# APC CAT5 Analog KVM QuickStart Guide

Use this guide to install and configure the American Power Conversion (APC®) CAT5 Analog Keyboard Video Mouse (KVM) Switch and related products. See the APC CAT5 Analog KVM *Installation, Configuration, and User's Guide,* available on the APC Web site, **www.apc.com**, for additional information about the KVM.

The following graphic illustrates the connections that can be made to the APC CAT5 Analog KVM. The numbers in the graphic correspond to the numbers in the list of steps in the table below.
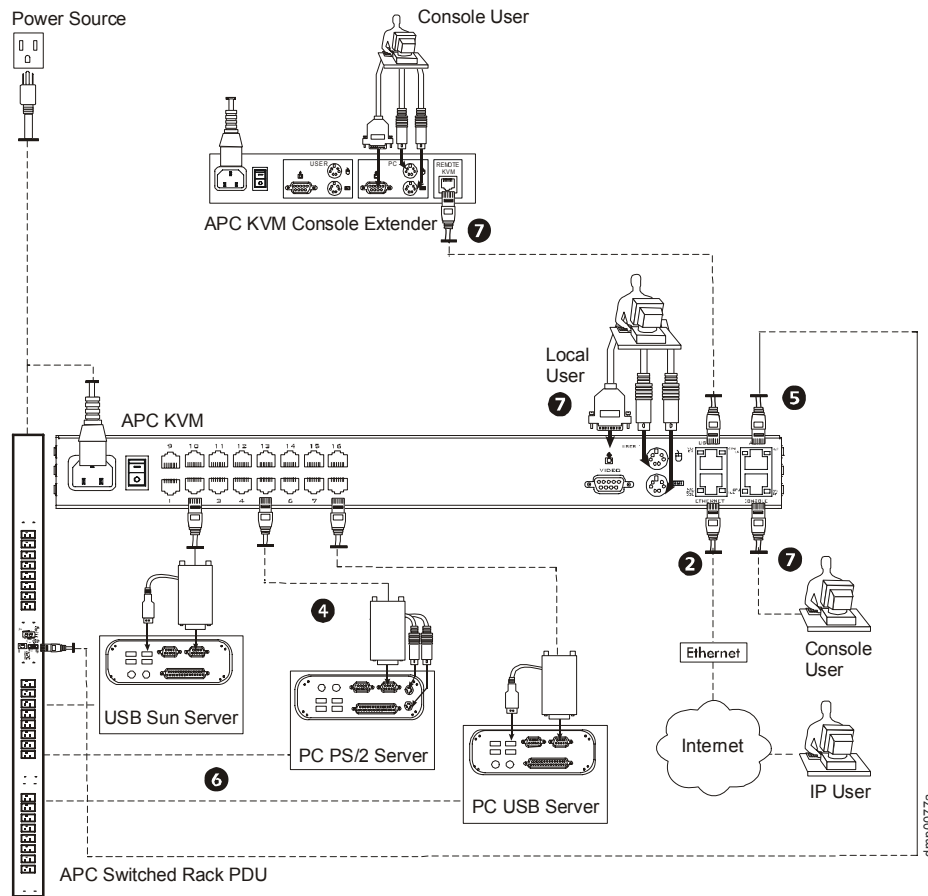

The following table lists the basic installation instructions in the order they should be performed. For detailed information about a procedure, see the page number listed for that step.

❶	Mount the KVM.	Page 2
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Mount the KVM

Obtain a Phillips screwdriver and appropriate nuts and bolts before starting the following procedure.

1. Decide whether to mount the KVM brackets at the front or back of the unit, and locate the appropriate sets of holes on the KVM.

2. Attach the brackets (provided) to each side of the KVM, using three screws for each bracket.

Bracket
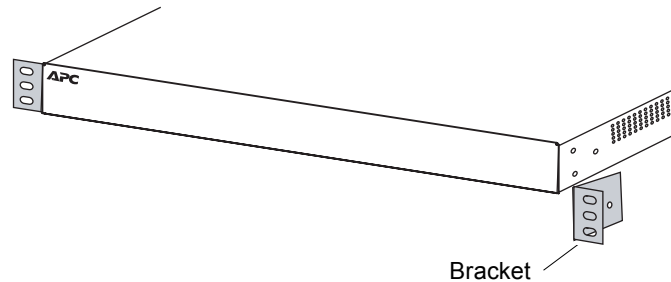
3. Use the mounting hardware recommended for your rack to mount the KVM.

Make an Ethernet Connection

Use an Ethernet cable to connect your local area network (LAN) to the Ethernet port on the KVM.

Connect Cascaded KVM Units to the Primary KVM (Optional)

The KVM supports the cascading of secondary KVM devices.

1. Remove power from all KVM hardware and connected devices.

2. To connect the primary KVM to the User 2 port of a secondary KVM unit, use a CAT5 cable to connect a KVM port on the primary KVM to the User 2 port on the secondary KVM.

 Warning: In a single-user configuration, ensure that the master KVM unit is connected to the User 2 port on a cascaded KVM unit.

3. To connect the primary KVM to the User 1 port of a secondary KVM:

   a. Use a CAT5 cable to connect a KVM port on the primary KVM to an APC KVM Server Module.

   b. Connect the VGA and PS/2 connectors of the APC Server Module to the User 1 port on the secondary KVM.

4. Repeat steps 1 through 3 for each secondary KVM to be connected to the primary KVM.

 Note: To support two concurrent users accessing the cascaded KVM units, ensure that both of the user ports (User 1 and User 2 or User A and User B) are connected to the master unit.

See Chapter 3, "Advanced Installation Procedures" in the APC CAT5 KVM *Installation, Configuration, and User's Guide*.

Connect Servers to KVM Ports

Note: The KVM components are hot-pluggable, but components of connected devices, such as the PS/2 keyboard and mouse ports on a computer, may not be hot-pluggable. Turn off power to all devices before connecting them. Apply power to the connected devices again only after the KVM is receiving power.

1. Connect the appropriate APC Server Module for the server that you are connecting.

Note: If you are using an APC PS/2 Server Module, make connections in this order: video, mouse, and keyboard.

2. To extend the connection from the computer to the KVM, use an RJ-45 to RJ-45 CAT5 cable up to 152 m (500 ft) long to connect the APC Server Module to a KVM port on the KVM.

3. Repeat step 1 and step 2 for all computers to be connected to the KVM ports.

4. If this is a first-time installation, go to "Access the KVM to Perform Basic Network Configuration" on page 3.

Connect APC Rack Power Distribution Units to the KVM (Optional)

You can control an APC Rack PDU by connecting it to the AUX port on the IP KVM.

1. Use an APC KVM to APC Switched Rack PDU RJ-45 to RJ-12 cable to connect the AUX port on the 16-port IP KVM to the RJ-12 serial port of your APC Switched Rack PDU.

2. Configure the AUX port for power management. See "To Configure the AUX Port for Use With an rPDU or an External Modem" in the KVM *Installation, Administration, and User's Guide*.

Plug Servers to be Managed by the KVM Into an APC Rack PDU (Optional)

In order for the KVM to manage the power of servers while the KVM is connected to those servers through KVM ports, the servers must be receiving power from an APC Rack PDU that is connected to the KVM. See the Power Management sections in the KVM *Installation, Configuration, and User's Guide* for detailed instructions.

Access the KVM to Perform Basic Network Configuration

To perform necessary basic network configuration, make a direct connection to the KVM by doing one of the following: connect a terminal or computer to the console port; connect a keyboard, monitor, and mouse to the keyboard, monitor, and mouse connectors on the KVM; or connect the APC KVM Console Extender to the User 2 port of the KVM.

Optionally, you can access the KVM without making a direct connection. See page 9 for instructions.

To Connect a Computer to the Console Port
Perform the following steps to connect a computer to the console port of the KVM.

1. Connect an RJ-45 CAT5 cable to the console port on the KVM.

2. Connect the other end of the RJ-45 CAT5 cable to the RJ-45 to DB-9 crossover console adapter (provided).

3. If your workstation has a DB-9 connection, plug the DB-9 console adapter into the DB-9 connection.

4. If your workstation has a USB connection, use a DB-9-to-USB adapter (not provided) and plug the USB adapter into a USB port on the computer.

5. Using a terminal emulation program (such as HyperTerminal®) installed on a computer, start a session with the following console port settings:

Serial Speed: **9600** bps	Stop Bits: **1**
Data Length: **8** bits	Flow Control: **None**
Parity: **None**	ANSI emulation

6. Go to "Apply Power to the KVM and Connected Devices" on page 4.

To Connect a Keyboard, Monitor, and Mouse to the User 1 Management Port

Connect a keyboard, monitor, and mouse to the User 1 port on the right back of the KVM.

1. Plug the station's monitor, keyboard, and mouse cables to the Keyboard, Video, and Mouse connectors labeled User 1 on the KVM.
2. Go to "Apply Power to the KVM and Connected Devices" on page 4.

To Connect the KVM Console Extender to the KVM

1. Place the KVM Console Extender on a desk or table up to 152 m (500 ft) away from the KVM.
2. Use a CAT5 cable to connect the Remote User port on the KVM Console Extender to the User 2 port on the KVM.
3. Connect your monitor, keyboard, and mouse cables to the User port on the KVM Console Extender.
4. Optionally, connect the KVM Console Extender to your local workstation: Use a KVM cable to connect the VGA port and PS/2 keyboard and mouse ports on the back of your PC to the PC VGA port and PS/2 keyboard and mouse ports on the KVM Console Extender.
5. Plug in the power cord of the KVM Console Extender. If you performed Step 4, you can skip this step. (The PC can supply power to the KVM Console Extender.)
6. Go to "Apply Power to the KVM and Connected Devices" on page 4.

Apply Power to the KVM and Connected Devices

1. Make sure the power switch of the KVM is off.
2. Plug in the power cable.
3. Turn on the power switches of the KVM, its connected devices, and, if needed, the KVM Console Extender.

Perform Basic Network Configuration

Do one of the following to assign a static IP address to the KVM, and to specify the subnet mask and other networking parameters:

- Through a console connection to the console port, log in and use the wiz command.

  See "Configuring Basic Networking Using the wiz Command" on page 5.

- Through a local KVM connection to the User 1 or User 2 ports, log into the On Screen Display (OSD) and configure networking through the network screen.

  See "Configuring Basic Networking Using the OSD" on page 8.

Before you start, collect the following network information from your network administrator.

❑ Hostname:	
❑ Public IP address of the KVM:	
❑ Domain name:	
❑ IP address of the DNS server:	
❑ Gateway IP address:	
❑ Subnet mask:	
❑ MAC address of the KVM:	
❑ IP address of the NTP server:	

Configuring Basic Networking Using the wiz Command

The following procedures require a hardware connection between the console port of the KVM and the COM port or USB port (through a USB-to-serial adapter) of a computer. See "To Connect a Computer to the Console Port" on page 3.

To Log Into the KVM Through the Console

From your terminal emulation application, log into the console port as **root**.

```
KVM login: root
Password: apc
```

As shown in the preceding screen, the default password is **apc**.

To Change the Password Through the Console

Note: If the default password **apc** is still in effect, change the root password. Changing the default password closes a security hole that could be easily exploited.

1. Enter the **passwd** command.

```
[root@KVM /]# passwd
```

2. Enter a new password when prompted.

```
New password: new_password
Re-enter new password: new_password
Password changed
```

3. Enter the **saveconf** command to save the password.

To Use the wiz Command to Configure Network Parameters

1. Launch the Configuration Wizard by entering the **wiz** command.

```
[root@KVM /]# wiz
```

2. At the prompt, enter **n** to change the parameter settings.

```
Set to defaults (y/n)[n]: n
```

3. Press **Enter** to accept the default hostname; otherwise enter your own hostname.

```
Hostname [KVM]: kvm_hostname
```

4. Type **n** to disable DHCP.

```
Do you want to use DHCP to
automatically assign an IP for your
system?  (y/n)[n]: n
```

5. Enter a public IP address to assign to the KVM.

```
System IP[192.168.160.10]:
public_IP_address
```

6. Enter the domain name.

```
Domain name[.com]: domainname
```

7. Enter the IP address of the DNS (Domain Name System) server.

```
Primary DNS Server[192.168.44.21] :
DNS_server_IP_address
```

8. Enter the IP address for the gateway.

```
Gateway IP[eth0] :
gateway_IP_address
```

9. Enter the subnet mask.

```
Network Mask[#] : netmask
```

10. To apply and save these parameters to Flash, see "To Apply and Confirm the Network Parameters Defined Using the wiz Command" on page 7.

To Apply and Confirm the Network Parameters Defined Using the wiz Command

This procedure must be completed immediately after you define network parameters using the wiz command as described in "To Use the wiz Command to Configure Network Parameters" on page 6.

1. Review the values of all the network configuration parameters, as shown in the following screen example. The values shown are examples only.

```
Current configuration:
Hostname : kvm
DHCP : disabled
System IP : 192.168.45.32
Domain name : .com
PrimaryDNSServer:192.168.44.21
Gateway IP : 198.168.44.1
Network Mask : 255.255.252.0
Are all these parameters correct?
(y/n) [n] :
```

2. Type **y** if the values shown are correct, or press **Enter** and go back to "To Use the wiz Command to Configure Network Parameters" on page 6 to make changes.

The following prompt appears when **y** is entered.

```
Are all the parameters correct? (y/
n)[n]: y
```

3. Type **y** to save the changes.

```
Do you want to save your
configuration to Flash? (y/n)[n]: y
```

4. To confirm the configuration, enter the `ifconfig` command.

5. The new network parameters display.

6. Log out from the terminal session.

7. In a HyperTerminal application on a Windows PC, select **File**, then **Exit**.

8. If performing a first-time installation, go to "Add Users and Configure Ports Using the Web Manager" on page 10.

Configuring Basic Networking Using the OSD

This procedure requires a hardware connection between the User 1 port of the KVM and a local monitor, keyboard, and mouse or between the User 2 port of the KVM and an APC KVM Console Extender. After the KVM and monitor are receiving power, the following OSD login screen appears.
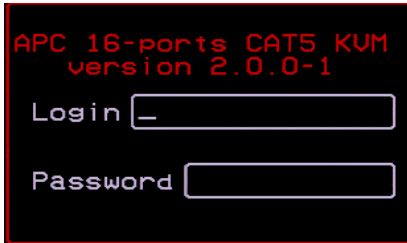
If your keyboard has a **Return** key instead of an **Enter** key, press the **Return** key when you see **Enter**.

To Log Into the OSD

1. On the OSD login screen, enter **apc** as the Login name.
2. Enter the password (**apc**, by default) and press **Enter**.
3. If you are performing an initial configuration of basic networking parameters, go to "To Change Default Password Using the OSD" on page 8; otherwise, go to "To Configure Network Parameters Using the OSD" on page 8.

To Change Default Password Using the OSD

1. Log into the OSD.
2. From the **Main Menu**, select the **Configure** option.
3. From the **Configure** menu, select the **Users and Groups** option.
4. From the list of users on the **User Database** screen, select the administrator username, **apc**.
5. On the **Enter the Password** screen, enter the new password.
6. On the password confirmation window, re-enter the password.
7. Select **OK**.
8. Press **Esc** on your keyboard to return to the **Configure** menu.
9. Select **Save/Load Config**.
10. Select **Save Configuration** to save the new password.

To Configure Network Parameters Using the OSD

1. From the OSD Main Menu, go to **Configure** > **Network**.
2. Select the **disabled** option.
3. Enter the IP address for the KVM.
4. Enter the subnet mask (in the form 255.255.255.0).
5. Enter the IP address for the gateway.
6. Enter the IP address for the DNS server.
7. Enter the domain name.
8. Enter the hostname for the KVM and save the changes to complete the basic network configuration.

To Set the Time and Date Using the OSD

1. From the Main menu of the OSD, go to **Configure**.

2. Select **Date/time**.

3. To enable the NTP time and date server:

    a. On the **Date/time conf.** form, select the **enabled** option.

    b. Enter the IP address of the NTP server.

    c. Save the changes.

4. To enter the date and time manually:

    a. On the **Date/time conf.** form, select the **disabled** option.

    b. Enter the date in the format shown, and press **Enter**.

    c. Enter the time in the format shown and save the changes.

Access the KVM without Making a Direct Connection

An experienced administrator can use the following procedures to enable access to the KVM Web Manager without making a direct connection:

- Use the default IP address of the KVM, `192.168.160.10`, to access the Web Manager, assign a fixed IP address to the KVM, and specify other network parameters without making a direct connection. See "To Use the Default IP Address to Access the Web Manager" on page 9.
- DHCP is enabled on the KVM by default. If you have network access to the DHCP server for the KVM, and if you are able to discover the dynamically-assigned IP address of the KVM, you do not need to make a direct connection. See "To Use a Dynamic IP Address to Access the Web Manager" on page 9.

To Use the Default IP Address to Access the Web Manager

The default IP address for the KVM is `192.168.160.10`. This procedure assumes that you are able to temporarily change the IP address of a computer that is on the same subnet as the KVM.

1. On a computer that resides on the same subnet as the KVM, change the network portion of the IP address of that computer to `192.168.160.`*NN*, where NN is not 10, and change the subnet mask to `255.255.255.0`.

    For example, you could change the IP address of the computer to `192.168.160.44`. For the host portion of the IP address, use any number except `10`, `0`, or `255`.

2. Open a browser on the computer whose address you changed, enter the default IP address of the KVM (`http://192.168.160.10`) to access the Web Manager, and log in.

3. To allow subsequent use of the Web Manager from any computer, go to the Wizard: "Step 1: Network Settings" to change the default IP address to a static public IP address and to configure the other basic network parameters and save them to Flash.

4. Restore the IP address of the computer to its previous IP address.

To Use a Dynamic IP Address to Access the Web Manager

This procedure assumes that DHCP is enabled on the KVM.

1. Set up the KVM.

    See "Mount the KVM" on page 2.

2. Connect computers and other devices to be managed through the KVM.

    See "Connect Servers to KVM Ports" on page 3.

3. Apply power to the KVM and connected devices.

  See "Apply Power to the KVM and Connected Devices" on page 4.

4. To obtain the current IP address of the KVM from the console port:

  a. Using the console port, log in as **root**.

    See "To Connect a Computer to the Console Port" on page 3.

  b. Execute the command

```
ifconfig eth0
```

  Output similar to the following text will appear. The line in bold type face labeled **inet address** lists the IP address of the KVM:

```
eth0  Link encap:Ethernet  HWaddr
       00:60:2E:01:4F:FC
      inet addr:192.168.50.72
       Bcast:192.168.51.255
       Mask:255.255.252.0
      UP BROADCAST RUNNING MULTICAST
       MTU:1500  Metric:1
      RX packets:7282803 errors:43
       dropped:0 overruns:0 frame:43
      TX packets:167335 errors:3
       dropped:0 overruns:0 carrier:3
      collisions:0 txqueuelen:100
      RX bytes:539070845 (514.0 MiB)
       TX bytes:18911603 (18.0 MiB
      Base address:0xe00
```

5. Finish configuring users and ports using the Web Manager.

Add Users and Configure Ports Using the Web Manager

To connect to the Web Manager, enter the IP address of the KVM in a supported browser. The **apc** user can administer the KVM through the Web Manager.

For more information about the KVM, see the following chapters in the APC CAT5 KVM *Installation, Administration, and User's Guide*:

- Prerequisites for using the Web Manager–Chapter 1, "Introduction"
- Using the Web Manager to add users and configure ports–Chapter 4, "Web Manager for Administrators"
- Installing external modems–Chapter 3, "Advanced Installation Procedures"
- Accessing servers and devices that are connected to the KVM–Chapter 6, "Accessing Connected Devices"
- Using the Web Manager to manage power and to change your user password–Chapter 5, "Web Manager for Regular Users"

Specifications

16-port CAT5 Analog KVM

Electrical

Input voltage	100–240 V
Input power	AC
Input connection type	Internal
Input frequency	50/60 Hz
Power cords	C13 to 5-15P
	C14 to C13
Power cord length	1.8 m (6.0 ft)

Physical

Net weight	1.13 kg (6.9 lb)
Shipping weight	5 kg (11 lb)
Dimensions (H x W x D)	44.5 mm (1.75 in) x 431.8 mm (17 in) x 241.3 mm (9.5 in)
Shipping dimensions (H x W x D)	152 mm (6 in) x 533 mm (21 in) x 286 mm (11.25 in)

Environmental

Temperature	
Operating	0° to 50°C (32° to 122°F)
Storage	-40° to 85°C (-40° to 185°F)
Relative humidity	
Operating	5% to 90% non-condensing
Storage	5% to 90% non-condensing
Elevation	
Operating	0 to 3000 m (0 to 10,000 ft)
Storage	0 to 15 000 m (0 to 50,000ft)

Compliance

Approvals	CE, CSA Certified to CSA C22.2 No. 60950-1, CSA-NRTL Listed to UL 60950-1, TÜV-GS approved to EN60950–1, FCC Part 15 Class A, ICES-003 Class A, VCCI Class A, EN 55022 Class A, EN 55024, EN 61000-3-2, EN 61000-3-3, AS/ NZS CISPR 22

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Life-Support Policy

General policy

American Power Conversion (APC) does not recommend the use of any of its products in the following situations:

• In life-support applications where failure or malfunction of the APC product can be reasonably expected to cause failure of the life-support device or to affect significantly its safety or effectiveness.
• In direct patient care.

APC will not knowingly sell its products for use in such applications unless it receives in writing assurances satisfactory to APC that (a) the risks of injury or damage have been minimized, (b) the customer assumes all such risks, and (c) the liability of APC is adequately protected under the circumstances.

Examples of life-support devices

The term *life-support device* includes but is not limited to neonatal oxygen analyzers, nerve stimulators (whether used for anesthesia, pain relief, or other purposes), autotransfusion devices, blood pumps, defibrillators, arrhythmia detectors and alarms, pacemakers, hemodialysis systems, peritoneal dialysis systems, neonatal ventilator incubators, ventilators (for adults and infants), anesthesia ventilators, infusion pumps, and any other devices designated as "critical" by the U.S. FDA.

Hospital-grade wiring devices and leakage current protection may be ordered as options on many APC UPS systems. APC does not claim that units with these modifications are certified or listed as hospital-grade by APC or any other organization. Therefore these units do not meet the requirements for use in direct patient care.

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- Visit the APC Web site to access documents in the APC Knowledge Base and to submit customer support requests.
    - **www.apc.com** (Corporate Headquarters)
      Connect to localized APC Web sites for specific countries, each of which provides customer support information.
    - **www.apc.com/support/**
      Global support searching APC Knowledge Base and using e-support.
- Contact an APC Customer Support center by telephone or e-mail.
    - Regional centers

Direct InfraStruXure Customer Support Line	(1)(877)537-0607 (toll free)
APC headquarters U.S., Canada	(1)(800)800-4272 (toll free)
Latin America	(1)(401)789-5735 (USA)
Europe, Middle East, Africa	(353)(91)702000 (Ireland)
Western Europe (inc. Scandinavia)	+800 0272 0272
Japan	(0) 3 6402-2001
Australia, New Zealand, South Pacific area	(61) (2) 9955 9366 (Australia)

    - Local, country-specific centers: go to **www.apc.com/support/contact** for contact information.

Contact the APC representative or other distributor from whom you purchased your APC product for information on how to obtain local customer support.

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