USER MANUAL

ACX1004, ACX1008 SERIES

DKM TC KM SWITCH W/ HID PORTS

24/7 TECHNICAL SUPPORT AT 1.877.877.2269 OR VISIT BLACKBOX.COM

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SAFETY INSTRUCTIONS

To ensure reliable and safe long-term operation of your DKM Series TC KM Switch please note the following guidelines:

- Only use in dry, indoor environments.
- Only use the device according to this User Manual. Failure to follow these procedures could cause damage to the equipment or injury to the user or installer.
- The DKM Series TC KM Switch and the power supply units can get warm. Do not install components in an enclosed space without any airflow.
- Do not place the power supply directly on top of the device.
- Do not obscure ventilation holes.
- Only use power supplies originally supplied with the product or manufacturer-approved replacements. Do not use a power supply if it appears to be defective or has a damaged chassis.
- Connect all power supplies to grounded outlets. In each case, make sure that the ground connection is maintained from the outlet socket through to the power supply's AC power input.
- Do not connect the link interface to any other equipment, particularly network or telecommunications equipment.
- Take any required ESD precautions.

CAUTION: To disconnect the device completely from the electric circuit, remove all power cables.

- Do not attempt to open or repair a power supply unit.
- Do not attempt to open or repair the DKM Series TC KM Switch. There are no user-serviceable parts inside.
- Contact Black Box Technical Support at 877-877-2269 or info@blackbox.com if there is a fault.

CHAPTER 1: SPECIFICATIONS

1.1 INTERFACES

1.1.1 USB-HID

Our devices with USB-HID interface support a maximum of two devices with USB-HID protocol. Each USB-HID port provides a maximum current of 100 mA.

KEYBOARD

Compatible with most USB keyboards. Certain keyboards with additional functions may require custom firmware to operate. Keyboards with an integral USB Hub (Mac keyboards e.g.) are also supported.

MOUSE

Compatible with most 2-button, 3-button and scroll mice.

OTHER USB-HID DEVICES

The proprietary USB emulation also supports certain other USB-HID devices, such as specific touch screens, graphic tablets, barcode scanners or special keyboards. Support cannot be guaranteed, however, for every USB-HID device. Only two USB-HID devices are supported concurrently, such as keyboard and mouse or keyboard and touch screen. A hub is allowed, but it does not increase the number of HID devices allowed.

To support other USB “non-HID” devices, such as scanners, web cams or memory devices, choose our devices with transparent USB support.

1.1.2 RJ-10/4P4C

This interface is used to establish a customer-specific communication with the TC KM Switch.

EXTERNAL STATUS LED

To control an external LED to indicate the status of a port:

Connect the anode of the LED to pin 1 and the cathode to pin 2. Use a suitable series resistor that you connect in series. The interface supplies 3.3 V output voltage with 15 mA max.

EXTERNAL BUTTON

To control a port by an external button, use an NC (normally closed) contact as a switch. This contact has to short-circuit pin 3 and pin 4 to operate.

1.2 SUPPORTED PERIPHERALS

1.2.1 USB-HID DEVICES

Our The TC KM Switch will support most USB-HID devices, including the vast majority of keyboards and mice currently on the market. Many other kinds of HID devices such as bar-code scanners and touch screens may also be compatible.

It is not possible to guarantee support for all available USB-HID devices. In certain cases, custom firmware may be required.

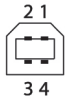
USB-HID (and other) devices that are not supported as standard will normally operate with our devices featuring transparent USB support.

NOTE: Concurrent operation of more than two USB-HID devices is not possible even if you use a USB hub.

1.3 CONNECTOR PINOUTS

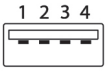
1.3.1 USB TYPE B CONNECTOR

TABLE 1-1. USB TYPE B CONNECTOR PINOUTS

PICTURE	PIN	SIGNAL	COLOR
	1	VCC (+5 VDC)	Red
	2	Data –	White
	3	Data +	Green
	4	GND	Black

1.3.2 USB TYPE A CONNECTOR

TABLE 1-2. USB TYPE A CONNECTOR PINOUTS

PICTURE	PIN	SIGNAL	COLOR
	1	VCC (+5 VDC)	Red
	2	Data –	White
	3	Data +	Green
	4	GND	Black

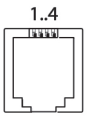
1.3.3 MINI USB TYPE B CONNECTOR

TABLE 1-3. MINI USB TYPE B CONNECTOR PINOUTS

PICTURE	PIN	SIGNAL	COLOR
	1	VCC (+5 VDC)	Red
	2	Data –	White
	3	Data +	Green
	4	Not connected	—
	5	GND	Black

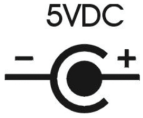
1.3.4 RJ-10/4P4C CONNECTOR

TABLE 1-4. RJ-10/4P4C CONNECTOR PINOUTS

PICTURE	PIN	SIGNAL
	1	LED +
	2	LED –
	3	Dry Contact
	4	GND

1.3.5 POWER SUPPLY CONNECTOR

TABLE 1-5. POWER SUPPLY CONNECTOR PINOUTS

PICTURE	PIN	SIGNAL
	Inside	VCC (+5 VDC)
	Outside	GND

1.4 POWER SUPPLY

TABLE 1-6. POWER SUPPLY SPECIFICATIONS

SPECIFICATION	DESCRIPTION
Voltage	5 VDC
Power Requirement	ACX1004A-HID2: max. 500 mA; ACX1008A-HID2: max. 700 mA; ACX1004A-HID4: max. 700 mA

1.5 ENVIRONMENTAL CONDITIONS

TABLE 1-7. ENVIRONMENTAL SPECIFICATIONS

SPECIFICATION	DESCRIPTION
Operating Temperature	41 to 113° F (5 to 45° C)
Storage Temperature	-13 to +140° F (-25 to +60° C)
Relative Humidity	Max. 80% non-condensing

1.6 DIMENSIONS

TABLE 1-8. DIMENSIONS SPECIFICATIONS

SPECIFICATION	DESCRIPTION
Switch Dimensions	1.7"H x 8.2"W x 5.6"D (4.2 x 20.9 x 14.3 cm)
Shipping Box Dimensions	5.1"H x 11.0"W x 7.1"D (13 x 28 x 18 cm)

1.7 SHIPPING WEIGHT

TABLE 1-9. SHIPPING WEIGHT SPECIFICATIONS

SPECIFICATION	DESCRIPTION
Shipping Weight	1.3 lb. (0.6 kg)

1.8 MTBF

The following table contains the mean time between failure (MTBF) in power-on hours (POH). The estimate is based on the FIT rates of the parts included. FIT rates are based on normalized environmental conditions of T = 60° C and activation energy (Ea) of 0.7 eV. Calculations are based on 90% confidence limit.

We estimate that inside the housing, temperature will be 15°C higher than the ambient temperature. Therefore, the MTBF calculation refers to an ambient temperature of 45°C. The humidity is limited to 60%.

TABLE 1-10. MTBF SPECIFICATIONS

SWITCH PRODUCT CODE	MTBF
ACX1004A-HID2	487,000 POH
ACX1008A-HID2	361,000 POH
ACX1004A-HID4	357,000 POH
ACX1004A-U23	468,000 POH

CHAPTER 2: DESCRIPTION

2.1 APPLICATION

The DKM Series TC KM Switch is used to communicate between several sources (computer, CPU, KVM Extender CON Units) and several monitors with one keyboard and mouse set only.

The DKM Series TC KM Switch is especially suitable for use with KVM switches and KVM extenders in the Black Box family.

2.2 SYSTEM OVERVIEW

The DKM Series TC KM Switch is connected to sources (computer, CPU, KVM extender CON Units) using the cables supplied.

Keyboard and mouse are connected to the device.

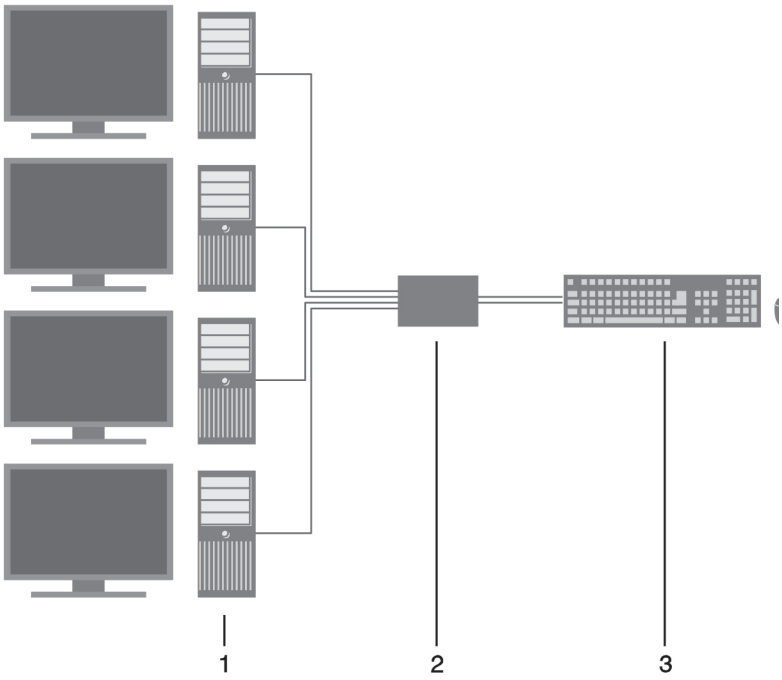


FIGURE 2-1. TYPICAL APPLICATION

TABLE 2-1. COMPONENTS IN A TYPICAL APPLICATION

NUMBER IN FIGURE 2-1	DESCRIPTION
1	Sources (computer, CPU, KVM Extender CON Units)
2	TC KM Switch
3	Keyboard, mouse

NOTE: See Section 3.3 in this manual for installation examples.

2.3 PRODUCT RANGE

TABLE 2-2. AVAILABLE SWITCH MODELS

PRODUCT CODE	DESCRIPTION
ACX1004A-HID2	TC KM Switch 4 Port
ACX1008A-HID2	TC KM Switch 8 Port
ACX1004A-HID4	TC KM Switch for parallel switching of 2x4 ports
ACX1004A-U23	TC KM Switch with 4 ports USB-HID and 4 ports USB 2.0

2.4 DEVICE VIEWS

2.4.1 ACX1004A-HID2

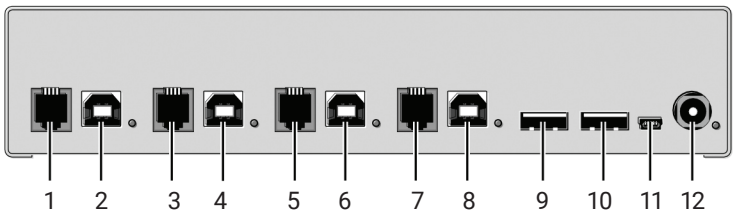


FIGURE 2-2. REAR VIEW OF THE ACX1004A-HID

TABLE 2-3. ACX1004A-HID2 COMPONENTS

NUMBER IN FIGURE 2-2	DESCRIPTION
1	Connect to RJ-10/4P4C (Port 1)
2	To CPU 1: USB-HID
3	Connect to RJ-10/4P4C (Port 2)
4	To CPU 2: USB-HID
5	Connect to RJ-10/4P4C (Port 3)
6	To CPU 3: USB-HID
7	Connect to RJ-10/4P4C (Port 4)
8	To CPU 4: USB-HID
9	Connect to USB-HID devices 1
10	Connect to USB-HID devices 2
11	Service port
12	Connect to 5-VDC power supply

2.4.2 ACX1008A-HID2

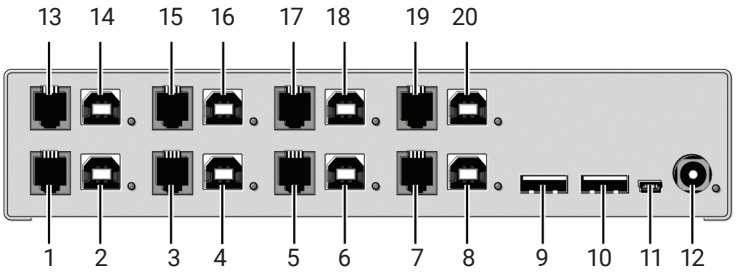


FIGURE 2-3. REAR VIEW OF THE ACX1008A-HID2

TABLE 2-4. ACX1008A-HID2 COMPONENTS

NUMBER IN FIGURE 2-3	DESCRIPTION
1	Connect to RJ-10/4P4C (Port 1)
2	To CPU 1: USB-HID
3	Connect to RJ-10/4P4C (Port 2)
4	To CPU 2: USB-HID
5	Connect to RJ-10/4P4C (Port 3)
6	To CPU 3: USB-HID
7	Connect to RJ-10/4P4C (Port 4)
8	To CPU 4: USB-HID
9	Connect to USB-HID devices 1
10	Connect to USB-HID devices 2
11	Service port
12	Connect to 5-VDC power supply
13	Connect to RJ-10/4P4C (Port 5)
14	To CPU 5: USB-HID
15	Connect to RJ-10/4P4C (Port 6)
16	To CPU 6: USB-HID
17	Connect to RJ-10/4P4C (Port 7)
18	To CPU 7: USB-HID
19	Connect to RJ-10/4P4C (Port 8)
20	To CPU 8: USB-HID

2.4.3 ACX1004A-HID4

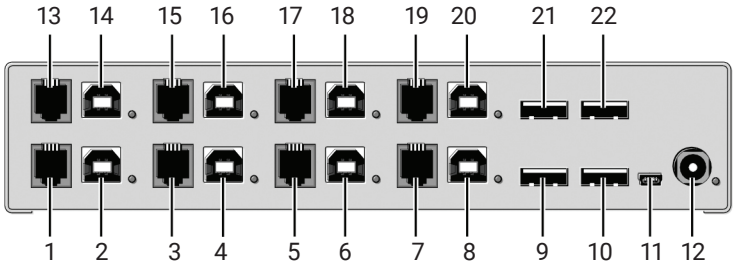


FIGURE 2-4. REAR VIEW OF THE ACX1004A-HID4

TABLE 2-5. ACX1004A-HID4 COMPONENTS

NUMBER IN FIGURE 2-4	DESCRIPTION
1	Connect to RJ-10/4P4C (Port 1)
2	To CPU 1.1: USB-HID
3	Connect to RJ-10/4P4C (Port 2)
4	To CPU 2.1: USB-HID
5	Connect to RJ-10/4P4C (Port 3)
6	To CPU 3.1: USB-HID
7	Connect to RJ-10/4P4C (Port 4)
8	To CPU 4.1: USB-HID
9	Connect to USB-HID devices 1
10	Connect to USB-HID devices 2
11	Service port
12	Connect to 5-VDC power supply
13	Connect to RJ-10/4P4C (Port 5)
14	To CPU 1.2: USB-HID
15	Connect to RJ-10/4P4C (Port 6)
16	To CPU 2.2: USB-HID
17	Connect to RJ-10/4P4C (Port 7)
18	To CPU 3.2: USB-HID
19	Connect to RJ-10/4P4C (Port 8)
20	To CPU 4.2: USB-HID
21	Connect to USB-HID devices 3
22	Connect to USB-HID devices 4

NOTE: USB-B connectors 1.2–4.2 must be connected to additional USB-HID modules on the extender in order to allow parallel switching with USB-B connectors 1.1–4.1.

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2.4.4 ACX1004A-U23

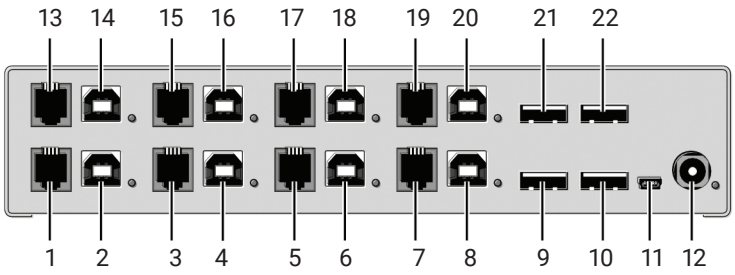

FIGURE 2-5. REAR VIEW OF THE ACX1004A-U23

TABLE 2-6. ACX1004A-U23 COMPONENTS

NUMBER IN FIGURE 2-5	DESCRIPTION
1	Connect to RJ-10/4P4C (Port 1)
2	To CPU 1.1: USB-HID
3	Connect to RJ-10/4P4C (Port 2)
4	To CPU 2.1: USB-HID
5	Connect to RJ-10/4P4C (Port 3)
6	To CPU 3.1: USB-HID
7	Connect to RJ-10/4P4C (Port 4)
8	To CPU 4.1: USB-HID
9	Connect to USB-HID devices 1
10	Connect to USB-HID devices 2
11	Service port
12	Connect to 5-VDC power supply
13	Connect to RJ-10/4P4C (Port 5)
14	To CPU 1.2: USB 2.0
15	Connect to RJ-10/4P4C (Port 6)
16	To CPU 2.2: USB 2.0
17	Connect to RJ-10/4P4C (Port 7)
18	To CPU 3.2: USB 2.0
19	Connect to RJ-10/4P4C (Port 8)
20	To CPU 4.2: USB 2.0
21	Connect to USB-HID devices 3
22	Connect to USB-HID devices 4

NOTE: USB-B connectors 1.2–4.2 must be connected to additional USB 2.0 embedded modules.

:

2.5 STATUS LEDS

The TC KM Switch is fitted with a multi-color LED on both sides that indicates connection status.

FIGURE 2-6. LEDS ON THE FRONT PANEL OF THE SWITCH

TABLE 2-7. STATUS LEDS ON THE FRONT PANEL

NUMBER IN FIGURE 2-6	LED	STATUS	DESCRIPTION
1	Status (green)	Off	Device not ready
		On	Device ready
2	Power (red)	Off	Power supply not available
		On	Power supply available

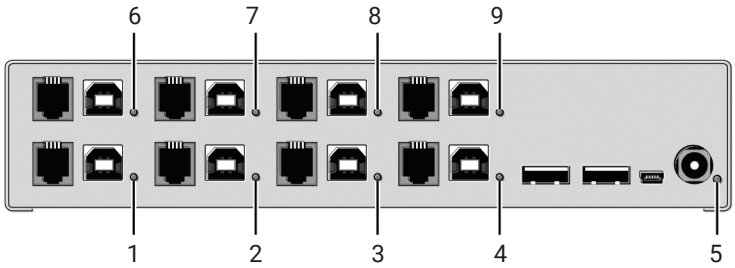

FIGURE 2-7. LEDS ON THE BACK PANEL OF THE SWITCH

TABLE 2-8. STATUS LEDS ON THE BACK PANEL

NUMBER IN FIGURE 2-7	LED	STATUS	DESCRIPTION
1	USB Status CPU 1 (green)	Off	No connection to CPU 1
		On	Connection to CPU 1
2	USB Status CPU 2 (green)	Off	No connection to CPU 2
		On	Connection to CPU 2
3	USB Status CPU 3 (green)	Off	No connection to CPU 3
		On	Connection to CPU 3
4	USB Status CPU 4 (green)	Off	No connection to CPU 4
		On	Connection to CPU 4
5	Power (red)	Off	Device not ready
		On	Device ready
6	USB Status CPU 5 (green)	Off	No connection to CPU 5
		On	Connection to CPU 5
7	USB Status CPU 6 (green)	Off	No connection to CPU 6
		On	Connection to CPU 6
8	USB Status CPU 7 (green)	Off	No connection to CPU 7
		On	Connection to CPU 7
9	USB Status CPU 8 (green)	Off	No connection to CPU 8
		On	Connection to CPU 8

CHAPTER 3: INSTALLATION

3.1 PACKAGE CONTENTS

Your extender package contains the following items:

- DKM Series TC KM Switch
- External power supply
- Power cord
- CD-ROM with user manual
- (4) USB cables (1.8-m, Type A to Type B)

Additional items included in package for ACX1008A-HID2/ACX1004A-HID4/ACX1004A-U23:

- (4) USB cables (1.8-m, Type A to Type B)

If anything is missing or damaged, contact Black Box Technical Support at 877-877-2269 or info@blackbox.com.

3.2 SYSTEM SETUP

NOTE: For first-time users, we recommend that you set up the system with the CPU Unit and the CON Unit in the same room as a test setup. This will allow you to identify and solve any cabling problems, and experiment with your system more conveniently.

SETUP STEPS:

1. Switch off all devices.
2. Connect the USB cables to the CPUs (CON units) and to the TC KM Switch.
3. Connect mouse and keyboard to the TC KM Switch.
4. Connect the 5-VDC power supply to the TC KM Switch.
5. Power up the system.

When powering up the TC KM Switch, a boot process will be enabled. The duration depends upon the size of the TC KM Switch (4 port version: 30 seconds, 8 port version: 50 seconds).

The boot process must complete before you can use the TC KM Switch and keyboard and mouse will be enabled.

3.3 EXAMPLE APPLICATIONS

This section illustrates typical installations of the TC KM Switch .

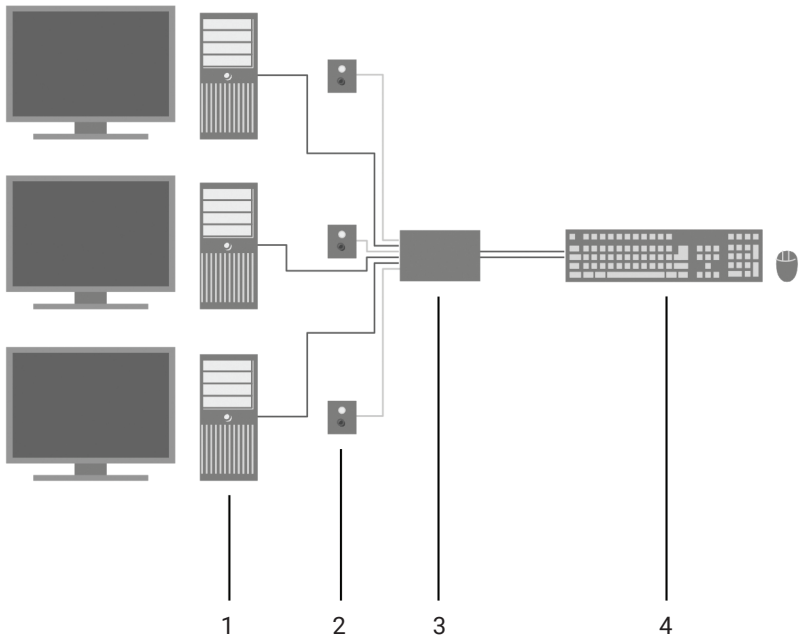

FIGURE 3-1. DIRECT CPU CONNECTION

TABLE 3-1. TC KM SWITCH (DIRECT CPU CONNECTION)

NUMBER IN FIGURE 3-1	DESCRIPTION
1	Source (computer, CPU)
2	Switch button
3	TC KM Switch
4	Keyboard, mouse

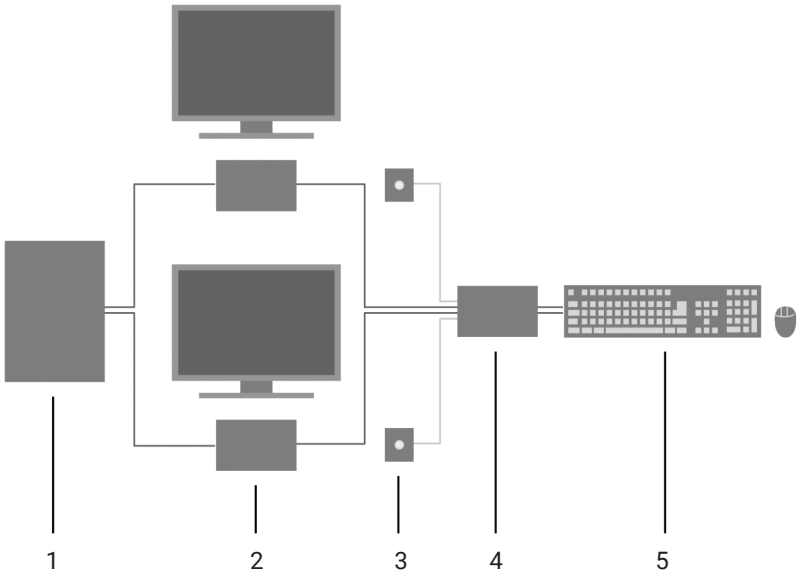

FIGURE 3-2. USING THE TC KM SWITCH WITH A BLACK BOX KVM SWITCH

TABLE 3-2. TC KM SWITCH (IN COMBINATION WITH BLACK BOX KVM SWITCH)

NUMBER IN FIGURE 3-2	DESCRIPTION
1	Black Box KVM Switch
2	CON Units
3	Monitor LEDs
4	TC KM Switch
5	Keyboard, mouse

CHAPTER 4: CONFIGURATION

4.1 COMMAND MODE

The TC KM Switch has a Command Mode that allows several functions via keyboard command during normal use.

To enter Command Mode, use a hotkey sequence and to exit Command Mode, press <Esc>. While in Command Mode, the LEDs Shift and Scroll on the console keyboard will flash. In Command Mode, normal keyboard and mouse operation will cease. Only selected keyboard commands are available.

If no keyboard command is executed within 10 seconds after activating Command Mode, it will be automatically deactivated.

The following table lists the keyboard commands to enter and to exit Command Mode and to change the hotkey sequence.

TABLE 4-1. KEYBOARD COMMANDS

FUNCTION	KEYBOARD COMMAND
Enter Command Mode (default)	2x <Right Shift> (or hotkey)
Exit Command Mode	<Esc>
Change hotkey sequence	<current hotkey>, <c>, <new hotkey code>, <Enter> Until 2011-30-09: <Left Ctrl> + <Left Shift> + <c>, <Hotkey Code>, <Enter>

<Key> + <Key> Press keys simultaneously

<Key>, <Key> Press keys successively

2x <Key> Press key quickly, twice in a row (similar to a mouse double-click)

The hotkey sequence to enter Command Mode can be changed. The following table lists the Hotkey Codes for the available key sequences.

TABLE 4-2. HOTKEY CODES

HOTKEY CODE	HOTKEY
0	Freely selectable (2012-01-12)
2	2x <Scroll>
3	2x <Left Shift>
4	2x <Left Ctrl>
5	2x <Left Alt>
6	2x <Right Shift>
7	2x <Right Ctrl>
8	2x <Right Alt>

NOTE: In a KVM switch configuration, choose different hotkeys for the KVM Extender and the Black Box TC KM Switch.

Set freely selectable Hotkey (exemplary)

To set a freely selectable hotkey (e.g. 2x <Space>), use the following keyboard sequence: <current hotkey>, <c>, <0>, <Space>, <Enter>

Reset Hotkey

To set a hotkey back to the default settings of the extender, press the key combination <Right Shift> + <Del> within 5 seconds after switching on the CON unit or plugging in a keyboard.

4.2 CONFIGURATION OF MULTI-SCREEN CONTROL

The TC KM Switch can be flexibly configured for the use of Multi-Screen Control via Tera tool, so the possibility of switching via mouse.

For a configuration proceed as follows:

1. Execute the DKM Java Utility on your computer.
2. Select “Extras > KM-Switch MSC Configurator” in the menu bar.
3. Connect the TC KM Switch via a Mini-USB cable to your computer.
4. Press the button “Search KM-Switch.”
5. Select your TC KM Switch from the list and press the Next > button.
6. Select the requested layout in the field “Arrangement” or select “Free Layout” for a flexible layout.
7. If you have selected “Free Layout,” move the requested monitors from the field “Available Screens” into the grid and arrange them according to your requirements. The monitors can be adjusted in terms of size, if required. Use the mouse and drag the monitors into the appropriate size by using the selection points.
8. Alternatively, you can open an already existing layout by using the “Open” button or press the “Save As” button to store the current layout.
9. Confirm your layout by pressing the “Finish” button. The configuration will be transferred to the TC KM Switch and stored.

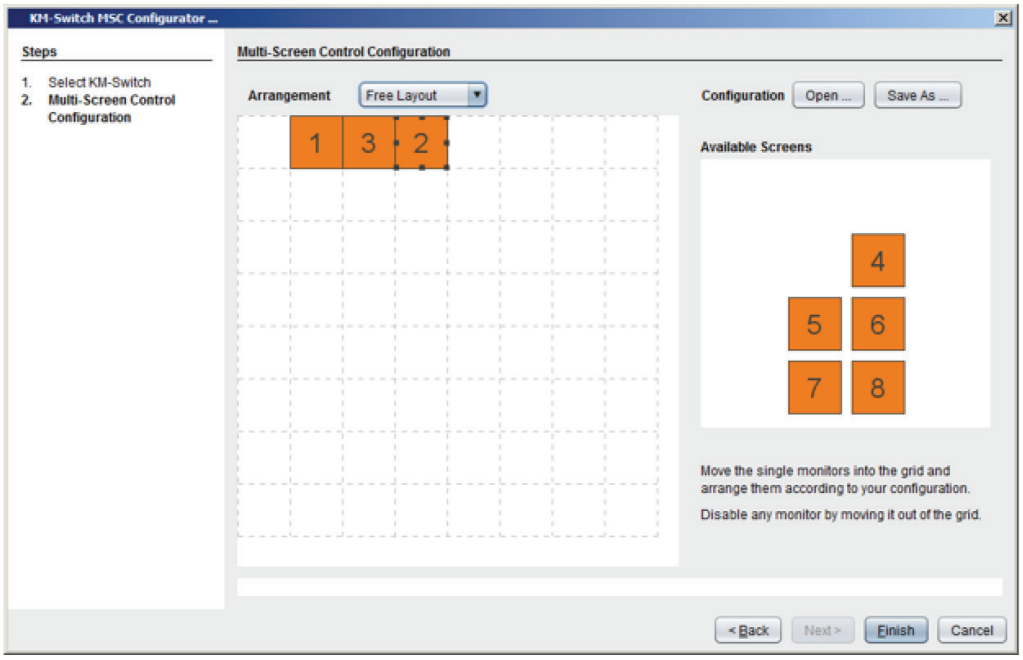

FIGURE 4-1. CONFIGURATOR MULTI-SCREEN CONTROL

4.3 EXTERNAL DISPLAY (OPTIONAL)

The TC KM Switch has an RJ-10 interface at each USB-HID port for CPUs. It provides the current status of the port, e.g. for control of a status LED.

4.4 EXTERNAL CONTROL (OPTIONAL)

The TC KM Switch has an RJ-10 interface at each USB-HID port for CPUs. You can change the current switching status via a contact-closure switch.

4.5 FIRMWARE UPDATE

The TC KM Switch can be updated via a service port. To perform an update, proceed as follows:

1. Remove all USB cables from the CPU ports of the TC KM Switch.
2. Connect from a computer to the TC KM Switch via a mini USB cable. As a result, the TC KM Switch will open a flash drive.
3. Copy the provided firmware files to the TC KM Switch. You do not have to adhere to a special sequence.
4. Restart the TC KM Switch.
5. Before putting the TC KM Switch into operation again, you have to reconnect to USB cables to the TC KM Switch with the power switched off.

5.1 SWITCHING A SOURCE

5.1.1 SWITCHING VIA KEYBOARD

From your console, you can switch between different monitors using a keyboard sequence as follows:

1. Open Command Mode with the hotkey(see Section 4.1).

2. Enter the number of the specific source or monitor and confirm with the <Enter> key.

Command Mode will close and the keyboard LEDs will return to their previous status.

Keyboard and mouse are connected to the specified source or monitor.

NOTE: When using the numeric keypad for switching, you don't need to press the <Enter> key to confirm the switching operation.

5.1.2 SWITCHING VIA MOUSE (PANNING)

When panning the mouse cursor beyond the border of the monitor, you can switch from your console to monitors located horizontally or vertically.

Monitors that are only arranged horizontally or vertically (e. g. 4 x 1, 8 x 1, 1 x 4, 1 x 8) have to be operated with the one-dimensional Multi-Screen mode. Monitors that are arranged vertically and horizontally (e. g. 2 x 2, 4 x 2) have to be operated with the two-dimensional Multi-Screen mode. Alternatively, the arrangement can be virtually done by a freely configurable mode.

NOTE: When using sources (computers, CPUs) in multi-head operation (e.g. dual-head), the switching only works manually via keyboard commands. Any non-observance may have a negative influence on the stability of the system.

The function cannot be guaranteed when using wireless keyboards and mice.

1. Activate the switching via mouse by executing the following keyboard sequences:

One-dimensional mode (horizontal): hotkey, <x>, <1>, <Enter>

One-dimensional mode (vertical): hotkey, <x>, <3>, <Enter>

Two-dimensional mode: hotkey, <x>, <2>, <Enter>

Freely configurable mode: hotkey, <x>, <4>, <Enter> (for configuration, see Section 4.1)

2. Move the mouse pointer beyond the border of the monitor to the adjacent horizontal or vertical monitor. Switching to the new monitor will occur instantly.

3. Deactivate the switching via mouse by executing the following keyboard sequence: hotkey, <x>, <0>, <Enter>

4. Unused or non-connected ports should be deactivated, if switching via mouse is in use. To deactivate a port, switch to it at first (manual switching). Then deactivate the port by using the following keyboard sequence:

hotkey, <x>, <d>, <Enter>

5. Re-activate the port by using the following keyboard sequence:

hotkey', <x>, <e>, <Enter>

6. Re-activate all ports at the same time by using the following keyboard sequence:

hotkey, <x>, <c>, <Enter>

NOTE: When switching to a deactivated port, the respective port flashes periodically. After booting the TC KM Switch, you will be switched by default to the first available port that is activated.

NOTE: Additional software for calibration and positioning of the mouse pointer is not necessary.

5.1.3 EXTERNAL SWITCHING (OPTIONAL)

Optionally, you can connect a button with an RJ-10 interface to switch to the respective source or monitor. The RJ-10 interface is separately available for each USB-HID port with a CPU connection.

CHAPTER 6: TROUBLESHOOTING

6.1 USB-HID

TABLE 6-1. TROUBLESHOOTING TIPS

PROBLEM	POSSIBLE REASON	SOLUTION
Keyboard LEDs Shift and Scroll are flashing	Keyboard in Command Mode	Press <Esc> to leave Command Mode
USB device not working	No USB-HID device connected	Connect USB-HID device
	USB-HID device is not supported	Check compatibility

CHAPTER 7: TECHNICAL SUPPORT

Before contacting Black Box Technical Support, make sure you have read this manual, and then installed and set-up your TC KM Switch as recommended.

7.1 SUPPORT CHECKLIST

To efficiently handle your request, make sure you have the following information available before you call:

- Company, name, phone number and email
- Type and serial number of the device (see bottom of device)
- Nature, circumstances and duration of the problem
- Components included in the system (such as graphic source/CPU, OS, graphic card, monitor, USB-HID/USB 2.0 devices, interconnect cable) including manufacturer and model number
- Results from any testing you have done

7.2 SHIPPING CHECKLIST

1. To return your device, contact Black Box Technical Support at 877-877-2269 or info@blackbox.com to obtain an RMA number (Return-Material-Authorization).
2. Package your devices carefully, preferably using the original box. Add all pieces that you received originally.
3. Note your RMA number visibly on your shipment.

APPENDIX A: REGULATORY INFORMATION

A.1 FCC STATEMENT

This equipment generates, uses, and can radiate radio-frequency energy, and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

APPENDIX A: REGULATORY INFORMATION

A.2 NOM STATEMENT

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.
5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc.
6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.
10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.
11. El aparato eléctrico deberá ser connectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.
12. Precaución debe ser tomada de tal manera que la tierra fisica y la polarización del equipo no sea eliminada.
13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.
14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.
15. En caso de existir, una antena externa deberá ser localizada lejos de las lineas de energia.
16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.
17. Cuidado debe ser tomado de tal manera que objectos liquidos no sean derramados sobre la cubierta u orificios de ventilación.
18. Servicio por personal calificado deberá ser provisto cuando:
    - A: El cable de poder o el contacto ha sido dañado; u
    - B: Objectos han caído o líquido ha sido derramado dentro del aparato; o
    - C: El aparato ha sido expuesto a la lluvia; o
    - D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
    - E: El aparato ha sido tirado o su cubierta ha sido dañada.

APPENDIX A: REGULATORY INFORMATION

A.3 CE DECLARATION OF CONFORMITY

This product complies with the provisions of the following European Directives:

2014/30/EU Council Directive on the approximation of the laws of the Member States relating to electromagnetic compatibility

2014/35/EU Council Directive on the harmonization of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits.

CE MARKING

The products comply with the following harmonized standards for Information Technology Equipment:

- EN 55022: 2010/AC:2011 (Class A)
- EN 55024:2010 + A1:2015
- EN 61000-3-2:2014
- EN 61000-3-3:2013
- EN 61000-6-2:2005
- EN 60950-1:2006/A2:2013

A.4 WEEE

The manufacturer complies with the EU Directive 2012/19/EU on the prevention of waste electrical and electronic equipment (WEEE).

A.5 ROHS/ROHS 2

This device complies with the Directive 2011/65/EU of the European Parliament and of the council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS 2, RoHS II).

APPENDIX B: GLOSSARY

The following terms are used in this manual.

AES/EBU: Digital audio standard that is officially known as AES3 and that is used for carrying digital audio signals between devices.

CATx: Any CAT5e (CAT6, CAT7) cable

CGA: Color Graphics Adapter (CGA) is an old analog graphic standard with up to 16 displayable colors and a maximum resolution of 640 x 400 pixels.

Component Video: Component Video (YPbPr) is a high-quality video standard that consists of three independently and separately transmittable video signals, the luminance signal and two color difference signals

Composite Video: Composite Video is also called CVBS and it is part of the PAL TV standard.

CON Unit: Component of a KVM Extender or Media Extender to connect to the console (monitor(s), keyboard and mouse; optionally also with USB 2.0 devices)

Console: Keyboard, mouse and monitor

CPU Unit: Component of a KVM Extender or Media Extender to connect to a source (computer, CPU)

CVBS: The analog color video baseband signal (CVBS) is also called Composite Video and it is part of the PAL TV standard.

DDC: Display Data Channel (DDC) is a serial communication interface between monitor and source (computer, CPU). It allows a data exchange via monitor cable and an automatic installation and configuration of a monitor driver by the operating system.

DisplayPort: A VESA standardized interface for an all-digital transmission of audio and video data. It is differentiated between the DisplayPort standards 1.1 and 1.2. The signals have LVDS level.

Dual Access: A system to operate a source (computer, CPU) from two consoles

Dual Link: A DVI-D interface for resolutions up to 2560 x 2048 by signal transmission of up to 330 MPixel/s (24-bit)

Dual-Head: A system with two video connections

DVI: Digital video standard, introduced by the Digital Display Working Group (http://www.ddwg.org). Single Link and Dual Link standards are distinguished. The signals have TMDS level.

DVI-I: A combined signal (digital and analog) that allows running a VGA monitor at a DVI-I port— in contrast to DVI-D (see DVI).

EGA: The Enhanced Graphics Adapter (EGA) is an old analog graphic standard, introduced by IBM in 1984. A DB9 connector is used for connection.

Fiber: Single-mode or multi-mode fiber cables

HDMI: An interface for an all-digital transmission of audio and video data. It is differentiated between the HDMI standards 1.0 to 1.4a. The signals have TMDS level.

KVM: Keyboard, video and mouse

Mini-XLR: Industrial standard for electrical plug connections (3-pole) for the transmission of digital audio and control signals

Multimode: 62.5-µ multimode fiber cable or 50-µ multimode fiber cable

OSD: The On-Screen-Display is used to display information or to operate a device.

Quad-Head: A system with four video connections

RCA (Cinch): A non-standard plug connection for transmission of electrical audio and video signals, especially with coaxial cables

S/PDIF: A digital audio interconnect that is used in consumer audio equipment over relatively short distances.

SFP: SFPs (Small Form Factor Pluggable) are pluggable interface modules for Gigabit connections. SFP modules are available for CATX and fiber interconnect cables.

Single Link: A DVI-D interface for resolutions up to 1920 x 1200 by signal transmission of up to 165 MPixel/s (24-bit). Alternative frequencies are Full HD (1080p), 2K HD (2048 x 1080) and 2048 x 1152.

APPENDIX B: GLOSSARY

Single-Head: A system with one video connection

Single-mode: 9-µ single-mode fiber cable

S-Video (Y/C): S-Video (Y/C) is a video format transmitting luminance and chrominance signals separately. It has a higher quality standard than CVBS.

TOSLINK: Standardized fiber connection system for digital transmission of audio signals (F05 plug connection)

Triple-Head: A system with three video connections

USB-HID: USB-HID devices (Human Interface Device) allow for data input. There is no need for a special driver during installation; "New USB-HID device found" is reported. Typical HID devices include keyboards, mice, graphics tablets and touch screens. Storage, video and audio devices are not HID.

VGA: Video Graphics Array (VGA) is a computer graphics standard with a typical resolution of 640 x 480 pixels and up to 262,144 colors. It follows the graphics standards MDA, CGA and EGA.

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