USER GUIDE

FusionView

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FUSIONVIEW - USER GUIDE

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Revision History

Revision	Brief Description of Changes	Date of Issue	Author
1.0	Initial Issue	2018-Feb-01	hjs
1.1	corrected grounding information	2018-May-09	hjs

Terms and Conditions

Kontron warrants products in accordance with defined regional warranty periods. For more information about warranty compliance and conformity, and the warranty period in your region, visit http://www.kontron.com/terms-and-conditions.

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If you have any difficulties using this user guide, discover an error, or just want to provide some feedback, contact Kontron support. Detail any errors you find. We will correct the errors or problems as soon as possible and post the revised user guide on our website.

Symbols

The following symbols may be used in this manual

⚠DANGER	DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.
⚠WARNING	WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.
⚠CAUTION	CAUTION indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.
NOTICE	NOTICE indicates a property damage message.
	Electric Shock! This symbol and title warn of hazards due to electrical shocks (> 60 V) when touching products or parts of them. Failure to observe the precautions indicated and/or prescribed by the law may endanger your life/health and/or result in damage to your material. Please refer also to the "High-Voltage Safety Instructions" portion below in this section.
	ESD Sensitive Device! This symbol and title inform that the electronic boards and their components are sensitive to static electricity. Care must therefore be taken during all handling operations and inspections of this product in order to ensure product integrity at all times.
⚠CAUTION 	Hot surface! This device will heat up during operation and if touched may cause burns.
	This symbol indicates general information about the product and the user manual. This symbol also indicates detail information about the specific product configuration.
	This symbol precedes helpful hints and tips for daily use.

For Your Safety

Your new Kontron product was developed and tested carefully to provide all features necessary to ensure its compliance with electrical safety requirements. It was also designed for a long fault-free life. However, the life expectancy of your product can be drastically reduced by improper treatment during unpacking and installation. Therefore, in the interest of your own safety and of the correct operation of your new Kontron product, you are requested to conform with the following guidelines.

High Voltage Safety Instructions

As a precaution and in case of danger, the power connector must be easily accessible. The power connector is the product's main disconnect device.

⚠CAUTION

Warning

All operations on this product must be carried out by sufficiently skilled personnel only.

Electric Shock!

Before installing a non hot-swappable Kontron product into a system always ensure that your mains power is switched off. This also applies to the installation of piggybacks. Serious electrical shock hazards can exist during all installation, repair, and maintenance operations on this product. Therefore, always unplug the power cable and any other cables which provide external voltages before performing any work on this product.

Earth ground connection to vehicle's chassis or a central grounding point shall remain connected. The earth ground cable shall be the last cable to be disconnected or the first cable to be connected when performing installation or removal procedures on this product.

Special Handling und Unpacking Instruction

ESD Sensitive Device!

Electronic boards and their components are sensitive to static electricity. Therefore, care must be taken during all handling operations and inspections of this product, in order to ensure product integrity at all times.

Do not handle this product out of its protective enclosure while it is not used for operational purposes unless it is otherwise protected.

Whenever possible, unpack or pack this product only at EOS/ESD safe work stations. Where a safe work station is not guaranteed, it is important for the user to be electrically discharged before touching the product with his/her hands or tools. This is most easily done by touching a metal part of your system housing.

It is particularly important to observe standard anti-static precautions when changing piggybacks, ROM devices, jumper settings etc. If the product contains batteries for RTC or memory backup, ensure that the product is not placed on conductive surfaces, including anti-static plastics or sponges. They can cause short circuits and damage the batteries or conductive circuits on the product.

General Instructions on Usage

In order to maintain Kontron's product warranty, this product must not be altered or modified in any way. Changes or modifications to the product, that are not explicitly approved by Kontron and described in this user guide or received from Kontron Support as a special handling instruction, will void your warranty.

This product should only be installed in or connected to systems that fulfill all necessary technical and specific environmental requirements. This also applies to the operational temperature range of the specific board version that must not be exceeded. If batteries are present, their temperature restrictions must be taken into account.

In performing all necessary installation and application operations, only follow the instructions supplied by the present user guide.

Keep all the original packaging material for future storage or warranty shipments. If it is necessary to store or ship the product then re-pack it in the same manner as it was delivered.

Special care is necessary when handling or unpacking the product. See Special Handling and Unpacking Instruction.

Quality and Environmental Management

Kontron aims to deliver reliable high-end products designed and built for quality, and aims to complying with environmental laws, regulations, and other environmentally oriented requirements. For more information regarding Kontron's quality and environmental responsibilities, visit http://www.kontron.com/about-kontron/corporate-responsibility/quality-management.

Disposal and Recycling

Kontron's products are manufactured to satisfy environmental protection requirements where possible. Many of the components used are capable of being recycled. Final disposal of this product after its service life must be accomplished in accordance with applicable country, state, or local laws or regulations.

WEEE Compliance

The Waste Electrical and Electronic Equipment (WEEE) Directive aims to:

- Reduce waste arising from electrical and electronic equipment (EEE)
- Make producers of EEE responsible for the environmental impact of their products, especially when the product become waste
- Encourage separate collection and subsequent treatment, reuse, recovery, recycling and sound environmental disposal of EEE
- Improve the environmental performance of all those involved during the lifecycle of EEE

Environmental protection is a high priority with Kontron.
Kontron follows the WEEE directive
You are encouraged to return our products for proper disposal.

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1/ General Safety Instructions for IT Equipment

⚠WARNING **Please read this chapter carefully and take careful note of the instructions, which have been compiled for your safety and to ensure to apply in accordance with intended regulations. If the following general safety instructions are not observed, it could lead to injuries to the operator and/or damage of the product; in cases of nonobservance of the instructions Kontron is exempt from accident liability, this also applies during the warranty period.**

The product has been built and tested according to the basic safety requirements for low voltage (LVD) applications and has left the manufacturer in safety-related, flawless condition. To maintain this condition and also to ensure safe operation, the operator must not only observe the correct operating conditions for the product but also the following general safety instructions:

- The product must be used as specified in the product documentation, in which the instructions for safety for the product and for the operator are described. These contain guidelines for setting up, installation and assembly, maintenance, transport or storage.
- The on-site electrical installation must meet the requirements of the country's specific local regulations.
- If a power cable comes with the product, only this cable should be used. Do not use an extension cable to connect the product.
- To guarantee that sufficient air circulation is available to cool the product, please ensure that the ventilation openings are not covered or blocked. If an air filter is provided, this should be cleaned regularly. Do not place the system close to heat sources or damp places. Make sure the system is well ventilated.
- Only devices or parts which fulfill the requirements of SELV circuits (Safety Extra Low Voltage) as stipulated by IEC 60950-1 may be connected to the available interfaces.
- Before opening the device, make sure that the device is disconnected from the mains.
- Switching off the device by its power button does not disconnect it from the mains. Complete disconnection is only possible if the power cable is removed from the wall plug or from the device. Ensure that there is free and easy access to enable disconnection.
- The device may only be opened for the insertion or removal of add-on cards (depending on the configuration of the system). This may only be carried out by qualified operators.
- If extensions are being carried out, the following must be observed:
  - All effective legal regulations and all technical data are adhered to.
  - The power consumption of any add-on card does not exceed the specified limitations.
  - The current consumption of the system does not exceed the value stated on the product label.
- Only original accessories that have been approved by Kontron can be used.
- Please note: safe operation is no longer possible when any of the following applies:
  - The device has visible damages.
  - The device is no longer functioning.

  In this case the device must be switched off and it must be ensured that the device can no longer be operated.

1.1. Additional Safety Instructions for DC Power Supply Circuits

- To guarantee safe operation of devices with DC power supply voltages larger than 60 volts DC or a power consumption larger than 240 VA, please observe that:
  - The device is set up, installed and operated in a room or enclosure marked with “RESTRICTED ACCESS”, if there are no safety messages on product as safety signs and labels on the device itself.
  - No cables or parts without insulation in electrical circuits with dangerous voltage or power should be touched directly or indirectly.
  - A reliable protective earthing connection is provided.
  - A suitable, easily accessible disconnecting device is used in the application (e.g. overcurrent protective device), if the device itself is not disconnectable.
  - A disconnect device, if provided in or as part of the equipment, shall disconnect both poles simultaneously.
  - Interconnecting power circuits of different devices cause no electrical hazards.

- A sufficient dimensioning of the power cable wires must be selected – according to the maximum electrical specifications on the product label – as stipulated by EN60950-1 or VDE0100 or EN60204 or UL508 regulations.
- The devices do not generally fulfill the requirements for "centralized DC power systems" (UL 60950-1, Annex NAB; D2) and therefore may not be connected to such devices!

1.2. 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.

1.2.1. Grounding Methods

By adhering to the guidelines below, electrostatic damage to the device can be avoided:

1. Cover workstations with approved antistatic material. Always wear a wrist strap connected to workplace. Always use 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 only field service tools which are conductive, such as cutters, screwdrivers, and vacuum cleaners.
8. Always place drives and boards PCB-assembly-side down on the foam.

2/ 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.

Table 1: FusionView - Scope of delivery

	FusionView system in the configuration ordered: FV 121 (with 12.1" display) FV 156 (with 15.6" display) FV 185 (with 18.5" display) FV 215 (with 21.5" display)
	DC power terminal
	Mounting clamps with Allen screws for front panel of system (delivered and mounted to the front panel of the FusionView) Number of mounting clamps depends on the model ordered
	Safety instruction for IT equipment

2.1.1. Optional System Configuration

Table 2: FusionView - System configuration options

Option	Description
RFID	wireless access e.g. for Authentication

2.1.2. Accessory Parts

Table 3: FusionView – Optional Accessories

<table>
<tr><th colspan="2">Adaptor</th><th>Description</th></tr>
<tr><td colspan="2">  </td><td rowspan="2">External AC/DC adaptor (90-264 V AC/24 V DC), including power cable for EU and US.

Mating connector (DC power terminal for DC power supply) is supplied with the system.</td></tr>
<tr><td> 
EU</td><td> 
USA</td></tr>
</table>

3/ Technical Data

Table 4: FusionView Technical Data

System		FV 121	FV 156	FV 185	FV 215
TFT LCD Display	Size (diagonal)	12.1"	15.6"	18.5"	21.5"
	Active area (H x V) [mm]	261.1 x 163.2	344.2 x 193.5	409.8 x 230.4	476.6 x 268.1
	Resolution (H x V) [pixel]	1280 x 800	1366 x 768 (WXGA)	1366 x 768 (WXGA)	1920 x 1080 (Full HD)
	Pixel Pitch (H x V) [µm]	204 x204	252 x 252	300 x 300	248 x 248
	Colour Depth	16.7 M colors	16.7 M colors	16.7 M colors	16.7 M colors
	Backlight	LED	LED	LED	LED
	Brightness [cd/m2]	400	400	450	300
	Control Signal	24 bit/s LVDS	24 bit LVDS	24 bit LVDS	24bit LVDS
	Viewing Angle [°] (r / l / u / d)	88/88/88/88	85/85/80/80	85/85/80/80	89/89/89/89
	Contrast ratio	1000:1	500:1	1000:1	5000:1
	Response Time [msec]	10	8	5	25
Touch Screen		Projected Capacitive	Projected Capacitive	Projected Capacitive	Projected Capacitive
External interfaces		1x USB (3.0) Type B			
		1x DisplayPort			
		1x DVI, 1x VGA			
		1x Power input			
LED Indicators		Power LED, Graphic source LED			
DC IN Power Plug (on the bottom side)		3-pin Phoenix connector on the bottom side			
Power supply		DC: external 15 to 30 V power source (limited power source), max. specified input power 75W			
VESA 75/100 Mounting		On the rear			
Protection Class		IEC IP20 with VESA mount IEC IP65 front (only mounted to a wall/panel)			
Driver support		Windows/Linux			
Touch controller options (only on demand)		Glove Support, Palm Rejection Support, Water rejection Mode			
Glass		4 mm thickness, Glass is chemically hardened with the C-shape of the edge			
Options					
RFID		LF/125kHz, EM4100/EM4050 HF/13.56kHz, ISO15693			

3.1. Electrical Specifications

⚠CAUTION

Hint for DC power connection: The FusionView 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 FusionView to an AC power source.

Table 5: FusionView Power Consumption

FusionView	FV 121	FV 156	FV 185	FV 215
Power	15 to 30 V DC			
Power consumption	3.0 A max.	3.0 A max.	3.5 A max.	3.5 A max.

3.2. Mechanical Specifications

3.2.1. Dimensions and weight

For detailed mechanical dimensions, please see the outline dimensions drawings on the web site www.kontron.com.

Table 6: FusionView Dimensions

FusionView	FV 121	FV 156	FV 185	FV 215
Height	266 mm (10.47")	298 mm (11.73")	337 mm (13.27")	373 mm (14.69")
Width	328 mm (12.91")	414 mm (16.3")	480 mm (18.9")	545 mm (21.46")
Depth (total)	67,6 mm (2.66")	67,6 mm (2.66")	67,6 mm (2.66")	67,6 mm (2.66")
Depth (without front plate)	61,6 mm (2.42")	61,6 mm (2.42")	61,6 mm (2.42")	61,6 mm (2.42")
Weight	3.75 kg (8.2 lbs)	5.05 kg (11.13 lbs)	6.4 kg (14.1 lbs)	7.6 kg (16.75 lbs)
Touch unit	PCAP or protective glass			
Chassis	Aluminum with fins and holes for VESA75/100 mounting			

Table 7: Dimension of the touch display unit

FusionView	FV 121	FV 156	FV 185	FV 215
Front bezel (W x H)	328 x 266 [mm] (12.91" x 10.47")	414 x 298 [mm] (16.3" x 11.73")	480 x 337 [mm] (18.9" x 13.27")	545 x 373 [mm] (21.46" x 14.69")
Frontal cut out for display (W x H)	261.1 x 163.2 [mm] (10.28" x 6.43")	344.2 x 193.5 [mm] (13.55" x 7.62")	409.8 x 230.4 mm] (16.13" x 9.07")	476.6 x 268.1 [mm] (18.76" x 10.56")
Wall/panel mounting cut out (W x H)	312 x 250 [mm] (12.28" x 9.84")	398 x 282 [mm] (15.67" x 11.02")	464 x 321 [mm] (18.27" x 12.64")	529 x 357 [mm] (20.83" x 14.06")

3.2.2. Mechanical Dimensions of the Monitor

Figure 1: Mechanical specification - Front view of the FV 121

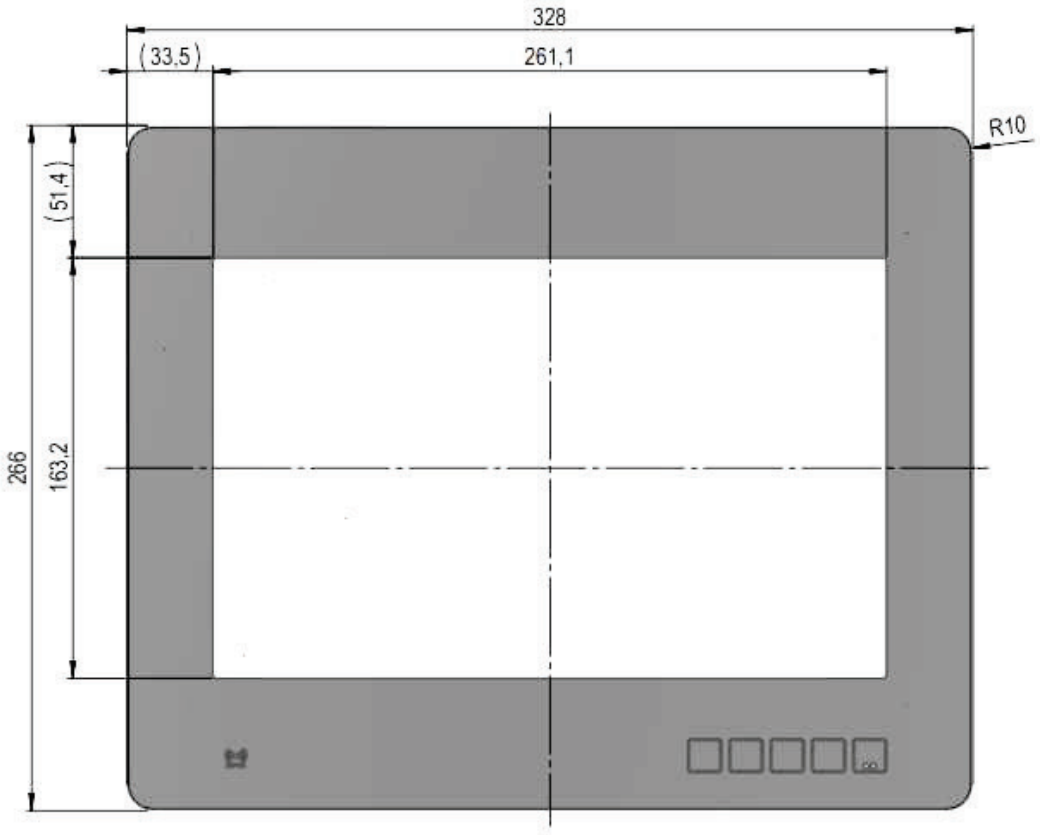


Figure 2: Mechanical specification - top view of the FV 121

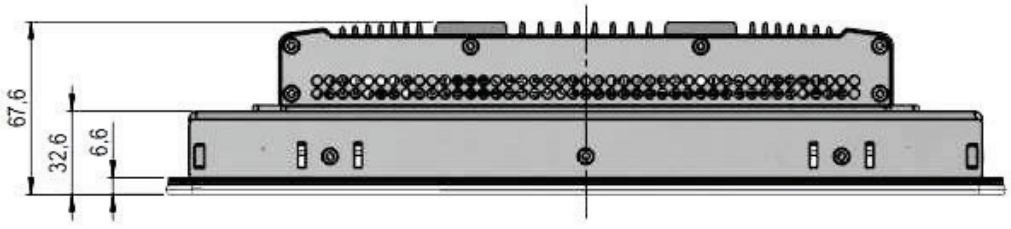


Figure 3: Mechanical specification - rear view of the FV 121

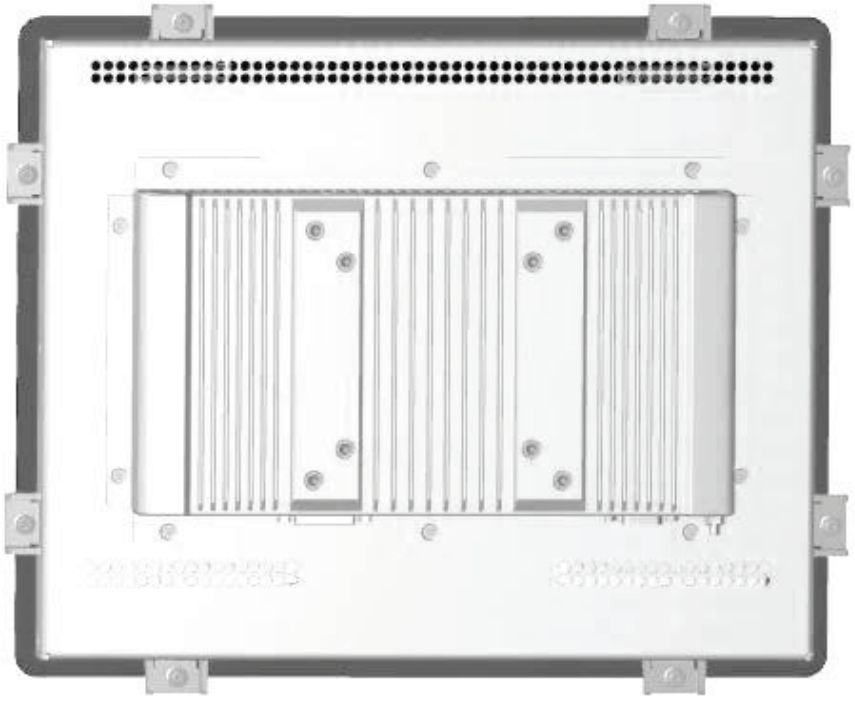


Figure 4: Mechanical specification - Front view of the FV 156

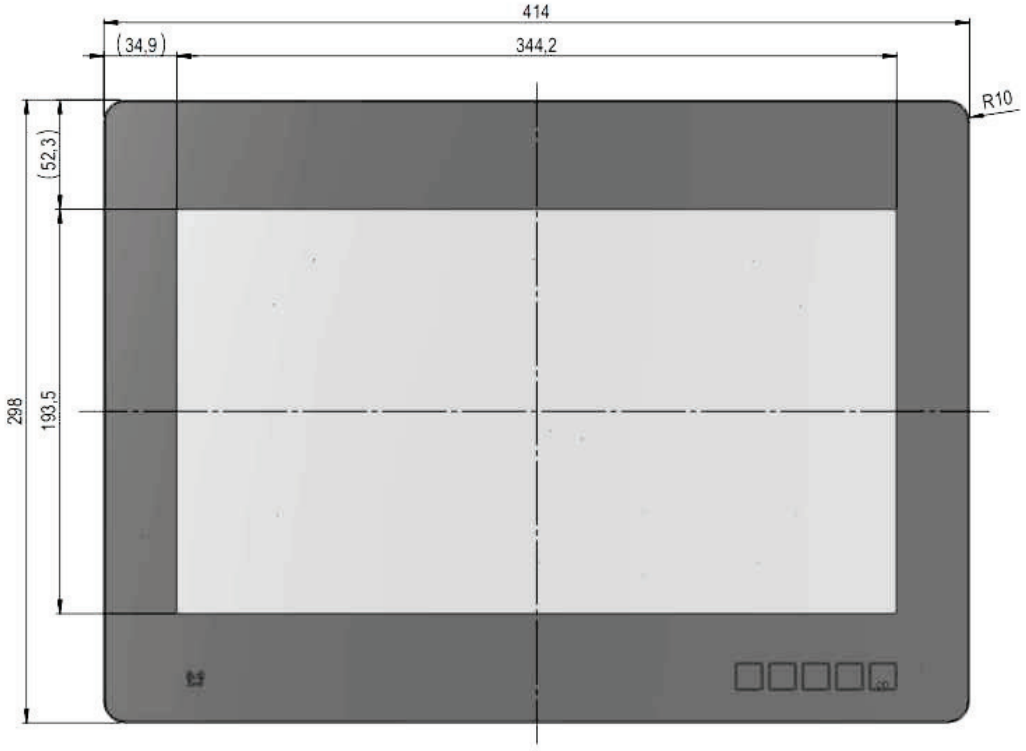


Figure 5: Mechanical specification - Rear view of the FV 156

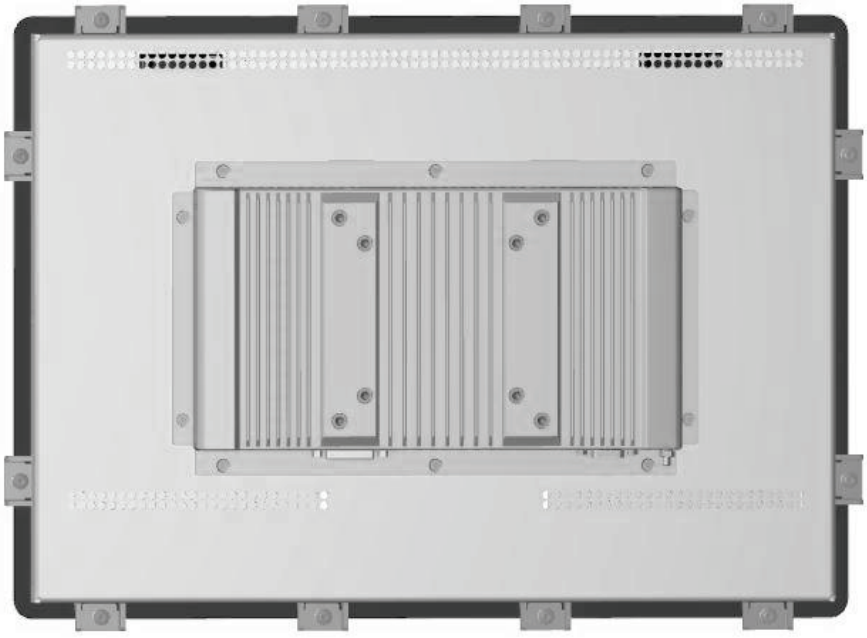


Figure 6: Mechanical specification - top view of the FV 156

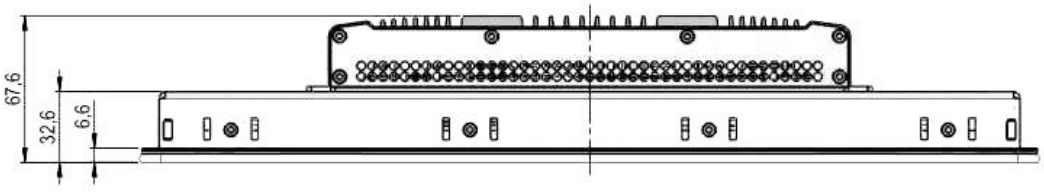


Figure 7: Mechanical specification - Front view of the FV 185

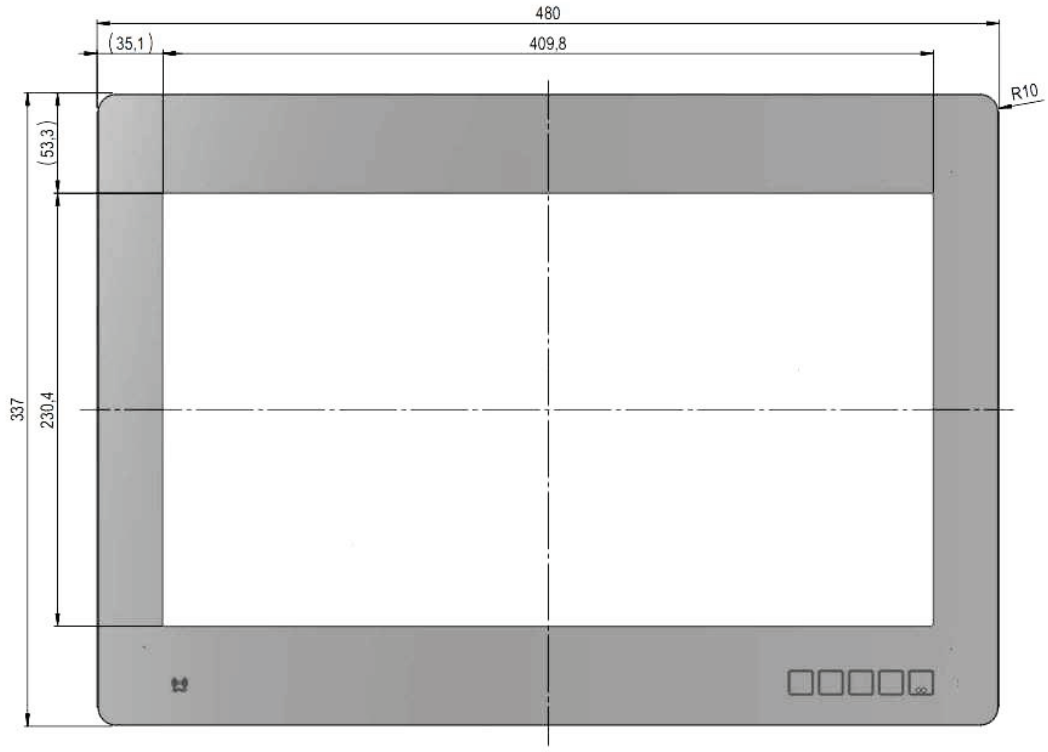


Figure 8: Mechanical specification - Rear view of the FV 185

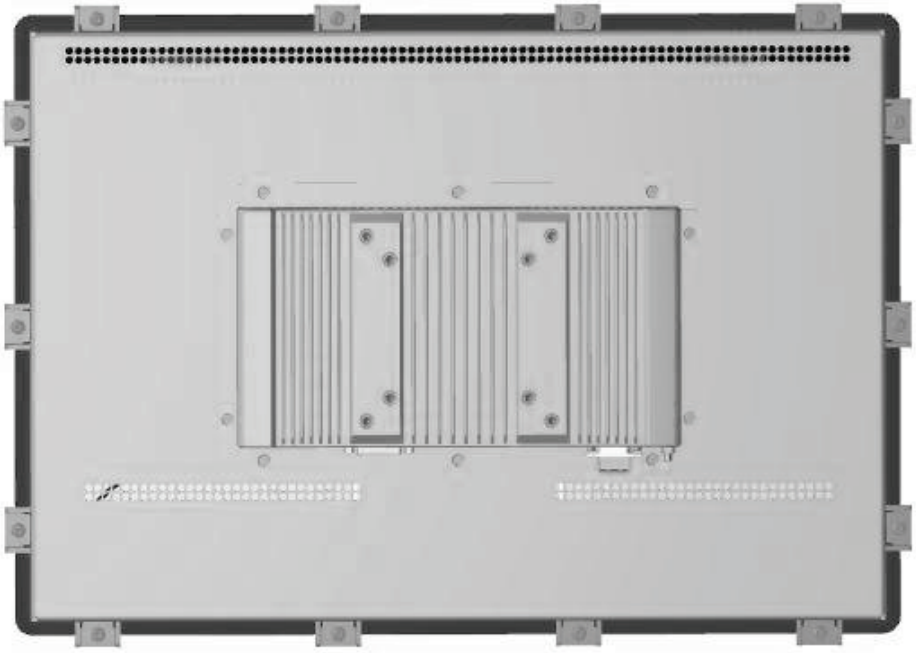


Figure 9: Mechanical specification - Top view of the FV 185

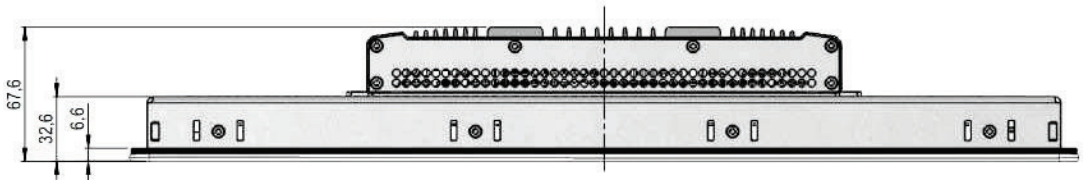


Figure 10: Mechanical specification - Front view of the FV 215

Figure 11: Mechanical specification - Rear view of the FV 215

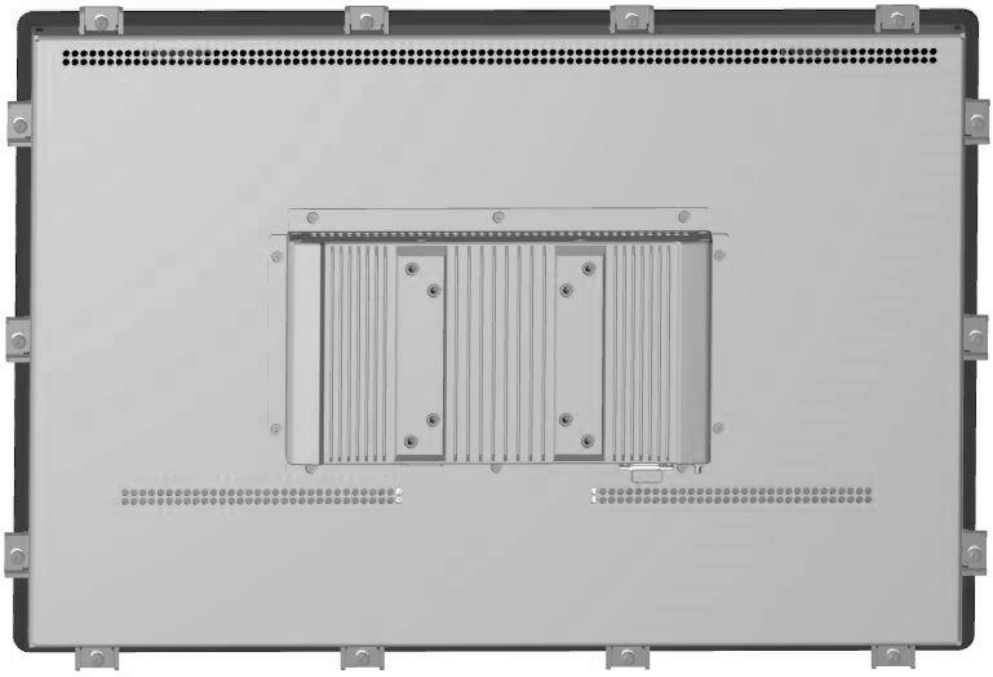
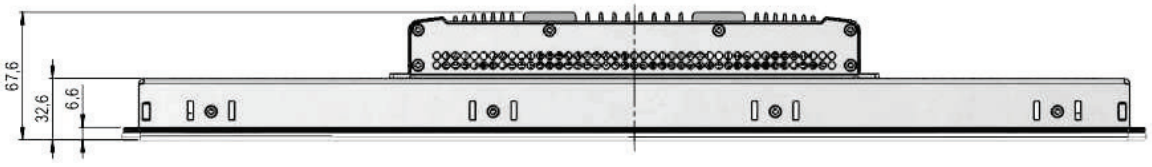


Figure 12: Mechanical specification - Top view of the FV 215



3.2.3. Mechanical Dimensions of the PC Box

Figure 13: Mechanical specification - Side view of the PC Box

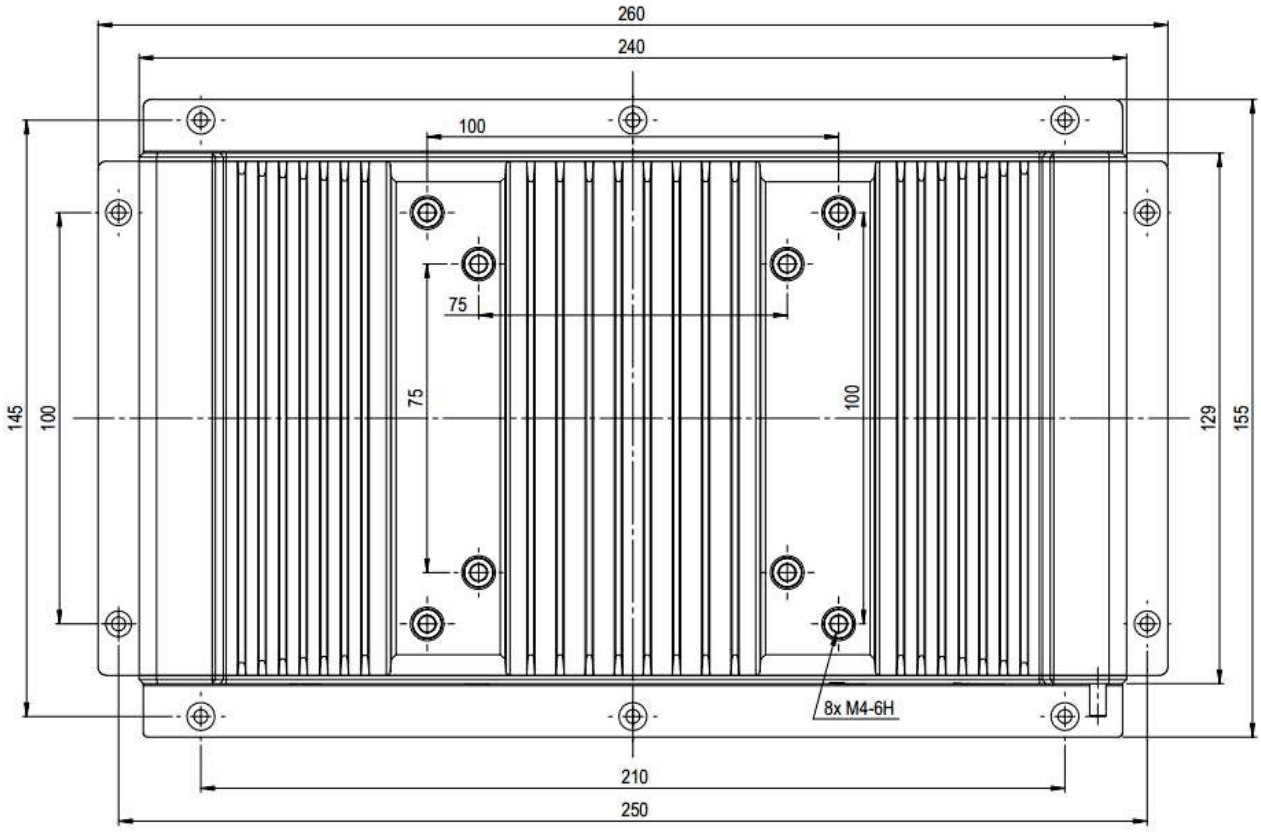
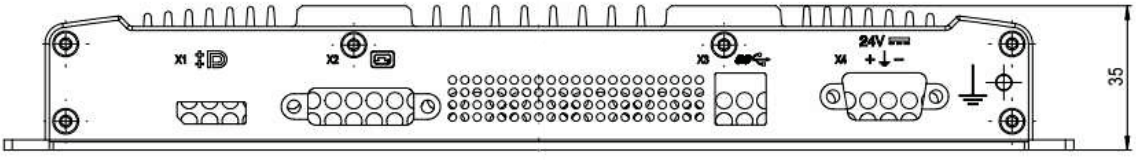


Figure 14: Mechanical specification - Bottom view of the PC Box



3.3. Cooling

The FusionView monitor is a fanless unit with passive cooling. To ensure the airflow through the unit there are ventilation holes at the bottom and top of Rear cover and PC Box. Ventilation holes are also in the support plate for better airflow through the PC Box.

3.4. Environmental Specifications

Table 8: FusionView SD Environmental Specifications

Environmental Specifications	FusionView
Thermal management	Convection cooling (fanless)
Temperature (operating)	0 °C to +50 °C (32 °F to 122 °F)
Temperature (storage/transit)	-20 °C to +70 °C (-4 °F to 158 °F), acc. to IEC 60068-2-1 and IEC 60068-2-2
Relative humidity (non operating)	EN60068-2-30: 5 % to 90 % (non condensing) @ 50°C
Shock (operating)	15 G, 11 ms, half sine, acc. to IEC 60068-2-27:2010-2
Shock (non operating)	30 G, 11 ms, half sine, acc. to IEC 60068-2-27:2010-2
Vibration (operating)	10 Hz to 500 Hz, 1G/3axes acc. to IEC 60068-2-6:2008-10
Vibration (non operating)	10 Hz to 500 Hz, 2G/3axes acc. to IEC 60068-2-6:2008-10
Max. operation altitude	2,000 m
Max. storage/transit altitude	10,000 m

3.5. CE-Directives, Standards and Approvals

Table 9: FusionView CE Directive

CE Directive	Description
Elektrical Safety	General Product Safety Directive (GPSD) 2001/95/EC Low Voltage Directive (LVD) 2014/35/EU
Electromagnetic Compatibility (EMC)	EMC Directive 2014/30/EU
CE Marking	CE Directive 93/68/EEC
RoHS II Directives	2011/65/EU
Waste Electrical and Electronic Equipment (WEEE)	WEEE Directive 2012/19/EU
ECO	Eco design requirements (Directive 2009/125/EC)
REACH	REACH compliance (Regulation (EC) No 1907/2006)

Table 10: FusionView Electrical Safety

Electrical Safety	Harmonized Standards
EUROPE	Information technology equipment - Safety - Part 1: General requirements EN 60950-1
U.S.A. / Canada	Certified to IEC/UL 60950-1 + CAN/CSA C22.2 No. 60950-1
CB Report	IEC 60950-1(ed.2); Amendment 1 (Am1), Am2

Table 11: FusionView EMC

EMC	Harmonised Standards
EU	Generic standards - Emission standard for industrial environments: EN 61000-6-4; EN 55032: Class A (Radiated and Conducted Emissions) EN 61000-3-2, EN 61000-3-3 Generic standards - Immunity for industrial environments: EN 61000-6-2; EN 301 489-17
U.S.A. / Canada	FCC (CFR) 47 Part 15 Subpart B Class A

3.6. Electromagnetic Compatibility (Class A Device)

For detailed information refer to section 3.5 "CE-Directives, Standards and Approvals".

3.6.1. Electromagnetic Compatibility EU

This product has been designed for industrial environment. This product complies with the European Council Directive on the approximation of the laws of the member states relating to electromagnetic compatibility (EMC Directive 2014/30/EU).

3.6.2. FCC Statement (U.S.A.)

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 in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The following statement applies to the products covered in this manual, unless otherwise specified herein. The statement for other products will appear in the accompanying documentation.

Kontron is not responsible for any radio television interference caused by unauthorized modifications of this equipment or the substitution or attachment of connecting cables and equipment other than those specified by Kontron. The correction of interference caused by such unauthorized modification, substitution or attachment will be the responsibility of the user.

The use of shielded I/O cables is required when connecting this equipment to any and all optional peripheral or host devices. Failure to do so may violate FCC and ICES rules.

3.6.3. EMC-Compliance Canada

The method of compliance is self-declaration to Canadian 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.

3.7. RFID Specification (Option)

RFID	Specification
RFID Reader	IDS-R13MP HF/13.56MHz ISO15693
Internal antenna	Internal connected
Read distance (d Peak)	0 mm to 20 mm

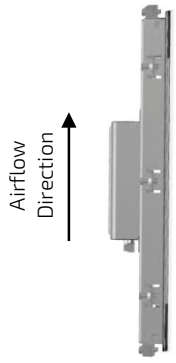
4/ Product Description

Before working with your FusionView Short Distance (FV-SD), you should take a few minutes to learn about the variants, various ports, drives, connectors and controls that are part of your FusionView system.

The Human Machine Interface (HMI) FusionView is designed for industrial applications. The touch screen display has a rugged design, which offers mechanical stability suitable for operation in harsh industrial environments. The unit offers 12.1", 15.6", 18.5" and 21.5" display sizes.

FusionView is fanless with a compact aluminum chassis with cooling fins. The air openings are located on the rear sides of the touch display unit. The cooling fins provide air circulation for the system interior in order to prevent overheating.

Figure 15: Airflow direction



NOTICE

- When powering the FusionView system, make sure that the air intake and exhaust openings and the cooling fins of the cover are not covered by any objects.
- In order to prevent the systems overheating and to ensure the access to the I/Os for cable connections, leave at least 5 cm (approx. 2") of free space on the rear top and bottom side of the computer base .

FusionView is designed to be connected to a 24 V DC (15 V to 30 V DC operating range) mains power supply (limited power supply) using the DC power terminal (included). An optional external AC/DC adaptor can be ordered in order to connect the FusionView to the main power source.

FusionView provides a self-protection turn off function if the temperature sensors will measure an internal temperature level out of the limits (85°C). Refer to the section **Fehler! Verweisquelle konnte nicht gefunden werden.** "**Fehler! Verweisquelle konnte nicht gefunden werden.**".

FusionView is designed to comply with IP65 protection class at the front side (when installed to a wall/panel only).

The mounting and operation of the FusionView is allowed in horizontal (with the interfaces downwards) and vertical position. Vertical operating position (with the interfaces to the left or to the right) is only possible when supported by the OS used.

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

The system is designed to be mounted in the user's application by either of the following methods:

- Installation in an instrument panel or other cabinets (preferred mounting method) using the corresponding supplied mounting clamps.
- Installation by a heavy duty VESA 75/100 compliant mounting system.

NOTICE

Installation by using of a VESA 75/100 compliant mounting system must be properly designed to support the heavy load of the FusionView system.

⚠WARNING

No user-serviceable parts inside. Do not open the FusionView system.

The following sections detail each of these components and their function in the FusionView.

4.1. Product Images of FusionView (shown as 21.5", other units similar)

Figure 16: Bottom view

Figure 17: Right view

Figure 18: Front view

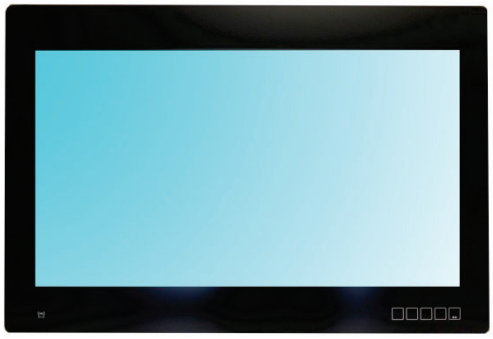
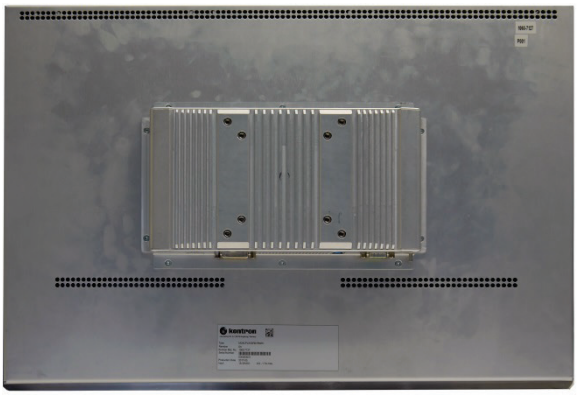


Figure 19: Left view

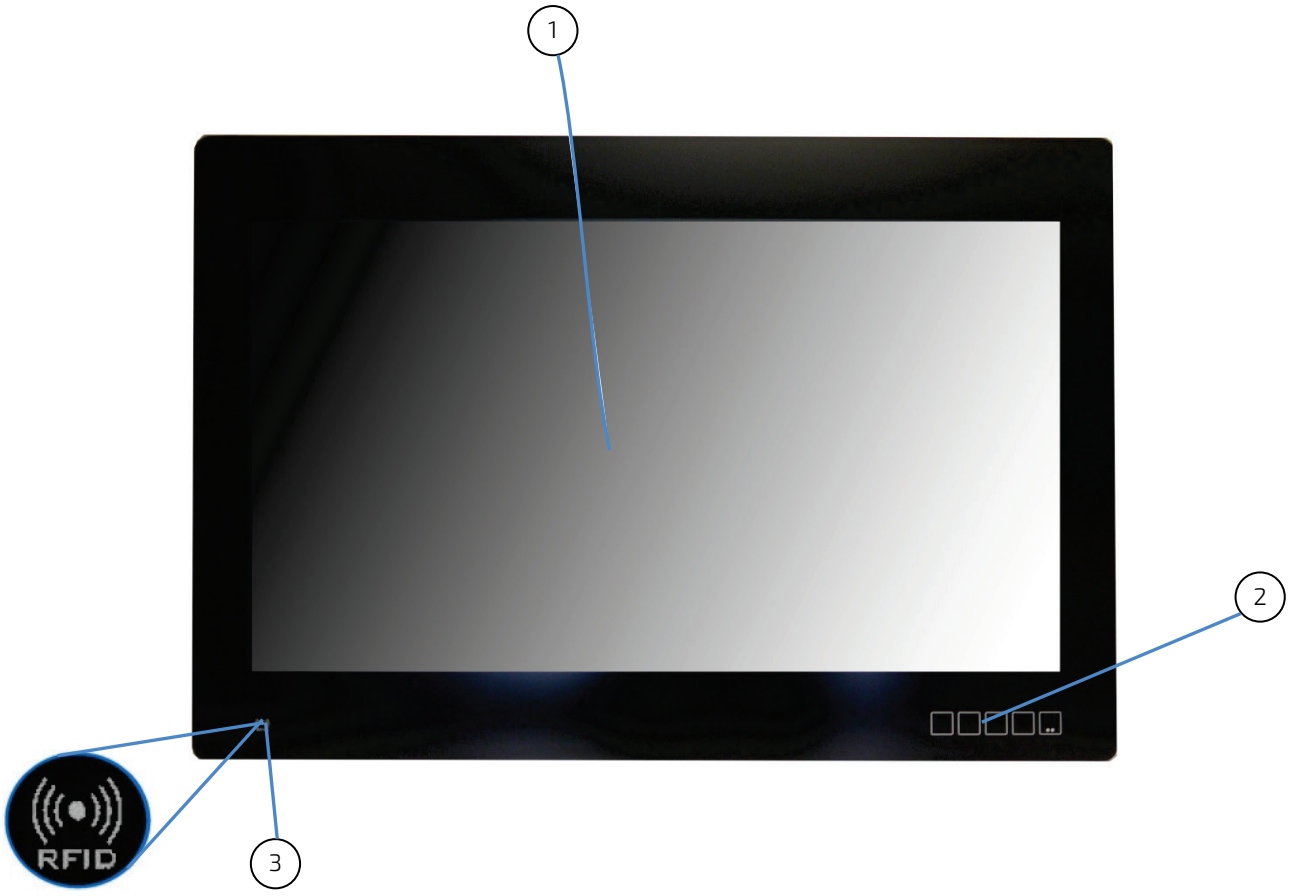
Figure 20: Top view

Figure 21: Rear view



4.2. Front View

Figure 22: Front view of FusionView SD



1. TFT display with touch screen and full glass front
2. Buttons for Power and Setup
3. RFID reader location (optional) Detail: enlarged RFID logo

4.2.1. Front Side

The front side of the FusionView system consists of a continuous glass front (Figure 22, pos.3), the display with the integrated projected capacitive touch screen and the anti-glare glass plate (Figure 22, pos.2).

4.2.2. Display with Touch Screen

Depending on the FusionView system ordered, the built-in display is a 12.1", 15.6", 18.5" or 21.5" size TFT display with corresponding Projected Capacitive (PCAP) touch screen. The touch screen is USB connected. The surface of each display size is also mechanical protected through an appropriate anti-glare glass plate.

The glass plate provides physical and chemical properties to protect against accidental damage to the display during field applications such as accidental drops or scratches with tools.

The integrated touch screen registers contacts of fingers and allows the user to operate the system without a keyboard or a pointing device. The implemented touch technology allows 10-touch operations with fingers or thin gloves.

For technical specification of the built-in display and touch screen refer to chapter 3/ “Technical Data”.

⚠CAUTION	Do not use a hard or a pointed object (like screw driver) to operate the touch screen, since it can damage the touch screen surface and can disturb the touch screen functionality. If any stylus is used make sure it is proper for PCAP sensitive surface. The touch screen is covered with an anti-glare glass panel and care should be taken when cleaning it (see section "Touch Screen Care and Cleaning")

4.2.3. RFID Card Reader (Option)

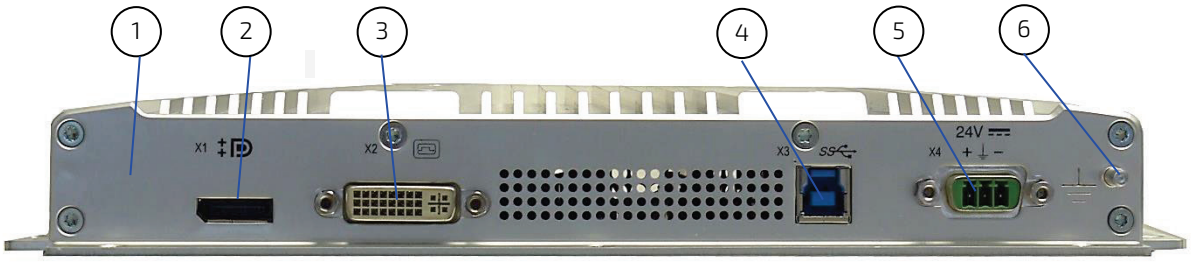
Your FusionView can optionally be equipped with a contactless RFID card reader. It is designed for reading chip data from electronic cards and documents (contactless reading of RFID data). The data between the HF-mPCIe RFID reader and a host system are transmitted via a USB COM port emulation.

The transponder is readable over the whole operation distance between reader antenna and the specified maximum read distance. For technical specifications, refer to section 3.7.

Depending on your application installed the RFID card reader allows reading of chip cards for authentication functions or for services that requires user-specific authorizations (for access rights control).

4.3. Bottom Side (with Interfaces)

Figure 23: Bottom side of the FusionView (interface side of a 21.5" display)

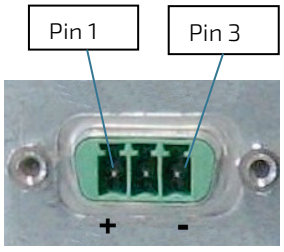


1. Computer base
2. 1x DisplayPort
3. 1x DVI
4. 1x USB 3.0 Type B
5. DC power input connector
6. Grounding Stud
7. Mounting slots (with installed mounting clamps and screws)

4.3.1. DC Power Input Connector

The 3-pin connector provides the power connection of the FusionView system to an appropriate DC main power supply (15 to 30 V DC) via a power cable connection (refer to section 6.1. and 6.1.1.). For pin assignments, refer to subsection 8.1.1.

Figure 24: Detail of the DC Power connector shown without Phoenix terminal



Pin	Description
1	15 to 30 V DC (input)
2	Shield
3	0 V (input)

The external cable connector is a Phoenix PSC 1,5/ 3-M, 3-pin plug with an SCT-D-SUB 9-KG housing. This power plug is delivered with the FusionView. The mating connector is a Phoenix PSC 1,5/ 3-F connector.

The system is equipped with a reverse voltage protection (30 V max).

For connection to a DC power supply, refer to subsection 6.2.1.

For connection to an AC power supply by use of the optional AC/DC adaptor refer to subsection 6.2.2.

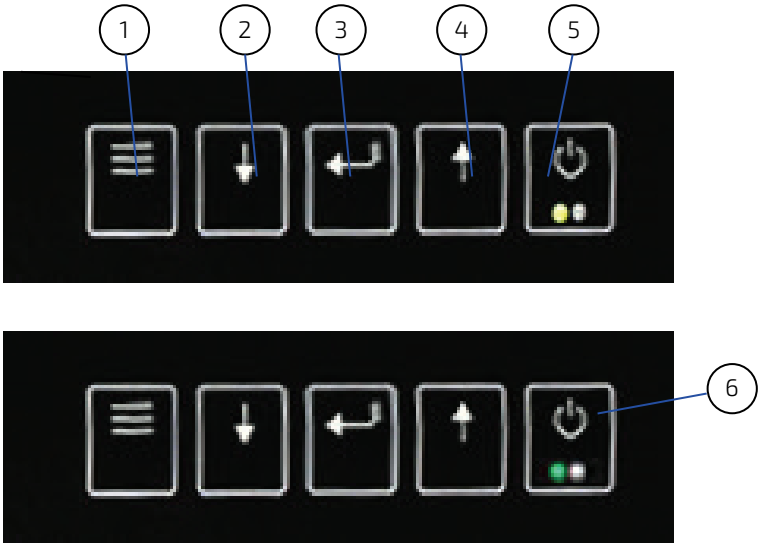
4.3.2. Grounding Stud

There is an M4 grounding stud, see Figure 23: Bottom side of the FusionView (interface side of a 21.5" display). Please observe the requirements for grounding and connect this terminal as required.

⚠WARNING Each FusionView system is equipped with the stud. It is marked with a grounding symbol. It has to be grounded to an appropriate "common earth" connection point (refer to 6.2.1 "DC Power Connection").

4.3.3. Buttons and Indicators

Figure 25: FusionView - Buttons and Indicators



1. Menu
2. Menu down
3. Set and Hotkey for Brightness, Contrast, Backlight
4. Menu up
5. Power Button (Off, orange LED)
6. Power Button (On, green LED)

NOTICE Hotkey for button 3:

1. Tap – Window Brightness appears
2. Tap – Window Contrast appears
3. Tap – Window Backlight appears

4.3.3.1. Colors of Power LEDs

Table 12: Colors of the power LED indicate the system status

State	Monitor	Input Signal	LED green	LED orange	Note
1	ON	valid	ON	OFF	Picture is displayed
2	ON	not valid	OFF	ON	No sync or scanning inputs is displayed
3	OFF	no signal was preset, card went into standby	ON	ON	Deep Sleep
4	OFF	no signal	OFF	OFF	SoftPowerOff (Card is switched off by PowerKey)

4.3.4. USB 3.0

The FusionView provides one USB 3.0/2.0 Typ B interface. This connector allows connection of USB 3.0 or USB 2.0 compatible devices to the system.

For pin assignment, refer to subsection 8.1.3.

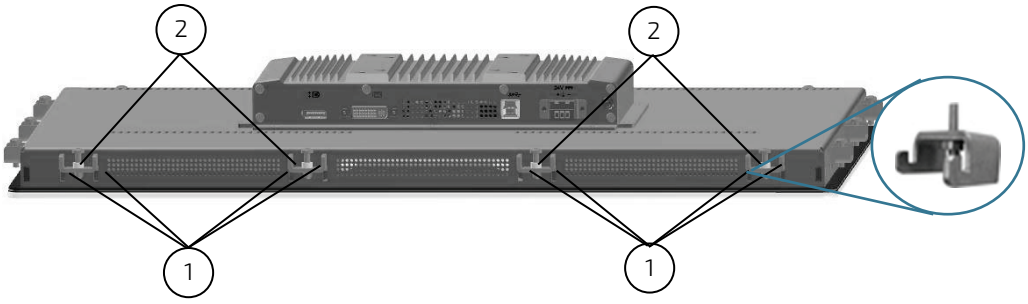
4.3.5. DisplayPort

The DisplayPort provides a compliant interface using a standard connector. It allows to connect an external display to the system. For pin assignment, refer to subsection 8.1.2.

4.3.6. Mounting Slots on the bottom Side of the Touch Display Unit

On the bottom side of the touch display unit are available two pairs of mounting slots for the installation of the provided mounting clamps with screws (Figure 26, pos. 2).

Figure 26: Bottom side of the touch display unit with installed mounting clamps (enlarged, in circle)



1. Pairs of mounting slots
2. Mounting clamp with screw

Note for mounting clamps:

The FV 215 and FV 185 system will be secured into a wall/panel by use of:

- four mounting clamps at the top and bottom side
- three mounting clamps at the left and right side

The FV 156 system will be secured into a wall/panel by use of:

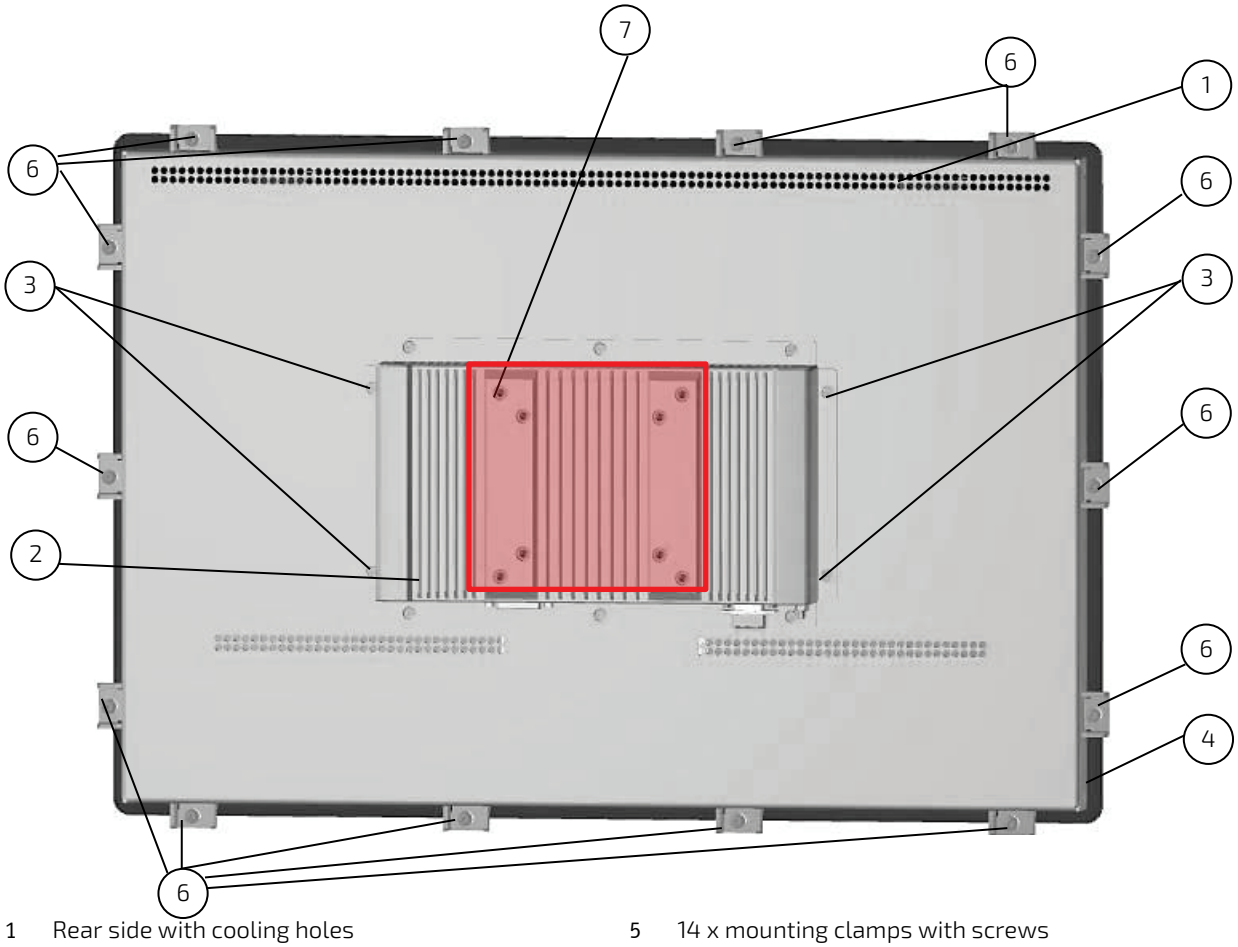
- four mounting clamps at the top and bottom side
- two mounting clamps at the left and right side

The FV 121 system will be secured into a wall/panel by use of:

- two mounting clamps at the top and bottom side
- two mounting clamps at the left and right side

4.4. Rear Side

Figure 27: Rear side of the FusionView shown as FV 215



1 Rear side with cooling holes
2 Cover of the computer base with cooling fins
3 Screws that secures the cover with cooling fins to the display unit
4 Gasket location (around the rear side of the touch display unit)
5 14 x mounting clamps with screws
6 8x M4 threaded blind holes (8mm max) for mounting of the optional VESA® 75/100 compliant adaptor
7 VESA mount

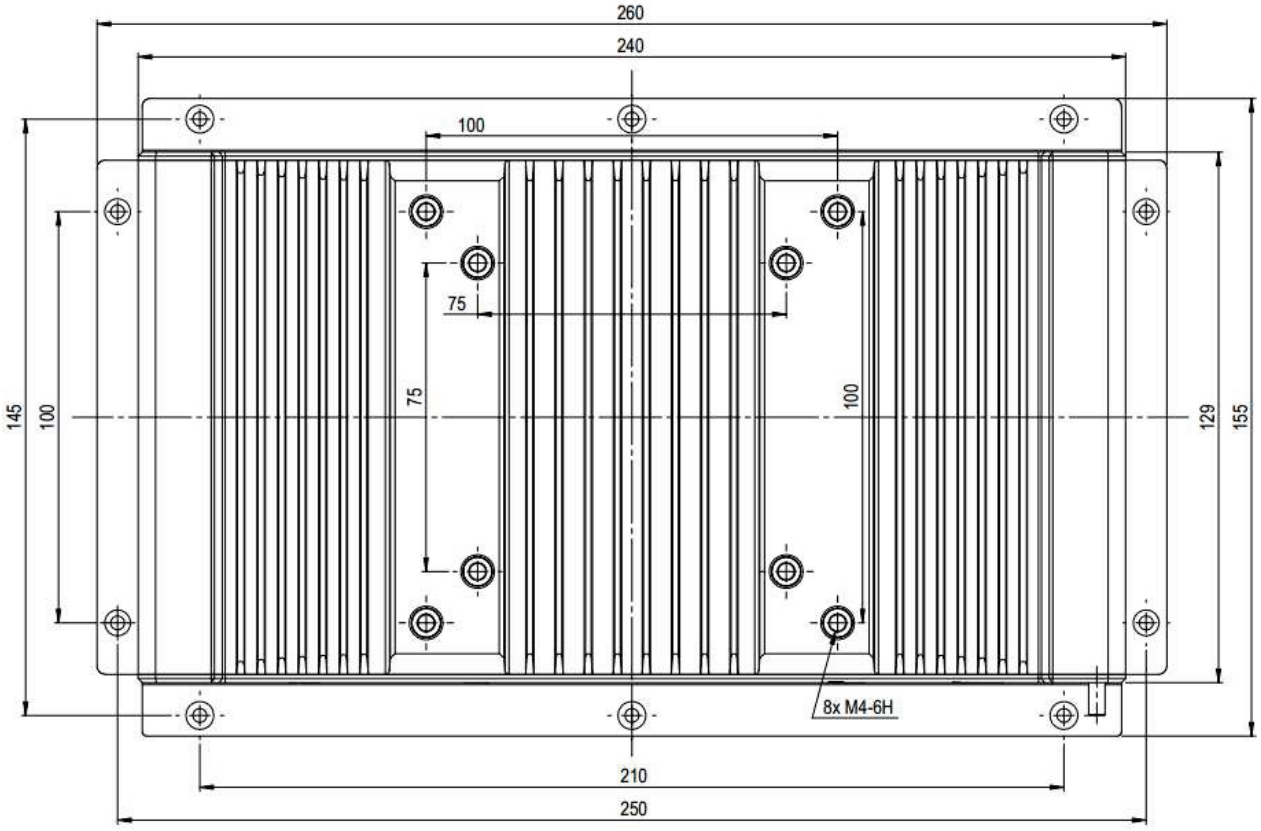
⚠CAUTION

When powering on the FusionView, make sure that the air intake and exhaust openings are not obstructed and the cooling fins not covered by objects.

4.4.1. VESA 75/100 Mounting Holes

The FusionView can be mounted to a VESA 75/100 compliant mounting system (in vertical position with the interfaces downwards). The FusionView mounted to a VESA 75/100 compliant mounting system may be rotated to left or right in order to view landscape or portrait images if the installed operating system supports this feature. Ensure that the length of the cable connections to power and peripherals are sufficient for this operating position.

Figure 28: Rear view with holes (M4 - depth 8 mm) for VESA 75/100 mounting



5/ Installation Instructions

The FusionView is designed to be mounted in the user's application by either of the following methods:

- Installation in an instrument panel or other cabinets by use of mounting clamps (preferred mounting method)
- Installation by a heavy duty VESA 75/100 compliant mounting system

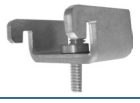
⚠CAUTION

- The FusionView has to be installed and operated only by trained and qualified personnel.
- We recommend that the mounting procedure is to be carried-out by two persons.
- The mounting and operation of the FusionView is allowed in horizontal (with the interfaces downwards) and vertical position. Vertical operating position (with the interfaces to the left or to the right) is only possible when supported by the OS used.
- The unit must be placed such that there is sufficient space for connecting the cables to the I/O interface connectors.
- 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.
- During the system operation, the cover of the computer base must be proper installed and secured by the corresponding screws.

5.1. Installation by use of the Mounting Clamps

The mounting clamps with screws (supplied), allow the easy and fast mounting of the FusionView FV-SD. The outline and mounting drawing can be found on our web site www.kontron.com.

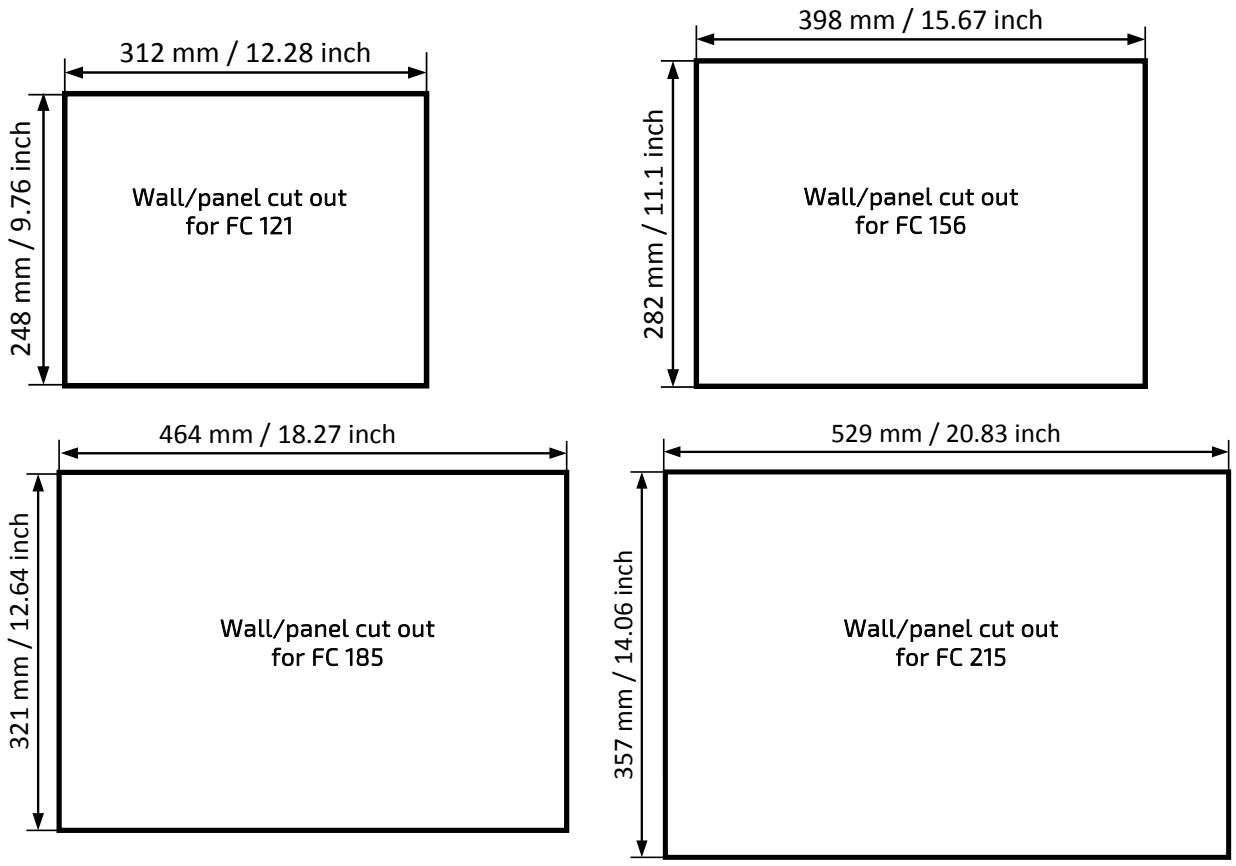
Table 13: FusionView - Specification for mounting

Dimensions for:	FV 121	FV 156	FV 185	FV 215
Cut-out for mounting to a wall/panel (W x H) [mm]	312 x 250 mm (12.28" x 9.84")	398 x 282 mm (15.67" x 11.02")	464 x 321 mm (18.27" x 12.64")	529 x 357 mm (20.83" x 14.06")
Thickness of the mounting wall/panel for proper mounting [mm]	1.5 - 6			
Clamp with screws for mounting the FusionView to a wall/panel	8x	12x	14x	
				
Required Tool	Allen Wrench 2 mm			
Proper Torque	Tighten the screws with a torque of 0.7 Nm (start with 0.4 Nm and increase to 0.7 Nm)			
Mounting position	Ensure the vertical and horizontal alignment of the system/display unit.			

NOTICE

In order to ensure IP65 front sealing against dust and water, mount the system on a non-textured surface. Before you install the FusionView system into a panel or a wall, verify the perfect condition of the gasket at the rear of the front bezel. The gasket has to be in place without surface imperfections/defects and dirt. Ensure the vertical and horizontal alignment of the system/display unit.

Figure 29: Wall/panel cutout dimensions for FusionView systems

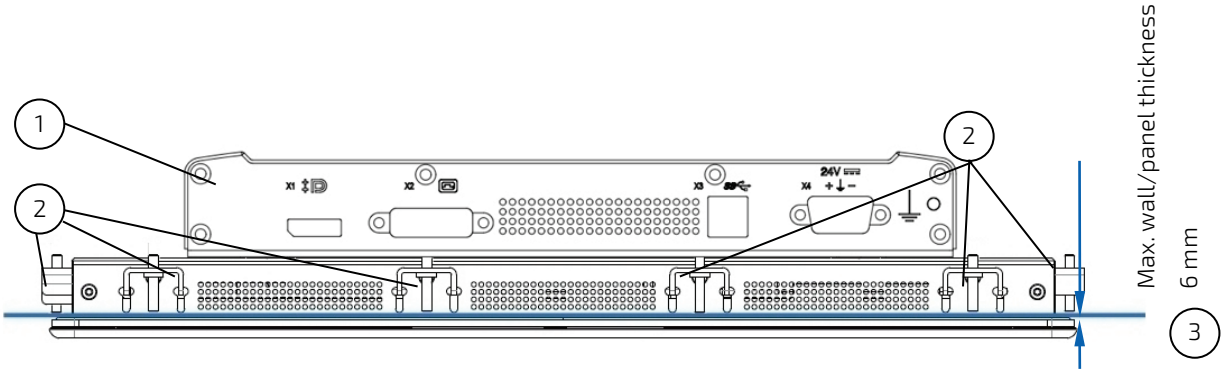


⚠WARNING

The glass front of the FusionView is fragile. Handle with care to prevent personal injury or material damage. Never place the FusionView on the edges or corners of the glass front. Always use two hands when carrying the device.

The glass front of the FusionView is provided with edge protection and a protective foil. Only remove this protective material after the installation.

Figure 30: Wall/panel mounting of the FusionView by use of the mounting clamps



1. Bottom side of the computer base
2. Mounting clamps with screws for system installation into a wall/panel
3. Example of wall thickness for system installation

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

1. Depending on the dimension of the display enclosure of your FusionView, prepare a cutout in the wall/panel. The maximum thickness of the wall/panel is 6 mm. Refer to Table 13 and

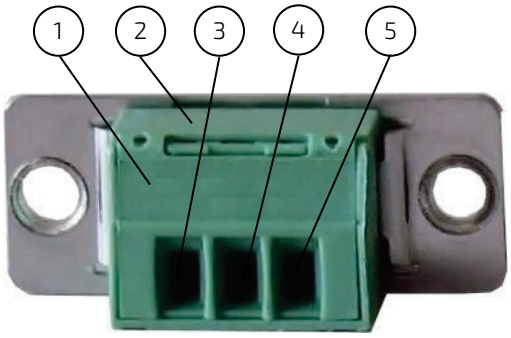
2. Figure 29 for the wall/panel cutout dimensions or to the corresponding mechanical drawings for your FusionView on our web site www.kontron.com.
3. The system must be properly powered down and disconnected from the power source and peripherals.
4. The wall/panel where you intend to install the system must be accessible from both sides (front as well as rear). The material strength and stiffness must be sufficient to hold the FusionView unit.
5. Insert the system into the wall/panel cutout from the front.
6. In order to ensure the protection class IP65 on the front side in the installed condition, the contact surface with the gasket must be clean and flush.
7. Hook the mounting clamps with screws (Table 13) from the rear side of the panel into the corresponding pairs of slots as shown in Figure 26.
8. The system must be attached firmly by tightening the screws . Always tighten screws in pairs on opposite sides of the front panel. Repeat the tightening sequence two times and increase the torque from 0.4 to 0.7 Nm.

6/ Starting Up

6.1. DC Power Terminal

The FusionView is delivered with a DC power plug terminal (3-pin Phoenix connector). For DC connection, prepare the connecting wires using the supplied Phoenix plug terminal: PSC 1,5/ 3-F.

Figure 31: Phoenix power plug terminal



1. 3-pin Phoenix plug terminal
2. Cover over the slotted pan head screws
3. Location for inserting the "15-30 V DC (input)" wire
4. Location for inserting the "shield" wire
5. Location for inserting the "0 V (input)" wire

6.1.1. Cabling

For the pin assignment Phoenix power plug terminal refer to subsection 8.1.1 "Power Input Connector".

1. Cut the required length three isolated wires (1 mm^2) American Wire Gauge (AWG18) and strip each end 5 to 7 mm.
2. Twist the striped wire-ends and provide them with ferrules.
3. Open the cover (Figure 31, pos. 2) to have access to the slotted pan head screws.
4. Loosen the slotted pan head screws of the DC plug terminal far enough so that you can insert the end of the prepared wires.
5. Insert the wires into the corresponding clamp of the Phoenix plug terminal. Make sure that you have the right polarity of the connection [refer to Figure 31, Figure 24 or subsection 8.1.1 "Power Input Connector"].
6. Fasten the screws to secure the wires into the clamps of the plug terminal.
7. Close the cover (Figure 31, pos. 2).

6.2. Connecting to Power

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

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

The FusionView systems can be connected to a DC power source or optionally via an AC/DC power adaptor to an AC main power. The DC power connector is located on the bottom side of the system.

6.2.1. DC Power Connection

Please observe the safety requirements given in chapter 1/ "General Safety Instructions for IT Equipment".

⚠WARNING

- The system must be connected only to a LPS (Limited Power Supply) 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 FusionView (refer to the type label).
- The system 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.
- Ensure that a short-circuit (overcurrent) protection is provided as part of the building installation. Install only in accordance with national and local wiring regulations.
- When you install or replace the system the ground connection must always be made first and disconnected last.
- We recommend that the power cable should be the last cable attached to the system.

To connect the FusionView to a corresponding DC main power supply, please perform the following steps:

1. The wires used for power connections must be clearly marked (+/-/grounding) to ensure that they will be proper connected to the DC connector of the FusionView and to the main power source, corresponding the signals marked (refer to Figure 24).
2. Ensure that the DC power source is switched off via a disconnecting device (circuit breaker), in order to ensure that no power is flowing from the external DC power source during the connection procedure.
3. Connect at first the wire for the grounding stud to an appropriate "common earth" connection point.
4. Connect the Phoenix power terminal prepared as described in subsection 6.1.1 "Cabling" to the DC input connector of the FusionView. The DC input connector is located on the front side and is marked "24 VDC".
5. Connect the other ends of the DC power wires to the connections of the DC main power supply. Pay attention to the polarity of the connections.
6. Switch on the disconnecting device (circuit breaker) in order to apply voltage to the terminals of the power wires.

6.2.2. AC Power Connection

Please observe the safety requirements given in chapter 1/ "General Safety Instructions for IT Equipment".

⚠WARNING

- 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 AC power cable must correspond to the requirements of the country where the system is used.
- Make sure that the mains power supply (power outlet) is properly grounded and that the power cord is in perfect condition without any visible damage. An ungrounded power supply is not permissible.
- The AC power cable of the AC/DC adaptor is the disconnecting device. For this reason the socket for the power supply must always be mounted close to the device and be easily accessible.
- Never connect the monitor to an AC source, use always an AC/DC adaptor

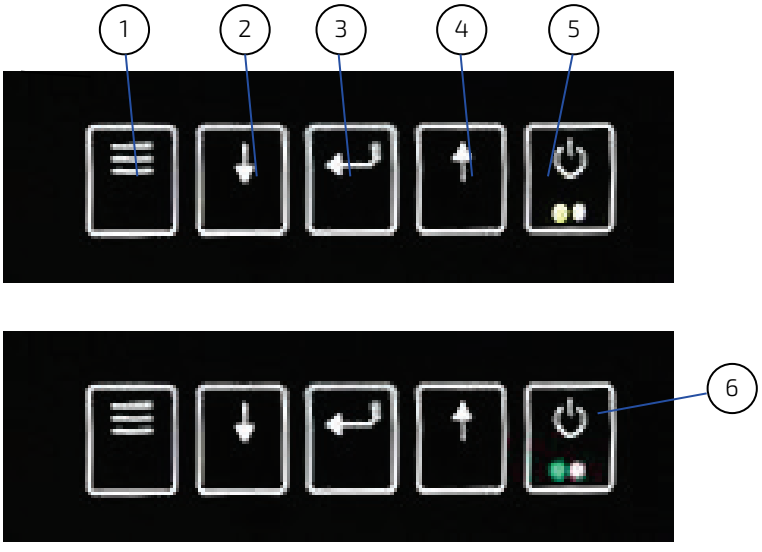
The FusionView system will be connected to an AC power source via the optional AC/DC adaptor.

1. Connect the 3-pin DC connector of the AC/DC adaptor to the appropriate DC power connector of the FusionView. The DC power connector of the system is located on the bottom side and is labeled "15 to 30V DC". Make sure the connector is securely locked in place.
2. Connect the AC power cord to the AC/DC adaptor.
3. Plug the AC connector of the adaptor into an AC wall outlet of the AC power source.

6.3. System Settings with On-Screen Display (OSD) Menu

6.3.1. Buttons and Indicators

Figure 32: FusionView - Buttons and Indicators



1. Menu
2. Menu down
3. Set
4. Menu up
5. Power Button (Off, orange LED)
6. Power Button (On, green LED)

6.3.2. Starting OSD-Screens

After pressing the Menu Button the Main Menu screen appears.

Figure 33: Main Menu of the user interface by pressing on Menu Button

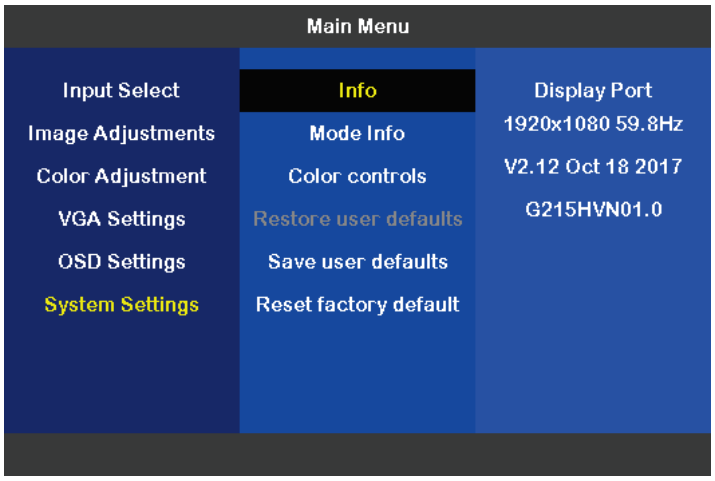


Figure 34: On-Screen Display (OSD) Menu

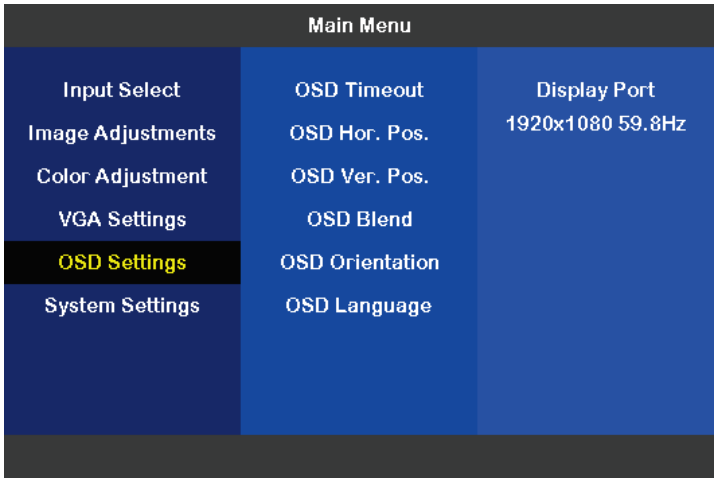
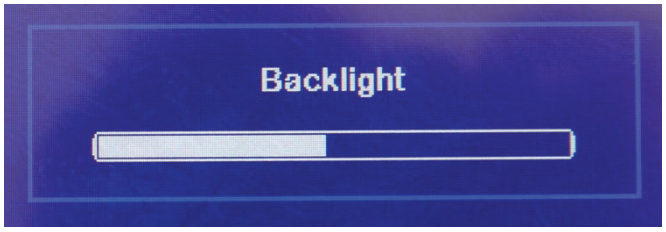


Figure 35: System Setting by pressing on Set Button



6.4. OSD Menu

After pressing on the menu button appears the user interface. It will disappear 12 seconds later, if no action happened.

Figure 36: Main Menu: Input Select

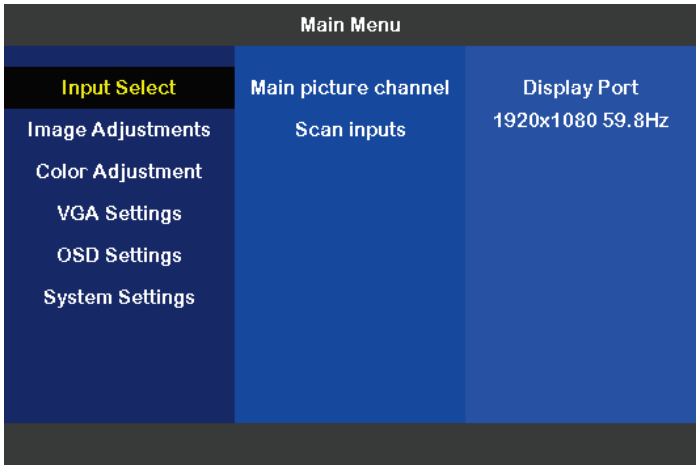


Figure 37: Main Menu: Input Select, Sub Menu: Main picture channel

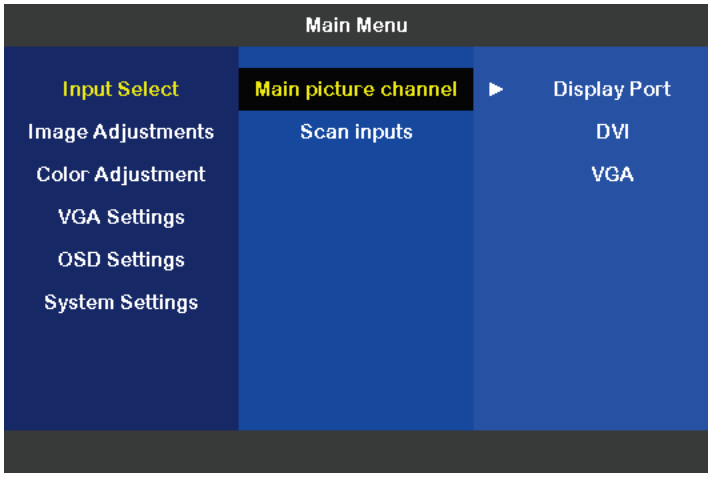


Figure 38: Main Menu: Input Select, Sub Menu: Scan Inputs

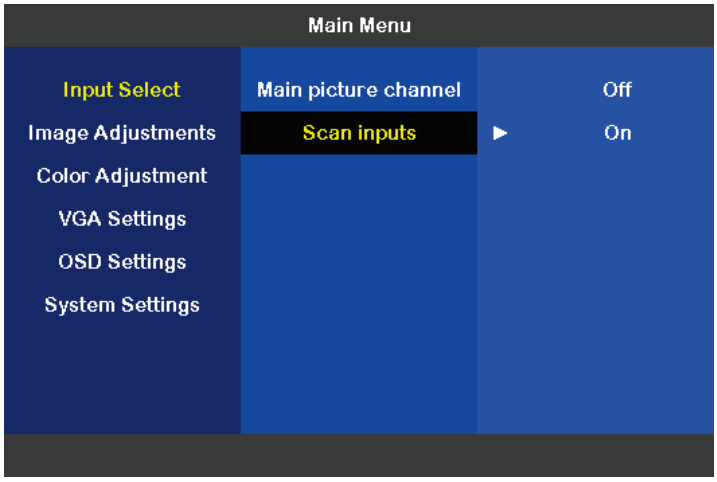


Figure 39: Main Menu: Image Adjustments

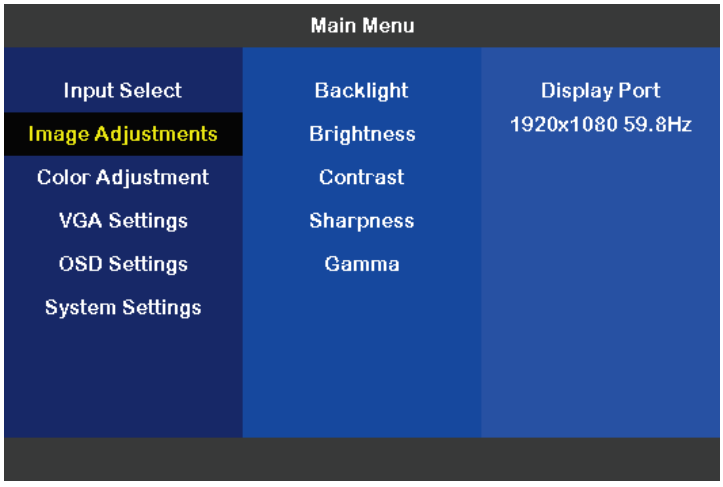


Figure 40: Main Menu Image Adjustments, Sub Menu Backlight

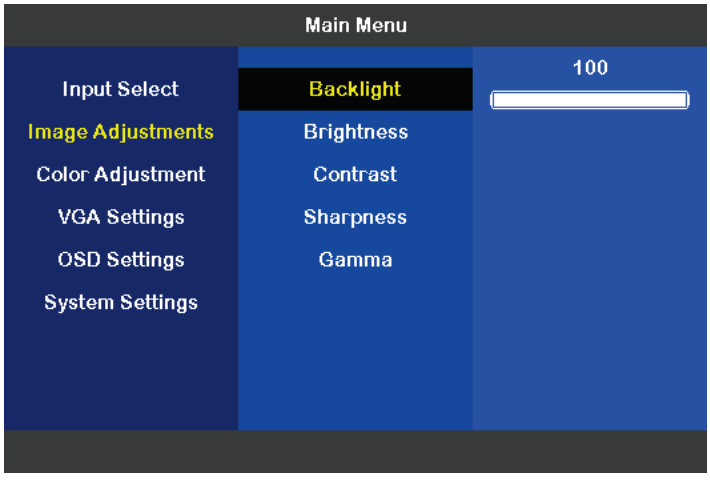


Figure 41: Main Menu Image Adjustments, Sub Menu Brightness

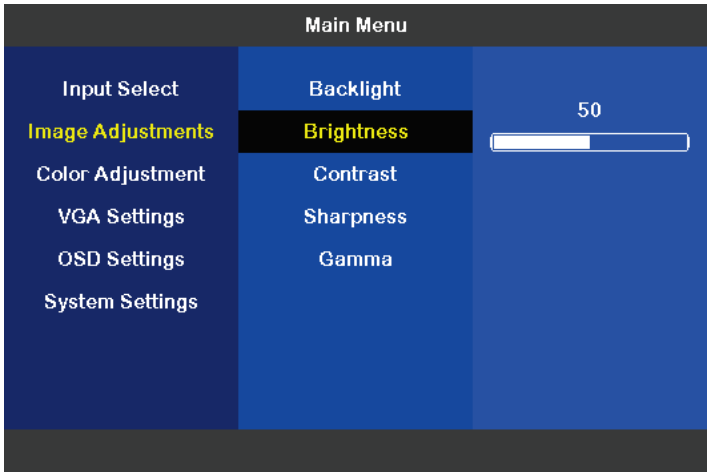


Figure 42: Main Menu Image Adjustments, Sub Menu: Contrast

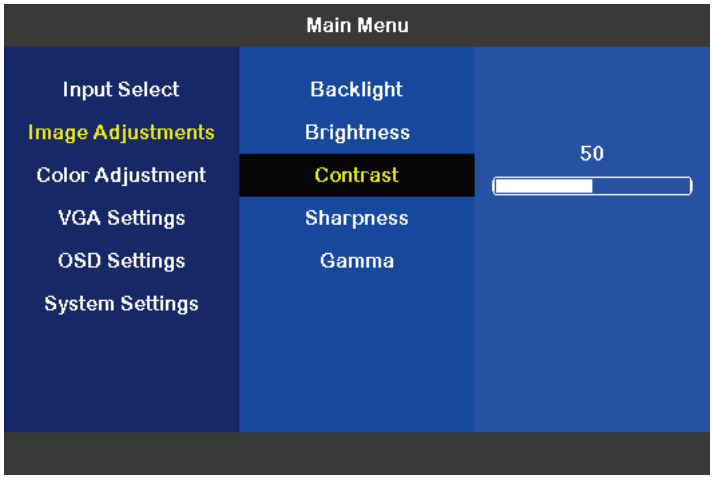


Figure 43: Main Menu Image Adjustments, Sub Menu: Sharpness

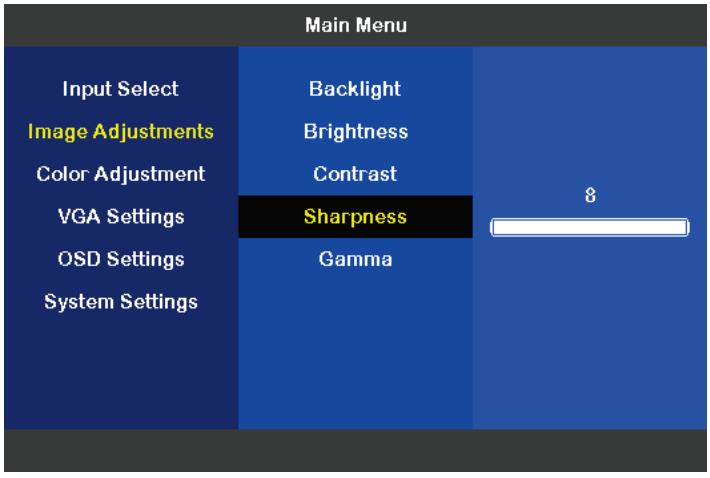


Figure 44: Main Menu Image Adjustments, Sub Menu: Gamma

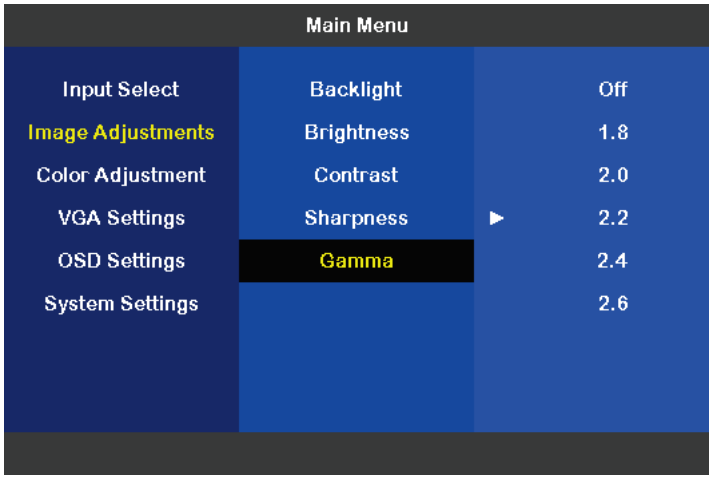


Figure 45: Main Menu Color Adjustment, Sub Menu Theme

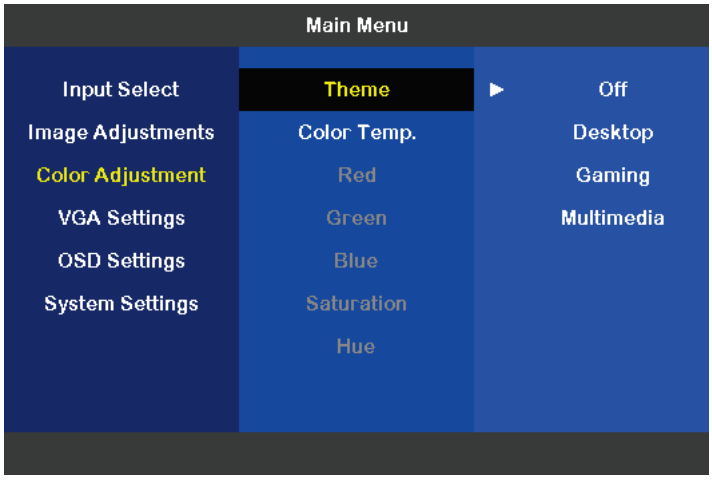


Figure 46: Main Menu Color Adjustment, Sub Menu Color Temp.

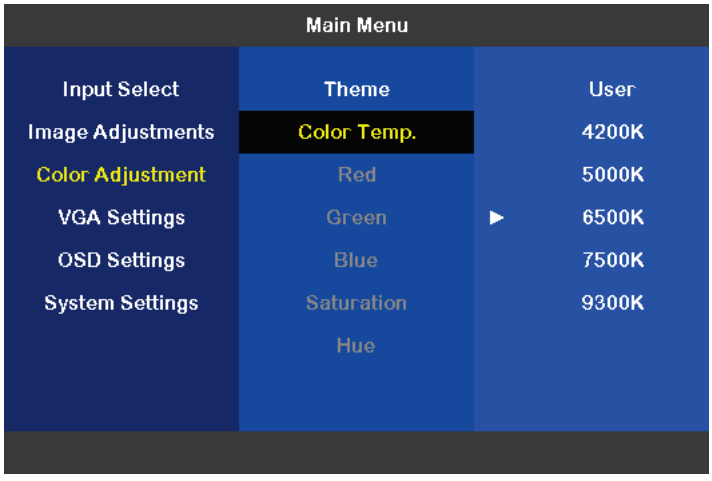


Figure 47: Main Menu Color Adjustment, Sub Menu Red

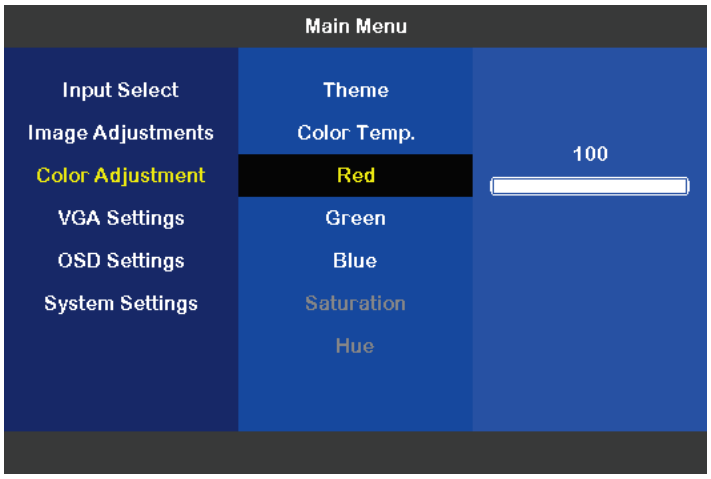


Figure 48: Main Menu Color Adjustment, Sub Menu Green

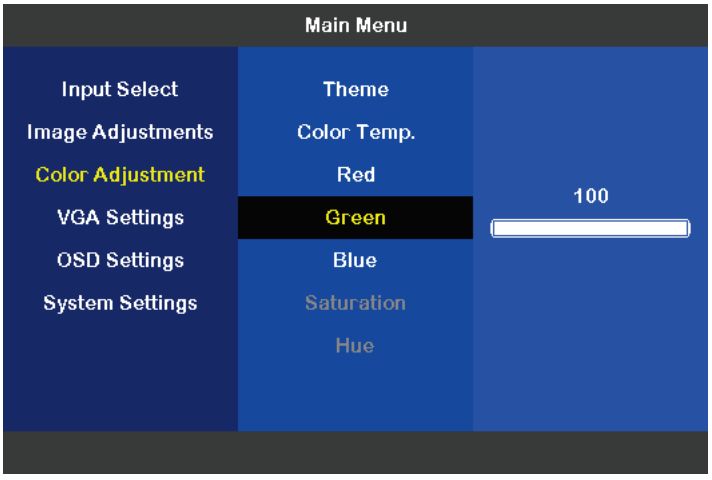


Figure 49: Main Menu Color Adjustment, Sub Menu Blue

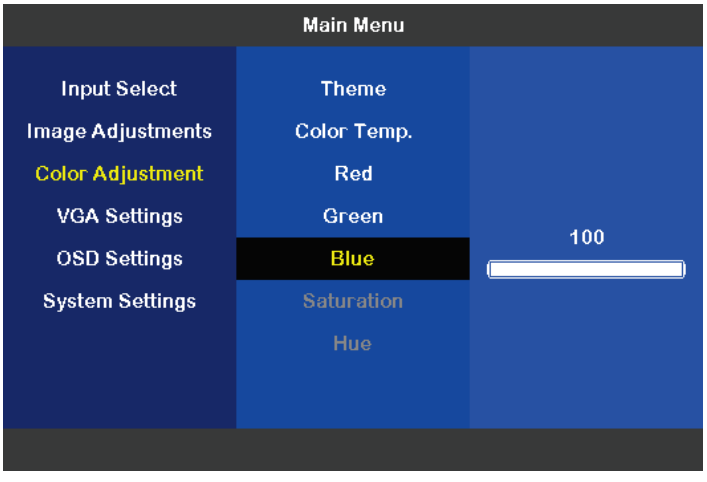


Figure 50: Main Menu Color Adjustment, Sub Menu Saturation

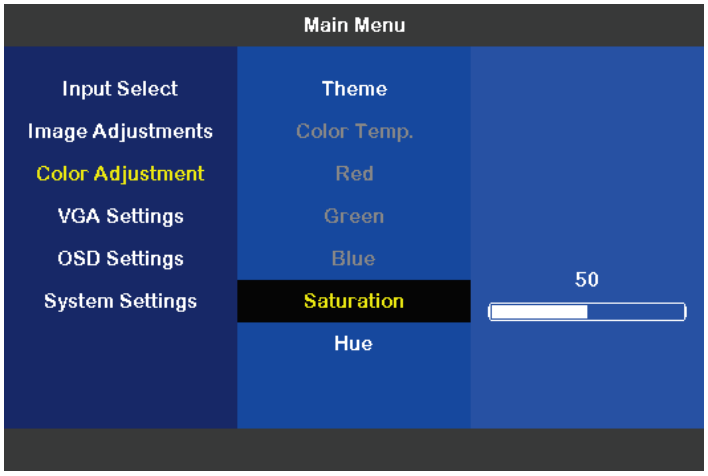


Figure 51: Main Menu Color Adjustment, Sub Menu Hue

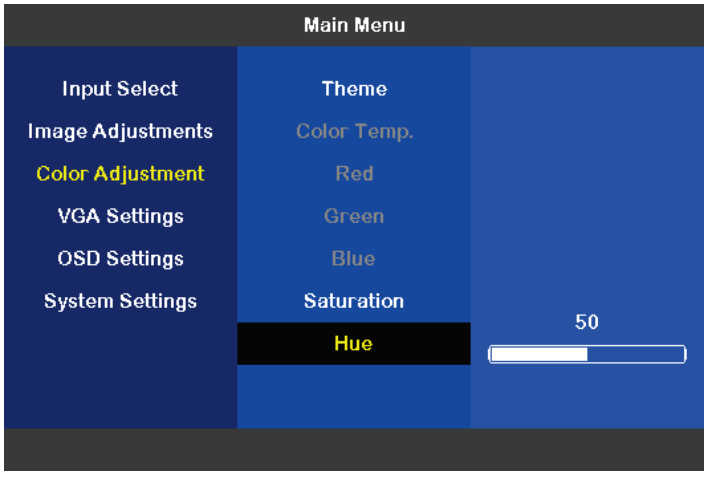


Figure 52: Main Menu VGA Settings

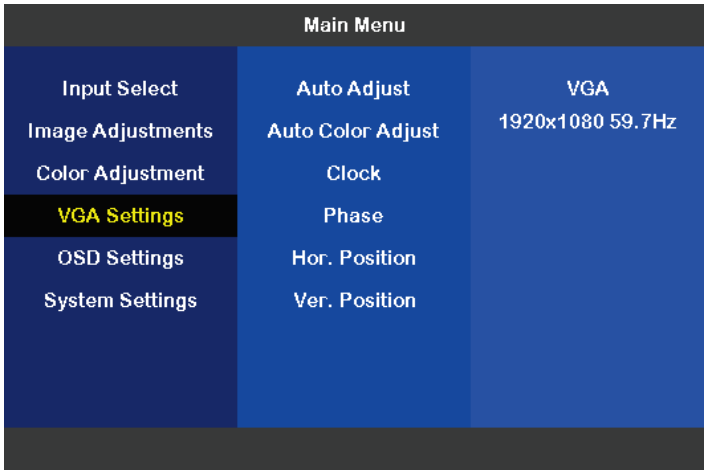


Figure 53: Main Menu VGA Settings, Sub Menu Auto Adjust

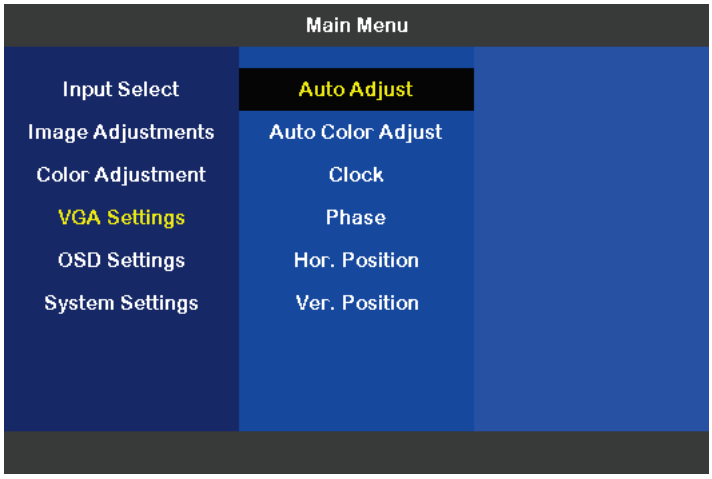


Figure 54: Main Menu VGA Settings, Sub Menu Auto Color Adjust

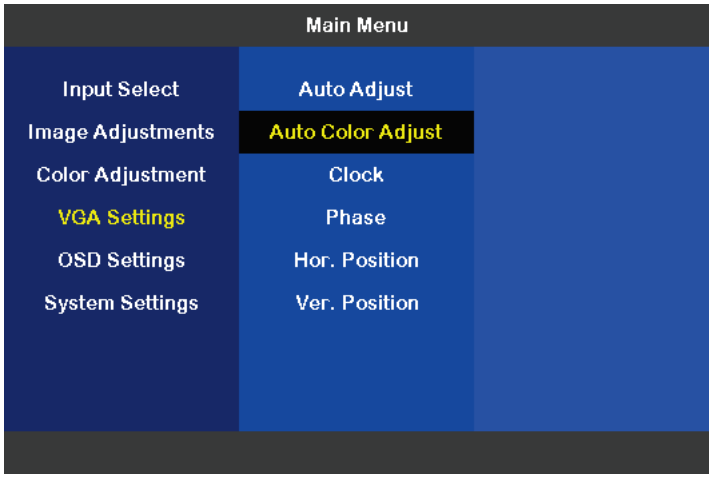


Figure 55: Main Menu VGA Settings, Sub Menu Clock

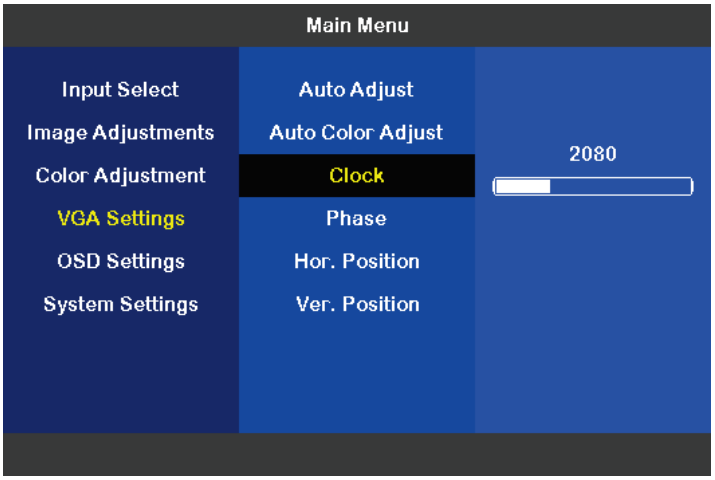


Figure 56: Main Menu VGA Settings, Sub Menu Phase

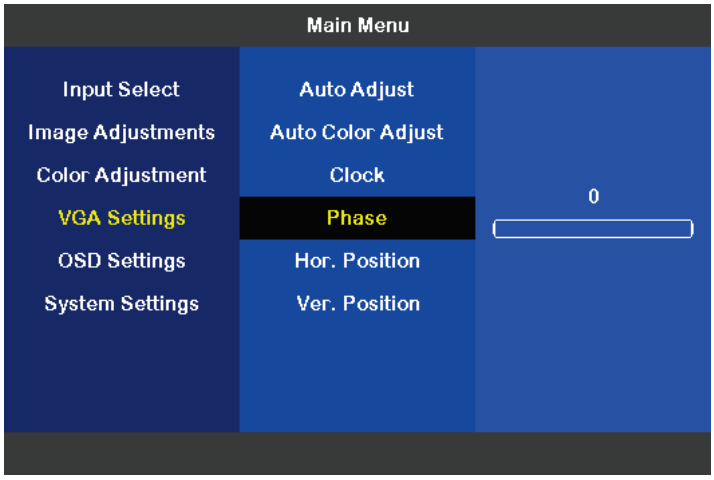


Figure 57: Main Menu VGA Settings, Sub Menu Hor. Position

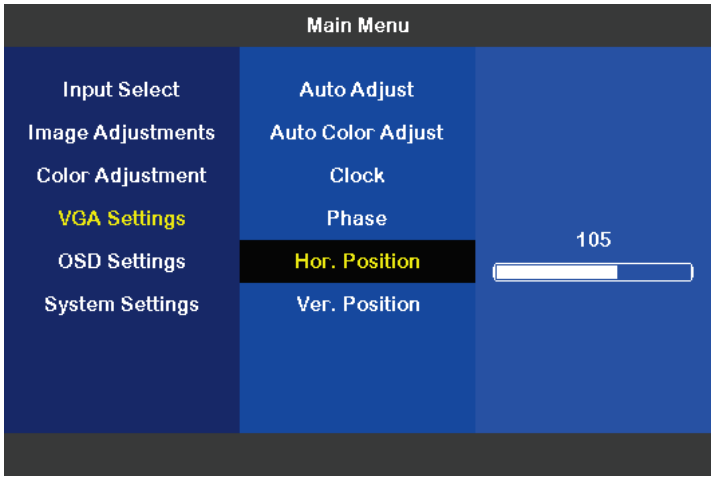


Figure 58: Main Menu VGA Settings, Sub Menu Ver. Position

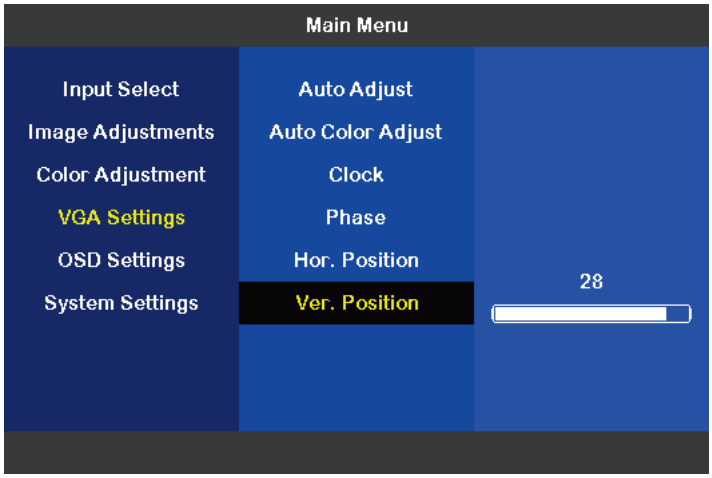


Figure 59: Main Menu OSD Settings

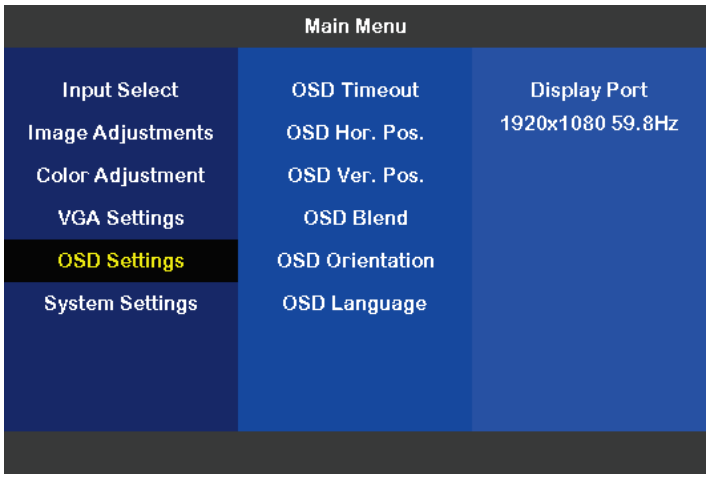


Figure 60: Main Menu OSD Settings, Sub Menu OSD Timeout

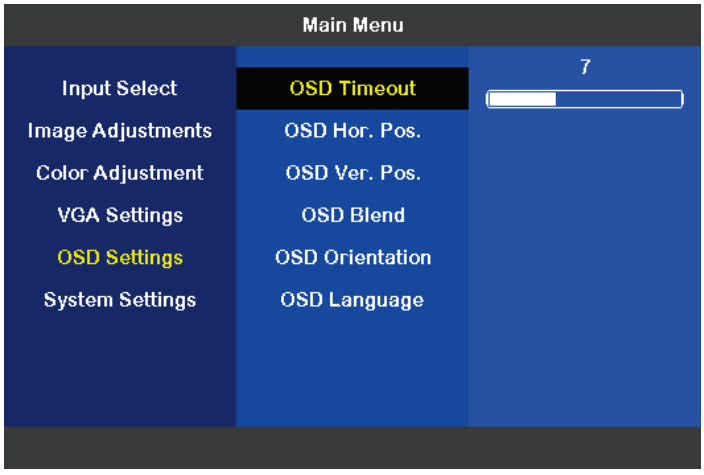


Figure 61: Main Menu OSD Settings, Sub Menu OSD Hor. Pos.

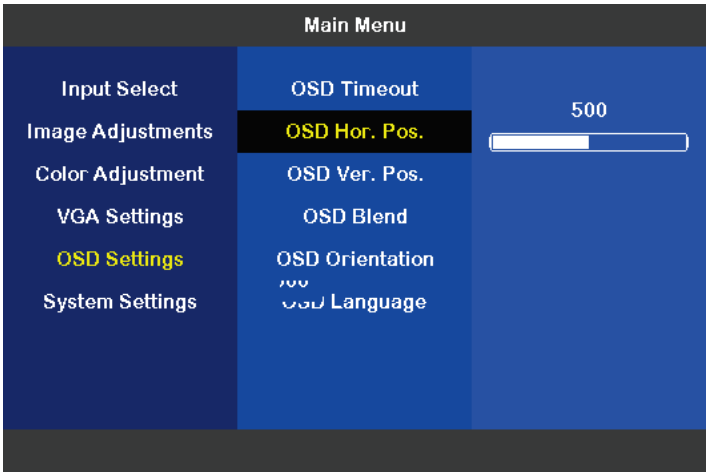


Figure 62: Main Menu OSD Settings, Sub Menu OSD Ver. Pos.

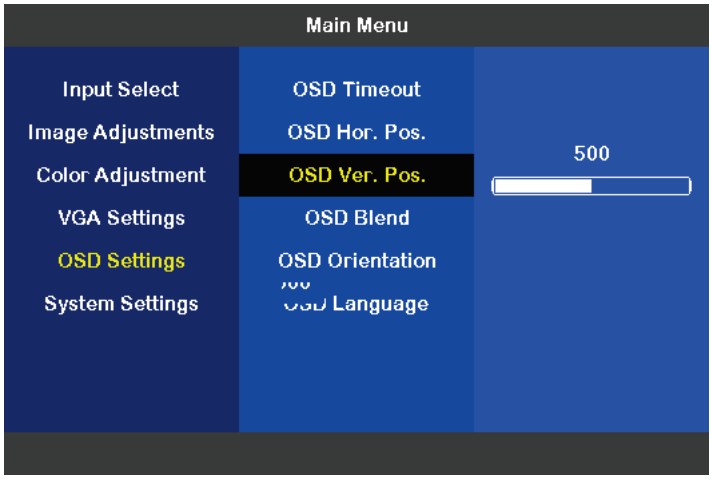


Figure 63: Main Menu OSD Settings, Sub Menu OSD Blend

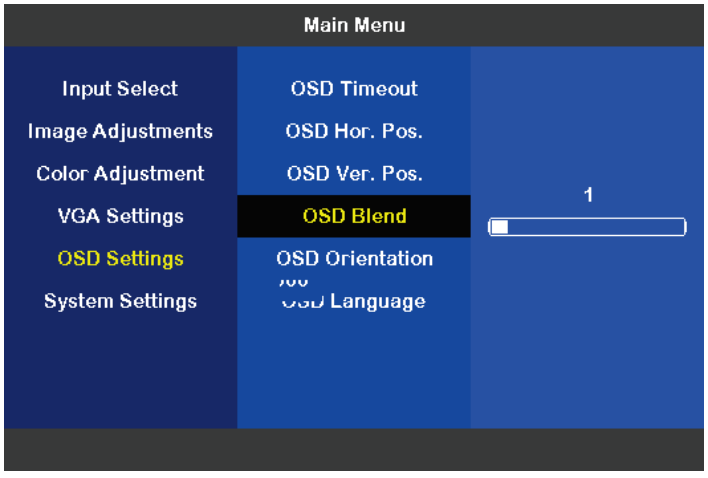


Figure 64: Main Menu OSD Settings, Sub Menu OSD Orientation

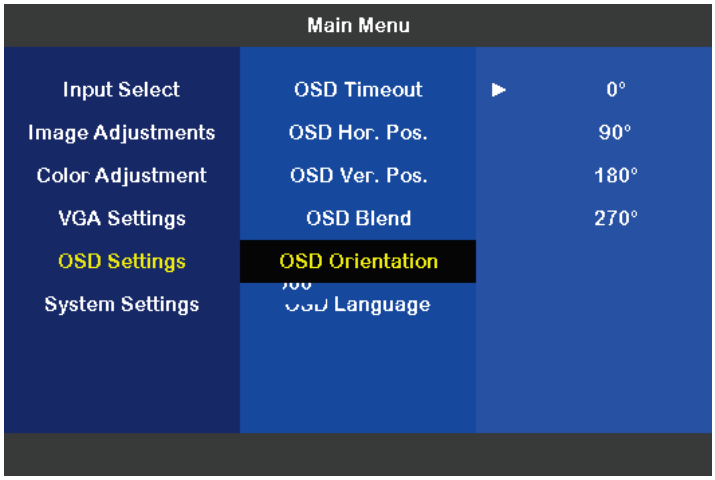


Figure 65: Main Menu OSD Settings, Sub Menu OSD Language

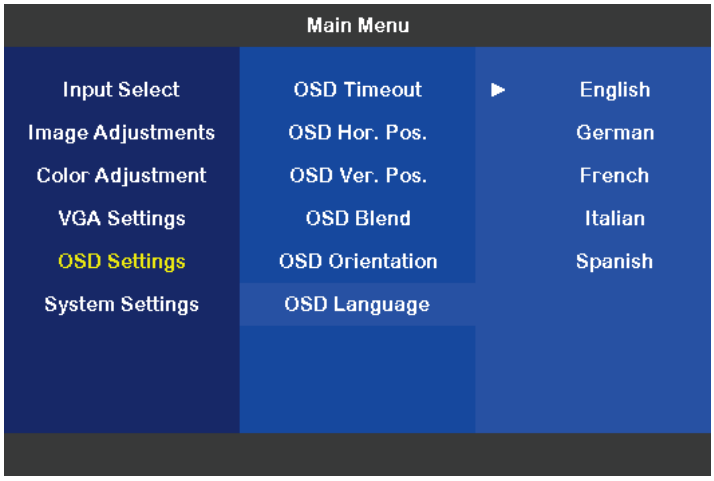


Figure 66: Main Menu System Settings

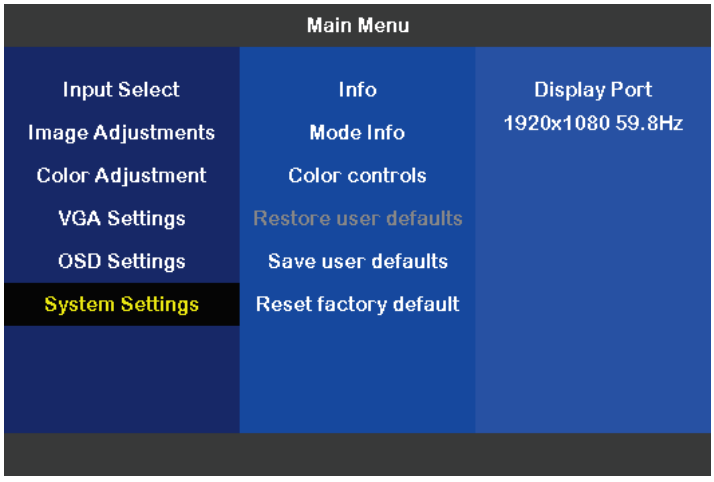


Figure 67: Main Menu System Settings, Sub Menu Info

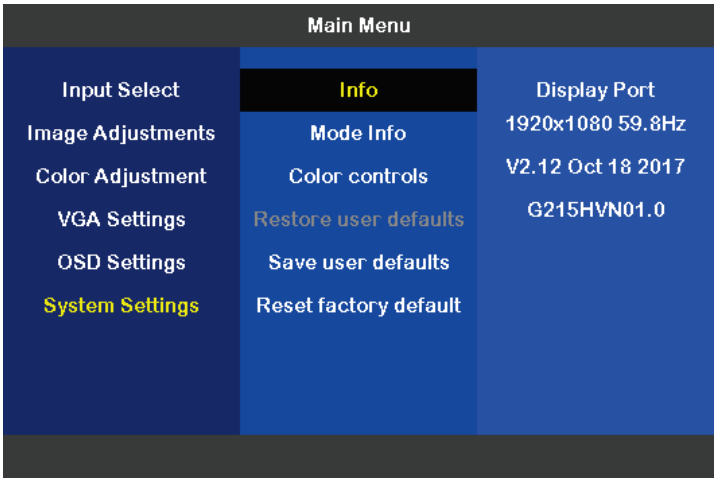


Figure 68: Main Menu System Settings, Sub Menu Mode Info

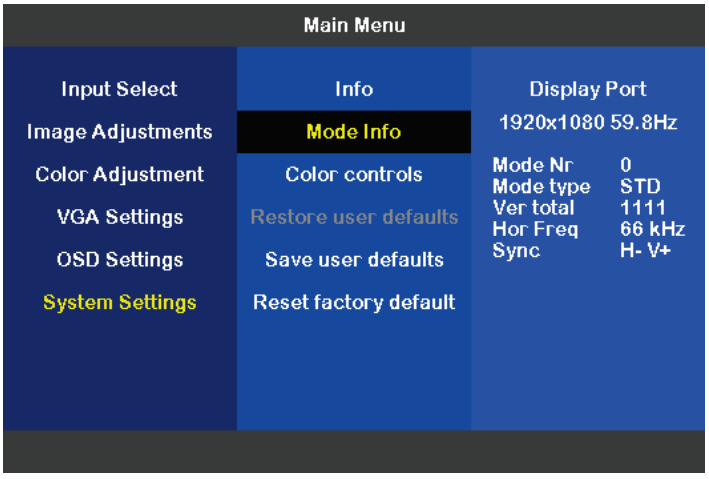


Figure 69: Main Menu System Settings, Sub Menu Color Controls

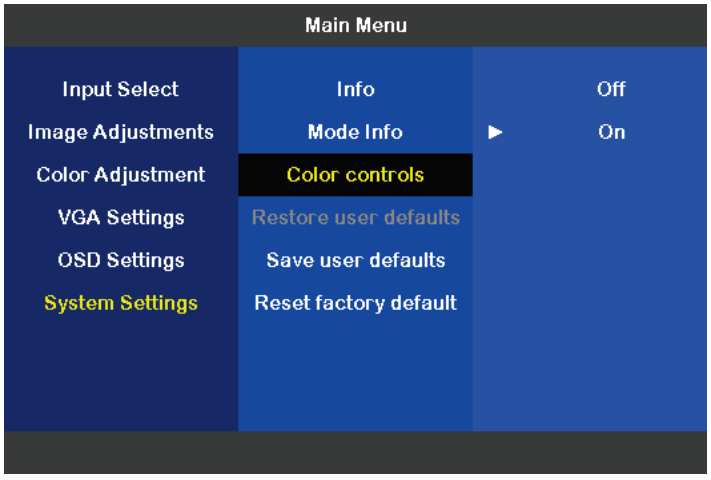


Figure 70: Main Menu System Settings, Sub Menu Save User Defaults

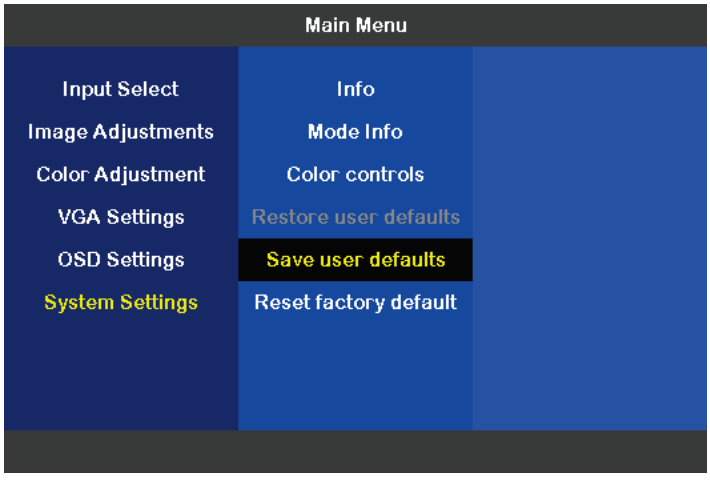
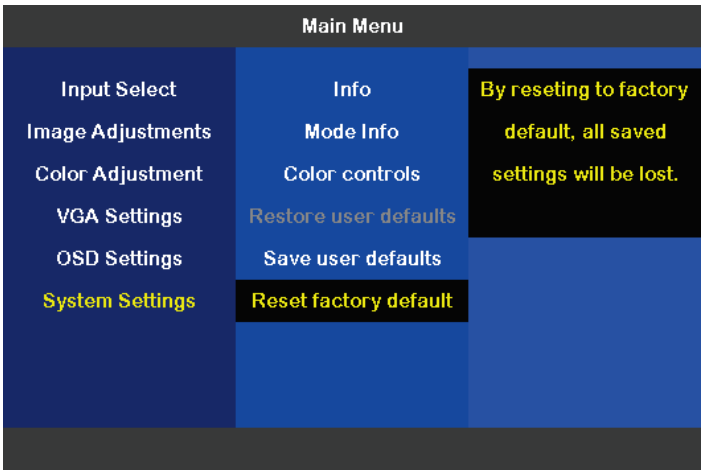


Figure 71: Main Menu System Settings, Sub Menu Reset Factory Default



6.5. Windows-Software Soft-OSD

From the homepage www.kontron.com the user can download the Windows-software Soft-OSD for configuring the monitor. On four screens the admin can adjust the connection, image, OSD and VGA.

Figure 72: Screen Connection of Soft-OSD

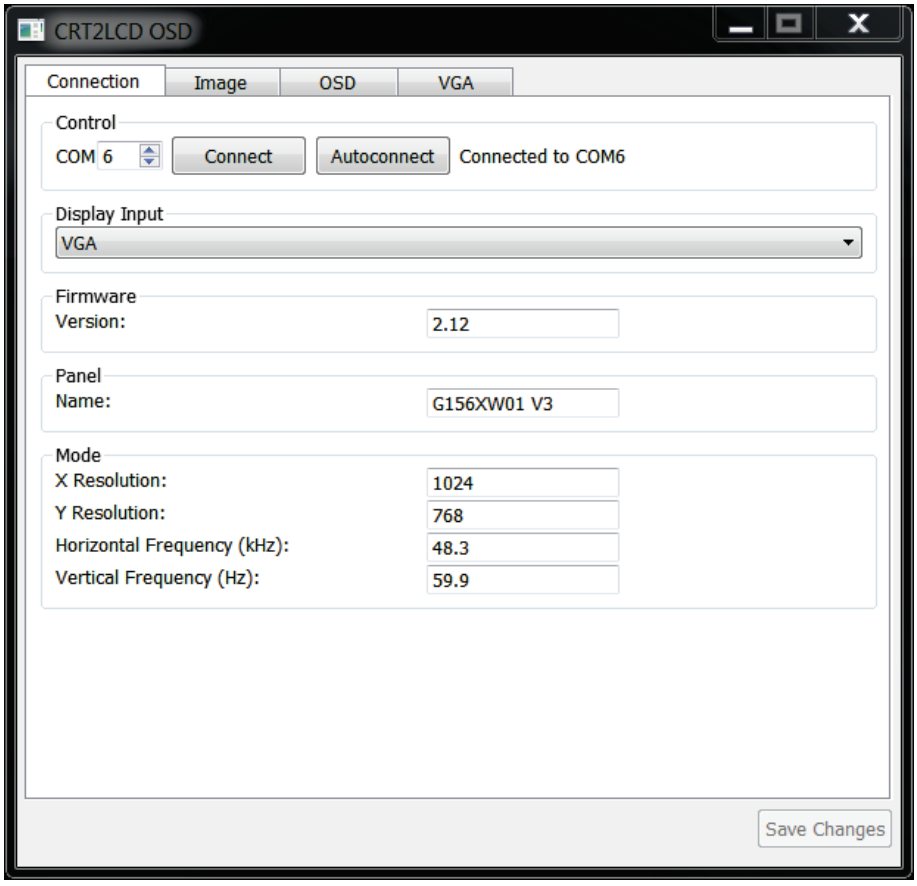


Figure 73: Screen Image of Soft-OSD

Figure 74: Screen OSD of Soft-OSD

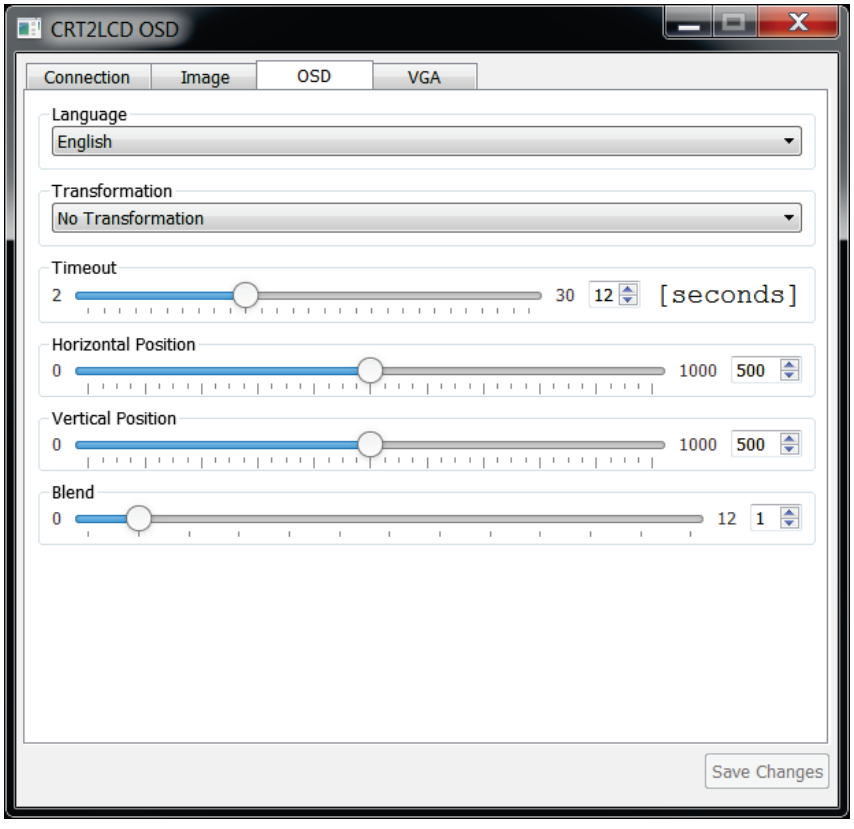
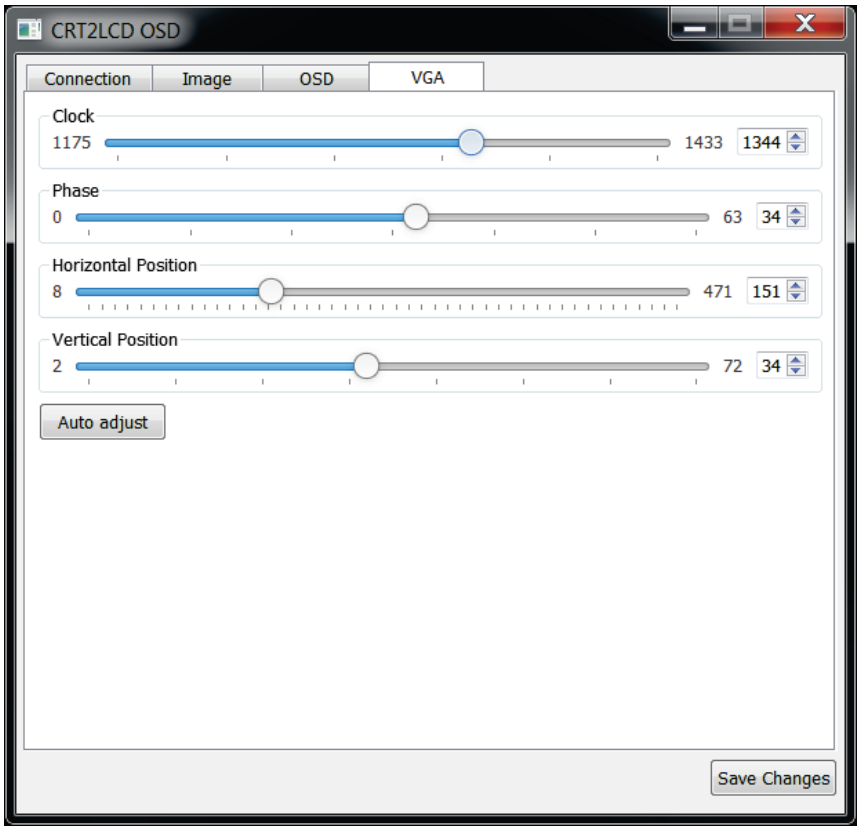


Figure 75: Screen VGA of Soft-OSD



7/ Maintenance and Cleaning

The monitor systems require minimal maintenance and care to keep them operating correctly.

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

7.1. Touch Screen Care and Cleaning

NOTICE

The touch screen is covered by an anti-glare glass plate and care should be taken when cleaning it. The front side of the touch display unit is sealed against dust and liquids.

The touch screen is protected by an anti-glare glass surface. Care should be taken to avoid using sharp objects such as knife, pen or pencil tips. Sharp objects may permanently damage the surface of the anti-glare glass plate.

Mild detergent and water is recommended for cleaning the touch screen. Use of strong solvents must be avoided. Wet the glass plate with a microfiber cloth lightly moistened with warm water and mild glass cleaner.

⚠CAUTION

- **Even when the system is turned off via the power button, there are parts of the system still energized.**
- **The unit is completely disconnected from the DC mains only when the power is removed.**
- **The DC main power supply should be able to be switched off and on via a two-pole isolating switch. 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.**

⚠WARNING

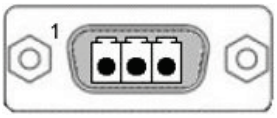
No user-serviceable parts inside. Do not open the FusionView system.

8/ Standard Interfaces – Pin Assignments

Low-active signals are indicated by a minus sign.

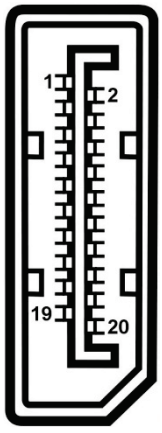
8.1.1. Power Input Connector

Table 14: Power Input Connector

Pin	Signal Name	3-pin Power Subcon (male)
1	15 to 30 V DC (input)	
2	Shield	
3	0 V (input)	

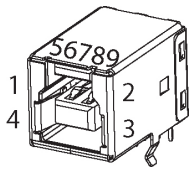
8.1.2. DisplayPort (DP)

Table 15: DP Pinout

Pin	Signal Name	DisplayPort	Signal Name	Pin
1	ML Lane 0 (p)		GND (ML Lane 0)	2
3	ML Lane 0 (n)		Lane 1 (p)	4
5	GND (ML Lane 1)		Lane 1 (n)	6
7	Lane 2 (p)		GND (ML Lane 2)	8
9	Lane 2 (n)		Lane 3 (p)	10
11	GND (ML Lane 3)		Lane 3 (n)	12
13	AUX SEL#		Pull-down to GND	14
15	AUX CH (p)		GND (AUX CH)	16
17	AUX CH (n)		Hot Plug	18
19	GND (GND_DDC)		3.3V (DDC EEPROM power 500 mA fused	20

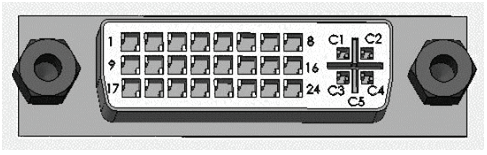
8.1.3. USB3.0 Port

Table 16: USB 3.0 Pinout

Pin	Signal Name			9-pin USB Connector Type B Version 3.0/2.0
USB 2.0 contact pins		USB 3.0 contact pins		
1	VCC, fused (900 mA max.)	5	StdA_SSRX-	
2	Data-	6	StdA_SSRX+	
3	Data+	7	GND_DRAIN	
4	GND (ground for power return)	8	StdA_SSTX-	
		9	StdA_SSTX+	

8.1.4. DVI Connector

Table 17: DVI Pinout

Pin	Signal Name	Description	DVI
1	RX2-	Receiver Signal (-)	
2	RX2+	Receiver Signal (+)	
3	GND	TMDS Data 2 shield	
4	NC	Not connected	
5	NC	Not connected	
6	DDC clock	I2C clock	
7	DDC data	I2C data	
8	VS	Analog vertical sync	
9	RX 1–	Receiver Signal (-)	
10	RX 1+	Receiver Signal (+)	
11	GND	TMDS Data 1 shield	
12	NC	Not connected	
13	NC	Not connected	
14	+5 V	Power for monitor when in standby	
15	GND	Ground (return for +5 V and analog sync)	
16	HP	Hot plug detect	
17	RX0-	Receiver Signal (-)	
18	RX0+	Receiver Signal (+)	
19	GND	TMDS Data 0 shield	
20	NC	Not connected	
21	NC	Not connected	
22	GND	TMDS clock shield	
23	RXC+	Digital clock signal+	
24	RXC-	Digital clock signal-	
C1	RED	Analog red	
C2	GREEN	Analog green	
C3	BLUE	Analog blue	
C4	HS	Analog horizontal sync	
C5	GND	Analog ground	
C6	GND	Analog ground	

9/ Technical Support

For technical assistance, please contact our Technical Support department via:

e-mail: support@kontron.com or
web: http://www.kontron.com/support-and-services

Ensure that your request contains the following information:

- unit part number (PN),
- serial number (SN), which can be found on the type label,
- a short description of the faulty behaviour of your system.

For information about Kontron products and services, please visit www.kontron.com

9.1. Returning Defective Merchandise

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

1. Download the corresponding form for returning a device with an RMA No. [RMA (Return of Material Authorization)] from our website http://www.kontron.com/support-and-services/support/RMA-information contact our customer 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 packaging.
- Enclose a copy of the RMA form with the consignment.

Appendix B – List of Acronyms

EMC	Electro Magnetic Compatibility
HMI	Human Machine Interface
I2C	Inter IC bus
I₂C / I2C	Inter-integrated circuit, two-wire serial bus
LED	Light Emitting Diode
MTBF	Mean Time Between Failures
OSD	On Screen Display
PSU	Power Supply Unit
RFID	Radio Frequency Identification
RST	Reset
USB	Universal Serial Bus
WEEE	Waste Electrical and Electronic Equipment

About Kontron

Kontron, a global leader in embedded computing technology and trusted advisor in Internet of Things (IoT), works closely with its customers, allowing them to focus on their core competencies by offering a complete and integrated portfolio of hardware, software and services designed to help them make the most of their applications.

With a significant percentage of employees in research and development, Kontron creates many of the standards that drive the world's embedded computing platforms; bringing to life numerous technologies and applications that touch millions of lives. The result is an accelerated time-to-market, reduced total-cost-of-ownership, product longevity and the best possible overall application with leading-edge, highest reliability embedded technology.

For more information, please visit: http://www.kontron.com/

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