Make the Rose Connection

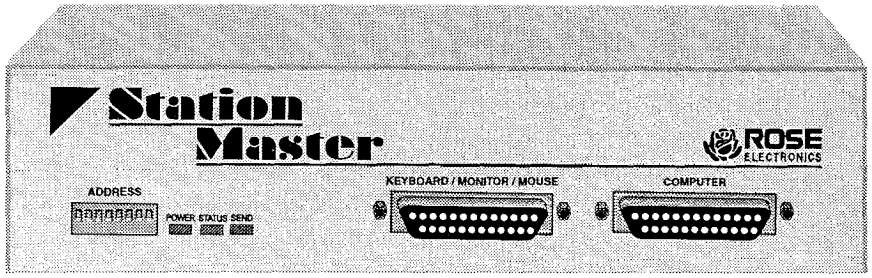
ROSE ELECTRONICS

PO BOX 742571 ■ HOUSTON, TEXAS 77274 ■ (713)933-7673

Station Master

KEYBOARD-VIDEO NETWORK

INSTALLATION AND OPERATION MANUAL



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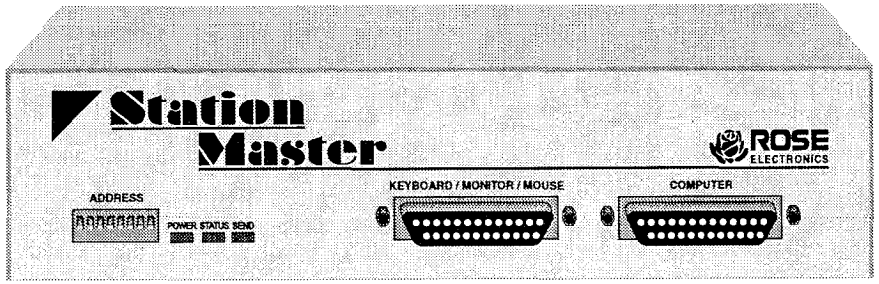

Make the Rose Connection ROSE ELECTRONICS

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LIMITED WARRANTY

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NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Rose Electronics Part # MAN-SM1.1

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INTRODUCTION

Thank you for choosing StationMaster™. Designed for *plug-and-play* operation, your new StationMaster will simplify your job by helping you organize your multiple computer applications. Because StationMaster lets you use several keyboards, monitors, and mice to access a number of computers, you can significantly reduce your equipment overhead and end keyboard and monitor clutter.

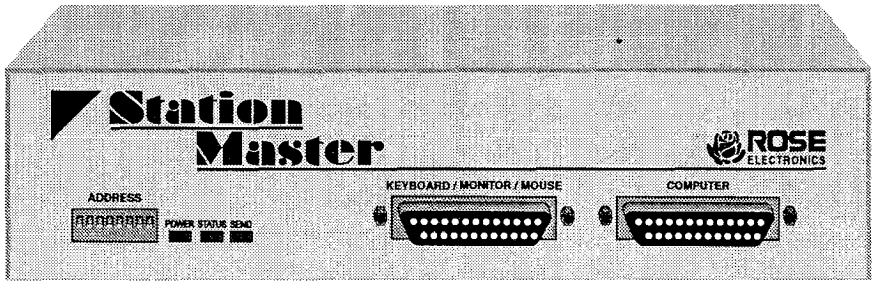


Figure 1. The StationMaster unit

Features

- Access up to 255 PCs with several keyboards, monitors, and mice
- Microprocessor controlled keyboard and mouse switching and emulation for plug-and-play operation
- Saves energy to assist in latest energy saving programs
- Coax bus connection allows multiple units to be daisy chained for local and remote control
- Coax bus connection uses high quality 13W3 video connectors for crystal clear video even at long distances
- Data on bus connection uses packetized network format for fast and highly reliable delivery of keyboard, mouse, and control information
- Front panel dip switch determines port numbers and establishes network address
- Keyboard timeout feature allows sharing of CPUs
- Programmable security features to restrict access
- Drives video, keyboard, and mouse signals up to 100 feet away
- Select CPU from keyboard or optional keypad
- Supports XGA, SVGA, and VGA video

- Video resolution supports up to 1280X1024 non-interlaced video
- Supports all modes of PS/2 and AT compatible keyboards
- Mouse can be PS/2 or RS232 type
- Front panel LEDs shows bus status, and video sending state
- Optional keypad allows switching to desired port
- Remembers and restores Num Lock, Caps Lock, Scroll Lock, and keyboard mode of each CPU when switching
- Screen blank function turns off video after 1–999 seconds of inactivity
- Scan function sequences among CPUs at a rate of 1–15 seconds
- Programmable starting and ending scan ports
- Programmable keyboard typematic rate and delay
- Programmable power up port
- Previous channel command for easy back and forth access to 2 CPUs
- Each unit can have different keyboard timeout allowing optimum and convenient sharing of CPUs
- Can save keyboard power-up state, keyboard timeout, keyboard typematic value,scan interval, scan minimum and maximum ports, default power-up port, screen blank interval, and security settings in non-volatile memory
- Compatible with ServeView™ electronic keyboard-monitor switches for system expandability
- Many more features to make the unit extremely versatile and expandable
- Available in 117VAC or 230VAC models
- 19" and 24" rack mount kits available

GETTING STARTED

To acquaint you with your StationMaster unit, this manual first describes StationMaster's front and rear panels. Installation and operation instructions begin with the *Quick setup system wiring guide* on page 6. This easy-to-understand diagram illustrates how to connect StationMaster to your CPUs, monitor, keyboard, and mouse.

Package contents

Your StationMaster package includes the StationMaster unit, a power transformer, your warranty registration card, and this manual. Cables are ordered separately.

Cable requirements

StationMaster connects to a CPU with a CPU Adapter Cable and to the monitor, keyboard, and mouse with a Keyboard-Monitor-Mouse adapter Cable. These cables are most commonly purchased with the StationMaster and will provide quick and trouble-free operation. If you wish to build your own cables, refer to the pinout information in *Appendices A, B, and C. Appendix F* describes the cable part number based on the type of equipment you wish to connect. *Appendix G* lists the most common cables.

To interconnect the units together you use coax bus cables between each box and terminators at the first unit on the bus and the last unit on the bus. Cables and accessories are available from where you purchased your StationMaster.

Most installations use cable for the CPU and monitor, keyboard, and mouse which are no longer than 20 feet in length. Cable length will affect the quality of the video, depending upon which resolution you will be using. You can improve the video resolution and distance by ordering coax cables for your CPU and monitor connections, see A*ppendix F and G* and *Table 6 Video Distance Capability.*

Locating the unit

The StationMaster unit is best located near the CPU and associated keyboard, monitor, and mouse. This will reduce the length of the cables and provide a more cost-effective and neater installation. Sometimes the StationMaster will be mounted in a rack with the optional rackmount kit, especially when connected to a ServeView for CPU expansion. Typically you should leave the front panel accessible in order to view the status and send signals, though once all is installed you will probably not need to see these LEDs. The total length of bus cable should not exceed 200 feet, depending upon the resolution of video used.

FRONT PANEL

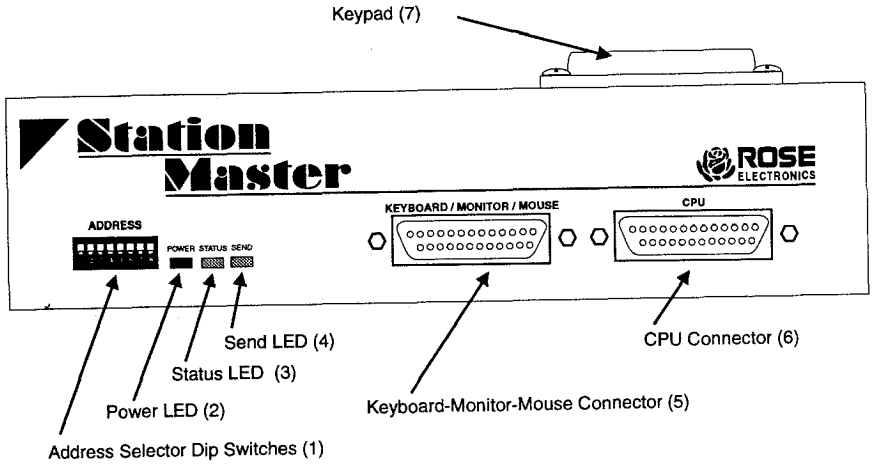


Figure 2. Front panel, model # SMB-CMB

Table 1. The front panel		
1	Address	Determines the port number of the CPU on the unit. Address 0 is reserved for diagnostics. Address 255 is reserved for security configuration.
2	Power LED	When lit indicates that unit is powered on.
3	Status LED	Flashes once a second to show bus connection. Also flashes when keyboard or mouse activity occurs.
4	Send LED	When lit video is being sent over the coax bus, one or more monitors may be receiving the video
5	Keyboard-Monitor-Mouse	Keyboard, monitor, and mouse are connected at this port using a Keyboard-Monitor-Mouse adapter cable. The cable has a DB-25M at one end and appropriate connectors at the other end, depending upon your video, keyboard, and mouse type. Only one adapter cable is needed.*
6	CPU 1-16	Your computer is connected at this port using a CPU adapter cable. The cable has a DB-25M at one end and appropriate connectors at the other end, depending upon your video, keyboard and mouse type. When the keypad option is present this port is not populated.*
7	Keypad	Switches monitor, keyboard, and mouse to number of computer entered from keypad. This option not available when CPU port is populated.
** See Appendix F and G for further cable information.*		

REAR PANEL

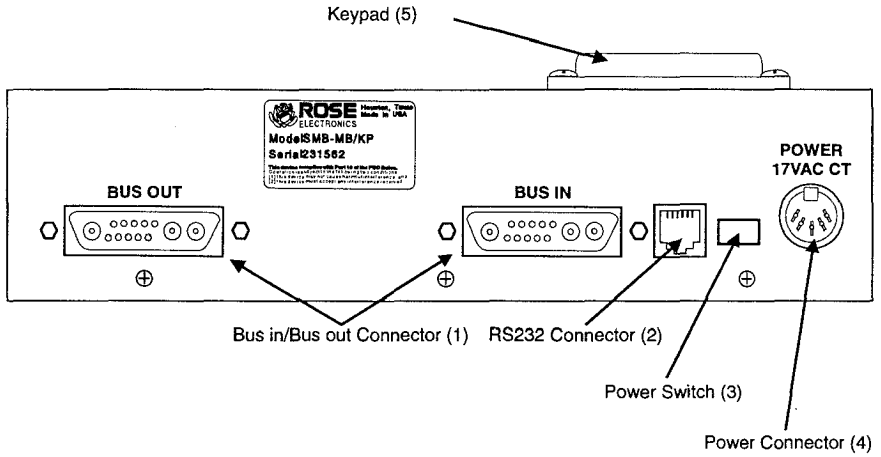


Figure 3. Rear panel, model # SMB-CMB

Table 2. The rear panel		
1	Bus in/ Bus out	Bus cable to next unit or terminator is connected here. Terminator or bus cable may be connected to either bus in or bus out.
2	RS232	RS232 serial port for factory diagnostics only.
3	Power switch	Pressing the switch turns the unit on, provided supplied power transformer is properly connected.
4	Power	Power transformer included in package connects here. This is **not** a keyboard input. Power transformers are available for U.S. or International use. Input voltage is 17VAC with center tap.
5	Keypad	Switches monitor, keyboard, and mouse to number of computer entered from keypad.

QUICK SETUP SYSTEM WIRING GUIDE

The following diagrams offers a basic example of how to connect your CPUs, keyboard, monitor, and mouse and the StationMasters to one another. Connectors will vary depending upon the types of equipment being installed.

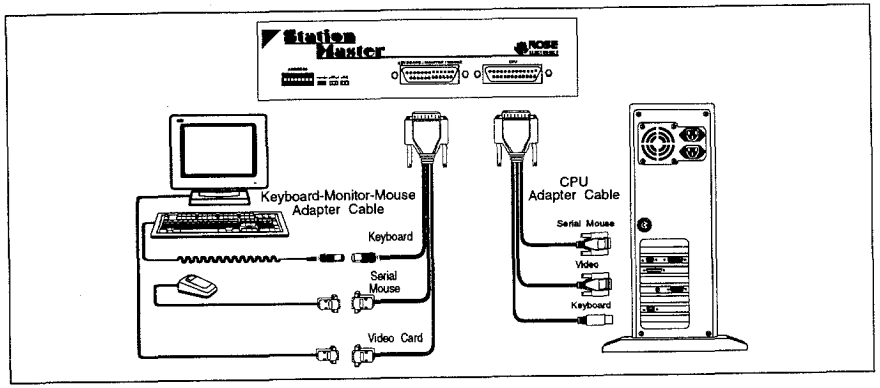


Figure 4. Connecting CPUs, keyboard, monitor, and mouse

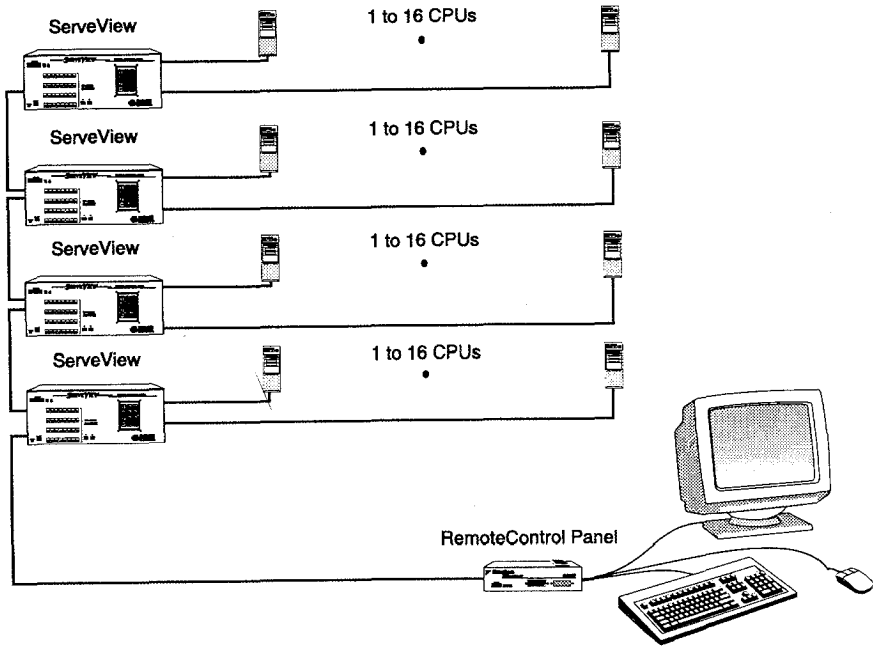


Figure 5. Connecting the bus

INSTALLATION

This section provides instructions for the setup of your StationMaster. For an illustrated example, see the *Quick setup system wiring guide* on the previous page.

> **NOTE:** Be sure that **all** computers you are connecting to your StationMaster will support the monitor, keyboard, and mouse you plan to use.

Step 1. Connecting the monitor, keyboard, and mouse

The Keyboard-Monitor-Mouse adapter cable connects your monitor, keyboard, and mouse equipment to the StationMaster. Various styles of electrical connectors are used by different classes of equipment, so you should have the correct cable to match your equipment's connectors. Adapter cables are available where you purchased your StationMaster. Should you prefer to build your own cables, however, pinout information is shown in *Appendices A & B.*

1.1 Plug the DB-25 male connector of the adapter cable into the port labeled "Monitor/Keyboard/Mouse" on the StationMaster rear panel.

1.2. Plug the adapter cable's monitor, keyboard, and mouse connectors into your equipment's corresponding connectors.

Step 2. Connecting the CPU

A CPU adapter cable connects your computer to the StationMaster. CPU adapter cables are available where you purchased your StationMaster. Should you prefer to build your own cable, pinout information is shown in Appendices A and B .

2.1 Plug the DB-25 male connector of the CPU adapter cable into one of the numbered CPU ports on the StationMaster rear panel.

2.2 Plug the CPU adapter cable's monitor, keyboard, and mouse connectors into the CPU's corresponding ports.

> **WARNING:** Avoid routing cable near fluorescent lights, air conditioning compressors, or machines that may create electrical noise. For best quality video, when exceeding 20 feet use coax cable. See *Table 6 Video Distance Capability* and *Appendix F and G* for further cable information.

Step 3. Connecting the bus

3.1 Connect the units together with the coax bus cables by connecting either bus in or out to either bus in or bus out of the next unit. The units may be other StationMasters or ServeViews equipped with bus connectors.

3.2 Install terminators on the first unit on the bus and the last unit on the bus.

3.3 Set the dip switch address to identify the port numbers. Typically when used in a classroom or control room environment, you will start with 1, the next would be 2 and so on. If a unit is used remotely with no CPU attached, this one can be set to address 255. See Appendix D for further dip switch information.

Step 4. Powering up the system

4.1 Plug the power transformer's power jack into the the power plug located on the back of the StationMaster unit, then plug the transformer into a power strip or wall outlet.

4.2 Push the On/Off switch on the back of the StationMaster to power it up.

4.3 Upon power-up the yellow status light will light briefly and go out. After a few seconds the status light will flash irregularly as it talks to the keyboard any mouse attached. Then if other units are on the bus, the LED will flash at a steady one second interval. If it flashes at a faster rate, about 3/second, this indicates either a hardware error or a duplicate address. See the troubleshooting section for more information.

4.4 Boot up your CPU. StationMaster emulates all keyboard and mouse functions for automatic boot-up. You do not have to re-boot the CPU, if it is inconvenient. In this case you may need to issue the mode command, see page 14, to have proper keyboard communication.

Step 5. Testing the installation

Your StationMaster is now ready for operation using its default settings. To take full advantage of the StationMaster features, refer to the *Operation* section beginning on page 10. The *Operation* section gives detailed information about each of the StationMaster commands, describing its application and giving the keyboard command sequence. For your convenience, this information is summarized in the *Keyboard command summary* on page 19. To begin switching immediately, however, follow the instructions below.

6.1 Try switching from the keyboard, you will find it easy and convenient. Press and release the keyboard's **left** Control Key (**[Ctrl]**), then type in the port number of another StationMaster. The CPU port number of a particular unit is determined from the address of the dip switch.

Single digit port numbers can be selected by either 01-09, 1-9 and the enter key, or 1-9 and wait 2 seconds for the port to switch. For installations with more than 99 ports, set the scan maximum (see the operation section) to the number of ports in the system, other wise three digit port numbers will not be accepted.

6.3 The default setting is that you can access any port from any keyboard. If you wish to restrict accessing other CPUs on a remote unit, you must use the level command to establish the security and access levels.

NOTE: Before entering any StationMaster keyboard command, you must press and release the **left** Control Key. This activates StationMaster to look for commands from the keyboard. You then have two seconds in which to start entering a valid command.

NOTE: When entering numeric commands, use only the numeral keys located at the top of your alpha-numeric keyboard. Numbers entered from the numeric keypad to the right will **not** be recognized as valid commands.

OPERATION

StationMaster is simple to operate. Port selection and function commands are entered from the keyboard. You can also select ports from the StationMaster's optional keypad. This section details each StationMaster function. Also see the *Keyboard command summary* starting on page 19.

> **IMPORTANT OPERATION NOTE:** To send StationMaster keyboard commands, you must first press and release the **left** Control Key (**[Ctrl]**). Pressing and releasing **[Ctrl]** activates StationMaster to look for commands from the keyboard. You have two seconds between each keystroke to enter a valid command, otherwise StationMaster aborts the command.
> **NOTE:** When entering numeric commands from the keyboard, use only the numeric keys located at the top of your keyboard. Numbers entered from the numeric keypad on the right of the keyboard will **not** be recognized as valid commands.
> **NOTE**: StationMaster commands ignore case. All command letters are shown capitalized for clarity only.
> **NOTE:** All non-switching commands which require a numeric operand must use the **[Enter]** key to complete the command. Do not confuse this with the optional **[Enter]**, when switching to a port.

Keyboard port selection

To select a port from your keyboard, press and release your keyboard's **left** Control Key (**[Ctrl]**), then type in the port number. Remember to use the numbers located at the top of your keyboard. **Do not** use the numeric keypad.

16–99 Ports: StationMaster will immediately switch to the desired port when you enter the two-digit number. For single-digit ports, you can enter the number with a leading zero (such as 01) or enter the single-digit number and press **[Enter]**. If you enter only one digit, and do not follow it with **[Enter]**, StationMaster will wait two seconds for you to enter another digit, then, if no additional number is entered, will switch immediately to the single-digit port.

100–256 Ports: StationMaster will immediately switch to the desired port when you enter the three-digit number. For single- and double-digit ports, you can enter the number with one or two leading zeros (such as 027, 001), or enter the single- or double-digit number and press **[Enter]**. As noted above, StationMaster will wait two seconds for a second or third number to be entered, then will switch to the port number entered.

Going to the next highest or lowest port

From the keyboard you can switch forward or backward through the ports by using the + and - keys. To go to the numerically next higher port, press and release the **left** Control Key (**[Ctrl]**), then press the "+/=" (plus) key. To go to the next numerically lower port, press and release **[Ctrl]**, then press the "-/_" (minus) key. The command is not case-sensitive. Use the keys at the top of your keyboard, **not** those on the numeric pad.

The count wraps around. It follows the ports as defined by the scan minimum and maximum settings, described later.

Keyboard timeout command

This is a very powerful feature that controls access when two or more keyboards are sharing a CPU. The setting of this time interval value determines after what amount of time a CPU becomes available for use by another keyboard.

This value is loaded upon connecting to a CPU and when any keyboard or mouse activity occurs. If there is no keyboard or mouse activity for this time interval the CPU is available for connection by another port. Each StationMaster unit can have a different timeout value set. If another keyboard connects to a CPU on a particular unit, the timeout is set by that remote keyboard and not the local one.

If the timeout is set for zero this is an instant timeout. Two keyboards each set for a zero timeout and connected to the same CPU will appear to both be connected to the CPU. If the timeout is set for 255 this is an infinite timeout. A CPU will not be released, until another port is switched to from the keyboard with the infinite timeout or the timeout is changed.

The default setting is 30 seconds. To set another interval, press and release the **left** Control Key, type "**H**", enter the new keyboard timeout interval (in seconds), and press **[Enter]**. Remember to use the upper numeric keys, **not** the numeric keypad to the right. Follow with the Keep command to save the setting.

Access level command

This command is used to restrict access to ports. There are two conditions which can be controlled separately.

The first is the ***local only*** setting. When this is enabled on a unit, then from that unit's keyboard all attempts to switch to a port other than one of its own is refused. You should never enable this on a unit which has no CPU port as this will inhibit all access from the keyboard and monitor.

The second is the ***disconnect on change*** setting. When this is enabled if your keyboard times out and someone else switches to the port you were on, your screen will be blanked and your keyboard and mouse are disconnected. You must issue a switch command to reconnect. This feature is intended to serve as a method of preventing accidental access to a CPU which you did not know you were switched to.

The access level can only be set from a unit that is set to address 255. This is to prevent someone from easily changing their access level from their own keyboard. To change the access level on a unit, you must switch to a port on the unit you wish to change. Refer to *Table 3* below to determine which access level value corresponds to the settings of the local only and disconnect on change.

The default setting is level 0. To set another access level value, make sure you are switched to a port on the unit you wish to change. Press and release the **left** Control Key, type "**L**", enter the new access level and press **[Enter]**. Remember to use the upper numeric keys, **not** the numeric keypad to the right. Follow with the Keep command to save the setting.

Table 3. Access level values

Access Level	Local only	Disconnect on change
0	Disable	Disable
1	Disable	Enable
2	Enable	Disable
3	Enable	Enable

Power up port command

This setting is intended to provide a port to which you will connect to upon power up of a unit. If ***local only*** is enabled (see access level command above) this is ignored and you will be switched to the CPU on the unit. The default setting is the unit's port 1. To set another port, first switch to the desired port. Then press and release the **left** Control Key and type "**J**". Follow with the Keep command to save the setting.

Previous port command

This setting is intended to provide a convenient method to alternate between two CPUs. You can rapidly and easily switch to the previous port that you were on. This is especially useful when you have many CPUs and entering the multi-digit port number can be tedious. To set another interval, press and release the **left** Control Key and then press the "**backspace**" key.

Scan mode commands

To enable scanning from the keyboard, press and release the **left** Control Key, then type "**S**". StationMaster will begin scanning sequentially from its current port through the remaining ports up to the maximum scan port and begin again at the minimum scan port. The time between switching to the next higher port is the scan time interval (see below) and is programmable from 1-15 seconds. To stop scanning, press and release the **left** Control key, then type "**X**". Scanning is also disabled by entering a port selection command. You can program the unit to start scanning upon power-up by enabling the scan mode and issuing the keep command.

Scan time interval command

The scan time interval command sets the time, in seconds, that StationMaster will pause at each of the ports when scanning. The allowable scan time is from 1 to 15 seconds. The default setting is 5 seconds. To set another time interval, press and release the **left** Control Key, type "**T**", enter the new scan time interval (in seconds), and press **[Enter]**. Remember to use the upper numeric keys, **not** the numeric keypad to the right. Follow with the Keep command to save the setting.

Minimum scan and maximum scan port commands

The scan minimum and maximum port commands set the range of ports for which scanning occurs. If a unit is set to ***local only*** access level these are ignored. The default minimum port is 1, the default maximum port is 16. To set the minimum scan port, press and release the **left** Control Key, type "<", enter the new minimum scan port and press **[Enter]**. To set the maximum scan port, press and release the **left** Control Key, type ">", enter the new

maximum scan port and press **[Enter]**. Remember to use the upper numeric keys, **not** the numeric keypad to the right. Follow with the Keep command to save the setting.

The maximum scan port is also used to determine the number of keys required to enter a port number. If the maximum scan port is set to 99 or less, then only two digits are required to enter the port number. If the maximum scan port is set to 100 or greater than three digits are required to enter the port number to select.

Screen blanking command

This feature reduces the wear on your screen and provide security for your system by blanking the screen when there has been no keyboard or mouse activity for a specified length of time. To set the screen blank interval time, press and release the **left** Control Key, type **"V"**, enter the interval time, in seconds (0–999), and press **[Enter]** (an interval time of 0 disables this screen blank feature). Remember to use the upper numeric keys, **not** the numeric keypad to the right. Follow with the Keep command to save the new setting in the unit's non-volatile memory.

When in the Screen Blank state, all StationMaster Select LEDs will be off. To restore the video screen, press any key or move the mouse. To disable the screen blank feature, press and release the **left** Control Key, type **"V"**, enter **"0"** as the interval time, and press **[Enter]**. Follow with the Keep command if desired to save it.

Mode command

StationMaster supports keyboard modes 1, 2, and 3. The keyboard mode is set by commands from the CPU. Mode 2 is the most common mode used by the vast majority of CPUs. It is also the power-up state of all 101-type and PS/2 keyboards. Mode 1 is used primarily by most models of the latest PS/2s. Mode 3 is used by certain specialized servers.

StationMaster automatically detects a CPU's keyboard mode upon CPU boot-up, and thus learns which mode the CPU uses. If the CPU has already booted and is then connected, StationMaster cannot detect the CPU's keyboard mode and uses the setting stored in the StationMaster's non-volatile memory. The mode command can be issued to change the keyboard mode for any port and can be saved in non-volatile memory with the Keep command. Most CPUs which are mode 2 do not send a mode 2 command, since that is the keyboard's power-on mode. If a port was previously set to mode 1 and you connect a mode 2 CPU to that port, it probably will not communicate correctly and you will need to issue the mode command.

To issue the Mode command, press and release the **left** Control Key, type **'M"**, and enter the mode number **"1"**, **"2"**, or **"3"** followed by **[Enter]**. Remember to use the alpha-numeric keys, **not** the numeric keypad, to enter the mode number. Follow with the Keep command. The mode is changed on your currently selected port. To change the mode on another port, you must first switch to that port and then issue the mode command.

Typematic value command

StationMaster can be configured to control the keyboard typematic rate and delay. This setting is used to adjust the user preference of the way the keyboard acts when holding a key down to repeat the key, such as when moving a cursor across a line. The rate is the speed at which the keys are sent in keys/second. The delay is the wait time in milliseconds after the key is initially pressed, before additional keystrokes are sent. To issue the command press and release the **left** Control key, then type **"A"**, then enter the 1-3 digit decimal *typematic value* followed by **[Enter]**. The *typematic value* is defined as shown below. Use the keep command to save the value.

The *typematic value* to be used is determined from the following tables using the equation: **Typematic Value = Rate value + Delay Value**. Pick the desired rate in keys/sec. (32 choices) and delay in milliseconds (4 choices) from the tables below. Add the values to the right of the desired settings. For example to use a Rate of 16.0 keys/sec. and a 500 millisecond delay, the typematic value = 7 + 32 = 39, so to set this value, type *[Ctrl] A 39 [Enter]*.

Table 4. Typematic rate

Rate Keys/sec	Rate Value	Rate Keys/sec	Rate Value	Rate Keys/sec	Rate Value	Rate Keys/sec	Rate Value
30.0	0	15.0	8	7.5	16	3.7	24
26.7	1	13.3	9	6.7	17	3.3	25
24.0	2	12.0	10	6.0	18	3.0	26
21.8	3	10.9	11	5.5	19	2.7	27
20.0	4	10.0	12	5.0	20	2.5	28
18.5	5	9.2	13	4.6	21	2.3	29
17.1	6	8.6	14	4.3	22	2.1	30
16.0	7	8.0	15	4.0	23	2.0	31

Table 5. Typematic delay

Delay in millisec.	Delay value	Delay in millisec.	Delay value	Delay in millisec.	Delay value	Delay in millisec.	Delay value
250	0	500	32	750	64	1000	96

Maximum ports command

This command is used to interface to a ServeView which has no bus interface for specifying how many ports are on the ServeView. This gives the StationMaster a range of ports that belong to it. The start of the range is its dip switch address. The end of the range is the address+the maximum ports setting. Any requests to connect to this range of ports will be redirected to the ServeView.

If ***local only*** is enabled, then from the local keyboard you can only access the ports on the ServeView and not CPUs on other units. The port number of the ServeView CPUs from this local keyboard now starts at 1 and ends at the value set by maximum port. From other units which are not set to local only, the address remains the same.

For a StationMaster that has a single CPU or no CPU attached to it, the maximum ports value should be set to 1.The factory default setting is 16 ports, except when the address of the unit is set to 255, in this case is it set to 1. One of the models of ServeViews offered is part # SVX-16U/SM and is a ServeView with the StationMaster integrated into it. It

To issue the command press and release the **left** Control Key, type "**P**", enter the total number of ports, and press **[Enter]**. Follow with the Keep command to save the new setting in the unit's non-volatile memory.

Keep command

The Keep command saves the current state of the StationMaster's custom settings. These settings are power up port, scan state upon power up, scan time interval, scan minimum and maximum ports, access level, maximum ports, screen blank time interval, each CPU's mode and keyboard LED state, keyboard timeout interval, and the keyboard typematic value. These settings are saved in non-volatile memory and become the power-up settings. To enter the command, press and release the **left** Control Key, then type "**K**".

Null command

This command is used to re-synchronize an out-of-sync PS/2 mouse. Such a condition can result due to transients, spurious power-up effects, or plugging and unplugging of cables with live equipment. The command may need to be entered once or twice, depending if the mouse is out-of-sync by one or two bytes. Microsoft mouse driver version 9.01 corrects this inadequacy of previous drivers and renders this command unnecessary. At publishing time, it is believed this mouse driver is only available for DOS and Windows. To issue the command, press and release the **left** Control Key, then type "**N**".

ROM Identification command

This command is used to identify the revision level of StationMaster firmware currently installed. Before entering this command, your currently selected CPU should be at a command prompt, so that when the StationMaster sends the ROM revision level that the result will be displayed. To issue the command, press and release the **left** Control Key, then type "**I**". StationMaster will send back its current firmware revision level, in the format *majorlevel.minorlevel.*

Reset command

This command is used to re-boot the mouse and keyboard without removing power from the StationMaster. This is most useful to reset a PS/2 mouse which has been unplugged and plugged back in. This command is also useful to enable mouse data to be sent to a CPU which has not enabled the mouse. This may be the case if the StationMaster was not connected or powered off after a CPU was booted up. To issue the command, press and release the **left** Control Key, then type "**R**". This command should not be issued to a CPU which has a PS/2 mouse connected, but no mouse driver is loaded, since many CPUs will crash if you send them unexpected mouse data.

XGA video, model 9515, 9517, and 9518, monitors

Many models of IBM PS/2s come with XGA and XGA-2 video. You should have ordered the CAB-Y0606Cxx cable for your CPU. If this cable is not used, you may be unable to switch to high resolution video. If you wish to use XGA monochrome you also must order a special cable. Otherwise certain color combinations will not be visible.

9515, 9517, and 9518 monitors are not normal VGA monitors and require special CPU cables in order for the video to be synchronized and sized correctly. See *Appendices E and F* for ordering details on special cables mentioned. For further information you can request Technical Support Note *Using XGA/XGA-2 with the StationMaster and VideoSwitch.*

Video distance capability

The limitation on driving distance is usually due to the quality of the video. The table below shows the distances, resolution, and quality of video that can be expected. The table uses a letter which shows the cable type and a number which refers to the quality of the video, as described below. This table applies to the base unit without chaining. There will be some degradation when StationMasters are chained together. Rose Electronics does not support systems where the video quality is 1 or 2. There are further capabilities not listed here in order to send the higher resolution video longer distances. Please contact Rose Electronics technical support for more details.

N – Normal cabling

C – Coax cabling

4 – Perfect or near-perfect; Unable to easily detect defects in screen

3 – Very acceptable; Images clear, small reflections around lettering depending upon color; if you examine the screen closely you will find defects

2 – Acceptable; Slightly fuzzy images; readable text, acceptable for casual use, but not for prolonged viewing as this will cause eye fatigue

1 – Unusable; images smeared; text not easily readable

Table 6. Video distance capability

	5'	10'	20'	30'	50'	75'	100'	125'	150'	200'
640X480 60Hz refresh	N4 C4	N4 C4	N4 C4	N4 C4	C4	C4	C4	C4	C3	C3
640X480 72-75Hz refresh	N4 C4	N4 C4	N4 C4	N3 C4	C4	C4	C4	C3	C3	C3
800X600 non-interlaced	N4 C4	N4 C4	N3 C4	N3 C4	C4	C4	C4	C3	C3	C3
1024X768 interlaced	N4 C4	N3 C4	N3 C4	N3 C4	C4	C4	C3	C3	C3	C3
1024X768 non-interlaced	N4 C4	N3 C4	N3 C4	N3 C4	C4	C3	C3	C3	C3	
1280X1024 interlaced	N3 C4	C4	C3	C3	C3	C3				
1280X1024 non-interlaced	N3 C4	C4	C3	C3						

Power interruption to the StationMaster

Certain keyboards are sensitive to rapid cycling of the power. Since power to the keyboard is provided from the StationMaster, you should not interrupt power to the StationMaster for less than three seconds. The StationMaster is immune to such transients, but the keyboard may not reset correctly.

Rackmount kit

The rackmount kit is an optional item that can be ordered at any time. Your StationMaster unit is pre-drilled to accept the rack-mount mounting screws. There are two sizes available 19" by 5.25" and 24" by 5.25".

KEYBOARD COMMAND SUMMARY

To enter any keyboard command, first press and release the **left** Control Key, represented by **[Ctrl]**. Then enter the command followed by any parameters you wish to specify, for example the port number. Letter/symbol commands are not case sensitive, and are shown in upper case for clarity only. **Do not** use the shift key when entering a command. **Do not** use the numeric keypad to enter any commands.

All StationMaster commands use a two second time-out between characters, to abort the command. This is a feature that restores the keyboard to normal operation, so the keyboard is not put it into a command mode which might lock it up from normal operation. The **[Ctrl]** character is not passed through to the CPU when it is pressed and released. The command characters and command operands, are absorbed by the StationMaster and not sent to the CPU.

All non-switching commands which require a numeric operand must use the **[Enter]** key to complete the command. Do not confuse this with the optional **[Enter]**, when switching to a port.

Table 7. Keyboard command summary

Command	Key Sequence	Description
Go to selected port	**[Ctrl]** *xxx* where "*xxx*" is 1–3 digit port number	Connects your keyboard, monitor, and mouse to the selected CPU port.
Go to next higher port	**[Ctrl]** +	Selects the next higher sequential port.
Go to next lower port	**[Ctrl]** –	Selects the next lower sequential port.
Scan On	**[Ctrl]** S	Turns Scan mode on, causing StationMaster to start scanning sequentially from the current port through the remaining ports until scan max is reached and then switching to scan min. If *local only* is enabled then scanning is local port 1-16 only. If scan is on when a Keep command is issued then upon power up the unit will start scanning.
Scan Off	**[Ctrl]** X	Turns Scan mode off. **Note:** Scan can also be stopped by entering a port selection command.
Scan time interval	**[Ctrl]** T *xx* **[Enter]** where "*xx*" is time in seconds from 1-15 seconds	Sets the time, in seconds, that StationMaster will pause at each port when scanning. **Note:** Follow with Keep command.
Minimum scan port	**[Ctrl]** < *xxx* **[Enter]** where "*xxx*" is port number	Sets port number which is the lowest port for scanning. When scanning and maximum scan is reached, the next port will be minimum scan. **Note:** Follow with Keep command.
Maximum scan port	**[Ctrl]** > *xxx* **[Enter]** where "*xxx*" is port number	Sets port number which is the highest port for scanning. When scanning and maximum scan is reached, the next port will be minimum scan. **Note:** Follow with Keep command.
Previous port	**[Ctrl]** BS(backspace)	Switches to the previous port you were on.
Power up port	Select any port then enter command: **[Ctrl]** J	Sets the port which will be switched to upon power up of the unit. **Note:** Follow with Keep command.
Keyboard timeout	**[Ctrl]** H *xxx* **[Enter]** where "xxx" is time in seconds from 0 to 255 seconds	Determines after what amount of time a CPU becomes available for access by another keyboard. Value of 255 is infinite timeout. Value of 0 is instant timeout. **Note:** Follow with Keep command.
Access level	Select any port on unit to change, then enter command: **[Ctrl]** Lx **[Enter]** where "x" is the access level shown 0 Neither enabled 1 Disconnect on change enabled 2 Local only enabled 3 Both enabled	Controls *local only* and *disconnect on change* settings. If local only is enabled then unit can only access local ports on its own box. If disconnect on change is enabled, then if the keyboard has timed out and another port switches to the port you were on then you are disconnected and your screen is blanked. This command can only be used if it is issued from a unit with address 255.
Reset command	**[Ctrl]** R	Resets and enables mouse and keyboard, enables PS/2 mouse on currently selected port.
Send null to mouse	**[Ctrl]** N	Used to re-synchronize PS/2 mouse which has gotten out-of-sync.
Identify ROM version	**[Ctrl]** I	Identifies ROM version, CPU must be at some sort of command prompt to receive value.
Keep settings	**[Ctrl]** K	Tells StationMaster to save custom settings of various commands.
Set screen blank time interval	**[Ctrl]** V *xxx* **[Enter]** where "xxx" is time in seconds from 0 to 999 seconds	Sets time in seconds with no keyboard or mouse activity after which video will be turned off. Video is turned back on when any key is pressed or mouse is moved. **Note:** Follow with Keep command.
Set keyboard mode	Select port, then enter command: **[Ctrl]** M *x* **[Enter]** where "*x*" is 1, 2, or 3)	Sets StationMaster CPU's keyboard mode. Will change the keyboard to the new mode and update its internal value. Switching to this port will use the new mode. **Note:** Follow with Keep command.
Set maximum ports	**[Ctrl]** P *xxx* **[Enter]** where "*xxx*" is the number of ports	The value sets how many ports are on a ServeView connected to the CPU port. **Note:** Follow with Keep command.
Set typematic value	**[Ctrl]** A *xxx* **[Enter]** where "*xxx*" is a number from 0 to 127 indicating KB typematic value	Sets power-on keyboard typematic action which is controlled by the StationMaster. This can be used to adjust the key stroke rate and delay to the user preferred setting. See *Tables 4 and 5* for how the typematic value is determined. **Note:** Follow with Keep command.

TROUBLESHOOTING

1. CPU does not boot, keyboard error received
CPU does not boot, mouse error received

a. Cable is loose, reseat cable and hit F1 to continue or reboot computer.

b. Wrong cable plugged in, keyboard and mouse cables reversed.

c. Cable is defective, try using cable from another CPU. If problem goes away cable is defective.

d. Port on StationMaster is defective, try using another port on StationMaster. If problem goes away port is defective.

e. Port on CPU is defective, try plugging in keyboard or mouse directly if problem remains CPU port is defective. If CPU power status LED not lit, fuse on motherboard may be blown.

2. Mouse driver does not load.

a. If PS/2 type mouse, CPU must be connected to StationMaster or mouse at boot-up time in order for mouse to be recognized by CPU. Reboot computer with StationMaster powered on and cable attached.

b. If RS-232 type mouse, make sure right COM port is being used and syntax of mouse driver is correct to search for the correct port.

c. Incompatible or old mouse driver being used, try latest driver. At time of this publishing Microsoft 9.01 driver is best one available.

3. Can't switch ports from keyboard

a. Power to StationMaster was removed for less than three seconds possibly causing keyboard to lock up. Disconnect keyboard and plug it back in.

b. The mode of the keyboard does not match that of the CPU. Issue the mode command, usually 1 for IBM PS/2s and 2 for all others. The default setting of the StationMaster is mode 2. Sometimes an incorrect mode will confuse the CPU or keyboard and require re-booting the CPU or resetting the keyboard by unplugging and plugging it back in.

c. If trying to reach a remote port, that port is busy. Try again later.

d. If trying to reach a remote port, the bus cable is disconnected, or the remote box is powered off. Check status LED on local unit, if it is not flashing at a one-second interval then bus cable has been disconnected or no other units are attached to the network. Check remote unit for activity also.

e. KB port or CPU port cable disconnected. Typing in characters to the KB should cause the status LED to flash more rapidly. Use this to test if you have a good KB or mouse connection to the unit

4. Wrong or missing characters from those typed

a. The keyboard mode is incorrect. See *item 3c* above.

5. Can't access all functions of mouse

a. If Microsoft BallPoint mouse, get latest Microsoft revision 9.01 driver.

6. Mouse does not move

a. StationMaster turned off after or not connected when CPU booted or application using mouse run. Exit and re-enter application using mouse or issue reset command.

b. PS/2 mouse was not connected when StationMaster powered up or has been disconnected and reconnected. Issue the reset command.

7. PS/2 mouse gets out of sync

a. Cabling was disturbed during mouse movement. Issue the null command once or twice to re-sync the mouse. Get a later mouse driver which does not exhibit this problem, such as Microsoft rev 9.01.

8. Video fuzzy

a. Cable too long or wrong type. Verify that resolution and distance match *Video Distance Capability* table. Upgrade cable if necessary.

9. Video not synchronized or wrong color

a. Cable is loose, reseat cable.

b. Wrong CPU cable used. If you have a 9515, 9517, 9518, XGA mono or similar monitor you must use special cables or adapters. See previous section, *XGA video, Model 9515, 9517, 9518 monitors.*

c. Cable is defective, try using cable from another CPU if problem goes away cable is defective.

d. Port on StationMaster is defective, try using another port on StationMaster. If problem goes away port is defective.

10. Lower resolution video OK, but can't enter high resolution mode

a. Wrong CPU cable used. If you have a XGA, XGA-2, or other high resolution video card you should probably be using the CAB-Y.. cable to connect your CPUs.

b. Driver has not been setup. Windows, OS/2, or other driver has not been configured for this resolution. Configure the driver.

10. Status LED flashes at steady 3/second rate, unit does not respond

a. Duplicate address is present, Some other unit has same address as this unit. Change address from dip switch and power unit off and on.

b. Unit has a defective component and fails self test. Unit must be serviced.

SERVICE INFORMATION

Maintenance and repair

The unit does not contain any user-serviceable parts inside. Any malfunction of the unit should be reported to a factory-authorized repair center for service. Any discrepancies in the operation of the unit according to this manual should be reported to the Technical Support Department of Rose Electronics.

Technical support

If you cannot determine the nature of a problem, please call Rose Electronics and ask for Technical Support. If possible, call from a phone located near the unit—we may be able to solve your problem directly over the phone. If we cannot solve your problem, and determine that the fault is in the unit, we will issue a Return Authorization (RA) number that must appear on the outside of all returned products. The unit should be double-packed in the original container, insured, and shipped to the address given to you by our Technical Support representative.

To speak to a Technical Support representative, call (713) 933-7673 from 8:00–Noon and 1:00–5:00 Central Time, Monday through Friday.

Appendix A. Cable pinout Information

You can, if you prefer, build your own adapter cables. The following tables give you all pertinent information for cable construction.

Pin-to-Pin Wiring
Keyboard-Monitor-Mouse Adapter

PS/2 Keyboard with MiniDin-6M

StationMaster DB-25M	Keyboard MiniDin-6F	Signals
4	3	Digital Ground
7	5	Keyboard Clock
8	1	Keyboard Data
11	4	+ 5V

PS/2 Mouse with MiniDin-6M

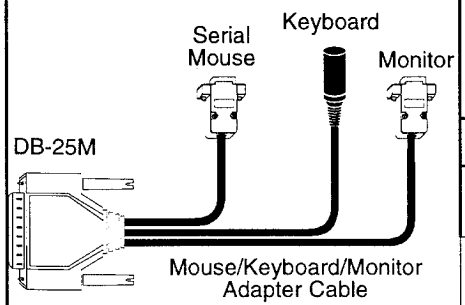
StationMaster DB-25M	Mouse MiniDin-6F	Signals
4	3	Digital Ground
9	5	Mouse Clock
10	1	Mouse Data
11	4	+ 5V

PC Keyboard with Din-5M

StationMaster DB-25M	Keyboard DIN-5M	Signals
4	4	Digital Ground
7	1	Keyboard Clock
8	2	Keyboard Data
11	5	+ 5V

Serial Mouse with DB-9F

StationMaster DB-25M	Mouse DB-9M	Signals
23	5	Digital Ground
21	3	TxD*
12	2	RxD
13	7	RTS
24	4	DTR*



Serial Mouse with DB-25F

StationMaster DB-25M	Mouse DB-25M	Signals
23	7	Digital Ground
21	2	TxD*
12	3	RxD
13	4	RTS
24	20	DTR*

VGA Monitor with HD-15M

StationMaster DB-25M	Monitor HD-15F	Signals
1,2,3	6, 7, 8	Analog Ground
4	5, 10	Digital Ground
5	13	Horizontal Sync
6	14	Vertical Sync
14	1	Red
15	2	Green
16	3	Blue

Pin-to-Pin Wiring CPU Adapter

PS/2 Keyboard Port with MiniDin-6F

Station-Master DB-25M	Keyboard MiniDin-6M	Signals
4	3	Digital Ground
7	5	Keyboard Clock
8	1	Keyboard Data
11	4	+ 5V

PS/2 Mouse Port with MiniDin-6F

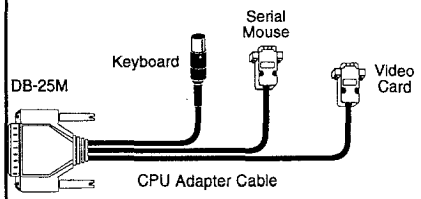
StationMaster DB-25M	Mouse MiniDin-6M	Signals
4	3	Digital Ground
9	5	Mouse Clock
10	1	Mouse Data
11	4	+ 5V

CPU Keyboard Port with DIN-5F

Station-Master DB-25M	Keyboard DIN-5M	Signals
4	4	Digital Ground
7	1	Keyboard Clock
8	2	Keyboard Data
11	5	+ 5V

Serial Mouse Port with DB-9M

StationMaster DB-25M	Mouse DB-9M	Signals
23	5	Digital Ground
12	2	RxD
13	7	RTS



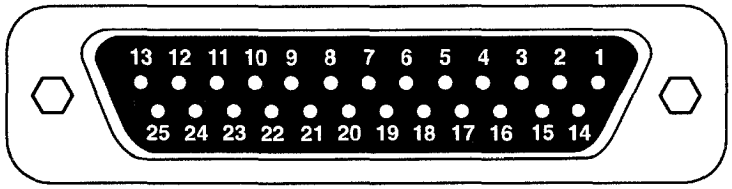
Serial Mouse Port with DB-25M

StationMaster DB-25M	Mouse DB-25F	Signals
23	7	Digital Ground
12	3	RxD
13	4	RTS

VGA Video Port with HD-15F

StationMaster DB-25M	Monitor HD-15M	Signals
1,2,3	6, 7, 8	Analog Ground
4	5, 10	Digital Ground
5	13	Horizontal Sync
6	14	Vertical Sync
14	1	Red
15	2	Green
16	3	Blue

Appendix B.CPU/KB-Monitor-Mouse pinout



DB-25 Female Connector

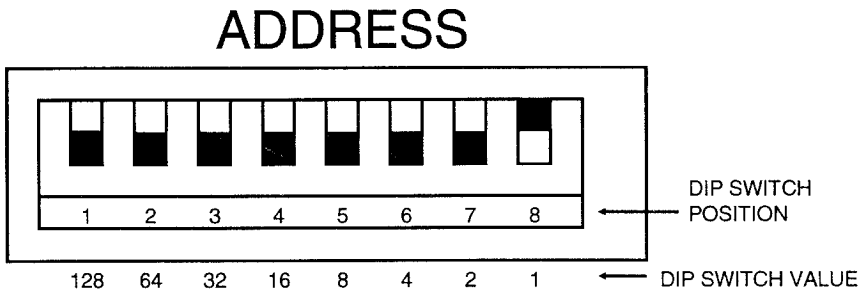
Pinouts for StationMaster DB-25 Female Connectors

Pins	Numbered CPU Ports	Keyboard-Monitor-Mouse Port	Description
1	Ground	Ground	Analog Ground
2	Ground	Ground	Analog Ground
3	Ground	Ground	Analog Ground
4	Ground	Ground	Digital Ground
5	HSync-in	HSync-out	Video Control
6	VSync-in	VSync-out	Video Control
7	KBClk	KBClk	Keyboard Clock
8	KBData	KBData	Keyboard Data
9	MSClk	MSClk	Mouse Timing
10	MSData	MSData	Mouse Data
11	+5V-in	+5V-out	Power for LEDs, Peripherals
12	RS232-TXD	RS232-TXD	Serial Data
13	RS232-RTS	RS232-RTSt	Serial Data
14	Red-in	Red-out	VGA Color
15	Green-in	Green-out	VGA Color
16	Blue-in	Blue-out	VGA Color
17	Reserved	Reserved	Reserved
18	Reserved	Reserved	Reserved
19	Reserved	Reserved	Reserved
20	Reserved	Reserved	Reserved
21	Reserved	Reserved	Reserved
22	Ground	Ground	Digital Ground
23	Ground	Ground	Digital Ground
24	V+	V+	8-10V 10ma only
25	RS232-RXD	RS232-RXD	RS232-RXD

Appendix C. Factory default settings

Setting	Default
Scan enable	Off
Scan Time Interval	5 seconds
Scan minimum port	1 (local)
Scan maximum port	16 (local)
Power up port	1 (local)
Number of ports	16, except when address=255, this value is 0
Access level	0 (local only & disconnect on change disabled)
Keyboard timeout	30 seconds
Caps/Numlock/Scroll	Numlock On
Keyboard Mode	2
Screen Blank Time Interval	0 (Off)
Typematic Value	43 (Rate=10.9 chars/sec, delay = 500 millisec.)

Appendix D. Dip switch description



A unit's address is determined from the settings of the dip switch upon power up. The dip switch forms a standard binary number with up being a "one" and down being a "zero". Each position has a value corresponding to it. From left to right the values are 128, 64, 32, 16, 8, 4, 2, and 1. When the dip switch is up add the values of the position to form the address value.

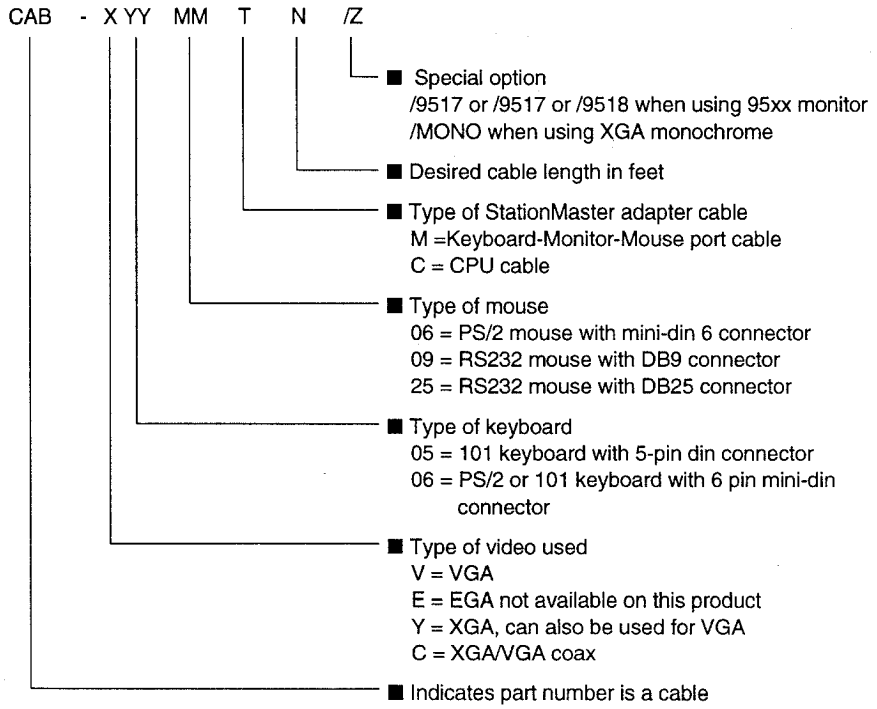
The most common values and positions are: **1** (8 up – shown above), **17** (4,8 up), **33** (3,8 up), **49**(3,4,8 up), **65** (2,8 up), **81** (2,4,8 up), **97**(2,3,8 up), **113** (2,3,4,8 up), **129**(1,8 up), **145** (1,4,8 up), **161** (1,3,8 up), **177**(1,3,4,8 up), **193** (1,2,8 up), **209** (1,2,4,8 up), **225**(1,2,3,8 up), and **241** (1,2,3,4,8 up).

Appendix E. General specifications

SIZE	8.8"W x 2.25"H x 4.9" D
WEIGHT	12 lb.
INPUT POWER	117 VAC power adapter, 230 VAC optional
OUTPUT POWER	17VAC CT, 1.4A
POWER CONNECTOR	DIN5
CPU/KEYBOARD-MON-MOUSE CONNECTORS	DB25 Female
BUS IN/OUT CONNECTORS	13W3 Female
CHASSIS	Fully shielded, black painted steel
CONTROLS	Power on/off switch, + and – CPU select switches, optional numeric keypad
INDICATORS	1 power LED (green), status LED (yellow), send LED (yellow)

Appendix F. Cable part numbers

To specify a cable, refer to the diagram below, which defines each field of the cable part number, or refer to *Appendix G* which lists many common cables.



Appendix G. Cables and accessories

Description	Part Number
Monitor/Keyboard/Mouse Adapter Cables	
VGA–AT keyboard–Serial (9) mouse to DB-25M cable	CAB-V0509M1
VGA–PS/2 keyboard–PS/2 mouse to DB-25M cable	CAB-V0606M1
CPU Adapter Cables	
VGA–AT keyboard–Serial (9) mouse to DB-25M cable	CAB-V0509C*xx**
VGA–PS/2 keyboard–PS/2 mouse to DB-25M cable	CAB-V0606C*xx**
XGA–PS/2 keyboard–PS/2 mouse to DB-25M cable	CAB-Y0606C*xx**
XGA/VGA Coax–AT keyboard–Serial (9) mouse to DB-25M cable	CAB-C0509C*xx***
XGA/VGA Coax– PS/2 keyboard–PS/2 mouse to DB-25M cable	CAB-C0606Cxx**
Other Cables	
Coax bus cable 13W3 male to 13W3 male	CAB-SMxx**
*Available in standard lengths of 5, 10, and 20 ft. Replace *xx* with desired length.	
**Available in 30, 50, 75, 100, 125, 150 and 200-foot lengths. Replace *xx* with desired length.	
Accessories	
Bus terminator, two required per system	ACC-SMT
Rackmount: Black anodized, for installation in 19-inch racks.	RM-SV16
Rackmount: Black anodized, for installation in 24-inch racks.	RM-SV16/24
Call for other rackmount arrangements.	