

CRISP Automation Systems Documentation

Manual Number: MAN-CSP-SPD-031

Subject: CRISP 3.1 Software Product Description

Date Created: 07/24/2002 Revision 1.1 Date Revised: 08/12/2002

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Supersedes: MAN-CSP-SPD-031 V 1.0

Revision History

<u>Revision</u>	<u>Date Issued</u>	<u>Description</u>	<u>Author</u>	<u>Approved</u>
1.0	07/24/2002	Original Issue	S. Quayle	K. Wild
1.1	08/12/2002	Fix header; redundancy	S. Quayle	K. Wild

Reference Documents:

N/A

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Dept: Engineering

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Description

CRISP®/32 and related layered products from CRISP Automation deliver a powerful, flexible and reliable factory automation platform. CRISP®/32 is a real-time process control environment that uses the OpenVMS operating system to implement plant-specific application software.

If you are seeking improved horizontal integration among your manufacturing processes, this platform provides both centralized and distributed process control capability. If you are seeking improved vertical integration in your business enterprise, the CRISP®/32 platform supports information management for direct and/or supervisory process monitoring and control.

CRISP®/32 executes monitoring and control algorithms in a high speed, multi-tasking environment. It continuously reads inputs to the system, processes them through user-developed logic and derives system outputs for control, alarming or annunciation.

CRISP®/32 provides a real-time memory resident database with historical data storage and retrieval and a host of other features. It supports a full, network-based client/server architecture which, in turn, facilitates seamless integration with existing business and production control systems.

General CRISP®/32 Features

The CRISP®/32 Software Product has numerous features. The following are among the more prominent:

- An open architecture based on a scalable hardware platform.
- Modular design which provides for ease of expansion.
- All system software components and layered products are completely integrated for ease of use.
- Upgrade paths for user interfaces.
- Hardware investment is usually preserved if business needs dictate expansion or a change in business or production strategies.
- Real-time memory resident databases.
- Real-time simultaneous data acquisition, process monitoring and Human-Machine Interface support.
- Math and logic functions.

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- Built-in support for redundant configurations.
- Choice of operator interface technology.
- An Application Programming Interface (API) and high level language interface for advanced users.
- Powerful peer-to-peer communications.
- Built-in "health-checking" for user-developed applications.
- Real-time trending and historical data storage and retrieval.
- Multiple databases and user application logics.

Specific Features for CRISP®/32 Version 3.1

There are several features that are specific to the current major release of CRISP®/32:

- Support for Compaq's OpenVMS operating system on Alpha processors, version 7.2 and later.
- The Log Server, which allows all CRISP console messages to be logged to a file and optionally sent via UDP/IP to other systems.
- Improvements to the security facility to support FDA Part 11 requirements.
- User databases may be "hot swapped" to new versions (requires separate license)
- Many other improvements to the CRISP®/32 System components.

CRISP Historian Data Storage and Retrieval

This software implements historical trends and provides a means of long-term process data storage and retrieval from any point in the process database. Data may be sampled and stored directly or averaged for a period of time before being stored on disk. The data files are standard RMS relative files with a unique name that depends on sample rate and creation date. Features of Historian are:

- Event-driven or time-based data sampling.
- User specified sample time.
- Over 500 samples per second, depending on hardware configuration.
- Retrieved data can be processed by CRISP application code.

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SYSTEM COMPONENTS

The basic components of the CRISP®/32 system are defined in the following:

- SOFTWARE BUS** Provides a standard mechanism for inter-process communication and access to the CRISP databases.
- DBINSTALL** The database installer process (DBINSTALL) provides an easy method to install a database. DBINSTALL allows the name of the database to be specified, as well as its definition.
- LGINSTALL** The logic installer (LGINSTALL) provides an easy method to install an application logic task. LGINSTALL allows a name to be specified as well as the interval and priority at which execution should occur.
- CRISP COMPILER** The CRISP Compiler generates output files, which are later built into executable images (application programs), from source files written in the CRISP®/32 language.
- CLE** The CRISP Logic Executive (CLE) provides control and scheduled execution of user written application logics.
- DBCTRL** The Database Controller (DBCTRL) processes CRISP timer variables. The controller also stores status data for controlling access to the CRISP database by external processes.
- PRINT** PRINT receives messages from CRISP application logic and prints them on the correct device.
- TREND** TREND retrieves variables from application databases and graphically represents this data continuously.
- HISTORIAN SYSTEM** The CRISP Historian System allows the user to store selected process variables in permanent disk files for later analysis. Data may be stored on a time or event driven basis.
- ICC** The CRISP Inter - Computer Communications (ICC) process provides data transfers from the active CPU of a dual system to the idle CPU. The transfers can be sent via Arbiter hardware (VAX only) or via Ethernet.

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FILES	The FILES server process enables CRISP application logic processes to read and write data files stored on disk.
CRMON	The CRMON process provides health checking of the CRISP processes.
DBASRV	The Database Access (DBASRV) allows decoupled access to local CRISP databases. Client processes interface with the server via messages sent over the Software Bus or Ethernet.
CASRV	The CRISP Access Server (CASRV) performs Historian and display file I/O functions for networked workstations and communication clients.
LOGSRV	Captures messages sent by all CRISP processes. Sends the messages to the CRISP\$TT device, a log file, and via UDP/IP to other Log Server processes.

HARDWARE REQUIREMENTS

CRISP®/32 Version 3.1 is compatible with the following:

VAX CPU's

- All VAX CPU's which support OpenVMS 5.5-2 or later.
- Disk Capacity: A minimum of 150 Megabytes of available disk storage without DECwindows, 200 Megabytes with DECwindows. Additional disk storage required for Historian or SPC.
- Memory: A minimum of 8 Megabytes of memory without DECwindows, 12 Megabytes with DECwindows. If users intend to use additional layered products, more memory should be installed.

<u>Product</u>	<u>Additional Memory</u>
VMS Cluster member	2 MB
Color Workstation	600 KB per station
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Windowed Workstation	4 MB per CRISPdraw process running in the same system
Historian (up to 100 points) Additional points	1 MB 500 KB per 100 points
IDI	750 KB per port

Additional physical memory may be required for other non-CRISP, user-specific processes.

- Network: One or more Ethernet interfaces

Color Workstation requires either QBus or a UNIBUS machine.

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Alpha CPU's

- All Alpha CPU's which support OpenVMS 7.2 or later.
- Disk Capacity: A minimum of 1000 Megabytes of available disk storage without DECwindows, 1500 Megabytes with DECwindows. Additional disk storage required for Historian or SPC.
- Memory: A minimum of 64 Megabytes of memory without DECwindows, 128 Megabytes with DECwindows. If users intend to use additional layered products, more memory should be installed.

<u>Product</u>	<u>Additional Memory</u>
VMS Cluster member	20 MB
Windowed Workstation	10 MB per CRISPdraw process running in the same system
Historian (up to 100 points) Additional points	1 MB 500 KB per 100 points
IDI	1 MB per port

Additional physical memory may be required for other non-CRISP, user-specific processes.

- Network: One or more Ethernet interfaces

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Additional Hardware

The CRISP system software is designed to accommodate the use of the following optional hardware equipment:

- VT terminals
- Line printers
- LAT terminal servers

SOFTWARE REQUIREMENTS

CRISP/32 Version 3.1 requires the following:

- VAX Operating System: VMS version 5.5-2 or later.
- Alpha Operating System: VMS version 7.2 or later, with minimum version 7.2-2 recommended.
- CRISP®/32 is supported on multi-processor (SMP) systems. Refer to manual MAN-CSP-MIG-031 for restrictions on multi-processor support.
- Network Software: DECnet end node or full function software license. TCP/IP software required for CRISPView. TCP/IP software required for Log Server network operation.

Optional software on VAX includes VAX C or VAX FORTRAN compilers. Optional software on Alpha includes Compaq C or Compaq FORTRAN compilers.

LAYERED PRODUCTS

CRISP®/32 V3.1 is compatible with the following layered products. Refer to the Compatibility chart for version numbers.

- CRISP®/32 I/ONYX®
- Graphics Print Package (GPP)
- CRISPconnect™ Family:
 - Server for NetDDE (VAX only)
 - Server for @aGlance/IT (VAX only)
 - Intelligent Device Interface (IDI)

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- WORF™ Network API
- DATAGATE™ Relational Database Interface (VAX only)
- 20/20™ Interface (VAX only)
- CRISPView™ Family:
 - CRISPwindows
 - Color Workstation
 - PC Workstation
 - Historian Viewer™ (VAX only)
 - Statistical Process Control (SPC) (VAX only)
 - REPORTER™ (VAX only)
 - CHART/II™ (VAX only)

USER DOCUMENTATION

The following documentation is provided with this software. For layered product documentation, please refer to the corresponding Software Product Description.

CRISP®/32 V3.1 Migration Guide	MAN-CSP-MIG-031
CRISP®/32 Installation Guide	
CRISP®/32 Language Reference Manual	
CRISP®/32 Function Calls Reference Manual	
CRISP®/32 Logic Debugger User's Manual	
Utilities Reference Manual	
CRISP®/32 Annunciator User's Guide	
Color Workstation User's Guide	
CRISP®/32 I/ONYX Config Reference Manual	
Software Bus/DBA Reference Manual	
CRISP®/32 Historian System User's Guide	

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COMPATIBILITY MATRIX

Related Product	Version of	
	3.0	3.1
MS/IONYX - V3.01	C	C
MS/IONYX - V4.01	C	C
I/OVER - V4;5, 4;6	NT	NT
I/OVER - V4;7, 4;8	C	C
I/OVER - V4;9, 5;0	C	C
I/OVER - V5;1,5;2	C	C
I/OVER - V5;3	C	C
ARB - p16;6, p16;7 (VAX only)	C	NT
VAX/VMS - V5.4 and earlier	NS	NS
VAX/VMS - V5.5-2	C	C
VAX/VMS - V6.0	C	NT
VAX/VMS - V7.0	NT	C
VAX/VMS - V7.1	NT	C
VAX/VMS - V7.2	NT	C
VAX/VMS - V7.3	NT	C
Alpha VMS - V7.1 and earlier		NS
Alpha VMS - V7.2		C
Alpha VMS - V7.3		C

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Matrix Legend

C = Compatible

NC = Not compatible

NS = Not supported

NT = Not tested

SOFTWARE PRODUCT COMPATIBILITY

Product Version Required for CRISP 3.1

<u>Product</u>	<u>Minimum Version</u>	<u>Latest Version</u>	<u>Release Upgrade Recommendations</u>	<u>Release Features</u>
CHART (VAX only)	6.0 or later	8.0C	Obsolete product, replaced by CHART/II	Not applicable
CHART/II™ performance and handling (VAX only)	1.0	1.2	Recommend customers upgrade due to performance improvements	Improved escape sequence
DATAGATE™ (VAX only)	1.0	2.2	New product	New product supporting Rdb/VMS
HVIEW (VAX only)	1.1	1.2	New product	Motif Compatibility, ease of use
IDI (on VAX)	4.1	4.2	Improved licensing on V4.2	
IDI (on Alpha)	4.2	4.2	No Alpha support prior to V4.2	
PCWS and array	2.7-1	3.4	Very strongly recommend V3.0-1 due to array handling improvements	Improved VGA support
REPORTER™ Tagnames	2.0	2.1	New features, improved performance	Supports Alias & Variable Subscripts

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SPC Historian	3.1	3.2	Recommend 3.2 for use with Historian point files	Improved File Access performance
WWS	2.2	3.0	Enhanced security	
WORF	3.1	3.1	Version must match CRISP version	

SOFTWARE LICENSING

This software product is furnished under the licensing provisions and Terms and Conditions of Sale of CRISP Automation. The software can be licensed for a single CPU or for multiple CPU's.

SOFTWARE WARRANTY

Warranty for this software product is twelve (12) months from the time of shipment and is provided by CRISP Automation with the purchase of a license for the product. The software is warranted to conform to this Software Product Description.

SOFTWARE SUPPORT AGREEMENT

This software product comes with a six (6) month software support agreement that includes new software releases, interim updates, remote diagnostic support and telephone consultation. The agreement can be renewed on an annual basis by the customer for a minimal fee.