



ACX310
ACX310F
ACX310FIA

ACX310-T
ACX310F-T
ACX310FIA-T

ACX310-R
ACX310F-R
ACX310FIA-R

ServSwitch™ Fiber DVI + USB Extender EC

Provides Full HD and USB extension
up to 1640 feet (500 m) over multimode fiber.

Supports resolutions up to 1920 x 1200.



Customer Support Information

Order toll-free in the U.S.: Call 877-877-BBOX (outside U.S. call 724-746-5500) • FREE technical support 24 hours a day, 7 days a week: Call 724-746-5500 or fax 724-746-0746
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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.

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Normas Oficiales Mexicanas (NOM) Electrical Safety Statement INSTRUCCIONES DE SEGURIDAD

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.

NOM Statement

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.
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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 física 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 líneas de energía.

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 objetos líquidos 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: Objetos 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.

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Chapter 1: Specifications

1. Technical Specifications

Approvals	TUV, CE, UL, CSA, RoHS, WEEE, FCC
Cascadable	No
Computer Interface	DVI video, USB
DDC Support	Internal DDC table
Distance	From CPU to TX: 16 feet (5 m), maximum DVI-D and USB limitations; Between TX and RX: 328 feet (100 m), maximum
Encryption	No
Heat Dissipation	40.92 BTU/hr. maximum
Leads Supported	DVI video, USB
Switching Option	A pair of extenders (ACX310F-T and ACX310F-R or ACX310FIA-T and ACX310FIA-R) also works with a network switch (such as LGB5028A or LGB5052A). See the application diagram in Chapter 5 .
Indicators	Each unit (Transmitter or Receiver): (1) Power/Status LED
Environment	Temperature Tolerance: Operating: 32 to 113° F (0 to 45° C); Storage: -4 to 158° F (-20 to +70° C); Operating Humidity: 80%, noncondensing
Altitude	10,000 feet maximum

1. Technical Specifications (continued)

Connectors	<p>ACX310-T Transmitter:</p> <ul style="list-style-type: none">(1) DVI-I input (physical connector supports DVI-D only),(1) DVI-I output (physical connector supports DVI-D only),(1) USB Type B F,(1) RJ-45,(1) barrel connector for power; <p>ACX310F-T Transmitter:</p> <ul style="list-style-type: none">(1) DVI-I input (physical connector supports DVI-D only),(1) DVI-I output (physical connector supports DVI-D only),(1) USB Type B F,(1) SFP cage, LC connectors, multimode,(1) barrel connector for power; <p>ACX310FIA-T Transmitter also includes:</p> <ul style="list-style-type: none">(2) 3.5-mm bidirectional audio connectors; <p>ACX310-R Receiver:</p> <ul style="list-style-type: none">(1) DVI-I output (physical connector supports DVI-D only),(4) USB Type A F,(1) RJ-45,(1) barrel connector for power; <p>ACX310F-R Receiver: (1) DVI-I output (physical connector supports DVI-D only),</p> <ul style="list-style-type: none">(4) USB Type A F,(1) SFP cage, LC connectors, multimode,(1) barrel connector for power; <p>ACX310FIA-R Receiver also includes:</p> <ul style="list-style-type: none">(2) 3.5-mm bidirectional audio connectors; <p><i>NOTE: ACX310FIA supports DVI-I (both VGA and DVI-D).</i></p>
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1. Technical Specifications (continued)

Power	External in-line power supply; Input: 100–240 VAC, 50/60 Hz, 0.5 A; Output: 12 VDC, 1 A, 12 W; Power supply cord length: 5 ft. (1.5 m)
Dimensions	Each unit (Transmitter or Receiver): 1.6"H x 3.85"W x 4.17"D (4.1 x 9.8 x 10.6 cm)
Weight	Each unit: 0.61 lb. (0.27 kg) (Total: 1.22 lb. [0.55 kg])

2. Overview

2.1 Introduction

The ServSwitch™ Fiber DVI + USB Extender EC provides lossless Full HD and USB extension up to 1640 feet (500 m) over 62.5- μ m multimode fiber cable. It consists of two units: a transmitter and a receiver. The extender is plug-and-play, so there aren't any complex installation instructions. And you don't need to configure the unit, either.

NOTE: SFP modules are included with the extenders, but any SFP should work with the extender.

2.2 Features

- Supports USB keyboard/mouse, USB touchscreen, and other Human Interface Devices (HIDs).

NOTE: Storage devices such as External Hard drives / flash drives will require the USB 2.0 license ACX300-U2).

- Supports full HD 1080p and resolutions up to 1920 x 1200.
- ACX310 uses just one USB CAT5e/6/7 cable.
- ACX310F and ACX310FIA use multimode 62.5- μ m duplex fiber optic cable.
- Provides local monitoring.
- Supports USB 2.0 extension.
- Plug-and-play installation with DDC/EDID reading.
- An optional mounting option for 19" racks with four units in (1) rack unit (RU) is available.
- Can also be wall-, table-, or DIN-rail-mounted. Mounting options accessories are:
 - ACX300-RMK: 19" Rackmounting Kit for up to 4 local or remote units.
 - ACX300-TMK: Table and Wallmount Kit for either local or remote unit.
 - ACX300-DRM: DIN-rail Mounting Kit for either local or remote unit.
- ACX310FIA also features:
 - Bidirectional audio/microphone.
 - VGA/DVI support.
- Extender pair (ACX310-T and ACX310-R, ACX310F-T and ACX310F-R, or ACX310FIA-T and ACX310FIA-R) works with a network switch to connect several PCs with several monitors, or to control several PCs from one workstation.
- When used with a network switch, the extender supports up to 48 devices. For example, you can use 30 PCs from 18 workstations.

Chapter 2: Overview

2.3 What's Included

Your package should include the following items. If anything is missing or damaged, contact Black Box Technical Support at 724-746-5500 or info@blackbox.com.

ACX310:

- (1) transmitter
- (1) receiver
- (2) 12-VDC power supplies w/US, UK, EU, and AU power clips
- (1) USB Type A to B cables
- (2) DVI-D cables
- (2) packs of (4) rubber feet
- (2) packs of (4) adhesive feet
- This user's manual

ACX310-T:

- (1) transmitter
- (1) 12-VDC power supply w/US, UK, EU, and AU power clips
- (1) USB Type A to B cable
- (1) DVI-D cable
- (1) pack of (4) rubber feet
- (1) pack of (4) adhesive feet
- This user's manual

ACX310-R:

- (1) receiver
- (1) 12-VDC power supply w/US, UK, EU, and AU power clips
- (1) DVI-D cable
- (1) pack of (4) rubber feet
- (1) pack of (4) adhesive feet
- This user's manual

ACX310F:

- (1) transmitter
- (1) receiver
- (2) 12-VDC power supplies w/US, UK, EU, and AU power clips
- (1) USB Type A to B cables
- (2) DVI-D cables

- (2) packs of (4) rubber feet
- (2) packs of (4) adhesive feet
- This user's manual

ACX310F-T:

- (1) transmitter
- (1) 12-VDC power supply w/US, UK, EU, and AU power clips
- (1) USB Type A to B cable
- (1) DVI-D cable
- (1) pack of (4) rubber feet
- (1) pack of (4) adhesive feet
- This user's manual

ACX310F-R:

- (1) receiver
- (1) 12-VDC power supply w/US, UK, EU, and AU power clips
- (1) DVI-D cable
- (1) pack of (4) rubber feet
- (1) pack of (4) adhesive feet
- This user's manual

ACX310FIA:

- (1) transmitter
- (1) receiver
- (1) DVI-D cable
- (1) DVI-I to VGA cable
- (2) 3.5-mm audio cables
- (2) 12-VDC power supplies w/US, UK, EU, and AU power clips
- (1) USB Type A to B cables
- (2) packs of (4) rubber feet
- (2) packs of (4) adhesive feet
- This user's manual

ACX310FIA-T:

- (1) transmitter
- (1) DVI-D cable
- (1) DVI-I to VGA cable

Chapter 2: Overview

- (2) 3.5-mm audio cables
- (2) 12-VDC power supplies w/US, UK, EU, and AU power clips
- (1) USB Type A to B cables
- (2) packs of (4) rubber feet
- (2) packs of (4) adhesive feet
- This user's manual

ACX310FIA-R:

- (1) receiver
- (1) DVI-D cable
- (1) DVI-I to VGA cable
- (2) 3.5-mm audio cables
- (2) 12-VDC power supplies w/US, UK, EU, and AU power clips
- (2) packs of (4) rubber feet
- (2) packs of (4) adhesive feet
- This user's manual

ACX3-SW:

- Receiver Switching License

NOTE: The ACX3xx can also support matrix switching if you purchase the ACX3-SW switching license. The license is applied to the receiver only and will allow it to communicate and switch among multiple transmitters. You can have at maximum 48 endpoints in a matrix system (i.e. 1 receiver, 47 transmitters or 47 receivers and 1 transmitter). The matrix MUST reside on a single network switch only, and each port on the network switch must support link speeds up to 1 Gbps.

2.4 Hardware Description

2.4.1 Transmitter (Local Unit)

Front Panel

The transmitter's (ACX310-T, ACX310F-T, or ACX310FIA-T) front panel is blank except for a Power Status LED, which is described in Table 2-1.

Back Panel

The transmitter's (ACX310-T, ACX310F-T or ACX310FIA-T) back panel is shown in Figures 2-1 and 2-2. Table 2-1 describes its components.

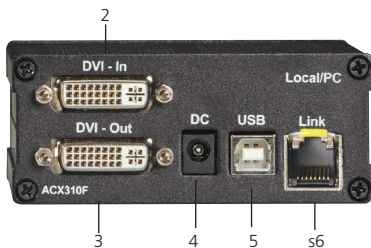


Figure 2-1. ACX310-T transmitter's back panel.

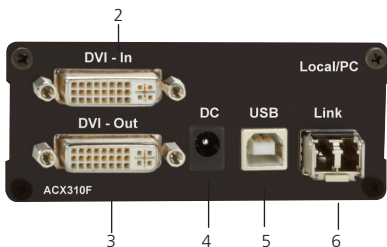


Figure 2-2. ACX310F-T transmitter's back panel.

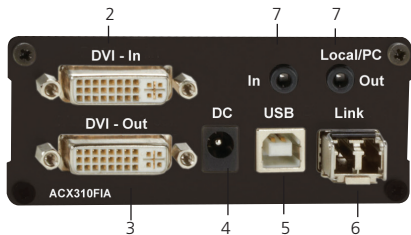


Figure 2-3. ACX310FIA-T transmitter's back panel.

Table 2-1. Transmitter's components.

Number	Component	Description
1	Power Status LED (not shown, located on the front panel of the transmitter)	Lights when power to the transmitter is on.
2	(1) DVI connector	Connects to the PC.
3	(1) DVI connector	Connects to a local monitor.
4	(1) barrel connector	Links to 12-VDC, 1-A power.
5	(1) USB Type B connector	Links to USB port on the PC.
6	(1) SFP module cage for multimode fiber connector	Connects one end of the 1640-foot (500-m) link between the transmitter and receiver.
7	(2) 3.5-mm connectors	Links to audio in and audio out.

2.4.2 Receiver (Remote Unit)

Front Panel

The receiver's front panel is blank except for a Power Status LED, which is described in Table 2-2.

Back Panel

The receiver's back panel is shown in Figures 2-3 and 2-4. Table 2-2 describes its components.

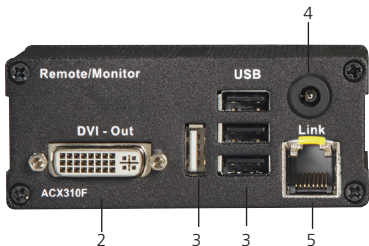


Figure 2-4. ACX310 receiver's back panel.

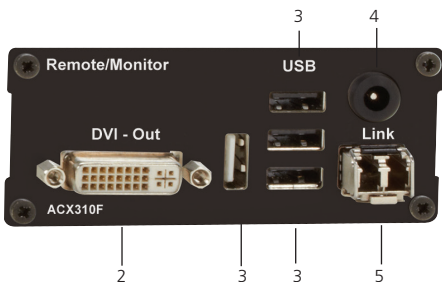


Figure 2-5. ACX310F-R receiver's back panel.

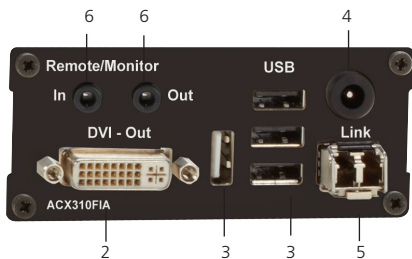


Figure 2-6. ACX310FIA-R receiver's back panel.

Table 2-2. Receiver's components.

Number	Component	Description
1	Power Status LED (not shown, located on the front panel of the receiver)	Lights when power to the receiver is on.
2	(1) DVI connector	Connects to DVI monitor.
3	(4) USB Type A connectors	Link to keyboard/mouse and two USB peripheral devices.
4	(1) barrel connector	Links to 12-VDC, 1-A power.
5	(1) SFP module cage for multimode fiber connector	Connects one end of the 1640-foot (500-m) link between the receiver and transmitter.
6	(2) 3.5-mm connectors	Links to audio in and audio out.

3. Installation

3.1 Cable Requirements

For twisted-pair models (ACX310), use CAT5/6/7 cable. The pins are connected 1:1.

NOTE: Both cable ends must comply with either EIA/TIA-568A or EIA-TIA-568B. If they don't comply, a cable tester won't find the cable pinnings.

Pinning

The pins of the green pair of wires are not together.

The cable must be at least CAT5 standard and Gigabit transfer-ready.

Table 3-1. Cable pinning.

Pin	Color	Connects to this pin	Color
1	Orange/White	2	Orange
2	Orange	1	Orange/White
3	Green/White	6	Green
4	Blue	5	Blue/White
5	Blue/White	4	Blue
6	Green	3	Green/White
7	Brown/White	8	Brown
8	Brown	7	Brown/White

NOTE: Use 24 AWG or larger shielded solid cable. Make sure that the shield is connected on both sides. You can also use shielded patch cable if the connection allows.

For fiber models (ACX310F and ACX310FIA), use 62.5- μ m multimode fiber optic cable with the included SFPs; otherwise, use the designated cable for the SFPs you are using.

Chapter 3: Installation

3.2 Installing the Transmitter and Receiver

The extender is plug-and-play. Simply plug in the following connections as shown in Figure 3-1.

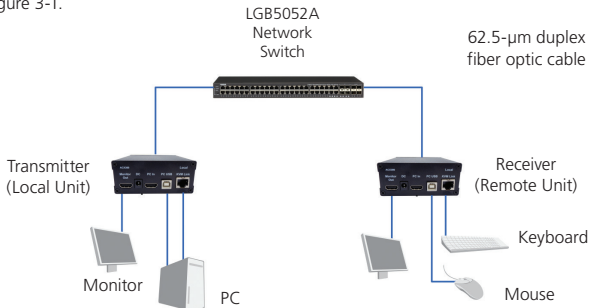


Figure 3-1. Connecting the extender units.

Connect the respective workstations (via Remote Extenders) and computers (via Local Extenders) with the network switch.

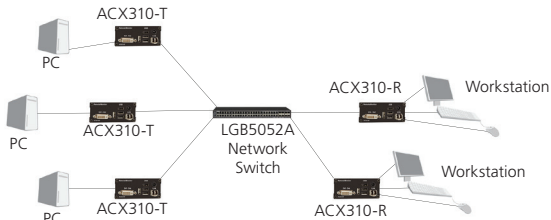


Figure 3-2. Switching application.

3.3 Initial Operation

Switch on the device. Both extenders start working automatically. For about five seconds, the LED will blink red. When the LED turns green, the device is ready to use.

NOTES:

The ACX3xx can also support matrix switching if you purchase the ACX3-SW switching license. The license is applied to the receiver only and will allow it to communicate and switch among multiple transmitters. You can have at maximum 48 endpoints in a matrix system (i.e. 1 receiver, 47 transmitters or 47 receivers and 1 transmitter). The matrix MUST reside on a single network switch only, and each port on the network switch must support link speeds up to 1 Gbps.

4. Operation

4.1 Startup

Switch on all devices. Both extenders start working automatically. For about five seconds, the LED will blink red. When the LED turns green, the device is ready to use.

4.2 Menu Settings

To enter the menu, press the ScrollLock key on the attached keyboard five times quickly.

The on-screen display (OSD) menu appears on the attached display (see Figure 4-1). You can access sub-menus by pressing the appropriate key. The currently installed firmware version is displayed below the menu.

```
Menu
T = Status Overview
U = Update Flash FW
M = Option Overview
O = DDC Option (remote monitor)
W = Network Settings
G = Extender Settings
K = Keyboard Locale (EN)
Q = Exit

Remote (Con) FW Ver = 4177
Local (PC) FW Ver = 4177
```

Figure 4-1. Main Menu.

4.2.1. Menu Item “U” — Update Flash FW

This option is used to update the firmware. Download the latest version of the firmware. Go to blackbox.com, type in the part number “ACX310,” and navigate to the proper device. Once on the product page of the device you need firmware for, click on the “Resources” tab to view all available firmware.

4.2.2 Menu Item “M” – Option Overview

This option displays the extender’s activated options. The status is indicated by the colors green (activated), and red (not activated).

If the memory option on the extender is activated, this can be enabled or disabled at any point in this menu.

```
Options Overview

[USB Memory] - Enabled
              (1 - enable, 0 - disable)
[RS232]       [VGA]
[Sound]       [Switching]

Device ID: 123456f7
Send ID to distributor to unlock
options.

Press M to enter code.
```

Figure 4-2. Options Overview menu.

The menu displays the device ID.

Compile a list of all Request Keys / Device IDs from each ACX310 Receiver unit. The request key / device ID is found in the Option Overview menu (M). Once you have the list of request keys / device IDs, determine which license you need (switching: ACX310-SW / storage devices: ACX300-U2). Once you have determined which license you need, contact Black Box at 724-746-5500, or send an email to info@blackbox.com. Include all of the Request Keys, Device IDs, and the license you would like to purchase so that the proper activation codes can be generated. Enter this activation code by pressing the “M” key. This will not alter options that have already been activated.

Press “Esc” to return to the main menu.

4.2.3 Menu Item “L” – Lock Menu

You can lock the extender menu from this menu. When enabled, access to the menu will be locked 5 minutes after start up. This prevents unauthorized access to the extender menu. To enter the main menu again, restart the extender (turn the power supply off and on).

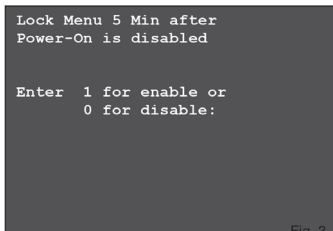


Figure 4-3. Lock menu.

To enable or disable the menu from this screen, by press "0" or "1" respectively. To return to the main menu, press "ESC."

4.2.4 Menu Item "O" – DDC Option

In this menu, you can define the DDC information used by the PC.

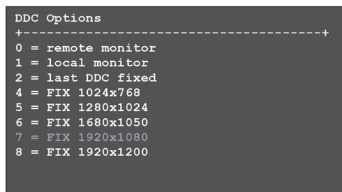


Figure 4-4. DDC Option menu.

Press "0" to use the DDC information from the monitor attached to the remote Extender.

Press "1" to use the DDC information from the monitor attached to the local Extender.

Press "2" to save the current DDC information.

Use keys “4” through “8” to use a predefined saved resolution.

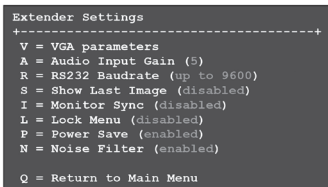
Press “ESC” to return to the main menu.

4.2.5 Menu Item “W” – Network Settings

The menu includes the preferences and settings for the switching option.

4.2.6 Menu Item “G” – Extender Settings

This menu presents more preferences. Three of the selections (VGA, Audio, and RS-232) take you to more menus, while the other four toggle on and off when you press the marked key.



```
Extender Settings
+-----+
V = VGA parameters
A = Audio Input Gain (5)
R = RS232 Baudrate (up to 9600)
S = Show Last Image (disabled)
I = Monitor Sync (disabled)
L = Lock Menu (disabled)
P = Power Save (enabled)
N = Noise Filter (enabled)

Q = Return to Main Menu
```

Figure 4-5. G: Extender Settings menu.

Menu Item “V” – VGA Parameters

Set and optimize VGA preferences through this menu.

Press the “F1” and “F4” keys to move up and down the display area. Press the “F2” and “F3” to shift the display area left and right.

Use the “F5” and “F6” keys reduce or enlarge the display area to fit the display area of the monitor.

Press the “<space bar>” to alter the rate of change of the above settings.

Repeatedly pressing the “space bar” to set this back to 1.

Use the “M” button to switch the video mode between “Auto”—the mode is automatically detected and set by the Extender: “DVI” – only DVI input is detected, and “VGA” – only VGA input is detected.

To automatically adjust and position the image area, press “K”.

Chapter 4: Operation

Press "I" to reset parameters to default values.

To save the settings and exit the menu press "S." To exit without saving press "Q."

```
Shift      up F1  F4 down  0
Shift      <- F2  F3  ->   0
Zoom       out F5  F6 in   2200
Pixelfine  -  F7  F8 +    0

Space = 1/10 steps
M = Video Mode Auto
K = Automatic seek
I = Init VGA Table
S = Save - exit
Q = Quit - no save
```

Figure 4-6. G: V: VGA Parameters menu.

Menu Item "A" – Audio Input Gain

This menu sets the volume of the audio input on the remote extender (microphone). The default value is "5" and can be amplified up to "9" and reduced down to "0". At "0," the audio input on the remote extender is disabled.

```
Audio Input Gain (5)

0      = Off
1 - 9 = Amplification Level
```

Figure 4-7. A: Audio Input Gain menu.

Menu Item “R” – RS232

The following signals are transferred, the pin numbers refer to a DB9 plug.

Table 4-1. DB9 connector pinout.

Pin	Function
3	Transmit Data
2	Receive Data
4	DTR
8	CTS

You can set the baud rate in the menu. There is a universal setting for baud rates up to 9600 that transmits RS-232 configurations transparently. For higher baud rates, you can choose these settings in Table 4-2 from the menu.

Table 4-2. Baud rate settings.

Baud Rate	Parity	Stop Bits
4800	No	1
9600	Odd	2
19200	Even	—
38400	Mark	—
57600	Space	—
115200	—	—
230400	—	—

Chapter 4: Operation

Menu Item “S” – Show Last Image

When this option is enabled, the console extender will not show a black screen when it is no longer connected to a PC extender. Instead it will keep the last image that it received. To indicate that this image is no longer current, the edges of the screen will flash red.

Menu Item “I” – Monitor Sync

You can turn the monitor synchronization on or off. When enabled, the refresh rate of the graphics card of the PC and that of the remote monitor are adjusted to match one another. This ensures smooth transmission when the screen content changes rapidly (e.g. when using multimedia applications).

Not all monitors support this method, so by default this option is disabled. If the monitor starts to flicker, then it does not support this feature and should be disabled again.

Menu Item “L” – Lock Menu

You can lock the extender OSD menu from this menu. When enabled, access to the menu will be locked 5 minutes after start up. This prevents unauthorized access to the extender menu. To enter the main menu again, restart the extender (turn the power supply off and on).

To enable or disable the menu from this screen, by press “0” or “1” respectively. To return to the main menu, press “ESC.”

Menu Item “P” – Power Save

When in power saving mode, the remote extender will turn its video off when it receives no video for more than a minute. This enables the monitor to enter sleep mode if supported. To wake, press any key on keyboard.

4.2.7 Menu Item “K” — Keyboard Locale

Select between layouts for navigating the OSD. Choose from French (Azerty), English (Qwerty), and German (Qwertz).

4.2.8 Menu Item “N” – Noise Filter

This feature improves video performance in very specific circumstances: when viewing moving video with very high levels of noise (particularly along the horizontal axis) then the frame rate of the extender will drop below a critical level, and artifacts may begin appearing in the image.

When this feature is enabled, a filter will be activated whenever the frame rate falls below the critical frame rate, and deactivated once the frame rate is sufficiently high. This filter applies a blur to the image to reduce the noise, enabling the frame rate to rise above the critical level.

We recommend enabling monitor synchronization when using this feature with a compatible monitor.

4.2.9 Menu Item “Q”

To close the extender menu, press the “Q” key.

Chapter 5: Switching Menu Guide/Settings

5. Switching Menu Guide/Settings

Press “W” in the main menu of the OSD to access the Switching Option settings and configure your network.

NOTE: This menu item is only active when the Switching Option is unlocked on the Remote Extender. ACX300-SW is the license to support the switching option.

To unlock an Option, see Section 4.1.2.

To prevent unauthorized access to the Network Settings, this item is protected by a user/password. Access is only allowed for users with administrator rights.

The default settings for an administrator user are:

User: admin

Password: admin.

```
Enter User/Password
+-----+
> USER:      admin-----
> PASSWORD:  admin-----
ESC = Cancel
```

Figure 5-1. Enter User/Password screen.

```
NETWORK SETTINGS
+-----+
R = Reset to Factory Default
P = Passwords Disabled
T = Set Timeout (Immediately)
C = Auto Connect Enabled
V = Private Connections Disabled
B = User-PC Binding Disabled
D = Dcon on PC Power Down Enabled

M = Master View (Network Configuration)
Q = Save and Exit
```

Figure 5-2. Network Settings screen.

5.1 Switching Item “R” – Reset to Factory Default

This will reset the extenders to factory settings.

ATTENTION: All user/console/computer tables will be deleted.

5.2 Switching Item “P” – Passwords Disabled

Enter the passwords to activate user groups and rights and login access.

For more information about user groups and rights, see Section 5.8.2, User List.

Access to the network settings is always protected by a login and password, even when the password system is disabled.

5.3 Switching Item “T” – Set Timeout

When the password system is activated, you can define under what circumstances the user will be required to enter their login details when switching.

I – Immediately: User and password must be entered for each switch.

N – Never: User and password are not required until the current user logs out.

T – Time in min: You define the number of minutes since the last switch before the user and password details are required again.

5.4 Switching Item “C” – Auto Connect

If your connection is interrupted by another user, the switching system will automatically connect you with a free computer when the Auto Connect setting is active.

This function is unavailable while using the Password System.

5.5 Switching Item “V” – Private Connections

By activating the private connection function, users can set up a private connection with a computer, which can't be interrupted by other users.

To establish a private connection, hold down “<Shift>” while you select a new connection (either in the switching menu or by pressing the hotkey combination).

5.6 Switching Item “B” – User-PC Binding

When in the User-PC Binding mode, the switching system behaves quite differently. Each console starts disconnected and displays the log in screen. The switching menu and switching hot keys are not available. The admin must configure each user to have a specific PC bound to them. When a user logs on they will be automatically connected to their bound PC. If another user wishes to use the console, the first user must disconnect and logout with the key combination Ctrl-Alt-F11.

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Users with Master or Admin rights can access the switching menu as usual once they enter their login details.

5.7 Switching Item “D” – Disconnect on PC Power Down

When enabled, any local extender connected to a PC that is powered down will automatically break its connection, allowing the remote extender to find a different local extender to connect to.

5.8 Switching Item “M” – Master View (Network Configuration)

The master view menu provides the administrator with the ability to view, add, edit or remove user, console, and computer information.

```
MASTER VIEW menu
+-----+
C = Connections Overview
U = User List
W = Console Extender List
S = PC Extender List
H = Multi-Head Configuration

Q = Exit
```

Figure 5-3. Master View menu.

5.8.1 Master View Item “C” – Connections Overview

This option provides an overview of the current connections as well as the free PCs and consoles on the network.

You may break a connection remotely or assign a PC to a new console, or vice versa.

```
MASTER VIEW connections overview
+-----+
> SERVER 1      <--> CONSOLE 1
  SERVER 2      <--> CONSOLE 2
  SERVER 3      <--> CONSOLE 3
                   CONSOLE 4

I = Show Details
Q = Exit
```

Figure 5-4. Master View connections overview screen.


```
MASTER VIEW connections detail
+-----+
> Computer:      SERVER 1
  Workstation:   CONSOLE 1
  User:          <None>

D = Force Disconnect
E = Select PC for workstation
Q = Exit
```

Figure 5-5. Master View connections detail screen.

5.8.2 Master View Item "U" – User List

With this menu item, you can manage user details, rights and groups.

Press the "a" key to add a new user. Press the "r" key to delete a user. Press "i" to display details about the user that you can edit.

```
MASTER VIEW user list
--USER-----+---GROUPS---+---RIGHTS--+
> admin      | 1,2,3,4,5.. | admin
  master     | 1,2          | master
  user       | 1            | user

      |           |
      |           |
      |           |

A = Add          R = Remove
I = Info        Q = Exit
```

Figure 5-6. Master View user list screen.

```
MASTER VIEW user list
--USER-----+---BOUND PC-----+
> admin      | <None>
  User1      | SERVER 1
  User2      | SERVER 2

      |
      |
      |

A = Add          R = Remove
I = Info        Q = Exit
```

Figure 5-7. Master View user list screen.

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User: Assign each user a login name with max. 16 characters.

Full Name: For clarity, you can enter a user's full name. This name is displayed when informing other users who interrupted their connection.

Password: Each user requires a password (max. 16 characters) for login.

Rights: There are three types of rights: USER, MASTER, and ADMIN. Press the "+" key to change the rights of the selected user.

The rights control access to the Network Settings menu (only ADMIN), and which users may interrupt the connection of which other users.

Admin: May interrupt connections of Masters and Users. If an Admin interrupts the connection of another Admin, the interrupted Admin can reclaim the original connection. Private connections can't be interrupted.

Master: May interrupt connections of Users. If a Master interrupts the connection of another Master, the interrupted Master can reclaim the original connection. Admins and private connections can't be interrupted.

User: If a User interrupts the connection of another User, the interrupted User may reclaim the original connection. Admins, Masters, and private connections can't be interrupted.

Groups: Each user can join up to 8 user groups. Each computer is defined as belonging to one user group. By default, all computers are in the same user group. This system makes it possible to allow or deny different users access to a computer. The user's group access is set by pressing the buttons 1–8.

Bound PC: When in User-PC Binding mode (see Section 5.6), each user must have a PC bound to them. That user will only be able to connect to that PC. To select the User Details for a specific PC, press "RETURN" and a list of PCs on the network will be displayed to select from.

```
MASTER VIEW user detail
+-----+
> USER:      admin
FULL NAME:   Administrator
PASSWORD:    admin
RIGHTS:      *** (admin)
GROUPS:      1,2,3,4,5,6,7,8
Bound PC:    SERVER 1

A = Add           R = Remove
I = Info          Q = Exit
```

Figure 5-8. Master View user detail screen.

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5.8.3 Master View Item "W" – Console Extender List

In the console list, you can view all console extenders (remote extenders) in the switching network and their current status.

"this" defines the extender you are currently using.

"in use" indicates that the extender is in use.

"free" indicates that this extender is not busy.

Each console extender (remote extender) can be assigned a name.

Press the "i" key to bring up the submenu.

```
MASTER VIEW console extender list
--NAME-----+--STATUS--+
> Workstation1      | this
  Workstation2      | in use
  Workstation3      | free
                  |
                  |
R = Remove (Disconnected Only)
I = Info           Q = Exit
```

Figure 5-9. Master View console extender list.

5.8.4 Master View Item "S" – PC Extender List

In the computer list, you may view all the PC extenders (local extenders) in the switching network, their group, and current status.

Again, you can change extender name and user group details in the submenu by pressing the "i".

```
MASTER VIEW PC extender list
--NAME-----+--GROUP--+--STATUS--+
> SERVER1      | 1 | conn'd
              |  |
              |  |
R = Remove (Disconnected Only)
I = Info       Q = Exit
```

Figure 5-10. Master View PC extender list screen.

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5.8.5 Master View Item "H" – Multi-Head Config

If you use multiple monitors with a PC, then you can group individual local and remote extenders together with the Multi-Head settings, making them switch as a single unit.

To simplify the following steps, we recommend that you first name every extender via the PC Extender List and Console Extender List menu items. To help identify the extenders, when in these menus, the selected extender will start blinking red-green.

We recommend that, before performing the final installation, you first bring all the extenders to a single location, connect them all to a single switch, and configure the network.

This configuration setup requires a monitor, a keyboard, and a network switch.

```
MASTER VIEW multi-head configuration
--MULTI-HEAD SET-----+---TYPE---+---SIZE--+
> MULTIHEAD_SERVER      | PC      | 3
  DUALHEAD_CONSOLE      | Console | 2
  DUAHLHEAD_SERVER      | PC      | 2
  MULTIHEAD_CONSOLE     | Console | 3
                        |         |
                        |         |
A = Add                 R = Remove
I = Info                Q = Exit
```

Figure 5-11. Master View multi-head configuration screen.

Bring up the Multi-Head menu and create a new Multi-Head set by pressing <A>. The Detail menu will open; in this menu, you can give the Multi-Head Set a name.

In this menu, you can add individual extenders to the set by pressing <A>. The extender type is automatically determined once you select the first extender. Press <R> to remove an extender from the Multi-Head set. Press <Q> to leave this menu and save.

```
MASTER VIEW multi-head detail
+-----+
> Name:      mhs1
  Type:      Undefined
  Heads:     0
--Module List-----
SERVER 1/1           | conn'd
SERVER 1/2           | in use
SERVER 1/3           | in use

A = Add Module      E = Edit
Q = Exit and Save
```

Figure 5-12. Master View multi-head detail screen.

When you select a Multi-Head set in the main Multi-Head menu, you can bring up the details again to read or edit by pressing the <I> key.

To remove a dismantled or altered Multi-Head set from the system, select it in the menu and press <R>.

5.9 Switching Between Different Computers

You can access the menu for the switching option via a USB keyboard on the Remote Extender. Press “Ctrl+Alt+F12” to display the switching menu (see Figure 5-13).

The switching menu will list all the computers (Local Extenders) connected to the switching network.

Blue indicates the computer with which you are currently connected. The status is listed as “conn’d”.

White indicates a computer that is currently connected to another workstation (Remote Extender). The status is listed as “in use.”

Green indicates a computer in the switching network that isn’t connected to any workstation (Remote Extender). The status is listed as “free.”

Red indicates a computer that was once in the switching network but isn’t currently available. This usually indicates that the Extender has been disconnected from the network. In this case, you can remove the computer from the switching menu with the “delete” key.

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```
---+Computer-----+-----
> 1| PC1                |conn'd
 2| PC2                |in use
 3| PC3                |free
 4| PC4                |discon
   |                   |
   |                   |
   |                   |
   |                   |
   |                   |
User: admin            X - Logout
D - Disconnect
```

Figure 5-13. Computer switching screen.

Use the “arrow up” and “arrow down” keys to navigate through the list. The currently selected computer is indicated by the “greater than” symbol on the left edge of the OSD (On Screen Display). Press the “Return” key to switch to the selected computer.

The left column defines the favorites menu, and provides each computer with a favorite number. You can change the order of the favorite numbers when desired. Select the relevant computer and press a key “1” through “8” to select that computer’s favorite number.

Each favorite number corresponds to a hotkey combination that you can use to quickly connect to the desired computer without accessing the switching menu. For example, favorite “1” has the hotkey combination “Ctrl+Alt+F1”, for favorite “2” it’s “Ctrl+Alt+F2” and so on up to favorite “8” with “Ctrl+Alt+F8”. You can still access all other computers via the switching menu.

If the password system is active, the user in currently logged in is displayed at the bottom. You can manually logout by pressing the “x” key or disconnect from the current PC by pressing the “d” key.

6. Troubleshooting

6.1 Contacting Black Box

If you determine that your CATx DVI + USB Extender EC is malfunctioning, do not attempt to alter or repair the unit. It contains no user-serviceable parts. Contact Black Box Technical Support:

- Email in the US: info@blackbox.com
in the UK: techhelp@blackbox.co.uk
- Phone in the US: 724-746-5500
in the UK: +44 (0)118 965 6000

Before you do, make a record of the history of the problem. We will be able to provide more efficient and accurate assistance if you have a complete description, including:

- the nature and duration of the problem.
- when the problem occurs.
- the components involved in the problem.
- any particular application that, when used, appears to create the problem or make it worse.

6.2 Shipping and Packaging

If you need to transport or ship your CATx DVI + USB Extender EC:

- Package it carefully. We recommend that you use the original container.
- If you are returning the unit, make sure you include everything you received with it. Before you ship for return or repair, contact Black Box to get a Return Authorization (RA) number.

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