

Installing the MOD-10I-U ISDN Expansion Board

Introduction

The MOD-10I-U ISDN expansion board allows you to add ISDN capability to the PortMaster 2E communications server. Each board contains 5 BRI ports each supporting two 64Kbps B channels and one 16Kbps D channel for signalling. An NT1 is integrated, providing a U interface for the USA, allowing you to plug ISDN phone lines directly into the port. In addition, a high-density 10-pin RJ-45 port is provided along with a convenient cable suitable for attachment directly to a punch-down block.

The board requires ComOS release 3.3 or later.

Installing the MOD-10I-U Board



Caution – Do not unpack components or open the case of the PortMaster without taking measures to control static electricity.

Note – Revision A and Revision B of the board can only be used in the PM-2E. Revision C can be used in the PM-2E or PM-2ER. The Revision can be seen in the corner of the board next to the Livingston Enterprises copyright notice.

1. **Set the power switch to the OFF position and disconnect the PortMaster from the AC power source.**

2. **Open the PortMaster case.**

Remove the screw at the center of the top rear edge, then slide the top of the PortMaster case 1/2" horizontally and lift straight up. If you encounter difficulty separating the top and bottom sections of the PortMaster case, try pressing down on the top edge sides and pushing firmly.

3. **Verify that the 60-pin ribbon has been installed in the center of the PortMaster main board:**

If the ribbon is already connected, continue to Step 4.

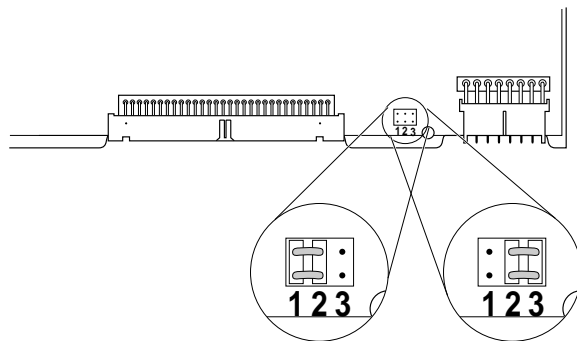
If it is not connected, insert the connector with the white stripe on the top into the main board, with the red line on the 60-wire ribbon closest to the power supply chamber. When inserting the 60-pin connector, support the free edge of the board (the side closest to the front of the PortMaster), with your hand so that it does not bend excessively.

4. **Verify the board's revision number.**

The revision number is located at the corner of the board. The PortMaster 2ER requires at least revision C of the MOD-10I-U board. Any version of the MOD-10I-U may be used in other expandable PortMasters.

5. Verify the position of the expansion board jumper.

The jumper pins are marked with three numbers, 1, 2, and 3. If the jumper connects pins 1 and 2, the expansion board will be seen as ports S10-S19. If the jumper connects the pair of pins marked 2 and 3 to the middle pair of pins, the expansion board will be seen as ports S20-S29.



6. Remove the blank cover plate(s) from the rear of the PortMaster.

The S10-S19 expansion board is inserted above the rear face plate with ports S0 through S9. The S20-S29 expansion board is inserted above the rear face plate with ports S10 through S19.

7. Attach the rear face plates with the screws provided before attaching the data and power cables to the expansion board.

Before tightening any of the screws, ensure that the face plate is aligned.

8. Plug the power cable (8-wire ribbon cable) and bus cable (60-wire ribbon cable) into the front of the expansion board.

9. Close the PortMaster case by replacing the top of the case and the screw at the center of the top rear edge of the PortMaster.

10. Connect the PortMaster to the AC power source and set the power switch to the ON position.

High-Density 10-pin ISDN Cable

Table 1 on page 3 describes the pinouts for the 20 foot (6 m) high-density 10-pin ISDN cable. The cable is unshielded 24 gauge solid level 1 wiring. When using this port, the LEDs next to the five BRI ports indicate the status of each BRI that is connected through the HD port.

This cable is supplied with the MOD-10I-U, PM-2i-U, and PM-2E-10I-U. Additional cables can be ordered from Livingston Enterprises by specifying product code CBL-HD45. Punchdown blocks are available from electronic supply stores that carry telephone equipment.

Table 1 High-Density 10-pin RJ-45 Cable

| Pin | Color | Ports S0-9 | Ports S10-19 | Ports S20-29 |
|-----|--------------|---------------|-----------------|-----------------|
| 1 | white-gray | 5 | S18-19 | S28-29 |
| 2 | white-brown | 4 | S16-17 | S26-27 |
| 3 | white-green | 3 | S14-15 | S24-25 |
| 4 | white-orange | 2 | S12-13 | S22-23 |
| 5 | white-blue | 1 | S10-11 | S20-21 |
| 6 | blue-white | 1 | S10-11 | S20-21 |
| 7 | orange-white | 2 | S12-13 | S22-23 |
| 8 | green-white | 3 | S14-15 | S24-25 |
| 9 | brown-white | 4 | S16-17 | S26-27 |
| 10 | gray-white | 5 | S18-19 | S28-29 |

Your cable may have 2 extra lines that are solid red or solid blue. Disregard these lines; they are not used.



Caution – Do not insert an 8-pin RJ-45 cable into the high-density 10-pin port, as damage to the pins in the port may result.

BRI Port 8-pin RJ-45 Cable

Table 2 provides the pinout for the ISDN/U port. The directions (input/output) are with respect to the PortMaster.

This cable is not supplied, but can be ordered from Livingston Enterprises by specifying product code CBL-4545 (RJ-45 to RJ-45) or CBL-1145 (RJ-45 to RJ-11).

Table 2 ISDN/U to RJ-45 Connector

| ISDN/U Port | Direction |
|-------------|--------------|
| 4 | Input/Output |
| 5 | Input/Output |

ISDN Port Configuration

To configure the MOD-10I-U, you will need to set the ISDN switch type, Service Profile Identifiers (SPIDs), and port telephone numbers.

Setting the Switch Type

To set the ISDN Switch Type, use the appropriate command from the following list.

| Switch Type | Command |
|----------------------------|--------------------------|
| NET3 | set isdn-switch net3 |
| 1TR6 | set isdn-switch 1tr6 |
| VN2 | set isdn-switch vn2 |
| VN3 | set isdn-switch vn3 |
| VN4 | set isdn-switch vn4 |
| NTT | set isdn-switch ntt |
| KDD | set isdn-switch kdd |
| NI-1 | set isdn-switch ni-1 |
| DMS-100 | set isdn-switch dms-100 |
| 5ESS Custom Multipoint | set isdn-switch 5ess |
| 5ESS Custom Point-to-Point | set isdn-switch 5ess-ptp |

Switch type changes will not take effect until the PortMaster is rebooted.

SPID

The telephone company uses Service Profile Identifiers (SPIDs) to identify each of your ISDN lines. You should receive SPIDs from your telephone company; one SPID must be assigned to each port on the MOD-10I-U.

To set the SPID on a port, use the following command:

```
Command> set s10 spid 1510555121200
```

Setting the Port Telephone Numbers

Telephone numbers must be assigned to each ISDN B channel on the MOD-10I-U. When the PortMaster receives an incoming call, the call is connected to the B channel with the corresponding telephone number.

To assign a telephone number, use the **set directory** command.

```
Command> set s11 directory 5105551111
```

If Multilink PPP will be used, ensure that the same phone number is assigned to each B channel used for the Multilink PPP connection.

Monitoring Port Status

To display the status of an ISDN port, use the **show <port number>** command. The Status field displays a message reflecting the current status of the port. To interpret this message, consult the following table.

| Port Status | Modem Status | | | | Description |
|-------------|--------------|------|--------|------|--|
| NO-SERVICE | DCD- | CTS- | TELCO- | NT1- | No SPID set |
| NO-SERVICE | DCD- | CTS- | TELCO- | NT1+ | No cable or no circuit to Telephone Company |
| NO-SERVICE | DCD- | CTS+ | TELCO+ | NT1+ | Cable and ISDN circuit OK but SPID not registered |
| IDLE | DCD- | CTS+ | TELCO+ | NT1+ | SPID registered and ready to use |
| ESTABLISHED | DCD- | CTS+ | TELCO+ | NT1+ | Connecting or providing device service but no carrier sensed |
| ESTABLISHED | DCD+ | CTS+ | TELCO+ | NT1+ | Connected |
| ESTABLISHED | DCD+ | CTS- | TELCO+ | NT1+ | Connected with V.120 async but flow controlled by other end |

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Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Contacting Livingston Technical Support

Every Livingston product comes with a one year hardware warranty.

To obtain technical support, contact Livingston Enterprises Monday through Friday between the hours of 6 a.m. and 5 p.m. (GMT -8). Please record your Livingston ComOS version number and report it to the technical support staff.

By voice, dial (800) 458-9966 within the USA (including Hawaii), Canada, and the Caribbean, or +1 (510) 426-0770 from elsewhere. By FAX, dial +1 (510) 426-8951. By electronic mail, send mail to "support@livingston.com." Using the World Wide Web, see "<http://www.livingston.com/>."

You can schedule one-hour installation appointments in advance by calling the technical support telephone number listed above. New releases and upgrades of Livingston software are available via anonymous FTP from "[ftp.livingston.com](ftp://ftp.livingston.com)."