

Application Module^X Customer Release Guide

AX11-490

***Application Module^X
Customer Release
Guide***

**AX11-490
Release 110
7/95**

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About This Publication

The Application Module^X Customer Release Guide provides

- an overview of Application Module^X (A^XM) functionality,
- an overview on Release 100 functions,
- an overview on new functionalities that come with the Application Module^X, Release 110,
- revisions of TDC 3000^X software with which it will work,
- minimum hardware and firmware revisions and minimum memory sizes for related circuit boards,
- any special considerations when using the product,
- directions to the installation instructions,
- procedure to configure additional module memory, and
- problem reporting procedures, should any problems occur during the installation, migration, or ongoing use of the Application Module^X.

The A^XM is compatible with TDC 3000^X Software Release 430.6a and later R43x releases, or TDC 3000^X Software Release 500.0.44 and later R5xx releases.

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Acronyms

AM	Application Module
A ^X M	Application Module ^X
CD-ROM	Computer Disk Read Only Memory
CDS	Custom Data Segment
CL	Control Language
CLI	Command Line Interface
DAT	Digital Audio Tape
EDB	External Data Block
FORTRAN	FORmula TRANslation programming language
GB	Gigabyte (1 billion bytes)
HP-UX	Hewlett-Packard UNIX
HVTS	Hardware Verification Test System
I/O	Input/Output
LCN	Local Control Network
LED	Light Emitting Diode
MAU	Medium Attachment Unit
Mw	Megaword (1 million words)
NCF	Network Configuration File
NOX	NO eXchange
OpenDDA	Open Data Definition and Access
PAR	Product Anomalies Report
POSIX	Portable Operating System Interface*
PSDP	Processor Status Data Point
RAM	Random Access Memory
SMCC	System Maintenance Command Center
TAC	Technical Assistance Center
US	Universal Station
U ^X S	Universal Station ^X
WSI	Workstation Interface

References

Publication Title	Publication Number	Binder Title	Binder Number
<i>Application Module^X System Administration</i>	AX11-400	Application Module ^X	TDC 2094
<i>Application Module^X Troubleshooting</i>	AX13-400	Application Module ^X	TDC 2094
<i>Application Module^X Service</i>	AX13-410	Application Module ^X	TDC 2094
<i>Application Module^X User Guide</i>	AX09-400	Application Module ^X	TDC 2094
<i>Application Module^X and OpenDDA Specification and Technical Data</i>	AX03-400	Application Module ^X	TDC 2094
<i>CL/AM Reference Manual</i>	AM27-410 (for R43x) or AM27-510 (for R500)	Implementation/ Application Module- 2	TDC 2035-2
<i>OpenDDA User's Guide</i>	DD11-100	OpenDDA	TDC 680
<i>OpenDDA Reference Manual</i>	DD27-100	OpenDDA	TDC 680
<i>OpenDDA Customer Release Guide</i>	DD11-190	OpenDDA	TDC 680

Hewlett-Packard documentation (on CD-ROM)

Section 1 – Contents of the Release

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1.1 Overview

Product description

The Application Module^X (A^XM) provides a dual processor architecture, with the Application Module (AM) providing a reliable and secure link to the LCN, and a Hewlett-Packard PA-RISC coprocessor running the HP-UX operating system.

The coprocessor provides an open environment for the development and execution of custom control applications provided by Honeywell or third-party sources, or applications created by the customer.

The Application Module^X can be used in different ways, from a “black box” controller, which comes factory-loaded with one or more applications that can start automatically when the A^XM is brought up, to a sophisticated multi-user development platform and execution engine for multiple control platforms.

Hardware components

The A^XM can be configured in a base form, or with one or more options included. The base and the options are shown in Table 1-1.

Continued on next page

1.1 Overview, Continued

Hardware components, continued

Table 1-1 Base and Optional AXM Hardware

Base AXM Hardware	AXM Hardware Options
K2LCN with 4 Mw memory (R430 only)	K2LCN with 8 Mw memory
K2LCN with 8 Mw memory (R430 or R500)	HMPU with 4 Mw memory (R430 only)
	HMPU with 6 Mw memory (R430 or R500)
	K4LCN with 8 Mw memory (R500 only)
	K4LCN with 16 Mw memory (R500 only)
64 MHz PA-RISC processor (on WSI2 board)	100 MHz PA-RISC processor
525 MB hard drive	1 GB hard drive
	Provision for two hard drives on the hard drive tray (2 GB Max. total)
32 MB RAM	64 MB or 128 MB RAM
5-slot chassis	10-slot chassis

1.2 AXM Functionality

Architecture

The AXM resides on the LCN and has an AM front end. It has all the standard AM alarming, CL (background and foreground), CDS data structures, messaging, Regulatory Control, and other point processing capabilities (input/output connections).

The heart of the Application Module^X is the tightly coupled integration of workstation technology with the LCN. Since it utilizes the standard Application Module as its base functional platform, it provides integration and compatibility with the current LCN technology. Additionally, the AXM provides the operating environment of HP-UX and POSIX-compliant interfaces to further enhance the total operating environment by leveraging the use of state-of-the-art commercial software.

LCN Release 430.6a or 500.0.44 required

Although the Application Module^X is an LCN release independent device, the LCN must be running on software release 430.6a or 500.0.44 or later in order for the AXM to function properly.

1.3 Release 100 Functions

Status information

User visibility of CL-initiated X-side applications status and initiation queue status has been implemented as customer accessible CL extensions.

Statistics on communication traffic between the dual processors is provided on the LCN side, by PSDP parameters.

Security

Three levels of security for X-side data stores to the LCN are provided by an engineer key level accessible LCN PSDP parameter. Full write capability can be set only when the external load module XACCES has been configured for the A^XM node.

CL program change capability of the LCN security parameter is implemented as a customer accessible CL extension. A restart value for the LCN PSDP parameter is configurable on the X-side by the system administrator.

Only local X-side applications can directly read or write LCN data.

OpenDDA

The Control Engineer's interface to data access is called OpenDDA, which is included with the A^XM. This method of data access hides the raw data access from the user. By developing to this interface, the user is guaranteed compatibility to future platforms even though the underlying method of data access will likely change.

Programmer access to LCN data

Application programmers on the X-side will be able to access LCN data without knowing the details of the LCN access mechanism. The application programmer specifies a mapping of LCN point.parameters to program local variables.

Operating system independence

The A^XM has a failover feature (similar to the U^XS) where the two operating systems are running independently of each other, and failure of one will not affect the operation of the other. The only impact would be message and data interchange between the two operating systems.

Synchronous operation of CL and X-side tasks

The coprocessing capabilities of the A^XM allow background CL programs to synchronously initiate X-side tasks. Once a synchronous task is initiated, the background CL will go into suspension (wait) until the X-side task has been initiated, and has responded with an indication of completion.

The X-side task initiation capability is implemented as a customer accessible CL extension, equivalent to the already existing CL extensions, such as file I/O or math library.

1.4 Release 110 Enhancements

OpenDDA programming languages

For Release 110, the available programming languages are FORTRAN, ANSI C, and C++. The ANSI C compiler provides C programming capability. With the C++ compiler, developers can program in either C or C++ programming languages.

Hot/Warm/Cold restart

Software Release 110 gives you the ability to select the restart mode when loading an A^XM, and permits the appropriate keylevel access checking when overriding the default restart mode.

When an A^XM is loaded by selecting the AUTOLOAD NET target, you can now select a new OVERRIDE DEFAULT target on the AM Node Status display. This would allow you to select a specific startup mode, either HOT LOAD, WARM LOAD, COLD LOAD, or NOPROC LOAD, instead of forcing you into a “COLD” startup mode.

For more information on Hot/Warm/Cold restarts, refer to the *Application Module Control Interfaces* manual (AM09-402 for R43x or AM09-502 for R500).

OpenDDA NOX Variables

OpenDDA “NOX” variables are not associated with any external entity. NOX stands for “NO eXchange” of data with an external source or destination. The variables can be used as place holders without the performance impact of transferring test values.

Here are a couple of ways you could use NOX variables.

- NOX variables can be written by one subroutine or function, and read by another, as a means of passing parameters.
 - Or NOX variables containing data, such as text, limits, or configuration can be read by an application program from an EDB that is separate from the source code.
-

1.5 Software Package

Initial software

If purchasing a new Application Module^X the initial standard software will (except as noted below) already be loaded and delivered on the hard drive within the A^XM. The OpenDDA developer's kit external-media software will be included and must be installed by the customer.

Software components

The table below lists the software components that make up the A^XM software package, along with the marketing kit number, and the Honeywell part number.

Table 1-2 A^XM Standard Software Components

Component Title	Mktg. Kit No.	Part No.
A ^X M HP-UX Software (DAT tape)		51150818
A ^X M personality (DAT tape)	MP-SWAXM1	51150817-430
Application Module (AM) Personalities (Bernoulli disk)(See Note 1)	MP-M4AM31	51152453
HP-UX 9.05 Patch Tape (R100 & R110)(DAT tape)	MP-ZHPP20	51152908
HP-UX 9.05 Install Tape (DAT tape)	MP-SWXBT2	51150548
HP-UX Tools Upgrade (DAT tape) (Optional—See Note 2)	MP-ZUXS11	51152906
OpenDDA developer's kit (DAT tape) (Note 3)	MP-SWDDA1	51151515

Note 1: The Application Module (AM) Personalities are required for external load modules AMCL06 and XACCES, but are delivered with the TDC 3000^X R430/R500 software.

Note 2: Installations using a U^XS R100 must have the additional DAT tape that includes the HP-UX Tools Upgrade. This upgrade enables A^XM R110 to be loaded via the Kermit interface.

Note 3: OpenDDA can be purchased separately for a remote HP-UX workstation.

Continued on next page

1.5 Software Package, Continued

Software options

The table below lists the software options available for the A^XM. Each option includes the license and media.

Table 1-3 A^XM Software Options

Software Description	Model No.
FORTRAN compiler only	MP-SWDDA2
C/ANSI C compiler only	MP-SWDDA3
C/C++ compiler only	MP-SWDDA4

1.6 Standard Hardware and Options

Hardware model numbers

The following table provides a list of available hardware and its respective model number for the Application Module^X. The hardware listed in this table is part of the minimum A^XM configuration.

Table 1-4 A^XM Hardware Model Numbers

Component Description	Model No.	Comments
A ^X M 64MHz K2LCN w/4 Mw	MP-AMXK01	Part of the minimum configuration for R430
A ^X M 64MHz K2LCN w/8 Mw	MP-AMXK03	Part of the minimum configuration for R500
32 MB RAM workstation memory	MP-XL32MB	Part of the minimum configuration
525 MB Hard Drive (Primary)	MP-XLAD01	Part of the minimum configuration
PIN Connector (MAU)	MP-PINC01	Part of the minimum configuration

If you do not have a Universal Station^X or a workstation with a CD-ROM reader and DAT drive to connect to your A^XM, and you would like to do your own system administration and development, you must purchase the workstation listed below, or an equivalent workstation.

Table 1-5 Optional HP 712 Workstation

Component Description	Model No.	Comments
A ^X M System Admin. and Development Station	MP-AMXST1	HP 712 workstation; includes CD-ROM drive and DAT drive

In addition, if you have the console furniture configuration (US or U^XS) to accommodate them, an optional DAT drive and/or CD-ROM drive are available that can be configured on your A^XM.

Continued on next page

1.6 Standard Hardware and Options, Continued

Hardware model numbers, continued

The table below contains a list of the HP-UX processor memory options.

Table 1-6 HP-UX Processor Memory Options

Component Description	Model No.	Comments
32 MB RAM workstation memory	MP-XL32MB	Base minimum configuration
64 MB RAM workstation memory	MP-XL64MB	Optional
128 MB RAM workstation memory	MP-XL128M	Optional

The table below contains a list of the HP-UX hard disk options.

Table 1-7 HP-UX Hard Disk Options

Component Description	Model No.	Comments
525 MB Hard Drive (Primary)	MP-XLAD01	Base minimum configuration
1 GB Hard Drive (Primary)	MP-XLAD02	Optional
Second 525MB Hard Drive	MP-XLAD03	Optional
Second 1GB Hard Drive	MP-XLAD04	Optional

Processor options - R430

The table below lists the base minimum processor and the optional processor configurations with HP-UX that can be used with TDC 3000^X software release 43x.

NOTE: K4LCN processor boards cannot be used with LCN software release 43x. K4LCN boards are only used with R500 and later.

Table 1-8 HP-UX/LCN Processor Options - R430

Component Description	Model No.	Comments
A ^X M 64 MHz K2LCN w/4 Mw	MP-AMXK01	Base minimum configuration for R430
A ^X M 64 MHz K2LCN w/8 Mw	MP-AMXK03	Optional for R430; Base minimum for R500
A ^X M 64 MHz HMPU w/4 Mw	MP-AMXH01	Optional
A ^X M 100 MHz K2LCN w/4 Mw	MP-AMXK07	Optional
A ^X M 100 MHz K2LCN w/8 Mw	MP-AMXK09	Optional
A ^X M 100 MHz HMPU w/4 Mw	MP-AMXH02	Optional

Continued on next page

1.6 Standard Hardware and Options, Continued

Processor options - R500

The table below lists the base minimum processor and the optional processor configurations with HP-UX that can be used with TDC 3000X software release 500 and later.

Table 1-9 HP-UX/LCN Processor Options - R500

Component Description	Model No.	Comments
A ^X M 64 MHz K2LCN w/8 Mw	MP-AMXK03	Base minimum configuration for R500; Optional for R430
A ^X M 64 MHz K4LCN w/8 Mw	MP-AMXK05	Optional
A ^X M 64 MHz K4LCN w/16 Mw	tbd	Optional
A ^X M 100 MHz K4LCN w/8 Mw	MP-AMXK11	Optional
A ^X M 100 MHz K4LCN w/16 Mw	tbd	Optional

1.7 Supporting Documentation

Documentation and its contents

In support of the Application Module^X, the following documents have been published and include the contents listed. Note the media on which the documentation is available.

Table 1-10 Supporting Documentation

Document	Media	Contents/Comments
<i>Application Module^X System Administration</i>	Paper Document	A ^X M system admin. tasks Basic HP-UX (supplemental) system admin. tasks
<i>Application Module^X Troubleshooting</i>	Paper Document	TDC 3000 ^X A ^X M problem isolation information
<i>Application Module^X Service</i>	Paper Document	Configuration and service information
<i>Application Module^X User Guide</i>	Paper Document	General information on the use of the A ^X M
<i>Application Module^X Customer Release Guide</i>	Paper Document	Contents of the software release, standard and optional hardware, special considerations when installing A ^X M, and problem reporting procedures
<i>CL/AM Reference Manual, Appendix I</i>	Paper Document	Use of the AMCL06 external load module
<i>OpenDDA User's Guide</i>	Paper Document	Information on the use of OpenDDA
<i>OpenDDA Reference Manual</i>	Paper Document	Detailed reference information on OpenDDA
<i>OpenDDA Customer Release Guide</i>	Paper Document	How to install and set up the configuration on OpenDDA, porting ABE applications, problem reporting
<i>Hewlett-Packard documentation</i>	CD-ROM	Multiple Hewlett-Packard manuals, covering editors, compilers, networking software, and other tools

Section 2 – Special Considerations

Section contents These are the topics covered in this section:

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2.1 Special Considerations - Details

Description of this section The Special Considerations section is designed to make the customer aware of special situations involving the A^XM, the circumstances of those situations, and any actions that can be taken to avoid, or eliminate, each situation.

Be sure to read all items in this section carefully, and apply as appropriate.

Reduced available memory Available user memory is reduced for an A^XM node as opposed to an AM node of comparable memory size with the same configuration by approximately 1,437,000 words for TDC 3000^X Release 430, and by 2,510,000 words for TDC 3000^X Release 500. This provides space for the increased functionality needed by A^XM.

Refer to Section 4.2, *Configuring Additional Module Memory* to address this issue, for both TDC 3000^X Release 430 and TDC 3000^X Release 500.

A^XM node startup At least one background CL task or one concurrent data access task must be configured in the NCF for successful A^XM node startup.

No A^XM redundancy The A^XM nodes cannot be arranged in redundant pairs.

Continued on next page

2.1 Special Considerations - Details, Continued

Use of yellow pages reduces performance

Honeywell does not recommend running yellow pages (NIS) on A^XM control nodes. Doing so may negatively impact data access performance.

Configure additional module memory

For R430.6a up to (but not including) R431 only: In order to allow migration of the existing user database in A^XM R110 (or A^XM R100) to the next planned A^XM release (R200), add 318,464 words to the additional module memory entry you already have, using page 3 of the A^XM node configuration page.

IMPORTANT: For existing A^XMs, prior to entering this additional module memory, check the PSDP parameter MEMFREE in the A^XM to make sure there is enough spare memory. If MEMFREE is less than 318,464 words, you should call Honeywell TAC to discuss your options (such as adding more memory).

The configuration procedure is described in Section 4.3 of this manual.

Migrating TDC 3000^X software from R430 to R431

Special Case - If you have performed the procedure to configure additional memory (See previous topic), and you are migrating the TDC 3000^X software from R430 to R431, you must remove the additional 318,464 words, since R431 does the additional memory procedure for you.

Loading A^XM with WSI2 interface off

When attempting to load an A^XM, with the WSI2 interface present but the SHUTDOWN switch is in the SHUTDOWN position, the A^XM will load, but it will only load with the standard AM personality.

To load this as an A^XM, you do not want the SHUTDOWN switch in the SHUTDOWN position.

Adding/changing out WSI2 board

If a WSI2 board is added or changed out, you must contact the Honeywell Technical Assistance Center to obtain a temporary license and enabling address, to be used until your new or updated license and enabling address arrive.

Section 3 – Installation Preparation

Section contents These are the topics covered in this section:

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3.1 What To Do Before Installing Your Software

Overview It is strongly suggested that people having one or more of the general functions below become very familiar with the contents of the listed documents, prior to installing an AXM.

Table 3-1 Source Information For AXM Functions

Function	Be familiar with the contents of ...
LCN or AXM Implementer	<i>CL/AM Reference Manual</i>
System Administrator	All AXM documentation
Maintenance/Technical Support	<i>Application Module^X Service</i> <i>Application Module^X Troubleshooting</i>
Application Module ^X user	<i>Application Module^X User Guide</i>

Hardware, firmware, and memory sizes There is no required change in hardware, firmware, or memory sizes for customers who are migrating from AXM Release 100 to Release 110 software within a given LCN release, such as R430 or R500.

For migration from AXM Release 100 on TDC 3000^X R43x to AXM Release 110 on TDC 3000^X R500, the minimum memory size increases to 6 Mw.

Section 4 – Installation

Section contents These are the topics covered in this section:

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4.1 Locating Installation Instructions

Where to find them The procedures for configuring additional module memory, a requirement described in the Special Considerations section, can be found in this section.

The detailed installation instructions for the AXM, including configuring AM external load modules such as AMCL06 and XACCES, are located in the *Application Module^X System Administration* manual.

The AMCL06 option comes in two variations, depending on which TDC 3000^X software you are running. See the Table below.

Table 4-1 AMCL06 Option - File Name Choices

IF you are using TDC 3000 ^X software...	THEN load ...
Release 430.6a	AMCL06
Release 431, or later R4xx version	AMCL06_1
Release 500.0.44	AMCL06
Release 500.0.45 and later	AMCL06_1

XACCES is configured using the same procedures as used for AMCL06. You can obtain further information on XACCES in the *Application Module^X User Guide*, AX09-400.

Continued on next page

4.1 Locating Installation Instructions, Continued

If you are upgrading to R110

TDC 3000^X software release 430.6a or 500.0.44 or later must be installed on your LCN system before using Release 110 of A^XM software. Upgrading from R100 to R110 is described in the *A^XM System Administration Manual*, Section 5.

CAUTION

When migrating from A^XM R100 software to R110 software using the A^XM HP-UX Software Tape, do NOT select all of the filesets when using UPDIST and UPDATE.

Follow the steps in Table 4-2 to select the proper filesets.

Table 4-2 Selecting Filesets on A^XM HP-UX Software Tape

Step	Action
1	On the Update Main Menu, CHOOSE <code>Select/View Partitions and Filesets ...</code>
2	SELECT <u>only the HONEYWELL-AXM partition</u> by typing <code>y</code> in the <code>selected</code> column
3	DESELECT all other listed partitions by typing <code>n</code> in the <code>selected</code> column
4	SELECT <code>Start Loading Now</code>

The above procedure loads only these filesets:

- XOPEN-AXM-COMM
- XOPEN-AXM-USER

Do not load any other filesets from the A^XM HP-UX Software Tape.

4.2 Configuring Additional Module Memory

Configure additional module memory

SKIP THIS PROCEDURE if

- you are installing a new A^XM. You will have performed these steps as a part of the normal installation, **or if**
- you are running TDC 3000^X software release 431 or later, **or if**
- you are running TDC 3000^X software release 500.0.44 or later.

PERFORM THIS PROCEDURE if you are upgrading your software from Release 100 to Release 110, anytime after the Release 110 software has been loaded, and you are using TDC 3000^X software release 430.6a up to (but not including) release 431.

In order to allow migration of the existing user database in A^XM R110 to the next planned A^XM release (R200), additional module memory must be configured in the NCF for the A^XM. The following procedure should be performed on each A^XM.

NOTE: Be sure you have reviewed the Special Consideration "Configure Additional Module Memory" prior to starting this procedure.

Table 4-3 Configuring Additional Module Memory in the NCF

Step	Action
1	At a US or U ^X S, install an NCF backup floppy or cartridge.
2	From the Engineering Main Menu, select <input type="text" value="SUPPORT UTILITIES"/> .
3	Select <input type="text" value="MODIFY VOLUME PATHS"/> .
4	Set the NCF Backup Path to the NCF backup media pathname: \$F _x >&ASY> (x = drive number)
5	Press [ENTER]
6	From the Engineering Personality Main Menu, select <input type="text" value="LCN NODES"/> .
7	A display will appear with a target for each node possible on the LCN. Verify that the configuration is in the ON-LINE mode in the upper right corner of the display. Select the target for the node number of the A ^X M that you wish to configure (you may need to use the Page Forward key to display the target for the desired A ^X M).
8	Select the <input type="text" value="MODIFY NODE"/> target.

Continued on next page

4.2 Configuring Additional Module Memory, Continued

Configure additional module memory, continued

Table 4-3 Configuring Additional Module Memory in the NCF, continued

Step	Action
9	<p>Page forward to page three.</p> <p>If you have TDC 3000^X software release 430, record and save the value in the box labeled <code>ADDITIONAL MODULE MEMORY (WORDS)</code>, then add 318464 to whatever value is currently in the block. (If it is blank, enter 318464) This extra 318,464 words of memory is for R430 ONLY!</p> <p>If you are upgrading to R431 or later, restore the value in this box to the original value that existed before you added the 318,464 words.</p>
10	Press the [ENTER] key.
11	Press [CTL][F1] to check the new NCF, and press [CTL][F2] to install the new NCF.
12	Press the [ENTER] key to confirm the install.
13	Return to the Engineering Personality Main Menu. A message will appear at the bottom of the display indicating the successful completion of the NCF installation.
14	Load the A ^X M node personality. The load will include the additional module memory that was configured.

Section 5 – Problem Reporting Procedures

Section contents These are the topics covered in this section:

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5.1 Overview

Introduction

When it comes to troubleshooting and successful diagnosis of a migration problem, understanding and recording what occurred before and during a failure is extremely important.

The following procedures should be used for reporting problems encountered during the upgrade.

5.2 Collect Failure Data

Overview

If a failure has occurred, specific data should be collected that will help in the diagnosis of the problem.

With the AXM, a failure could occur on either the AM-side (CL and LCN-related) or on the X-side (HP-UX, application program-oriented), and either side may still be running while the other has failed. Determine which side has failed before proceeding and obtain the related information as it applies.

If you are unsure, collect all of the information listed in this section.

If it's an X-side failure

Enter the following commands to show the version of the X-side software.

Table 5-1 Procedure To Identify Version of X-Side Software

Step	Action
1	ENTER <code>what /opt/DDA/bin/dda</code> (for OpenDDA)
2	ENTER <code>what /opt/TDC_Open/common/bin/xaccess</code> for the XACCESS security restart tool
3	ENTER <code>what /opt/TDC_Open/common/bin/cds_hdr</code> for the CDS header generation tool
4	ENTER <code>what /opt/TDC_Open/common/bin/lcndaemon743</code> Include for all AXM problems found.
5	ENTER <code>what /opt/TDC_Open/common/bin/cdsdaemon</code> Include for all AXM problems found.

Continued on next page

5.2 Collect Failure Data, Continued

If it's an X-side failure, continued

Also, include the following information:

Table 5-2 X-Side Failure–Data Collection

Information (or command)	Description
<code>/usr/adm/syslog</code>	The HP-UX system log file
Core dumps	Core dumps in your current working directory (non-CL-initiated applications)
<code>/users/axm/core</code>	Core dumps (CL-initiated applications)
<code>/var/opt/TDC_Open/common/CDS_daemon.log</code>	Daemon log file
<code>/core</code>	Provide only if the CDS daemon crashes and core dumps
<code>/var/opt/TDC_Open/common/LCN_daemon.log</code>	Audit trail log file
<code>/core</code>	Provide only if the LCN daemon crashes and core dumps

For OpenDDA subsystem PARs (Product Anomalies Report), please enclose the following additional information:

- A copy (electronic preferred) of the application's source file
- A copy of the application's definition file (.def)
- A screen dump, if using the Command Line Interface (CLI)
- A printout of the application's output file, if the error occurred during execution (.dda_out)

If using the "XACCESS" security restart utility, collect the following information:

Table 5-3 Failure Data Collection If Using XACCESS

Information (or command)	Description
Core	If the XACCESS utility core dumps; found in your current working directory.
<code>/etc/opt/TDC_Open/common/xaccess.cfg</code>	The XACCESS security restart file
Any messages printed to the terminal.	

Continued on next page

5.2 Collect Failure Data, Continued

If it's an AM side failure Include versions for the following:

- Personality version (from SMCC when the node is loaded)
- All external load modules that are loaded (.LO)

Then, examine the symptom labels in this section,

- System or module working, but not properly,
- Node not responding,

and where applicable, use those procedures to collect failure data.

System or module working, but not properly

Perform the following steps as they apply to your situation.

Table 5-4 Steps To Take If You Have an Unknown Failure

Step	Action	Examples/Hints
1	Record system software release no.	R430.3 for example
2	Record all symptoms of failure.	Slow response from node Error indication on node
3	Record all user actions that occurred immediately before the failure.	Type of operation being performed, such as <ul style="list-style-type: none"> • Area database configuration • Point building • Building trend displays • Building graphic displays
4	Record the personalities being used.	Universal, engineering, operator, History Module, Application Module
5	Record error messages during the time of the error (in their entirety).	Real Time Journal printouts Event History Retrieval printouts
6	If custom graphic displays or user-written CL programs are involved, copy related information.	Schematic source files Related subpictures Related CL programs
7	If the problem is related to particular points, IDFs, or exception-build files, submit them to TAC.	
8	If you have the TLK1 Tool kit, use NODEPERF to print the screen of data shown for the node.	For use of Tool kit, see the <i>Customer Resource Manual</i> , Section 15.

5.2 Collect Failure Data, Continued

Node not responding

Perform Steps 1 through 8 in “System or module working, but not properly” earlier in this section, then perform the following steps as they apply to your situation.

Table 5-5 Steps To Take If Node Is Not Responding

Step	Action	Examples/Hints
1	Record state of LEDs on module control and processor boards.	
2	Record value in 3-digit display on processor board.	-191 for example.
3	Use SMCC to display Detailed Module Errors for the failed node, and print a copy of the display.	Displays last error in the personality.
4	Dump contents of memory to removable media, using dump function.	See <i>Engineer's Reference Manual</i> , Section 20. Note: Cartridge preferred. (New cartridge will be sent to customer)
5	Copy contents of !CSY directory from NET to removable media, using this command. CP NET>!CSY>*.* \$Fd>!CSY>=-D where d = destination drive	Cartridge preferred. Use same cartridge as in Step 4 of this procedure.
6	Obtain printout of board type and revision status of failed node. Reload failed node with same personality it had when it failed, then <ul style="list-style-type: none"> • Select SMCC (from Eng Main Menu) • Select REV/CONFIG Status • Perform a screen print 	
7	Print at least the last two pages of the Real Time Journal that showed the failure.	
8	Print Event History Retrieval for all system errors immediately before and during the time of the failure.	
9	If hardware error is suspected, run appropriate HVTS software.	See <i>Hardware Verification Test System</i> in <i>LCN Service - 2</i> binder.

5.3 Field Support Plan

Field support plan

To support the A^XM, the following field support plan is in place.

The field support and problem reporting information in this manual is specifically for customers who are supported by Honeywell service organizations residing in the continental United States.

If you are serviced by one of the many Honeywell Regions outside the continental United States, you must contact your local office to obtain the service contact information for your system.

Customers should appoint a liaison for reporting problems and asking questions of the Honeywell Technical Assistance Center (TAC). A customer focal point minimizes multiple calls to TAC for the same problem and develops a customer system expert.

Technical Training

Please refer to the *Automation College Catalog* for complete descriptions, appropriate prerequisites, course dates, and prices.

If you have additional questions regarding technical training issues, please contact your project manager, or the Honeywell Automation College in Phoenix, toll free 1 (800) 852-3211 [in Arizona (602) 313-5669].

Field Problem Resolution

- In the continental United States, the TAC group receives all requests for field support. TAC owns and maintains their own TDC 3000^X System, including all types of nodes such as the A^XM. TAC attempts to duplicate customer-reported problems on this equipment, as well as using it for training and system practice.
 - For customers within the continental United States serviced by Honeywell TAC in Phoenix, the method of reporting and resolving any problems uncovered in the field is as follows:
 - The person on-site should contact TAC, and only TAC, with all suspected system or documentation problems. Be sure to have accumulated all information that should be available before calling for assistance.
 - On the A^XM, TAC access is available through a modem interface. For this interface, we recommend you use a US Robotics Sportster 9600 (or equivalent) modem.
-

Continued on next page

5.3 Field Support Plan, Continued

Field Problem Resolution, continued

Table 5-6 Honeywell TAC Support Information

TAC Information	Telephone Numbers/Details
Honeywell TAC phone number (24 hours a day)	1 (800) 822-7673 -or- In Arizona: (602) 313-5558
7:00 a.m. through 4:00 p.m. m.s.t.	TAC dispatcher will route your call to the appropriate TAC engineer.
4:00 a.m. through 7:00 p.m. m.s.t.	Emergency calls go to an answering service, then an on-call TAC engineer responds to calls of a critical nature.

When calling, be sure to stress the relative seriousness of the problem using appropriate terms (for example, loss of view, emergency, production stopped, etc.).

- TAC gathers enough information to complete a Product Anomalies Report (PAR). TAC clarifies customer operational errors or documentation errors. If the problem is a documentation error, TAC turns in the documentation bug report. They help the customer gather enough data to reproduce and describe the problem.
- TAC then analyzes the problem. If TAC cannot analyze the problem, they work with the customer to gain enough information to identify the source of the problem. TAC and Engineering may attempt remote analysis if the problem cannot be defined in Phoenix. Analysis can be performed on-site if remote diagnosis is unsuccessful and the problem is a critical one.
- TAC gives the US Honeywell Software Release Center the PAR and tracks the problem priority and status for the customer.
- The customer is informed a PAR has been written and TAC communicates to the customer any work-arounds that apply to this problem.

Continued on next page

5.3 Field Support Plan, Continued

Field Problem Resolution, continued

- Engineering analyzes the problem, corrects it if reasonable to do so, retests the problem area, and ensures that the fix introduces no system problems. Engineering then puts the fix into the source, recompiles the source, regression-tests the product (or the system as required), and puts this corrected code into the next system Software Update for field distribution. (Note: The "source" may be a patch source file.)

If the problem is critical, modified software may be sent to the site to temporarily remedy the problem. A system Software Update, however, is the distribution technique for the final problem resolution.

The US Software Release Center is the single distribution point for TDC 3000^X LCN Module System Software, which includes the A^XM software. This ensures a file of customer names and their software revision exists. Additionally, this ensures that customers receive software updates as they become available.

Spare parts support

For customers within the continental United States, send purchase orders for spare parts to

Honeywell IAC
Parts Support Center - M/S 455
1100 Virginia Drive
Fort Washington, PA 19034

In an emergency, call 1 (800) 223-8947.

The Houston Depot contains all A^XM replacement parts for use by the U.S. region.

If a part fails at a customer site, the customer or Honeywell person calls the local Information Service Center (ISC) branch office. The branch office then arranges for the depot to send a spare to the site within 24 hours.

For emergency parts service after hours or on weekends, call the Houston Depot after-hours number at:

(713) 863-3331

Field Quality group

TDC 3000^X system hardware, firmware, and software must all be at the correct revision level to guarantee that they function together.

The Field Quality group ensures that all customer systems and spare parts, as well as the Spare Parts Depot, maintain their hardware at the correct revision level for the software release being shipped.

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BY TELEPHONE: In the U.S.A. use our toll-free number 1*800-822-7673 (available in the 48 contiguous states except Arizona. In Arizona dial 1-602-313-5558).

BY MAIL: Use this form. Detach, fold, tape closed, and mail to us.

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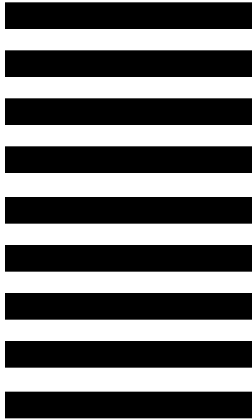
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