



MACH-ProWebSys™

Web-Enabled Controller

## Web server. Simplified.

Publish your building automation system to the Web quickly and easily with the Reliable Controls® MACH-ProWebSys™. The first 3-in-1 device of its kind, the MACH-ProWebSys™ combines a BTL-listed BACnet Building Controller (B-BC), a BTL-listed BACnet Operator Workstation (B-OWS), and a powerful web server, all in a single package with an installed footprint of a typical building controller.



5 year  
Warranty



Better by design

[www.reliablecontrols.com/MPWS](http://www.reliablecontrols.com/MPWS)

## TECH SPECS

### Processor

- 147 MHz\*, high-performance, 32-bit embedded microcontroller

### Memory

- 8 MB operating RAM
- 1 MB non-volatile RAM (trends and dynamic values)
- 256 MB\* Flash EEPROM operating system, database, JavaScript, graphics, and controller configuration

### Supply Voltages

- 24 VAC  $\pm 10\%$  75 VA max. 50/60 Hz
- 24 VDC  $\pm 10\%$  25 W max.

### Communications

- IEEE 802.3 Ethernet 10/100 BaseT
- 2 EIA-485 @ 76.8 kbps max.
- 1 EIA-232 @ 115.2 kbps max. PC or modem
- SMART-Net port @ 16 sensors max.

### Browser Support

- IE 8, Firefox 3, Chrome 5, Safari 5, or greater
- JavaScript must be enabled on client
- Flash required for animations and flood fill

### Universal Inputs

- 12 universal inputs
- 12-bit A/D converter
- Analog: 0–10 VDC, 4–20 mA, thermistor
- Digital: dry contact
- Impedance: 1 M $\Omega$  for 0–10 VDC range 250  $\Omega$  for 4–20 mA range 20 k $\Omega$  pull-up for thermistor/dry contact range
- Pulse counting up to 150 Hz (supports flow meters)
- 24 VAC over-voltage protection

### 8 Outputs

- 12-bit D/A converter
- First four outputs are socketed to accommodate relay, TRIAC, or universal modules (output modules sold separately)
- Analog: 0–12 VDC
- Binary: 0/12 VDC
- Manual ON provides adjustable 0–12 VDC (HOA only)
- LED indicator (glows proportionally)
- Output power: 75 mA @ 12 VDC
- 24 VAC over-voltage and short protection

### Expansion Modules

- Up to 7 MACH-ProPoint™ expansion modules

### Peripheral Power

- Onboard variable 15–24 VDC power supply providing up to 200 mA of DC power to peripheral devices (If powered with 24 VDC, the maximum voltage output is 22 VDC.)

### Real-Time Clock

- $\pm 1$  second per day

### Memory/RTC Backup

- 72 hour backup
- 10 years for database

## FEATURES

### Protocol

- BACnet®
  - B/IP x 2, Ethernet, MS/TP and PTP
- HTTP/1.1
  - Hyper Text Transfer Protocol
- Reliable Controls Protocol
  - Backward compatibility with previous generation systems
- Modbus
  - Supports both RTU and TCP in both master and slave configurations
- SMTP
  - Provides standard email communications for broadcasting email alarms
- SMS
  - GSM/GPRS modem
- SNMP
  - Simple Network Management Protocol

### 12 Inputs

- Universal ranges
- Expandable using MACH-ProPoint™ expansion modules
- Maximum possible inputs of 128

### 8 Outputs

- Outputs 1–4 are wired to unpopulated sockets
- Outputs 5–8 are universal (no sockets)
- Expandable outputs using MACH-ProPoint™ expansion modules
- Maximum possible outputs of 120

### 256 Variables

- Selectable standard and custom ranges, as well as fixed program-driven values

### 64 PID Loops

- Standard P, PI, or PID controllers for closed loop control
- BACnet loops supported

### 32 Weekly Schedules

- 4 On/Off times for each weekday and 2 override days
- BACnet schedules supported

### 8 Annual Schedules

- Days of the year designated as holidays
- BACnet calendar supported

### 20 Custom Tables

- For creating custom scaling functions

### 64 System Groups

- Allows related points to be grouped on to one display
- 160 points/group

### 128 Control-BASIC™ Programs

- User programmable control strategy in a readable, BASIC-like language
- 3200 bytes per program

### 96 Trend Logs

- Each Trend Log stores 512 samples and up to 6 points
- Values recorded at user defined intervals
- BACnet Trend Logs supported
- RC-Archive® data visible in browser

### 128 Runtime Logs

- Totals the On time and records the On/Off times of a binary point
- Holds 200 events

### 128 User Passwords

- Protects access to system
- Each user is assigned a user name and an access level

### 16 Custom Units

- 8 analog engineering units
- 8 digital engineering units
- 8 multistate units with 8 states, 32 characters each

### Graphic Files

- Supports GIF, TIFF, JPG, PNG, and SWF

### SMART-Net™ Port

- Networks up to 16 SMART-Sensors™

### Real-Time Clock

### Warranty

- 5 years

### Certification

- BTL Listed (B-OWS)
- BTL Listed (B-BC)
- UL 916 Listed
- FCC CFR 47 Part 15/B
- CE

### Wiring Terminals

- 12 to 22AWG (2.5 mm<sup>2</sup> to 0.14 mm<sup>2</sup>)
- Stranded or solid core
- Copper conductors only

### Dimensions

- 25.4 cm L x 13.7 cm W x 3.9 cm H (10" L x 5 3/8" W x 1 1/2" H)

### Mounting

- #8 clearance holes on 23.0 cm L x 11.0 cm W (9 1/16" L x 4 5/16" W)
- Screw depth 25 mm (1")

### Weight

- 1.3 kg (2.7 lb)

## ORDERING

### MPW-S

- MACH-ProWebSys™ controller/Web server

### MPW-S-H

- MACH-ProWebSys™ with HOA (Hand/Off/Auto) switches and pot adjust

### MPW-S-SMK

- MACH-ProWebSys™ certified for smoke control (see MPW-S-SMK Submittal Sheet for details)

## ACCESSORIES

### MPP-IO

- MACH-ProPoint™ I/O expansion module with 12 universal inputs and 8 outputs

### MPP-IO-H

- MPP-IO with HOA (Hand/Off/Auto) switches and pot adjust

### MPP-IO-DL

- Door label sheet for MPW-S, MPW-S-H, MPW-S, MPW-S-H, MPP-IO, and MPP-IO-H

### MPP-I

- MPP Input expansion module with 24 universal inputs

### MPP-I-DL

- Door label sheet for MPP-I

### MPP-O

- MACH-ProPoint™ Output expansion module with 16 outputs

### MPP-O-H

- MPP-O with HOA (Hand/Off/Auto) switches and pot adjust

### MPP-O-DL

- Door label sheet for MPP-O

### RM

- Relay output module (package of 10)

### TM

- TRIAC output module (package of 10)

### UM

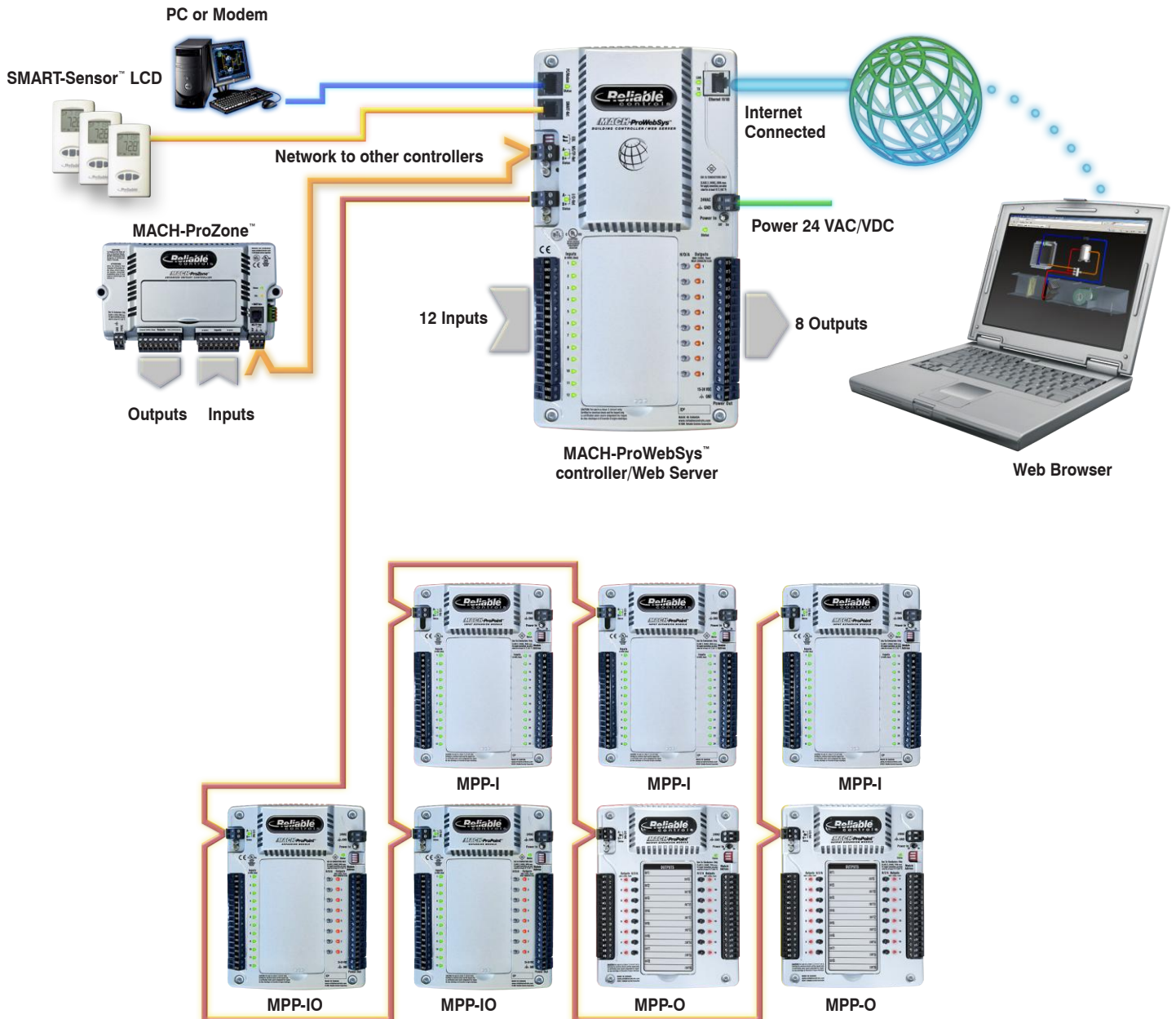
- Universal output module (package of 10)

### Ambient Limits

- Operating: -20 °C to 55 °C (-4 °F to 131 °F)
- Shipping: -40 °C to 60 °C (-40 °F to 140 °F)
- Humidity: 10% to 90% RH non-condensing

\* Rev F and greater: previous revisions were 100 MHz and had 128 MB EEPROM

## APPLICATION DIAGRAM



Connect up to 7 MACH-ProPoint™ expansion modules (MPP-IO, MPP-O and/or MPP-I) with a maximum input count of 128, and a maximum output count of 120 per controller. Expansion modules are daisy-chained to the I/O-Net port of the controller in any combination while limiting the total inputs, outputs, and modules below maximum.



The Reliable Controls® MACH-ProWeb™ combines the field controller, configurable Web server, and browser driven workstation into a single device which is simple to use, flexible to engineer, and highly economical.

## FIELD CONTROLLER

Program the MACH-ProWeb™ point database, Control-BASIC sequence, and graphics just as you would for any other Reliable Controls® product. The MACH-ProWeb™ is a fully functional BACnet Building Controller (B-BC).

**5000RNG MACH-ProWeb - Inputs**

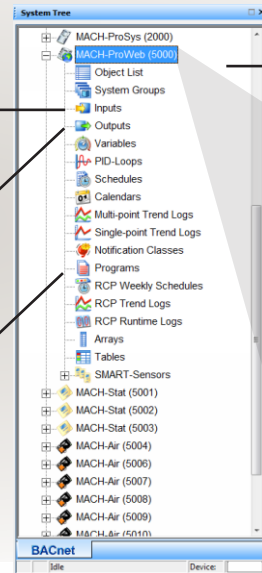
| Input Name   | Value   | Auto/Man | Range       | Calibration | Average | D | Alarm | Label | Object |
|--------------|---------|----------|-------------|-------------|---------|---|-------|-------|--------|
| 1 ACS-SAT    | 20.8°C  | Auto     | 10K-40 >120 | 0.1000064   |         |   |       |       | AI1    |
| 2 ACS-MAT    | 22.3°C  | Auto     | 10K-40 >120 | 0.3000064   |         |   |       |       | AI2    |
| 3 ACS-RAT    | 24.8°C  | Auto     | 10K-40 >120 | 0.1000064   |         |   |       |       | AI3    |
| 4 ACS-SFA    | 8.8Amps | Auto     | 0.0 >100    | 0.0064      |         |   |       |       | AI4    |
| 5 ACS-RFA    | 7.8Amps | Auto     | 0.0 >100    | 0.0064      |         |   |       |       | AI5    |
| 6 ACS-SPARE  | 0.0     | Auto     | Unused      | 0.0064      |         |   | Y     |       | AI6    |
| 7 ACS-SAT    | 21.1°C  | Auto     | 10K-40 >120 | 0.1000064   |         |   |       |       | AI7    |
| 8 ACS-MAT    | 22.7°C  | Auto     | 10K-40 >120 | 0.3000064   |         |   |       |       | AI8    |
| 9 ACS-RAT    | 24.5°C  | Auto     | 10K-40 >120 | 0.2000064   |         |   |       |       | AI9    |
| 10 ACS-SFA   | 6.4Amps | Auto     | 0.0 >100    | 0.0064      |         |   |       |       | AI10   |
| 11 ACS-RFA   | 4.7Amps | Auto     | 0.0 >100    | 0.0064      |         |   |       |       | AI11   |
| 12 ACS-SPARE | 0.0     | Auto     | Unused      | 0.0064      |         |   | Y     |       | AI12   |
| 13           | 0.0     | Auto     | Unused      | 0.0064      |         |   | Y     |       | AI12   |

**5000RNG MACH-ProWeb - Outputs**

| Output Name  | Value    | Auto/Man | Switch | Range           | On | 100% | Delay | Min   | On | S | D | Alarm | Label | Program | In Service | Obj |
|--------------|----------|----------|--------|-----------------|----|------|-------|-------|----|---|---|-------|-------|---------|------------|-----|
| 1 HTG-P1     | Start    | Auto     | Auto   | Stop/Start      |    |      |       |       |    |   |   |       |       | 13      | Yes        | BO1 |
| 2 HTG-P2     | Stop     | Auto     | Auto   | Stop/Start      |    |      |       |       |    |   |   |       |       | 16      | Yes        | BO2 |
| 3 HTG-P3     | Start    | Auto     | Auto   | Stop/Start      |    |      |       |       |    |   |   |       |       | 17      | Yes        | BO3 |
| 4 HTG-P4     | Start    | Auto     | Auto   | Stop/Start      |    |      |       |       |    |   |   |       |       | 18      | Yes        | BO4 |
| 5 HTG-B1-ENA | Enabled  | Manual   | Auto   | Disabled/Enable |    |      |       |       |    |   |   |       |       | System  | Yes        | BO5 |
| 6 HTG-B2-ENA | Disabled | Auto     | Auto   | Disabled/Enable |    |      |       |       |    |   |   |       |       | 15      | Yes        | BO6 |
| 7 HTG-SEC-V  | 11.1 %   | Auto     | Auto   | 0.0 >100%       |    |      | 0.00  | 10.00 |    |   |   |       |       | 14      | Yes        | AD7 |

**5000PRGS MACH-ProWeb - Control-BASIC**

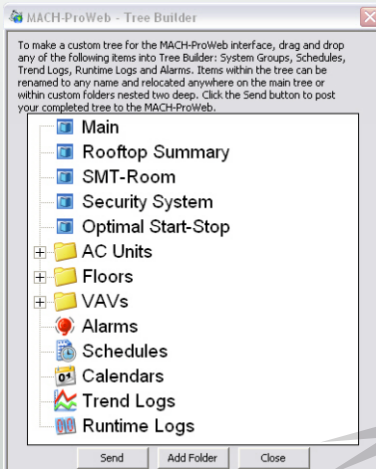
| Program Name | Run | Auto/Man | Timer   | Time | Left | Size | Exit | Label |
|--------------|-----|----------|---------|------|------|------|------|-------|
| 1 FC1-PRG1   | Yes | Auto     | Enabled |      | 2472 | No   |      |       |
| 2 FC1-PRG2   | Yes | Auto     | Enabled |      | 1285 | No   |      |       |
| 3 CALLS      | Yes | Auto     | Enabled |      | 209  | No   |      |       |



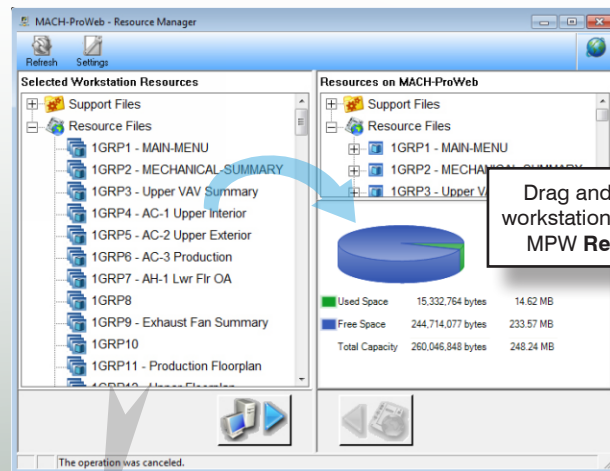
Right-click to access MACH-ProWeb™ Tools

## WEB SERVER

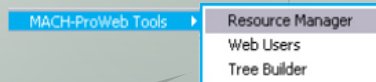
Using the MACH-ProWeb™ Tools in RC-Studio® 2.0, it is extremely simple to select and post resource files to the MACH-ProWeb™ and manage future changes.



With the MPW Tree Builder, drag and drop graphics and objects to make your own customized navigation tree.

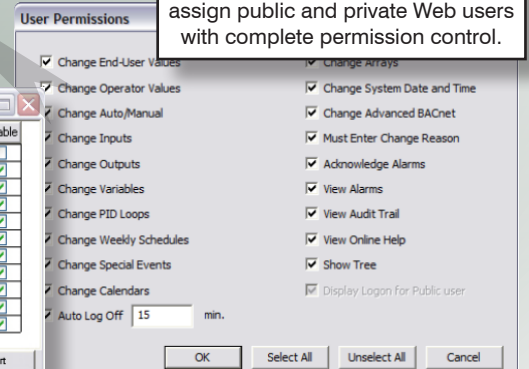


Drag and drop selected PC workstation resources using the MPW Resource Manager.



**5000MPWDS MACH-ProWeb - Web Users**

| User Name | Password | Level | Group     | Permissions | Enable                              |
|-----------|----------|-------|-----------|-------------|-------------------------------------|
| 1 Public  | *****    | 3     | MAIN-MENU | Permissions | <input checked="" type="checkbox"/> |
| 2 Bob     | *****    | 3     | MAIN-MENU | Permissions | <input checked="" type="checkbox"/> |
| 3 Doug    | *****    | 6     | MAIN-MENU | Permissions | <input checked="" type="checkbox"/> |
| 4 Tom     | *****    | 6     | MAIN-MENU | Permissions | <input checked="" type="checkbox"/> |
| 5 Roland  | *****    | 7     | MAIN-MENU | Permissions | <input checked="" type="checkbox"/> |
| 6 Robin   | *****    | 6     | MAIN-MENU | Permissions | <input checked="" type="checkbox"/> |
| 7 Levi    | *****    | 6     | MAIN-MENU | Permissions | <input checked="" type="checkbox"/> |
| 8 Kent    | *****    | 1     | MAIN-MENU | Permissions | <input checked="" type="checkbox"/> |
| 9 Richard | *****    | 6     | MAIN-MENU | Permissions | <input checked="" type="checkbox"/> |
| 10 Robert | *****    | 9     | MAIN-MENU | Permissions | <input checked="" type="checkbox"/> |
| 11        | *****    | 3     | MAIN-MENU | Permissions | <input checked="" type="checkbox"/> |



With the MPW Web Users tool, assign public and private Web users with complete permission control.

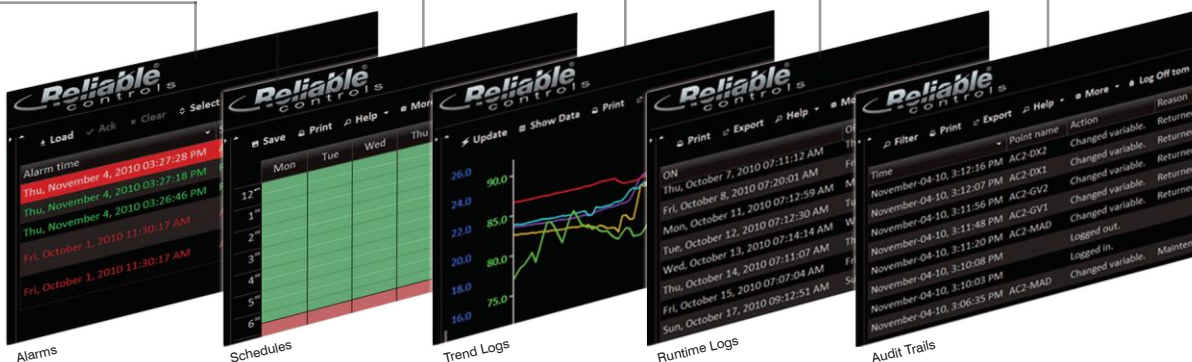
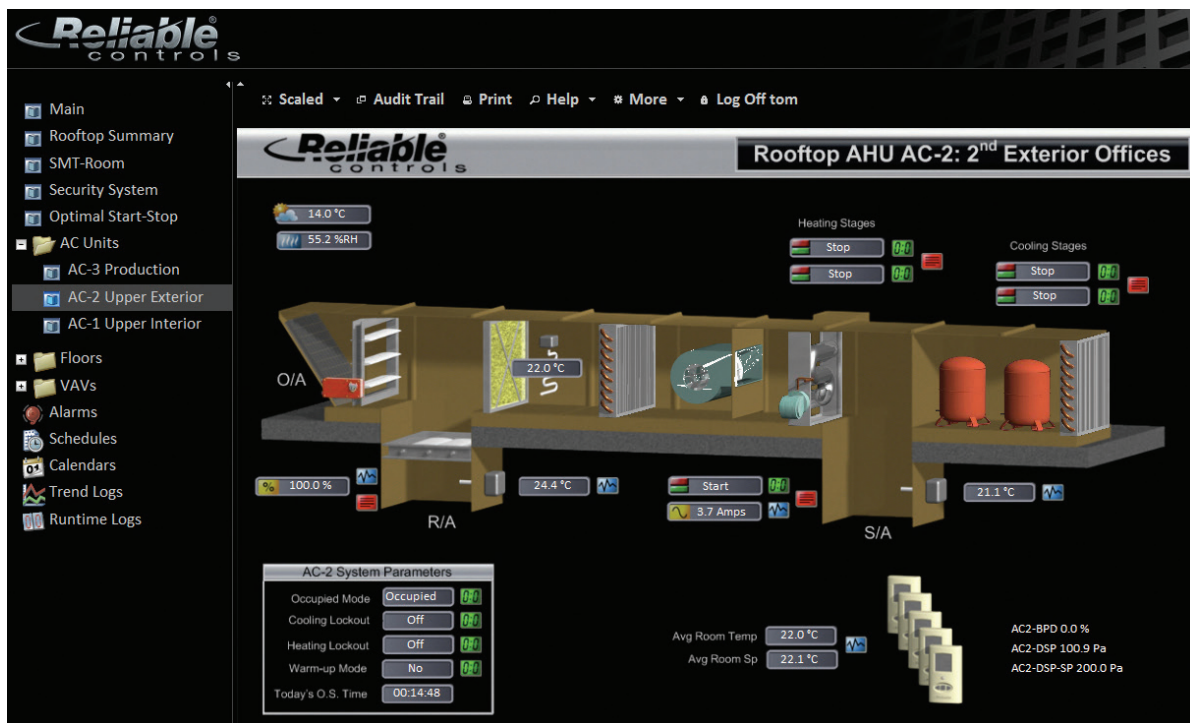
## WORKSTATION

The MPW interface provides total functionality required for day-to-day building operations, and is a BTL-listed BACnet Operator Workstation (B-OWS). Using a standard browser (IE 8, Firefox 3, Chrome 5, Safari 5, or greater) on a PC or Mac, enter the URL of the MACH-ProWeb™ and navigate through the system to access and print point values, alarms, schedules, trend logs, runtime logs, and audit trails.



Public users can access the MACH-ProWeb™ URL and associated system graphics assigned for public views.

Private users log in with credentials.



The MACH-ProWeb™ is the first three-in-one device of its kind, combining B-BC, B-OWS, and Web server capabilities into a single package with an installed footprint of a typical building controller.