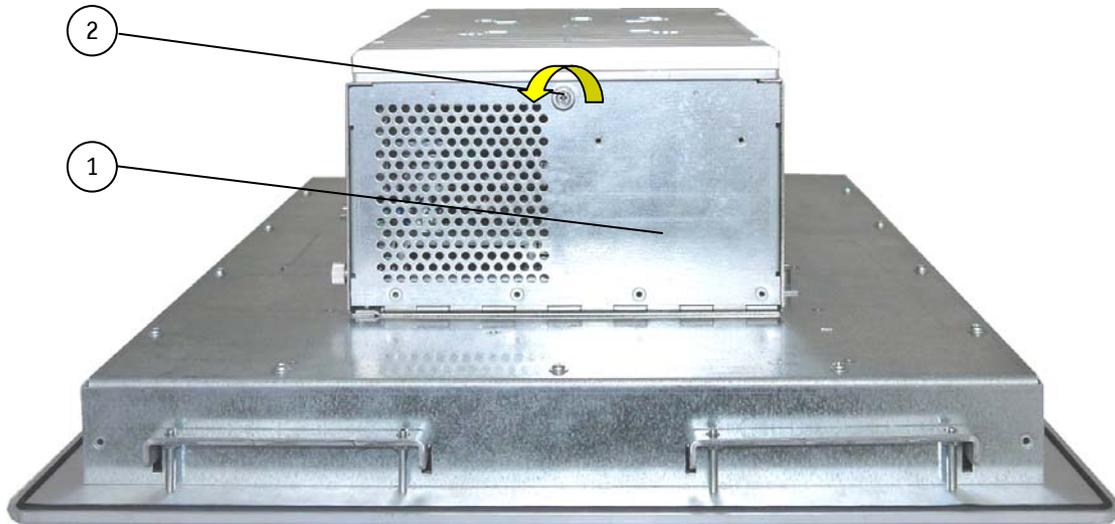


Fig. 18: Open the access door of the V Panel Express System



Fig. 19: Opened access door (system is shown with riser card for up to 2x PCIe x1 expansion slots)

Legend for Fig. 18 and Fig. 19:

- | | |
|--|--|
| 1 Access door | 6 Baseboard with ETX COM Express ST2 Module |
| 2 Captive knurled screw of the access door | 7 SATA cable and SATA power connectors |
| 3 Screws to secure the expansion cards slot brackets | 8 On the inside of the access cover there is the “Safe-keeping” location for the CF-slot cover (if CF card is installed) |
| 4 Free PCIe x1 slots of the PCIe riser card | |
| 5 Removable HDD tray (one SSD installed) | |

8.2. Replacing the Removable HDD Tray



The HDD, the expansion cards, the fuse and the Lithium battery are located in an “OPERATOR ACCESS AREA”. The area behind the access door (Fig. 18, pos. 1) designed as “OPERATOR ACCESS AREA” may only be opened for installing/removing of HDDs, expansion cards, or checking/replacing the fuse, or replacing the Lithium battery by qualified specialist personnel according to the description in this user’s guide.



Fit the “SATA 0” drive location always first if your system has to be operating with one HDD drive only (refer to Fig. 21, pos. 4)!

Perform the following procedure if you are replacing (removing/installing) the SATA HDD:

1. Close all applications; shut down the system properly and disconnect the power cord from the power source.
2. Lay down the hard disk tray on a clean and ESD protected workplace.
3. Loosen the knurled screw on the left side of the unit that secures the access door (refer to Fig. 18, pos. 1 and pos. 2) and open access door.
4. Disconnect the SATA cable and the SATA power connector (Fig. 19, pos. 7) from the rear side of the installed HDD (refer to Fig. 21, pos. 3).
5. Loosen the captive knurled screws (Fig. 20, pos. 2) that secure the drive tray to the chassis and pull-out the HDD tray (Fig. 20, pos 1) from the system (see Fig. 8, pos. 10).
6. Remove the four screws (two screws on each side) that secure the HDD to the drive tray (refer to Fig. 22, pos. 6) and Fig. 24, pos. 10). Retain the screws for later use!
7. Slide the drive(s) out of the tray.

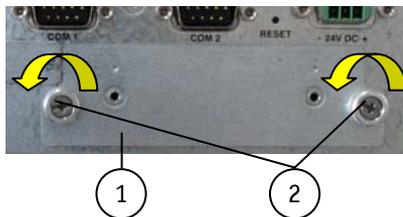


Fig. 20: Detail: removable HDD tray of the system



Fig. 21: Rear side of the removed HDD tray

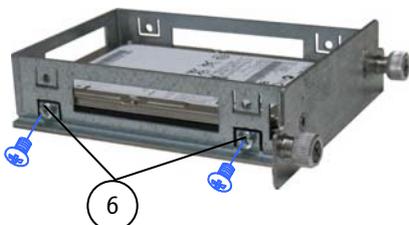


Fig. 22: Left side of the HDD tray

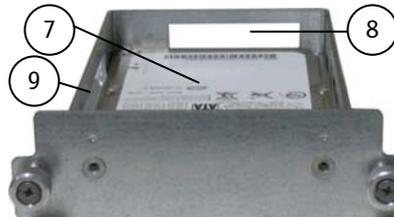


Fig. 23: Removed HDD tray

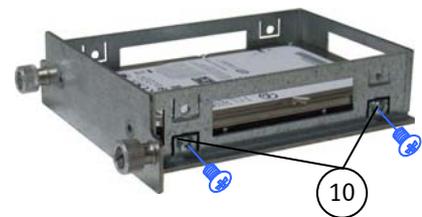


Fig. 24: Right side of the HDD tray



Fig. 25: Removed HDD tray with installed HDD (SATA0)

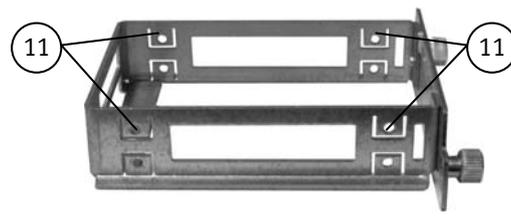


Fig. 26: Removed HDD tray without HDD

Legend for the figures Fig. 20, Fig. 21, Fig. 22, Fig. 23, Fig. 24 and Fig. 26:

- | | | | |
|---|--|----|---|
| 1 | Installed HDD tray (removable) | 7 | 2.5" SATA HDD installed as "SATA 0" into the drive tray |
| 2 | Captive knurled screws that secure the drive tray to the chassis | 8 | Upper cut-out for HDD connector (power and SATA) for the "SATA1" drive (not included) |
| 3 | Location for the drive connectors (power and SATA) on the rear of the drive tray (if HDD is installed into the tray) | 9 | Drive tray for up to two 2.5" SATAII drives |
| 4 | Location for the 2.5" HDD drive (SATA 0) | 10 | HDD mounting screws on the right side of the drive tray |
| 5 | Location for the 2.5" HDD drive (SATA 1) | 11 | Mounting holes for the second HDD (HDD is not included) |
| 6 | HDD mounting screws on the left side of the drive tray | | |

In order to reinstall a new 2.5" SATA drive into the "SATA 0" drive location or to expand your system with a second 2.5" SATA drive into the "SATA 1" drive location proceed as follows:

8. Remove the drive tray as described in the steps 1-7.
9. Insert the new 2.5" SATA drive into the "SATA 0" drive location or a second one into the "SATA 1" drive location (refer to, Fig. 21, pos. 3, pos. 4 and pos. 5). Fit the "SATA 0" drive location always first if your system has to be operating with one HDD drive only (refer to Fig. 21, pos. 4)!
10. Make sure the drive has been fitted properly into the drive tray and secure the drive using the retained screws (step 6). The screws for securing the second HDD (for SATA1 location) into the drive tray are not included (refer to Fig. 26).
11. Insert the hard disk tray into the systems HDD tray, by slightly pressing inwards.
12. Through the access door connect inside of the unit, the SATA cable and the SATA power connector to the rear of the HDD (refer to Fig. 21, pos. 3).
13. Close the access door and secure it with the knurled screw (Fig. 13, pos. 2).
14. When the drive/s is/are lined up correctly, secure the drive tray to the chassis with the captive knurled screws (see Fig. 8, pos. 10).

8.3. Replacing the Lithium Battery



The HDD, the expansion cards, the fuse and the Lithium battery are located in an “OPERATOR ACCESS AREA”. The area behind the access door (Fig. 18, pos. 1) designed as “OPERATOR ACCESS AREA” may only be opened for installing/removing of HDD’s, expansion cards, or checking/replacing the fuse, or replacing the Lithium battery by qualified specialist personnel according to the description in this user’s guide. Please observe the labels (Fig. 27, pos. 6 and Fig. 28).



Before replacing the Lithium battery, the system has to be shut down properly, switched off and disconnected from the power source.

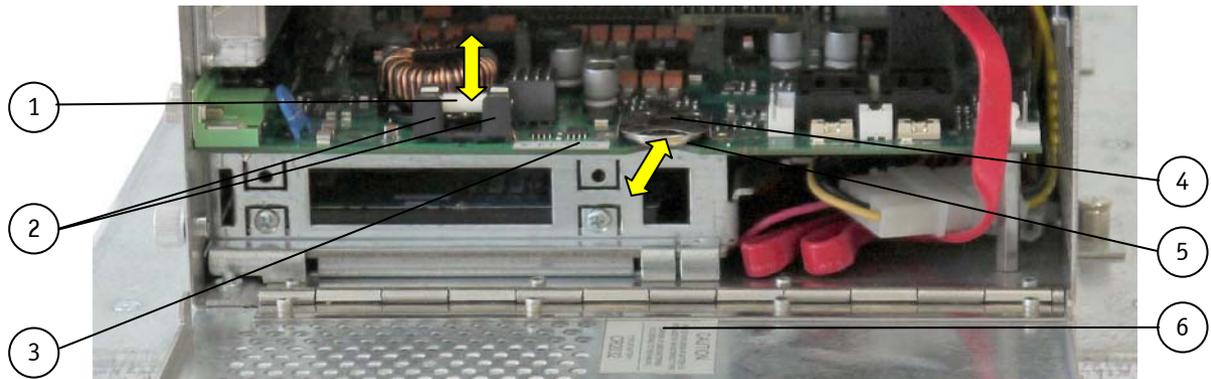


Fig. 27: Detail of the V Panel Express – OPERATOR ACCESS AREA

- | | |
|-------------------------------------|---|
| 1 Fuse (10A) | 4 Lithium battery holder (plus pole top) |
| 2 Fuse holder | 5 Lithium battery |
| 3 Label for fuse location and value | 6 Warning label for replacing the Lithium battery |

The ETX baseboard is equipped with a Lithium battery. To replace this battery, please proceed as follows:

1. Open the unit as described in the 8.1 “Installing/Removing the Expansion Cards” section (steps 1-3).
2. Pull the battery (Fig. 27, pos. 5) outwards.
3. Position the Lithium battery in the Lithium battery holder (Fig. 27, pos. 4) with the positive (+) terminal face-up. Gently push the battery into the holder in as far as it goes.
4. Make sure that you insert the battery correctly. The plus pole must be on top!
5. Close the Unit as described in the section 8.1 “Installing/Removing the Expansion Cards” (step 8).

The lithium battery must be replaced with an identical battery or a battery type recommended by Kontron Europe (Lithium battery 3.0 V for RTC, type: CR2032). The Lithium battery type must be UL recognized.



Do not dispose of lithium batteries in domestic waste. Dispose of the battery according to the local regulations dealing with the disposal of these special materials (e.g. to the collecting points for the disposal of batteries).



Fig. 28: Label for Lithium battery

8.4. Replacing the Fuse



The HDD, the expansion cards, the fuse and the Lithium battery are located in an “OPERATOR ACCESS AREA”. The area behind the access door (Fig. 18, pos. 1) designed as “OPERATOR ACCESS AREA” may only be opened for installing/removing of HDDs, expansion cards, or checking/replacing the fuse, or replacing the Lithium battery by qualified specialist personnel according to the description in this user’s manual. Please observe the label (Fig. 27, pos. 3 and Fig. 29).



Before the fuse may be checked or replaced, the system has to be shut down properly, switched off and disconnected from the power source.

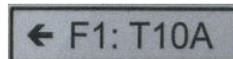
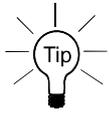


Fig. 29: Label for fuse

Fuse	Value / Type	Circuit	Position
F1 (Fig. 27, pos.1)	10 A time-lag / 5 mm x 20 mm	24 V DC	Behind the access door (Fig. 18, pos. 1)

1. Close all applications; shut down the system properly and disconnect the power cord from the power source. Disconnect all peripherals.
2. To gain access to the fuse loosen the captive knurled screw and open the access door (Fig. 18, pos. 1 and pos. 2).
3. Remove the defective fuse from the holder and replace it by a fuse of the same type and rating.
4. Close the access door and secure it with the knurled screw.

9. Installation Instructions



Expansion card installation should be performed before installing the V Panel Express to a wall.



The V Panel Express has to be installed and operated only by trained and qualified personal.

In order to ensure the IP65 protection class at the front side, make sure that the USB connector on the front panel is covered by the elastic captive rubber coat.

The mounting and operation of the V Panel Express is only the vertical position with the interfaces downwards.

The unit must be placed such that there is sufficient space for connecting the cables to the I/O interface connectors and for operating the power button.

Leave at least 5 cm (approx. 2") of free space around the unit to prevent the device from possibly overheating! Do not obstruct the air intake and exhaust openings.

The voltage feeds must not be overloaded. Adjust the cabling and the external overload protection to correspond with the rated voltage range indicated on the type label.

The type label is located on the right side of the system.

The access door and HDD drive tray must be secured by the captive knurled screws during operation.

All V Panel Express system configurations are delivered with the mounting clamps and the Allen screws (refer to Fig. 30, pos. 3 and pos. 4) as accessories. These mounting clamps have to be used in order to install the system into a subframe or a panel.

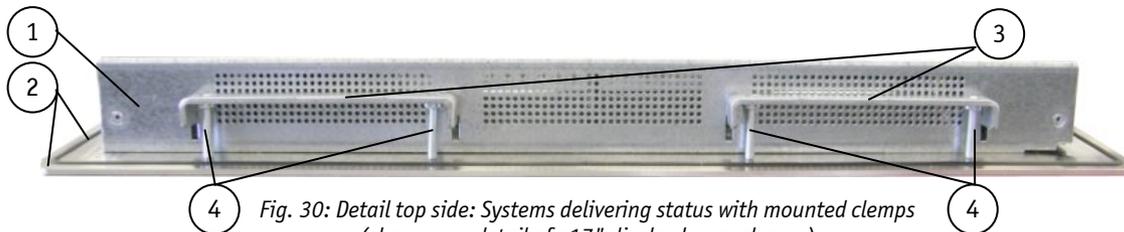


Fig. 30: Detail top side: Systems delivering status with mounted clamps (shown as a detail of a 17" display box enclosure)



Fig. 31: Detail top side: Systems without mounting clamps (shown as a detail of a 17" display box enclosure)

Legend for Fig. 30 and Fig. 31:

- | | |
|--|--|
| 1 Display Box enclosure | 3 Mounting clamps (for systems with 15" and 17" display) |
| 2 Rear side of the front panel with seal | 4 Allen screws (M4) |
| | 5 Pair slots for mounting clamps |

The mount clamps with screws (supplied), allow the easy and fast mounting of the V Panel Express-121/150/170/190 V Panel Express into an instrument panel or wall panel.

Dimension for: V Panel Express	121 VPE	150 VPE	170 VPE	190 VPE
Rear side display box enclosure [mm] (W x H x D)	324 x 263x 41.25	406.4 x 311x 34.25	418 x 356 x 41.5	460 x 380x 42
Cut-Out for Mounting into a Panel [mm] (W x H)	327 x 266	409 x 314	421 x 359	463 x 387.5
Requirements for Mounting				
Metal mounting panel thickness for proper mounting	1.5 – 6	1.5 – 6	1.5 – 5	1.5 – 9
Used clamps with screws for mounting the V Panel Express to a panel/subframe/rackmount kit	6x	8x		
				
Required Tool	Allen Wrench 2 mm			
Proper Torque	Tighten the screws with a torque of 0.5 Nm			
Mounting Position	Ensure the vertical and horizontal alignment of the system/display box.			

Table 1: Requirements for V Panel Express mounting into a subframe/panel



In order to ensure IP65 front sealing against dust and water, **mount the system on a non-textured surface**. Before you install the V Panel Express system into a panel or a subframe for industrial cabinet, verify the perfect condition of the seal at the rear of the front plate. The seal has to be in place without injury/defects and dirt.

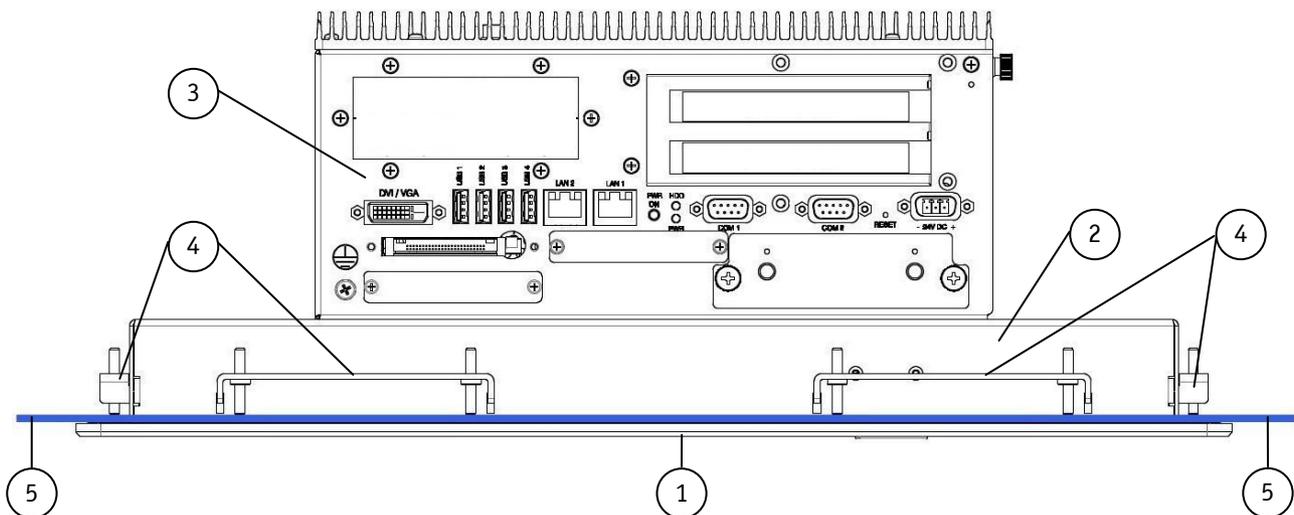


Fig. 32: Panel mounting for V Panel Express systems

- 1 Front panel of the V Panel Express with seal
- 2 Display Box Enclosure
- 3 PC-Box of the V Panel Express
- 4 Mounting clamps with screws for system installation into a subframe/panel/rackmount kit
- 5 Example of subframe for system installation

To mount the system to a subframe or to a panel, follow these steps:

1. Depending on the dimension of the display enclosure of your system, cut a hole in the panel/subframe (refer to Table 1 for the panel cut-out dimensions or mechanical drawings for V Panel Express on our web site www.kontron.com). The panel where you intend to attach the system must be accessible from both front and rear side.
2. The system must be turned off and disconnected from the power source and peripherals.
3. Insert the system into the panel cut-out from the panel/subframe front.
4. In order to ensure the protection class IP65 on the front side in the installed condition, the contact surface with the seal must be clean and flush.
5. Hook the mounting clamps with screws (Fig. 30, pos. 3 and 4) from the rear side of the panel into the corresponding pairs of slots (Fig. 31, pos. 5) of the Display box enclosure.
6. The system must be attached firmly with the screws (refer to Table 1 for the mounting requirements).

10. Starting Up

10.1. Connecting to Power

The DC power socket is located on the front side of the system.



The rated voltage range of the mains supply must correspond to the value on the type label.

The V Panel Express systems can optionally be connected to an AC power source or to a DC power source.



- ❑ Before using your system, you should first become familiar with the system components and check that everything is connected properly. Following a proper cabling procedure will prevent a false power-on condition, which could result in unit operational failure.
- ❑ Also, it is recommended that the last cable attached to the system should be the power cable!

10.1.1. DC Connection



The device must be connected only to a LPS (**L**imited **P**ower **S**upply) DC mains power supply complying with the requirements of EN 60950-1.
It must be ensured that the system can be powered ON and OFF via a readily accessible two-pole disconnecting device that shall be incorporated in the building installation wiring. It must be UL-listed and correspond to the required current and voltage for the V Panel Express (refer to the type label).
The unit is only completely disconnected from the DC power source, when the DC power cord is disconnected either from the power source or the unit. Therefore, the DC power cord and its connectors must always remain easily accessible.

For the DC connection please prepare the connecting wires with the provided Phoenix terminal.



The length of the DC power cabling may not exceed 3 m (9.8 ft).

Strip and twist the connecting wire-ends but do not tin it with solder. The minimum cross section of the wires for power connection is 1mm² (AWG 18).

1. Loosen enough the two slotted screws of the provided Phoenix terminal, so that you can insert the ends of the connecting wires. Pay attention to the polarity of the connections (refer to Fig. 34).
2. Tighten the slotted screw firmly.
3. The second end of each wire will be prepared as required for the connection to the DC power source.
4. Ensure that the DC power source is switched off via a two-pole disconnecting device (UL listed), in order to ensure that no power is flowing from the external DC power source during the connection procedure.
5. Connect V Panel Express to the DC power source.
6. Switch on the isolating switch (disconnecting device) in order to apply voltage to the terminals of the power source (cable wires).



Fig. 33: DC-connector (without Phoenix plug terminal)



Fig. 34: DC-Phoenix plug terminal (AWG 18)

10.1.2. Connecting to AC Power Source via the AC/DC Adapter



Use only a LPS (Limited Power Supply) power supply complying with the requirements of EN-60950-1 to connect the system to an AC power source.

The V Panel Express system will be connected to an AC power source via the AC/DC adapter (option).



Fig. 35: External AC/DC adapter (Option)

1. Connect the 3-pin DC connector of the AC/DC adapter to the appropriate DC power connector (refer to Fig. 8, pos. 9) of the V Panel Express. The DC power connector of the system is on the bottom side and is labeled “24V DC”. Make sure the connector is securely locked in place.
2. Connect the AC power cord to the AC/DC adapter.
3. Plug the AC connector of the adapter into an AC wall outlet of the AC power source.

Please observe the recommendations given in the chapter 4 “General Safety Instructions for IT Equipment”.



The AC power cable must correspond to the requirements of the country where the system is used.

The AC/DC adapter must stand freely and may not be covered. Do not place the AC/DC adapter on a heat-sensitive surface.

There must be at least 100 mm (approximately 4”) free space around the V Panel Express 121/150/170/190 system and around the AC/DC adapter.

10.2. Operating System and Hardware Component Drivers

Your V Panel Express system can be supplied either with or without a pre-installed operating system.

If you have ordered your system with a pre-installed operating system, all drivers are installed in accordance with the system configuration ordered (optional hardware components). Your system is fully operational at the first start-up.

If you have ordered a V Panel Express system without a pre-installed operating system, because you want to install it yourself, please pay attention to the following instructions:



You can download the relevant drivers for the installed hardware from our web site at www.kontron.com by selecting the product name (designation).

The corresponding driver (depending on the installed operating system) for the touch screen controller is available on our web site by selecting the “Downloads” tab of the V Panel Express product site.

10.2.1. Hints for the Installation of the Touch Screen Controller Driver

The display unit is equipped with a resistive touch screen. The touch screen is internally connected to the on-board USB interface of the installed ETX baseboard.

10.2.1.1. Preparations of System for Installation Procedure

Before installing the driver please check the following items.

- operating system installed
- USB port driver for operating system installed.
- USB port in BIOS enabled

10.2.1.2. Install Touch Controller Software

Please download corresponding touch controller software from Kontron web site <http://www.kontron.com/>. Please observe that the installed touch screen is USB connected. After complete installation of the touch controller software you find a new icon in the control panel to set additional features. If calibration does not run automatically, see next subsection.

Calibration serves two purposes:

- Sets the active area of the touch screen
- Aligns the active area of the touch screen to the screen’s image.



Before you calibrate the touch screen, let the unit warm up for 30 minutes.

Calibration aligns the active touch-sensitive area of the touch screen with the image on the display. Calibration also determines the edges of the screen’s image and locates the center of the touch screen. If the touch screen is not calibrated properly, the active area of the touch screen may not be aligned with the screen’s image or may be unnecessarily small in size. Use the calibration tool to recalibrate the touch screen if necessary:

1. Carefully touch the location of the markers with your stylus to recalibrate the touch screen.
2. The calibration screen with the calibration mark will be displayed. Follow the instruction displayed on the screen.

10.2.1.3. Calibrate the Touch Screen (Windows® XP, Windows® 7)

The touch screen of your system is factory calibrated. Run the calibration routine when an alignment problem exists between the mouse pointer and the stylus contact location on the screen.

You can adjust the calibration of the touch screen by running Start-Programs and clicking on “eGalaxTouch”. The following screens will appear to configure the calibration:

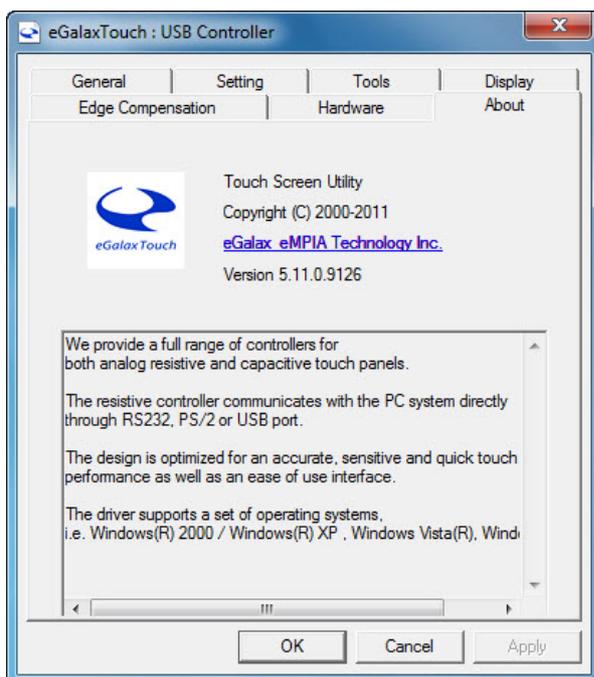


Fig. 36: About touch screen utility

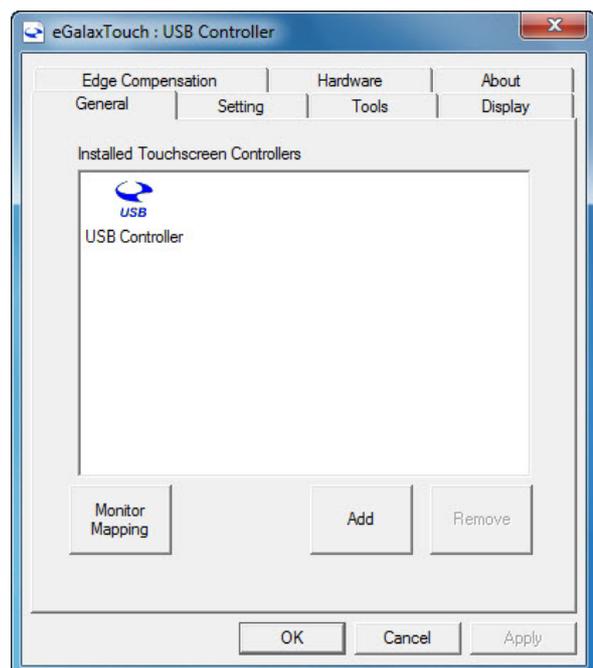


Fig. 37: About touch screen controller

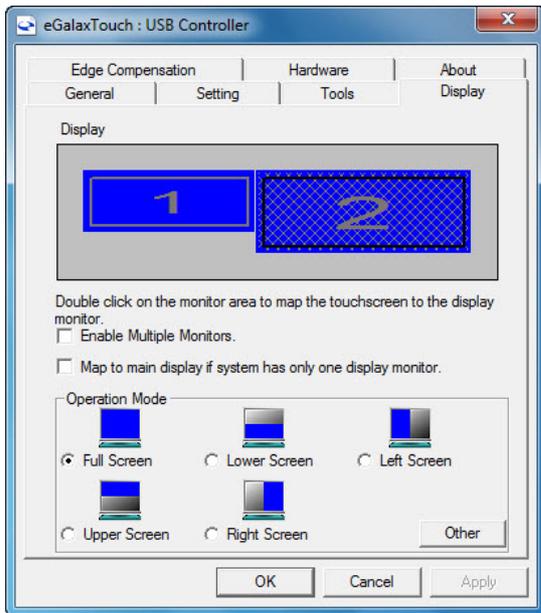


Fig. 38: Display selection

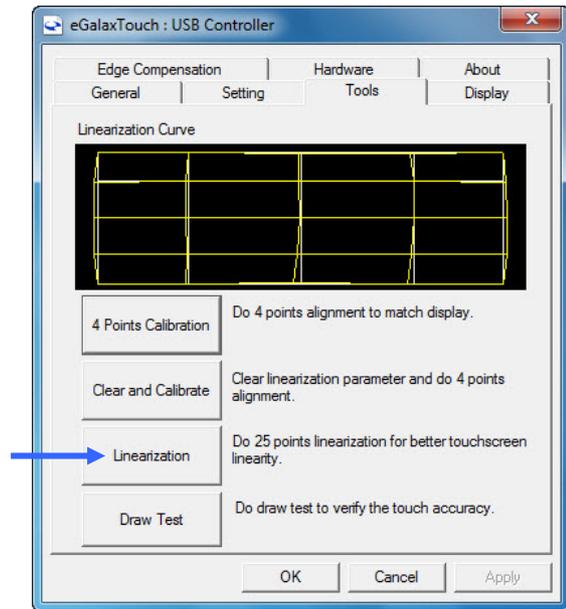


Fig. 39: Select 4-25 point calibration type

When a 4 point calibration type was selected, the following screen will appear; touch the center of each calibration point as accurately as possible. Touch the calibration points in the following sequence: lower left corner, lower right corner, upper right corner and upper left corner. The calibration is properly completed, if the red marks will not be displayed again and each of the red calibration points changes the colour to blue and an OK mark is displayed.

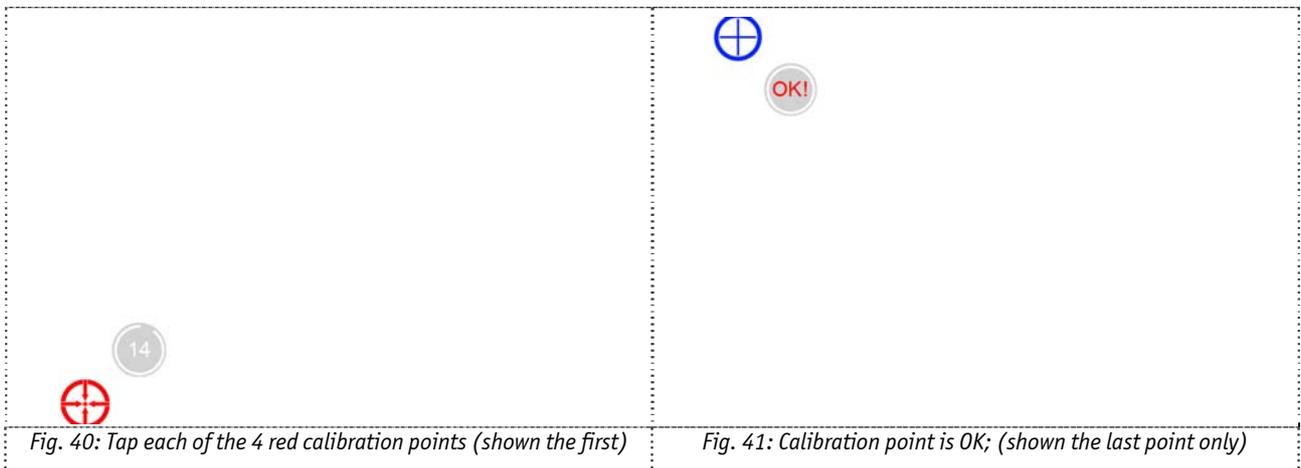


Fig. 40: Tap each of the 4 red calibration points (shown the first)

Fig. 41: Calibration point is OK; (shown the last point only)

Confirm the calibration settings and close the calibration tool with <OK>

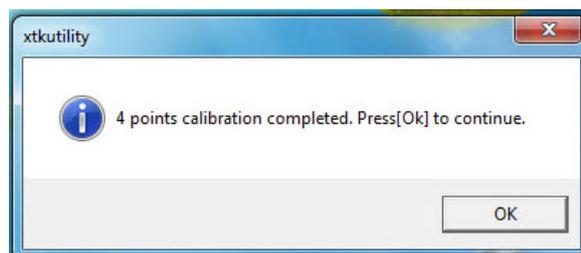


Fig. 42: Four point calibration completed

When clicking in “Setting” tab, you can define the number of calibration points for the later launched cal routine. Depending on your choice (9 point or 25 point calibration) the number of calibration points will be display right to button “Linearization” (refer to Fig. 39. In the shown popup below, a 25 point calibration has been selected. A 25 point calibration will result in best accuracy for the daily touch operation.



During a 4 point calibration no touch linearization included.

After completion of the calibration process, the cal data will be stored into the flash memory of the controller. Use the draw test for checking the touch functionality and its accuracy.

10.2.2. Display Brightness Adjusting



The screen brightness adjusting can be done in the BIOS Setup only.

In order to adjust the displays brightness, access the BIOS Setup / Advanced / Video Function Configuration / Backlight Brightness setting. The setting can be adjusted between 0 and 255.

The factory default setting for the brightness is “255” and corresponds for the maximum possible display brightness.

The backlight brightness setting can be changed by typing directly the value required in the options field or using the NUM Lock function (if activated) per \oplus or \ominus key. The brightness changes are shown in real time.

Display Backlight	Setting for Backlight Brightness
ON	“255” (maximum brightness) Default
Dark	“0” (minimum brightness)
OFF	“0-2”



The changes will be adopted only, if “Save Changes and Exit” is selected for quitting. Reboot your system.

11. Maintenance and Prevention

Kontron Europe systems require minimal maintenance and care to keep them operating correctly.

- Occasionally wipe the system with a soft dry cloth.
- You should only remove persistent dirt by use of a soft, slightly damp cloth (use only a mild detergent).

11.1. Touch Screen Care and Cleaning



The front panel and the touch screen are covered by a plastic overlay and care should be taken when cleaning it.

Mild detergent and water is recommended for cleaning. Use of strong solvents, which could attack paint or plastic, should be avoided.

The plastic overlay or the touch screen surface is subject to burning and scaring from direct heat sources such as cigarettes. The display front is sealed against dust, liquids, etc.

The front surface of the touch screen is a flexible plastic foil, so care should be used to avoid using sharp objects such as knife, pen or pencil tips. Sharp objects can permanently damage the functionality of the touch screen.

12. Main Specifications

V Panel Express		V Panel Express 121	V Panel Express 150	V Panel Express 170	V Panel Express 190
TFT LCD Display	Screen size	12.1"	15.0"	17.0"	19.0"
	Resolution (H x V) [pixel]	800 x 600 (SVGA)	1024 x 768 (XGA)	1280 x 1024 (SXGA)	1280 x 1024 (SXGA)
	Pixel Pitch (H x V) [mm]	0.3075 x 0.3075	0.297 x 0.297	0.264 x 0.264	0.294 x 0.294
	Colour depth	262k/16.2M	262k/16.2M	16.7 M	16.7 M
	Backlight	LED	LED	LED	LED
	Brightness cd/m ²	500	400	350	350
	Contrast ratio	700:1	700: 1	1000: 1	1000: 1
Touch Screen		4 wire resistive analog			
Processor	Intel® Core™ i7-2655LE or Intel® Celeron® 827E				
Lithium Battery	Type: CR2032; 3.0 V; 0.22Ah;				
External Interfaces (accessible at the front side)	1x USB 2.0				
External Interfaces (accessible from the bottom side)	1x DVI-I (single Link) or 1x external DVI to VGA Adapter 4x USB (2.0/1.0) 2x Serial Port (RS232) (COM1 and COM2) 1x LAN2 (10/100/1000 Mbps) 1x LAN1 (10/100/1000 Mbps for config. with ETX COMexpress-SC)				
Free Expansion Slots	2x PCIe x1 (for half size cards)				
Removable HDD drive tray	for up to 2x SATA				
CF Drive (external accessible)	1x CompactFlash™ slot for CF cards type I				
Operating Elements (on bottom side)	Power button Reset button				
LED Indicators (on the bottom side)	Power LED HDD LED				
DC IN Power Plug	On the bottom side				
Power	DC: external 24 V power source (limited power source) Option AC: via the optional external AC/DC adapter (limited power source); not included				
VESA 75/100 compliant	Rear side				
IP Protection Class	Front: IP65 (only with covered front USB port)				
Operating System	Please refer to the actually data sheet on our web site: www.kontron.com Search for the product name.				

12.1. Electrical Specifications

System Type	Input voltage	Input current
V Panel Express	24 VDC PSU +/- 20%	A: max. 6.3 A



The length of the DC power cabling may not exceed 3 m (9.8 ft).



Hint for DC power connection:

The V Panel Express must be connected only to a LPS (Limited Power Supply) DC mains power supply complying with the requirements of EN 60950-1.

Hint for AC power connection:

Use only a LPS (Limited Power Supply) power supply complying with the requirements of EN 60950-1 to connect the V Panel Express to an AC power source.

12.1.1. Electrical Specifications for the AC/DC Adapter

Optional Parts	AC Input	DC Output
AC/DC Adapter	100-240 V (150W) 2 A 50-60 Hz	24 V 6.25 A

12.2. Mechanical Specifications

V Panel Express	121	150	170	190
Height	312 mm (12.283")	354 mm (13.937")	399 mm (15.709")	426 mm (16.772")
Width	380 mm (14.961")	449.4 mm (17.693")	461 mm (18.150")	516 mm (20.315")
Depth (total)	169.25 mm (6.663")	162,25mm (6.388")	169,5 mm (6.673")	170 mm (6.693")
Depth (without front plate)	164.25 mm (6.467")	157.25 mm (6.191")	164.5 mm (6.476")	165 mm (6.496")
Weight	7.9 kg (17.416 lbs.)	8.9 kg (19.621 lbs)	10.8 kg (23.81 lbs)	13.3 kg (29.321 lbs)
Front Panel	Aluminum front plate with polyester front foil			
Housing	Zinc-coated steel			

12.3. Environmental Specifications

Thermal Management	passive cooling for CPU and system
Operating Temperature	0 ... +45 °C I Intel® Core™ i7-2655LE or 0 +50 °C Intel® Celeron® 827E
Storage / Transit Temp.	-10 ... +60 °C
Relative Humidity	Operating: 5 % to 95 % non condensing Storage / transit: 5 % to 95 % non-condensing
Max. Operating Altitude	up to 2000 m (6562 ft)
Max. Storage / Transit Altitude	up to 5000 m (16405 ft)
Operating Shock	15 G, 11 ms duration, half sine
Storage / Transit Shock	30 G, 11 ms duration, half sine
Operating Vibration	10 – 500 Hz, 1.0 G
Storage / Transit Vibration	10 – 500 Hz, 2.0 G
Protection class	IP20 Front IP65 (only with covered frontal USB port)

12.4. CE Directives and Standards

CE Directives	
Low Voltage Directive (Electrical Safety)	2006/95/EC
EMC Directive	2004/108/EC
RoHS II Directives	2011/65/EU

Electrical Safety	Standards
EUROPE	EN 60950-1: 2006+A11:2009 +A1:2010 +A12:2011
USA	UL 60950-1, 2 nd Edition
Canada	CSA C22.2- No. 60950-1-07:2007
CB Scheme	IEC 60950-1

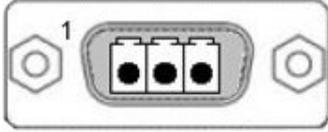
EMC	Standards
EUROPE	Limits - Limits for harmonic current emissions (equipment input current \leq 16 A per phase): EN 61000-3-2:2010
	Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current \leq 16 A per phase and not subjected to conditional connection: EN 61000-3-3:2008
	Emission of Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement: EN 55022:2010 Class B Generic standards - Immunity for industrial environments (Immunity): EN 61000-6-2: 2005
U.S.A.	FCC 47 CFR Part 15, Class A
Canada	ICES-003 class A

13. Technical Appendix - Interfaces

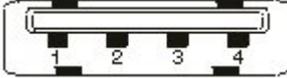
The following tables contain the plug assignments for the external connections of the V Panel Express.

Low-active signals are indicated by a minus sign.

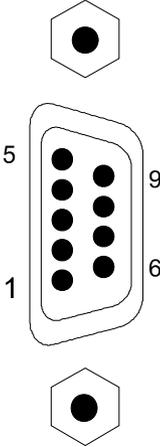
13.1. Power Connector

Pin	Signal Name	3-pin Power Connector (male)
1	Ground	
2	Ground	
3	24V DC IN	

13.2. USB Port

Pin	Signal Name	4-pin USB Socket Type A Version 2.0/1.1
1	VCC	
2	Data-	
3	Data+	
4	GND	

13.3. Serial Port (COM1, COM2) RS232

Pin	Signal Name	9-pin D-SUB Plug (male)
1	DCD (Data Carrier Detect)	
2	RXD (Receive Data)	
3	TXD (Transmit Data)	
4	DTR (Data Terminal Ready)	
5	GND (Signal Ground)	
6	DSR (Data Set Ready)	
7	RTS (Request to Send)	
8	CTS (Clear to Send)	
9	RI (Ring Indicator)	

13.4. DVI-I Connector (Single Link)

Pin	Signal Name	Description	DVI-I Connector (female)
1	TMDS2-	Differential TMDS Data 2-	
2	TMDS2+	Differential TMDS Data 2+	
3	GND	TMDS Shield	
4-5	NC		
6	DVI_SCL	DDC EDID data clock	
7	DVI_SDA	DDC EDID data	
8	DVI_VS	Analog VSYNC	
9	TMDS1-	Differential TMDS Data 1-	
10	TMDS1+	Differential TMDS Data 1+	
11	GND	TMDS Shield	
12-13	NC		
14	DVI_5V	5V / 100mA Power Supply	
15	GND	Ground	
16	DISPDET	Hot Plug Detection	
17	TMDS0-	Differential TMDS Data 0-	
18	TMDS0+	Differential TMDS Data 0+	
19	GND	TMDS Shield	
20-21	NC		
22	GND	TMDS Shield	
23	TMDS_SCL-	Differential TMDS Clock-	
24	TMDS_SCL+	Differential TMDS Clock +	
C1	DVI_R	Analog red	
C2	DVI_G	Analog green	
C3	DVI_B	Analog blue	
C4	DVI_HS	Analog HSYNC	
C5	Analog GND	Analog Ground	

14. Technical Support

For technical support, please contact our Technical Support department:

e-mail: support@kontron.com

Web: <http://www.kontron.com/support>

Make sure you have the following information on hand when you call:

- the unit part id number (PN),
- the serial number (SN) of the unit; the serial number can be found on the type label, placed on the rear side of the system.

Be ready to explain the nature of your problem to the service technician.

If you have questions about Kontron Europe or our products and services, you can reach us by the above-mentioned telephone number and on e-mail address or at: www.kontron.com .

14.1. Returning Defective Merchandise

Please follow these steps before you return any merchandise to Kontron Europe:

1. Download the corresponding form for returning a device with an RMA No. [RMA (Return of Material Authorization)] from our website www.kontron.com / Support / RMA Information.
You also can contact our Customer Service department to obtain an RMA No.:
e-Mail: service@kontron.com
2. Ensure that you have received an RMA number from Kontron Customer Services before returning any device. Write this number clearly on the outside of the package.
3. Describe the fault that has occurred.
4. Please provide the name and telephone number of a person we can contact to obtain more information, where necessary. Where possible, please enclose all the necessary customs documents and invoices.
5. When returning a device:
 - Pack it securely in its original box.
 - Enclose a copy of the RMA form with the consignment.

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