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Please read this manual thoroughly and follow the **Installation** procedures to prevent any damage to the KVM switch or any connecting device

---------- Introduction

The **KVM Extender** consists of a **Computer Unit** and a **Station Unit** that is suitable to locate a keyboard/monitor/mouse set up to 150 meters away from a computer or KVM switch using an inexpensive Category 5 UTP (unshielded twisted pair) cable. It provides an ideal and convenient way to remotely access the computer which is located in a secure, clean or dirty, harsh environment.

The **KVM Extender** is designed to enable one computer to be controlled by one or two users. Meanwhile, it is allowed for a console to control two computers locally and remotely. They are perfect to be used in factory or construction areas where you want to secure your computers and valuable data or manage them either in remote or both in remote and local sites.

With a variety of models to choose from, you can economically increase the flexibility of your selection and meet your needs for **PS/2** or **PS/2 + USB** system. No software or dip switches are required, just plug and play. With one push button, two LED indicators and simple hotkey commands, you can manage this device easily.

There are 8 models available for your choices. Please refer to the following Table 1: **Control Status between console and computer**. Some of models are connected with 3-in-1 or 2-in-1 special cable(s). For detailed description, please see the **Specifications.**

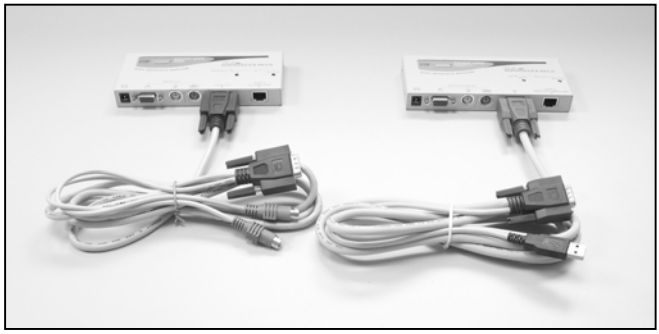


Figure 1: Connection of 3-in-1 and 2-in-1 cable

---------- Key Features

- Connects the **Computer Unit** and **Station Unit** via Category 5 UTP cable
- Remotely locates the keyboard, mouse and monitor up to 150m from a computer
- Supports **PS/2** and **USB + PS/2** series for flexible choice
- Video compensation can be adjusted by **hotkey** to ensure the optimum signal quality for any length of cable within the limit.
- Easy to get and install the standard cable at lower cost
- Simple indication makes operation user-friendly
- Locates the computer away from your desk and work area, saving you valuable space
- Allows two users to share a single computer both in local and remote areas. (EKx-222, EKx-221)
- Applicable for one console to manage two computers locally and remotely (EKx-222, EKx-212)
- Beeps confirmation for key control makes the operation easier and cross-checked
- Supports for standard PS/2 keyboard & mice, including Microsoft IntelliMouse
- Compatible with XGA, VGA, and SVGA system

---------- Specifications

USB + PS/2 Model		EKU-222	EKU-212	EKU-221	EKU-211
PS/2 Model		EKP-222	EKP-212	EKP-221	EKP-211
Connection		CAT 5 - RJ45 female			
Station Unit Connectors	*Console*	miniDIN6, female x 2 HDB15 female x 1	miniDIN6, female x 2 HDB15 female x 1	miniDIN6, female x 2	miniDIN6, female x 2
	Computer	HDB15 female x 1	HDB15 female x 1	HDB15 female x 1	HDB15 female x 1
Computer Unit Connectors	*Console*	miniDIN6, female x 2 HDB15 female x 1		miniDIN6, female x 2 HDB15 female x 1	
	Computer	HDB15 female x 1	HDB15 female x 1	HDB15 female x 1	HDB15 female x 1
LED Indicators (Station Unit)	*Local* *Remote*	On: Controls its computer On: Controls system remotely	On: Controls its computer On: Controls system remotely	x On: Controls system remotely	x On: Controls system remotely
LED Indicators (Computer Unit)	*Local* *Remote*	On: Controls local computer On: System is controlled remotely Flash alternately: Auto mode	x On: System is controlled remotely x	On: Controls local computer On: System is controlled remotely Flash alternately: Auto mode	x On: System is controlled remotely x
Push Button		Switch to the control status			
Power Supply		External power adapter DC 9V, 600mA			
Resolution		1024 x 768 @150 m			
Weight		293g			
Dimensions (W x D x H)		156 x 65 x 20 (mm)			

---------- Control Modes and Cable Types

Function	Model	Station Unit				Computer Unit				Cable
		Model	Console port	Computer port		Model	Console port		Computer port	
				Local	Remote		Remote	Local		
2 Consoles ⟷ 2 Computers	EKU-222C	*EKU-12S*	1	1	1	*EKU-21P*	1	1	1	CBM180H CBM180UH*
1 Console ⟷ 2 Computers	EKU-212C	*EKU-12S*	1	1	1	*EKU-11P*	1		1	CBM180H CBM180UH*
2 Consoles ⟷ 1 Computer	EKU-221C	*EK-11S*	1		1	*EKU-21P*	1	1	1	CBM180H CBM180UH*
1 Console ⟷ 1 Computer	EKU-211C	*EK-11S*	1		1	*EKU-11P*	1		1	CBM180H CBM180UH*
2 Consoles ⟷ 2 Computers	EKP-222C	*EKP-12S*	1	1	1	*EKP-21P*	1	1	1	CBM180H*
1 Console ⟷ 2 Computers	EKP-212C	*EKP-12S*	1	1	1	*EKP-11P*	1	1	1	CBM180H*
2 Consoles ⟷ 1 Computer	EKP-221C	*EK-11S*	1		1	*EKP-21P*	1		1	CBM180H*
1 Console ⟷ 1 Computer	EKP-211C	*EK-11S*	1		1	*EKP-11P*	1		1	CBM180H*

*CBM180UH: 180cm cable with connectors of USB type A and HDB15 male.
*CBM180H: 180cm cable with connectors of PS/2 male and HDB15 male.

Figure 2: CBM180H for PS/2 computer

Figure 3: CBM180UH for USB computer

---------- Packing Checklist

- **KVM Extender** Station Unit x 1
- **KVM Extender** Computer Unit x 1
- Power Adapters – 9V DC, 600mA x 1
- User Manual x 1
- Food Pad x 2 sets
- KVM Cable (CBM180H or CBM180UH) x 1 or x 2

---------- Product Description

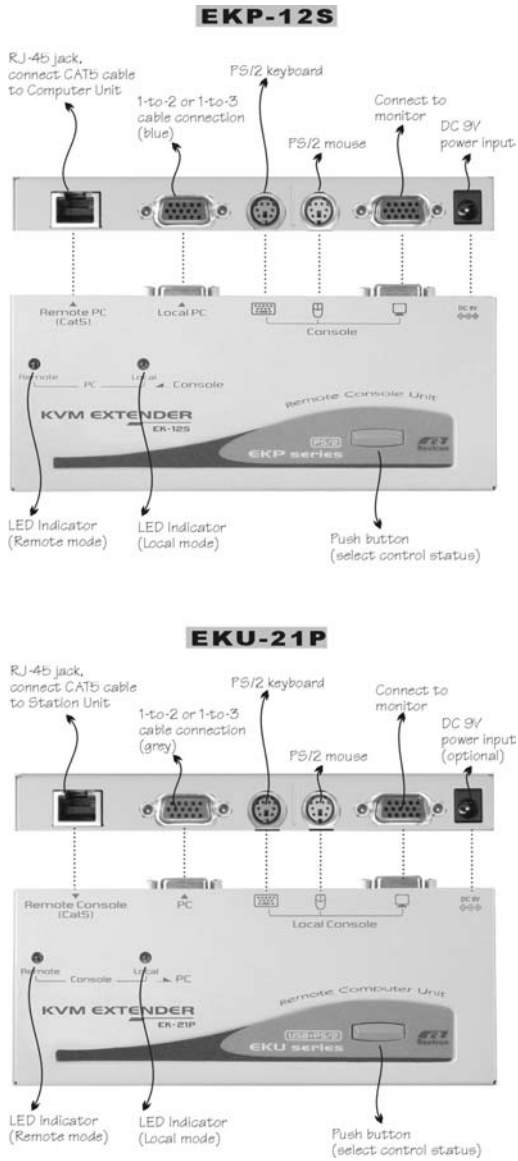
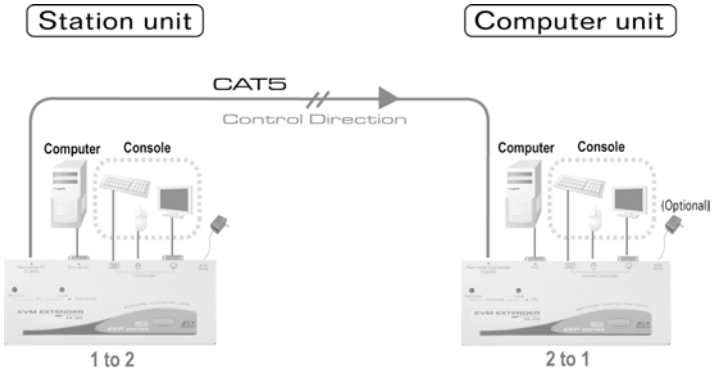


Figure 4: Indication and Connection

---------- Installation

Connection Patterns

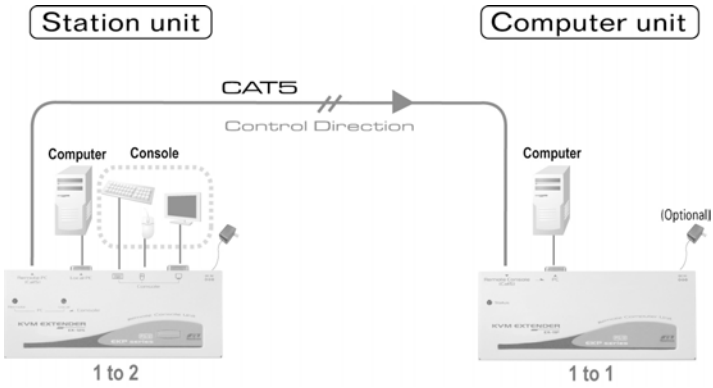
EKP222 / EKU222



EKP-12S
EKU-12S

EKP-21P
EKU-21P

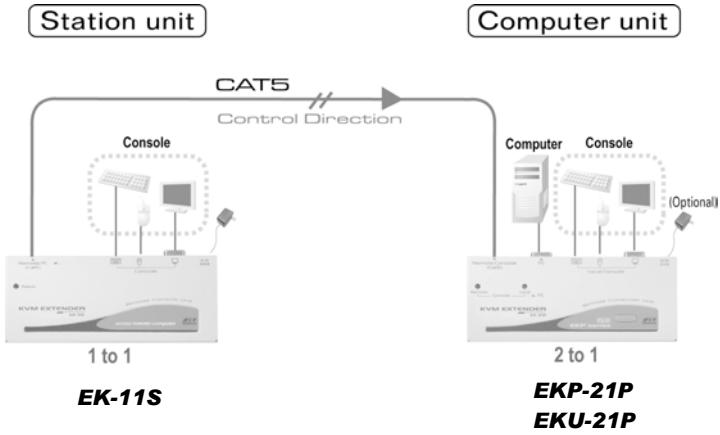
EKP212 / EKU212



EKP-12S
EKU-12S

EKP-11P
EKU-11P

EKP221 / EKU221



EKP211 / EKU211

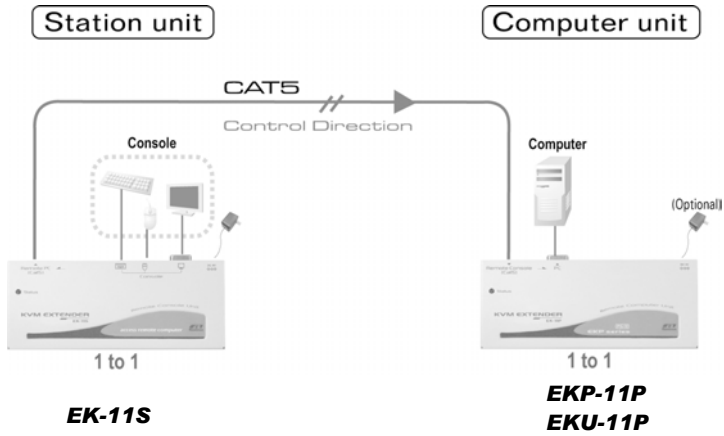


*Figure 4: Connection patterns of **KVM Extenders***

---------- *Video Compensation*

Before operating, you may like to conduct the Video Compensation first. In this case, the hotkeys are used to adjust the Equalization on the **Remote Unit** to get optimum video signal for various cable lengths. There are four segments of various lengths of CAT 5 cables can be chosen from. To achieve the best visibility, the following table can be used as a reference to adjust the video compensation.

First, assure that the length of CAT 5 cable you used now. Then, use the hotkeys to adjust the video compensation. You can press **Ctrl** twice , **E** and **F11** keys followed, and the different beeps sounded to indicate the setup of cable length respectively. Please refer to **Operation of Hotkey Control.**

---------- Operation

A keyboard and mouse must be connected to the **Station Unit**. And then the system conducts the emulation for local computer which can be controlled remotely. On the other hand, it does not need to use keyboard, mouse and monitor if you don't want to control the computer locally. Anyway, there are 8 different models can be chosen to meet your needs in all aspect. Please refer to the specifications for the model you are in hand and ready to operate in compliance with the following procedure.

---------- LED Indicators

The LEDs on the **KVM Extender** are showing the latest status which indicates the linking, communication, and control situation between **Computer Unit** and **Station Unit.**

Station Unit

Model	LED Status	Control Description
EKP-12S **EKU-12S**	Remote: Off, Local: On	**Station Unit** controls its local PC. In this mode, there are two statuses as follows: 1. The **Computer Unit** is now taking control of the system if the 3 LEDs (Num, Caps and Scroll Lock) on the keyboard are flashing. 2. The system is waiting for **Station Unit** or **Computer Unit** to take control if the 3 LEDs (Num, Caps and Scroll Lock) on the keyboard are not flashing at this moment.
	Remote: On, Local: Off	**Station Unit** is remotely taking control of the **Computer Unit.**
EK-11S	Remote: On	The **Station Uni**t remotely controls the **Computer Unit**

Table 3.1: LED - Control indication for **Station Unit**

Power Up LED Status

Model No.	LED Indicators
EKP-12S	Local: On
EK-11S	Remote: On
EKU-12S	Local: On

Table 3.2:The Initial status and indication is displayed when **KVM Extender** is powered up

Computer Unit

Model	LED Status	Control Description
EKP-21P **EKU-21P**	Remote: Off, Local: On	**Computer Unit** controls its local PC or KVM switches. In this mode, the **Station Unit** can not take control of the **Computer Unit** remotely.
	Remote: On, Local: Off	**Station Unit is** remotely taking control of the **Computer Unit**
	Remote/Local Flashes alternately (Auto Mode)	The system is waiting for **Station Unit** or **Computer Unit** to take control.
EKP-11P **EKU-11P**	Remote: On	The system is controlled remotely from **Station Unit**

Table 4.1: LED - Control indication for **Computer Unit**

Power Up LED Status

Model No.	LED Indicators
EKP-21P	Local/remote: Flashes alternately
EKP-11P	Remote: On
EKU-21P	Local/remote: Flashes alternately
EKU-11P	Remote: On

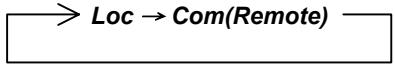
Table 4.2:The Initial status and indication is displayed when **KVM Extender** is powered up

----------Push Button: Switch to the control status

There is a button on the panel of **Computer Unit** and **Station Uni**t respectively, which can be pushed (switched) in sequence to select the operation modes.

Button on Station Unit (EKx-222 / EKx-221)

The button on the panel of **Station Unit** can be pushed (switched) in sequence to select the following two modes:

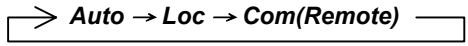


Local: The LED of Local is "**On**". In this mode, the system controls its local computer.

Remote: The LED of Remote is "**On**". In this mode, the system remotely controls the **Computer Unit**.

Button on Computer Unit (EKx-222 / EKx-212)

While pressing the button, there are three modes can be chosen from and its sequence indicates as follows:



Auto: 1. In this mode, the Remote and Local LEDs are flashing alternately.

2. The system is now waiting to take control of either from **Computer Unit** or from **Station Unit**. Once the keyboard or mouse of **Computer Unit** is active, the LED of Local is on and the LED of Remote is off. This status indicates that the **Computer Unit** is now taking control of the system and vice versa for **Station Unit**. In this case, the latch time period of 5, 15, 30, or 60 seconds is offered to allow the **Computer unit** or **Station Unit** to take control again if the latch time is due and the status returns to the "**Auto**" mode.

In "**Auto**" mode, whenever the ***keyboard***, ***mouse buttons*** or ***scroll wheel*** of mouse is activated, the Unit (**Computer Unit** or **Station Unit**) immediately takes control of the system.

Local: The LED of Local is "**On**". In this mode, the system is being controlled by the **Computer Unit.** In this case, the **Station Unit** can learn this status from the flashing of 3 LEDs (**Num**, **Caps** and **Scroll Lock**) on the keyboard.

Remote: The LED of Remote is "**On**". In this mode, the system is remotely controlled by the **Station Uni**t.

----------Hotkeys Control

Hotkey command is a short keyboard sequence to select a computer, to activate computer scan, and so forth. The **KVM Extender** interprets keystrokes for hotkeys all the time. A hotkey sequence starts with two *left* **Ctrl** keystrokes followed by one or two more keystrokes. A built-in buzzer generates a high-pitched beep for correct hotkey command, while one short and one long beeps are sounded for wrong commands. Thus, the bad key commands will not be forwarded to the selected modes.

There is an unique Hotkey command of **Ctrl** + **Ctrl** + **Alt+E** you should be well aware when the **KVM Extenders** are connected to other KVM Switches.

To switch to this mode, press *left* **Ctrl** twice, hold **Alt** and press **E** key(press both keys simultaneously). This function is used to prevent from misunderstanding once the system is connected to Rextron's **KVM Switches.** Thus, the user can choose either the control mode of **KVM Extender** or the number of computer connected to the **KVM Switches**.

----------Station Unit Hotkeys Control

Hotkey Commands		Function Description
without [E] optional	With [E] optional	
∗[Ctrl] + [Ctrl] + [T]	[Ctrl] + [Ctrl] + [T]	Toggle switch selects [Loc] or [Com] mode
[Ctrl] + [Ctrl] + [Esc]	[Ctrl] + [Ctrl] + [Esc]	Escape from hotkey mode
[Ctrl] + [Ctrl] + [Alt+E]	[Ctrl] + [Ctrl] + [Alt+E]	One beep: hotkey control without pressing [E] Two beeps: need to press [E] for hotkey control
∗[Ctrl] + [Ctrl] + [1]	[Ctrl] + [Ctrl] + [E] + [1]	Select the **computer 1** via KVM Switch [Loc] mode selection
∗[Ctrl] + [Ctrl] + [2]	[Ctrl] + [Ctrl] + [E] + [2]	Select the **computer 2** via KVM Switch [Rem] mode selection
∗[Ctrl] + [Ctrl] + [F2]	[Ctrl] + [Ctrl] + [E] + [F2]	Toggle switch for [Loc] or [Com]
[Ctrl] + [Ctrl] + [F4] (Keyboard speed selection)	[Ctrl] + [Ctrl] + [E] + [F4] (Keyboard speed selection)	To adjust typematic rates of keyboard, the **KVM Extender** generates 1 to 4 beeps corresponding to 6, 12, 20, and 30 characters/sec respectively.
[Ctrl] + [Ctrl] + [F11] (Video Compensation Adjustment)	[Ctrl] + [Ctrl] + [E] + [F11] (Video Compensation Adjustment)	To adjust video compensation, the **KVM Extender** generates 1 to 4 beeps corresponding to cable length of 0 ~ 40, 40 ~ 80, 80 ~ 120, 120 ~ 150 meters respectively.
[Ctrl] + [Ctrl] + [F12]	[Ctrl] + [Ctrl] + [E] + [F12]	Mouse resynchronized (for PS/2 only)

∗The hotkey commands are effective for models **EKx-222** and **EKx-212** only.

Table 5: Hotkey control for **Station Unit**

--------Computer Unit Hotkeys Control

Hotkey Commands		Function Description
without **E** optional	with **E** optional	
Ctrl + **Ctrl** + **T**	**Ctrl** + **Ctrl** + **T**	Toggle switch selects **Auto-Loc-Rem** mode
Ctrl + **Ctrl** + **Esc**	**Ctrl** + **Ctrl** + **Esc**	Escape from hotkey mode
Ctrl + **Ctrl** + **Alt+E**	**Ctrl** + **Ctrl** + **Alt+E**	One beep: hotkey control without pressing **E** Two beeps: need to press **E** for hotkey control
Ctrl + **Ctrl** + **1**	**Ctrl** + **Ctrl** + **E** + **1**	Select the **computer 1** via KVM Switch **Loc** mode selection
Ctrl + **Ctrl** + **2**	**Ctrl** + **Ctrl** + **E** + **2**	Select the **computer 2** via KVM Switch **Rem** mode selection
Ctrl + **Ctrl** + **3**	**Ctrl** + **Ctrl** + **E** + **3**	Select the **computer 3** via KVM Switch **Auto** mode selection
Ctrl + **Ctrl** + **F3**	**Ctrl** + **Ctrl** + **E** + **F3**	**Auto** mode latch time: 5, 15, 30, 60 seconds
Ctrl + **Ctrl** + **F4** (Keyboard speed selection)	**Ctrl** + **Ctrl** + **E** + **F4** (Keyboard speed selection)	To adjust typematic rates of keyboard, the **KVM Extender** generates 1 to 4 beeps corresponding to **6**, **12**, **20**, and **30** characters/sec respectively.
Ctrl + **Ctrl** + **F12**	**Ctrl** + **Ctrl** + **E** + **F12**	Mouse resynchronization (for PS/2 only)

∗All hotkey commands are effective for models **EKx-222** and **EKx-221** only.

Table 6: Hotkey control for **Computer Unit**

- **Alt+E** :

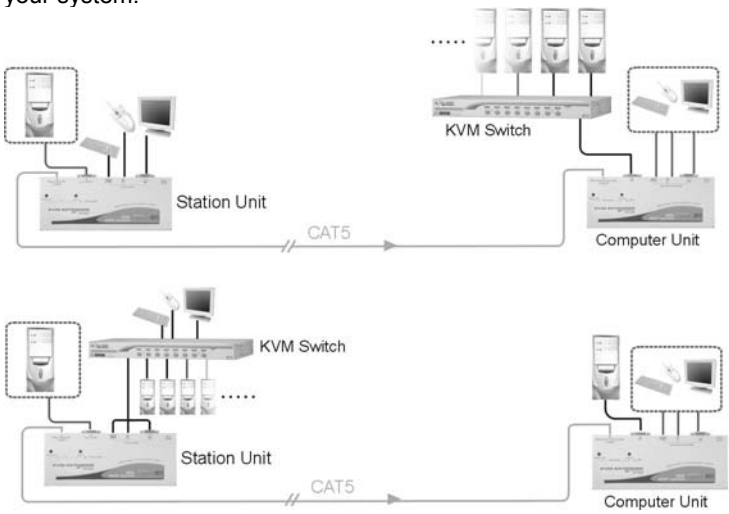
Hold **Alt** and press **E** key(press both keys simultaneously).

- Mouse resynchronization:

When the mouse can not work normally, conduct this function and make it synchronized with your system.

----------Cascade Configuration

The **KVM Extender** can be connected to the **KVM Switch** in compliance with the "**Cascade Configuration"**. In this case, there are some connection patterns may be conducted in a certain situations. However, to prevent from any conflict via hotkey commands among the connections, the **E** key is added and followed behind the **Ctrl** + **Ctrl**, which will enable you to manage the **KVM Extender** straightly. Moreover, please refer to the "**Notice of Cascade Connection**" stressed below for better management of your system.



Notice of Cascade Connection

1. The external power source is required to supply enough power to the **Computer Unit** of **KVM Extender** when connecting to the **KVM Switch**. In this case, you can purchase optional power adapter DC9V, 600mA from your local dealers.

2. To prevent from wrong keystrokes of control keys, for **Station Unit** of **KVM Extender**, the parameters such as Cable Length, Keyboard Speed, Push Button Control should be set up in advance before connecting to the **KVM Switch**.

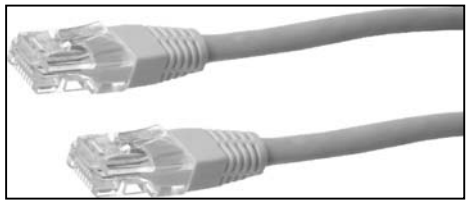
----------Appendixes

Cable Requirements

The cable interconnected between **Computer Unit** and **Station Unit** normally used is Category 5(CAT5) terminated with RJ45 connectors. It's easy to get them from the local stores or call your dealers for help. Besides, CAT5e or CAT6 are applicable to the **KVM Extender**. This CAT5 is not provided with the standard package mainly because it is subject to the different length you may required. In this case, the length of cable you used should be less than 150m. Otherwise, the poor result especially for video resolution may occur over longer distance beyond the limit.

Cat5 Cable

The **KVM Extender** needs a piece of unshielded twisted pair(UTP) cable up to a maximum length of 150 meters.

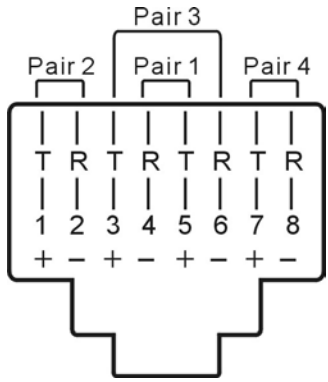


The cable must be wired in compliance with the EIA/TIA 568B industry standard as shown below.

Pin	Wire Color	Pair	Function
1	White/Orange	2	T
2	Orange	2	R
3	White/Green	3	T
4	Blue	1	R
5	White/Blue	1	T
6	Green	3	R
7	White/Brown	4	T
8	Brown	4	R

Table A1: Wiring definition of CAT5

Note: *CAT5, CAT5e or CAT6 cables are applicable to the extender pair.*



The above diagram shows the RJ45 connector of a CAT5 cable with its metal contacts facing up.

Limited Warranty

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