COMBICONTROL **C6**

INSTRUCTIONS FOR USE | **MONITORE**

Original manual
Document 20099481 EN 02

Content

SECTION **1**

Preliminary Information

- General notes
- Trademarks
- Instructions on disposal
- Description of safety symbols
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- The manual is a part of the system
- Figures
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- Notes about usage

General notes

a) The information in this manual is subject to change and is in no way binding upon KEB.
b) KEB is not responsible for technical errors or other omissions in the manual, and shall not accept any responsibility deriving from its use.

Trademarks

Disposal

Electronic devices of the KEB Automation KG are exclusively professional devices for further industrial processing (so-called B2B devices). Manufacturers of B2B devices are obliged to take back and recycle devices manufac- tured after 14.08.2018. These devices may not be disposed at the collection centres of public sector disposal organisations.

If no deviating agreement has been made between the customer and KEB or no deviating mandatory legal regulation exists, KEB products marked in this way can be returned. Company and keyword to the return point can be taken from the list below. Shipping costs are paid by the customer. Thereupon the devices will be professionally recycled and disposed.

Withdrawal by	WEEE-Reg.-No.		Keyword
Austria			
KEB Automation GmbH	ERA:	51976	Stichwort „Rücknahme WEEE“
France			
RÉCYLUM - Recycle point	ADEME:	FR021806	Mots clés „KEB DEEE“
Germany			
KEB Automation KG	EAR:	DE12653519	Stichwort „Rücknahme WEEE“
Italy			
COBAT	AEE: (IT)	19030000011216	Parola chiave „Ritiro RAEE“
Spain			
KEB Automation KG	RII-AEE	7427	Palabra clave „Retirada RAEE“

The packaging must be feed to paper and cardboard recycling.

Description of safety symbols

Danger

This symbol indicates a danger to life or health of personnel.

Notice

This symbol indicates a danger to the hardware and / or the environment.

Note

This symbol indicates an addition to a better understanding.

Qualified Personnel

a) The C6 MONITOR may be operated only by personnel qualified for the specific task in accordance with the relevant documentation for the specific task, in particular its warning notices and safety instructions.
b) Qualified personnel are those who, based on their training and experience, are able to identify risks and avoid potential hazards when working with these systems.

Basic knowledge required

a) To understand operating instructions a general knowledge of automation technology is needed.
b) Knowledge of personal computers and the Microsoft operating system is required to understand this user's guide.

Proper use of the product

a) KEB products may only be used for the applications described in the catalogue and in the technical documentation.
b) If products and components from other manufacturers are used, these must be approved by KEB.
c) Proper transport, assembly, installation, storage, commissioning, operation and maintenance are required to ensure that the product operates safely.
d) The indicated environmental conditions must be observed.
e) The information in this operating instruction must be observed.

Purpose of the operating instruction

a) This operating instruction contains information based on the requirements defined by DIN EN 62079 for mechanical engineering documentation.
b) This operating instruction is intended for:
    1. Users
    2. Commissioning engineers
    3. Maintenance personnel
c) Pay attention at the information in the chapter "Safety instructions".

The manual is a part of the system.

a) This operating instruction belongs to C6 MONITOR and is also required for commissioning.
b) Keep all supplied documentation for the entire service life of C6 MONITOR.

Figures

a) This manual contains illustrations of the described devices.
b) Some details of the illustrations may differ from the device provided.

Safety instructions

Installation according to the instructions

- Commissioning the C6 MONITOR device is prohibited until it has been absolutely ensured that the system in which the C6 MONITOR device is to be installed complies with all the applicable EU and international regulation.

Hazardous areas

- Do not use C6 MONITOR in hazardous areas.

Working on the control cabinet

- **Open equipment**
  The C6 MONITOR device is open equipment. This means that the C6 MONITOR may only be integrated in housings or cabinets, where it can be operated from the front panel. The cabinet in which C6 MONITOR is installed may only be accessed with a key or tool and only by trained and authorized personnel.
- **Dangerous voltage**
  Opening the cabinet may expose high voltage parts. Before opening the cabinet always disconnect the power.

Notes about usage

- C6 MONITOR is approved for indoor use only.
- C6 MONITOR may be damaged if operated outdoors.

SECTION **2**

General Description

- Product description
- Special features
- Package
- Front view
- Rear view
- Side view
- Connector view
- Touchscreen
- Cleaning
- Technical support & repairs

Product description

The C6 MONITOR is a generation in the family of front panel monitors. C6 MONITORS are available with 16 million colors TFT LCD in different sizes and aspect ratios: 10.0", 12.1", 12.1"W, 15.6" W, 17.0", 18.5" W, 19.0", 21.5" W and 24.0" W.
The C6 MONITOR family is available in resistive or capacitive touch technology with VGA and DVI, or optionally with a RVL connection.
Equipped with one USB port on the front (resistive only) and two on the rear with integrated HUB. The C6 monitor offers two different options for the front panel, according to KEB standards.

Special features

- LCD display sizes from 10.1” to 24.0”
- Front panel protection grade IP66
- 5:4, 4:3, 16:9 and 16:10 aspect ratio
- 5 wire resistive/capacitive touchscreen with USB interface (optional serial interface)
- LCD with LED backlight
- 1 x USB 2.0 (front, TYPE-A)
- 2 x USB 2.0 (rear, TYPE-A)
- 1 x VGA
- 1 x DVI or RVL
- 24VDC power supply

LCD LED backlight

LCD with LED backlight technology; the system is equipped with the new LCD generation with LED technology.

Package

C6 MONITOR package consists of:

C6 MONITOR	
Depending of LCD size: • n.9 (7+2 spare) clamps with grub screw • n.10 (8+2 spare) clamps with grub screw • n.12 (10+2 spare) clamps with grub screw • n.16 (14+2 spare) clamps with grub screw	
n.2 hex key	
n.1 Power supply plug (installed on the system)	
n.1 Power supply cover	

Table 1 Package

Front view

The system is available with this **frontal panel**:

- Full aluminium

Figure 1
Full aluminium front panel detail

- Glas front (capacitive)

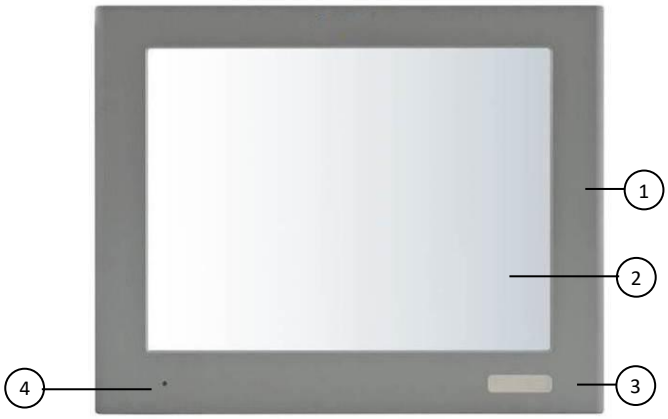
Figure 2
Glas front (capacitive)

Full aluminium front panel

C6 MONITOR (full aluminium front panel) is available in the following sizes:

- 10.1“
- 12.1”
- 12.1“ wide
- 15.0”
- 15.6” wide
- 17.0“
- 18.5” wide
- 19.0”
- 21.5” wide
- 24.0“ wide

Figure 3
Full aluminium front panel detail (in the figure is shown as an example a 15.0" display)



1. Full aluminium front panel
2. Touchscreen-Display
3. IP 66
4. Status LED

- There is a step between the front panel and the touchscreen.

Figure 4
Front panel “Step” detail

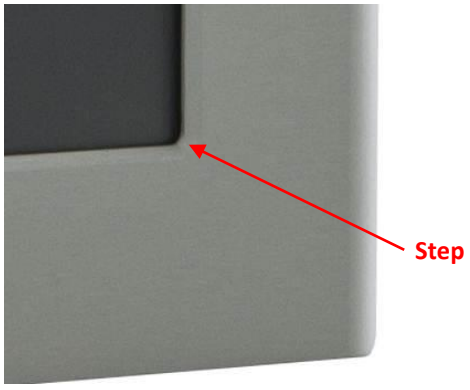
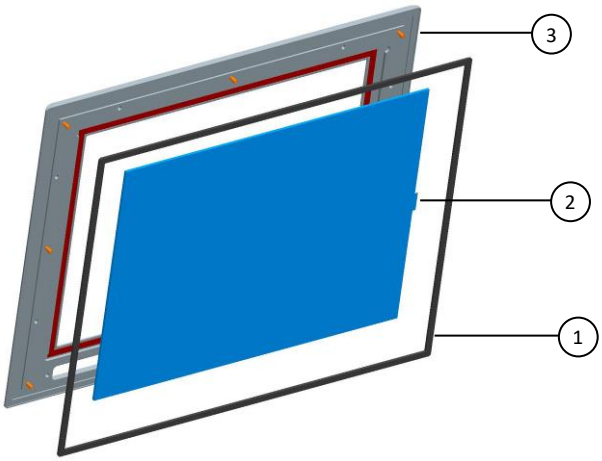


Table 2
Full aluminium features

Features	
Degree of protection	IP66
Back seal type	EPDM
Metal housing	EN AW-5754, H22 EN 485-1

Figure 5
Construction detail (rear view)



1 Back seal
2 Touchscreen
3 Metal housing

USB 2.0

The system is provided with a USB HUB device which creates n.4 USB ports, available as follow:The system is provided with:

- n.2 type A USB connector rear
- n.1 type A USB connector on front
- n.1 internal touchscreen

Note:
No USB frontal is present on stainless steel panels.

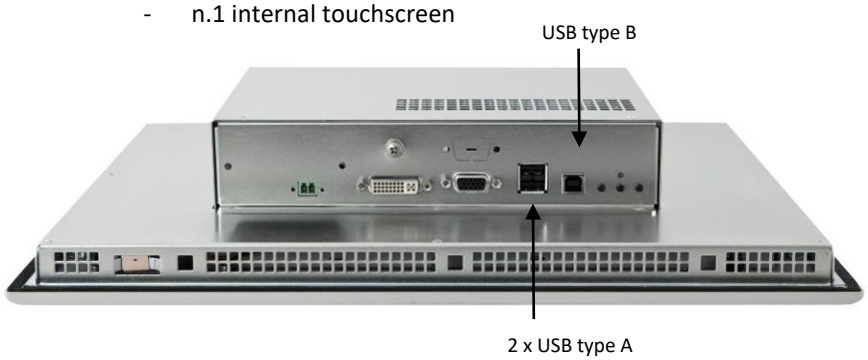


Figure 6
USB details

The HUB must be connected to the host PC through the USB type B connector on the rear of the system.

The USB 2.0 port on the front panel is protected by anti-flame silicone rubber cover.

Figure 7
USB details

Protection class IP66 is ensured if the silicone rubber cover is tight.

Figure 8
USB details

LCD aspect ratio

There are different LCD aspect ratio depending of the frontal panel size:

Table 3
LCD aspect ratio

Panel size	Aspect ratio
10.1“	16 : 10
12.1“	4 : 3
12.1” wide	4 : 3
15.0”	4 : 3
15.6” wide	16 : 9
17.0“	5 : 4
18.5” wide	16 . 9
19.0”	5 : 4
21.5” wide	16 : 9
24.0” wide	16 : 9

Figure 9
4:3 aspect ratio example

Figure 10
16:9 (Wide) aspect ratio example

Rear view

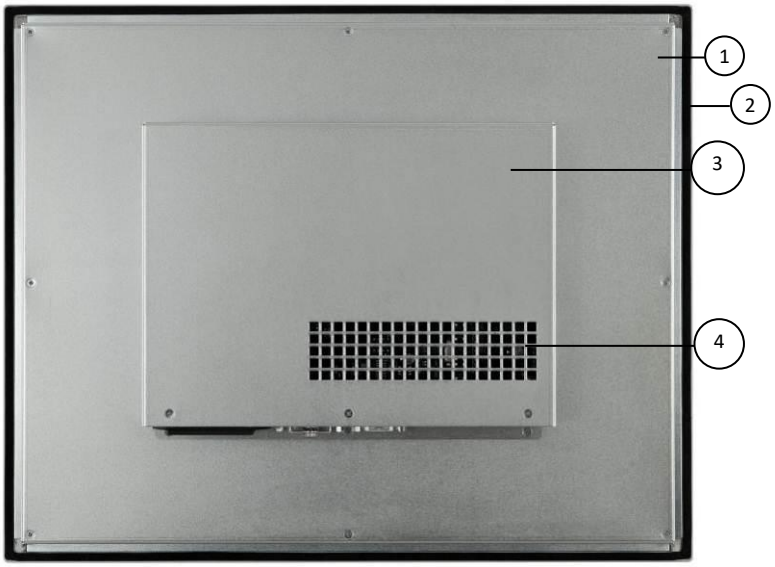


Figure 11
Rear view

1. LCD housing
2. Mounting seal
3. PC housing
4. Ventilation holes

Front view

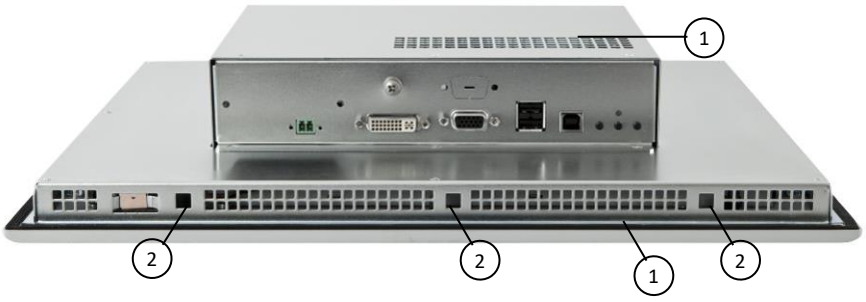
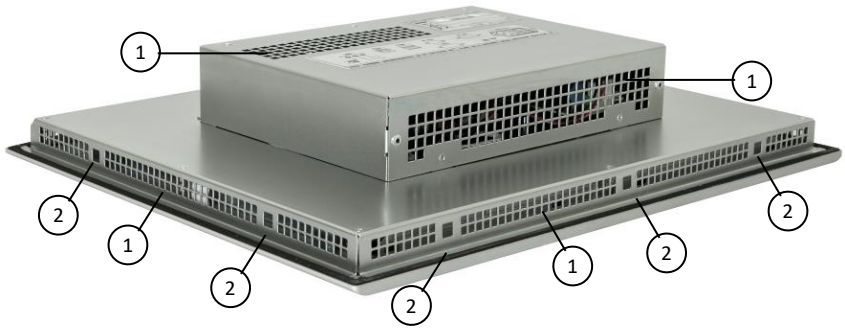


Figure 12
Front view

1. Ventilation holes
2. Recess for fixing clamps

Figure 13
Side view

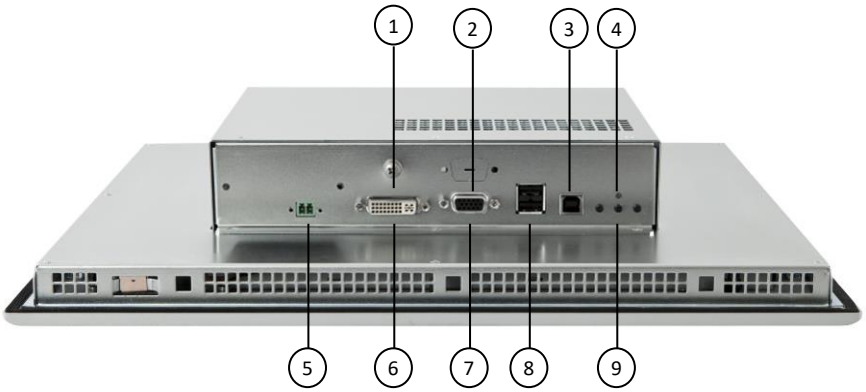


1 Ventilation holes
2 Recess for fixing clamps

Caution:
in order to access to the rear panel connectors the system must be disconnected from the power supply and put on a flat plane to remove the rear panel.

Connector view

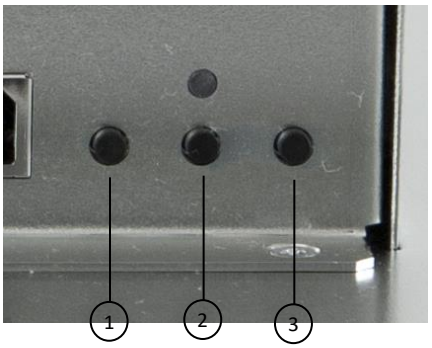
Figure 14
rear panel connectors



1. Earth connection screw
2. Optional
3. USB HUB input
4. Power LED
5. Power supply
6. DVI video input
7. VGA video input
8. USB host 2.0 (for instance to KBD/MS)
9. Control keys

OSD buttons

Figure 15
OSD buttons



1. \+ (<-)
2. \- (->)
3. Select

Label position

On the rear panel the following labels are present.

Note:
Label position may be different depending on display size.

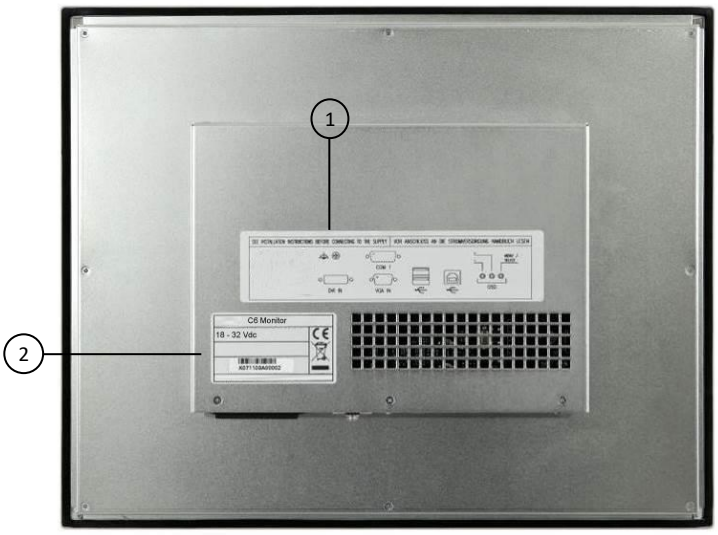


Figure 16
Label position details

1. Connector label
2. Marking label

Marking label

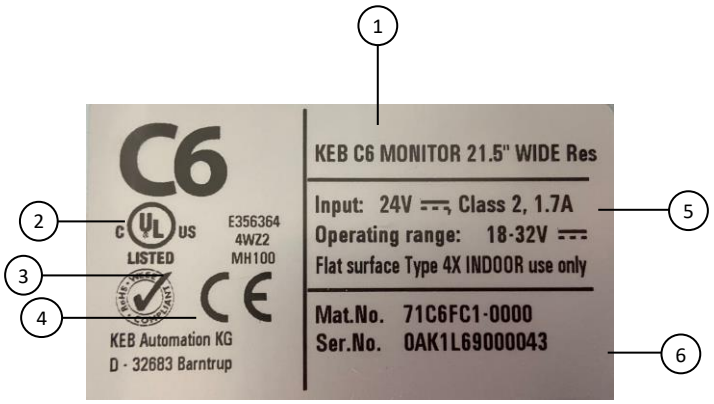


Figure 17
Marking label details

1. Model
2. UL marking
3. Disposal
4. CE marking
5. Electrical information
6. Serial number

Connector label

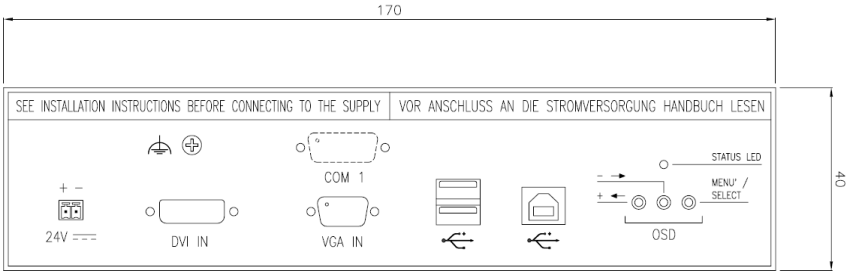


Figure 18
Connector label detail

Touchscreen

C6 MONITOR is provided with a 5-wire resistive touchscreen with controller integrated on the motherboard.

As an option, the full aluminium version can be provided without the touchscreen. In that case, the touchscreen is replaced by a tempered glass.

Standard technology

The touch surface consists of PET hard-coated film (hardness: 3H).

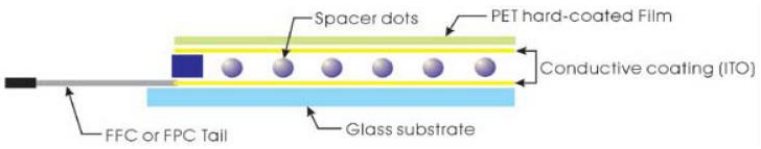


Figure 19
Touchscreen standard technology details

Cleaning

 Note: clean the front panel of the system with a soft damp cloth.

 Notice: Do not use detergents, solvents, cleaners or objects that could scratch the surface.

 Notice: Switch off the power before any cleaning operation.

Technical support & repairs

KEB offers wide-ranging, complete after-sales technical support. The staff who deal with this handle questions on the entire range of products skilfully, quickly, and efficiently.
You can phone our staff in the service department, and they will give you complete, prompt advice on how to resolve your problems.

Telephone: +49 (0) 5263 401-0
Fax: +49 (0) 5263 401-116
E-mail: combicontrol@keb.de

SECTION **3**

Installation

- Preparation for installation
- Checking the package contents
- Checking the operating conditions Fuse replacement
- Mounting position
- Checking installation distances
- Preparing the mounting cut-out
- Mounting the device
- Connecting C6 MONITOR
- Status LED
- OSD (On Screen Display)
- Touchscreen

Preparation for installation

Select the mounting location

The mounting location should comply with the following characteristics:

a) Avoid direct sunlight exposure.
b) Make sure that C6 MONITOR is properly (ergonomically) accessible to the operator.
c) Choose a suitable mounting height.
d) Ensure that the ventilation holes are not covered.

Checking the package contents

- Check the package content for visible signs of transport damage and for completeness.
- In the case of damaged parts, contact your KEB representative. Do not install parts damaged during shipment.

Checking the operating conditions

- Read carefully the standards, approvals, EMC parameters and technical specifications for operation of the device. This information is available in the following sections:
    - Certificates and approvals
    - Electromagnetic compatibility;
- Check the mechanical and climatic ambient conditions for operation of the device: Ambient conditions.
- Follow the instructions for local use of the device: Notes about usage.
- Adhere to the permissible rated voltage and the associated tolerance range:
- For DC models:
    - 24V ⎓
    - maximum permissible operating voltage range 18V to 32V

Mounting position

C6 MONITOR device is suitable for installation in:

- Mounting cabinets
- Control cabinets
- Switchboards
- Consoles

Damage due to overheating

- Up to 18.5” display the operative temperature must be between 0°C and 50°C.
- From 19.0” up to 21.5” display the operative temperature must be between 0°C and 45°C.
- All C6 MONITOR systems are designed for vertical mounting position.
- An inclined installation reduces the thermal convection by C6 MONITOR and the maximum permissible ambient temperature for operation. Please contact KEB for details.
- C6 MONITOR may otherwise be damaged and its certifications and warranty will be void.

Figure 20
Mounting position

Checking installation distances

To ensure adequate ventilation it is necessary leaving the open spaces around the system:

- **X** direction: (min.) 15 mm for each side
- **Y** direction: (min.) 15 mm for each side
- **Z** direction: (min.) 15 mm

Figure 21
Installation distances

Preparing the mounting cut-out

In order to ensure a proper mounting of the system, the material of the mounting cut-out must be sufficiently stable.
To obtain the degree of protection described below, the material of the mounting panel must not deform due to the use of clamps on the operator panel.

Degrees of protection

The system degree of protection (IP) is intended only for the front panel of C6 MONITOR and is guaranteed only if the following conditions are fulfilled:

- Material thickness at the mounting cut-out for IP66 protection: 2 mm to 6 mm.
- Deviations of the plane of the mounting cut-out limits: ≤ 0.5 mm.
- Allowed surface roughness in the area of the seal: ≤ 120 microns (Rz 120).

Cut-out

This section shows the dimensions of the rectangular openings to be implemented on the host panel to mount the system.

Dimensions of the cut-outs

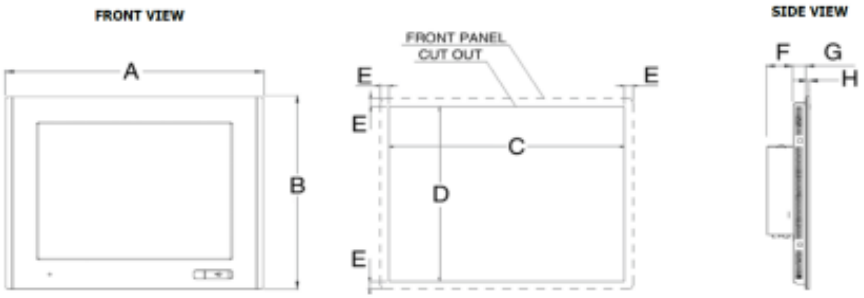


Figure 22
Cut-out

LCD TFT	A	B	C	D	E	F	G	H
10.1“	293	212	277	196	8	45	19	5
12.1“	335	270	315	250	10	45	19	5
12.1”W	331	234	313	218	9	45	21	5
15.0”	390	315	370	295	10	45	19	6
15.6”W	430	275	410	255	10	45	19	6
17.0“	455	355	435	335	10	45	21	6
18.5” W	500	320	480	300	10	45	19	6
19.0”	490	388	470	368	10	45	21	6
21.5” W	579	367	559	347	10	45	23	6
24.0“ W	640	402	620	382	10	45	21.3	8

Table 4
Cut-out dimensions

Mounting the device

Mounting clamps

- To obtain the declared degree of frontal protection for the system, it is necessary to respect the positions of the clamps shown below.
- The table below shows the number and the position of the clamps for each C6 MONITOR size.

Table 5
Mounting clamps

LCD size	Clamp	Quantity
10.0“		
12.1”		8
12.1“ wide		
15.0”		10
15.6” wide		10
17.0“		
18.5” wide		10
19.0”		10
21.5” wide		14
24.0“ wide		

Tools to tighten the mounting clamps

- 1.5 mm provided hexagonal key

Procedure

- Insert C6 MONITOR into the mounting cut-out from the front.

Figure 23 Installation

Note:
Mount the clamps with a minimum distance of 20 mm on the outer frame of the display.

Figure 24 Installation

- Insert the fixing clamps into the housing of the device.

Figure 25
Installation

Figure 26
Installation

- Tighten the fixing clamps with the hex key provided with (14 x 91 x 1.5 mm).

Figure 27
Hex key detail

Note:
*Observe the permissible torque when tightening the threaded pin of the mounting clamp: **0.2 Nm**.*

Figure 28
Installation

- Repeat the procedure for all mounting clamps.
- Check the seal seat.

Connecting C6 MONITOR

Notes on connection

- C6 MONITOR must be installed in accordance with the indications contained in this operating instructions.

Grounding and bonding

Warning:
The system must be powered with a voltage of 24V (18V÷32V).

- Whenever two pieces of equipment connected to each other are far apart, it is possible that their ground connections could be at a different potential level. The data cable screens connecting the equipment's chassis on one end and the C6 MONITOR chassis on the other end.It can therefore be subject to a high current circulation capable of destroying the interface.To overcome this hazard such current must be steered away from the interface. To achieve this goal the following methods can be used:

1. Connect the data cable screens to the equipotential bonding rail on both sides before connecting the cable to the interfaces.
2. Use an equipotential bonding cable (16mm^2) to connect the equipment's' ground to the C6 MONITOR ground.

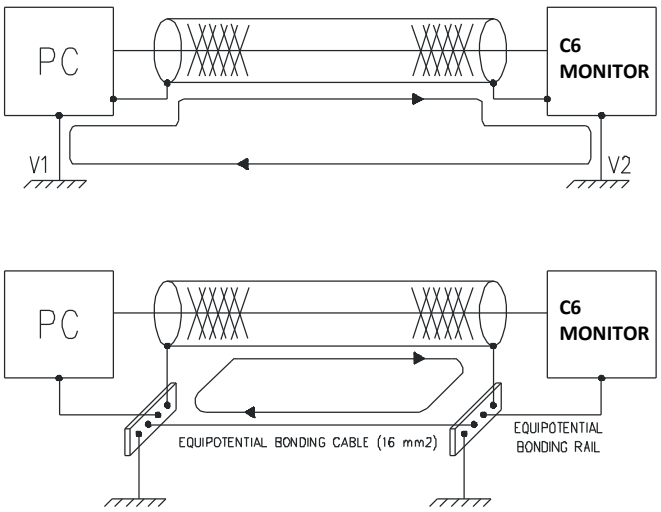


Figure 29
Power supply connection details

24 VDC version

Caution: The system must be powered with a voltage of 24 VDC (18 to 32 VDC)

The system must be powered with a voltage of 24 VDC (18 to 32 VDC).

- Remove the two poles connector from the system

Figure 30
Detail of the ground screw

Notice:
For EMI proposes it is necessary to connect the system to the ground wire by means of suitable wiring

(min. AWG13) connected to the ground screw.

Status LED

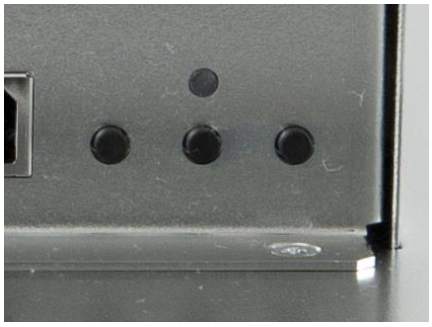


Figure 31
Status LED

The frontal and the rear LED have the same function.

Table 6
Status LED

Status LED	
Green	Correct video signal input
Yellow	Unsupported video input
Yellow blinking	No video input

OSD (On Screen Display)

The adjustments made through the OSD function relate solely to the screen mode currently used without changing the base configuration of the other viewing modes.
Therefore, this adjustment must be made for each viewing mode.
In the following section are detailed the operations to set properly the LCD controller based on ST Semiconductors/Genesis chip.

Figure 32
OSD adjustment

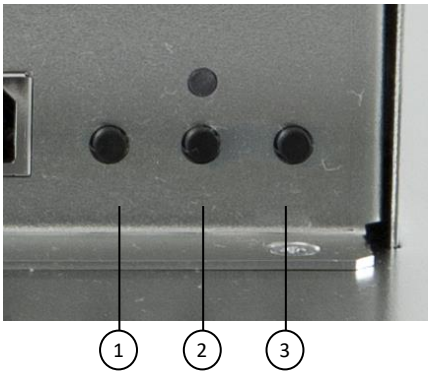


Figure 33
Keys for OSD adjustment

1. \+ (<-)
2. \- (->)
3. Select

OSD navigation

OSD menu appears by pressing push-buttons +, – :

- Select: it selects the evidenced option, entering in an “under-menu” or exiting from current menu (back option).
- **+**: Increases the value of the selected control or select the next menu item.
- **-**: Decreases the value of the selected control or select the previous menu item.

On-Screen Display menu

 Input interface Settings

 Brightness / Contrast

 Color Adjustment

 Image setting

 Tools

 Exit

Figure 34
On-Screen Display menu

Input Interface Setting

Displays the input interface in use:

Figure 35
OSD - Input Interface Setting menu

 **Analog Input**

 **Digital Input**

Figure 36
OSD - Input Interface Setting sub-menu

Brightness / Contrast

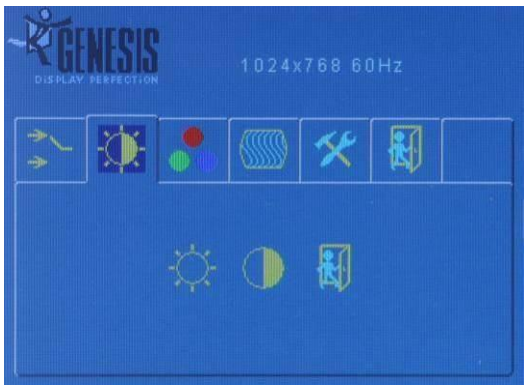


Figure 37
OSD – Brightness / Contrast menu

Figure 38
OSD - Brightness / Contrast sub-menu

Brightness: Adjust the brightness

Contrast: Adjust the contrast

Color adjustment

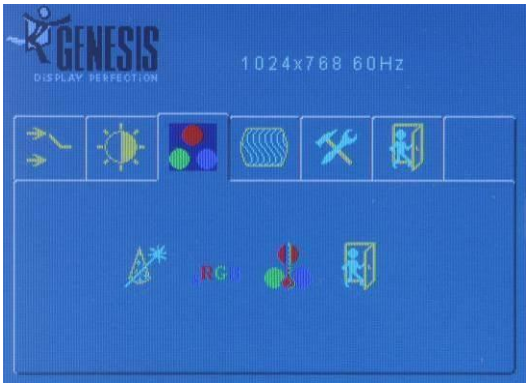


Figure 39
OSD - Color Adjustment menu

Figure 40
OSD - Color Adjustment Menu sub-menu

Auto Color Setup: Recall the color default settings

Standard Color Setup: Adjust Red, Green, Blue color

R.G.B. Color Temperature Setting: Change the color intensity of the selected temperature

Image Setting

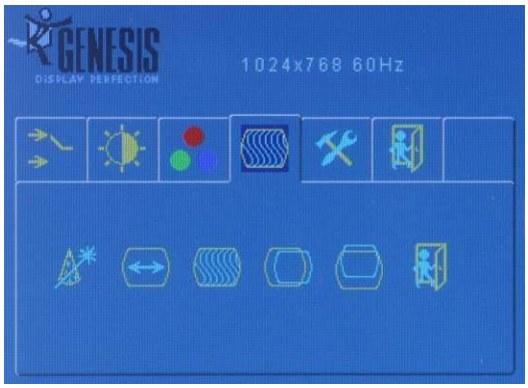


Figure 41
OSD – Image Setting Menu

Auto Config: Automatically adjust of Image Width, Phase, H-Position, V-Position settings

Image Width: Regulate Image Width

Phase Adjustment: Correct flickering text or lines

H-Position: Adjust screen horizontal position

V-Position: Adjust screen vertical position

Figure 42
OSD - Image Setting sub-menu

Tools

Figure 43
OSD – Tools menu


OSD Settings


Restore the default settings


Restore the color settings


Restore the timing settings


Text readibility

Dos Graphic Mode

Figure 44
OSD - Tools sub-menu

Touchscreen

The touchscreen is handled by a USB controller within the system, and it allows the management of the 5wire resistive touch-screen.

SECTION **4**

Technical data

- Technical specifications
- Drawings

Technical specifications

System characteristics		
Display	See specific display features	
Video inputs	Type	1 x VGA (DB15F) , 1 x DVI-D single link
Touchscreen	Technology	5 wires – analog – resistive
	Light transmission	80% ±2%
	Lifetime	35mln activations
	Linearity deviation	< 1 %
	Interface	USB
USB interfaces	Type	2 x USB 2.0 (rear, TYPE-A, host port), 1 x USB 2.0 (front, TYPE-A, host port, protected), 1 x USB 2.0 (rear, TYPE-
	Transfer rate	B, client port - HUB input) Up to 480Mbit/s (high speed)
Buttons and LEDs	LEDs	Power
	OSD	Yes, by 3 buttons on the back

Electrical characteristics		
Power supply	Input voltage	18/32 VDC

Mechanical characteristics		
Case	Type	Panel mount
	Material	Steel, zinc electroplating
Front panel *(note 1)*	Protection	IP66
	Construction	Aluminum alloy
	Color	
Dimensions mm		**Aluminium (W x H x D)**
	12.1”	335 x 270 x 69
	15”	390 x 315 x 70
	15.6”	430 x 275 x 70
	18.5”	500 x 320 x 70
	19”	490 x 388 x 72
	21.5”	579 x 367 x 74

Environmental characteristics		
Temperature	Operation	The operating temperature must be between 0°C and 50°C for a display up to 18.5”. The operating temperature must be between 0°C and 45°C for a display from 19.0” to 21.5”.
	Storage	-20° ÷ +60°C
Humidity	Operation/Storage	80% (non-condensing)

Warranty & Approvals		
CE	Emission	Conforms to EN 55022 Information technology equipment – Radio disturbance characteristics Conforms to EN 61000-3-2 – Limits for harmonic current emissions Conforms to EN 61000-3-3 – Limits of voltage fluctuation and flicker
	Immunity	Conforms to EN 55024 Information technology equipment – Immunity characteristics
	Safety	Conforms to EN 60950-1 – Information technology equipment – Safety
Warranty	Management	By KEB headquarters
	Standard	12 months

Notes	
1	With stainless front panel. Case with touch screen do not have a USB port on the front

Features of the 10.1" W display

Table 7
Features of the 10.1" W display

Features of the 10.1" W display	
Dimensions	10.1”
Technology	LCD-TFT active matrix
Active area	216.96 (A) x 135.6 (L) mm
Resolution	1280 x 800
Colors	262 K 16,7 M
Pixel Pitch	0.1695 x 0.1695 mm
Luminance	400 cd / m² typical
Horizontal visual angle (left + right)	170° typical
Horizontal visual angle (left + right)	170° typical
Contrast value on optimal angle	800:1 typical
Response (Rise)	12 ms max
Response (Decay)	13 ms max
Power	5.3 W
Surface treatment	Antiglare
Sidelight	LED
MTBF	70.000 h

Features of the 12.1” display

Table 8
Features of the 12.1" display

Features of the 12.1” display	
Dimensions	12.1”
Technology	LCD-TFT active matrix
Active area	246 (A) x 184.5 (L) mm
Resolution	800 x 600
Colors	16M
Pixel Pitch	0.3075 x 0.3075 mm
Luminance	500 cd / m² typical
Horizontal visual angle (left + right)	160° typical
Horizontal visual angle (left + right)	140° typical
Contrast value on optimal angle	800:1 typical
Response (Rise)	4 ms max
Response (Decay)	12 ms max
Power	3.3 V
Surface treatment	Antiglare
Sidelight	LED
MTBF	100.000 h

Features of the 12.1" W display

Table 9
Features of the 12.1" W display

Features of the 12.1" W display	
Dimensions	12.1″
Technology	LCD-TFT active matrix
Active area	261.12 (A) x 163.2 (L) mm
Resolution	1280 x 800
Colors	16M
Pixel Pitch	0.204 x 0.204 mm
Luminance	400 cd / m² typical
Horizontal visual angle (left + right)	176° typical
Horizontal visual angle (left + right)	176° typical
Contrast value on optimal angle	1000:1 typical
Response (Rise)	15 ms max
Response (Decay)	10 ms max
Power	9.95 W
Surface treatment	Antiglare
Sidelight	LED
MTBF	50.000 h

15.0” display features

Table 10
15.0” display features

15.0” display features	
Dimensions	15.0”
Technology	LCD-TFT active matrix
Active area	304.1 (H) x 228.1 (W) mm
Resolution	1024 x 768
Display color	16 M
Pixel Pitch	0.297 x 0.297 mm
Luminance	450 cd / m² typ.
Horizontal viewing angle (left + right)	160° typ.
Vertical viewing angle (up + down)	140° typ.
Contrast ratio	700:1 typ.
Response (Rise)	2 ms max
Response (Decay)	10 ms max
Power	3.3 V
Surface treatment	Antiglare
Backlight	LED
MTBF	50.000 h

15.6” display features

Table 11
15.0” display features

15.6” display features	
Dimensions	15.6”
Technology	LCD-TFT active matrix
Active area	344.2 (H) x 252 (W) mm
Resolution	1366 x 768
Display color	16 M
Pixel Pitch	0.252 x 0.252 mm
Luminance	300 cd / m² typ.
Horizontal viewing angle (left + right)	170° typ.
Vertical viewing angle (up + down)	160° typ.
Contrast ratio	500:1 typ.
Response (Rise)	6 ms max
Response (Decay)	2 ms max
Power	5 V
Surface treatment	Antiglare
Backlight	LED
MTBF	50.000 h

17.0” display features

Table 12
17.0” Display features

17.0” display features	
Dimensions	17.0”
Technology	LCD-TFT active matrix
Active area	337.9 (H) x 270 (B) mm
Resolution	1024 x 1024
Display color	16 M
Pixel Pitch	0.264 x 0.264 mm
Luminance	350 cd / m² typ.
Horizontal viewing angle (left + right)	170° typ.
Vertical viewing angle (up + down)	160° typ.
Contrast ratio	800:1 typ.
Response (Rise)	20 ms max
Response (Decay)	10 ms max
Power	11 W
Surface treatment	Antiglare
Backlight	LED
MTBF	50.000 h

18.5” display features

Table 13
18.5” Display features

18.5” display features	
Dimensions	18.5”
Technology	LCD-TFT active matrix
Active area	409.8 (H) x 230.4 (W) mm
Resolution	1366 x 768
Colors	16 M
Pixel Pitch	0.300 x 0.300 mm
Luminance	300 cd / m² typ.
Horizontal visual angle (left + right)	170° typ.
Vertical visual angle (up + down)	160° typ.
Contrast ratio	1000:1 typ.
Response time (Rise)	3.5 ms max
Response time (Fall)	1.5 ms max
Power	5 V
Surface treatment	Antiglare
Backlight	LED
MTBF	50,000 h

19.0” display features

Table 14
19.0” Display features

19.0” display features	
Dimensions	19.0”
Technology	LCD-TFT active matrix
Active area	376.3 (H) x 301.1 (W) mm
Resolution	1280 x 1024
Colors	16 M
Pixel Pitch	0.294 x 0.294 mm
Luminance	350 cd / m² typ.
Horizontal visual angle (left + right)	170° typ.
Vertical visual angle (up + down)	160° typ.
Contrast ratio	1000:1 typ.
Response time (Rise)	3.6 ms max
Response time (Fall)	1.4 ms max
Power	5 V
Surface treatment	Antiglare
Backlight	LED
MTBF	50,000 h

21.5” display features

Table 15
21.5” Display features

21.5” display features	
Dimensions	21.5”
Technology	LCD-TFT active matrix
Active area	476.6 (H) x 268.1 (W) mm
Resolution	1920 x 1080
Colors	16 M
Pixel Pitch	0.241825 x 0.24825 mm
Luminance	300 cd / m² typ.
Horizontal visual angle (left + right)	178° typ.
Vertical visual angle (up + down)	178° typ.
Contrast ratio	5000:1 typ.
Response time (Rise)	10 ms max
Response time (Fall)	6 ms max
Power	5 V
Surface treatment	Antiglare
Backlight	LED
MTBF	50,000 h

Features of 24.0" W displays

Table 16
24.0" display features

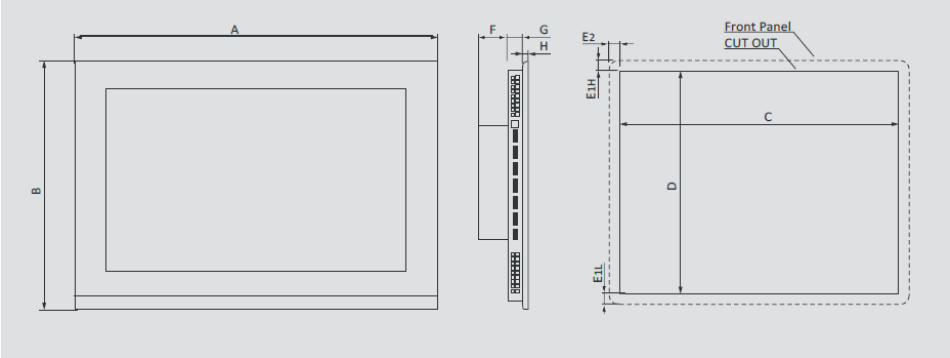
24.0" display features	
Dimensions	24.0"
Technology	LCD-TFT active matrix
Active area	531.36 (H) x 298.89 (W) mm
Resolution	1920 x 1080
Colors	16.7 M
Pixel Pitch	0.27675 x 0.27675 mm
Luminance	300 cd / m² typ.
Horizontal visual angle (left + right)	178° typ.
Vertical visual angle (up + down)	178° typ.
Contrast ratio	5000:1 typ.
Response time (Rise)	16 ms max
Response time (Fall)	9 ms max
Power	23.3 W
Surface treatment	Antiglare
Backlight	LED
MTBF	50,000 h

Drawings

Table 17 Measurements

	LCD	A	B	C	D	E1L	E1H	E2	F	G	H
Resistive	10.1“W	293	212	277	196	8	8	8	45	19	5
	12.1“	335	270	315	250	10	10	10	45	19	5
	12.1“W	331	234	313	218	9	9	9	45	21	5
	15“	390	315	370	295	10	10	10	45	19	6
	15.6“W	430	275	410	255	10	10	10	45	19	6
	17“	455	355	435	335	10	10	10	45	21	6
	18.5“W	500	320	480	300	10	10	10	45	19	6
	19“	490	3 88	470	368	10	10	10	45	21	6
	21.5“W	579	367	559	347	10	10	10	45	23	6
	24“W	640	402	620	382	10	10	10	45	21.3	8
Capacitive	10.1“W	293	212	277	196	8	8	8	45	19	5
	12.1“W	331	234	313	218	7	9	9	45	23	5
	15.6“W	433	280.5	410	255	15	10.5	11.5	45	36	6
	18.5“W	503	320.5	480	300	10	10.5	11.5	45	35	6
	21.5“W	581.5	367.5	559	347	10	10.5	11.5	45	35	8
	24“W	640	402	620	382	10	10	10	45	21	8

Figure 45 Dimensions



SECTION **5**

Certification

EU DECLARATION OF CONFORMITY

Document No. / month.year: ce_ca_remv-C6FB-FC-b_en.docx / 01.2020

Manufacturer:	KEB Automation KG Südstraße 38 32683 BARNTRUP Germany	
Product type	Monitor type	yy**C6FB**x – xxxx yy**C6FC**x – xxxx
	Control size	yy = 01 to FF for TouchPanel size x = any letter or number
	Voltage category	24 Vdc

The above given product is in accordance with the following directives of the European Union

Number:	**EMC : 2014 / 30 / EU**
Text:	Directive on the approximation of the laws of the Member States relating to electromagnetic compatibility.
Number:	**Hazardous Substances: 2011 / 65 / EEC (incl. 2015 / 863 / EU)**
Text:	Directive on the approximation of the laws of the Member States relating on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

Responsible: KEB Automation KG
Südstraße 38
32683 BARNTRUP

Place, date Barntrup, 28. December 2019

Issued by:

i. A. W. Hovestadt / Conformance Officer

W. Wiele / Technical Manager

This declaration certifies the conformity with the named directives, but does not contain any assurance of quality.

The safety instructions, described in the instruction manual are to be followed.

EU DECLARATION OF CONFORMITY

Annex 1

Document-No. / month.year:	ce_ca_remv-C6FB-FC-b_en.docx / 01.2020	
Product type	Monitor type	yy**C6FB**x – xxxx yy**C6FC**x – xxxx
	Control size	yy = 01 to FF for TouchPanel size x = any letter or number
	Voltage category	24 Vdc

The conformity of the above given product to the European Directive 2014/30/EU (for electromagnetic compatibility) is given by complete approval / testing to the following European harmonized standards. For not exceeding the required limits or minimum levels of immunity it is necessary to use observe the given wiring specifications from available instruction manual.

EN - Norm	Text
EN 61326-1 Version 2013	Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 1: General requirements
EN 61000 – 3 – 2 Version 2014	Electromagnetic compatibility – Part 3-2 Limits – Limits for harmonic current emmissions (equipment input current ≤ 16A per phase)
EN 61000 – 3 – 3 Version 2013	Electromagnetic compatibility – Part 3-3 Limits – Limits of voltage changes, voltage fluctuations and flicker in public low voltage systems, for equipment with rated current ≤ 16A per phase
EN 61000 – 6 – 2 Version 2005	Electromagnetic compatibility (EMC) – Part 6-2: Generic Standard – Immunity standard for industrial environment
EN 55011 Version 2009 + A1 - 2010	Industrial, scientific and medical equipment, radio-frequency disturbance characteristics: Limits and methods of measurement

The conformity of the above given product to the European Directive 2011/65/EU with changes of 2015/863/EU (for restrictions of the use for certain hazardous substances in electrical and electronic equipment) is given by qualification of components and manufacturing process within the ISO 9001 QM system. The necessary information and declarations are documented and memorized.

The above given product was developed, manufactured and tested within an internal quality management system. This ISO 9001 QM system was approved by:

Notified body:	TÜV - CERT
Adress:	Zertifizierungsstelle des RWTÜV Steubenstrasse 53 D - 45138 Essen
No. of approval	041 004 500
Dated:	20.10.1994
Valid until:	December 2021

Index figures

Index of tables

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