

Installation Notes

Cabling concentrators

- To cable a concentrator to a line on the adapter, attach a cable from one of the connectors on the adapter to the connector labelled HOST ADAPTER on the concentrator.

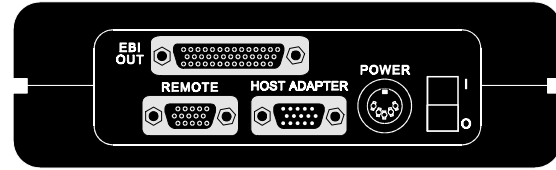


Figure 1. Side Panel of EPC/CON-16 module

- If you are cabling additional concentrators to the first, attach a cable to the REMOTE connector of the first concentrator and then connect this cable to the HOST ADAPTER connector of the second concentrator. Continue cabling until all concentrators in the chain are connected.
- You must install a terminator plug in the REMOTE connector of the last concentrator in the chain.
- To cable PORTS/Xem or Modem/Xem modules to the EBI bus of a concentrator, attach one end of an EBI cable to the EBI OUT connector on a concentrator and the other end to the EBI IN connector on the Xem module. Continue similarly using the EBI IN and EBI OUT connectors until all the modules for a concentrator are cabled together.
- Be sure to attach power supplies to the concentrators (and Modem/Xem modules).
- If you are adding a concentrator to an existing chain, you should add it at the end of the chain to preserve node numbering. Remove the terminator from the REMOTE connector of the last concentrator. Attach a cable to the REMOTE connector and then attach this cable to the HOST ADAPTER connector of the concentrator you are adding. Install the terminator plug in the REMOTE connector of the concentrator you added.

Setting the node numbers

Each concentrator must have a unique node number so the adapter can recognize it on the chain. In general, you should set the node number of a concentrator according to its relative position in the chain. For example, the concentrator closest to the adapter would be node 1, the second would be node 2, and so on. To set the node number, do the following:

- Wait until you see **P1** displayed on the front panel of the unit (about 30 seconds after you power on the unit). This indicates that the Power On Self Test has successfully completed.
- Press the right arrow button once to display the current node number. (**1n** is the default.)
- Press the left arrow button to increment the node number. Node numbers go up to **8n** and then return to **1n**.
- To save the node number currently displayed on the front panel, press the right arrow button once. If the number was successfully saved to EEPROM, the display will read **Pn**.

Installing peripheral cabling

You can connect printers, terminals, modems (or any other standard EIA-232 device to be controlled by applications on the computer) to the EPC/CON-16 concentrator by installing a cable between the peripheral and the concentrator.

On the peripheral end of the cable, the cable connector depends on the requirements of the peripheral. The EPC/CON-16 (or PORTS/Xem module) end of the cable must fit either an RJ-45 or DB-25 connector, depending on the model you have.

The pin assignments for each type of EPC/CON-16 connector are as follows:

DB-25 Pin Assignments

Signal	Description	Pin	Signal	Description	Pin
GND	Chassis Ground	1*	RI	Ring Indicator	1
TxD	Transmitted Data	2	DSR	Data Set Ready	2†
RxD	Received Data	3	RTS	Request To Send	3
RTS	Request To Send	4	GND	Chassis Ground	4
CTS	Clear To Send	5	TxD	Transmitted Data	5
DSR	Data Set Ready	6	RxD	Received Data	6
SG	Signal Ground	7	SG	Signal Ground	7
DCD	Data Carrier Detect	8	CTS	Clear To Send	8
DTR	Data Terminal Ready	20	DTR	Data Terminal Ready	9
RI	Ring Indicator	22	DCD	Data Carrier Detect	10

* Chassis Ground is also available on the connector shell

† Pin 2 can be configured for DCD (through Digi software) if you want to connect using an 8 pin connector

Refer to the material packaged with the EPC/X host adapter for more detailed cabling information.

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AccelePort EPC/X System

EPC/CON-16 Concentrator

Hardware Information

Introduction

Number of Ports. Each AccelePort® EPC/CON-16™ concentrator module has 16 EIA-232 ports, plus a connector for Digi's EBI (External Bus Interface) bus that lets you add additional EIA-232 ports by attaching Digi EBI-based modules to the concentrator. You can add up to three PORTS/8em, PORTS/16em, Modem/4em and/or Modem/8em modules to one EPC/CON-16 concentrator.

- Installation Notes for concentrators and modules are provided in this card.

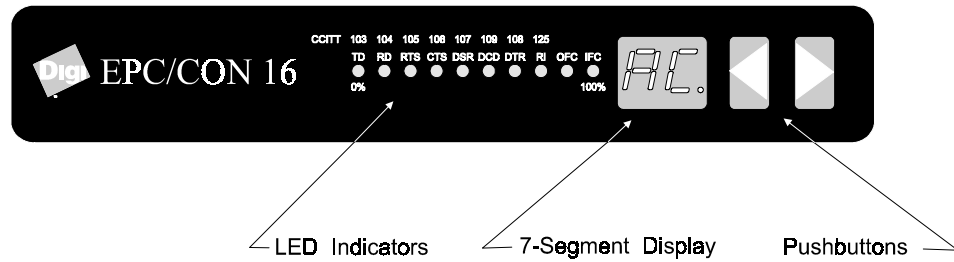
Intelligent Hardware. To become completely functional, the EPC/CON-16 concentrator requires software to be downloaded from an EPC/X adapter. The concentrator software is included with the driver that you load onto your host system. For that reason, to do anything other than run the diagnostics on the concentrator, you must have the adapter installed, the EPC/CON-16 concentrator correctly cabled to the adapter, the host system powered on, and the correct Digi driver installed on the host machine.

- Instructions for running diagnostics from the Display Panel are provided in this card.

Display Panel. As you are using your EPC/CON-16 concentrator, you can monitor several aspects of its performance from the Display Panel. The Display Panel can also be used to run diagnostics on the concentrator.

- Instructions for using the Display Panel are provided in this card.

Figure 2. EPC/CON-16 Display Panel



Using the Display Panel

From the Display Panel you can monitor the activity of a working system or run diagnostics on a concentrator that is not connected to the system.

Monitoring

To use the monitoring capabilities of a concentrator, it must be fully installed into a working system. The following simple elements are used to interpret concentrator status:

- 7-segment display shows the current monitoring function
- LED indicators display activity related to the current monitoring function
- Push buttons are used to move between functions

To use the Display Panel for monitoring, do the following:

1. Press the right or left arrow button to find the monitoring function that you want.
2. Observe the LEDs to gather information.

Table 1 illustrates the Display Panel monitoring functions and provides an interpretation of the LED indicators.

Example Monitoring Uses

There are several practical uses for the Display Panel monitoring capabilities:

Load Balancing. Use Line Utilization (LU) mode to determine if you have too many concentrators on one EIA-422 line and should move one to the other line on the EPC/X adapter.

Port Monitoring. If you are having difficulty communicating with a peripheral, observe the EIA-232 signal handshaking for the port.

◀ AC ▶	◀ LU ▶	◀ PU ▶	◀ PC ▶	◀ EC ▶	◀ 01-16 (64) ▶	◀ 1n-8n ▶
Activity	Line Utilization	Processor Utilization	Packet Count	Error Count	Port Monitor	Node Number
LEDs light sequentially, right to left to indicate current activity. As overall port activity increases, so does the speed of the rotation.	LEDs light from the left toward the right to indicate a percent of utilization (0% to 100%), of the EIA-422 line attached to the concentrator.	LEDs light from the left toward the right to indicate a percent of utilization (0% to 100%), of the concentrator's CPU.	LEDs show, in incrementing binary, the number of packets currently being transferred. ACTION: Press both arrows at the same time to start the packet count over from zero.	LEDs show, in binary, the total number of errors detected in the data flow. ACTION: Press both arrow buttons at the same time to reset error count to zero.	LEDs show activity of the EIA-232 signals for the port number displayed. Ports 1 to 16 are on the concentrator. Xem modules can also be monitored from the concentrator display (up to 64 ports possible). Note: If either the IFC or OFC LED is lit, the port is under flow control.	The node number (1n to 8n) assigned to this concentrator is displayed. LEDs light sequentially, right to left to indicate current activity. As overall port activity increases, so does the speed of the rotation.
<p>Binary Value of LEDs:</p> <p>512 256 128 64 32 16 8 4 2 1</p> <p>TD RD RTS CTS DSR DCD DTR RI OFC IFC</p>						<p>ACTION: Press both arrow buttons at the same time to release software flow control.</p>

Table 1. Description of Display Panel Monitoring Elements

Diagnostics

To use the full diagnostic capabilities of a concentrator, it must not be attached to the host system. The diagnostics use these elements of the Display Panel:

- 7-segment display shows the current test
- LED indicators display activity related to the test
- Push-button are used to move between tests

To run Diagnostics from the Display Panel, do the following:

1. Turn power to the concentrator off. Remove the cable from the HOST ADAPTER connector on the concentrator.
2. Turn the concentrator on. Wait for Power On Self Test (POST) to complete. P1 will display when POST completes successfully.
3. Press the RIGHT arrow button once. The current node number will display. Press the right arrow button again to get to test 1 (always press the right arrow key to increment to the next test).
4. Press the LEFT arrow key to execute the test. The test will continue to execute until stopped.
5. Stop test execution by pressing and holding the LEFT arrow key. Most tests indicate a pass or fail with a P or F showing next to the test number (for example, P4 indicates that test #4 passed).
6. Press the right arrow button again to go to the next test.
7. To leave test mode, run test 9. This test concludes by executing POST.

Refer to Table 2 for a description of the diagnostic tests available from the Display Panel.

#	Test Name	Description
1	Display Panel	Alternately turns on and off all 10 LED indicators and all segments of the 7-segment display at one-second intervals. You must visually check for success of the test.
2	RAM	Tests RAM accesses. The 7-segment display shows the pass count while the test is running. Errors are counted (in binary) on the ten LED indicators.
3	Timer	Runs the internal timer to verify that it can interrupt the internal processor. The 7-segment display shows the pass count while the test is running. Errors are counted (in binary) on the ten LED indicators.
4	Port Internal	Tests all ports on the concentrator and add-on modules using the loopback function of the internal UART chip. Received data is compared to transmitted data and interrupts are checked. The 7-segment display shows the pass count while the test is running. Errors are counted (in binary) on the ten LED indicators.
5	Port External	Loopback connector is required. Checks port EIA-232 circuitry. To execute: 1) Insert loopback connector in port to be tested. 2) Press right arrow button until test 5 displays. 3) Press left arrow button until number of port with loopback connector installed displays. 4) Press right arrow button to begin execution. 5) Press left arrow button to halt test. A P5 or F5 will display. To test next port press left arrow button to increment to next port number while P5 or F5 displays. 6) To move to next test, press right arrow button while P5 or F5 displays
6	Sync Internal	Tests the EIA-422 transmission modes. The 7-segment display shows the pass count while the test is running. Errors are counted (in binary) on the ten LED indicators.
7	Sync External	A terminator plug is required in the REMOTE connector of the concentrator. Tests the EIA-422 clocking modes. The 7-segment display shows the pass count while the test is running. Errors are counted (in binary) on the ten LED indicators.
8	EEPROM	Generates a checksum of the EEPROM contents and compares it to what is stored in EEPROM. The test passes if they match.
9	Watchdog Timer	In normal operation this timer should never expire. The test allows the timer to expire which resets the concentrator and starts POST.

Table 2. Description of Diagnostic Tests