

▶ Benutzerhandbuch/ User's Manual



21.3" Industrial LCD Monitor KFM21_e

User's Manual
Version 2.00

Kontron Embedded Computers GmbH

0-0096-2738

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Introduction

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Symbols used in this Manual

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.



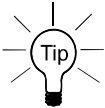
This symbol indicates that the product or parts thereof may be damaged if the corresponding warning notices are not observed.



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.

Important Instructions

This chapter contains instructions which must be observed when using the 21.3" Industrial LCD Monitor KFM21_e.

The manufacturer's instructions provide useful information on your 21.3" Industrial LCD Monitor KFM21_e.

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 the display backlighting, for example.

Exclusion of Accident Liability Obligation

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

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 on the device (especially the safety instructions), Kontron Embedded Computers shall not be required to honor the warranty even during the warranty period and shall be exempted from the statutory accident liability obligation.



Safety Instructions

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

This chapter also contains information on approval and interference suppression of your KFM21_e.

The device has been built and tested by Kontron Embedded Computers in accordance with EN 60950/VDE 0805 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 contained in this 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.
- Only use the power cord supplied.
- The unit is only completely disconnected from the main power source when the power cord is disconnected either from the power source or from the unit. Therefore, the power cord and its connectors must always remain easily accessible.
- Only devices and components which fulfill the requirements of a SELV circuit (Safety Extra Low Voltage) in accordance with EN 60950 may be connected to the interfaces of the system.
- All plugs on the connection cables must be screwed or locked to the housing.

- ❑ Do not place the device near heat sources or in a damp place. Make sure the device has adequate ventilation.
- ❑ The device is designed to be used in vertical position.
- ❑ Repairs may only be carried out by a person authorized by Kontron Embedded Computers.
- ❑ Maintenance or repair on the open device may only be carried out by qualified personnel authorized by Kontron Embedded Computers which is aware of with the associated dangers.
- ❑ It is not allowed to open the device.
- ❑ Only original accessories approved by Kontron Embedded Computers may be used.
- ❑ 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.

FCC Statement

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.

Electromagnetic Compatibility

This product has been designed for industrial, commercial and office use, including small business use. The most recent version of the EMC guidelines (EMC Rules 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.

Scope of Delivery

- 21.3" Industrial LCD Monitor KFM21_e
- This user manual for KFM21_e
- KFM – OSD-Menu - Description
- AC-Power cord
- VGA-cable connector
- 16x (M5) nut, DIN934, ST-ZN
- 16x 5.3 washer, DIN125

Type Labels and Product Identification

The type label of your KFM21_e is attached at the back of the device.

Type Label	Product Identification
KFM21_e	21.3" Industrial LCD Monitor KFM21_e with AC power supply unit

Product Description

The KFM21_e is a monitor which is designed for high-performance industrial applications. The solid type of enclosure offers the Monitor KFM21_e a mechanical stability. KFM21_e is proper therefore for industrial use. Excellent image representation, simple menu-driven handling and Plug & Play ability rounds off the qualities of this monitor.

The built-in display is a 21.3" TFT UXGA display with up to 1600 x 1200 resolution and 250 cd/m² luminance (brightness). The big flat screen area provides an excellent image quality (minimizes geometric distortions and being antireflection), allows perfect view.

The protection pane built-in in front of the display is made of special glass and protects the display from destruction of mechanical manner, for example get dirty, scratches at the display surface. The representation quality of the display is optimized also by the antireflection property of the protection pane.

The operating buttons of the On Screen Displays (OSD), the power On/Off button and the LED indicator can be mounted on the front side or on the rear side, right (refer to the "Operating Elements and LED Indicator" chapter.

The Monitor KFM21_e comes with VGA (analog)-, DVI-D (digital), S-Video-, Composite video signal inputs and provides therewith compatibility with the existing and the future computer-generation.

The integrated power supply is an AC-power supply "wide range".

The supply voltage range is indicated on the type label.

The type label and the approval marks are placed on the back of the unit.



Fig. 1: KFM21_e (with front side mounted operating element and LED indicator)



Fig. 1a: KFM21_e (with laterally mounted operating elements and front side LED)

Front Panel

The KFM21_e is available as panelmount unit in two version (refer to the pictures below).



Fig. 2: KFM21_e – with front side mounted operating elements and LED indicator)



Fig. 2a: KFM21_e – with front side mounted “LED indicator” (if the OSD menu buttons and the power On/Off button are laterally mounted)

Legend for Fig 2 and 2a:

- 1 Front panel
- 2 21.3" display with protection panel
- 3 Front side mounted operating elements and LED indicator
- 4 LED indicator (if the OSD menu buttons and the power On/Off button are rear side mounted)

The front panel of the monitor KFM21_e is suitable for the installation into control panels or other cabinets. The protection class IP 65 is ensured at the front side of the monitor.

The threaded bolts for the installation into a control panel or other cabinet are located in the back of the front panel (see section "Rear Side").

Operating Elements and LED Indicator

At the right side of the front panel are the control keys of the on screen display (OSD), the "power On/Off button" and "LED indicator".

Controls of the ON Screen Display (OSD)

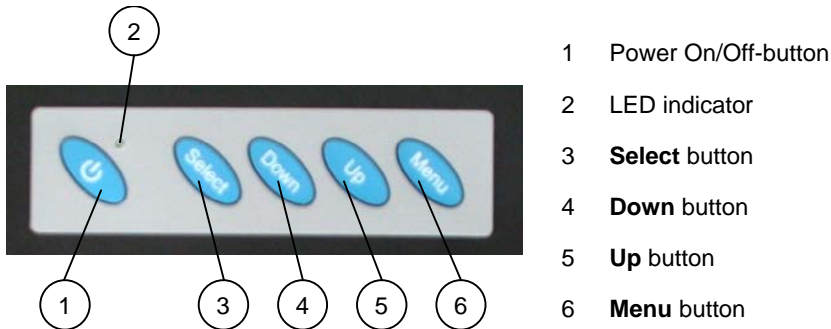


Fig. 3: Controls and LED indicator (for front side mounted controls and LED indicator)



The keys of the OSD menu and the power On/Off button can be optionally mounted to the right side of the monitor (rear-mounted).



The OSD key allows to select, to scroll, to install in the OSD main menu or OSD submenu (refer to the “On Screen Display (OSD)” chapter).

Power On/Off Button

Press this button to turn on or off the Monitor KFM21_e.



Even if you switch the monitor off with the “power On/Off button”, a standby voltage of 5 V is further present in the device.

The unit is complete disconnected from the power source, only when the power cord is disconnected from the power source.

Therefore the power cord and its connectors must always remain easily accessible.

LED Indicator (green)

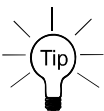
Is light up green when the device is switched on by pressing of the “power On/Off button” and a video signal is present at the selected video-input.

Prerequisite:

The AC power cord must be attached to a power supply source.



The LED indicator is at the front side for KFM21_e versions with OSD control keys mounted to the right side (rear-mounted); (refer to *Fig. 2.a*).



If this LED does not light up after turning on the device, then you must check the mains power source and the presence of the video signal at the monitor video signal input.

Display

The built-in display is a 21.3" TFT UXGA display with up to 1600 x 1200 resolution and 250 cd/m² of luminance (brightness). In front of the display there is installed a protection pane with antireflection properties. This protects the display surface from dirt and scratching also. The technical specification of the built-in display you can find out in the chapter "Main Specification".

Left Side

The interfaces and the AC power plug are situated at the left side of the monitor.

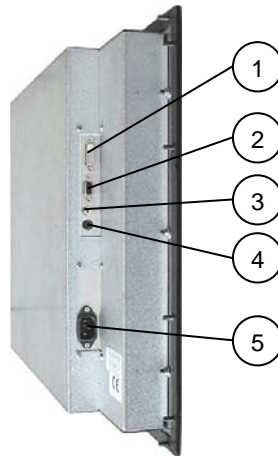


Fig. 4: KFM21_e - left side

- | | | | |
|---|---------------------------|---|-------------------|
| 1 | DVI-D (digital) interface | 4 | S-Video interface |
| 2 | VGA (analog) interface | 5 | AC-power plug |
| 3 | Composite Video interface | | |

Interfaces

The following interfaces with standard pin assignments are available:

- VGA (analog) input
- DVI-D (digital) input
- S-Video input
- C-Video (Composite Video) input



You can connect one corresponding signal source to each interface at the same time. By means of the OSD-menu function “input select” you can select, which of the signal source shall be represented on the display.

VGA Input

The VGA input is a 15-pin D-SUB connector (female), and allows you to connect an analog graphic card, by use of the supplied VGA-cable connector.

Monitor KFM21_e supports at this interface data transfer with up to 1600 x 1200 resolution (UXGA).

DVI-D Input

This interface support digital data transfer. The DVI-D connector (female) allows to connect only digital (DVD-D) graphic cards.

The KFM21_e supports at this interface data transfer with up to 1600 x 1200 resolution (UXGA).

S-Video Input

The S-Video-input is a 4-pin MiniDIN connector (female), and allows you to connect external analog signal sources as e.g. DVD or video player.

The KFM21_e supports at this interface TV pictures format PAL (720 x 576) and NTSC (720 x 480).

Composite-Video Input

The Composite Video input is a cinch connector (yellow)(female), and allows you to connect external analog signal sources as e.g. DVD- or video-player.

The KFM21_e supports at this interface TV pictures format PAL (720 x 576) and NTSC (720 x 480).

Power Plug

The power plug is an inlet connector for non-heating appliances and allows the connection to the power source through the power cord (supplied).

Right Side



The control keys of the “On Screen Displays” and the “power On/Off button” can be mounted optionally on the right side of the monitor (rear mounted).

The “LED indicator” is for this version of the KFM21_e on the front panel (refer to *Fig. 2a*).

(Option) Control Keys of the OSD and Power On/Off Button

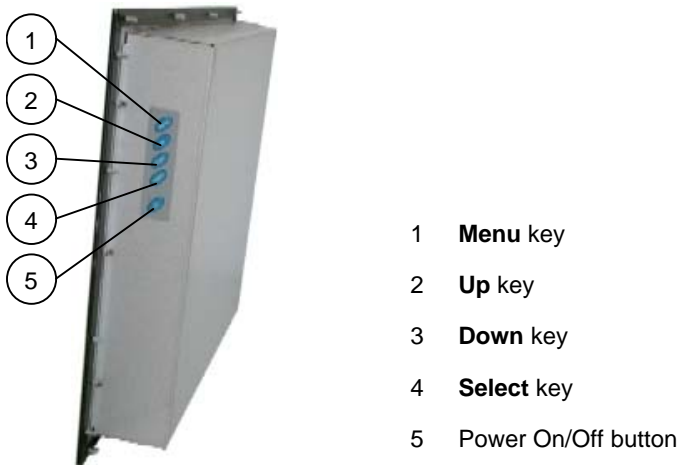


Fig. 5: KFM21_e - right side

Power On/Off Button

Press this button, in order to switch on or off the monitor KFM21_e.



Even if you switch the monitor off with the “power On/Off” button”, a standby voltage is further present in the device. The unit is complete disconnected from the power source, only when the power cord is disconnected from the power source. Therefore the power cord and its connectors must always remain easily accessible.

Rear Side

At the device rear side are the threaded bolts (four bolts M5 on each side) used for installation into control panels or other cabinets (see chapter “Installation Instructions”).

On the rear side of the monitor are attached the type label and the approval marks.

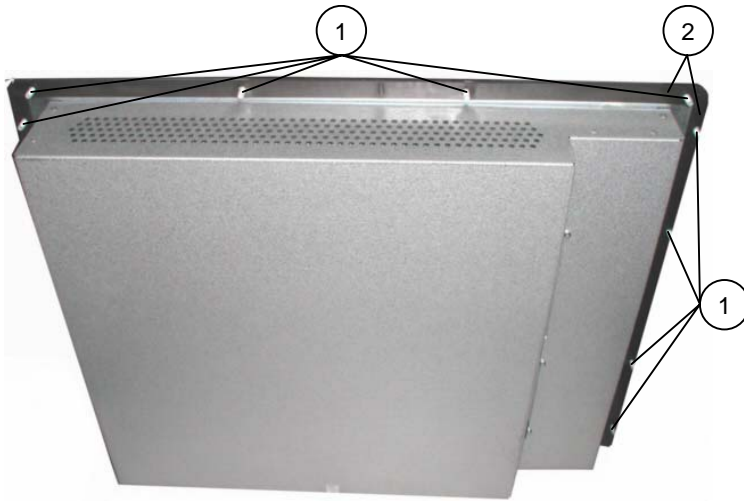


Fig. 6: KFM21_e - back-side

- 1 Threaded bolts for installation into control panels or other cabinets
- 2 Rubber seal

Air Openings

Behind the front plate, at the upper and bottom side of the chassis are the air openings.



Fig. 7: Air openings (top side)



Fig. 8: Air openings (bottom side)



When installing and switching on the monitor, make sure that the air openings at the bottom and top side of the device (behind the front panel) are not obstructed.

Power Supply

The monitor KFM21_e is equipped with one “wide range” AC-power supply.

The supply tension range can be read off the type label attached on the back of the unit.

For information about the supply voltage range of your device, refer to the type label attached on the back side of the unit.

System Version	Integrated PSU	Input
KFM21_e	AC-Power supply “wide range”	100 - 240 VAC 50 - 60 Hz max. 0.6 A

Power Cord Connection



Use the power cord suitable for the power supply in your country.

Do not remove or alter the grounding prong on the power cord. In situations where a two-slot receptacle is present, have it replaced with a properly grounded three-prong grounding type receptacle.



Please observe the hints described in the chapter “Safety Instructions”.

1. Connect the AC power cord into the system AC power plug.
2. Connect the AC power cord into an outlet.

On Screen Display (OSD)

Over the On Screen Display (OSD) can be installed the features, as OSD position and time, brightness, contrast, color, sharpness and others.

Some of these menus have sub-menus.

The push buttons allow to select, to scroll, to install in the OSD main menu or OSD-submenu.

Operation of the OSD Menu

1. Press <Menu> to display the main-menu.
2. Move between the functions of the main-menu by use of the buttons <Up> and <Down>.
3. Press the button <Menu> to choose a main-menu function.
4. Moving between the sub-function by use of the buttons <Up> and <Down>.
5. Press the button <Menu> to choose a sub menu function.
6. Adjustment of the sub-menu values by use of the button <Up> (to increase) and the button <Down> (to decrease).
7. Press the button <Menu> to choose the sub menu values.
8. To save a new setting, press the button <Menu> of the KFM21_e.
9. Press the button <Select> to leave ("Exit") the sub-menu.
10. Press the button <Select> to leave ("Exit") the main-menu.



The OSD menu and the possible settings are described in the provided "KFM - OSD Menu Description" documentation.

Installation Instructions



Please observe the described hints in the “Safety Instructions” chapter and the specification listed in the “Main Specification” chapter.

Instruction for the Mounting



Please take the needed free space on the interface side and operation field [OSD keys and power On/Off button (if the version of the KFM21_e is with laterally mounted operating elements)] into account, before you install the monitor into a control panel or other cabinet.

You find the description of the interfaces being available in the “Left Side” section.



Important Instructions!

The monitor KFM21_e has to be installed and operated only by trained and qualified personal.

Since the device may weigh up to 15 kg, it is advisable to have a colleague assist in the installation.

Make sure there is sufficient air circulation around the device when installing the industrial LCD-Monitor KFM21_e.

The openings for cooling on the device (on upper and down side) must not be obstructed by objects or the like. If the cooling openings are blocked, this can cause an overheating of the monitor.

When installing the KFM21_e into a control panel or other cabinet, leave at least 5 cm of space free around the unit to prevent the device from possibly overheating!

The control panel or the cabinet must stand firmly in place.

If further stabilization is necessary, then bolt the control panel or the cabinet to the floor or anchor it on the wall.

The voltage feeds must not be overloaded. Adjust the cabling and the external overcharge protection to correspond with the electrical values indicated on the type label.

The type label is located on the back side of the device.

Assembly into a Control Panel

At the back side of the monitor KFM21_e there are 16 threaded bolts (each four bolts on every side) used for installation into a control panel or other cabinet.

A cutout and 16 drill-holes ($\varnothing 7.5$ mm) corresponding the dimension in the hole pattern, have to be prepared first for a panel installation. The monitor will be tighten using the 16 M5 nuts and the 5.3 mm washers. Before bolt together, remove the rubber seal protection foil on the rear side of the front panel. The contact surface with the rubber seal must be clean and appropriately flat. The front of the KFM21_e is sealed in accordance with IP65).

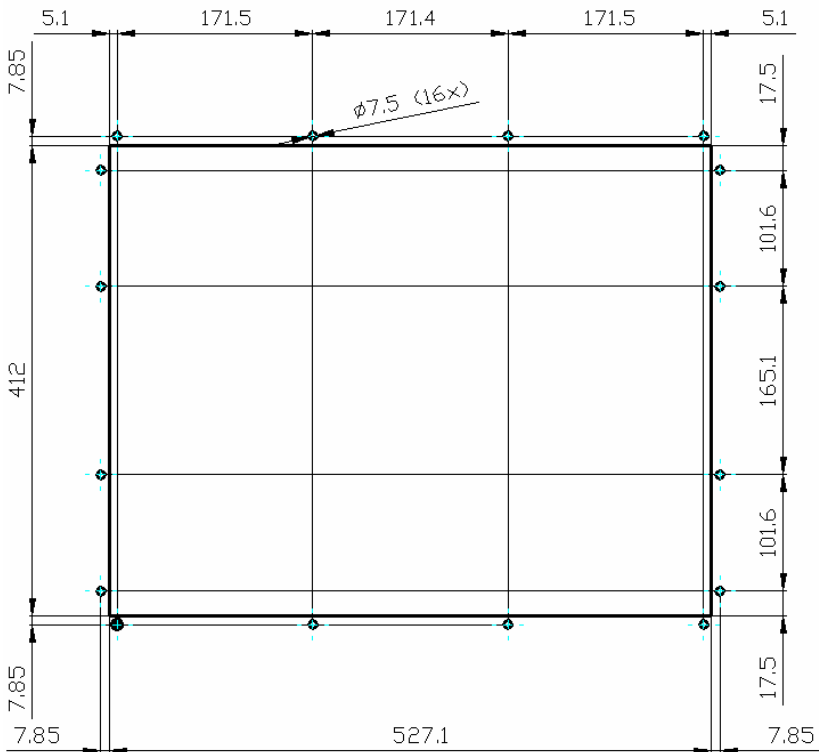


Fig. 9: Hole pattern for KFM21_e mounting
(all value in mm)

Monitor Connecting and Turning On

The KFM21_e can be connected to IBM PC-systems equipped with corresponding graphics capability.

1. Connect the PC-system's video signal-output interface to the video signal-input of the KFM21_e by use of the video signal cable (only the VGA cable connector is supplied).
2. Connect the power cord as described in the chapter "Power Cord Connection".
3. Push the "power On/Off button" to turn on the monitor.



When the screen is not in use, it must be turned off or the pattern must be frequently changed by a screen saver.

If it displays the same pattern for a long period of time, brightness down or image sticking may develop due to the structure of LC-Displays.

Maintenance and Prevention

Kontron Embedded Computers systems only require minimal maintenance and care to keep them operating correctly.

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



Use no abrasives, abrasion sponges, steel wool, metal threads, or solvent like alcohol, acetone, washing gasoline to clean the displays protection pane.

Main Specifications

TFT LCD Display	Diagonally (Size)	21.3" (432 x 324 mm)
	Resolution	Up to 1600 x 1200 dpi
	Pixel Pitch	0.270 mm x 0.270 mm
	Display colors	3x 8-Bit, 16.7 Mio. colors
	Backlight	6x CCFT
	Brightness	250 cd/m ²
	Viewing angle	170° (symmetrical)
	Contrast ratio	550:1
	Reaction time	< 20 ms
	H-Frequency	75 kHz
	V-Frequency	60 Hz
Interfaces	At the left side (rear mounted): 1x VGA (analog) input 1x DVI-D(digital) input 1x S-Video (analog) input 1x Composite Video(analog) input	
Operating Elements	Optional at the front side or right side (rear-mounted): 1x Power On/Off button for image representation adjustment on-screen: 1x Menu key of OSD 1x Up key of OSD 1x Down key of OSD 1x Select key of OSD	
LED Indicator	At the Front side: 1x Power LED	
Plug & Play Compatibility	Display Data channel DDC2B (VESA)	
AC-Power Plug	At the left side (rear-mounted)	
Power Consumption	65 W	
Protection Class	IP65 frontal	

Mechanical Specifications

Dimensions	Overall	Panel
Height	443.7 mm (17.468")	443.7 mm (17.468")
Width	558.8 mm (22")	558.8 mm (22")
Depth	83 mm (3.268"); required fitting depth: 80 mm (3.15")	3mm (0.118")
Weight	Approx. 15 kg (33.069 lbs) (without packaging)	
Material	steel zinc-plated	steel zinc-plated Frontal: black powder coated

Electrical Specifications

System Version	Integrated PSU	Input
KFM21_e	AC Power Supply (wide range)	100 - 240 VAC 50 - 60 Hz max. 0.6 A

Environmental Specifications

Operating Temperature	0 ... +50°C (32 122°F)
Storage / Transit Temperature	-20 ... +65 °C (-4 ... 149 °F)
Relative Humidity	10 – 85 % (non condensing)
Operating Altitude	10,000 ft (3,048 m)
Storage / Transit Altitude	25,000 ft (7,620 m)
Operating Shock	15 G, 11 ms duration, half sine
Storage / Transit Shock	30 G, 11 ms duration, half sine
Operating Vibration	10 – 58 Hz, ± 0.15 mm 58 – 500 Hz, 1.0 G
Storage / Transit Vibration	10 – 58 Hz, ± 0.15 mm 58 – 500 Hz, 1.0 G
Operating Discharge	8.0KV DC (IEC 801-2, level 3)

EC Directives and Standards

EC Directives	
Low Voltage Directive (Electrical Safety)	2006/95/EC
EMC Directive	2004/108/EC
EC Marking	93/68/EEC

Electrical Safety	Standards
EUROPE	EN 60950-1: 2006
U.S.A.	to meet UL 60950-1: 2003 First Edition

EMC	Standards
EUROPE	Generic emission standard for industrial environments (Emission): EN 61000-6-4: 2001 Generic standards – Immunity for industrial environments (Immunity): EN 61000-6-2: 2005
USA	FCC 47 CFR Part 15, Class A

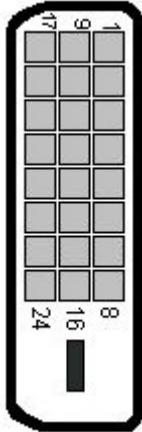
Technical Appendix - Interfaces

The following tables show the plug assignments for the external connections of the KFM21_e.


VGA Connector

Pin	Signal Name	15-pin D-SUB-Socket (female)
1	red	
2	green	
3	blue	
4	4 is NC	
5-8	GND	
9	Fused VCC	
10	GND	
11	NC	
12	DDC Data	
13	HSYNC	
14	VSYNC	
15	DDC Clock	


DVI-D Connector (Single Link)

Pin	Signal Name	Description	DVI-D Connector (female)
1	TMDS2-	Differential TMDS Data 2-	
2	TMDS2+	Differential TMDS Data 2+	
3	GND	TMDS Shield	
4-5	NC	Reserved for future use	
6	DVI_SCL	DDC EDID data clock	
7	DVI_SDA	DDC EDID data	
8	NC	Reserved for future use	
9	TMDS1-	Differential TMDS Data 1-	
10	TMDS1+	Differential TMDS Data 1+	
11	GND	TMDS Shield	
12-13	NC	Reserved for future use	
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	Reserved for future use	
22	GND	TMDS Shield	
23	TMDSSCL-	Differential TMDS Clock-	
24	TMDSSCL+	Differential TMDS Clock +	
C1	NC		
C2	NC		
C3	NC		
C4	NC		
C5- C6	GND	Ground	

S-Video Connector

Pin	Signal Name	Description	4-pin MiniDIN-Connector (female)
1	GND	Ground	
2	GND	Ground	
3	Y	Luminance	
4	C	Chrominance	

C-Video (Composite) Connector

Pin	Signal Name	Description	Cinch-Connector (yellow) (female)
1	GND	Ground	
2	CVBS	Composite video signal	

Technical Support

For technical support, please contact our Technical Support department.

Tel: +49 (0)9461 950-104

Fax: +49 (0)9461 950-200

e-mail: support@kontron.com

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

- the unit part id number (P/No #),
- and the serial number (S/No #) of the unit (provide the serial number found on the type label, placed on the right side of the system).

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

If you have questions about Kontron Embedded Computers or our products and services, you may reach us at the aforementioned numbers, or at: www.kontron.com or by writing to:

Kontron Embedded Computers GmbH

Oskar-von-Miller-Str. 1

85386 Eching

Returning Defective Merchandise

Before returning any merchandise, please:

1. Contact our Customer Service department to obtain an RMA (Return Material Authorization) number.
Fax: (+49) 8165-77 412
e-mail: service@kontron.com
2. Make sure that you receive an RMA number from Kontron Embedded Computers-Service before returning any merchandise. Clearly write or mark this number on the outside of the package you are returning.
3. Describe the device failure behavior.
4. When returning goods, include the name and telephone number of a person whom we can contact for further explanations if necessary. Where applicable, always include all duty papers and invoice(s) associated with the item(s) in question.
5. When returning a unit:
 - Ensure that the unit is properly packed in the original box.
 - Include a copy of the RMA form.