➤ **Benutzerhandbuch/
User's Manual**

➤ **15" Industrial LCD Monitor
KFM15_e**

User's Manual
Version 2.20

Kontron Embedded Computers GmbH

0-0096-2746

kontron

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Introduction

Kontron Embedded Computers would like to point out that the information contained in this manual may be subject to technical alteration, particularly as a result of the continuos upgrading of Kontron Embedded Computers products. The attached documentation does not entail any guarantee on the part of Kontron Embedded Computers with respect to technical processes described in the manual or any product characteristics set out in the manual. Kontron Embedded Computers does not accept any liability for any printing errors or other inaccuracies in the manual unless it can be proven that Kontron Embedded Computers is aware of such errors or inaccuracies or that Kontron Embedded Computers is unaware of these as a result of gross negligence and Kontron Embedded Computers has failed to eliminate these errors or inaccuracies for this reason. Kontron Embedded Computers expressly informs the user that this manual only contains a general description of technical processes and instructions which may not be applicable in every individual case. In cases of doubt, please contact Kontron Embedded Computers.

Kontron Embedded Computers GmbH
Oskar-von-Miller-Str. 1

85386 Eching near Munich
Germany

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.
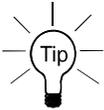
This symbol precedes helpful hints and tips for daily use.

Important Instructions

This chapter contains instructions which must be observed when using your industrial LCD monitor KFM15_e.

The manufacturer's instructions provide useful information on your industrial LCD monitor KFM15_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 KFM15_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.

❏ Maintenance or repair on the open device may only be carried out by qualified personnel authorized by Kontron Embedded Computers familiar 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

❏ Industrial LCD monitor KFM15_e (A or B)

❏ This user manual for the industrial LCD monitor KFM15_e

❏ KFM – OSD-Menu - Description

❏ AC power cord (for AC version only)

❏ VGA-cable connector (2 m)

❏ 8x M4 nut

❏ DC Phoenix connector power plug terminal (for DC version only)

Optional Parts

❏ USB or serial (COM) touch screen cable connector depending on the ordered touch screen terminal configuration (optional)
Available lengths for:
USB cable connector (Type A, male - Type A, male): 2m, 5m
COM (RS232) cable connector: 2 m, 5 m, 10 m

❏ VGA cable connector
Available lengths: 2 m, 5 m, 10 m)

❏ DVI cable connector
Available lengths: 2 m, 5 m)

❏ CD-ROM with the installation software and the driver for touch screen (if the KFM15_e is ordered with the optional touch screen)

Type Labels and Product Identification

The type label of your monitor KFM15_e is attached at the back of the device.

Type label	Product identification
KFM15_e - A	Industrial LCD Monitor KFM15_e with AC power supply unit
KFM15_e - B	Industrial LCD Monitor KFM15_e with DC power supply unit

Product Description

The KFM15_e is an industrial LCD monitor designed for high-performance industrial applications. The solid type of enclosure offers to the monitor a mechanical stability. KFM15_e is therefore proper for industrial use. Excellent image representation, simple menu-driven handling and plug & play ability round off the qualities of this monitor.

The built-in display is a 15" TFT XGA display with 1024 x 768 resolution and 350 cd/m^2 luminance (brightness).

The protection pane built-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 optimised also by the antireflection property of the protection pane.

Optionally the monitor can be equipped with a touch screen.

The KFM15_e comes with VGA (analog)-, DVI (digital)-, S-Video (analog)-, Composite-video (analog)- signal inputs and provides compatibility with the existing and the future computer-generation.

The KFM15_e can be equipped with an AC or a DC power supply unit. The supply voltage range is indicated at the type label. The type label and the approval marks are placed on the back of the unit.

Fig 1: Industrial LCD monitor KFM15_e (shown as 19" rackmount version)

☞ Please take care when installing and powering on the monitor, that the air openings at the bottom and upper side of the device (behind the front panel) must be not obstructed by objects.

Front Panel

The front plate of the KFM15_e is available alternatively as 19" front plate or in panel mount version.

The 19" front plate version is suitable for the installation of the monitor in 19" industrial cabinets. Therefore four mounting holes are available.

The panel mount version is suitable for the installation of the monitor in an instrument panel or other cabinets. Therefore at the rear side of the front plate are available eight threaded studs.

At the front side are the control elements of the on screen displays (OSD), the "On/Off-button" with the "Status LED" that indicate the status of the monitor, the 19" front plate and the 15" display with the protection pane or touch screen (optional).

The protection class IP 65 is ensured at the front side of the monitor.
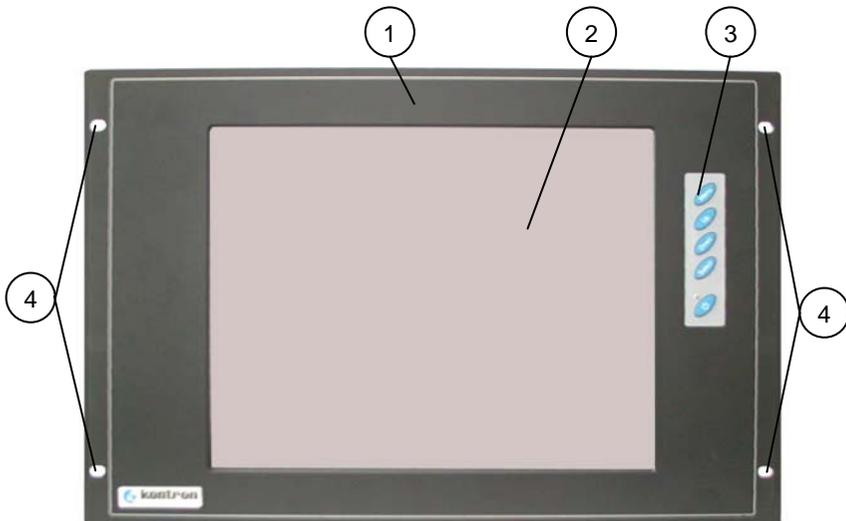
Fig. 2: KFM15_e – front side (shown as19"front plate version)

1 Front panel (shown as 19" rackmount frontpanel9

2 15" display with protection plate or touch screen (optional)

3 Controls and LED-indicator

4 Mounting holes

Display

The built-in display is a 15" TFT XGA display with a resolution of 1024 x 768 and 350 cd/m^2 of luminance (brightness). In front of the display is installed a glass protection pane with antireflection properties. This protects the display surface from dirt and scratches also. The technical specifications of the built-in display are listed in the chapter "Main Specifications".

Display with Touch Screen

The KFM15_e can be equipped optionally with a resistive touch screen. The installed touch screen is a 4-wire resistive touch screen. The terminal configuration of the touch screen can be alternatively an USB or a COM interface.

The touch screen is connected by means of provided cables via the COM (RS232) or USB interface to an external PC with corresponding interface.

The display surface of the KFM15_e is also mechanically protected through the touch screen. The touch screen registers contact of a finger or a pen and moves the mouse pointer. These functions under integration of the necessary software only (see chapter "Installation of the Touch Screen Software").
You get the corresponding touch screen driver for your operating system on a storage media (CD-ROM) supplied.

Controls and LED Indicator

At the right side of the front plate are situated the control buttons of the On Screen Display (OSD), the "On/Off button" and the "Status LED".

i | 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).

1   Menu-button

2   Up-button

3   Down-button

4   Select-button

5   LED-indicator
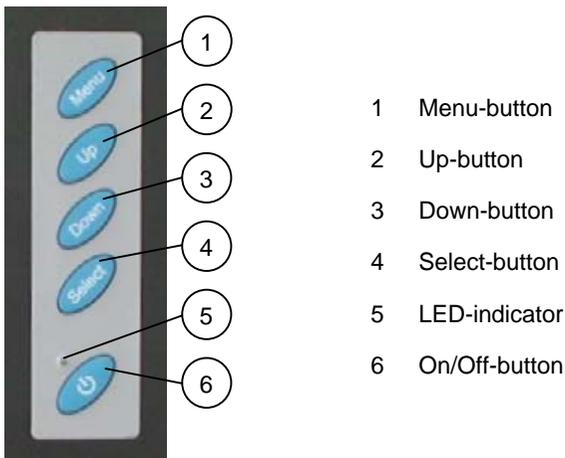
6   On/Off-button

Fig. 3: Controls and LED-indicator

On/Off Button and LED-Indicator

On/Off Button   Press this button, in order to switch on or off the monitor KFM15_e.

⚠ | Even if you switch the monitor off with the "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.

Status-LED (green) This LED lights up green, if the monitor is switched on and the data source is available.

> **Prerequisite:**
> The power cord must be connected to a corresponding power source.

Status-LED (orange) This LED lights up orange, if the monitor is switched off or no data source is available.

> **Prerequisite:**
> The power cord must be connected to a corresponding power source.
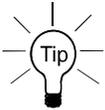
If this LED does not light up after turning on the device, then you have to check the mains power source.

On Screen Display Buttons

The push buttons of the On Screen Display allow you to select, to scroll, to install in the OSD main menu or OSD submenu (see chapter "On Screen Display (OSD)".

Left Side

The interfaces and the power plug (AC or DC) are on the left side of the monitor.

1   DVI-D (digital) - interface

2   VGA (analog) - interface

3   Composite-Video - interface

4   S-Video - interface

5   Optional touch screen terminal (USB or COM2) (shown without interface)

6   AC- or DC- power-plug (depending on the ordered version) (shown with AC power plug)
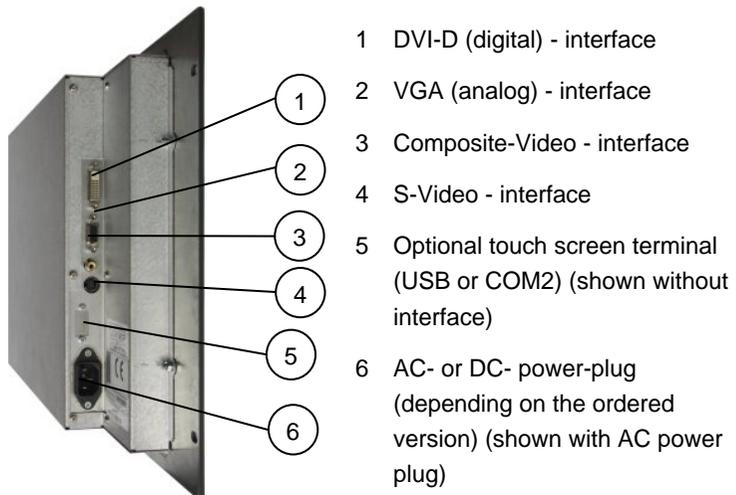
Fig. 4: KFM15_e - left side

Interfaces

The following interfaces with standard pin assignments are available:

❏   VGA (analog) - input

❏   DVI-D (digital) - input

❏   S-Video (analog) - input

❏   C-Video -Composite Video- (analog) - input

❏   USB / COM interface as the touch screen terminal

You can connect one corresponding signal source to each video interface at the same time. By means of the OSD-menu function "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. The industrial LCD monitor KFM15_e supports at this interface data transfer with a resolution up to 1024 x 768 (XGA), @ 85 Hz and Sync-On-Green (SOG).

DVI-D – Input

This Input is configured as a DVI-D "digital" (female) interface. This interface support digital data transfer.
The industrial LCD monitor KFM15_e supports at this interface data transfer with a resolution up to 1024 x 768 (XGA).

S-Video – Input

The S-Video-input is a 4-pin mini DIN connector (female), and allows you to connect external analog signal sources as e.g. DVD- or video-player.
The industrial LCD monitor KFM15_e supports at this interface TV pictures format PAL (768 x 576), NTSC (640 x 480) and SECAM.

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 industrial LCD monitor KFM15_e supports at this interface TV pictures format PAL (768 x 576), NTSC (640 x 480) and SECAM.

USB/COM Touch Screen Terminal

| ![i] | This interface is available (as an USB or serial COM interface) only if the industrial LCD monitor KFM15_e is equipped with touch screen. |

Depending on the ordered configuration of the touch screen connector, this interface is provided as:

❏ USB interface (version 1.1, type A, female) or as

❏ Serial COM interface (9 pin D-SUB socket), RS232 configured.

Power Plug

The power plug is an AC-inlet connector or a DC-Phoenix connector (depending on the ordered version) and allows the connection to the corresponding power source through the power cord (supplied).

Air Openings

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

Fig. 5: upper air openings

Fig. 5a: bottom air openings

☞ Please take care when installing and powering on the monitor, that the air openings at the bottom and upper side of the device (behind the front panel) must be not obstructed by objects.

Power Supply

The KFM15_e can be equipped with an AC PSU or a DC PSU.

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

System Version	Integrated PSU	Input
KFM15_e - A	AC Power Supply	100 - 240 VAC 50 - 60 Hz max. 0.3 A
KFM15_e - B	DC Power Supply	18 - 36 VDC max. 1.5 A

i The suffix "-A" on the type label (System Version, KFM15_e-A) of the system stands for the marking of the Kontron-devices, which are equipped with an AC power supply unit.

The suffix "-B" on the type label (System Version, KFM15_e-B) of the system stands for the marking of the Kontron-devices, which are equipped with a DC power supply unit.

Power Cord Connection

☞ Please observe the hints described in the chapter "Safety Instructions".

The voltage of the power source must agree with the voltage value on the type label.

AC Connection
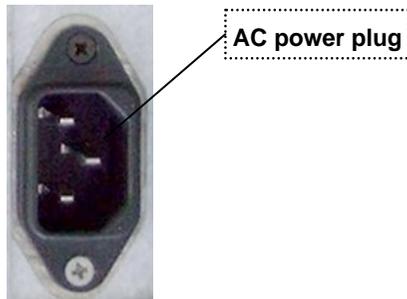
Abb. 6: AC power plug

1. Connect the supplied AC power cord into the system AC power plug.

2. Connect the other end of the AC power cord into a corresponding outlet.

⚠ 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.

DC Connection

☞   The length of the DC connecting wires may not exceed 10 m.
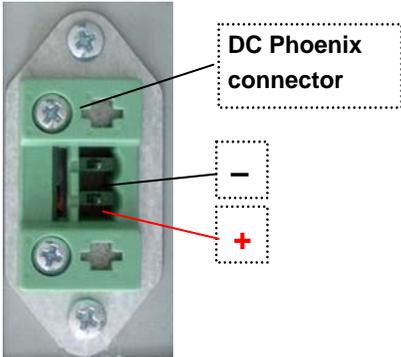
Fig. 7: DC Phoenix connector
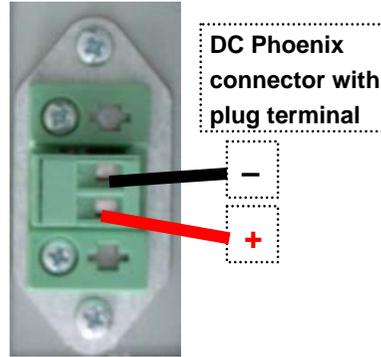
Fig. 7a: DC Phoenix connector with plug terminal (supplied)

For the DC connection prepare the connecting wires using the supplied Phoenix plug terminal.

1. Cut the required length of two isolated wires ($\varnothing$ up to 1.5 mm^2).

2. Strip each end 5 –7 mm.

3. Twist the striped wire ends and tin it with solder.

4. Loosen the two slotted pan head screws of the DC plug terminal far enough so that you can insert the end of the power cord.
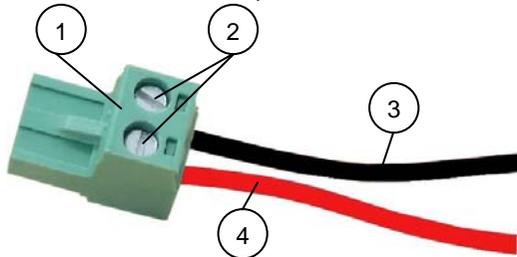
Fig. 8: Phoenix plug terminal with positive and negative voltage wire (example)

1	Phoenix plug terminal	3	Negative voltage wire (black)
2	Slotted pan head screws	4	Positive voltage wire (red)

5. Insert the negative and positive voltage wire into the corresponding clamp of the Phoenix plug terminal. Make sure that you have the right polarity of the connection (see *Fig: 7a*).

6. Fasten the screws to secure the negative and positive voltage wire into the clamps of the plug terminal.

☞ The second end of each wire will be prepared as required for the connection to the DC power supply.

Connect the KFM15_e to the DC power source as follows:

7. Plug the one end of the DC cable connection (Phoenix plug terminal) to the Phoenix plug of the KFM15_e.

8. Connect the other end of the DC cable connector to a corresponding DC power source.

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. The buttons <Up> and <Down> allows moving between the functions of the main-menu by use of.

3. Press the button <Menu> to choose a main-menu function.

4. The buttons <Up> and <Down> allow moving between the sub-function.

5. Press the button <Menu> to choose a sub menu function.

6. The button <Up> (to increase) and the button <Down> (to decrease) allows the adjustment of the sub-menu values.

7. Press the button <Menu> to choose the sub menu values.

8. To save a new setting, press the button <Menu> of the KFM15_e..

9. Press the button <Select> to leave the sub-menu.

10. Press the button <Select> to leave 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 chapter "Safety
           Instructions" and the specification listed in the chapter "Main
           Specifications".

Instruction for Mounting

☞   Please take into account the needed free space on the interface
           side, before you install the monitor into an industrial cabinet, an
           instrument panel or other cabinets.

           You find the description of the interfaces being available in the
           section "Interfaces".

Important Instructions!
KFM15_e has to be installed only by trained and qualified
personal.

Make sure there is sufficient air circulation around the device
when installing the KFM15_e.
The openings for cooling (on upper and bottom side of the device)
must not be obstructed.
When installing KFM15_e into an industrial cabinet, leave at least
5 cm (approx. 2") of free space around the unit to prevent the
device from possibly overheating!

The 19" industrial cabinet must stand firmly in place.
If further stabilisation is necessary, then bolt the industrial 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 left side of the monitor.

Panel Mount Version

If you install the panel version of the KFM15_e into an instrument panel or other cabinet, use the eight threaded studs M4 on the rear side of the front plate.

For the panel assembly, cut a window and eight pre-drill holes according figure 6. The system must be attached firmly with eight M4 metric nuts. Before mounting, remove the protective film on the rubber seal at the rear side of the display front plate. The contact surface with the rubber seal must be clean and flush.
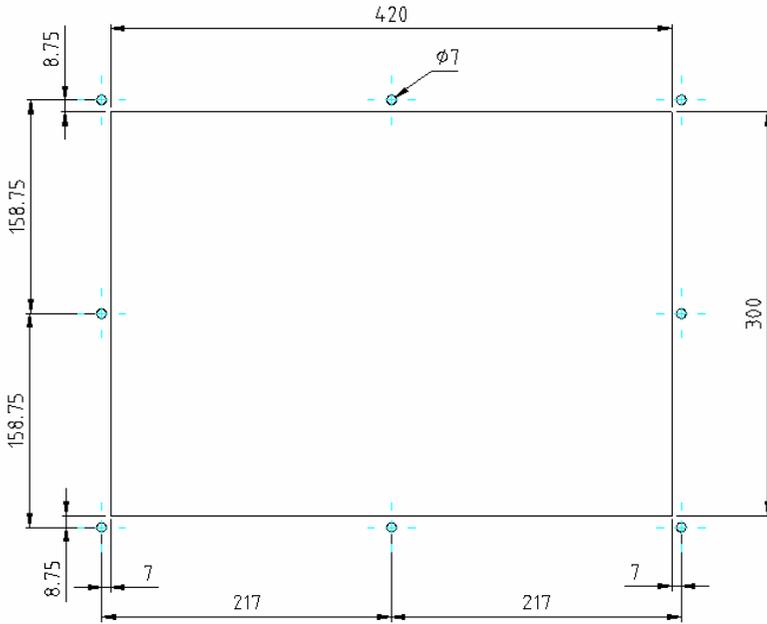
Fig. 6: Hole pattern for the KFM15_e, Panel mounting
(all values in mm)

Rack Mount Version

If you install the rack mount version of the KFM15_e into a 19" industrial cabinet, at the front plate four mounting holes, are at your disposal.
The system has a height of 7U and will be secured with four screws in the 19" industrial cabinet.

Monitor Connecting and Turning On

The industrial LCD monitor KFM15_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 KFM15_e, by use of the supplied video signal cable (depending
on your ordering).

2. If your KFM15_e is equipped with touch screen (COM or USB terminal) you
have to connect the touch screen terminal to the corresponding interface of
the PC system by use of the supplied touch screen cable connector.

3. Connect the power cord as described in the chapter "Power Cord
Connection".

4. Push the Power On/Off-button to turn on the monitor.

	The PC needs to be set to an appropriate graphics mode that has the same resolution with the LCD panel to have clear screen image.
	The colour representation of the image on each monitor can differ by physically causes and is dependent on the video signal source. If you prefer another colour temperature or want to adapt the colour representation of images on two monitors, you have to install these features in the OSD menu under "Color". Execute these settings only after reaching of the full operating temperature of the monitor (approx. 30 minutes).
	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.

Installation of the Touch Screen Software

The drivers are on the included CD-ROM for the following operating systems:

❏ DOS

❏ Windows 9x / Me

❏ Windows 2000 / XP

❏ Windows CE

❏ Linux

Tip
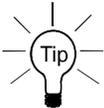
After installing the touch screen driver, be sure to restart your computer to load and activate the touch screen driver. Afterwards you calibrate the touch screen.

Calibrating the Touch Screen

After the installing and connecting your KFM15_e monitor and installing the touch screen, you have to calibrate the touch screen. Calibration serves two purposes:

❏ Sets the active area of the touch screen

❏ Aligns the active area of the touch screen to the screen's image

	Before you calibrate the touch screen, let the monitor warm up for 30 minutes and then center the screen's image within the screen area.

Calibration aligns the active touch-sensitive area of the touch screen with the image on the display. Calibration also determines the edges of the screen's image and locates the center of the touch screen. If the touch screen is not calibrated properly, the active area of the touch screen may not be aligned with the screen's image or may be unnecessarily small in size.

To calibrate the touch screen, open the touch screen control panel program, and then select "Calibration". Follow the directions displayd on the screen. Fore more information on calibration, refer to the user documentation enclosed on the supplied CD with the touch screen drivers.

	Whenever you change the resolution you have to calibrate the touch screen.

Maintenance and Prevention

Kontron Embedded Computers devices 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 or the surface of the touch screen.

Main Specifications

TFT LCD Display	Diagonally (Size) active area	15" (304.1 x 228.1 mm)
	Resolution	1024 x 768
	Pixel Pitch	0.297 mm x 0.297 mm
	Colors	262144 colors
	Backlight	2x CCFT
	Brightness	350 cd/m^2
	Viewing angle (r / l / u / d)	75° / 75° / 55° / 60°
	Contrast ratio	350:1

Touch screen (optional)	Type: 4-wire resistive
	  Terminal connection(optional):
	  as COM (RS232) or USB 1.1 connector	

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	At the front side or optional right side (rear-mounted):
	  1x On/Off-button
	
	 for image representation adjustment on-screen:
	  1x Menu-button of OSD
	  1x Up-button of OSD
	  1x Down-button of OSD
	  1x Select-button of OSD	

LED-indicator	At the Front side: 1x Status LED	
Plug & Play compatibility	VESA DDC1/2B EDID Ver. 1.3	
AC or DC Power plug	At the left side (rear-mounted)	
Backlight lifetime	50,000 h	
Protection class	IP65 frontal	

Mechanical Specifications

Dimensions	Panelmount	19" Front plate
Front plate:	H x W x D 333.5 x 450 x 3 (mm) 13.13" x 17.72" x 0.118"	H x W x D 7U x 19" x 3 mm
Material	steel zinc-plated Frontal: black powder coated	steel zinc-plated Frontal: black powder coated
Chassis		
Height	276.5 mm (10.886")	276.5 mm (10.886")
Width	393 mm (15.472")	393 mm (15.472")
Depth	60 mm (2.362")	60 mm (2.362")
Material	steel zinc-plated	steel zinc-plated
Weight	approx. 6.5kg (14.330 lbs.) (without packing)	approx. 6.5 kg (14.330 lbs.) (without packing)

Electrical Specifications

System Version	Integrated PSU	Input
KFM15_e - A	AC Power Supply	100 - 240 VAC 50 - 60 Hz max. 0.3 A
KFM15_e - B	DC Power Supply	18 - 36 VDC max. 1.5 A

Environmental Specifications

Operating temperature	0 … +50°C (32 … 122°F
Storage / transit temperature	-20 … +60 °C (-4 … 140 °F)
Relative humidity (operating)	20 - 80 % (non condensing)
Humidity (storage)	5 - 95 % (non condensing)
Operating altitude	10,000 ft (3,048 m)
Storage / transit altitude	40,000 ft (12,191 m)
Operating shock	5 G, 11 ms duration, half sine
Storage/transit shock	30 G, 11 ms duration, half sine
Operating vibration	10 – 58 Hz, ± 0.075 mm 58 – 500 Hz, 0.5 G
Storage / transit vibration	10 – 58 Hz, ± 0.15 mm 58 – 500 Hz, 1.0 G

CE-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 KFM15_e.

Low-active signals are indicated by a minus sign.

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	
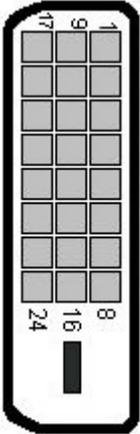
S-Video Connector

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	

USB Touch Screen Connector

Pin	Signal Name	4 pin USB-Socket Type A Version 1.1
1	VCC	
2	Data–	
3	Data+	
4	GND	
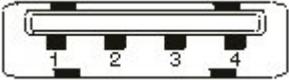
Serial Touch Screen Connector (RS232)

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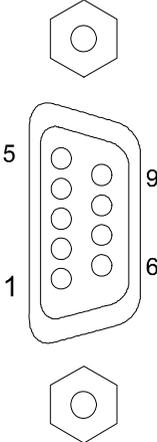
Technical Support

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.