Poll Sharing Unit

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8500129

1. DESCRIPTION

The Poll Sharing Unit makes it possible to share up to four polling host computers to as many as four different device ports, connecting to four or more different networks. Networks can be private line, phone company lines, wireless networks, or any combination of networks. The Poll Sharing Unit uses RTS/CTS or buffering and timeouts to resolve contention between the multiple host computers.

The DCB Poll Sharing Unit has four Host ports and four Device ports. Each port can be set to a different speed, from 1200 to 38,400 bps. The ports are RS232 asynchronous. RS422 port interface converters are available.

Polls coming into a Host port are sent out one or more of the four Device ports, mapped by the user on a per port basis. For example, polls coming in Host port 1 may be mapped to all 4 Device ports, while on Host ports 2, 3 and 4, data is mapped to a single Device port.

The Poll Sharing Unit has a per Host port poll timeout and a per Host port intra-message timeout. Polling data coming in a Host port is sent to the selected Device port(s). Any polls coming in on other Host ports are buffered until the first poll out is answered or after the poll timeout expires. Only one Host port at a time may send a poll out a Device port.

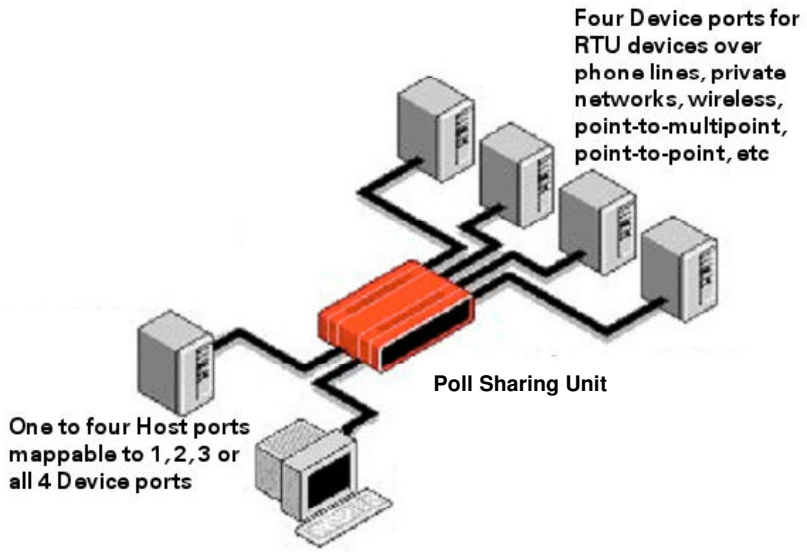
Another method of selecting ports is using RTS/CTS RS-232 control leads on the Host ports. The PSU constantly scans all ports for Request to Send (RTS). When RTS is asserted on the Host port, the Poll Sharing Unit returns CTS to the host computer, allowing it to send out a poll. The poll is sent out the mapped Device ports. No other Host computer port will get CTS from the Poll Sharing Unit until the first Host port gets a poll response back from a Device port, or the poll timeout expires and RTS turns off.

Features

- Asynchronous RS232 serial ports
- RS422 port interface converters available
- Port speeds from 300 to 38,400 bps
- Four Host ports, 4 Device ports
- Optional internal dial-up modem for host backup
- Each port can be set to its own speed
- Dedicated setup port
- Buffered Host ports, up to 1000 bytes/poll
- Buffered combiner mode, optional RTS/CTS mode

- Per port poll timeout, adjustable to 30 seconds
- Per port intra-message timeout of 5 to 1000 ms
- Map Host ports to any one or more Device ports
- Poll response from Device port goes only to Host port that initiated the poll
- Use to mix protocols from up to four different Hosts over one to four networks
- Industrial temp operation, -40° to +75° C
- Power options 120 or 240 VAC; 12, 24, 48 or 125 VDC

Application



2. SPECIFICATIONS

2.1 Ports

All port are asynchronous RS232
Rates from 300 to 38,400 bps (9600 bps default)
Port connectors are 8-pin RJ45, EIA561 pinout
RJ45 to DE-9 and DB-25 adapters available
RS232 to RS422 adapters available
The four Host ports can be mapped to any or all of the Device ports

2.2 Operating Modes

Buffered combiner mode using intra-message timer
  Intra-message timer, 5 to 1000 ms, 5 ms default
  Poll timeout 100 to 30,000 ms, 2000 ms default
Optional RTS/CTS control setting
1000 byte host port buffer

2.3 Environmental

Operation: -40 to 75° C, 10 to 85% relative humidity
Storage: -50 to 75° C, 10 to 85% relative humidity

2.4 Physical / Electrical

10¼" W x 9¾" D x 2½" H
120 or 240 VAC external power supply
Optional 12, 24, 48 or 125 VDC power
30 watts, .25 amps

2.5 Setup Port Commands

- Show Port Configuration
- Show Port Map
- Change Host Port Configuration
- Change Device Port Configuration
- Change Port Map
- Change Delay Timeout
- Configure Options
- Configure Internal Modem
- Show / Change unit ID
- Change Setup Port Password
- Activity Counters
- Zero Activity Counters
- Test Tools
  - Monitor Port Tx
  - Monitor Port Tx (HEX)
  - Monitor Port Rx
  - Monitor Port Rx (HEX)
  - Reset Device
- Type
- Repeat Last Command
- Disconnect Setup Port

3. INSTALLATION

3.1 Unpacking

Remove the unit from the shipping container and examine it carefully for external damage. If shipping damage is apparent, notify the shipper immediately.

The following is included with each unit:

- Unit and external power supply
- Setup Port cable (green) for connecting the setup port to a PC for configuration
- Manual
- Information regarding warranty, maintenance contracts and repair

3.2 Location

Place the unit in a clear area where you can reach the rear panel to connect the cables. The unit has an external power supply that requires a 120 VAC outlet.

3.3 Setup

Configure each Host and Device port to match the speed of the attached device. Use the CH command for Host ports and the CP command for Device ports. (See Section 5)

3.4 Connections

See cable diagrams in Section 6.

3.5 Optional Internal Dial-Up Modem

An internal dial-up modem is available for Host port backup. If installed, the modem is configured as Host port 5. See paragraph 5.4.4.

3.6 Resetting Factory Defaults

The factory default settings for the PSU are as follows:

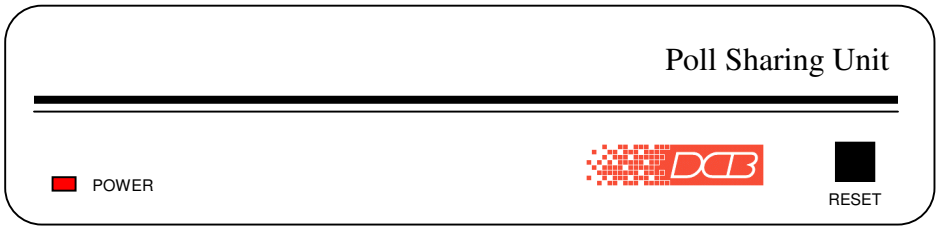
Host and Device Ports:

Loop	OFF
Rate	9600

Mode: Combiner
DCD to RX data delay: 10 ms
DCD holdover delay: 2 ms
Message timeout: 5 ms
Poll timeout: 2000 ms (2 sec)

To reset the unit to factory defaults use the **!R** command from the Setup port.

4. FRONT PANEL CONTROLS AND INDICATORS



4.1 Controls

The only control on the front panel is a RESET switch. Pressing this switch will reset the unit and keep the configuration intact.

4.2 Indicators

Indicator	Condition	Meaning
Power	ON	Power is applied to the unit.

5. SETUP PORT

5.1 Introduction

The Setup port is used to configure the unit for proper operation. This connection must be used to configure the Host and Device ports and other options.

5.2 Connections

Connection to the Setup port is made through a port on the rear of the unit.

5.2.1 Using a PC

The Setup functions are available through the port on the rear of the unit labeled Setup. To connect a PC to this port, use the green cable and adapter provided. Set the PC terminal emulation program (Hyperterm) for 9600 bps, 8 data bits, no parity, one stop bit and no flow control.

5.2.2 Using a Modem

For remote access to Setup functions, a dial-up modem may be connected to the Setup port. You must fix the DTE interface speed of the modem at 9600 bps, 8 data bits, no parity and one stop bit. Refer to your modem manual for appropriate setup procedures. Use the appropriate cable from paragraph 6.3.3 for connection.

5.3 Using the Setup Port

To activate the Setup port, press the ENTER key. When you see **AT YOUR COMMAND >>**, the Setup port is active and ready for your commands. Type H <Enter> to display the command set.

5.4 Commands

5.4.1 Help (H or ?)

COMMAND		PARAGRAPH
Show: Config	SC	5.4.2
Port Map	SM	5.4.3
Change: Host Config	CH	5.4.4
Port Config	CP	5.4.5
Port Map	CM	5.4.6
Delay Timeout	CD	5.4.7
Unit Options	CO	5.4.8
Config Internal Modem	CI	5.4.9
Set ID	ID	5.4.10
Set Password	PW	5.4.11
Activity Counters/Zero	AC/Z	5.4.12
Test Tools	TT	5.4.16
Type	TY	5.4.13
Repeat Last Command	*	5.4.14
Disconnect Setup Port	BYE	5.4.15

5.4.2 Show (Unit) Configuration

The Show Config (SC) command shows the current operating mode, host and device port configuration settings, and delay and timeout settings for the unit. Use this command to verify proper unit configuration.

5.4.3 Show Port Map

The Show (Port) Map command (SM) displays the current Host port map. Each Host port can be mapped to any one or all of the Device ports. To change the map, use the CM command.

5.4.4 Change Host (Port) Configuration

This command (CH) is used to change the speed and loopback settings for Host ports 1 thru 4. If the internal modem option is installed, Host port 5 can also be set.

5.4.5 Change (Device) Port Configuration

The CP command is used to change the speed and loopback settings for the four Device ports.

5.4.6 Change Port Map

Use the CM command to change the Host port map. Each Host port can be mapped to any or all of the Device ports. Follow the on screen prompts and use the SM command to verify the changes.

5.4.7 Change Delay Timeouts

This command (CD) is used to change two Host and Device port timeout parameters, DCD to Rx data delay and DCD holdover delay. These delays may be adjusted to insure data block integrity.

DCD to RX data delay can be set from 5 to 250ms. This is the time between Port DCD being asserted and data being sent out the port to the attached device. For example, if you are using a 202T modem off a Device port, you may want to set the DCD to RxD delay to match the modem RTS/CTS delay and use the Device port DCD signal to drive the modem RTS signal.

The DCD Holdover delay may be set to a value between 2 and 250ms. This will hold port DCD on for the designated time after the port buffer empties. This can help insure that all data gets to the attached device.

Two additional Host port timeouts are also set using this command. The Intra-Message Timeout can be set from 4 to 2000 ms.

The intra-message timeout is the idle time after a host message arrives before that message is sent to the mapped Device port(s). The intent of the timeout is to make sure that polls are sent to the device in one contiguous block which is important for protocols like MODBUS. The same delay is used to confirm that the device has completed its response to the poll before letting the unit start scanning for the next host poll.

The Host Poll Timeout can be set from 100 to 30000 ms. These can be set on a per port basis.

The host poll timeout is the window of time for the device to respond. The timeout starts when the last character has been sent to the Device port and the device response must arrive before the host poll timeout expires. If there is no response to a host poll, the unit starts scanning host ports again.

5.4.8 Change Unit Options

This command (CO) is used to set the operating mode to either Combiner (default) or RTS/CTS.

Use Combiner mode for systems that do no support RTS/CTS control. In Combiner mode, as soon as the first character arrives on a mapped Device port, it locks out all other ports so only one device response is passed back to the Host port. In addition, any characters that arrive on a Device port are discarded if there is no host poll outstanding.

In RTS/CTS mode, the Host ports are scanned for RTS high. When detected, that Host port is connected to its mapped Device ports and scanning stops until RTS goes low. Host port devices must be able to assert RTS only when sending data (polls).

5.4.9 Configure Internal Modem

If installed, the CI command connects the Setup port to the optional internal modem for configuration. An initialization string is automatically sent to the modem on power up or reset. This should provide proper operation for most applications. The CI command should only be used if fine tuning is required.

5.4.10 Set ID

The Set ID (ID) command allows you to set or change the units identifier (name or location). The ID can be a maximum of 15 characters in length. Pressing <Enter> with no entry will leave the ID unchanged. This is for documentation only and is not required for proper operation of the unit.

5.4.11 Set Password

Use the Set Password (PW) command to set a password for access to the Setup port. The password may be up to 15 characters long and is case sensitive.

To clear the password, type DELETE at the PW prompt or reset the unit to defaults as described in paragraph 3.6.

5.4.12 Activity Counts / Zero

The Activity Counts (AC) command shows transmit and receive data statistics for all ports. The data are presented in terms of blocks of information sent and received by each Host and Device port. Error counts are also shown.

The Z command is used to zero the counters so that current activity can be monitored.

5.4.13 Type

The Type (TY) command displays information about the unit including firmware version, number of ports and unit ID.

5.4.14 Repeat Last Command

To repeat the last command, simply press the * key. This is handy for repeating screens of constantly changing data.

5.4.15 Disconnect Setup Port

The BYE command toggles the CTS output from the Setup port. This is used to disconnect equipment such as dial-up modems or the DCB Access Switch.

5.4.16 Test Tools

The Test Tools (TT) menu summarizes the test and troubleshooting commands. These commands are listed separately to reduce the clutter in the main help list, but are always available from the command prompt.

COMMAND		PARAGRAPH
Monitor Port Tx	MT#	5.4.17
Monitor Port Tx (HEX)	MTH#	5.4.17
Monitor Port Rx	MR#	5.4.17
Monitor Port Rx (HEX)	MRH#	5.4.17
Reset Unit	RESET	5.4.18

5.4.17 Monitor Port Tx or Rx

The Monitor Port TX (MT#) command monitors data coming into the TxD input of the selected port. The Monitor Port RX (MR#) command shows the serial data going out the RxD output of the monitored port. A port number must be included on the command line. Device ports are 1 thru 4 and Host ports are 5 thru 8. If the optional internal modem is installed, it is port 9.

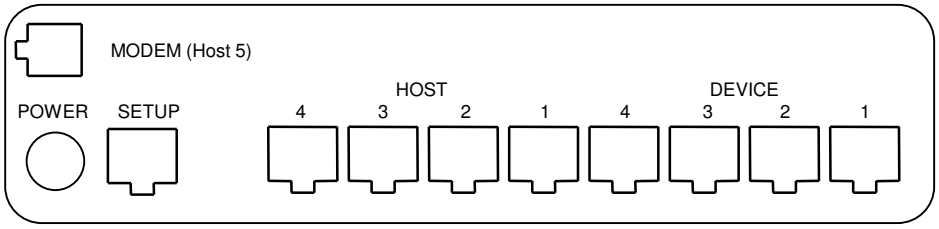
To view the information in HEX instead of ASCII use the MTH# and MRH# commands.

Using these commands on an active line may cause errors when using time sensitive protocols. Use the commands as a quick check to see if data are being sent over the link. Do not try to use these commands as a data line monitor.

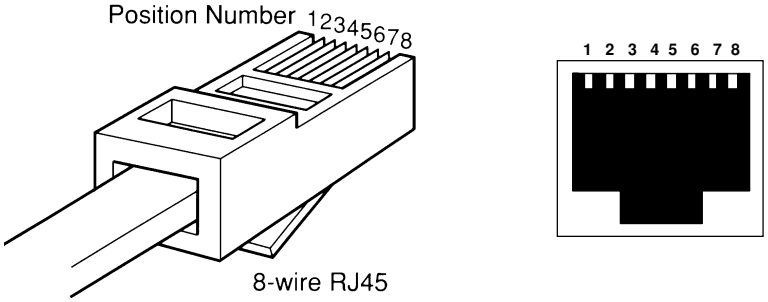
When port monitor is active, two ESC characters are required to end the test.

5.4.18 Reset Unit

The Reset Unit (RESET) command performs a software reset of the unit. All configuration settings are unchanged.



6.1 Connector Location and Pin Reference



RJ-45 Plug and Jack

6.2 Port Interface

6.2.1 Host and Device Ports (RJ-45)

Pin	Signal	In/Out
1	Data Set Ready	OUT
2	Data Carrier Detect	OUT
3	Not Used	IN
4	Signal Ground	
5	Receive Data	OUT
6	Transmit Data	IN
7	Clear to Send	OUT
8	Request to Send	IN

6.2.2 Setup Port (RJ-45)

Pin	Signal	In/Out
1	Not Used	
2	Not Used	
3	Data Carrier Detect	IN
4	Signal Ground	-----
5	Transmit Data	OUT
6	Receive Data	IN
7	Request to Send	OUT
8	Clear to Send	IN

6.2.3 Optional Internal Modem (RJ-11)

Pin	Signal	Direction
1	Not Used	
2	Receive Data (Black)	From TELCO
3	Transmit Data (Red)	To TELCO
4	Transmit Data (Green)	To TELCO
5	Receive Data (Yellow)	From TELCO
6	Not Used	

6.3 Cables

6.3.1 Host Port

To a DTE Computer or PLC port (DCB P/N 9802016)

Host Port RJ-45		DTE Device DB-25P
1	———	6
2	———	8
3	———	NC
4	———	7
5	———	3
6	———	2
7	———	5
8	———	4

To a PC Com Port

Host Port RJ-45		Computer DB-25S		DE-9S
1	———	6	or	6
2	———	8	or	1
3	———	NC	or	NC
4	———	7	or	5
5	———	3	or	2
6	———	2	or	3
7	———	5	or	8
8	———	4	or	7

To an External Dial-Up Modem (Combiner mode only)

Host Port RJ-45		Modem DB-25P
1	———	20
2	———	NC
3	———	NC
4	———	7
5	———	2
6	———	3
7	———	4
8	———	5

6.3.2 Device Port

To a leased line ASYNC Modem (DCB P/N 9802052)

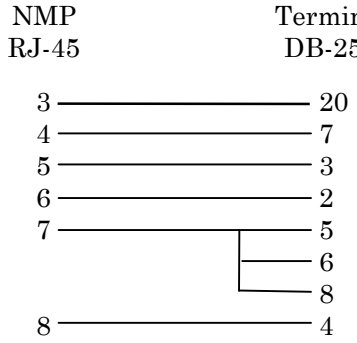
Device Port RJ-45		Modem DB-25P
1	———	NC
2	———	4
3	———	NC
4	———	7
5	———	2
6	———	3
7	———	NC
8	———	8

To MDS Radios

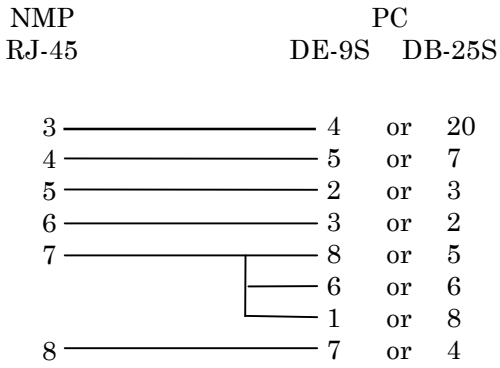
Device Port RJ-45		Radio DB-25P		DE-9P
1	———	NC	or	NC
2	———	4	or	7
3	———	NC	or	NC
4	———	7	or	5
5	———	2	or	3
6	———	3	or	2
7	———	NC	or	NC
8	———	8	or	1

6.3.3 Setup Port

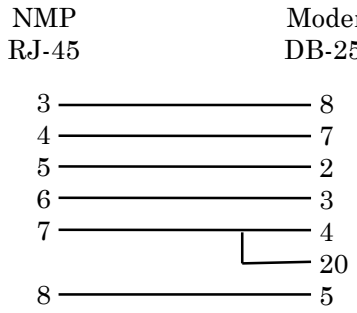
To a TERMINAL



To a PC using terminal emulation



To a dial-up MODEM for remote access (DCB P/N 9802027)



7. TROUBLESHOOTING

7.1 General Approach

When troubleshooting problems, a rational plan can save you many hours of frustration. The following is a brief outline of standard troubleshooting procedures.

1. Gather the facts to determine the exact nature of the problem.
2. Draw a picture of the system showing the equipment at both the host and remote ends and the phone lines or in-house wiring. Use this as a reference to note your observations, test steps and test results. A picture keeps you focused and often saves duplicate effort.
3. Record the front panel indications before changing anything. This is an important part of fact gathering
4. If you change anything, change only one thing at a time.
5. Use the built-in test functions, especially the loopback tests. Record your results.

7.2 Assistance

If you need assistance troubleshooting your system, contact DCB customer support at (217) 897-6600 between 8:00 am and 5:00 pm central time Monday through Friday.

8. WARRANTY

This DCB product is warranted to be free of defects in materials and workmanship for two years. Data Comm for Business, Inc. will repair or replace any equipment proven to be defective within the warranty period. All warranty work is F.O.B. Champaign, IL. This warranty is exclusive of abuse, misuse, accidental damage, acts of God or consequential damages, etc. DCB liability shall not exceed the original purchase price.

All equipment returned for repair must be accompanied by a Returned Material Authorization (RMA) number. To receive an RMA number, call (217) 897-6600 between the hours of 8 AM and 5 PM central time. Equipment must be shipped prepaid to DCB and will be returned at DCB's expense.

Ship returned items to:

Data Comm for Business
2949 County Road 1000E
Dewey, IL 61840
Attn: RMA number

Data Comm for Business, Inc.
PO Box 6329
Champaign, IL 61826-6329

Tel (217) 897-6600
Fax (217) 897-1331