Honeywell

Application Module^{X} Customer Release Guide

AX04-200

Honeywell

Application Module^{X} Customer Release Guide

AX04-200
Release 200
7/95

Copyright, Notices, and Trademarks

Revision 04 – July, 1995

This document was prepared using Information Mapping® methodologies and formatting principles.

Honeywell
Industrial Automation and Control
Automation College
2820 West Kelton Lane
Phoenix, AZ 85023

(602) 313-5669

About This Publication

The Application Module^{X} Customer Release Guide provides

- an overview of Application Module^{X} (A^{X}M) functionality,
- an overview on functions that come with software Releases 100 and 110,
- an overview on new functionalities that come with the Application Module^{X}, Release 200,
- 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 de-configure additional module memory if migrating from Release 110, and
- problem reporting procedures, should any problems occur during the installation, migration, or ongoing use of the Application Module^{X}.

A^{X}M release 200 is compatible with TDC 3000^{X} Software Release 431.0 and later R43x releases, or TDC 3000^{X} Software Release 500.0.44 and later R5xx releases.

Table of Contents

Tables

Acronyms

AM ..... Application Module
A^{X}M ..... Application Module^{X}
CD-ROM ..... Computer Disk Read Only Memory
CDS ..... Custom Data Segment
CIO ..... Control Input/Output
CLI ..... Command Line Interface
CL ..... Control Language
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
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
Application Module^{X} System Administration	AX11-200	Application Module^{X}	TDC 2094
Application Module^{X} Troubleshooting	AX13-200	Application Module^{X}	TDC 2094
Application Module^{X} Service	AX13-410	Application Module^{X}	TDC 2094
Application Module^{X} User Guide	AX09-200	Application Module^{X}	TDC 2094
Application Module^{X} and OpenDDA Specification and Technical Data	AX03-400	Application Module^{X}	TDC 2094
CL/AM Reference Manual	AM27-410 (for R43x) or AM27-510 (for R500)	Implementation/ Application Module- 2	TDC 2035-2
Honeywell License Installation and Administration A^{X}M	LA20-200	Application Module^{X}	TDC 2094
OpenDDA User's Guide	DD11-200	OpenDDA	TDC 680
OpenDDA Reference Manual	DD27-200	OpenDDA	TDC 680
OpenDDA Customer Release Guide	DD04-200	OpenDDA	TDC 680

Hewlett-Packard documentation (on CD-ROM)

Section 1 – Contents of the Release

Section contents

These are the topics covered in this section:

1.1 Overview

Product description

The Application Module^{X} (A^{X}M) 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^{X}M is brought up, to a sophisticated multi-user development platform and execution engine for multiple control platforms.

1.2 A^{X}M Functionality

Functionality

The Application Module^{X} promotes the consistent open solutions evolution theme, since it is another LCN module with increased capabilities for additional advanced control and optimization applications.

The heart of the Application Module^{X} is the tightly coupled integration of workstation technology with the LCN. It utilizes the standard Application Module as its base functional platform, to provide the integration and compatibility with the current LCN technology. Additionally, the A^{X}M 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.

The A^{X}M 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).

LCN Release 431.0 or 500.0.44 required

Although the Application Module^{X} is an LCN release independent device, the LCN must be running on software release 431.0 or 500.0.44 or later in order for the A^{X}M to function properly.

Hardware components

The A^{X}M can be configured in a base form, or with one or more options included. The base and the options are shown below.

Table 1-1 Base and Optional A^{X}M Hardware

Base A^{X}M Hardware	A^{X}M Hardware Options
K2LCN with 4 Mw memory (R430 only) K2LCN with 8 Mw memory (R430 or R500)	K2LCN with 8 Mw memory 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

1.3 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^{X}M 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^{X}M. 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^{X}M has a failover feature (similar to the U^{X}S) 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^{X}M 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 Functions

OpenDDA programming languages

For Release 110, the available OpenDDA 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^{X}M, and permits the appropriate keylevel access checking when overriding the default restart mode.

When an A^{X}M is loaded by selecting the `AUTOLOAD NET` target, you can select an `OVERRIDE DEFAULT` target on the AM Node Status display. This allows 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* document.

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 Release 200 Enhancements

Base A^{X}M functionality

The following enhancements apply to the base A^{X}M functionality.

Table 1-2 Base A^{X}M Functionality Enhancements

Enhancement	Description
A^{X}M - Hibernate Function Support	This functionality provides the user the ability to force an X-side OpenDDA application, initiated by a background CL block, to remain in memory after the first invocation, without requiring subsequent invocations to re-initialize the OpenDDA application. Applications can resume execution at the appropriate entry point by receiving activate and terminate events from background CL blocks.
A^{X}M Robustness Improvements	The following robustness improvements have been made in A^{X}M R200: **Data Access Request Retry**: Recoverable data access errors are automatically retried. **LCN Access Priority:** Low priority non-control data access requests are prevented from interfering with higher priority requests.

Continued on next page

1.5 Release 200 Enhancements, Continued

OpenDDA enhancements

The following are enhancements that apply to OpenDDA.

Table 1-3 OpenDDA Enhancements

Enhancement	Description
Re-map CIO (Control Input/ Output) files	Re-mapping CIO files allows the developer to design generic applications. These applications can configure the CIO file based upon local needs without requiring a recompilation and linking of the original source code.
Array Data Transfer	OpenDDA will use a new API call which provides the performance benefit of reading and writing array data.
Dynamic Selection Sets	By dynamically changing the selection sets the developer can design generic applications. These applications can configure the set (an individual element or entire set) based upon local needs without requiring a recompilation and linking of the original source code.
Shared Library	Utilizing shared libraries on the UNIX system. This functionality will reduce the resource requirements (program size) for applications. This functionality will also simplify the migration effort from release to release and allow for consistent application behavior as libraries are modified.
Writing External IDs	Writing external IDs will help the developer to interact with generic programs on the LCN.
EDB EXTERR (External Error) Support	OpenDDA will provide the EXTERR definition. This function will prevent an OpenDDA application from aborting due to inconsistency errors in the data declaration.
Hibernating Applications	OpenDDA execution statement will allow an application to "pause" during its execution until it receives an event to resume processing.
Robustness Features	OpenDDA will provide additional robustness in handling errors, when opening channels, when monitoring the priority of applications, on retries for memory constraints, and during initialization. This functionality will increase the availability of an OpenDDA application.
Execution time Cache handles to External Data	OpenDDA will provide a caching mechanism for TDC 3000X Point Name Internal Data References. This functionality improves Dynamic Data Selection performance.
Cache Maintenance Tool	OpenDDA will provide a cache maintenance tool that allows users to manipulate entries in the cache.

Continued on next page

Licensing

The system includes a network license manager. This function provides license enforcement and monitoring of the following components.

Component	Description
OpenDDA commands	All command line interfaces
AXM personality	Node load operation

1.6 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^{X}M. 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^{X}M software package, along with the marketing kit number, and the Honeywell part number.

Table 1-4 A^{X}M 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)(Note 1)	MP-M4AM31	51152453
OpenDDA developer's kit (DAT tape)(Note 3)	MP-SWDDA1	51151515
HP-UX 9.05 Patch Tape (DAT tape)	MP-ZHPP20	51152908
HP-UX Tools Upgrade (Optional–See Note 2) (DAT tape)	MP-ZUXS11	51152906
Honeywell License Manager	none	51150583

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^{X}S R100 must have the additional DAT tape that includes the HP-UX Tools Upgrade. This upgrade enables A^{X}M R200 to be loaded via the Kermit interface.

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

Continued on next page

1.6 Software Package, Continued

Software options

The table below lists the software options available for the A^{X}M. Each option includes the license and media for that option.

Table 1-5 A^{X}M Software Options

Software Description	Model No.	Comments
OpenDDA developer's kit (Note 1)	MP-SWDDA1	No compiler
FORTRAN compiler only	MP-SWDDA2	License and media
C/ANSI C compiler only	MP-SWDDA3	License and media
C/C++ compiler only	MP-SWDDA4	License and media

Note 1: OpenDDA can be purchased separately for a remote HP-UX workstation.

1.7 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^{X}M configuration.

Table 1-6 A^{X}M 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

Continued on next page

Hardware model numbers, continued

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^{X}M, and you would like to do your own system administration and development, you must purchase the workstation listed below, or an equivalent workstation.

Table 1-7 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^{X}S) to accommodate them, an optional DAT drive and/or CD-ROM drive are available that can be configured on your A^{X}M.

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

Table 1-8 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 1-9 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

Continued on next page

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 3000X software release 43x.

NOTE: K4LCN processor boards cannot be used with TDC 3000X software release 43x. K4LCN boards are only used with R500 and later.

Table 1-10 HP-UX/LCN Processor Options - R430

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

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 1-11 HP-UX/LCN Processor Options - R500

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

1.8 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 1-12 Supporting Documentation

Document	Media	Contents/Comments
Application Module^X System Administration	Paper Document	A^{X}M system admin. tasks Basic HP-UX (supplemental) system admin. tasks
Application Module^X Troubleshooting	Paper Document	TDC 3000^X A^{X}M problem isolation information
Application Module^X Service	Paper Document	Configuration and service information
Application Module^X User Guide	Paper Document	General information on the use of the A^{X}M
Application Module^X Customer Release Guide	Paper Document	Contents of the software release, standard and optional hardware, special considerations when installing A^{X}M, and problem reporting procedures
CL/AM Reference Manual, Appendix I	Paper Document	Use of the AMCL06 external load module
Honeywell License Installation and Administration A^{X}M	Paper Document	Describes how to install software licenses for A^{X}M and OpenDDA.
OpenDDA User's Guide	Paper Document	Information on the use of OpenDDA
OpenDDA Reference Manual	Paper Document	Detailed reference information on OpenDDA
OpenDDA Customer Release Guide	Paper Document	How to install and set up the configuration on OpenDDA, porting ABE applications, problem reporting
Hewlett-Packard documentation	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:

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^{X}M, 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^{X}M 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^{X}M.

A^{X}M node startup

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

No A^{X}M redundancy

The A^{X}M 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^{X}M control nodes. Doing so may negatively impact data access performance.

Deconfigure additional module memory

If migrating from A^{X}M R110 (or A^{X}M R100) to A^{X}M R200, and an addition of 318,464 words was configured in the earlier migration, subtract 318,464 words from the additional module memory entry you already have, using page 3 of the A^{X}M node configuration page. Migration of the user database memory space between releases is now handled from the external load module AMCL06_2.

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

Loading A^{X}M with WSI2 interface off

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

To load this as an A^{X}M, you do not want the SHUTDOWN switch in the SHUTDOWN position.

A^{X}M loading error with licensing

If a WARNING status on the node status display occurs as a result of loading an A^{X}M, there may be a licensing problem. The error can be seen by entering the command:

```
more /var/opt/TDC_Open/common/LCN_daemon.log
```

If no error is displayed, enter the following command to check for a licensing problem.

```
more /var/opt/TDC_Open/common/old.LCN_daemon.log
```

See the *Honeywell License Installation and Administration A^{X}M* manual for diagnostic troubleshooting help.

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:

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 A^{X}M.

Table 3-1 Source Information For A^{X}M Functions

Function	Be familiar with the contents of …
LCN or A^{X}M Implementer	*CL/AM Reference Manual*
System Administrator	All A^{X}M documentation
Maintenance/Technical Support	*Application Module^{X} Service* *Application Module^{X} Troubleshooting*
Application Module^{X} user	*Application Module^{X} User Guide*
Licensing	*Honeywell License Installation and Administration A^{X}M*

Hardware, firmware, and memory sizes

There is no required change in hardware, firmware, or memory sizes for customers who are migrating from A^{X}M Release 100 (or Release 110) software to Release 200 software within a given LCN release, such as R430 or R500.

For migration from A^{X}M Release 100 or 110 or 200 on TDC 3000^{X} R43x to A^{X}M Release 200 on TDC 3000^{X} R500, the minimum memory size increases to 6 Mw.

Continued on next page

Set up licensing

Prior to installation of your A^{X}M or OpenDDA software, you must follow the steps below to set up the software license.

Refer to the *Honeywell License Installation and Administration A^{X}M* manual if more details are needed to perform each step.

Table 3-2 Honeywell License Setup

Step	Action
1	LOAD the Honeywell License Manager software.
2	OBTAIN the license keys.
3	EDIT the license file.
4	SET UP the license environment variable.
5	DETERMINE if an options file is required. IF YES, Set it up.
6	INSTALL the license servers.

Section 4 – Installation

Section contents

These are the topics covered in this section:

4.1 Locating Installation Instructions

Where to find them

Special instructions for migrating A^{X}M software from R100 or R110 to R200 are located in Section 4.2, and a procedure for deconfiguring additional module memory is located in Section 4.3 of this manual.

The detailed installation instructions for the A^{X}M, 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 three 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 430.6	AMCL06
Release 431, or later R4xx version	AMCL06_2
Release 500.0.44	AMCL06
Release 500.0.45 and later	AMCL06_2

XACCES is configured using the same procedures as used for AMCL06_2. You can obtain further information on XACCES in the *Application Module^{X} User Guide*.

HP-UX Install tape

Please note that the HP-UX Install Tape is NOT USED in the initial installation of software nor in the migration of software to R200. It is used only to recover from hard drive failure.

4.2 Migrating From R100 or R110 Software to R200

CAUTION

The following information is presented with the assumption that you have installed the Honeywell License Manager. See Section 3.1 if you need more information.

Install TDC 3000X Release 431 or Release 500.0.44

TDC 3000X software release 431.0 or later, or TDC 3000X software release 500.0.44 or later, must be installed on your LCN system before using Release 200 of AXM software. Procedures to load the TDC 3000X software are located in the R431 Software Change Notice or R500 Customer Release Guide delivered with that software.

Backup HP hard drive

Hewlett Packard recommends the HP hard drive be backed up before installing HP-UX patches. The procedure to do so is provided in the *AXM System Administration manual*, Section 4.2, Backups and Restores.

Modify NCF configuration

If additional module memory was previously added, see Section 4.3 to deconfigure Additional Module Memory.

The NCF configuration for each AXM node must be changed to replace the existing external load module AMCL06 (or AMCL06_1) with the new external load module AMCL06_2. **Failure to change this configuration will cause a node crash and a SEVERE node status message during the load sequence.** (Procedures are located in the *CL/AM Reference Manual*, Appendix I.) Substitute AMCL06_2 when AMCL06 is called for.

NOTE: The procedures referenced above may be combined to accomplish both deconfiguring additional module memory and changing external load module.

Continued on next page

Install A^{X}M Personality DAT tape

Use the standard update procedure in the *A^{X}M System Administration manual*, Section 5, Installing and Updating Software, to install the A^{X}M personality tape.

Ignore the following update utility warning that occurs while loading the A^{X}M personality tape:

```
WARNING: Fileset "XOPEN-AXM-LCNP" "A.B9.43.13" is
older than "A.B9.43.8" already loaded on the system.
You might want to unselect this fileset.
```

Install A^{X}M HP-UX software tape

Use the standard update procedure in the *A^{X}M System Administration manual*, Section 5, Installing and Updating Software, along with the caution noted below, to install the A^{X}M HP-UX software tape.

Selecting proper filesets

CAUTION

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^{X}M HP-UX Software Tape

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

The above procedure loads only these filesets:

XOPEN-AXM-COMM

XOPEN-AXM-USER

Do not load any other filesets from the A^{X}M HP-UX Software Tape.

Continued on next page

Install OpenDDA Software Development kit

Use the standard update procedure provided in the *OpenDDA Customer Release Guide*, Section 3 to install the OpenDDA Software Development kit.

Install Patch tape

Use the standard update procedure in the *A^{X}M System Administration manual*, Section 5, to install the HP-UX 9.05 Patch tape. Description of patches, size effect on hard drive, and special selection instructions are provided with the HP-UX patch tape in an accompanying release letter.

NOTE: Since some patches automatically rebuild the HP-UX kernel and reboot the coprocessor, it is recommended that the AM node be checkpointed and SHUTDOWN during patch installation. (See the *A^{X}M System Administration manual*, Section 2.4, Tables 2-21 and 2-22.)

NOTE: Installation and rebuild can take an extended period (one hour or more), depending on which patches are selected.

Reboot HP-UX coprocessor

If the coprocessor has not been rebooted during HP-UX patch installation, reboot using the partial shutdown procedure in the *A^{X}M System Administration manual*, Section 3.5, Shutting Down HP-UX.

Load AM personality

Load the new AM personality, using the procedure in the *A^{X}M System Administration manual*, Section 3.4, Loading AM Personality.

NOTE: If the AM personality load results in a WARNING status, there may be a licensing problem. Enter the following command to check for a licensing problem.

```
more /var/opt/TDC_Open/common/LCN_daemon.log
```

If no error is displayed, enter the following command to check for a licensing problem.

```
more /var/opt/TDC_Open/common/old.LCN_daemon.log
```

Migration complete!

The migration for the A^{X}M node is now complete. Repeat the procedures, beginning with **Backup HP hard drive** for each A^{X}M node on the LCN.

4.3 Deconfiguring Additional Module Memory

Deconfigure additional module memory

SKIP THIS PROCEDURE if you are installing a new A^{X}M.

PERFORM THIS PROCEDURE if you are migrating your software from Release 100 or 110 to Release 200, **and you previously configured additional module memory.** This procedure should be performed anytime after the Release 200 software has been loaded.

The following procedure should be performed for each A^{X}M.

Table 4-3 Deconfigure Additional Module Memory in the NCF

Step	Action
1	At a US or U^{X}S, INSERT an NCF backup floppy or cartridge.
2	From the Engineering Main Menu, SELECT `SUPPORT UTILITIES`.
3	SELECT `MODIFY VOLUME PATHS`.
4	SET the NCF Backup Path to the NCF backup media pathname: $Fx>&ASY> (x = drive number)
5	PRESS <ENTER>
6	From the Engineering Personality Main Menu, SELECT `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 `MODIFY NODE` target.
9	PAGE FORWARD to page three. In the box labeled `ADDITIONAL MODULE MEMORY (WORDS)`, and **if there is a value other than zero in that box,** SUBTRACT 318464 from whatever value is currently in the block, then continue with Step 10. **If the box is blank**, PRESS [CTL][PAGE BACK]. This will abort this change, and return you to Step 7. (Continue with Step 7 for any remaining A^{X}M nodes.)

Continued on next page

4.3 Deconfiguring Additional Module Memory, Continued

Deconfigure additional module memory, continued

Step	Action
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:

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 migration.

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 A^{X}M, 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 `what /opt/DDA/bin/dda` (for OpenDDA)
2	ENTER `what /opt/TDC_Open/common/bin/xaccess` for the XACCESS security restart tool
3	ENTER `what /opt/TDC_Open/common/bin/xdaconfig` for the xdaconfig priority/channel configuration tool
4	ENTER `what /opt/TDC_Open/common/bin/cds_hdr` for the CDS header generation tool
5	ENTER `what /opt/TDC_Open/common/bin/lcndaemon743` Include for all A^{X}M problems found.
6	ENTER `what /opt/TDC_Open/common/bin/cdsdaemon` Include for all A^{X}M problems found.
7	ENTER `what /opt/hwiaclicense/bin/hwiaclmgrd` Include for all licensing problems found.

Continued on next page

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
`/usr/adm/syslog`	The HP-UX system log file
Core dumps	Core dumps in your current working directory (non-CL-initiated applications)
`/users/axm/core`	Core dumps (CL-initiated applications)
`/var/opt/TDC_Open/common/CDS_daemon.log`	Daemon log file
`/core`	Provide only if the CDS daemon crashes and core dumps
`/var/opt/TDC_Open/common/LCN_daemon.log`	Audit trail log file
`/var/opt/TDC_Open/common/old.LCN_daemon.log`	Previous audit trail log file
`/core`	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)

For licensing PARs, please include the following information:

- If the problem occurs during node load, include the `LCN_daemon.log` and the `old.LCN_daemon.log`, from the locations noted in Table 5-2.
- If the problem did not occur during node load, include the `/var/hwiaclicense/log/log` along with the error reported by the licensed software component (for example: `/opt/DDA/bin/dda`).

Continued on next page

If it's an X-side failure, continued

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.
`/etc/opt/TDC_Open/common/xaccess.cfg`	The XACCESS security restart file
Any messages printed to the terminal.	

If using XDACONFIG priority/channel configuration tool

If using the "XDACONFIG" priority/channel configuration tool, collect the following information:

Table 5-4 Failure Data Collection If Using XDACONFIG

Information (or command)	Description
Core	XDACONFIG utility core dumps; found in your current working directory.
`/etc/opt/TDC_Open/common/xdaconfig.cfg`	The XDACONFIG configuration tool restart file
Any messages printed to the terminal.	

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.

Continued on next page

5.2 Collect Failure Data, Continued

System or module working, but not properly

Perform the following steps as they apply to your situation.

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

Step	Action	Examples/Hints
1	Record system software release no.	R431.0 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 • 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 *Customer Resource Manual*, Section 15.

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 5-6 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 *Engineer's Reference Manual*, 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 • Select `SMCC` from Engineering 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 *Hardware Verification Test System* in *LCN Service - 2* binder.

5.3 Field Support Plan

Field support plan

To support the A^{X}M, 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^{X}M. 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^{X}M, 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

Field Problem Resolution, continued

Table 5-7 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

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^{X}M 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^{X}M 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.

Index

Index

READER COMMENTS

Honeywell's IAC Automation College welcomes your comments and suggestions to improve future editions of this and other publications.

You can communicate your thoughts to us by fax, mail, or toll-free telephone call. We would like to acknowledge your comments; please include your complete name and address.

BY FAX: Use this form; and fax to us at (602) 313-4108

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.

Title of Publication: **Application Module^{X} Customer Release Guide - R200** Issue Date: **7/95**

Publication Number: **AX04-200**

Writer: **Jerry Hackett**

COMMENTS: _____

_____

_____

_____

_____

_____

_____

_____

RECOMMENDATIONS: _____

_____

_____

_____

_____

_____

_____

_____

NAME _____ DATE _____

TITLE _____

COMPANY _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

(If returning by mail, please tape closed; Postal regulations prohibit use of staples.)

Communications concerning technical publications should be directed to:

Automation College
Industrial Automation and Control
Honeywell Inc.
2820 West Kelton Lane
Phoenix, Arizona 85023

FOLD FOLD

From: _____

_____

_____

NO POSTAGE
NECESSARY
IF MAILED
IN THE USA

BUSINESS REPLY MAIL

FIRST CLASS **PERMIT NO. 4332** PHOENIX, ARIZONA

POSTAGE WILL BE PAID BY ....

Honeywell

Industrial Automation and Control
2820 West Kelton Lane
Phoenix, Arizona 85023

Attention: Manager, Quality

FOLD FOLD

Cut Along Line

Additional Comments:

Honeywell

Industrial Automation and Control
Honeywell Inc.
16404 North Black Canyon Highway
Phoenix, Arizona 85023-3033

Helping You Control Your World