



Millennium terminals Pocket troubleshooting guide

All terminals

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Revision history

June, 1998

This is the third standard issue of this document. This troubleshooting guide covers all vintages and types of Millennium terminals. Any activities for individual vintages and types of terminals which vary from the common procedures are noted within the text.

This issue combines the information from the 01.01 (MSR 1.7) and 02.01 (MTR 1.9) issues and adds MTR 2.0 and SmartCity (an e-purse application).



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Standard publication of issue 02.01 of the *Millennium terminals troubleshooting guide* for MTR 1.9 version terminals.

January, 1996

Standard publication of issue 01.01 of the *Millennium terminals troubleshooting guide* for 1.7 and 1.7i version terminals.





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About this guide

This guide contains information to help operating company (telco) maintenance personnel to troubleshoot all types and vintages of Millennium terminals.

In this guide

About this guide describes who this guide is designed for and what it includes.

Before you start describes what you need to know before you start working on a terminal, what procedures and steps are required to prepare the terminal for maintenance, and what to do when you are finished working inside the terminal.

Using the craft interface describes how to use the built-in troubleshooting tool, which is used to run self-tests on terminal functions, to download tables, and to upload call detail records (CDRs).

Troubleshooting describes processes and uses flow charts to pinpoint troubleshooting actions for terminal problems.





2 — About this guide

Alarm messages lists the alarm messages sent to the Millennium Manager by a terminal experiencing problems with its hardware or functions. These messages provide a place to start troubleshooting, and include corrective actions.

Error codes lists the error codes displayed by the terminal when the craft interface encounters problems. Each error code has a description of the problem and a suggested action procedure.

Other information

The information contained in this guide, as well as specific installation and replacement procedures are documented in Millennium terminals documentation suite.



Security precautions

This book has been created in a handy-to-carry size for your convenience.

Ensure the guide is kept in a secure place, either on your person or in a secured tool box. The information contained within this guide is sensitive to use for fraud and/or vandalism activities.





Before you start

This guide is designed to help you to troubleshoot problems encountered while servicing Millennium terminals.

Before using this guide, familiarize yourself with Millennium Multi-pay-based, Card-based, and Desk terminals and the documentation pertaining to each type.

Detailed procedures for replacing parts and testing terminal function are not included in this guide. If you need detailed instructions, refer to the terminal guides.



Important precautions

Read this section carefully before you attempt to service the terminal.

Billing precautions

Upload the call detail records (CDRs) to the Millennium Manager before changing a control or telephony printed circuit pack (PCP), the validator, or the escrow. Then uninstall the terminal through the craft interface.





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After replacing the control PCP, firmware, the validator, or the escrow, run the INSTALL procedure. This procedure wipes out existing terminal records.

- Uploading CDRs is described in terminal documentation. This procedure also uploads a coin box status for MTR 1.9 Multi-pay terminals.
- If an e-purse application is present, transaction records need to be uploaded to the relevant collection center.
 - SmartCity records are uploaded manually, using the appropriate craft interface prompt.

• Uploading the CDRs before you service the terminal ensures the integrity of terminal billing and operational statistics.

- Arrange a coin box pickup for pre-MTR 1.9 terminals if you are going to replace a control PCP or firmware.

This is to maintain proper continuity of the coin records with the Millennium Manager.

- Do a coin collection if you are working in the coin vault. Once a coin box is removed it cannot be reinstalled.





Access to the craft interface

To troubleshoot the terminal using the craft interface, you must have maintenance-level access privileges.

Directions for running the craft interface are given in this book.

If none of the components are working, the terminal likely has a power problem. This must be dealt with before the craft interface can be run. Refer to **Troubleshooting** on page 37.

Craft interface requirements

- supplementary power on
- the vacuum fluorescent display (VFD) must be at least partially working

Note: If the VFD is blank, refer to **If the VFD is blank** on page 51 section.

The **Coin basic w/o display** and **Inmate terminals** require a portable VFD to view the craft interface prompts.

Note: When installing a portable display, keep in mind that you must:

- enter the craft interface before unlocking the terminal to install the display
- disconnect the power before plugging in the portable display
- in the case of the Inmate terminal, once the portable display is in-





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stalled, use the housing tiebars to simulate locking and unlocking since the terminal cannot be closed

- the control PCP must be operational

Note: If the control PCP does not work you cannot upload CDRs or transaction records. Follow operating company procedures for dealing with this event.

- the dialpad must work (Multi-pay/Card)

Electrostatic discharge (ESD)

To guard against damage to the electronic boards in the terminal, ensure that you:

- Wear your ESD wrist strap and ground it on the terminal by clipping it to the key in the lock, or the right or left housing mechanism (unpainted metal).
- Disconnect power from the boards before removing any board.
- If you remove a board (PCP) from the terminal, place it in an anti-static bag. Do not allow it to touch other PCPs.

Disconnecting power

Disconnect the power before disconnecting any other cables. To disconnect power from the terminal:

- **Multi-pay/Card:** disconnect the terminal block from the rear terminal PCP
- **Desk:** disconnect either at wall jack or remove RJ11 connector from the housing.





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Do not reconnect the power until you are ready to close the terminal to run the craft interface and terminal tests.

Tools

Below is a list of the tools needed to maintain the Millennium terminals:

- chip puller
- multimeter
- ESD strap
- T- or L- tool
- dial test set
- cleaning card
- small slot-head screwdriver
- #1 type 1A cross-recess screwdriver
- #2 type 1A cross-recess screwdriver
- 5/32-inch hex wrench
- portable display (Coin basic/Inmate)
- butt-end test set
- 7/16-inch wrench
- 7/8-inch wrench
- wire cutters
- electrical tape
- test cards



Replaceable modules

The terminal components are designed in replaceable modules. These include:

- customer-specific lock for the housing
- hookswitch/alerter bezel assembly
- alerter PCP
- upper bezel assembly
- handset/cord assembly/swivel assembly
- number card/instruction card, provided by telco





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- window assembly
- telephony PCP/control PCP
- card reader/bezel or blank bezel
- vacuum fluorescent display (VFD)
- quick access keys bezel, or blank bezel
- rear terminal PCP
- ID bezels: plain, coin entry, datajack
- smart card alert daughter board (MTR 1.7/1.9-based terminals) (optional)
- IAS module (optional)

Note: Not all terminals have all modules.

Multi-pay and Coin basic

- vault door
- security PCP
- escrow
- coin guide in ID bezel
- coin box/coin box cover
- coin box rail/coin funnel
- coin vault lock
- coin validator
- coin return

Two-line e-purse terminals

- multi-application control PCP with SAM daughter board

Large-screen terminals

- VFD comes as a display assembly
- multi-application control PCP with ADSI daughter board.

Inmate terminals

- steel instruction plate

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Desk terminals

If the control PCP needs replacing, the whole set is replaced. However, there are some components which can be replaced within the terminal, including:

- card reader assembly, with coin shield
- data jack daughter board/IAS module
- coil cord and handset
- line cord
- instruction cards, supplied by operating company

When you are finished

When you have replaced a part on the terminal do the following checks.

Before you reconnect power, check:

- all ribbon cables are properly connected
- no cables are kinked or pulled too tight
- telephony and control PCPs are properly seated in their frame and the interconnect cable is attached correctly

Restore terminal to operation, then:

- Run the INSTALL routine if you replace a control PCP or firmware, the validator, or the escrow.
- Use the craft interface to force a download of tables if you added optional features, such as quick access keys or a smart card alert or replaced the telephony PCP.





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- When opening and closing Multi-pay or Card terminals, ensure that the gaskets on the front housing are undamaged and properly seated.
- **E-purse terminals:** depending on the application, you may need to run the craft interface menu test which confirms that a valid SAM is present.

Testing the functions

When the craft interface runs clean, close and lock the terminal and test the terminal using all call and card types allowed.

Before you leave the site

Before you leave the site, make the following checks:

- Make sure the terminal is properly locked and in-service.
- Make sure both upper and lower housing keys have been removed.
- Make sure the T-tool has been removed.
- Make sure the VFD display indicates the terminal is ready for service and that advertising, if there is any, is working as planned.
- If you added or deleted any hardware, such as a quick access keys set, or a different type of card reader, make sure the instruction card and the quick access keys label reflect the changes.





Using the craft interface

There are two types of craft interface procedures for Millennium terminals.

1. The **INSTALL** procedure is run when:
 - a terminal is newly-installed
 - the memory on the control PCP becomes corrupted
 - any of the following have been replaced: the control PCP, firmware, the validator, or the escrow
2. The **maintenance** procedures are used as a troubleshooting tool to pinpoint problems, to force a download if new tables are required, to upload CDRs and SmartCity transaction records, or to notify the Millennium Manager that the terminal is being worked on (operation codes).



Coin basic/Inmate terminals: Attach a portable VFD so you can follow the craft interface prompts. How to attach a portable VFD is described in the main terminal documentation.





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The following procedures assume the terminal is in condition to run the craft interface as described in **Access to the craft interface** on page 5 under the **Before you start** section of this guide.

Accessing the terminal

This section describes what you need in order to access the craft interface, and the initial steps to getting into the interface.

What you need to start

To access a **desk terminal** you need:

- an access code
- PIN
- keycard

To access a **Millennium Multi-pay-based or Card-based terminal**, you need:

- an access code
- a personal PIN number
- a housing lock key, and a T- tool.
- a lower housing key if you need to access the coin vault

Accessing the interface

The following steps describe how to enter the craft interface. It is the same for either the INSTALL routine or the maintenance and op code levels.





Coin basic w/o display and Inmate terminals: The following procedure must be done before the terminal is entered to install the portable display.

With the handset on hook, follow these steps to access the craft interface:

1. With the handset on-hook, enter the terminal access code.
2. Enter your PIN at the PIN prompt.
3. Press *.

Open the terminal quickly. The terminal times out after three minutes. If this occurs, you must start again.

If you open the terminal after the timeout, an alarm message is sent to the Millennium Manager.



4. **Multi-pay-based and Card-based terminals:** Unlock the terminal and open it using the housing key and T-tool

Desk terminal: Insert the keycard.

- **If the card reader is not working,** enter 832 on the keypad. This uploads the CDRs. Then open the set and replace the card reader.
- **If the keypad is not working,** swipe the keycard in the card reader. If there are CDRs present, swipe the card again. The CDRs will upload. Then replace the set.





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Correcting errors

- If you make a mistake entering numbers, use the **◆** button to delete the entry, then re-enter the number.
- Error messages which might occur during the tests are listed at the end of this guide and are discussed in the troubleshooting section.
- If 30 minutes elapse between button presses, the terminal ends the session and the VFD blanks out. If you close the terminal, the VFD will display **out of service**. The download feature does not have the same time-out setting.



To INSTALL a terminal



1. Access the terminal as described in the **Accessing the interface** section.

Coin basic and Inmate terminals:

Install the portable display so you can see the messages.

2. If this message appears on the VFD, you will be running the INSTALL procedure, described below:

Not installed.

Use # to install

3. Press # on the keypad.
4. Follow the prompts as they appear.





Line and number checks

5. The first test checks the telephone line.
CO line check
Go off hook
 - a. Lift the handset off-hook. The terminal proceeds with the line check.
Checking CO connection
 - b. When the test is complete, press *.
Go back onhook
 - c. Replace the handset, and press *.

6. Enter the telephone number of the terminal at this prompt:

■■■■■■■■■■

Enter line tel. number

Note: Enter carefully! This is the key number for downloading the tables.

7. Press *.
8. Enter the serial number of the terminal:

■■■■■■■■■■

Enter serial number

9. Press *.
10. Enter the Millennium Manager (NCC) telephone number at this prompt:

■■■■■■■■■■

Enter NCC tel. number

Note: If a **pre-dial string** is required, enter it in front of the telephone number (MTR 1.9-vintage terminals).





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Answer supervision check

11. There is a group of prompts for the answer supervision test. The first reads:

Answer detect check
Go off hook

- a. Lift the receiver off-hook.
This prompt appears:
Checking answer detection
- b. When the test is finished, this prompt appears:
Completed: 00
To continue, press *
- c. Press *, and this prompt appears:
Go back onhook

Note: The **Inmate terminal** does not require answer supervision. In that case, the test will time out, allowing the INSTALL to continue.

Downloading tables

12. When the receiver is replaced on-hook, this prompt appears:

Press * to start NCC
download

- a. Press *.
This prompt appear:
*** Please wait ***

Note: If you press # while this prompt displays, you will stop the download and exit the INSTALL routine.





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Do not attempt to stop the download once the next prompt appears.

- b. When the terminal connects:
Download in progress
*** Please wait ***
- c. When complete, this appears:
Completed: XX
Press * to continue
(XX indicates terminal type:
01=Card or Desk set; 02=Multi-pay;
03=Coin; 04=Inmate)

Testing the keypad

- 13. After the download is complete, press *, and this prompt appears:

**Go offhook, press all
buttons, then onhook**

Test all the buttons.

If any button does not display, the button is damaged.

If all the buttons do not display, check the VFD connection first.

The main keypad keys sound DTMFs.

Card reader tests

- 14. If the terminal has card capabilities, you are prompted to:

**Please insert and
remove your card**

- a. Insert a valid credit card.





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- b. Remove your card:
(your card's number)
To continue, press *

Note: The number on the VFD will be the number embedded on the mag stripe of the card.

Coin path tests

15. If the terminal has coin capability, you are prompted to:

Deposit a
calibration coin

- a. Deposit your first coin.
The VFD will go blank, then:

Deposit a
calibration coin

- b. Deposit your second coin.
The sequence repeats.

Deposit a coin
to test escrow unit

- c. Deposit your third coin.
The sequence repeats.

Completed: 00
To continue, press *

Completing the INSTALL

16. Press *.
The install is complete when this prompt appears:

Install is complete
Close terminal now





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17. Close and lock the terminal. This step is mandatory to complete the INSTALL.

Inmate terminals: Pull up the left vertical housing tiebar to simulate locking.

18. Test the terminal.

- Test each function button.
- Test the card reader.
- Make several types of calls with all types of payment methods accepted by that terminal. These tests are described in the detailed terminal documentation.
- Use a SmartCity card to do a transaction, if the terminal has that application.
- Test the datajack and smart card alert functions if they are present.
- Test optional features.

Inmate and Coin basic terminals:

Remove the portable display:

- a. Re-enter the craft interface
- b. At the unlock prompt, unlock the terminal — in the case of Inmate terminals, this means pulling down the left vertical housing tiebar
- c. Disconnect the power
- d. Disconnect and remove the display.
- e. Restore the terminal.





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Maintenance menu options

The maintenance menu is circular. To move through the menu, press *. The volume buttons move back one (▼) or forward one (▲) menu item.

Bypassing the menu prompts

You can key in the numeric or mnemonic of the option at the main prompt to go straight to an item. Refer to the **Menu and codes and options** list below.

This feature is useful when you need to upload CDRs, if you need to force a download, or if you know the problem area.



Maintenance menu codes



# Code	Option	Mnemonic
227	Check Card reader	CAR
264	Check Coin Unit	COI
546	Check CO line	LIN
347	Check display	DIS
539	Check dialpad	KEY
225	Make/Answer a call	CAL
835	Show tel. number	TEL
622	Show NCC number	NCC
673	Enter op codes	OPE
369	Force download	DOW
732	Send call records	REC
267	Test answer sup.	ANS





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274	Change VFD brightness	BRI
636	Test memory	MEM
688	Put out of service	OUT

Note: The following items appear only on terminals with the SmartCity application.

378	FSU records	FSU
277	Check FSU SAM	

Note: The **Coin basic w/o display** terminal does not display the card reader menu item. **Card** and **Desk** terminals do not display the coin menu items.

Some terminals do not display items 267, 274, 636, or 688 on the menu. Enter numeric code to access.

Some newer vintage terminals start with menu item 732.



Accessing the maintenance menu

Access the terminal as described in **Accessing the interface** on page 12.

The main maintenance prompt

The main prompt says:

Use *=MENU, #=INSTALL or dial item number

Press * to enter the menu, or the code number on the keypad to go to the specific item.





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Ending the session

At any time, end the maintenance session by closing and locking the terminal.

Coin basic w/o display terminal: you need to close and lock the terminal to end the session, then re-enter the craft interface so you can disconnect the power and remove the portable display.

The **Inmate terminal:** to simulate locking the terminal to end the session, pull up the left vertical locking tiebar. Then re-enter the craft interface. At the unlock prompt, pull down the tiebar to simulate unlocking the terminal. Disconnect the power. Remove the display.

Desk terminal: Press # to end the session.



Card reader check

The following prompt checks the card reader sensors.

```
227. Check cardreader  
Use 1 = DO IT, * = NEXT
```

The card reader has two sensors which must be triggered by the card in order for the card to be read.

1. Press 1 and swipe a valid card. The prompt shows the card number:

■■■■■■■■■■■■■■■■■■

To continue, press *

2. Check that the number is correct.





3. Press * to return to the 227 prompt.
4. Press * to continue with the menu.

Coin unit check

If the terminal has coin capabilities, this prompt appears:

264. Check coin unit
Use 1 = DO IT, * = NEXT

1. Press 1. You will be prompted to deposit a calibration coin.

You are prompted to deposit coins three times. Each repeat tests a different part of the coin path.

2. After the third test passes:

Completed: 00
To continue, press *

3. Press * to return to the 264 prompt.
4. Press * to continue with the menu.



CO line check

This test checks voltage and dial tone

546. Check CO line
Use 1 = DO IT, * = NEXT

1. When you press 1, the prompt reads:

CO line check
Go offhook

2. Take the handset off-hook. As the test runs, the prompt reads:





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Checking CO connection

- At completion, the prompt reads:
Completed: 00
To continue, press *
- Press *. The prompt reads:
Go back on hook.
- Hang up the handset to return to the 546 prompt.
- Press * to continue.

Display check

This test checks that the VFD pixels work.

347. Check display
Use 1 = DO IT, * = NEXT

- Press 1. All the pixels display, then turn off. Then the pixels turn on one by one.
- When the test is complete, the 347 prompt reappears.
- Press * to continue.

Dialpad check

This menu item tests t the keypad buttons.

539. Check dialpad
Use 1 = DO IT, * = NEXT

- Press 1. The prompt reads:
Go offhook, press all buttons, then onhook





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2. Lift the receiver and press every button on the terminal.
3. Ensure that the correct character appears on the VFD.
Each key on the main dialpad also creates a DTMF tone.
4. Hang up the handset to return to the 539 prompt.
5. Press * to continue.

Make/answer a call check

Use this test if you need to make or receive a call while you are in the interface.

225. Make/Answer call

Use 1 = DO IT, * = NEXT

1. When you press 1, the prompt reads:
Please lift receiver.
2. Take the receiver off-hook:
**Please insert (payment)
or dial a number**
3. You can either enter a number and then insert a valid payment; or enter the payment, then dial a number.
4. The terminal dials the call.
5. If your call out is valid, hang up and the display returns to the 225 prompt.
6. Press * to continue.





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Telephone number check

This test is used to confirm the telephone number stored in the terminal.

835. Show tel. number

Use 1 = DO IT, * = NEXT

1. Press 1. The prompt shows the terminal telephone number:

■■■■-■■■-■■■■

To continue, press *.

2. Press *, to return to the 835 prompt.
3. Press * to continue.

Millennium Manager number check

This is the number the terminal dials to access the Millennium Manager (NCC).

622. Show NCC number

Use 1 = DO IT, * = NEXT

1. Press 1. The prompt shows the Millennium Manager primary number:

■■■■■■■■■■

To continue, press *.

2. Press *, to return to the 622 prompt.
3. Press * to continue.





Entering op codes

These information codes indicate to the Millennium Manager that tasks have been performed at the terminal.

673. Enter op codes

Use 1 = DO IT, * = NEXT

If the operating company uses op codes, refer to its documentation for definitions.

1. Press 1. The prompt reads:
Enter op code: ■■■
◆=FIX, *=SAVE, #=STOP
2. Enter the relevant op codes — up to eight at once — and press *.
3. When you are finished, press #.
4. Press * to continue.



Millennium Manager download

Use this menu item to download the function tables into the terminal, for instance, after you replace a telephony PCP.

369. Force Download

Use 1 = DO IT, * = NEXT

1. Press 1. This prompt appears:
Press * to start NCC
download
2. When you press *, the prompt reads:
* Please Wait *

If you want to stop the download, you must do it while the above prompt is on the display. Press #.





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3. When the terminal connects to the Millennium Manager, this displays:
Download in progress
*** Please Wait ***
4. When the download is complete:
Completed: XX
To continue, press *

 XX indicates the terminal type.
5. Press * to return to the 369 prompt.
6. Press * to continue.

Sending call detail records

It is recommended that you upload CDRs any time you work with the internal boards. However, you **must** upload CDRs when changing a control PC P, firmware, the validator, or the escrow.

732. Call records
Use 1 = DO IT, * = NEXT

1. Press 1. One of these prompts appears:
Call records present
Press * for NCC call

 or
No call records
To continue, press *
2. If there are no call records, press * to return to the 732 prompt.





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If there are call records, press * to upload them. The prompt will say:

*** Please Wait ***

and then

Download in progress

*** Please Wait ***

3. At completion, the prompt reads:

Completed: 00

To continue, press *

4. If there are CDRs, repeat Step 2 until this prompt appears:

No call records

To continue, press *

5. Press * to return to the 732 prompt.

6. Press * to continue.

Note: Some vintages of terminals do not display the following items on the menu. Use the numeric code to access the item.

Testing answer supervision

Answer supervision is provided on the line, or through an inferred answer supervision (IAS) module inside the terminal between the line and the rear terminal PCP. This menu item tests for answer supervision:

267. Answer detection

Use 1 = DO IT, * = NEXT

1. Press 1. If the handset is onhook:

Answer detect check

Go offhook





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2. Go offhook. The terminal runs the test:
**Checking answer
detection**
3. At completion, the prompt reads:
**Completed: 00
To continue, press ***
4. Press * to return to the 267 prompt.
5. Press * to continue.

Changing VFD brightness

The VFD has three levels of brightness.

To change the brightness, use this item:

274. VFD brightness
Use 1 = DO IT, * = NEXT

1. Press 1. The display will show:
**Choose level: 1 - 100%
2 - 75%, 3 - 50%**
2. Press the button on the keypad which corresponds with the level you want.
3. Press * to return to the 274 prompt.
4. Press * to continue.

Testing memory

If the terminal is not functioning properly, make sure you run a memory test. This test checks the memory for corruption.

636. Check memory
Use 1 = DO IT, * = NEXT

1. Press 1.





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While the memory is checked, this prompt displays:

*** Please wait ***

2. When the check is complete:
Completed: 00
To continue, press *
3. Press * to return to the 636 prompt.
4. Press * to continue.

Putting out of service

Using this feature sends an operation code to the Millennium Manager.

Use this code to:

- put a terminal out of service
- put the terminal back in service when it has been previously put out of service with this menu item.

This item initiates this function:

688. Out of service
Use 1 = DO IT, * = NEXT

1. Press 1.
Press 1 = card reader
2 = coin, 3 = whole set
 This prompt is specific to the options available on the terminal.
2. Press the number button appropriate to the service level you want.
3. Press * to return to the 688 prompt.
4. Press * to continue.





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Putting back in service

If the terminal has been put out of service with the procedure described above, return it to service with this procedure:

1. Access this prompt:

688. Out of service
Use 1 = DO IT, * = NEXT

2. Press *.
3. Close and lock the terminal.

SmartCity application prompts

The SmartCity (FSU) application has two prompts specific to the application.

These prompts allow you to:

- upload FSU smart card records to the SmartCity collection center.
- check that a SAM is installed correctly in the terminal.

Uploading FSU smart card records

The following menu item uploads the smart card records for this application.

1. Access this prompt:

378. FSU records
Use 1 = DO IT, * = NEXT

2. Press 1.

The terminal displays one of the following prompts:

If there are SmartCity transaction records in the terminal:





FSU records present
Press * to upload

If there are no records:

No FSU records
To continue, press *

3. Press * to return to the 378 prompt.
4. Press * to continue.

Checking the SAM

The following menu item checks the SAM installed in the terminal and initializes it.

1. Access this prompt:
277. Check FSU SAM
Use 1 = DO IT, * = NEXT
2. Press 1.
 - If the SAM is okay, this prompt displays:
SAM is okay
To continue, press *
 - If there is a problem with the SAM, the terminal displays:
SAM Not Responding
To continue, press *
3. Press * to return to the 378 prompt.
4. Press * to continue.

SmartCity SAM errors

If the SAM test errors, you must enter the terminal and replace the SAM.





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Refer to the relevant documentation for specific instructions about how to do this.

<p>ESD danger</p> <p>Electrical warning</p>	<p>Before changing the SAM</p> <p>Ensure that you:</p> <ul style="list-style-type: none"> • attach your ESD wrist strap to a grounding point inside the terminal • disconnect the power <p>Failure to follow these precautions will result in damage to the control PCP.</p>
---	---

Error prompts

If any of the craft interface tests fail, the terminal displays an error prompt:

Failed: XX
Press * to try again

Where XX is an error code. Look up codes on the chart at the end of this guide.

If you get error prompts, troubleshoot the feature using the troubleshooting charts in this guide or refer to specific terminal documentation. Then retry the test.





Download errors

When you are installing or forcing a download, you may encounter errors.

1. If the download initially fails, and the error codes are in the 20-to-26 range, wait a couple of minutes and retry.
2. If two or three retries fail check that:
 - you have entered the correct number for the terminal
 - you have entered the correct Millennium Manager (NCC) telephone number
3. If the telephone numbers are okay, refer to the error codes section for direction.
4. Error codes in the 30-to-35 range may require other corrective measures before retrying the download. Refer to the error codes section for directions.





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Troubleshooting

How you approach the terminal to troubleshoot it will depend on the information you have beforehand.

- Were you given alarm codes that the terminal sent to the Millennium Manager?
- Were you informed by a customer through the operating company that the terminal was not working or was displaying the prompt **Out of Service**?
- Are you trying to install the terminal, or do some other function as part of a regular procedure?
- What does the VFD of the terminal say when you get to the terminal?
- What is the condition of the outside of the terminal?



<p>Power warning</p> <p>Failure to disconnect power can result in board damage</p>	<p>After a fault is diagnosed, disconnect the power before making the repair.</p> <p>Restore power only after the terminal has been reassembled.</p>
--	---





Understanding the problem

If you are responding to alarm codes, you have a good place to start. Refer to the alarm codes section and run the craft interface tests, if necessary, to pinpoint the problem.

However, if you do not have a starting point, or if the terminal is not in a condition to run the craft interface, the following section gives some pointers about how to troubleshoot the problem.

Terminal power requirements

Millennium terminals use four wires: two for telephone service (tip and ring), and two for supplementary power. All four wires attach to the terminal block. Refer to Figures 1, 2, 3, and 4.

This gives Millennium terminals two modes of operation:

1. When the standard 24-volt supplementary power is present, the terminal has full call capability. In this state, the dial tone heard in the handset comes from the control PCP and there are voice prompts. The VFD should be operating both on- and off-hook.





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2. If supplementary power is missing, the terminal is in power-fail mode, and only some types of calls, determined by the operating company, are allowed.

In this mode, the dial tone heard in the handset comes from the CO line, there are no voice prompts, and the VFD and card/coin modules do not work.

Figure 1: Rear terminal PCP of Card terminal

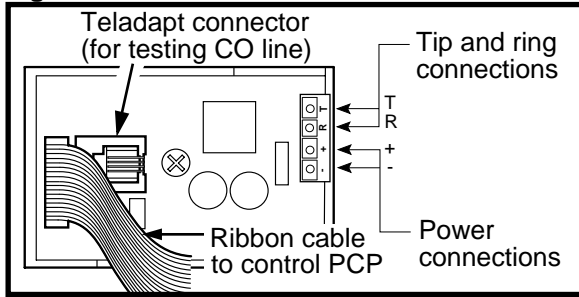
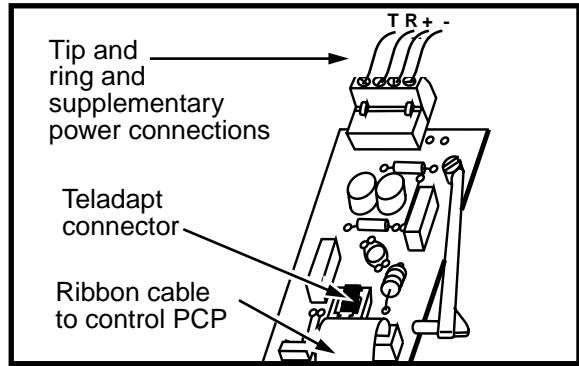


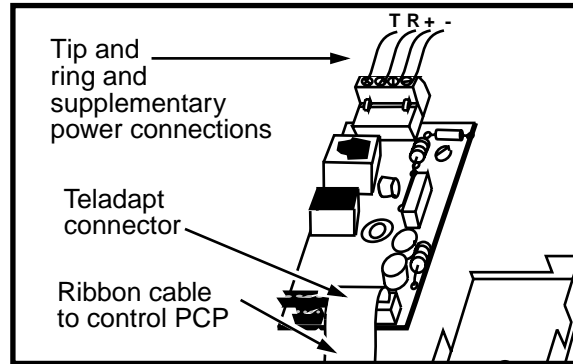
Figure 2: Rear terminal PCP, through-hole control PCP





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Figure 3: Rear terminal PCP, multi-application control PCP



The rear terminal PCP shown in Figure 2 is used on all through-hole control PCPs.

Because of the special power requirements for the multi-application control PCP, a rear terminal PCP with added grounding is required.

Terminals with a multi-application control PCP, therefore, will have either a rear terminal PCP like the one in Figure 2 but with an additional grounding wire, or they will have rear terminal PCPs which look similar to the board shown in Figure 3.

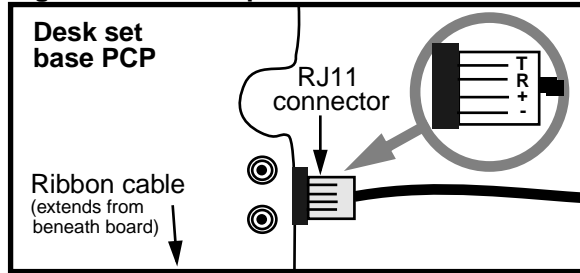
The boards can be differentiated by the position of the spare teladapt connector.

The rear terminal PCP shown in Figure 3 can be used with either control PCP.





Figure 4: Desk set power connector



Desk set: The power cord has an RJ11 connector (a standard, plastic telephone line connector) which plugs into a teladapt inside the base unit. To disconnect the power, pull this plug or disconnect the cable connecting the base PCP to the main housing.



Voltage and cable requirements

The power supply for the **Multi-pay-based, Card-based,** and **Desk** terminals, should be rated at 0.5 A at 24 V DC $\pm 15\%$.

Wire gauge	Maximum cable length (from terminal to supply)	
#26	41.8 m	(137 ft)
#24	66.5 m	(218 ft)
#22	105.6 m	(346 ft)
#20	168 m	(551 ft)
#18	266.7 m	(875 ft)
#16	424.3 m	(1392 ft)





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Wire gauge	Maximum cable length (from terminal to supply)	
#14	674.8 m	(2214 ft)
#12	1072.9 m	(3520 ft)

Note: The maximum cable length is shortened by any wire joints or junctions included in the line measurement.

For the **large-screen terminals**, the power supply should be rated at 1.0 A at 24 V DC $\pm 15\%$.

Wire gauge	Maximum cable length (from terminal to supply)	
#26	20.9 m	(68 ft)
#24	33.2 m	(108 ft)
#22	52.8 m	(173 ft)
#20	84 m	(275 ft)
#18	113.3 m	(372 ft)
#16	212.1 m	(696 ft)
#14	337.4 m	(1107 ft)
#12	513.9 m	(1686 ft)



Failing to adhere to these cable length-to-size specifications could result in irregular performance by the terminal.

For instance, a too-long cable may have enough initial power to run the basic terminal functions, but when the terminal







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tries to initiate a modem call, the increased power requirement would cause the terminal to experience a loss-of-power error, terminating the transaction as the terminal restarts.

This problem could also be caused by a failing transformer.

	<p>Cable length warning The output impedance of the power supply should be less than 10 Ω.</p>
	<p>Problem: A power spike causes the terminal to connect, then immediately disconnect inappropriately. Solution: You may need to pad each side of the line (tip and ring) with additional resistance. Suggested padding: 500 Ω.</p>



Television interference

If a terminal is installed on the same power circuit as a television, or near a television, it may cause interference.

If it is not possible to move the television or the terminal, replace the control PCP with one containing a capacitor and coil. To obtain this board, call the Nortel Global Technical Services (GTS).





Start your investigation

The following section provides guidelines for approaching the diagnostic process. Individual circumstances will dictate the actual procedure.

If the problem remains after you follow these procedures, follow your company policy for contacting the next level of support.

Does the VFD work?

The VFD is required to view the menus for the craft interface. If the VFD is blank, it may indicate a faulty VFD module or a power problem, either with the outside line or the control PCP.

- If you can make a call and you hear voice prompts in the handset, the problem is likely a faulty VFD.
- If you cannot make a call or do not hear voice prompts, follow the power and CO line troubleshooting procedures.

Check inside the terminal

When you first enter the terminal, check the following first:

- Check connectors and reseal if necessary. Then retry the function.
- Check the ribbon cables for tears or damage. Replace the module if cables are damaged. Then retry the function.





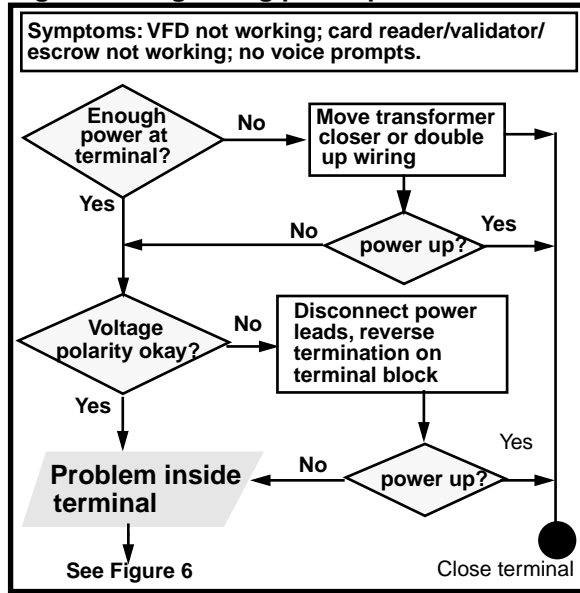
Power problems: inside or out?

A power problem is indicated if the VFD is blank and no payment options are working.

Figure 5 shows the process of deciding if the power problem is inside or outside.

Figure 6 shows the procedure to follow if you determine the problem is inside.

Figure 5: Diagnosing power problems



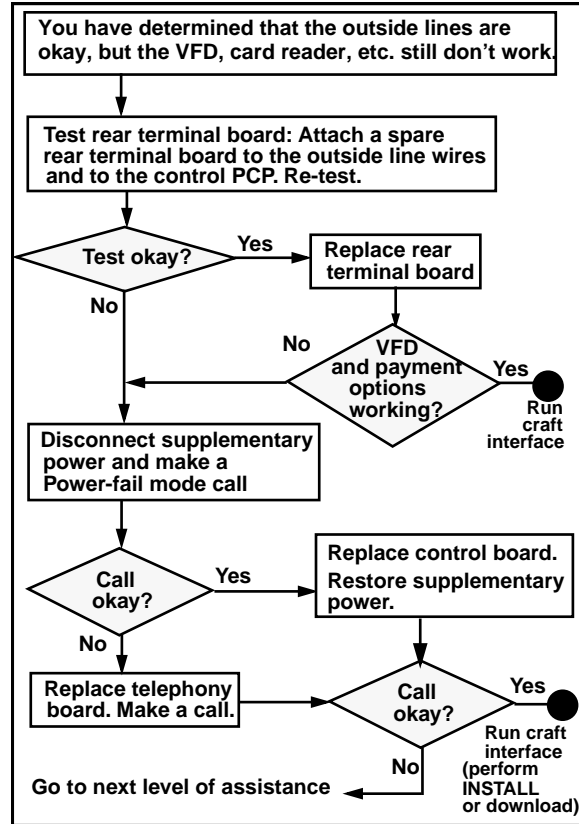
Desk terminal: If you determine that the power problem is internal, replace the unit. Note that you were unable to download CDRs.





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Figure 6: Testing power inside the terminal



Borderline power problems

A more subtle form of power problem may occur if the cable length/diameter ratio is not correct. Refer to the cable tables given earlier in this section.





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Some indications are:

- Customer complaints that a coin was accepted but the call didn't go through or Credit card calls fail during validation.
- When calls are attempted, the VFD flickers and displays **PLease hang up**.
- After a control board change you were unable to complete a download.
- The terminal consistently fails to make its scheduled call-in to the Millennium Manager for no apparent reason.

In all these situations, the increased voltage required by components to initiate coin activities or make data calls pushes the power requirements over the threshold supplied by supplementary power.

Troubleshooting the problem

Is the VFD working properly? If so, then the problem is probably outside the terminal.

Check the outside power supply to make sure it is functioning properly.

If it is, and since you know that power is getting to the terminal, because it powered up, you might speculate that the problem is a borderline power problem.

Attach a 22 Ω (10 Watt) resistor to the supplementary points on the terminal block. Check for correct voltage.





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Correcting the problem:

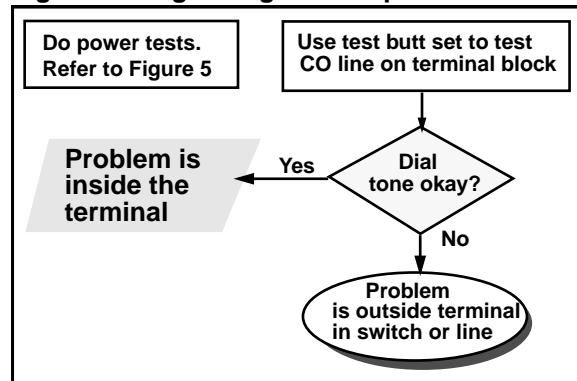
Check the length of the circuit, taking into consideration wire joints and junctions. Double the supplementary wire pair, if necessary.

CO problems: inside or out?

The VFD may be working, and you may get dial tone, but if you cannot dial out any calls, there is a problem with the CO line or the internal boards.

Figure 7 shows the process of confirming that the outside CO line is okay.

Figure 7: Diagnosing CO line problems



If the problem is outside the terminal, follow the operating company procedures for correcting CO line problems



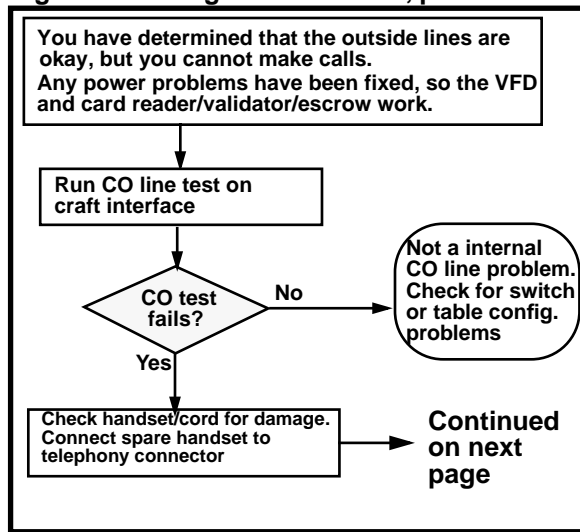


Desk terminal: If you determine that the CO problem is internal to the unit, check the cable connections. If that does not fix the problem, upload the CDRs, then replace the set.

Testing CO inside the terminal

Figure 8 and Figure 9 shows what to do if you have determined you have CO problems inside the terminal.

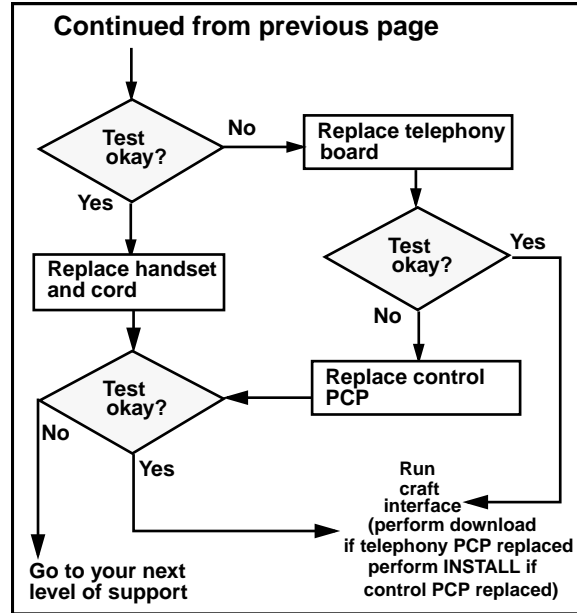
Figure 8: Testing CO line inside, part 1





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Figure 9: Testing CO line, part 2



If you determine that the problem is not an outside problem, power, or CO line problem, then the problem is most likely with a particular module.

The following section provides a troubleshooting flowchart for each module.

Note: If you replace the **control board**, firmware, validator or escrow, run the INSTALL routine.

If you replace the **telephony board**, perform a forced download.

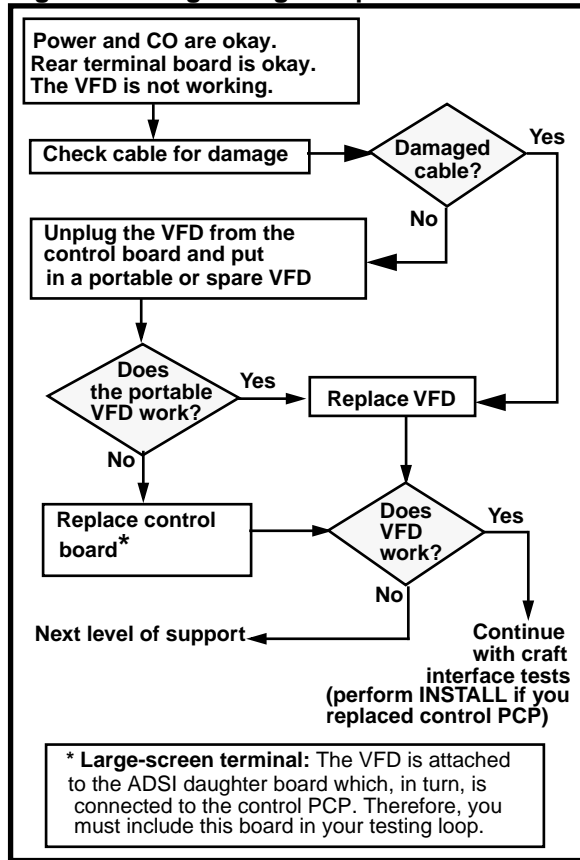




If the VFD is blank

If you determine that the problem is internal to the set, and the VFD is blank, follow the process shown in Figure 10.

Figure 10: Diagnosing VFD problems

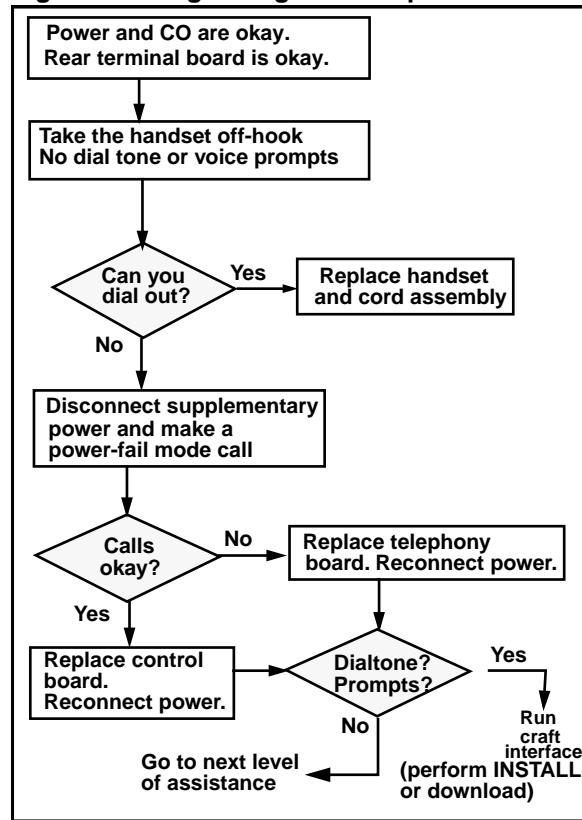




Cord and handset problems

Check for obvious physical damage.
Follow the process in Figure 11 if there is no apparent damage to the handset.

Figure 11: Diagnosing handset problems





Card reader troubleshooting

To test the card reader, try to make a call using a valid card.

To troubleshoot, run the craft interface card reader test. If errors occur, follow the chart in Figure 12.

Possible card reader problems:

- The card reader slot may be blocked.
- The magnetic head may need cleaning.
- One of the sensors may have failed.
- There are no error codes for a faulty smart card reader; if a valid card cannot be read, assume a card reader problem.



General card reader troubleshooting:

- Inspect the card reader for wear or vandalism, such as something stuffed in the card reader slot.
- Clean the card reader heads with a card reader head cleaner card.
- Make a call using a valid* mag stripe card. If you cannot make a call, replace the card reader.
- If the new card reader will not read a valid* mag stripe card, the terminal may have the wrong card table downloaded. Check with the system administrator.

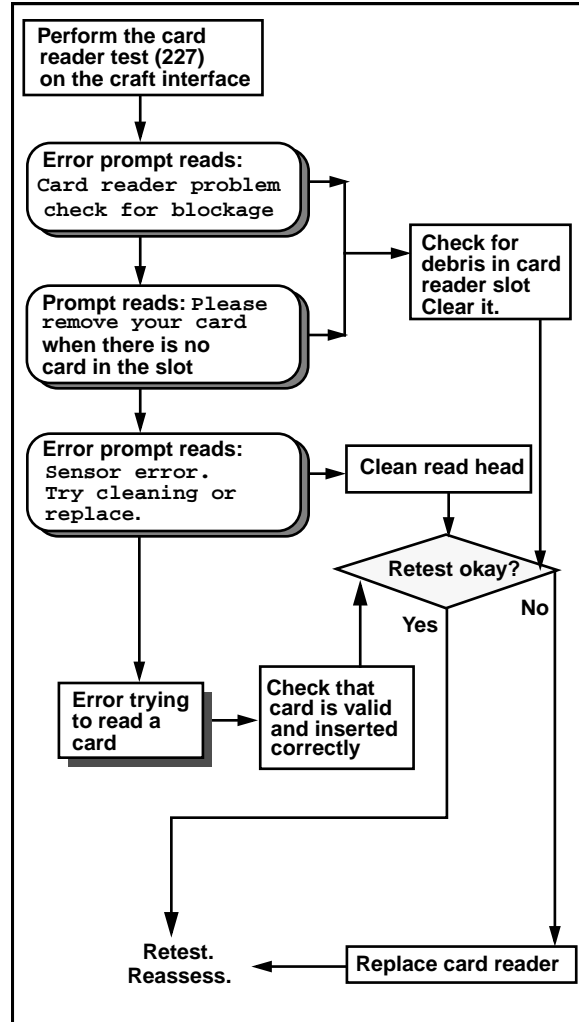
* **Make sure your card is valid by checking it on more than one terminal.**





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Figure 12: Card reader troubleshooting



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Coin path troubleshooting

Coin path problems occur primarily in the validator and escrow units.

The problems may be brought to your attention from any one of the three sources shown in Figure 13, below. However the problems are brought to your attention, the troubleshooting process is the same.

Figure 13: Indications of coin problems

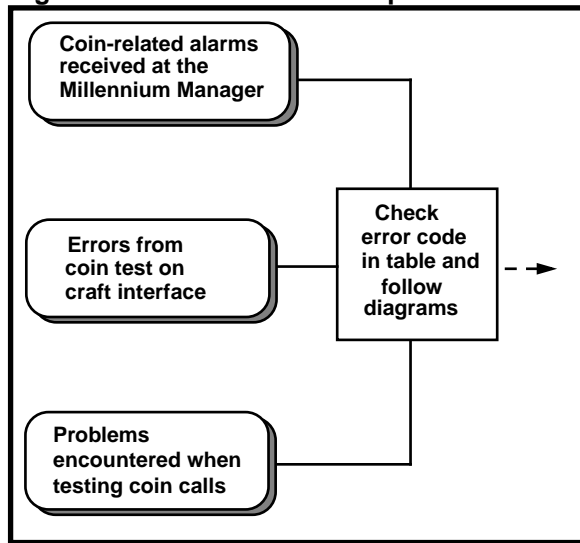


Figure 14 to Figure 16 lead you through the various coin-related error messages and suggestions for correcting them.





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Figure 14: Craft interface coin codes

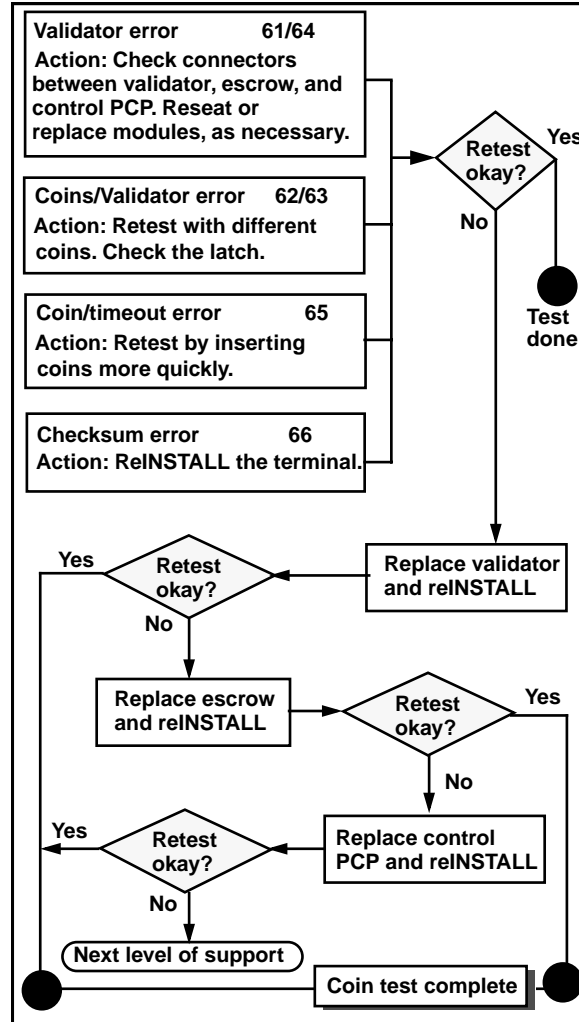
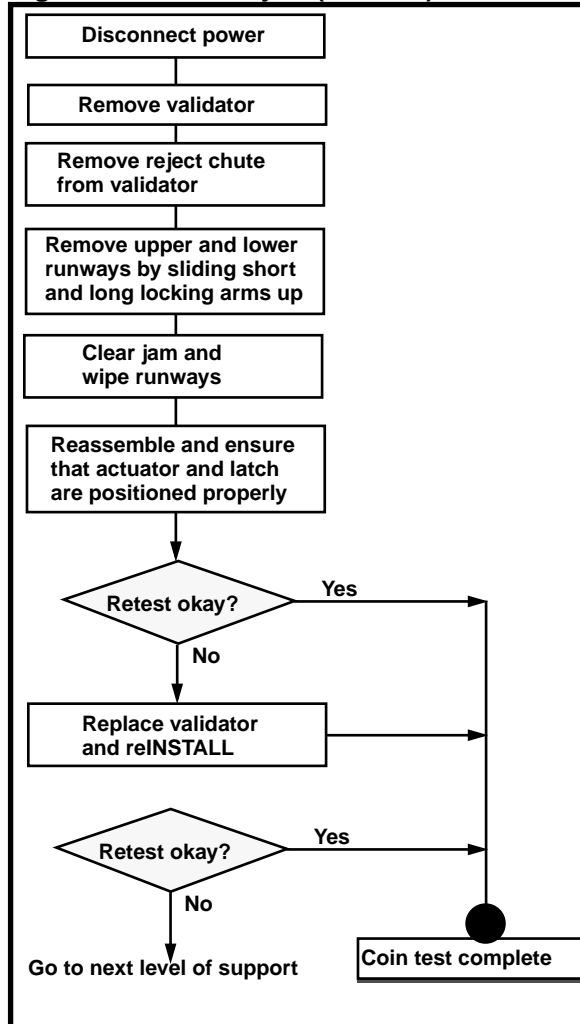




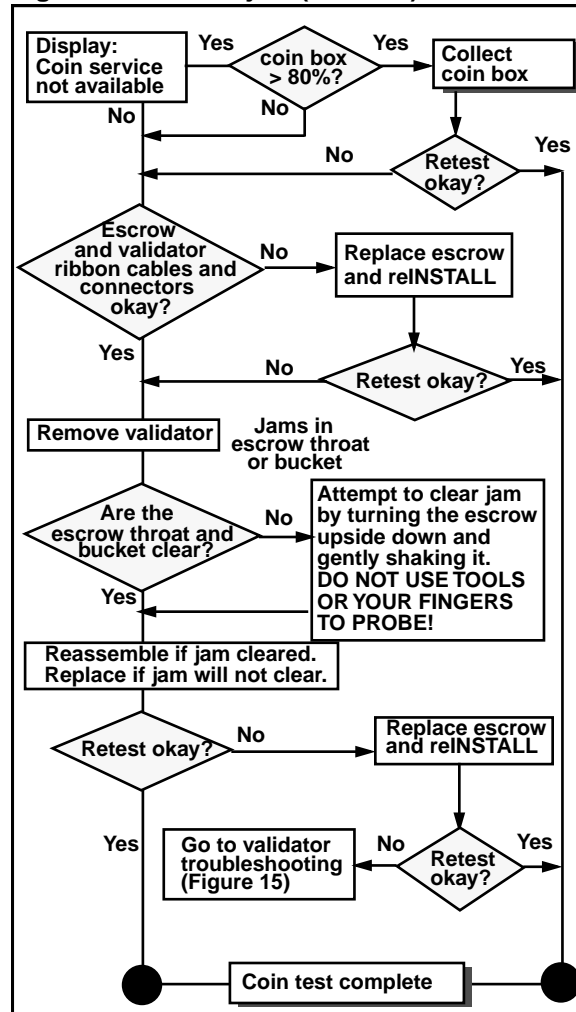
Figure 15: Validator jam (Error 67)





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Figure 16: Escrow jam (Error 68)





Coin box jams

If you find that coins are jamming between the escrow exit hole and the coin box lid, check to see which coin box rail is installed. If it is brass in color, consider replacing it with the new silver model, which has a better opening.

If you are using non-Nortel coin box lids, a coin funnel diaphragm is available which fits into the top of the rail opening and blocks the gap to the lid.

Security PCP fault indications

Coin vault security PCPs seldom fail. Therefore, there is no direct error to indicate a failure. However, a fault can be deduced by considering these conditions:

Error messages

There are error messages if the coin box key is left in the lock or if the vault is closed with no coin box. If neither of these conditions exist, and the terminal is still sending alarms, check that the micro-switch on the security PCP inside the coin vault.

The micro-switch should be activated when the lock is closed and a coin box is in the coin vault, and deactivated if the lock is open or the coin box is removed. If either case fails to activate the relevant microswitch, replace the security PCP.





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Coin box discrepancies

A faulty vault security PCP may be indicated if:

- A coin box is removed and there is no message sent to the Millennium Manager to indicate this.
- The **coin box full** message is transmitted, yet the coin box is not full.
- A new coin box is installed, but the **Card Only service** or the **Coin service unavailable** prompt appears on the VFD when the terminal is closed.
- An alarm has indicated there is no coin box, but there is one. The terminal displays **out of service** on the VFD.
- An alarm indicates that the coin vault is open, but this is not the case



To correct, replace the security PCP.

After you replace a security PCP, use the following procedure to simulate a coin pickup to reset the terminal counter to zero

1. Turn the coin box key to the locked position.
2. Hold the microswitch down or insert a lid-less coin box.
3. Power up the terminal, still holding the switch closed.
4. Turn the coin box key to the unlocked position. The terminal resets the count to zero.





5. Remove the lid-less coin box and insert a regular coin box.

Note: Inform the coin box collection service that they need to count the contents of the last two boxes to reconcile their coin count records.

Datajack telephony PCP power

If a Multi-pay or Card-only terminal with this feature is experiencing power problems during datajack operation, check the following conditions:

If the terminal has a telephony PCP which supports the datajack function, but the updated firmware chip was not installed, datajack operation may cause power fluctuations.

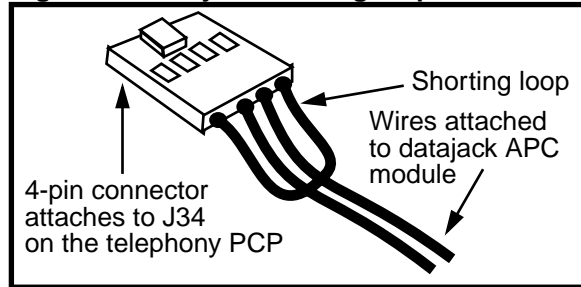
The datajack cable connector wiring is shown in Figure 17. Note that there must be a loop between the two outside connections. This shorting loop prevents the modem from drawing excess current off the line during datajack operation. If this loop is not present on the connector of the datajack module attached to the telephony PCP, make the adjustment to the wiring leads.





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Figure 17: Datajack shorting loop





Terminal alarm messages

The section lists the alarms sent to the Millennium Manager by the terminal when there is a problem at the terminal or with its connection to the Millennium Manager. This information should be supplied before you go to service the terminal

For detailed instructions about troubleshooting and parts replacement, refer to the standard terminal documentation.



Maintenance warning

Ensure you have read the section **Before you start** on page 3 before you do any maintenance work on the terminal.

Note: Desk set — if the control or telephony boards are non-functional, replace the entire set.

Alarms list

The following table lists the alarm codes, their causes, and possible solutions.





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Alarm	Description and action
0	Handset discontinuity
	<p>Indicator: There is a discontinuity in the handset receive circuit. Can be caused by:</p> <ul style="list-style-type: none"> • severed handset cord • handset cord failure • connector loose at telephony PCP
	<p>Action:</p> <ol style="list-style-type: none"> 1. Check the connector. 2. Inspect the handset/cord for damage. 3. If problem persists, plug in spare handset on telephony PCP <ul style="list-style-type: none"> • If you hear dialtone on the spare set, replace the handset. • If you don't hear dialtone on the spare set, replace the telephony PCP and perform a table download.
1	Telephony board not responding
	<p>Indicator:</p> <p>There is a communication problem with the telephony PCP, triggered by:</p> <ul style="list-style-type: none"> • query time out by a control PCP while waiting for response from telephony PCP • problem with connector between the telephony and control PCPs <p>Display reads: Telephony board not responding</p> <p style="text-align: right;">Continues on the next page</p>





Terminal alarm messages — 65

Alarm	Description and action
Alarm 1	<p>Action:</p> <ol style="list-style-type: none"> 1. Check line voltage and polarity. 2. Check the connector between the telephony and control PCPs. 3. Make a call. 4. If call can't be made, replace the telephony PCP, and perform a table download.
2	SAM not present
	<p>Indicator: The terminal is unable to detect an SAM during its power-up sequence.</p>
e-purse terminals	<p>Action: Insert a SAM into the first socket on the SAM daughter board attached to the control PCP. The number is marked on the board.</p> <ul style="list-style-type: none"> • If a SAM is already present, remove it, clean it, then try powering up again. • If the error continues, perform a forced download to re-establish the pertinent tables. • If the error continues, replace the SAM. Preserve the SAM you removed according to your company procedures.
3	EPM/SAM locked out
e-purse terminals	<p>Indicator: This error relates to SAMs which require PINs. For SAMs that do not have PINs, this error would indicate a faulty SAM.</p>
	<p>Action: Replace the SAM.</p>





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Alarm	Description and action
4	SAM expired
	Indicator: The SAM reached its internal expiry date.
e-purse terminals	Action: 1. Upload transaction records to the collection center. 2. Replace the SAM.
5	SAM transaction threshold reached
	Indicator: The SAM module has reached the limit of records it can contain. This indicates the SAM is wearing out.
e-purse terminals	Action: 1. Upload the transaction records to the collection center. 2. Replace the SAM.
6	Unable to reach collection system on primary number
	Indicator: Occurs when a terminal attempts to upload records but cannot connect to the collection system.
	Action: None. After a configured number of retries, the terminal switches to the alternate number. To manually revert back to the primary number, perform a forced download.





Terminal alarm messages — 67

Alarm	Description and action
8	Power fail
	<p>Indicator:</p> <p>This alarm is recorded if the terminal is without power long enough to lose its memory. In this case, when the power is restored, the terminal calls into the Millennium Manager to retrieve a new set of tables and register the alarm.</p> <p>When the terminal first powers up, in this instance, the VFD displays out of service until the tables are retrieved.</p>
CDRs will be lost	<p>Action:</p> <ul style="list-style-type: none"> • If the terminal fails to call in, this may indicate a continuing problem and require a site visit. • If the terminal was unable to restart, check the outside line. • Check the terminal for vandalism. • Check the control PCP using the craft interface. • If the tests fail, replace the control PCP and run the INSTALL routine. • If the tests pass, force a table download.
9	Display not responding
	<p>Indicator:</p> <p>There is a VFD communication problem. This may cause the display to freeze and the terminal to go out of service.</p> <p style="text-align: right;">Continued on the next page.</p>





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Alarm	Description and action
9	<p>Action:</p> <ol style="list-style-type: none"> 1. Check the display ribbon cable; if damaged, replace display. 2. If there appears to be no damage: <ol style="list-style-type: none"> a) Disconnect the power and connect a spare VFD to the control PCP connector. b) Reconnect the power. c) If the spare VFD works, replace the VFD. 3. If the problem continues, replace the control PCP and run the INSTALL routine.
10	Voice synthesis not responding
	<p>Indicator:</p> <p>There is a voice prompt problem. Possibly the voice chip is damaged or not fully seated.</p>
	<p>Action:</p> <ol style="list-style-type: none"> 1. Inspect the voice chip for damage and check that it is fully seated. 2. If the problem continues, replace the control PCP and perform INSTALL routine. 3. If the INSTALL fails, replace the telephony board.
11	Unable to reach collection system on alternate number
	<p>Indicator:</p> <p>A terminal attempts to upload records using the alternate collection system number, but fails to do so.</p> <p style="text-align: right;">Continued on the next page.</p>





Terminal alarm messages — 69

Alarm	Description and action
11 e-purse terminals	<p>Action:</p> <p>This could indicate a busy modem or trouble at the collection system.</p> <ul style="list-style-type: none"> • The terminal will re-try the transmission, or the maintenance person will re-try the transmission through the craft interface. • If the connection still cannot be made, contact the system administrator of the collection system and confirm the status of the modems. • If the craftsperson is on-site, force a table download to return to the primary number and try again.
12	Card Reader blocked alarm
	<p>Indicator: One or both of the card reader sensors are activated on-hook or in the off-hook-idle state.</p> <p>When the obstruction is removed, the terminal sends an un-alarm message.</p>
MTR 1.9 and later terminals	<p>Action:</p> <p>If the alarm does not clear itself, check the card reader for a forgotten card or debris.</p> <p>If a non-reloadable zero-value smart card is left in the card reader, the terminal may send this alarm rather than sounding the smart card alert, depending on how the terminal is configured.</p> <p>Terminals which accept e-purse reloadable cards should be configured to sound the smart card alert for zeroed-out cards.</p>





70 — Terminal alarm messages

Alarm	Description and action
16	CDR checksum error
17	Statistics checksum error
18	Terminal table checksum error
19	Other data checksum error
	Indicator: Data on the control PCP is corrupted.
CDRs may be lost	Action: Initiate the memory check (636). <i>Passed test:</i> monitor for other errors. <i>Failed test:</i> Replace the control PCP and perform INSTALL.
20	CDR list full
	Indicator: The call detail records list is full. If the terminal is unable to call the Millennium Manager, it goes out of service. The terminal tries to call in periodically. When it succeeds, it sends the alarm and uploads the CDRs. The terminal remains out of service until the list is properly uploaded.
	Action: None





Terminal alarm messages — 71

Alarm	Description and action
21	Bad EEPROM
	Indicator: The terminal failed to read and write to the EEPROM on the control PCP. Information stored on the EEPROM includes the Millennium Manager and terminal numbers.
CDRs may be lost	Action: 1. Check connectors to the control PCP. 2. If the problem continues, replace the control PCP and run the INSTALL routine.
22	Control microprocessor RAM contents lost
	Indicator: The terminal memory test resulted in a checksum error. The memory has been corrupted by either: <ul style="list-style-type: none"> • a loss of supplementary power and super capacitor backup • a control PCP chip problem.
CDRs may be lost	Action: 1. Perform a craft interface memory check. 2. If the terminal fails the test, replace the control PCP and run the INSTALL routine.





72 — Terminal alarm messages

Alarm	Description and action
23	Control microprocessor RAM defective
	Indicator: The terminal failed to write to a block of memory and read it back.
	Action: Replace the control PCP and run the INSTALL routine. (CDRs may be lost)
24	Station access cover
	Indicator: The front housing was opened without first entering an access code and PIN. This may indicate: <ul style="list-style-type: none"> • vandalism at the terminal • a craftsman opened the housing without entering the proper codes
	Action: <ol style="list-style-type: none"> 1. Check the terminal for vandalism. 2. Check the bolts holding the housing tie-bars. Ensure that the plates are engaging the actuator on the rear terminal PCP. 3. If the problem continues, replace the rear terminal PCP.
25	Stuck button
	Indicator: The terminal detected a malfunctioning or stuck button.
	Action: <ol style="list-style-type: none"> 1. Check all buttons for debris. 2. Clean the buttons. 3. Check the cable from the keypad PCP. 4. If the problem continues, replace the upper bezel assembly.





Terminal alarm messages — 73

Alarm	Description and action
27	Cash box threshold met
	Indicator: The volume of the cash box reached a predetermined threshold. The terminal maintains normal operation.
	Action: Arrange for a cash box collection.
28	Coin box cover opened
	Indicator: The coin compartment lock has been open longer than the time-out period. A switch in the vault controls this alarm.
	Action: <ol style="list-style-type: none"> 1. Check the terminal for vandalism. 2. If the problem continues, replace the vault security PCP. 3. Adjust the switch actuator so it operates properly, locked and unlocked. 4. Simulate a cash box collection.
29	Cash box removed
	Indicator: The cash box has been removed without unlocking the coin vault lock. <ul style="list-style-type: none"> • A switch on the vault security board detects the presence of the coin box and the terminal goes out of service. • This alarm may be generated accidentally if the coin compartment lock is locked before the coin box is replaced or if the collection takes too long before the box is replaced. • The alarm may occur if the coin box does not contact the switch actuator. <p style="text-align: right;">Continued on next page.</p>





74 — Terminal alarm messages

Alarm	Description and action
29	Action: <ol style="list-style-type: none">1. Check the terminal for vandalism.2. Check that the coin box is not bent or damaged and is fully seated and engaging the switch actuator.3. If the problem continues:<ol style="list-style-type: none">a) Replace the vault security PCP.b) Simulate a coin collection.c) Insert a new coin box.
30	Cash box full
	Indicator: This alarm follows the coin box alarm 27. The terminal goes out of service and displays Card Service only or Coin Service not Available . This alarm can be caused by: <ul style="list-style-type: none">• the coin box threshold has been met and a coin jam occurs.• the coin box volume is more than 100%
	Action: <ul style="list-style-type: none">• If a coin jam cannot be found and the coin box is not full, contact the Millennium Manager administrator to check the threshold.• If the coin box actuator switch is defective, the terminal may not have detected the last coin collection. The terminal will not return to normal operation until it can detect a valid collection. <ol style="list-style-type: none">1. Simulate a coin collection and insert a new coin box. <p style="text-align: right;">Continued on the next page.</p>





Terminal alarm messages — 75

Alarm	Description and action
30	2. If the problem continues: a) Replace the vault security board. b) Simulate a coin collection. c) Insert a new coin box.
31	Validator jam
	Indicator: The validator detected a blockage or there is a defective sensor. If either sensor is blocked, the terminal monitors it. If it stays blocked, the VFD displays Card Service only or Coin Service not available and sends the alarm. If the blockage clears, service resumes.
	Action: 1. Check the validator for blockages caused by debris or jammed coins. 2. If the problem continues: a) Upload the CDRs b) Uninstall the terminal c) Replace the validator d) Perform the INSTALL routine. 3. If the problem still exists: a) Replace the control PCP. b) Perform the INSTALL routine.





76 — Terminal alarm messages

Alarm	Description and action
32	Escrow jam
	<p>Indicator:</p> <p>The escrow detected a blockage or there is a defective sensor. Sensors are located:</p> <ul style="list-style-type: none">• at the top opening in the escrow.• at each exit of the escrow• by the escrow bucket. <p>The terminal monitors the blockage. If it does not clear, the terminal stops coin service and sends the alarm. If the blockage clears, the terminal resumes service.</p> <p>If blocked, the escrow cycles its motor to try to clear the problem. If this works, the terminal puts itself back into service.</p>
	<p>Action:</p> <ol style="list-style-type: none">1. Check the escrow for blockages.2. Check the ribbon cable for damage.3. If the problem continues:<ol style="list-style-type: none">a) Upload the CDRs.b) Uninstall the terminal.c) Replace the escrow.d) Perform the INSTALL routine.4. If the problem still exists:<ol style="list-style-type: none">a) Replace the control PCP.b) Perform the INSTALL routine.





Terminal alarm messages — 77

Alarm	Description and action
33	Validator hardware failure
	<p>Indicator:</p> <p>When the validator resets, is powered on or performs a self check, a number of parameters are checked, including ribbon cable continuity and the middle runway sensors (coils). If any of these are not operating correctly, OR if the memory is corrupted, the validator produces this alarm.</p>
	<p>Action:</p> <ol style="list-style-type: none"> 1. Upload the CDRs and perform the INSTALL routine. 2. Perform the coin test. 3. If the test fails, check for blockage in the main runway. <p>If problems persist</p> <ol style="list-style-type: none"> 4. Replace the validator. 5. Run the INSTALL routine.
34	Central office (CO) line check failure
	<p>Indicator:</p> <p>The terminal failed to detect line voltage or dial tone and goes out of service</p>
	<p>Action:</p> <p>Follow the CO line flowchart:</p> <ol style="list-style-type: none"> 1. Check the outside CO line for adequate voltage and dialtone. 2. Check the ribbon cables and wiring. 3. Check the connections to the PCPs <p style="text-align: right;">Continued on the next page.</p>





78 — Terminal alarm messages

Alarm	Description and action
34	<ol style="list-style-type: none">4. Check the handset by connecting a test unit to the telephony PCP and performing the CO line test.5. Check the rear terminal board by connecting a test unit.6. If the problem continues:<ol style="list-style-type: none">a) Upload CDRs.b) Replace the telephony PCPc) Perform an download.
35	Dialog failure
	Indicator: <p>The terminal failed to complete a call to the Millennium Manager after the allowable number of failures. There is a problem with one of the following:</p> <ul style="list-style-type: none">• modem (all modems might be busy)• Millennium Manager might be down• terminal modem might be faulty
	Action: <ol style="list-style-type: none">1. Check that the terminal is dialing the correct Millennium Manager number.2. Wait a few minutes; make a data call to determine if the modem answers, i.e. attempt a card or coin rate request call.3. If the modem still does not answer, call and check the system status.4. Check the CO line for tip and ring ground, tip/ring cross. <p style="text-align: right;">Continued on the next page.</p>





Terminal alarm messages — 79

Alarm	Description and action
35	<p>5. If contact is still not established, re-install the terminal using an alternate Millennium Manager number.</p> <p>At this point, any CDRs resident in the memory at the time of the failure will be lost. Report this to the system administrator.</p> <p>6. If the alternate number does not work, replace the modem chip on the control PCP and run the INSTALL routine.</p>
99	Un-alarm
	<p>Indicator:</p> <p>The terminal returned to normal after it had been in an Out of service state. Information alarms do not cause an un-alarm when cleared.</p> <p>Informational alarms are those which do not put the terminal out of service.</p>
	Action: None





80 — Terminal alarm messages





Craft interface error codes

The following list describes the error codes that the craft interface displays. These codes help to pinpoint problems and indicate the actions necessary to correct them.

For detailed instructions about troubleshooting and parts replacement, refer to the standard terminal documentation.

Note: Desk set — if the control board is non-functional, replace the set.



Maintenance warning

Ensure you have read the section **Before you start** on page 3 before you do any maintenance work on the terminal.

Errors list

The following table lists the error codes and possible solutions.





82 — Craft interface error codes

Error code	Occurrence Description Action
00 -04	<p>When: After successful download. 01 – Card or Desktop terminal, 02 – Multi-pay or large-screen terminal 03 – Coin basic terminal 04 – Inmate terminal</p> <p>Action: None.</p>
11	<p>When: Memory check, restricted mode. Occurs during a software checksum error.</p> <p>Description: A non-fatal board memory error.</p> <p>Action: None, the error is self-clearing. If it does not clear, re-install.</p>
12	<p>When: Memory check.</p> <p>Description: A non-recoverable error in the terminal, such as physical damage to the RAM.</p> <p>Action: Replace control PCP.</p> <p>CDRs may be lost</p>
21	<p>When: Call to the Millennium Manager.</p> <p>Description: Indicates no dial tone. Occurs during call set up during a table download.</p> <p>Action: Check for dial tone. Refer to: CO troubleshooting.</p>





Craft interface error codes — 83

Error code	Occurrence Description Action
22	When: Call to Millennium Manager.
CDRs may be lost	<p>Description: The Millennium Manager or all modems are busy. Occurs during setup when downloading tables.</p> <p>Action:</p> <ol style="list-style-type: none"> 1. Try calling again. If several attempts fail, call the Millennium Manager and listen for a modem tone. When the tone is heard, retry the download. 2. If the modem tone cannot be heard, the problem is not in the terminal. Contact the system administrator to confirm the system and modem pools are operating. 3. If the download is still unsuccessful, replace control PCP and rerun the INSTALL routine.
23	When: Call to the Millennium Manager.
CDRs may be lost	<p>Description: The carrier was lost. The terminal was connected, but the Millennium Manager dropped the carrier.</p> <p>Action:</p> <ol style="list-style-type: none"> 1. Try calling again. 2. If the problem persists, call the Millennium Manager to confirm that the system, modems, and telephone line are okay. 3. If all three are operating, try the download one more time.
Action continues on the next page.	





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Error code	Occurrence Description Action
23	If still fails: 4. Uninstall the terminal. 5. Replace the control PCP. 6. Run the INSTALL routine.
24	<p>When: Call to Millennium Manager.</p> <p>Description: A data transmission problem with the Millennium Manager.</p> <ul style="list-style-type: none"> • If the alarm occurs immediately after Download in Process displays, it indicates that the terminal ID was not downloaded to the Millennium Manager • If the alarm occurs after Download in Process has displayed for at least 30 seconds, it indicates a transmission problem with the Millennium Manager <p>CDRs may be lost Action:</p> <p>If the tables are not in the Millennium Manager, call the operating company clerk and ask to have the terminal added to the system.</p> <p>In the case of the second scenario:</p> <ol style="list-style-type: none"> 1. Try calling again. 2. If the problem persists, contact the system manager to confirm the terminal is properly configured. 3. Try the download again.
Action continues on the next page.	





Craft interface error codes — 85

Error code	Occurrence Description Action
24	If the download is still unsuccessful: 4. Uninstall the terminal. 5. Replace the control PCP. 6. Run the INSTALL routine.
25	When: Call to Millennium Manager. Usually occurs during the call set-up when obtaining a table download.
	Description: Indicates the Millennium Manager failed to answer the call and the wait time expired.
	Action: Refer to error code 23 .
26	When: Call to Millennium Manager. Usually occurs during the call set-up when obtaining a table download.
	Description: There is no ring-back signal.
	Action: Refer to error code 23 .
31	When: Millennium Manager download. Description: The terminal requested an abort command during a download.
	Action: Refer to error code 23 .
32	When: Millennium Manager download, during the INSTALL Description: An incorrect terminal type was downloaded.
Action continues on the next page.	





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Error code	Occurrence Description Action
32	Action: Retry the download. Contact the Millennium Manager and confirm the telephone number of the terminal and the download setup.
33	When: Millennium Manager download.
	Description: An attention call-back was received during the download.
	Action: None. The terminal will call in.
34	When: Millennium Manager download, installation mode.
	Description: A required table not present.
	Action: Contact the Millennium Manager to confirm the tables are properly configured.
35	When: Millennium Manager download, installation mode.
	Description: Indicates the CDRs are still present after the download was completed.
	Action: Retry the download.
36	When: Millennium Manager download.
	Description: A program logic error.
	Action: Retry the download.





Craft interface error codes — 87

Error code	Occurrence Description Action
41	When: Central Office (CO) line check.
	<p>Description: No voltage is present.</p> <p>Action:</p> <ol style="list-style-type: none"> 1. Check the CO line for voltage. <ul style="list-style-type: none"> • If the line voltage has been lost, follow the operating company procedures for restoring power. • If the line is okay, check that the handset plug is fully seated in the jack on the telephony PCP, and the tip and ring connections are secure. 2. If the test still fails, connect a spare rear terminal PCP to the line and to the control PCP. 3. If the test still fails, replace the telephony PCP and do a table download. 4. If the test still fails, replace the control PCP and run the INSTALL routine.
42	When: Central office (CO) line check.
	<p>Description: Indicates the CO line test failed because there is no dial tone.</p> <p>Action:</p> <ol style="list-style-type: none"> 1. Check the CO line coming into the terminal for dial tone. <ul style="list-style-type: none"> • If the dial tone has been lost on the line, follow the operating company procedures for restoring the line. <p style="text-align: center;">Action continues on next page.</p>





88 — Craft interface error codes

Error code	Occurrence Description Action
42	<ul style="list-style-type: none"> • If the line is okay, check that the handset plug is fully seated in the jack on the telephony PCP, and that the tip and ring connections are secure on the rear terminal PCP. <ol style="list-style-type: none"> 2. If the test still fails, replace the telephony PCP and do a table download. <p>If the test still fails:</p> <ol style="list-style-type: none"> 3. Uninstall the terminal. 4. Replace the control PCP. 5. Run the INSTALL routine.
51	<p>When: Answer supervision test, installation or restricted mode — code 267.</p> <p>Description: Indicates the answer supervision test failed.</p> <p>Action:</p> <ol style="list-style-type: none"> 1. Retry the answer supervision test. 2. If after several attempts the problem still persists: <ul style="list-style-type: none"> • Use your butt-end and voltmeter (multimeter) in parallel to check for a reversal in polarity when a call is connected. • If the reversal is not seen. Contact the central office switch personnel and confirm that the correct switch options have been set for answer supervision. <p>Action continues on the next page.</p>





Craft interface error codes — 89

Error code	Occurrence Description Action
51	<p>Note: If answer supervision is not available for the line, you must install an inferred answer supervision (IAS) module.</p> <p>If you confirm that answer supervision is available on the line and the problem is still not corrected, try the following, retesting after each replacement:</p> <ol style="list-style-type: none"> 1. Replace the handset. <p>If that does not work:</p> <ol style="list-style-type: none"> 2. Upload the CDRs, if you have not already done so. 3. Uninstall the terminal. 4. Replace the telephony and control PCPs. 5. Run the INSTALL routine.
61	<p>When: Coin unit test, installation or maintenance mode.</p> <p>Description: A coin validator error has occurred.</p> <p>Action:</p> <ol style="list-style-type: none"> 1. Check the cable connections to the escrow unit and control PCP. 2. Retry the test. <p>If the problem persists:</p> <ol style="list-style-type: none"> 3. Upload the CDRs if you have not already done so. 4. Uninstall the terminal. 5. Replace the coin validator. 6. Run the INSTALL routine. <p style="text-align: center;">Action continues on the next page.</p>





90 — Craft interface error codes

Error code	Occurrence Description Action
61	<p>Action:</p> <ol style="list-style-type: none"> 1. Check the cable connections to the escrow unit and control PCP. 2. Retry the test. <p>If the problem persists:</p> <ol style="list-style-type: none"> 3. Upload the CDRs if you have not already done so. 4. Uninstall the terminal. 5. Replace the coin validator. 6. Run the INSTALL routine. <p>If the test still fails</p> <ol style="list-style-type: none"> 7. Replace the escrow unit. 8. Run INSTALL routine.
62	<p>When: Coin unit test, installation or maintenance mode.</p>
	<p>Description: Valid but incorrect coin type.</p> <p>Action:</p> <ol style="list-style-type: none"> 1. Retry using several different coins. <p>If the problem persists:</p> <ol style="list-style-type: none"> 2. Upload the CDRs, if you have not already done so. 3. Uninstall the terminal. 4. Replace the coin validator. 5. Run the INSTALL routine.





Craft interface error codes — 91

Error code	Occurrence Description Action
63	When: Coin unit test, installation or maintenance mode.
	<p>Description: Invalid coin.</p> <p>Action:</p> <ol style="list-style-type: none"> 1. Retry using several different coins. <p>If the problem persists:</p> <ol style="list-style-type: none"> 2. Upload the CDRs, if you have not already done so. 3. Uninstall the terminal. 4. Replace the coin validator. 5. Run the INSTALL routine. <p>If test still fails</p> <ol style="list-style-type: none"> 6. Replace the escrow. 7. Run the INSTALL routine.
64	When: Coin unit test, installation or maintenance mode.
	<p>Description: Unknown code from coin validator.</p> <p>Action:</p> <ol style="list-style-type: none"> 1. Check the cable connections to the escrow unit and control PCP. 2. Retry the test. <p>If the problem persists:</p> <ol style="list-style-type: none"> 3. Upload the CDRs. 4. Uninstall the terminal. 5. Replace the coin validator. 6. Run the INSTALL routine. 7. If test still fails, replace the escrow. 8. Run the INSTALL routine.





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Error code	Occurrence Description Action
65	When: Coin unit test, installation or maintenance mode.
	Description: Time-out while waiting for a coin.
	Action: Retry test. Insert coins more quickly.
66	When: Coin unit test, installation or maintenance mode.
	Description: EEPROM checksum error.
	Action: 1. Reinstall the terminal. If the problem persists: 2. Upload the CDRs. 3. Uninstall the terminal. 4. Replace the coin validator. 5. Run the INSTALL routine. If test still fails 6. Replace the escrow. 7. Run the INSTALL routine.
67	When: Coin unit test, installation or maintenance mode.
	Description: Validator jam error.
	Action: 1. Check for blockages in the coin validator and escrow unit. If the problem persists: 2. Upload the CDRs. Action continues on the next page.





Craft interface error codes — 93

Error code	Occurrence Description Action
67	3. Uninstall the terminal. 4. Replace the coin validator. 5. Run the INSTALL routine. 6. If test still fails, replace the escrow. 7. Run the INSTALL routine.
68	When: Coin unit test, installation or maintenance mode.
	Description: Escrow jam error.
	Action: 1. Check for blockages in the escrow unit. If the problem persists: 2. Upload the CDRs. 3. Uninstall the terminal. 4. If test still fails, replace the escrow. 5. Run the INSTALL routine.
71	When: Download procedure.
	Description: Indicates possible read or write problem with the EEPROM
	Action: Replace the control PCP.





94 — Craft interface error codes

Documentation

This guide references the Millennium terminals installation, operation, and maintenance suite, as listed below:

Title	Order code
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All terminals

Millennium terminals provisioning guide	A0685011
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Millennium terminals: using the craft interface	P0883893
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Millennium terminals: maintenance troubleshooting	P0883894
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Millennium terminals pocket troubleshooting guide	P0883895
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Multi-pay-based terminals

Millennium Multi-pay-based terminals: installing terminal hardware	P0883896
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Millennium Multi-pay-based terminals: replacing parts	P0883897
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Card-based terminals





Craft interface error codes — 95

Title	Order code
Millennium Card-based terminals: installing terminal hardware	P0883898
Millennium Card-based terminals: replacing parts	P0883899
Desk terminals	
Millennium Desk terminals: installing and replacing hardware	P0883900
Also available:	
Accessory kit: binder, cover, and spine	A0737727
Complete assembly kit (one each of all modules)	A0737720
Multi-pay terminal documentation kit	A0737722
Card terminal documentation kit	A0737723
Desk terminal documentation kit	A0737725





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Notes

