SECTION 25 15 16

INTEGRATED AUTOMATION SOFTWARE FOR CONTROL AND MONITORING NETWORKS

Product Specified in this section:

Crestron SW-FUSION-RV

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SECTION 25 15 16

INTEGRATED AUTOMATION SOFTWARE FOR CONTROL AND MONITORING NETWORKS

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1. GENERAL
	1. SUMMARY
		1. Section Includes:
			1. An enterprise level networked system software that will monitor, manage and control multiple aspects of connected systems.
			2. Upon final installation and commissioning the system software will provide:
				1. Graphical views of room and asset status from a web-based user interface.
				2. Ability to remote control and chat with system users via the built-in help desk.
				3. Ability to generate and view reports showing room and asset usage.
				4. Email alerts based on predetermined events.
				5. Resource management, via a scheduling engine.
		2. Related Requirements
			1. Section 12 24 13 — Roller Window Shades
			2. Section 23 09 23 — Direct Digital Control System for HVAC
			3. Section 25 08 00 — Commissioning of Integrated Automation
			4. Section 25 10 00 — Integrated Automation Network Equipment
			5. Section 25 11 13 — Integrated Automation Network Servers
			6. Section 25 13 13 — Integrated Automation Control and Monitoring Network Supervisory Control
			7. Section 25 13 16 — Integrated Automation Control and Monitoring Network Integration Panels
			8. Section 25 13 19 — Integrated Automation Control and Monitoring Network Interoperability
			9. Section 25 15 16 — Integrated Automation Software for Control and Monitoring Networks
			10. Section 25 50 00 — Integrated Automation Facility Controls
			11. Section 25 90 00 — Integrated Automation Control Sequences
			12. Section 26 09 43.13 — Digital-Network Lighting Controls
			13. Section 26 05 00 — Common Work Results for Electrical
			14. Section 26 09 23 — Lighting Control Devices
			15. Section 26 09 36 — Modular Dimming Controls
			16. Section 26 09 43 — Network Lighting Controls
			17. Section 27 15 00 — Communications Horizontal Cabling
			18. Section 27 41 00 — Audio-Video Systems
			19. Section 27 41 13 — Architecturally Integrated Audio-Video Equipment
			20. Section 27 41 16 — Integrated Audio-Video Systems and Equipment
	2. REFERENCES
		1. Abbreviations and Acronyms
			1. RAMSS – Remote Asset Management System Software.
			2. UI – User Interface
		2. Definitions
			1. Asset – a required or beneficial component of the system, sub-system or related system.
2. PRODUCTS
	1. RAMSS (REMOTE ASSET MANAGEMENT SYSTEM SOFTWARE)
		1. Manufacturers:
			1. Basis-of-Design Manufacturer: Subject to compliance with requirements, provide products of **Crestron Electronics, Inc., Rockleigh, NJ 07647**, Phone 800-237-2041, Fax: 201-767‑1903, [www.crestron.com](http://www.crestron.com) **[**or comparable products from a single manufacturer approved by Architect prior to bidding**]**, with the following components and characteristics.
		2. Basis of Design Product:
			1. Crestron SW-FUSION-RV
		3. Remote Asset Management System
			1. The Remote Asset Management System shall be composed of the following system components:
				1. Remote Asset Management System Software as specified in this section.
				2. Remote Asset Management System Server as specified in Section 25 11 13.

Specifier: Edit the following system components to correspond to Project requirements.

* + - * 1. Control Processors as specified in related Divisions.
				2. Assets as specified in related Divisions.
				3. User Interfaces as specified in related Divisions.
		1. Control Processor Integration
			1. RAMSS shall maintain bidirectional Ethernet communication with hardware control processors.
			2. Assets
				1. Assets shall be capable of bidirectional communication with hardware processor or direct communication with RAMSS.
				2. RAMSS shall monitor and log the following asset device information:

Specifier: Edit list below to correspond to Project requirements.

Location

Usage and maintenance information.

* + 1. User Interfaces
			1. RAMSS shall utilize a client/server software design. All RAMSS services shall be accessible through a standard web browser interface.
			2. RAMSS browser interface shall support:
				1. Mozilla based browsers running on Windows and Macintosh operating systems.
				2. Full touch screen type, (via mouse) system and device control for programmed systems.

Specifier: The following paragraph refers to an Xpanel version of the in room touch screen. Edit to correspond to Project requirements.

* + - * 1. An exact graphical replica of the in-room user touch screen interface allowing primary system control, help-desk system control or supplementary user interface control.

Specifier: The following paragraph refers to an advanced Xpanel version of the in room touch screen. Edit to correspond to Project requirements. Retain only if programming for an additional advanced Xpanel is in the scope of the project.

* + - * 1. An advanced version of the in-room user touch screen interface allowing primary system control, help-desk system control or supplementary user interface control.
				2. Viewing remote rooms via in-room IP webcam.
				3. Custom user view preferences based system attributes.
				4. Multiple languages.
			1. Local Status Display:
				1. RAMSS shall support an outside of room networked wall mounted touch screen with the following capabilities:

Local room status display via red and green indicators with bright 180 degree visibility.

Local room display of schedule.

Un-occupied rooms may be scheduled directly from touch screen.

* + - 1. RAMSS browser user interface shall include Receive and Respond capability for help requests and critical alerts.
		1. System Architecture:
			1. Multiple Server Capability:
				1. Distributed Server Architecture: allows multiple servers to support one installation (organization). Servers can be located in different geographical locations while connected to the same database and providing a consistent user interface. Logging can be locally maintained and stored.
			2. Load Balancing:
				1. The database is divided between multiple servers in a group. The servers in a group divide the rooms assigned to them according to assigned server weight (i.e., capacity).
			3. Dynamic Allocation:
				1. Servers can be allocated to different groups when necessary and the room loads can be dynamically or manually rebalanced after such a reallocation.
			4. Failover Support:
				1. In a multiple server system, if one server fails, the remaining servers in the same group will temporarily host the rooms on that server while resources permit.
			5. Capacity:
				1. A single RAMSS instance shall support up to 750 rooms.
			6. Messaging:
				1. Microsoft Message Queuing: Microsoft Message Queuing is used for asynchronous message routing. Vital information may be communicated to services, which may not be accessible when the message is generated.
			7. Communications:
				1. Communication with external devices shall be through Ethernet protocol.
		2. Licensing:

Specifer:

FUSION-RV requires only one license per company or organization. Multiple servers and unlimited number of rooms/systems may operate under this single license.

If FUSION-RV and FUSION-EM are both being deployed, each application will required a license, for a total of two licenses, (one FUSION-RV license and one FUSION-EM license).

* + - 1. Entire Remote Asset Management System including servers, client devices and Control Processors shall operate under a single RAMSS license.
			2. Multiple servers for an organization shall operate under a single license globally.
			3. Systems requiring multiple server licenses for an organization or corporation shall not be accepted.

Specifier: Crestron FUSION-RV is free when used in 5 rooms/systems or less. Note: When FUSION-RV and FUSION-EM are used together both applications must be either paid (6 rooms or more) or free (less than 5 rooms).

* + - 1. Systems utilizing RAMSS in five or less rooms shall not require a paid license for operation.
		1. Functions
			1. System Monitoring:
				1. Monitor connected systems and devices from a networked browser.
				2. Monitor and log programmed attributes of connected systems and devices.
				3. Monitor and log online/offline status of all connected systems and devices.
				4. Auto-discover systems - automatically discover system control interfaces and compatible devices.
			2. System Control:
				1. Control connected systems and devices from a networked browser.
				2. Control programmed attributes of connected systems and devices in real time.

Specifier: Edit description below to correspond to Project requirements.

Crestron FUSION-RV browser interface supports in room (or sub-system) Xpanel access. Any room, area, or system with an Xpanel may be accessed and controlled directly through the FUSION-RV browser interface.

Access in-room AV user touch screen interface via browser.

* + - * 1. RAMSS shall support remote assistance help desk personnel via browser interface.

Browser Interface capability:

Control over programmed systems and devices.

IP camera viewing.

* + - * 1. RAMSS shall support automated actions based on data from the following integrated devices.

Specifier: Occupancy sensors may be integrated with FUSION-RV via the following interfaces/processors: TPMC-4SM, TPMC-4SM-FD (touch screen), C2N-CBD-P (Keypad), GLS-SIM (sensor interface), and any 2-series or 3-series control processor with available versiports.

Occupancy sensor

Specifier: Photo sensors may be integrated with FUSION-RV via the following interfaces/processors: C2N-CBD-P (Keypad), GLS-SIM (sensor interface), and any 2-series or 3-series control processor with available versiports.

Photo sensor

Specifier: Any action detectable by the control processor or generated by the control processor may serve as a trigger for FUSION-RV actions and events.

Example trigger actions: AV systems start-up and shut-down, HVAC system state or status, and Lighting control system state or status.

Control processor

Specifier: Detailed automation sequences may be specified in Section 25 90 00.

* + - 1. Scheduling
				1. Calendars

RAMSS shall support assignment of calendars to rooms, where rooms contain the systems, devices and assets.

Calendar shall be capable of day, week, or month views.

Calendar shall support adding, editing and deleting of meetings and events in rooms.

RAMSS shall support calendar schedule requests originating from assets.

RAMSS shall support the following scheduling applications:

Integrated calendar

Microsoft Outlook/Exchange

Lotus Notes/Domino

CollegeNet/R25

RAMMS shall be capable of scheduling rooms.

RAMMS shall support scheduling and control of video lecture capture sessions based on calendar event information.

* + - * 1. RAMSS shall support automated schedule actions based on:

Scheduled events contained in the following:

Integrated built-in scheduler

Microsoft Exchange

Lotus Domino

CollegeNet R25

Specifier: Edit below to correspond to a scheduling application that is to be integrated using the Crestron FUSION API (Application Programming Interface).

Other integrated scheduling software

Specifer: When FUSION-RV is integrated with equipment through a Crestron control processor, any action detectable by the control processor may serve as a trigger for FUSION-RV actions and events.

* + - * 1. Schedule Automation

The following functions shall be supported via integrated hardware:

RAMSS shall be capable of initiating actions on assets, systems, and devices based on calendar data.

Calendar shall support adding defined automation actions to meetings and events.

* + - 1. Resource Management

RAMSS shall provide the following resource management tools and capabilities:

* + - * 1. Maintenance tools:

RAMSS shall generate and send email notifications to support and maintenance staff based on:

Detected problems

Upcoming scheduled maintenance events

* + - * 1. Reporting:

Predefined templates shall be available for creating ad-hoc reports.

RAMSS shall generate the following default reports:

Room usage

Assets by Room

Assets by Type

Data Values (Analog)

Data Values (Digital)

Data Values (Serial)

Device Usage

Error Alerts

Help Requests

Meetings by Room

Room Online Status

Rooms by Node.

RAMSS shall be capable of the following report activities:

Specify report parameters: room selection, time range, and report style.

Save reports for future recall.

Schedule automatically running reports.

Email automatically generated reports to predefined recipient list.

Specifier: The following devices utilize Crestron Direct Connect technology, which enables FUSION-RV to connect to them without a control system:

* CAPTURE-HD
* DLP Display devices with Crestron Inside. See link for more info: <http://www.crestron.com/products/roomview_connected_embedded_projectors_devices/>
* TPMC-3SM
* TPMC-4SM
	+ - 1. Communication with compatible integrated display devices.
	1. ADDITIONAL SOFTWARE REQUIREMENTS:
		1. Provide and install the following software:
			1. Microsoft Windows Server 2008 R2 Standard or Enterprise.
			2. Microsoft SQL Server 2008 R2 with 10 user Client Access Licenses
			3. Microsoft .Net Framework
			4. Microsoft IIS
	2. OPTIONAL SCHEDULING SOFTWARE:
		1. Microsoft Exchange:
			1. Microsoft Exchange 2007 with Exchange Web Services or Exchange 2010
		2. Lotus:
			1. Lotus Notes Client: versions 7.03, 8.0, 8.5
	3. BARE METAL BOX SERVER
		1. Hardware Server: As specified in Section 25 11 13.
	4. CONTROL HARDWARE
		1. Required compatible hardware:
			1. Control processors as specified in Section 25 50 00
			2. Wall mounted touch screens as specified in Section 25 13 16
	5. SOFTWARE SYSTEM FUNCTIONAL REQUIREMENTS
		1. Automation Functions
			1. Room systems shall be automated based on scheduled events, occupancy or other detectable action.

Specifier Note: Automation may include AV systems start-up and shut-down, HVAC systems control, lighting control, video conference set-up or any pre-determined controllable sequences.

* + 1. Control Functions
			1. RAMSS shall support control of connected devices directly from a RAMSS linked user interface control window
			2. Control connected systems and devices from a centralized server through Ethernet connectivity.
		2. Monitoring Functions
			1. Monitor connected systems and devices from a centralized server through Ethernet connectivity.
			2. Monitor programmed attributes of connected systems and devices.
			3. Monitor online/offline status of all connected systems and devices.
	1. SOFTWARE SYSTEM SERVICES REQUIREMENTS
		1. System and Asset Management
			1. Asset Information:
				1. RAMSS browser interface shall include an asset information tab for each connected asset, capable of storing and displaying the following asset information:

Current status:

Online

Offline

Identification name or number

Type

Connection type

Make

Model

Asset Tag

Serial number

Last service date

Service status

Asset lifespan exceeded

Maintenance control expired

Service due notification

Economic lifespan

Date of Purchase

Warranty expiration date

Network connection type

IP address / Hostname

MAC address

Maintenance details

Service contract information

Service interval

Last service date

Custom defined asset properties

* + - * 1. RAMSS shall be capable of automatically filling in asset information for automatically discovered assets.
				2. RAMSS shall be capable of storing reference images for assets.
				3. RAMSS shall be capable of storing reference documents for assets.

Specifier Note: Systems/Locations may include the following, Edit list below to correspond to Project requirements. Coordinate systems/locations below with A/V Specifications.

* + - 1. The following systems shall be under RAMSS management:
				1. Classrooms
				2. Lecture halls
				3. Video conferencing rooms
				4. Boardrooms
				5. Meeting rooms
				6. Other rooms or areas with controllable equipment
			2. Email Notifications
				1. RAMSS shall be capable of generating email notifications based on any system event, devices event, or attribute state or level.
				2. RAMSS shall send email notifications of asset problems to maintenance personnel.
				3. RAMSS shall send email notifications of asset upcoming scheduled maintenance events to maintenance personnel.
			3. Help-Desk
				1. RAMSS shall support remote assistance help desk personnel via browser interface.

Browser Interface capability:

Control over programmed systems and devices.

IP camera viewing.

Specifier: Scheduling services refers to a user creating an event.

* + 1. Scheduling Services

Specifier: Admin Browser refers to a user interfacing FUSION-RV through a browser.

* + - 1. Administrator Browser
				1. View status of any selected room system on the RAMSS browser interface.
				2. Edit scheduled events of any selected room system on the RAMSS browser interface.

Specifier: Local at-the-door” refers to a user interfacing FUSION-RV through a touch screen located at the door/entrance to a FUSION-RV equipped room.

* + - 1. Local at-the-door
				1. RAMSS shall integrate with networked wall mounted touch screens as specified in Section 25 13 16.
				2. Networked wall mounted touch screens shall be capable of ad-hoc scheduling.
				3. Networked wall mounted touch screens shall be capable of viewing local room status and schedule.
			2. General
				1. RAMSS Calendar actions:

Adding event

Edit event

Delete event

* + - * 1. RAMSS shall include an integrated scheduling calendar.
				2. RAMSS shall integrate with, the following scheduling software calendars.

Microsoft Outlook/Exchange

Lotus Notes/Domino

CollegeNet R25

* + - * 1. RAMSS browser interface calendar shall be capable of day, week, or month views.
				2. RAMSS shall support assignment of calendars to rooms, where rooms contain the systems, devices and assets.
			1. Event Scheduling
				1. Un-occupied rooms may be scheduled directly from touch screen.
			2. Asset Scheduling
			3. Automation
				1. Schedule and Reschedule - capability to schedule rooms as well as re-schedule in the case of non-active or abandoned previously scheduled room events.
	1. INTEGRATION
		1. Communication
			1. RAMSS shall be cable of communicating with assets connected to integrated control processors.
			2. RAMSS shall be capable of direct network communication with the following devices without use of a control processor or other translator, gateway, or bridging device.

Specifier: The Crestron CAPTURE-HD/PRO is specified in Section 27 41 16. Include Section 27 41 16 “Audio-Video Devices / Digital Capture Device” if project requires digital audio-video capture functions. FUSION-RV is capable of direct communication with the CAPTURE-HD and CAPTURE-HD-PRO. Rooms requiring only capture functions without AV or other control, do not require a control processor in order to integrate into the FUSION-RV system.

* + - * 1. Audio-Video digital capture device as specified in Section 27 24 23.

Specifier: Video Display Devices should be specified in Section 27 41 16. For direct communication between FUSION-RV and display devices, Specify DLP display devices from the list found at: http://www.crestron.com/products/roomview\_connected\_embedded\_projectors\_devices/

* + - * 1. Display devices with embedded RAMSS connectivity software.

Specifier: Crestron touch screens are specified in Section 27 41 13.

Include Section 27 41 13 “Architecturally Integrated Audio-Video Equipment, Touch Screens” if project requires wall mounted touch screen scheduling.

A room may include a touch screen outside the entrance for scheduling, and additional touchscreens inside the room for control. FUSION-RV is capable of direct communication with the TPMC-3SM, TPMC-4SM/FD, and TSW-Series touch screens when they are in scheduling mode. The TPMC-4SM/FD includes connections for occupancy sensors, so room occupancy state is directly available to FUSION-RV.

Rooms requiring only scheduling functions without AV or other control user interface capabilities do not require a control processor in order to integrate the above touch screens into the FUSION-RV system.

* + - * 1. Touch Screen User Interfaces
1. EXECUTION

Not Used

END OF SECTION 25 15 16