6031 SET
USBflex single in Copper
6031L CPU/LOCAL
6031R CON/REMOTE
6032 SET
USBflex single in Fiber
6032L CPU/LOCAL
6032R CON/REMOTE
WHY KVM-TEC

kvm-tec4 future

flexible customized
the Productline FLEXline, media4Kconnect and 4K Ultraline are compatible in the Matrix Switching system and with the kvm-tec Gateway and Gateway2go access to virtual machines or Live pics from the Switching System are possible

future proofed
The Matrix Switching System can be extended at any time by upgrade packages for endpoints and guarantees a super fast switching up to 2000 endpoints

secure engineered
redundant for secure critical operations and uncompressed transmission without artefacts, non hackable - based on a unique and proprietary protocol - KVM system runs on a VLAN or a separate switch. This means a dedicated Networkmanagement

Hardware optimized
Software features Mouse glide & Switch, 4K Multiview Commander flexible & scalable USB, Video and Sound Channel managing 4 single or 4 dual FLEXline Extender in 1 RU – saves space in the rack

High performance KVM Solutions and Matrix Switching Systems up to 2000 endpoints

and the best - kvm-tec solutions convince by a sensational price-performance ratio and are produced in Europe

IN THIS GUIDE

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3. Configure the Extender
3.1 Matrix Switching System 24
Congratulations on the purchase of your new USBflex KVM Extender. You have bought a high quality extender. These instructions are part of this product. They contain important information regarding safety, use and disposal for every user of the USBflex KVM Extender. Please familiarise yourself with the information within prior to using your product. Use the product only in the manner as described and for the areas of application as stated. When passing the product to a third party be sure to also supply all instructions and other relevant documentation. Following proper use and maintenance, your USBflex KVM Extender will bring you joy for many years to come.

1.1 INTENDED USE

This product is intended to be used as a device to increase the distance that a keyboard, monitor and mouse can be placed from a computer. This product is intended for professional use. The product should not be used in potentially explosive environments.

The product may only be used according to the instructions as described in this manual. All use, other than that described in this manual, is seen as unintended use. Modifications in the course of technological progress are reserved. In these user instructions the USBflex Extender is referred to as ‘product’ or ‘extender’. The USBflex is referred to as the ‘local unit’ CPU and the UB1/Monitor is referred to as the ‘remote unit’ / CON.
1. INTRODUCTION

1.2 SAFETY INSTRUCTIONS

WARNING! Read and understand all safety instructions.

- Follow all the instructions. This will avoid accidents, fire, explosions, electric shocks or other hazards that may result in damage to property and/or severe or fatal injuries. Please ensure that everyone who uses the product has read and followed these warnings and instructions.
- Keep all safety information and instructions for future reference and pass them on to subsequent users of the product.
- The manufacturer is not liable for cases of material damage or personal injury caused by incorrect handling or non-compliance with the safety instructions. In such cases, the warranty will be voided.
- This product is not intended for use by persons (including children) with restricted physical, sensory or intellectual capability or lack of experience and/or knowledge, unless they are supervised by a person who is responsible for their safety or provides them with instructions on how to use the product.
- DANGER! Not for use in potentially explosive environments.
- DANGER! Be vigilant at all times, and always take care around this product. Do not use electrical equipment if you are lacking in concentration or awareness, or are under the influence of drugs, alcohol or medication. Even a moment of inattentiveness can lead to serious accidents and injuries when using electrical equipment. Check the product and the cables for any damage before use. If there is any visible damage, a strong odour, or excessive overheating of components unplug all the connections immediately and stop using the product.
- If the product is not installed and used in accordance with this manual, it may cause disruptive interference with radio or television reception or affect other electronic products in residential areas.
- Use shielded cables only to connect the components in order to avoid such interference. Non-compliance invalidates the permission to operate this product.
- Only the mains adapter included with the product should be used as the power supply. Do not use other adapters.
- Prior to connecting to the mains, make sure your local mains voltage matches the rating indicated on the product.
- The product must be connected to a permanent and earthed AC wall socket.
- Protect cables from being strained, pinched or buckled and place them in a way to prevent people from tripping over the cord.
- In particular, ensure to avoid damage to the mains adapter.
- Use the product with a suitable, properly installed and easily accessible mains power socket. Make sure the product can be disconnected from the power socket at all times.
- Unplug the product during electrical storms or when not in use.
- DANGER! Never touch the adapter with wet hands.
- Use the product within the specified performance limits.
- Keep the product away from flammable materials such as curtains and drapes.
- Protect the mains adapter from use by third parties (particularly children). Keep the unused mains adapter in a dry, elevated or locked location away from children.
- Do not place the product near heaters.
- Do not drop or hit the product.
- Unplug all connections before cleaning the product. Do not use wipes or chemicals as these could damage the surface. Wipe the housing with a damp cloth. Electrical/electronic parts must not be cleaned.
- Alterations to the product and technical modifications are not permitted.
1.3 TECHNICAL SPECIFICATIONS

Typ: KVM Extender local/CPU Unit and remote/CON Unit

Modell: USBflex single copper UB1 KVM Extender
        USBflex single fiber UB1-F KVM Extender

Voltage supply: 100 - 240 V; 50/60 Hz AC

Power supply: 12VDC2A, external power supply

Power Input: 6W pro Extender (without USB devices)

Operation environment: 0 °C to 45 ºC / 32 to 113 ºF

Storage environment: -25 ºC to 80 / -13 to 176 ºF

Relative Luftfeuchtigkeit: max. 80% (non condensing)

Humidity for storage: max. 80% (non condensing)

Housing material: anodized aluminum

Dimension: 109 x 43 x 107,5 mm/ 4.29 x 1.69 x 4,23 inch

Weight: 295 g/0,65 lb Local/CPU / 295g/0,65 lb Remote /CON

Shipment weight: 1005g/2,21 lb per set single

MTBF: 82 820 calculated hours / 10 years

1.4 ABOUT THE PRODUCT - USBFLEX SINGLE COPPER

Remote /CON Extender

<table>
<thead>
<tr>
<th>Nr.</th>
<th>Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>USB</td>
<td>USB from Videocamera, Photocamera, Joystick</td>
</tr>
<tr>
<td>2</td>
<td>kvm-link</td>
<td>Networkcable</td>
</tr>
<tr>
<td>3</td>
<td>dc</td>
<td>Connection 12V2A power supply</td>
</tr>
</tbody>
</table>

LED STATUS

- yellow LINK ok
- green Video ok
- green blinking Video and USB activity
1. INTRODUCTION

Local /CPU Extender

<table>
<thead>
<tr>
<th>Nr.</th>
<th>Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>USB</td>
<td>USB to PC</td>
</tr>
<tr>
<td>2</td>
<td>kvm-link</td>
<td>Connection for CAT5/6/7 cable</td>
</tr>
<tr>
<td>3</td>
<td>dc</td>
<td>Connection power supply 12V 2A</td>
</tr>
</tbody>
</table>

LED STATUS

- yellow: LINK ok
- green: Video ok
- green blinking: Video and USB activity

1.5 PRODUCT ELEMENTS - USBFLEX SINGLE FIBER

Remote/CON Extender

<table>
<thead>
<tr>
<th>Nr.</th>
<th>Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>USB</td>
<td>USB from Videocamera, Photocamera, Joystick</td>
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</tr>
<tr>
<td>3</td>
<td>dc</td>
<td>Connection power supply 12V 2A</td>
</tr>
</tbody>
</table>

LED STATUS

- yellow: LINK ok
- green: Video ok
- green blinking: Video and USB activity

Misprints, errors and technical changes reserved
1. INTRODUCTION

Local /CPU Extender

1.6 PRODUCT ELEMENTS - USBFLEX BACKSIDE

<table>
<thead>
<tr>
<th>Nr.</th>
<th>Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>USB</td>
<td>USB to PC</td>
</tr>
<tr>
<td>2</td>
<td>kvm-link</td>
<td>Connection for CAT5/6/7 cable</td>
</tr>
<tr>
<td>3</td>
<td>dc</td>
<td>Connection 12V 2A power supply</td>
</tr>
</tbody>
</table>

**LED STATUS**
- yellow: LINK ok
- green: Video ok
- green blinking: Video and USB activity

<table>
<thead>
<tr>
<th>Nr.</th>
<th>Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>LED Status</td>
<td>Display the status of the extender</td>
</tr>
<tr>
<td>2</td>
<td>Reset</td>
<td>Button for reset</td>
</tr>
</tbody>
</table>
1.7 ABOUT THE STATUS LED

The Status LED (8/15) can light red, orange or green. Table 1 shows the meaning of each colour. Also see chapter *Troubleshooting*.

<table>
<thead>
<tr>
<th>Colour</th>
<th>Blinking</th>
<th>Physical Link</th>
<th>Active Connection</th>
<th>Video Extended</th>
<th>USB Initialisation</th>
<th>USB Data Received</th>
<th>Identify Command</th>
<th>Autoupdate Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>-</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td></td>
<td>Update Failed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red</td>
<td>Slow</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td></td>
<td>Update Failed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orange</td>
<td>-</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td></td>
<td>Update in Progress</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orange</td>
<td>Fast</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td>Update Succeeded</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Green</td>
<td>-</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Green</td>
<td>V. fast</td>
<td>Yes**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red/Green</td>
<td>V. fast</td>
<td>Yes**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>RJ45 Socket LEDs</strong></td>
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<td><strong>RJ45 Socket LEDs</strong></td>
</tr>
<tr>
<td>Yellow</td>
<td>-</td>
<td>No</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yellow</td>
<td>Slow</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Green</td>
<td>-</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Green</td>
<td>V. fast</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* MX only

** Rem. Only

*Meaning of LED indicators*

1.8 UNPACKING AND CHECKING THE CONTENTS

Before using the product for the first time it should be checked for damage. In case of damage due to transport inform the carrier immediately. Before delivery the product is checked for its function and its operating safety.

- Make sure that the packaging contains the following content:

**USBflex Single copper**

**Local/CPU Unit**
1 x UB1 local/CPU
1 x wall power supply unit 12 V 2A (EU-plug or Int plug)
1 x USB cable 1,8m/5.9ft
4 x rubber feet

**Remote / CON Unit**
1 x UB1 remote/CON
1 x wall power supply unit 12 V 2A (EU-plug or Int plug)
4 x rubber feet

**USBflex Single fiber**

**Local/CPU Unit**
1 x UB1-F local/CPU
1 x wall power supply unit 12 V 2A (EU-plug or Int plug)
1 x USB cable 1,8m/5.9ft
1 x SFP module multimode up to 500m (optionally with single mode up to 20km)
4 x rubber feet

**Remote / CON Unit**
1 x UB1-F remote/CON
1 x wall power supply unit 12 V 2A (EU-plug or Int plug)
1 x SFP module multimode up to 500m (optionally with single mode up to 20km)
4 x rubber feet
1. INTRODUCTION

1.9 MOUNTING OPTIONS

1.9.1 MOUNTING PADS AND RUBBER FEET

The mounting pads and rubber feet can be used to hold the extenders in place and prevents them from sliding and falling.

To attach the mounting pads or rubber feet:
1. Remove the protection layer from the mounting pads or rubber feet (G).
2. Attach the mounting pads or rubber feet (G) to the bottom the units.

1.9.2 MOUNTING KITS (OPTIONAL)

The following mounting kits are available:

Rackmounting RMK-FLEX-F  Part Nr. 6232 RMK-FLEX-F
The rack mounting kit RMK-FLEX-F is for mounting kvm-tec USBflex single extenders. It consists of a 19” rack shelf and an alu-faceplate.

Rackmounting RMK-FLEX-FN-T  Part-Nr. 6233 RMK-FLEX-FN
The rack mounting kit RMK-FLEX-FN is for assembling kvm-tec USBflex extenders. It consists of 19” Rack Shelf, an alu-faceplate and a power supply. For 4 Single Extender in one Rack

Under table mounting kit  Part Nr 6231 UMK-FLEX
The Under Desk Mounting kit is for underdesk mounting of the USBflex extender.

Din Rail mounting  Part-Nr. 6235 DINMK-FLEX
The DIN rail mounting is used for space-saving installation in control cabinets or on DIN rails. The attachment to the USBflex Extenders is possible in several ways.

Vesa mounting  Part-Nr. 6236 VH-FLEX
The robust VESA mounting is used to attach an extender to a monitor with existing VESA mounting points. The Extender becomes one unit with the monitor and saves a lot of space and cable clutter.

2. INSTALLATION OF THE EXTENDER

2.1 INSTALLING THE EXTENDER

WARNING! Read and understand all safety information before installing the product.

The units can be set up to access one host computer, or to access numerous host computers. In the case of the latter, an additional Network Switch must be installed. With a Network Switch, each user can gain quick access to any of the required computers.

Point to point connection & Matrix Switching System
2. INSTALLATION OF THE EXTENDER

2.2 QUICKINSTALLATION USBFLEX SINGLE COPPER

1. Connect the CON / Remote and the CPU / Local Unit to the included 12V 2A power supply.
2. Now connect the USB cable to a USB port on your PC and connect the other end of the USB cable to the CPU / Local Unit. Connect some USB devices to the CON / Remote Unit.
3. Connect the CPU / Local and the CON / Remote Unit with a network cable.

HAVE FUN - your kvm-tec Extender is now in use for many years (MTBF approx 10 years)

Quick Installation USBflex local / CPU – remote/ CON

2.3 QUICKINSTALLATION USBFLEX SINGLE FIBER

1. Connect the CON / Remote and the CPU / Local Unit to the included 12V 2A power supply.
2. Now connect the USB cable to a USB port on your PC and connect the other end of the USB cable to the CPU / Local Unit. Connect some USB devices to the CON / Remote Unit.
3. Connect the CPU / Local and the CON / Remote Unit with a network cable.

HAVE FUN - your kvm-tec Extender is now in use for many years (MTBF approx 10 years)

Quick Installation USBflex Fiber local / CPU – remote/ CON

Network cable CAT5e/6/7 up to 150m/492ft

OM3-Fiber cable up to 500m/1640ft

USB from Photo camera
USB from Joystick
USB from Video camera

USB from Camera
USB from Joystick
USB from Video camera
2. INSTALLATION OF THE EXTENDER

2.4 START UP

To start up the system without switch:
1. Make sure that the two monitors and the computer are switched on.
2. If you are using a Network Switch, connect the power supply to an earthed wall socket.
3. Connect both extender power supplies (C) to an earthed wall socket. Both extenders will start an initialisation process. The red status LED blinks a few seconds. After a few seconds the status LED lights green. The monitor will display your computer’s desktop or any open applications.

2.5 REMOVING A CATX CABLE

To remove a CATx cable:
• Press the latch down and slowly pull the cable out.

2.6 BEST PRACTICE FOR WINDOWS 10

Disable USB Energy Savings in Windows 10
2. INSTALLATION OF THE EXTENDER
3. NETWORK SETTINGS AND MANAGEMENT SWITCHING SYSTEMS

All network settings, user administration and extender management are done via the included Switching Manager software and all functions are described in the Switching Manager 2000 manual. You can download the manual from our website. www.kvm-tec.com

3.1 MATRIX SWITCHING SYSTEM

The configuration is done via the Switching Manager.

3.2 POINT TO POINT CONNECTION

Connect the cables - plug & play.

3.3 UPDATE WITH USB-STICK

Plug the USB stick with update file into USB Flex.
1. press the button on the back left (if PtP, the USB channel will be disconnected) – 4 sec
2. wait until LED flashes orange (USB stick is scanned for updates) – 10-20 sec
3. LED lights up specifically for 3 seconds
4. LED red -> no update on stick found (remove stick and start at step 1)
5. press button again
6. wait until the update is completed or an error occurs (for PtP local is updated first) – 2-3 min (PtP ~ 5-6 min)
   While update is running, LED flashes green, if data is transferred or copied, LED flashes very fast.
   At the end of the update, the LED flashes orange 4 more times and then starts the reboot process (the Extender must not be disconnected from the power supply during this process!)

4. FIRST AID

smart connection

---

No Power (No LED)

- Check the power plug
- Is the power supply ok? Try another Unit.

USB is not working

- Are the USB devices plugged in correctly?
- Try reprogramming the Unit by using a JTAG programmer
- Are the USB devices working directly on the PC?

---

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- Are the USB Devices working directly on the PC?
5. MAINTANCE & CARE

5.1 EXTENDER CARE

Caution! Do not use solvent-containing cleaners. Do not use wipes, alcohols (e.g. spiritus) or chemicals as these could damage the surface.

5.2. DISPOSAL

This symbol on the product, the accessories or packaging indicates that this product must not be treated as unsorted municipal waste, but must be collected separately! Dispose of the product via a collection point for the recycling of waste electrical and electronic equipment within the EU and in other European countries that operate separate collection systems for waste electrical and electronic equipment. By disposing of the product in the proper manner, you help to avoid possible hazards for the environment and public health that could otherwise be caused by improper treatment of waste equipment. The recycling of materials contributes to the conservation of natural resources. Therefore do not dispose of your old electrical and electronic equipment with the unsorted municipal waste.

The packaging is made of environmentally friendly materials, which may be disposed through your local recycling facilities. By disposing of the packaging and packaging waste in the proper manner, you help to avoid possible hazards for the environment and public health.

6. WARRANTY

6.1. STANDARD WARRANTY

The warranty period is 24 months from the date of purchase. The warranty expires in case of:

- External effort
- Improper maintenance
- Violation of the operating instructions
- Lightning damage

Please, contact us first before returning the product.

6.2 EXTENDED WARRANTY

- Art Nr 9003 warranty extension to 5 years per Set
- Art Nr 9002 warranty extension to 5 years per Unit
7. CABLE REQUIREMENTS

7.1 REQUIREMENTS FOR CAT5E/6/7 CABLES

A Cat5e/6/7 cable should meet the following requirements:

- The pins are connected 1:1. **Caution:** the cable pairs must be twisted to EIA/TIA-568A (rare) or EIA/TIA-568 B (common) pairs.
- Erroneous assignments cannot be found with a simple cable tester.
- The pins for the green pair of wires are not adjacent to one other.
- The cable must at the very least meet the CAT5 specifications and be suitable for Gigabit transmission.
- The cable should meet one of the following standards: Class D ISO/IEC 11801:2002 or EN 50173-1:2002. Schema EIA/TIA-568 B.
- Only use shielded installation cable with min. cross section of 24 AWG throughout the length.
- The shield should be contiguous and connected to both ends. A shielded patch cable is allowed for connection to the device.

![Schema EIA/TIA-568 B](image)

<table>
<thead>
<tr>
<th>Pin</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Orange/White</td>
</tr>
<tr>
<td>2</td>
<td>Orange</td>
</tr>
<tr>
<td>3</td>
<td>Green/White</td>
</tr>
<tr>
<td>4</td>
<td>Blue</td>
</tr>
<tr>
<td>5</td>
<td>Blue/White</td>
</tr>
<tr>
<td>6</td>
<td>Green</td>
</tr>
<tr>
<td>7</td>
<td>Brown/White</td>
</tr>
<tr>
<td>8</td>
<td>Brown</td>
</tr>
</tbody>
</table>

8. REQUIREMENTS NETWORK SWITCH

The entire switching network system requires its own separate network. For security reasons, it cannot be integrated into an existing corporate network.

The network switch must meet the following specifications:

- 1 Gigabit switch, with a port-to-port transfer rate of 1 Gigabit/second.
- The following switches have all been tested and verified to work with all kvm-tec extenders:

**Network requirements Matrix System UDP Version**

The KVM-TEC Matrix Switching System communicates via IP between the individual endpoints (local/CPU or remote/CON), as well as with the KVM-TEC Switching Manager, Gateway2Go and API. Sharing of videos is realized via the IGMP function of the switch via multicast.

Each endpoint joins a multicast group, even if only one connection is established. This process is repeated cyclically so that the switch keeps the multicast group active. One exception is the Gateway2Go, which uses unicast and communicates via UDP just like the other devices.

**The following UDP ports are required for the transmission:**

Port Number 53248 (0xD000) to 53260 (0xD00C)

Port Number 50000 (0xC350)

These ports must be taken into account when configuring the firewall. For the connection via WAN a secured VPN connection is necessary.

The KVM-TEC Matrix system supports DHCP management of IP addresses, static IP addresses are possible, internal default address range and assignment of IP addresses via a DHCP server. To meet all these requirements, the use of Layer 3 switches is recommended.

8.1 RECOMMENDED SWITCHES

An up-to-date list of all recommended switches can be found on our website under Switching System - Recommended Switches.

https://www.kvm-tec.com/fileadmin/user_upload/Produkte/Switching/Switching_Box_eng/NETGEAR_recommended_Switche_EN_01.pdf
9. CONTACTS & PHONE / EMAILS

If you have any questions about our products, please contact kvm-tec or your dealer.

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Find our newest updates and FAQs on our homepage:
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