



## INTRODUCTION

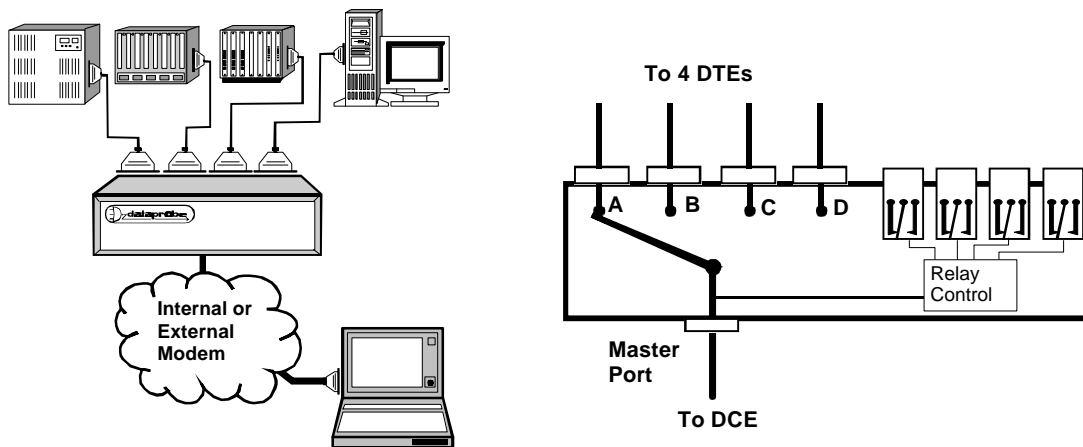
The 4PK-SCS is a serial switching system, capable of providing several functions:

### Port Selector

As a port selector, the 4PK-SCS allows one Master RS-232 asynchronous channel to be selectively switched to any of up to 4 ports. As a Port Selector, the 4PK-SCS can be used to provide access from one modem or terminal to multiple systems. A typical use for the Port Selector is to access out-of-band management ports on multiple devices. By using simple escape strings or easy to use menu commands, the operator can select which port to access. Ports can also access the Master by raising a control lead. While accessing a port, the 4PK-SCS is passive, allowing all data to pass until it receives a user programmable command.

### Relay Controller

As a relay controller, the 4PK-SCS accepts code or menu commands from its Master Port to energize or de-energize four relays. These relays can be used, in turn, to control any device that responds to a contact closure or open. When connected to Dataprobe supplied A/C or D/C power switches, communications A/B switches or other devices, the 4PK-SCS allows remote control of many systems through its Master RS-232 port.



Supports Hardware #: 1-232-01 Rev D

REF: CAS4PKSCS\_110\_V980326R.DOC

Technical Support Hotline: (201) 967-8788



## OPERATION

The 4PK-SCS can be operated in four possible ways.

### Menu Selection

By connecting to the Master Port, the user can switch to any of the four ports (A-D) or operate any of the four relays. The menu system allows convenient naming of each port and relay, as well as allowing setup of all 4PK-SCS parameters. A login procedure protects the menu system.

### Escape Code Sequences

(Page 6) The menu operation can be bypassed by transmitting escape codes to the Master Port of the 4PK-SCS. These escape codes can be partially defined by the user through the setup menus.

### Lead Control

(Page 7) This option allows any of the four ports to access the master port by raising its Request To Send (RTS) or Data Terminal Ready (DTR) control lead. This capability is in addition to the menu selection as described above.

### Manual Control

(Page 7) A front panel push-button allows local control of port selection.

## MENU CONTROL

The 4PK-SCS is controlled principally through an ASCII terminal interface. By connecting to the modem using a terminal or PC running terminal emulation software. The factory default parameters for communication are:

**9600 Bits per Second , 8 Data Bits , No Parity, 1Stop Bit (9600,8,n,1)**

The 4PK-SCS incorporates automatic rate detection, allowing connection at 300-115.2K bps. Using the default speed will allow the quickest access to the unit. To invoke the auto rate detector, send the Enter key one or more times as necessary. When the rate is detected 4PK-SCS will respond the Security Login Prompt:

```
Login >
```

Enter the Security Code. Three incorrect attempts to enter the security code will cause the 4PK-SCS to terminate the call. When the correct code is entered, the Main Menu appears:

```
4PK-SCS      Ver XXX

1) Port Selection
2) Relay Control
3) Programming
X) Logout

Enter >
```

## 1) Port Selection

This selection connects the Master Port to any of the four ports A through D. This brings up a Port Selection Menu. Each port can be given a 24 character name. The default names are shown below:

```
A)  PORT A
B)  PORT B
C)  PORT C
D)  PORT D
X)  Exit
Enter Port >
```

Once a port is selected, the 4PK-SCS will clear the screen and generate the following message:

```
x Selected (x=the programmed name of the port)
Enter ESC{PASSWORD}ESC to return to menu
```

At this point the Master Port is connected through to the port selected. The 4PK-SCS is passive to the messages sent between the Master Port and the port selected. To terminate the session with the current port and bring back the menu, enter the escape character plus the security code and another escape character. i.e.  $^E_{sc}TEST^E_{sc}$

## 2) Relay Control

This selection allows control of the relays in the 4PK-SCS.

```
1) Eng SWITCH1
2) Eng SWITCH2
3) Den SWITCH3
4) Eng SWITCH4

# - Select relay to toggle
P# - Pulse relay
X - Exit
Enter >
```

Again, each relay can be named. Eng and Den display the current status of the relay, Energized or De-energized. To toggle the relay, simply enter the relay number, followed by Enter.

The relay can also be cycled (pulsed) by entering P plus the number. (i.e. P1 to cycle relay number 1) The length of time the relay pulses is preset through the programming menu. While the relay is cycling, a message will be displayed.

**3) Programming**

```
1) Device labels
2) Password
3) Baud: 19200
4) Parity/Data: N,8
5) Lead: N
6) Resp: Y
7) Mode: Modem
8) Cycle time: 5
9) Time out: 0
X) Exit

Enter > 1
```

**1) Device Labels.** This allows changing of the screen labels for the ports and power control outlets.

```
A) PORT A
B) PORT B
C) PORT C
D) PORT D

1) SWITCH1
2) SWITCH2
3) SWITCH3
4) SWITCH4

X) Exit

Enter >
```

Enter the label to be changed. The current label is displayed along with a prompt for the new name. Type in a new label and then confirm the selection. Labels can be up to 24 characters.

```
CURRENT LABEL PORT A PORT A
NEW LABEL PORT A > Your New Name

PORT LABEL CHANGED FROM PORT A
                TO Your New Name
SAVE CHANGES? (Y/N) >
```

**2) Password** The password is used for login to the menu system and in every escape sequence. **The factory default is 'TEST'**. The security code may be 1 to 8 characters. These characters can be any ASCII character except NULL (00 hex). To change the password, the current password must be reentered. Then a prompt for a new password, then a confirmation of the new password.

```
LOGIN > TEST
ENTER NEW PASSWORD > TEST
RE-ENTER NEW PASSWORD > TEST
PASSWORD CHANGED
```

**3) Baud Rate** The 4PK-SCS is capable of operation from 300 BPS to 115200 BPS. Simply enter the desired baud rate followed by the enter key. Valid Selections are:

**300 600 1200 2400 4800 9600 19200 38400 57600 and 115200**

The baud rate set only effects the code and menu control of the 4PK-SCS. Once connection is made to a port, the 4PK-SCS is transparent to the speed and character format sent.

**4) Parity and Data Bits** The 4PK-SCS is capable of operating with a 7 or 8 bit data frame, and odd, even, or no parity. You need only set the parity, None, Even or Odd. The number of data bits and stop bits is automatically determined.

**5) Lead Control** This selection determines whether control leads from the switched ports can be used to access the Master Port. The factory default is lead control disabled. Select Yes or No.

**6) Command Response** The 4PK-SCS can send a response to escape sequences to let the operator know that the switch has taken place. The factory default is responses disabled. Select Yes or No to change this setting.

**7) Modem or Terminal Mode** Sets the 4PK-SCS for either Terminal or Modem use. Each time selection 7 Mode is chosen, this setting toggles.

#### **Modem Mode**

The 4PK-SCS monitors the DCD lead from the Master Port. Once the call is established, send the Escape to invoke the auto rate detector, if required, then the Enter Key to generate the Login Prompt, or any valid control code. Three unsuccessful login attempts causes the 4PK-SCS to hang up the modem. Use this setting when the 4PK-SCS is connected to a dial modem.

#### **Terminal Mode**

The 4PK-SCS does not monitor the connection status of the Master Port. This mode allows an unlimited number of login attempts. Each time an enter key is received, a new login prompt is issued. After three tries, the login prompt is suppressed to allow entry of control codes. Use this mode for direct cable connections from a PC or Terminal to the 4PK-SCS.

**8) Cycle Time** Sets the length of time in a relay Cycle command. This time is set once for all relays controlled. Selection of from 1 to 255 seconds are valid.

**9) Time Out** To prevent one port from dominating access to the Master Port and locking out other selections, a time out feature is incorporated. With the timeout feature enabled, the 4PK-SCS monitors the data activity received by the Master Port. When no data is received by the time as set, the currently selected port is de-selected. Set the Time out from 1 to 99 minutes. Setting the Time Out to 0 (default setting) disables the feature and allows unlimited time with no data received. The time out feature affects all selection modes.

**X) Exit the Programming Mode**

Exit the programming menu and activate all current settings. If the baud rate and/or character format have been changed, Exit will enable those changes.

**X) Logout**

From the Main Menu, this terminates the current session and a new connection to the 4PK-SCS will be required. The calling system must terminate the session and hang up the modem.

**ESCAPE CODE CONTROL**

The 4PK-SCS allows direct computer control using simple ASCII strings. These codes can control the port selection and relay operation. To access the 4PK-SCS for code control, enter the commands as shown below. To invoke the auto-rate detector, send the Escape Key one or more times, until the 4PK-SCS responds with **4PK-SCS READY**. The syntax for all commands use the following:

<sup>E</sup>s<sub>c</sub>            The Escape Character (Decimal 27 Hex 1B)  
 <Sec>            The Security Code (Default = TEST)  
 <x>                The Port Letter (A - D)  
 <n>                The Relay Number (1 - 4)  
 <EOT>            The End of Text Character (Decimal 04 Hex 04 Ctl+D on the IBM Keyboard)

Select Port                    <sup>E</sup>s<sub>c</sub><Sec><x>  
 Deselect Port                 <sup>E</sup>s<sub>c</sub><Sec><EOT>  
 Toggle Relay                  <sup>E</sup>s<sub>c</sub><Sec>R<n>  
 Query Status                 <sup>E</sup>s<sub>c</sub><Sec>?  
 Access Menu System         <sup>E</sup>s<sub>c</sub><Sec><sup>E</sup>s<sub>c</sub>

**Code Control Responses**

The 4PK-SCS has an option to allow confirmation of switching commands. With this option enabled, the 4PK-SCS will report back:

**n selected**                    where 'n' is the current port number or name (if programmed)  
**no ports selected**            when all ports are de-selected  
**r <status>**                    Indicating the relay (number 'r') has been changed <status> will be  
    ENERG for energize or DE-ENERG for de-energized status.  
**n selected**  
**1E 2D 3E 4D**                    Response to Query Command. (E = Energized, D = De-energized)

Responses to Code Control commands are optional and set via the Programming Menu.

## LEAD CONTROL OF PORTS

The 4PK-SCS provide the means for automatic port selection via control leads. The feature must be set up prior to use. Any port can access the master by raising the RTS or DTR lead (jumper selectable) provided no other port is already connected by Menu, Manual or Code Control. If another port is connected the request is placed in queue. The queue is first in first out.

Once a port has been connected via lead control it remains in connected until the control lead has gone low. If a port has been manually selected, and another port requests access, the manually selected port remains active until it is deselected via the Menu, Code or Manual Control.

## MANUAL CONTROL OF PORTS

The manual push-button switch on the front panel can be used for local control of the 4PK-SCS. Each time the button is depressed, the port will cycle to the next port. To return the 4PK-SCS to automatic operation, depress the push-button switch for over two seconds; all Port LEDs will turn off.

The Timeout feature, if enabled continues to operate when Manual control is established. To override this feature, select Timeout = 0 from the Programming menu.

When manual control is selected, lead control is locked out. Escape codes will override the manual selection only in Terminal Mode

## INSTALLATION

### Master and Switched Ports

Connection to the Switched A-D ports is made using 25 pin D Subminiature connectors on the rear of the unit. The following leads are supported for Asynchronous communications:

Pin#	Designation
2	Transmit Data
3	Receive Data
4	Request to Send
5	Clear to Send
6	Data Set Ready
7	Signal Ground
8	Data Carrier Detect
20	Data Terminal Ready

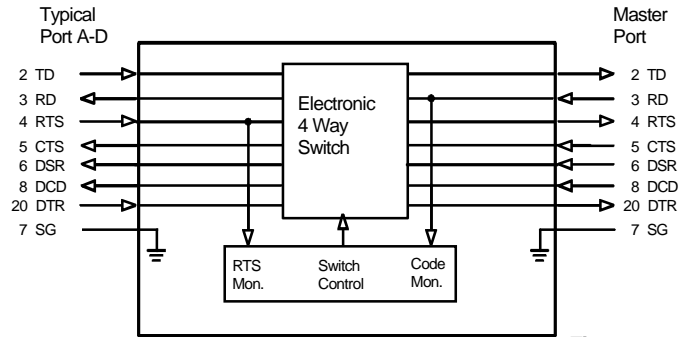
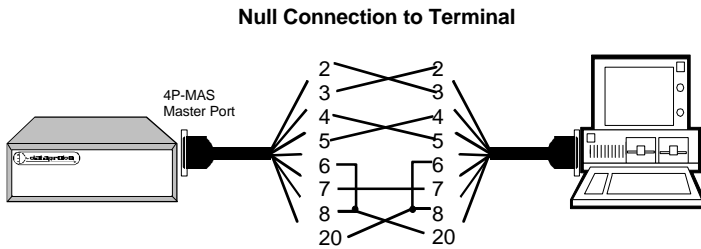


Figure 2 System Diagram

The four switched ports A-D are wired DCE (output data on pin 3, RD). The Master port is wired for as DTE. To directly connect a terminal device to the Master Port, a Null cable is required. Refer to Figure 3.



Control Leads Required vary from device to device. Consult your operations manual for details on your specific needs.

Figure 3 Null Modem Connection

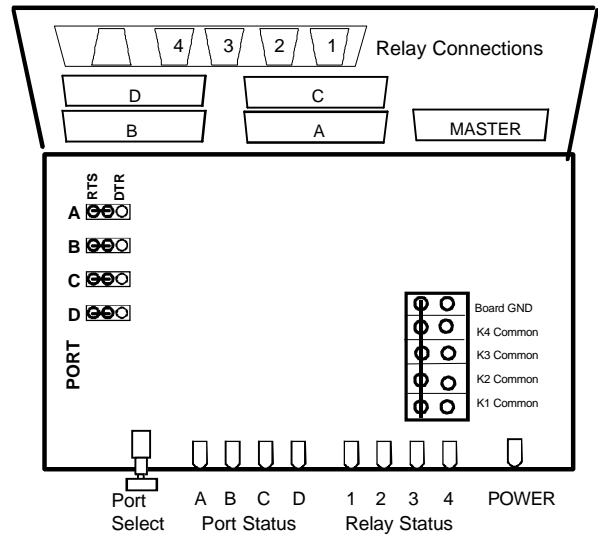


Figure 4 Component Location (Not to Scale)

### RTS / DTR Selection

Jumpers JP1 through JP4 allows selection of RTS (default) or DTR as the control lead used for Lead Control. To access these jumpers, disconnect the power source and remove the top cover of the 4PK-SCS by loosening the two screws on the underside of the unit. The jumpers are located behind the B and D Port Connectors. See Figure 4.

### Ground / Common Pole

Any or All of the relay commons can be connected together and/or connected to board ground using the header J9, located adjacent to the power LED. ( Used in conjunction with the 9 pin relay out )

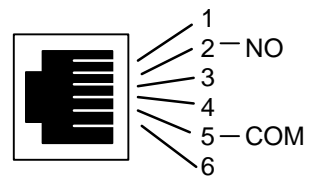
**Power Control Relay Connection**

Connection to the four Power Control relays are made using four RJ11 modular jacks located on the rear of the unit. The modular jacks are marked for Relays 1 - 4. Refer to Figure 4, Component Locations. Dataprobe supplies A/C power and communications switches that can be used with the 4PK-CAS. The pin-outs of the modular jacks are designed to connect directly to Dataprobe's relay switches. In some cases a control cable, available from Dataprobe is required.

Model	Description	Connect to 4PK-CAS with
K-12A	A/C Power Switch	RJ11 Cord supplied with K-12A
K-515A	4 Outlet Power Strip	Cable Supplied with K-515A
K-AB Series	Communications A/B	Cable SL-K7 Ordered Separately

To connect any other equipment to the relays, the following pin-out should be used:

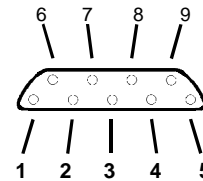
Pin #	Designation
2	Normally Open
5	Common



**Figure 5**  
Modular Jack Pinout for Relay Connections

DB9 Female Connector for relay connection. These connections are in addition to the RJ11 connectors.

Pin #	Designation
1	Normally Open Relay #1
2	Normally Open Relay #2
3	Normally Open Relay #3
4	Normally Open Relay #4
5	Board Ground

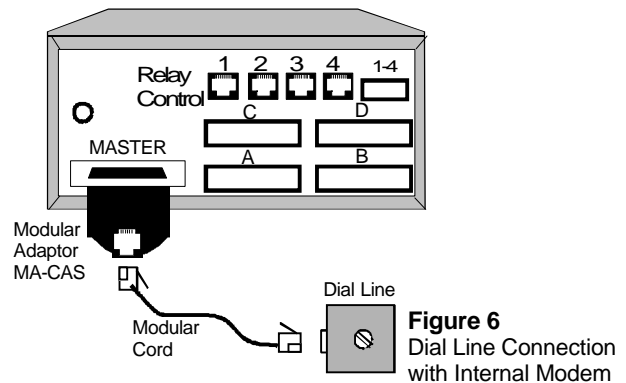


**INTERNAL MODEM OPTION**

Dataprobe offers the following internal modem options with the 4PK-SCS:

MOD-24	2400bps Modem
MOD-144	14.4 Kbps Modem
MOD-336	33.6 Kbps Modem

These modem options, when ordered with the 4PK-SCS are supplied factory installed. They can also be ordered separately for field installation. Information on field installation is supplied with the modem.



**Figure 6**  
Dial Line Connection with Internal Modem

Connection to the dial line is made using a RS-232 to Modular Adapter, **Model MA-CAS**, supplied with the modem. This adapter connects to the Master Port and to an RJ11 Modular Jack. The modem's FCC registration and AT command set are supplied in a separate document.

## SPECIFICATIONS

### Physical

8" Wide x 6.25" Deep x 3.25" High.

### Power

120VAC via Wall Mounted Power Supply. UL/CSA approved.

### Communications

Speed: 300 to 115,200 bps.  
Character Format: 8 data, no parity, 1 stop bit / 7 data even or odd parity, 1 stop bit.  
Interface: RS-232 Asynchronous .

### Connectors

Ports A through D: 25 pin D Subminiature, Female.  
Master Port: 25 pin D Subminiature, Male. Pins Supported: 1-8, 20.

### Relays

Form C (SPDT)  
Rating 0.5A @ 120VAC or 1A @ 24VDC  
Switching Power 60VA Max 50uW Min  
Switching Voltage 120VAC or 60VDC Max 1VDC Min  
Switching Current 2A Max 1mA Min  
Resistance 100 milliohms (initial value)  
Life Expectancy 5 Million Operations Mechanical  
100K Operations at rated load

## TECHNICAL SUPPORT, RETURNS & WARRANTY

Dataprobe Technical Support is available 8:30AM to 5:30PM ET to assist you in the installation and operation of this product. To obtain Technical Support call our Tech Support Hotline at 201-967-8788, or Email us at tech@dataprobe.com. Please have the following information available when you call:

- Model of Product
- Serial Number
- Date of Purchase
- Name of Seller (if other than Dataprobe)

If you purchased this product through an **Authorized Dataprobe Reseller**, you should contact them first, as they may have information about the application that can more quickly answer your questions.

### WARRANTY

Seller warrants this product, if used in accordance with all applicable instructions, to be free from original defects in material and workmanship for a period of One Year from the date of initial purchase. If the product should prove defective within that period, Seller will repair or replace the product, at its sole discretion.

Service under this Warranty is obtained by shipping the product (with all charges prepaid) to the address below. Seller will pay return shipping charges. Call Dataprobe Technical Service at (201) 967-8788 to receive a Return Materials Authorization (RMA) Number prior to sending any equipment back for repair. Include all cables, power supplies and proof of purchase with shipment.

**THIS WARRANTY DOES NOT APPLY TO NORMAL WEAR OR TO DAMAGE RESULTING FROM ACCIDENT, MISUSE, ABUSE OR NEGLIGENCE. SELLER MAKES NO EXPRESS WARRANTIES OTHER THAN THE WARRANTY EXPRESSLY SET FORTH HEREIN. EXCEPT TO THE EXTENT PROHIBITED BY LAW, ALL IMPLIED WARRANTIES, INCLUDING ALL WARRANTIES OF MERCHANT ABILITY OR FITNESS FOR ANY PURPOSE ARE LIMITED TO THE WARRANTY PERIOD SET FORTH ABOVE; AND THIS WARRANTY EXPRESSLY EXCLUDES ALL INCIDENTAL AND CONSEQUENTIAL DAMAGES.**

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**WARNING:** The individual user should take care to determine prior to use whether this device is suitable, adequate or safe for the use intended. Since individual applications are subject to great variation, the manufacturer makes no representation or warranty as to the suitability of fitness for any specific application.

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