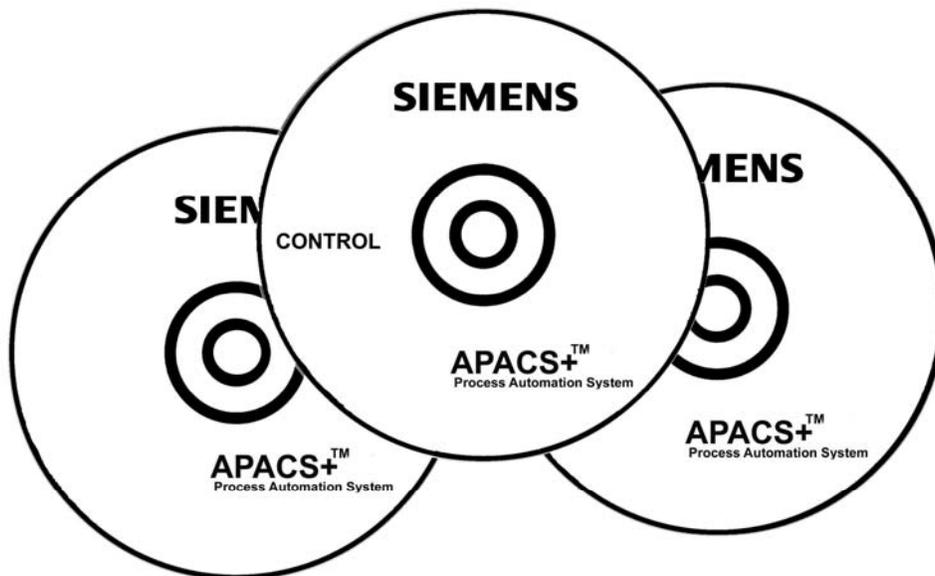


SR39CTRL-1
Rev: 1
November 2005

APACS+TM
Control Products Software
Version 6.1



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Disclaimer of Liability

We have checked the contents of this manual for agreement with the hardware and software described. Since deviations cannot be precluded entirely, we cannot guarantee full agreement. However, the data in this manual is reviewed regularly and any necessary corrections included in subsequent editions. Suggestions for improvement are welcomed.

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Technical data subject to change.

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1 Introduction

This document presents comprehensive software release information for the APACS+™ Control Version 6.1 components. These software products handle controller configuration and communications for ProcessSuite® R4 and R5 systems and PCS 7/APACS+ OS Option Version 6.1.

Product enhancements and other product topics are presented under the following headings:

- Control Enhancements
- Installation
- Compatibility

Periodically check the Siemens web site for software updates such as a QuickPatch, which provides the latest available software updates in a timely manner. Service Packs contain more comprehensive updates and are distributed on a CD. Service Pack details, if any, are supplied in the Appendi(x)/(ces) of this document.

For additional information about individual components of APACS+ software, refer to the release text (release.txt) files supplied on the APACS+ Control CD, and any supplied Service Pack CD. These are accessible from the Start menu as ProcessSuite or Siemens Release Notes. Also, complete product documentation is provided on the *Electronic Manuals* CD supplied with your system.

1.1 Products Involved

1.1.1 Development Nodes

Engineering Development Node	Part Number
Control	UPH:PS032011V61
R4+ Full	UPH:PS042001V301a
R4+ Keyless	UPH:PS042001KV301a
R4+ Full Batch	UPH:PS042002V301a
R4+ keyless Full Batch	UPH:PS042002 KV301a
R5+ Full	UPH:PS053001V500a
R5+ Keyless Full	UPH:PS053001KV500a
R5+ Full Batch	UPH:PS053002V500a
R5+ Keyless Full Batch	UPH:PS053002KV500a

1.1.2 Archive Kits

Archive Kit	Part Number
Control Software	UPH:PS032016V61
R4+ Software Media	UPH:PS042004V301a
R5+ Software Media	UPH:PS053004V500a

1.1.3 Desktop Nodes

Desktop Node	Part Number
Safety Matrix	PS032043V61

1.1.4 Client Nodes

Client Node	Part Number
Safety Matrix	PS032045V61

1.1.5 Update Kits

Update Kit	Part Number
V6.1 Control CD	UPH:PS032303V61U

APACS+ Control Components in the V6.1 release

Component	Version
4-mation Configuration Program	V4.53
ACMx Software (new)	V4.50
ACM+ Software	V4.43
QUADLOG CCMx Software (new)	V3.53
QUADLOG CCM+ Software	V3.42
RunTime API	V4.40
APACS+ OPC Server	V1.12
APACS+ RealTime IO Server	V4.43
Industrial Ethernet Module (IEM) FB Libraries (new)	V3.52, V4.43 and V4.50
Control Simulator/Control Engine	V4.50
Control Panel Applet	V4.41
Network Interface Manager	V4.41.1.1
Resource Init Utility	V4.40
Diagnostic Logger	V4.50.0.2
IO Import Utility	V4.50
MBUS Driver	V4.50.2.1
Sequence of Events Viewer Utility	V4.40
HLL RealTime IO Server	V4.42
LIL RealTime IO Server	V4.40
Time Synchronization Utility	V4.40
Common Libraries	V4.50.1.4
Basic Appl Library	V4.43 and V4.50
AGA Appl Library	V4.43 and V4.50
Industrial Boiler Appl Library	V4.43 and V4.50
Hydrostatic Tank Gauging Appl Library	V4.43 and V4.50
Heat Recovery Steam Gen Appl Library	V4.43 and V4.50
Paper Stock Refiner Appl Library	V4.43 and V4.50
Batch Basic Process Cell Appl Library	V4.43 and V4.50
Advanced Regulatory Control Appl Library	V4.43 and V4.50
APACS Motorized Valve Appl Library	V4.43 and V4.50
MODBUS (Master) FB Library	V4.00 and V4.50
MODBUS (Slave) FB Library	V4.00 and V4.50
LIL FB Library	V4.11 and V4.50
Motor and Valve FB Library	V4.40 and V4.50
SOER FB Library	V4.40 and V4.50
Link Interface Module	V3.03
QUADLOG Control FB Library	V3.41 and V3.53
QUADLOG MODBUS (Master) FB Library	V3.20 and V3.53
QUADLOG MODBUS (Slave) FB Library	V3.20 and V3.54
QUADLOG SOER FB Library	V3.32 and V3.53
Failsafe Comm FB Library	V4.42 and V4.50
QUADLOG Failsafe Comm FB Library	V3.30 and V3.53

Component	Version
DIREKTOR FB Library	V4.40 and V4.50
PS Batch Comm FB Library	V4.40 and V4.50
CSIM IO Sim FB Library	V4.40
CSIM IO Sim FB Library	V4.40
CSIM DIREKTOR FB Library	V4.40
CSIM PS Batch Comm FB Library	V4.40
QUADLOG CCMx Safety Matrix FB Library	V3.53
CSIM MBUS (Master) FB Library	V4.40
CSIM MBUS (Slave) FB Library	V4.40
CSIM LIL FB Library	V4.40
Profibus Fieldbus Module	V4.40
MP Universal Container	V4.40
Function Block SDK	V4.40

2 Control Enhancements

This section presents the major enhancements and maintenance upgrades that are incorporated into the APACS+ Control components. For additional information see the individual component release notes accessible by the Start menu after the control components are installed from the CD. For information on the control components that were not updated in this release, see *APACS+ R5 Control Products Software Version 3.01* (SR39PS-5).

All APACS+ control components now operate on **Windows XP Professional SP2** and **Windows 2003 Server** platforms, with the following exceptions:

- APACS+ Realtime I/O Server
- LIL Realtime I/O Server
- HLL Realtime I/O Server

2.1 **4-mation Configuration Software 4.53**

Enhancements

- Operates under Windows XP and Windows 2003 Server. This is in addition to Windows 2000 and Windows NT
- PCS7/APACS+ OS Option Library has been added as an application library which contains an "AlarmState" derived block to be copy-pasted into the QUADLOG® resource's "ResourceStatus".

Maintenance Update

- Corrects an abnormal termination when run as an automation server. A user cancel action attempted to close the server.
- It is no longer possible to move I/O channels to modules that do not support those channels.
- Export to XML correctly captures Structured Text Sheets with tag referenced I/O.

Operational Considerations

- Printing an I/O Channel list for a particular I/O Module does not return a report if the default wild card character * is left in the "Filter on Tag Name" field. If the * is deleted then the report will return data.
- Disabled I/O Channels may have unavailable quality after an Incremental Transfer. To restore the quality, each disabled I/O Channel needs to be enabled then disabled again.
- It is recommended that the I/OBUSFault softlist parameter of all output channels be configured to HOLD_LAST_STATE prior to an Incremental Transfer. The original output configuration will be restored by the transfer operation.
- When using Incremental Transfer or Associated Resource to an online redundant controller, the A: side controller must be installed and running.

2.2 ACMx System Operating Software 4.50 (New)

Operational Considerations

- In general, the operation of this version is similar to version 4.4x of ACM/ACM+ software.
- The following list of rules should be closely followed when upgrading to the new ACMx:
 - Do not mix ACMx modules with ACM+ as redundant partners.
 - Do not mix ACMx 4MB modules with ACMx 8MB as redundant partners.
 - Do not copy and paste logic between ACM/ACM+ and ACMx; use Export/Import.
 - Do not transfer configurations between ACM/ACM+ and ACMx (unless Export/Import database utility is completed first).
- Export/Import of the *4-mation* database must be performed before a ACM or ACM+ configuration can be transferred into ACMx.
- Operational differences may be observed in some situations when comparing the ACMx function block results with the ACM/ACM+ function block results. Differences may occur in the precision of floating point calculations for real numbers and when "Time" datatype values are used. These differences were at the 6th or 7th significant decimal place.
- The ACMx operating system software (O/S) will contain a version of the Boot-ROM firmware. This firmware will be checked by the O/S for compatibility when performing startup and future software upgrades. The O/S will reload the firmware when needed.
- The ACMx is shipped from the factory with the battery disconnected. The battery must be connected to the ACMx just prior to applying power or the module cannot be properly initialized. Keep the battery connected while the ACMx is in use. Disconnect the battery for long term storage.
- ACMx does not support the LIM (Link Interface Module) and the LIM presentation FBs have been removed. You should continue to use the ACM or ACM+ for the LIM and presentation FB functionality.

Maintenance Updates from ACM+ V4.43

- The controller will no longer incorrectly post a SSC36:EC22 error ("maximum number of retries for downloading configuration from the controller to an I/O module has been exceeded").
- An ACMx and its redundant partner will now report their respective hardware revision numbers correctly to the Diagnostic Logger. Previously, the same revision number was displayed for both the primary and the backup, even when they did not match. In addition, extraneous characters will no longer be displayed at the end of an I/O module's hardware revision.

- In some blocks, an input value of 1.#QNAN ("not a number") caused 1.#QNAN output values. Previously, the 1.#QNAN output could remain after the resumption of good input values. Now, normal output calculations will resume upon the return of good input values. The affected blocks are: PID, PD, ID, DERIV, FILTER, LEADLAG, SETPNT, and an AM. For SETPNT, if PV or ESP is 1.#QNAN, then SP, ISP, CSP, and SLIST_SP will retain their previous values instead of becoming 1.#QNAN.
- An improvement was made in the storage of exception information to prevent BOOT ROM corruption when a CPU exception occurs.
- The redundancy timeout has been improved to prevent the I/O scan shutdown when redundancy communications loss occurs.
- The configuration crossloading between redundant partners has been improved to reduce the overall crossload time and reduce overscan errors. This also reduces Failsafe Communication (FSC) function block timeout susceptibility between resources.
- The MODINFO function block will set the error mask back to zero for the original I/O module, when the IOBRD input is changed.
- When redundant ACMx controllers lose redundancy synchronization and redundancy is no longer in operation, a SSC18:EC03 error may have been reported instead of SSC27:EC03. The correct error is now reported.

2.3 CCMx System Operating Software 3.53 (New)

Operational Considerations

- During the File->Transfer->Initialize, please make sure you do not remove the modules or power them down. You could render your CCMx controllers useless and it will require factory return to correct them.
- This version is only compatible with QUADLOG CCMx controllers and must be installed to operate a new CCMx module. In general, the operation of this version is similar to CCM+.
- The following list of rules should be closely followed when upgrading to the new CCMx:
 - Do not mix CCMx modules with CCM+ as redundant partners
 - Do not mix CCMx 2MB modules with CCMx 6MB as redundant partners. (Note 17145)
 - Do not copy and paste logic between CCM+ and CCMx (Note 17004)
 - Do not transfer configurations between CCM+ and CCMx (unless export/import database utility is completed first)
 - Export/Import of the *4-mation™* database must be performed before a CCM+ configuration can be transferred into CCMx
- Situations may occur where differences are observed when comparing the CCMx function block results with the CCM+ function block results.
- Differences in the precision of floating point calculations with real and time values are used. These differences were at the 7th significant decimal place.
- When the WT_AVG function block is used for TIME datatypes, the time calculations may show differences between 1 to 40 ms.
- The CCMx will sometimes handle invalid numbers (infinity values, QNAN, etc.) differently than the CCM+. This may be observed when invalid numbers are input to a compare function block.
- While the CCMx offers faster scan times (when compared to the CCM/CCM+), there are instances where some function blocks performed slightly slower. Examples of these blocks include the following:
 - EXP, COS, TAN, ACOS, MAT_SUB, MAT_MUL, MAT_DIV, MAT_SQRT, MAT_BIAS, LN, LOG, EXPT, ATAN, ASIN, PD.
 - Although these function blocks perform slightly slower, expect an overall scan time performance when compared to the CCM or CCM+.
- In redundant CCMx's, Power failure during a crossover may result in loss of configuration.
- After recovery from a power failure, the CCMx controller may report a software flow control error class 4 system service code 08 error code 02 (08:02). Manually clear this error and reset the shutdown logic using the RESET input on the shutdown logic blocks (TOTIO_SD and PARTIOSD blocks).

Maintenance Updates

- The configuration crossloading between redundant partners has been improved to reduce the overall crossload time and reduce scan overrun.
- The configuration crossloading between redundant partners has been improved to continue MBUS communications during part of the crossload.
- The redundancy timeout has been improved to prevent the I/O scan shutdown when redundancy communications loss occurs.
- A correction was made for the proper display of the selected CCMx resource module. A new 'module.cmx' will be installed and a new 'module.ini' will be created as part of 3.53 install.
- An improvement in handling the redundancy messages will prevent a memory corruption.
- A correction was made to eliminate a false posting of 36:22 errors posted on I/O downloads and configuration transfers.
- A correction was made for the proper display of the "HW Rev" for redundant CCMx controllers and I/O modules as seen from the Diagnostic Logger.
- CCMx Operating System Software V3.53 includes CCMx firmware (boot ROM) V3.12. When CCMx Operating System Software is transferred to the controller (through *4-Mation* File->Transfer->Initialize), the correct firmware is automatically checked and installed. To ensure compatibility, CCMx Operating System Software will overwrite any pre-existing CCMx Firmware version if needed. This may lengthen the CCMx initialization time.
- Three function blocks (HLLAALM, HLLAA4, PGRMR) were changed to correct a "Configuration Memory Corrupt Error". This error could occur immediately after restart or after several hours of operation. The V3.53 Function Block Library is independent of the controller operating system.

2.4 CCM+ System Operating Software 3.42

Maintenance Updates

- The configuration crossloading between redundant partners has been improved to continue MBUS communications during part of the crossload.

2.5 OPC Device Server Software 1.12

Enhancements

- The APACS+ OPC Device Server components have been validated for installation and execution on both Windows XP Pro and Windows 2003 Standard Server, in addition to Windows 2000 and Windows NT. For OPC clients connecting to the APACS+ OPC Device Server installed on either Windows XP Pro or Windows 2003 Standard Server, a special Software Firewall / DCOM configuration procedure must be followed. This special configuration procedure is provided in both the *OPC Device Server Software Guide* (document number SG39OPCDS-1) and the installed OPC server help file.
- The APACS+ OPC Browse DB Loader application was enhanced to support connecting/interacting with a SQL server installed on a PCS7 OS PC. The first time the APACS+ OPC Browse DB Loader application is executed, immediately following an install from the Control CD, the loader cycles through 3 different SQL server connect string sequences in order to determine the correct connection string for connecting to either the MSDE SQL server installed from the Control CD or a previously installed PCS7 OS SQL server. Once a successful SQL server connection attempt is made, the successful SQL connect string is saved in the loader application's registry configuration for use on all subsequent executions.

Maintenance Updates

- Updated the OPC Server Enumeration application (OpcEnum.exe) and the two OPC Common Proxy/Stub DLLs (opccomn_ps.dll, opcproxy.dll) to the latest (12/02/2004) OPC Foundation Version 2.20. This update does not fix any problems seen with the APACS+ OPC Device Server. However, the OPC Foundation recommends that the latest versions of these common files always be included as part of the OPC vendor's install.
- A maintenance update was made to the OPC server to fix a problem that occurred when an OPC client first connects to the server. The OPC server connection problem resulted in a generic MS Windows error popup stating the APACSOPCDeviceServer made a "Pure Virtual Function" call. Acknowledging the error dialog would result in the OPC server aborting. This problem would only occur intermittently.

- A maintenance update was made to the APACS+ OPC Browse DB Loader application to correct a problem where some of the tags contained within a .CSV file, generated from the APACS+ Database Automation application, were not being loaded into the OPC browse database.

2.6 Control Simulator 4.50

Enhancement

- The Control Simulator software now operates under Windows XP and Windows 2003 Server. This is in addition to Windows 2000 and Windows NT.
- When the "Security On" box is checked on the faceplate of a Quadlog Control Simulator, the Quadlog Security Control Block (QL_SECR) now functions in the same manner as when the Security Enable switch on a CCM is enabled. The function block EN input must also be set to TRUE for security to be enabled and the faceplate LED to be lit.
- ACMx and CCMx memory models were added to the control simulator.
- Gateway function blocks (GW_SEND, GW_REC) were added to the Control Simulator. The blocks are not operational in the simulator, but this allows configuring the blocks in the simulator, before deploying the configuration in a real controller.

2.7 M-BUS Driver 4.50

Enhancement

- The M-BUS Driver software now operates under Windows XP and Windows 2003 Server. This is in addition to Windows 2000 and Windows NT.

2.8 Diagnostic Logger Software 4.50

Enhancement

- The Diagnostic Logger software now operates under Windows XP and Windows 2003 Server. This is in addition to Windows 2000 and Windows NT.
- The Diagnostic Logger now supports the ACMx, CCMx, IDO, QUADLOG CAM, QUADLOG CAI, and QUADLOG CDO modules.

Operational Consideration

- If the detailed error information does not display when double-clicking on an entry, or the help file does not display when selecting it from the Help menu, then the Diagnostic Logger application should be restarted.

2.9 Control Panel Applet 4.41

Operational Consideration

- The Advanced area of the APACS.INI page will not allow a value of 0 for the MBUS-RETRY_ADDR or ENET_RETRY_ADDR parameters. If a value of 0 is desired for either of these parameters, it must be entered by manually editing the APACS.INI file in the c:\etc\ directory.

3 Install APACS+ Control CD V6.1

Note

The following procedure is based on a typical installation.

Note

The OPC Device Server needs MS SQL Server. If MS SQL Server is **not** installed, install the copy of MSDE from the Microsoft folder on this CD.

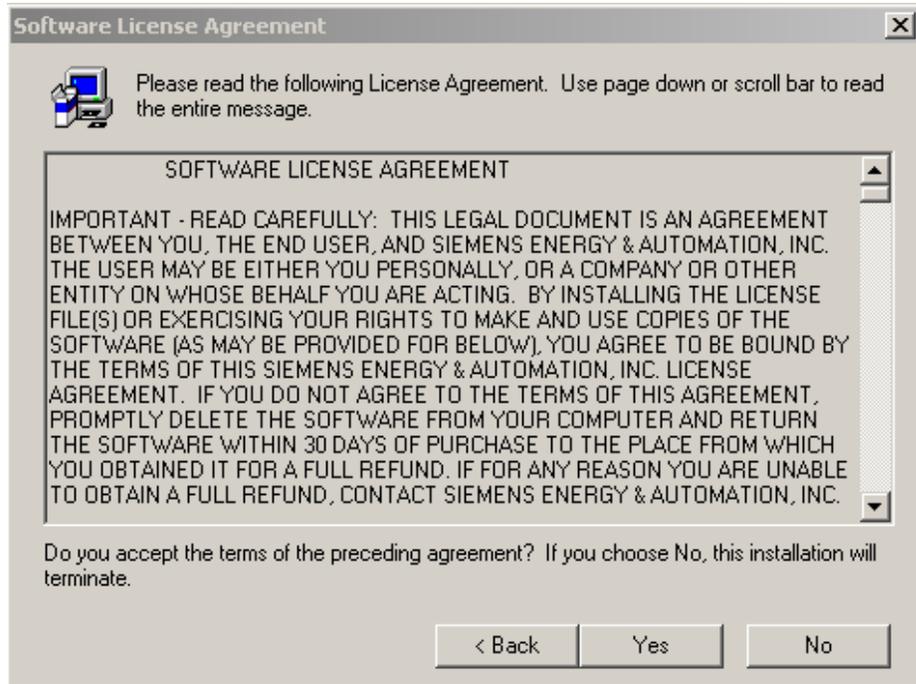
Note

Prior to installing this software, log on with Administrator rights and disable any virus protection software that is currently running.

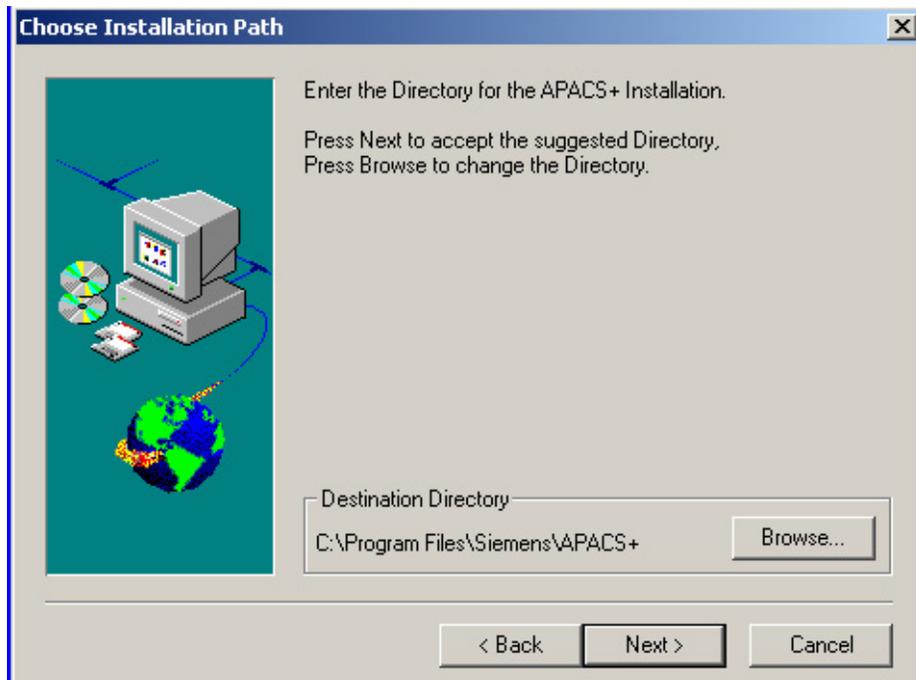
2. Insert the APACS+ Control CD V6.1 into the CD ROM drive.
The **Welcome to Siemens** window opens.



3. Click the **Next** button.
The **Software License Agreement** window opens.



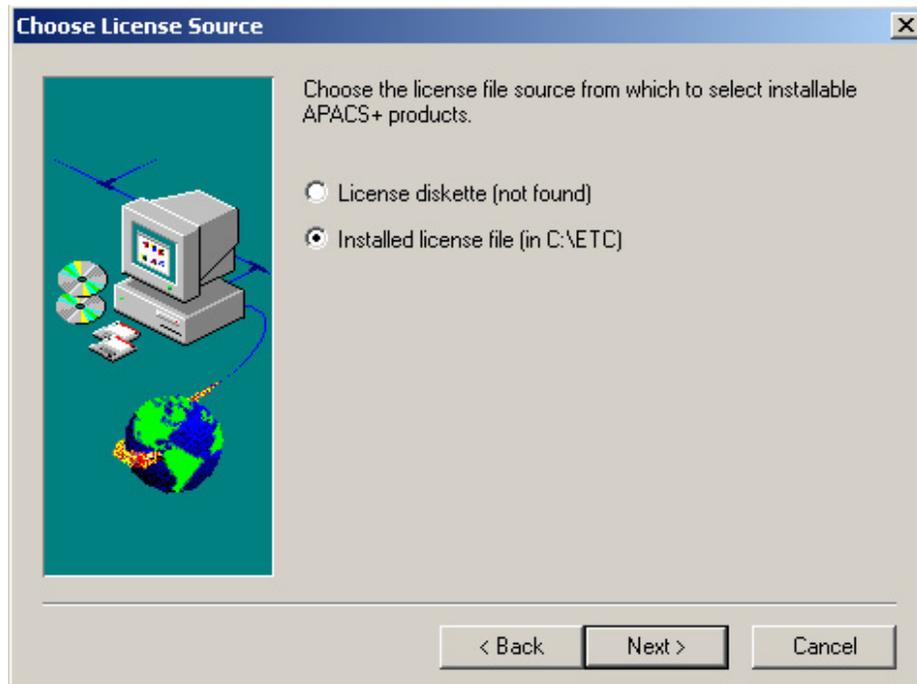
4. Read the Software license agreement.
Click the **Yes** button to accept the agreement.
The **Choose Installation Path** dialog box opens.



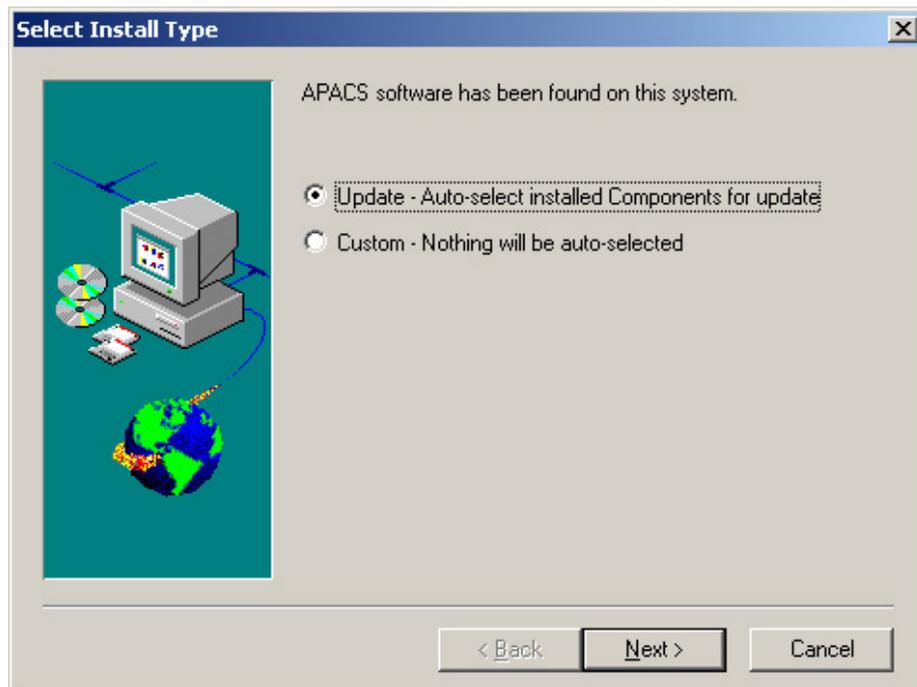
5. Select an installation path, and click the **Next** button.
The **Choose Directory** dialog box opens (only if you click on the browse button in the **Choose Installation Path** dialog box.)



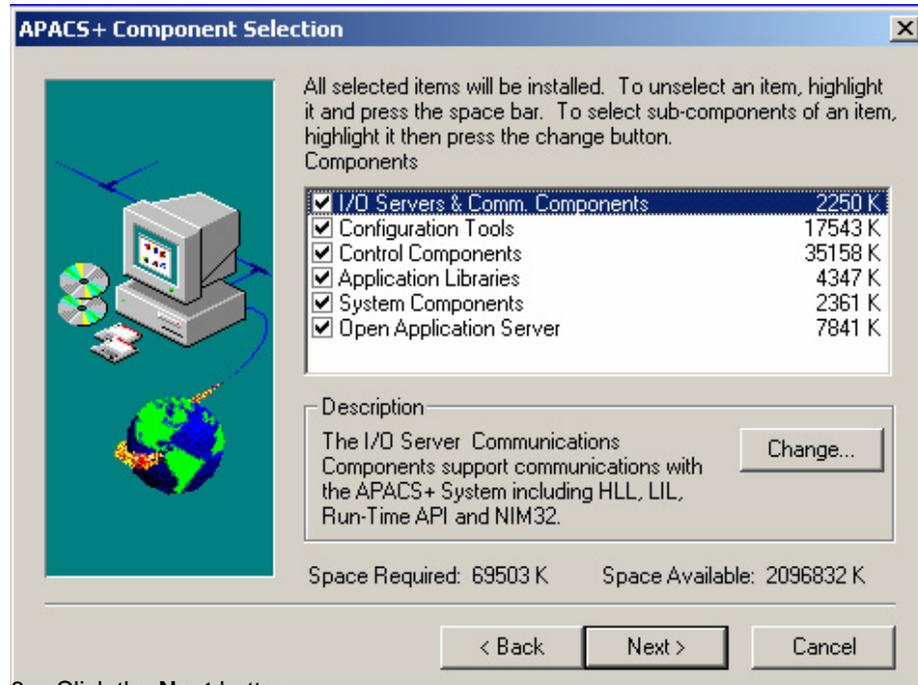
6. Click the **OK** button.
For new installations, the **Choose the License Source** dialog box opens.



For upgrade installations, the **Select Install Type** dialog box opens.



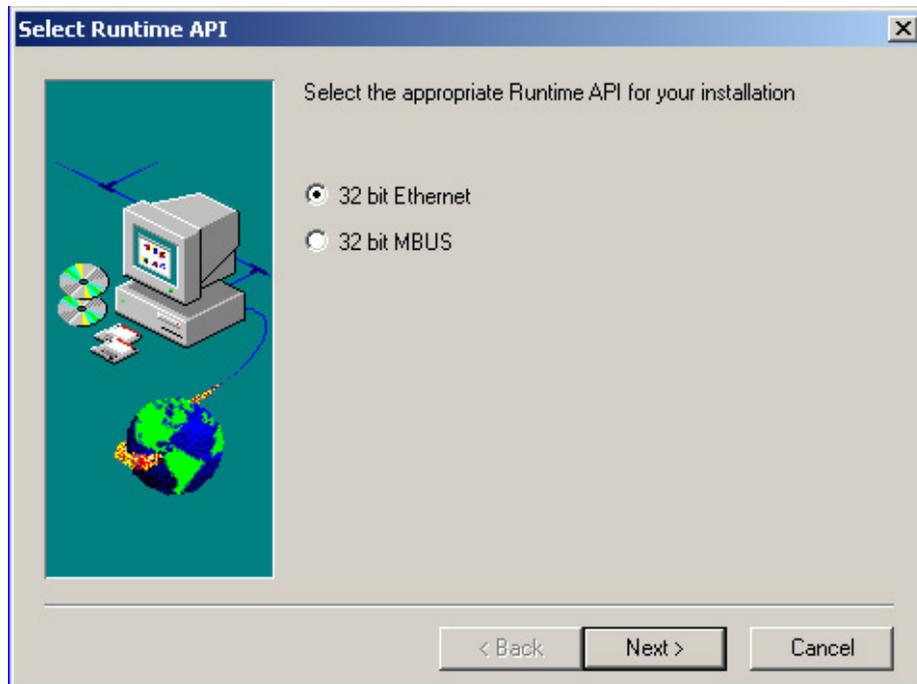
7. Select the license file source. For new installations, the license should be on the diskette.
Click the **Next** button.
The **APACS+ Component Selection** dialog box opens. Make any changes to the list of components selected for installation by selecting a category, clicking the **Change** button, and selecting the components to install.
Your choice of components depends on the type of station (server, client, etc...) you are installing.



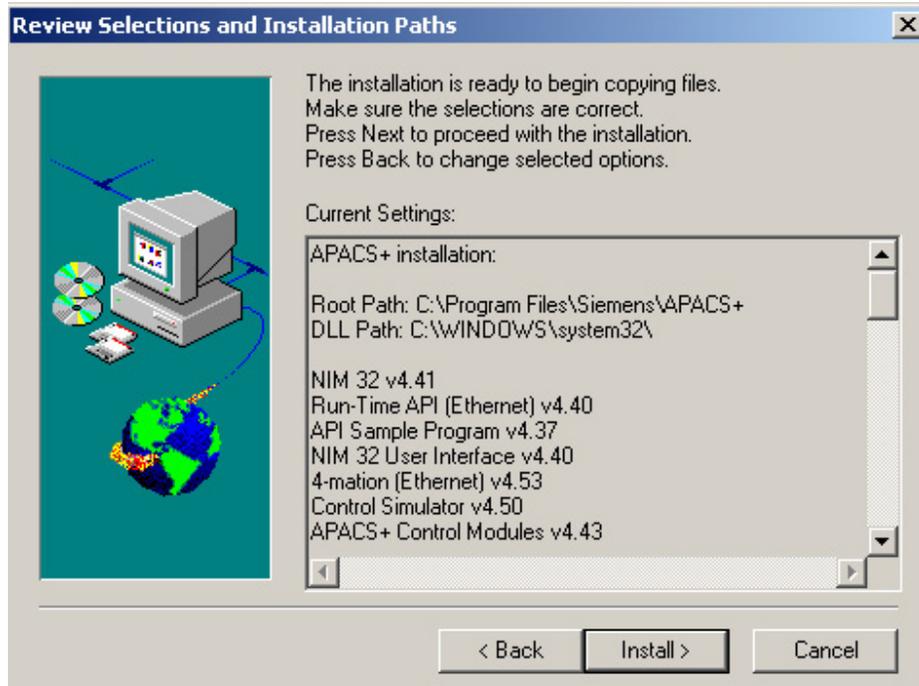
8. Click the **Next** button.
If this is the first time OPC Server is being installed, the **Select OPC Device Server Startup Mode** dialog box opens.



If OPC Server has been installed before, the **Select Runtime API** dialog box opens.



9. Select the appropriate option for your installation.
Click the **Next** button.
The **Review Selections and Installation Paths** dialog box opens.

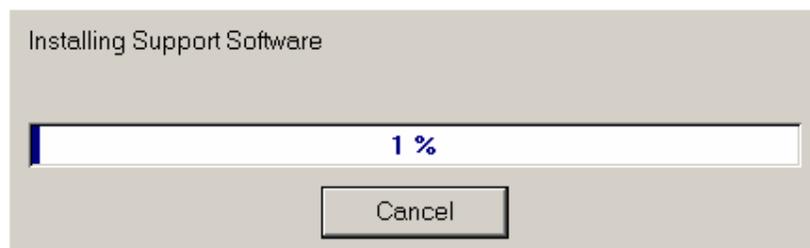


10. Scroll through the list and verify that the correct components have been selected. If any components are missing or were incorrectly selected, click the **Back** button to return to the screen to reselect the appropriate components. When you are satisfied that the list is correct, click the **Install** button.

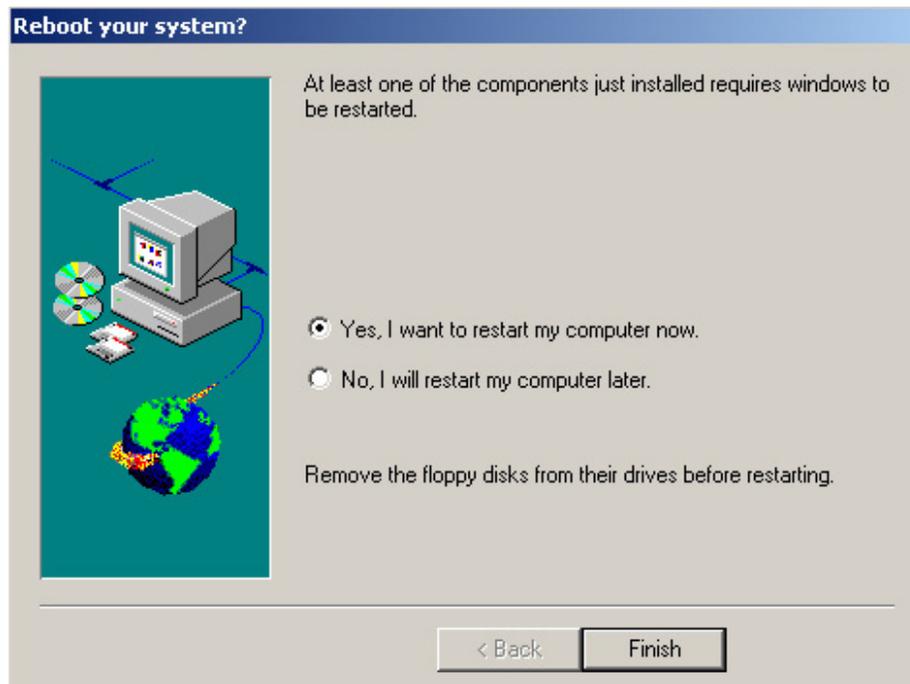
The installation begins copying the files.
The **Installing Support Software** progress bar opens.

Note

If you are installing on Windows XP or Windows 2003, the installation will inform you that the software has not undergone Windows Logo testing. Click **OK** to acknowledge, and continue the installation. The Windows operating system will again warn you that the software has not undergone Windows Logo testing. Click the **Continue Anyway** button to continue the installation. Windows Logo testing does not affect the installation or operation of the software.



11. The **Reboot your System?** dialog box opens.
If you had a license diskette in the floppy drive, remove it. Take the Install CD out of the CD drive.
Select the **Yes, I want to restart my computer now.** radio button, and click the **Finish** button.
The installation is complete.



4 Compatibility

Control software products and operating platforms compatible with the APACS+ 4-mation Configuration Software version 4.53 are listed in the following tables. Use the current version of APACS+ software to obtain the latest features. All hardware products must be compatible with the associated software products.

Software Compatible with 4-mation Configuration Software V4.53

Compatible Software Products	Version
Advanced Control Module (ACM) Software	4.00 - 4.50
Advanced Regulatory Control Application Library	4.00 - 4.43
AGA Application Library	4.30 - 4.43
APACS+ Realtime I/O Server Software (32 bit)	4.00 - 4.43
API (Application Program Interface)	4.00 - 4.42
Batch Basic Process Cell Application Library	4.01 - 4.43
Control Engine	4.40 - 4.50
Control Simulator (includes APACS+ and QUADLOG Simulators)	4.40 - 4.50
Control Simulator Direktor™ Communication Function Block Library (Requires Runtime API 4.36 or higher)	4.40
Control Simulator I/O Simulation Function Block Library	4.40
Control Simulator Motor Valve Function Block Library	4.40
Control Simulator ProcessSuite Batch Function Block Library	4.40
Diagnostic Logger	4.40 - 4.50
Direktor™ Communication Function Block Library	4.00 - 4.50
Fail Safe Communications Function Block Library	4.42-4.50
Function Block Wizard	4.40
Heat Recovery Steam Generator Application Library	4.30 - 4.43
Hydrostatic Tank Gauging Application Library	4.30 - 4.43
Industrial Boiler Application Library	4.30 - 4.43
Link Interface Module (LIM) System Software	3.03
Local Instrument Link (LIL) Function Block Library	4.11-4.50
MODBUS Master Function Block Library	4.00-4.50
MODBUS Slave Function Block Library	4.00-4.50
Motorized Valve Application Library	4.30 - 4.43
NIM32	4.40 - 4.41
OPC Device Server (Requires Runtime API 4.36 or higher)	1.00 - 1.12
Paper Stock Refiner Application Library	4.30 - 4.43
ProcessSuite Batch Communication Function Block Library	4.00 - 4.50
QUADLOG Critical Control Module (CCM) Software	3.20 - 3.53
QUADLOG Advanced Control Module (ACM) Software	3.03
QUADLOG Advanced Control Module Plus (ACM+) Software	3.21 - 3.41

Compatible Software Products	Version
QUADLOG Control Function Block Library	3.30 - 3.53
QUADLOG Fail Safe Communications Function Block Library	3.30 - 3.53
QUADLOG Sequence of Events Recorder Function Block Library	3.20 - 3.53
QUADLOG MODBUS Master Function Block Library	3.03 - 3.53
QUADLOG MODBUS Slave Function Block Library	3.03 - 3.54
QUADLOG Safety Matrix Software	1.00 - 1.03
QUADLOG Safety Matrix Function Block Library	3.34 - 3.53
Satellite Control Module (SCM) System Software	4.00
Sequence of Events Recorder Function Block Library	4.00 - 4.50
Standard Motor and Valve Function Block Library	4.00 - 4.50

Operating Platforms Compatible with 4-mation Configuration Software 4.53

4-mation Configuration	
ETHERNET	MODULBUS
Windows NT	Windows NT
Windows 2000	Windows 2000
Windows XP	Windows XP
Windows 2003 Server	Windows 2003 Server

Module ROMs and Other Software Compatible with ACM/ACM+/ACMx System Software

ROM or Other Software	Version
Advanced Control Module (ACM 4.43)	3.03
Advanced Control Module Plus (ACM+ 4.43)	4.00
Advanced Control Module Ex (ACMx 4.50) ³	4.10
APACS+ Runtime API	4.00 - 4.42
APACS+ Realtime I/O Server	4.00 - 4.43
Enhanced Analog Module (EAM)	3.00 - 3.01
HART Fieldbus Module (HFM)	3.00 - 3.02
Input Discrete Module (IDM)	3.00
Isolated Discrete Output (IDO) ²	3.00
Kernal OpCode (15939-783) (IDO)	1.52
Link Interface Module (LIM)	3.00
Network Interface Module (NIM/RNI)	3.00 - 3.09
APACS+ NIM32	4.40 - 4.41
Output Discrete Module (ODM)	3.00
PROFIBUS Fieldbus Module (PFM)	3.00 - 3.03
Kernal OpCode (15939-810V) (PFM)	1.53
Resistance Temperature Module (RTM)	3.00 - 3.02
Satellite Control Module (SCM)	4.00

ROM or Other Software	Version
Standard Analog Input Module (SAI) ²	3.00 - 3.03
Kernal OpCode (15939-818) (SAI)	1.54
Standard Analog Module (SAM)	3.00 - 3.05
Standard Discrete Module (SDM)	3.00 - 3.01
Standard Discrete Module Plus (SDM+) 24 Volt Version	3.00 - 3.23
Standard Discrete Module Plus (SDM+) 48 Volt Version	3.00 - 3.23
Voltage Input Module (VIM)	3.00 - 3.02

Notes

1. In modules with more than one ROM, each ROM must be the same version. The ROM version number is listed on the module's identification label.
2. May require kernal opcode for field upgrade.
3. ACMx boot ROM code is installed by the operating system to assure correct version.

**Module ROMs Compatible with
QUADLOG CCM/CCM+/CCMx Software**

ROM Software	Version
QUADLOG Critical Control Module (CCM 3.41)	3.03
QUADLOG Critical Control Module Plus (CCM+ 3.42)	3.03
QUADLOG Critical Control Module Ex (CCMx 3.53) ⁴	3.12
QUADLOG Critical Analog Input Module (CAI) ³	3.00 - 3.04
QUADLOG Kernal OpCode (15939-818) (CAI)	1.53
QUADLOG Critical Analog Module (CAM) ³	3.01 - 3.04
QUADLOG Kernal OpCode (15939-761V) (CAM)	1.52
QUADLOG Critical Discrete Module (CDM)	3.02 - 3.04
QUADLOG Critical Discrete Output (CDO-DC) ³	3.00 - 3.01
QUADLOG Kernal OpCode (15939-783V) (CDO)	1.52
QUADLOG Enhanced Analog Module (EAM)	3.01 – 3.02
QUADLOG Input Discrete Module (IDM)	3.00
QUADLOG Output Discrete Module (ODM)	3.01
QUADLOG Resistance Temperature Module (RTM)	3.00 - 3.01
QUADLOG Standard Analog Module (SAM)	3.00
QUADLOG Standard Discrete Module Plus (SDM+)	3.02 - 3.03
QUADLOG Voltage Input Module (VIM)	3.01 – 3.04

Notes

1. In modules with more than one ROM, each ROM must be the same version. The ROM version number is listed on the module's identification label.
2. For additional QUADLOG compatibility information, refer to the QUADLOG release.txt files on the Control CD.
3. May require kernal opcode for field upgrade.
4. CCMx boot ROM code is installed by operating system to assure correct version.