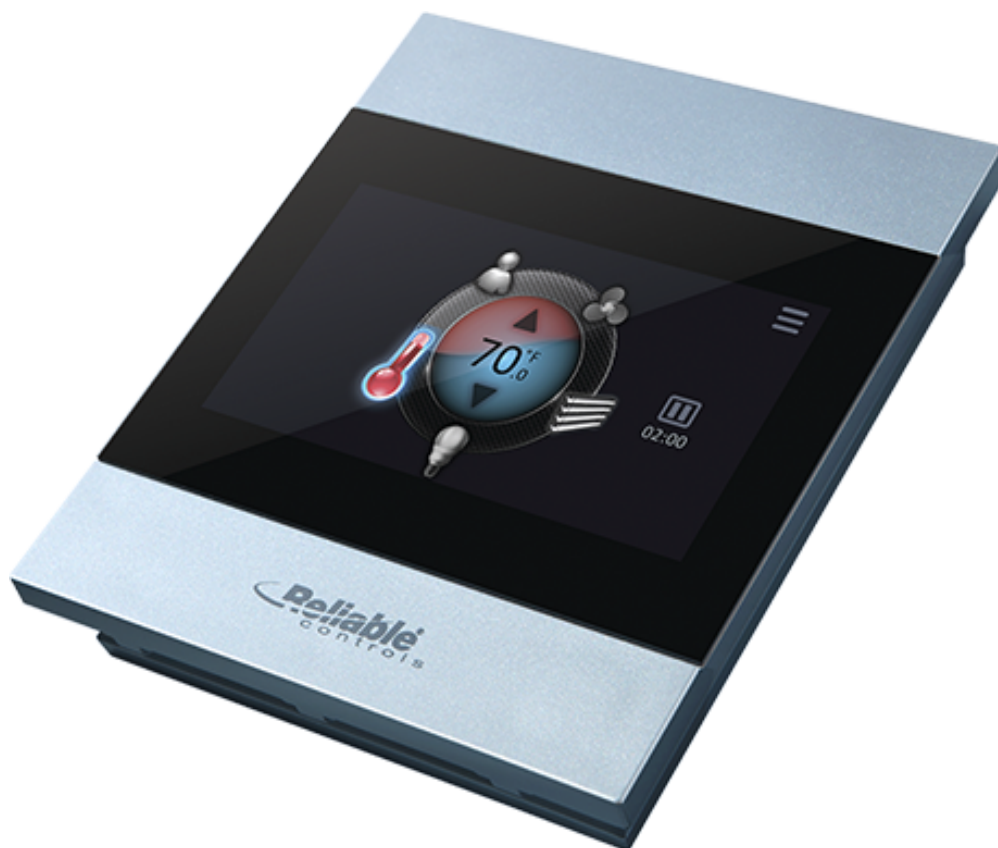




The Reliable Controls MACH-ProView™ LCD with Router is a powerful and elegant BACnet Building Controller (B-BC) and BACnet Operator Display (B-OD) that provides a plenitude of attractive high-resolution graphical interfaces to access, control, and monitor the comfort and energy of any space while routing communications to multiple networks.

Choose from a selection of configurable views (EQUIPMENTview, SPACEview, LISTview, STATview, etc.). Multiple LCD color themes allow the MACH-ProView LCD to fit virtually any decor. Routing supports connectivity to BACnet MS/TP devices, Modbus RTU devices, or any MACH-ProPoint™ expansion module. Base models reside on Ethernet, or Wi-Fi networks.

Project:	Dealer Information:  EMS Energy Management Systems (Pvt) Ltd.
Engineer:	
Approved by:	

PRODUCT FEATURES

Protocols

- BACnet
 - Supports one B/SN connection with RC-RemoteAccess®.
 - Supports two BACnet/IP subnetworks.
 - Ethernet and MS/TP.
- DHCP: Dynamic Host Configuration Protocol.
- OpenADR.
- Internet Data Services.
- Modbus
 - Supports Modbus RTU and TCP/IP communications.
 - Can act as a Modbus client for up to 128 server devices or as a Modbus server device.
- SMTP: Simple Mail Transfer Protocol:
 - Provides standard email communications for broadcasting email alarms.
 - Supports TLS/SSL security.
- SNTP: Simple Network Time Protocol.
- Wi-Fi on controllers with the -WR option:
 - Supports up to WPA2-Personal using AES128 (IEEE 802.11i).
- SMART-Net.
- EIA-485 port. Software configurable to be one of the following:
 - BACnet MS/TP.
 - Modbus RTU client or server.
 - I/O-Net supports one MACH-ProPoint.

64 Views

- Display and access related objects from the LCD.
- Customizable screens include EQUIPMENTview, SPACEview, LISTview, and STATview.
- System Views include TRENDview, ALARMview, SCHEDULEview, RUNTIMEview, CONFIGURATIONview, and NAVIGATIONview.

Large Touchscreen Display

- Display full-color graphics, runtime logs, trend logs, alarms, and schedules.
- Configure display to be always on or to blank after 10-100 seconds of idle time.

Languages

- English.
- French.
- German.
- Italian.
- Traditional Chinese.
- Portuguese.
- Spanish.

64 System Groups

- Group related objects on one display.
- 320 unique objects per group.

Six Inputs

- Universal ranges.
- Use software to select thermistor/dry contact, 4-20 mA, or 0-10 VDC.
- Expand to up to 30 inputs using one MACH-ProPoint expansion module.

Six Outputs

- First four have jumper-selectable universal ranges.
- Last two are binary solid-state relay only.
- Expand to up to 22 outputs using one MACH-ProPoint Output expansion module.

128 Loops

- Standard P, PI, or PID controllers for closed loop control.

64 Calendars

- Designate days of the year as holidays.

PRODUCT FEATURES

Support for myControl App

- Display SPACEview, LISTview, and STATview using the myControl app.
- The MACH-ProView allows 10 concurrent myControl app users.

Optional Inputs

- CO₂ sensor.
- Humidity sensor.
- Occupancy sensor.
- VOC sensor with humidity sensor.
- Particulate matter sensor.

1,024 Values

- Select standard and custom ranges as well as fixed program-driven values.

128 Schedules

- Up to 7 on/off cycles for each weekday or exception.

Multipoint Trend Logs

- Store up to eight objects in each trend log.
- Record values at user-defined intervals.
- Dynamic; user assigned.

128 Arrays

- Up to 128 elements in a one-dimensional array.

Runtime Report

- Total the on time and record the on/off times of every binary object.
- Automatically generated.

20 Tables

- For creating custom scaling functions.

Warranty

- 5 years.

Real-Time Clock

Single-point Trend Logs

- Record values user-defined intervals or based on change of value.
- Dynamic; user assigned.

129 Notification Classes

- Specify alarm configuration, broadcast destination, and email recipients.

128 Programs

- Freely programmable control strategy in a readable, BASIC-like language.
- 3,200 bytes per program.

Onboard Temperature Sensor

- Dedicated 10 kΩ thermistor.

SMART-Net Port

- Network up to four SMART-Net devices.

24 Custom Units

- Eight analog engineering units.
- Eight binary units.
- Eight multistate units with eight states.

1,536 Net Ins

- The maximum number of shares from other devices.

512 Net Outs

- The maximum number of writes to other devices.

128 User Passwords

- Protect access to the system.
- Assign each user with a username and access level.
- Multiple levels of security.

TECHNICAL SPECIFICATIONS

Processor

- 147 MHz high-performance 32-bit embedded microcontroller.

Supply Voltages

- 24 VAC $\pm 10\%$ 93 VA maximum, 50/60 Hz.
- 24 VDC $\pm 10\%$ 9 W maximum.

Communication Options

- One EIA-485 (RS-485) port that supports a baud rate up to 76.8 kbps.
- One SMART-Net port that supports up to four devices on a SMART-Net network.
- Optional IEEE 802.3 (Ethernet 10/100BASE-T) port (MPV-L-ER model).
- Optional IEEE 802.11a/b/g/n (Wi-Fi, 2.4/5.0 GHz) wireless connection (MPV-L-WR model).

Display

- Full-color 480 x 272 pixel screen.
- 4.3" wide-quarter VGA.
- Thin film transistor.
- Projective capacitive touch.
- Display area 57 x 96 mm (2 1/4" x 3 3/4").

CO₂ Sensor (-CO₂ Option)

- Nondispersive infrared optical sensor.
- 400-2,000 ppm range.
- Accuracy ± 40 ppm.
- Automatic calibration built in.
- Nonlinearity $< 1\%$ of full scale.

Memory

- 8 MB operating RAM.
- 1 MB nonvolatile RAM for trends and dynamic values.
- 32 MB Flash EEPROM operating system, database, and controller configuration.

Universal Inputs

- 12-bit A/D converter.
- Analog: 0-10 VDC 4-20 mA, thermistor.
- Binary: Dry contact.
- Impedance:
 - 1 M Ω for 0-10 VDC range.
 - 250 M Ω for 4-20 mA range.
 - 20 M Ω for pull-up for thermistor/dry contact range.
- Pulse counting up to 150 Hz. Supports flow meters.
- 24 VAC overvoltage protection.

Universal Outputs

- 12-bit D/A converter.
- Analog: 0-12 VDC.
- Binary: Software-configurable between 0-12 VDC.
- Maximum 75 mA each.
- 24 VAC overvoltage and short protection.

Solid-State Relay Outputs

- Switch 24 VAC/VDC.
- 500 mA maximum.

Expansion Module

- Add one MACH-ProPoint expansion module.

Temperature Sensor

- Range -20°C to 55°C.
- 0.1°C (0.18°F) resolution.
- User calibrated to $\pm 0.1^\circ\text{C}$ (0.18°F) accuracy.

TECHNICAL SPECIFICATIONS

VOC Sensor (-V Option)

- Automatic background calibration.
- Heated metal oxide sensor.
- Accuracy 40% of measured value.
- Resolution:
 - 2 ppb (0-2,008 ppb).
 - 6 ppb (2,009+ ppb).
- Automatically includes humidity sensor (-H option).

Particulate Matter Sensor (-PM Option)

- Laser scattering particulate matter sensor.
- PM2.5 measures particles 0.3 to 2.5 µg wide.
- PM10 measures particles 0.3 to 10 µg wide.
- Sensing range 0-1000 µg/m³.
- Accuracy at 25°C (77°F) 50% RH.
 - ±5 µg/m³ at 0-100 µg/m³.
 - ±10% of measured value at 100-1000 µg/m³.
- Fan sampling method.

Real-Time Clock

- ±1 second per day.

Memory/RTC Backup

- 72-hour backup.
- 10 years for database.

Wiring Terminals

- 16-24 AWG (1.31-0.21 mm²).
- Stranded or solid core.
- Copper conductors only.

Weight

- 0.28 kg (0.6 lb).

Humidity Sensor (-H Option)

- 0.1% display resolution.
- 0%-100% range.
- Accuracy ±2.4% maximum from 0%-90%. See plot.

Occupancy Sensor (-OC Option)

- Passive infrared radiation sensor.
- 64 detection zones.
- 94° horizontal range/82° vertical range.
- 5 m (16.4 ft) maximum detection distance.

Mounting Hardware Included

- Two 6-32 1" Truss head Phillips mounting screws for single-gang and dual-gang boxes.

Dimensions

- 14.5 cm L x 12.2 cm W x 2.7 cm H (5 11/16" L x 4 13/16" W x 1 1/16" H).
- Compatible with single-gang, dual-gang, 4" x 4", and 4 11/16" square boxes.
- Minimum opening in wall 46 x 72 mm (1 13/16" x 2 13/16").

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%-90%.

Certifications

- [BTL Listed \(B-BC\)](#).
- [BTL Listed \(B-OD\)](#).
- [UL 916 Listed](#).
- FCC CFR 47 Part 15 Class B.
- CE.
- WEEE.

ORDERING

Models

MPV-L-ER

- MACH-ProView LCD with Router and Ethernet port.

MPV-L-WR

- MACH-ProView LCD with Router and Wi-Fi connection.

Options

- -CO2 adds CO₂ sensor.
- -H adds humidity sensor.
- -V adds VOC sensor.
- -PM adds particulate matter sensor.
- -OC adds occupancy sensor.
- /W for white enclosure.

Build Your Order

To create the order number, add your options to the base model. For example, MPV-L-ER-CO2-H-OC/W is the order number for a MACH-ProView LCD with Router, Ethernet port, and CO₂, humidity, and occupancy sensors in a white enclosure.

Some combinations of options are not available. Confirm your order number is available in eBusiness.

Order limitations are as follows:

- -V option must be ordered with the -H option.

PoE (-P) is a legacy option and cannot be ordered.

Accessories

ACC-MPV-L-PM

- MACH-ProView Panel Mount Kit. Please note: If you mount the controller with this accessory kit, onboard sensors are not functional. We recommend against adding optional sensors or using the onboard thermistor with this accessory.

MPP-IO-U

- MACH-ProPoint Input/Output Universal expansion module.

MPP-IO-U-H

- MACH-ProPoint Input/Output Universal expansion module with HOA switches.

MPP-IO-DL-LASER

- MACH-ProPoint Input/Output expansion module door label sheet for laser printer.

MPP-IO-DL-INKJET

- MACH-ProPoint Input/Output expansion module door label sheet for inkjet printer.

MPP-I

- MACH-ProPoint Input expansion module.

MPP-I-B

- MACH-ProPoint Binary Input expansion module.

MPP-I-DL-LASER

- MACH-ProPoint Input expansion module door label sheet for laser printer.

MPP-I-DL-INKJET

- MACH-ProPoint Input expansion module door label sheet for inkjet printer.

MPP-O

- MACH-ProPoint Output expansion module.

MPP-O-H

- MACH-ProPoint Output expansion module with HOA switches.

ORDERING

CC-MULTI-XP2

- Cables for connecting X-Port-2 to controller SMART-Net, MS/TP terminal blocks, and SMART-Sensor micro-USB (-J) option connection.

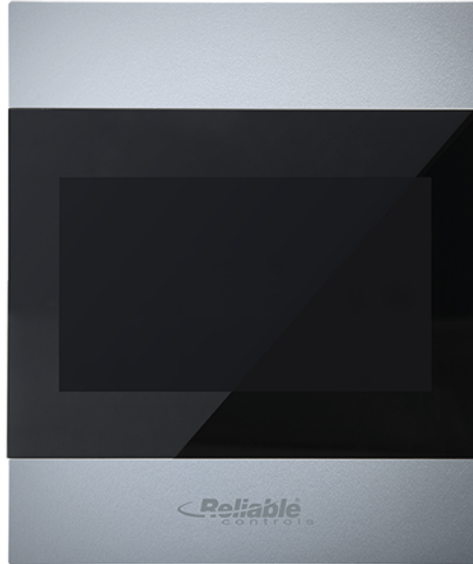
MPP-O-DL-INKJET

- MACH-ProPoint Output expansion module door label sheet for inkjet printer.

MPP-O-DL-LASER

- MACH-ProPoint Output expansion module door label sheet for laser printer.

PRODUCT IMAGES



MACH-ProView LCD with Router

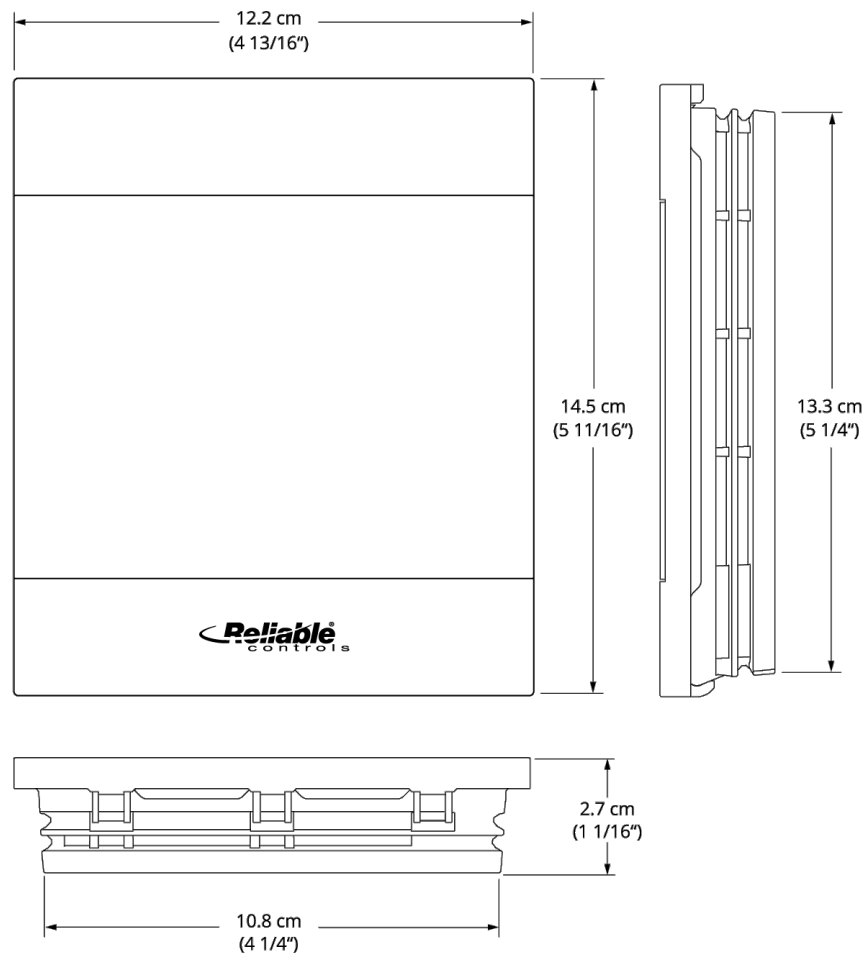


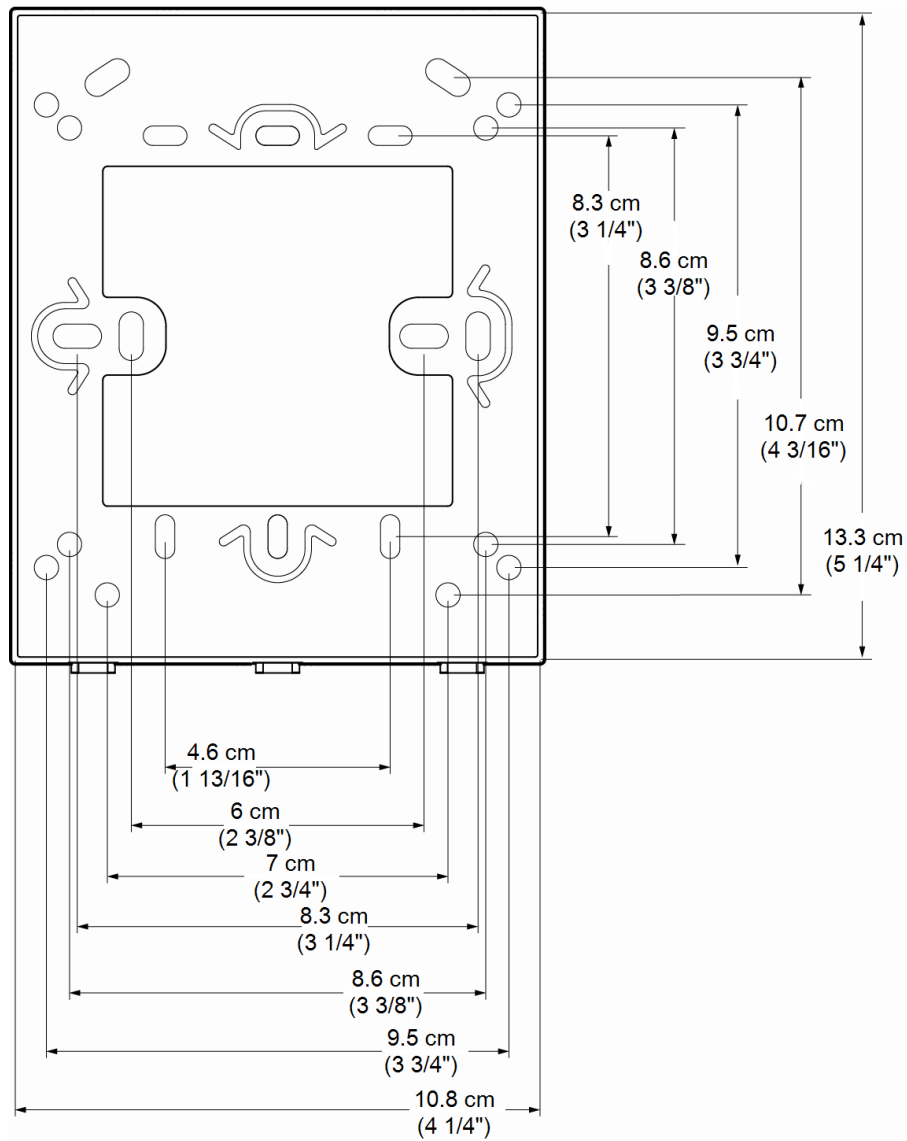
MACH-ProView LCD with Router bottom



MACH-ProView LCD with Router side

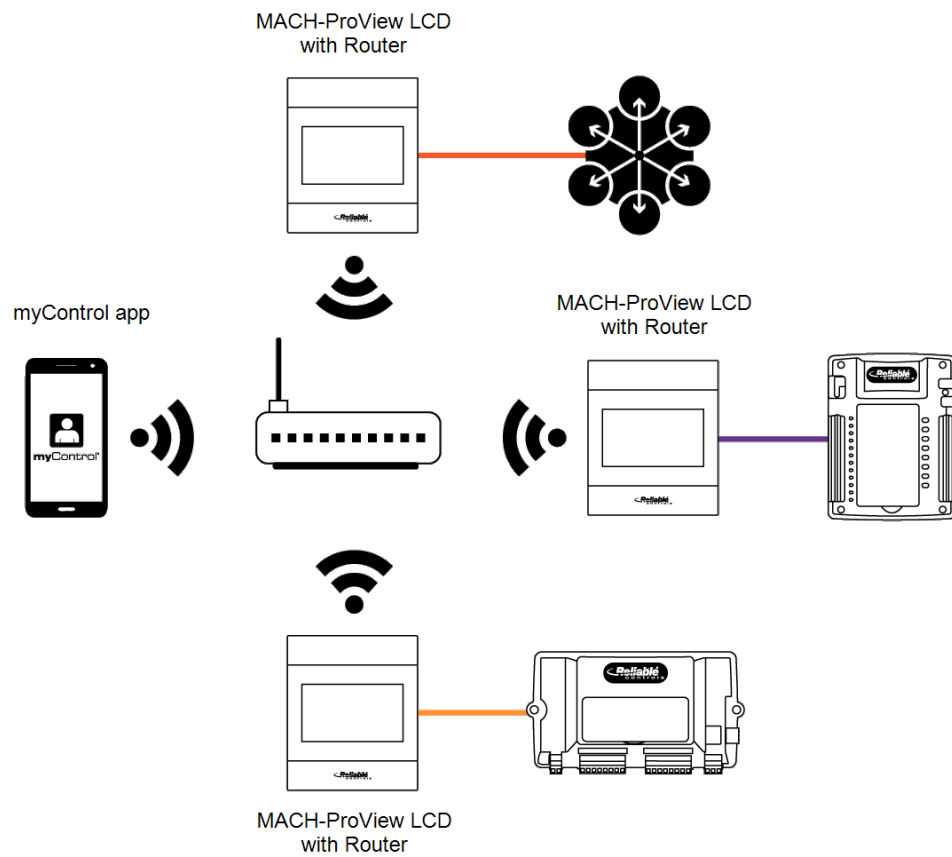
DIMENSIONS



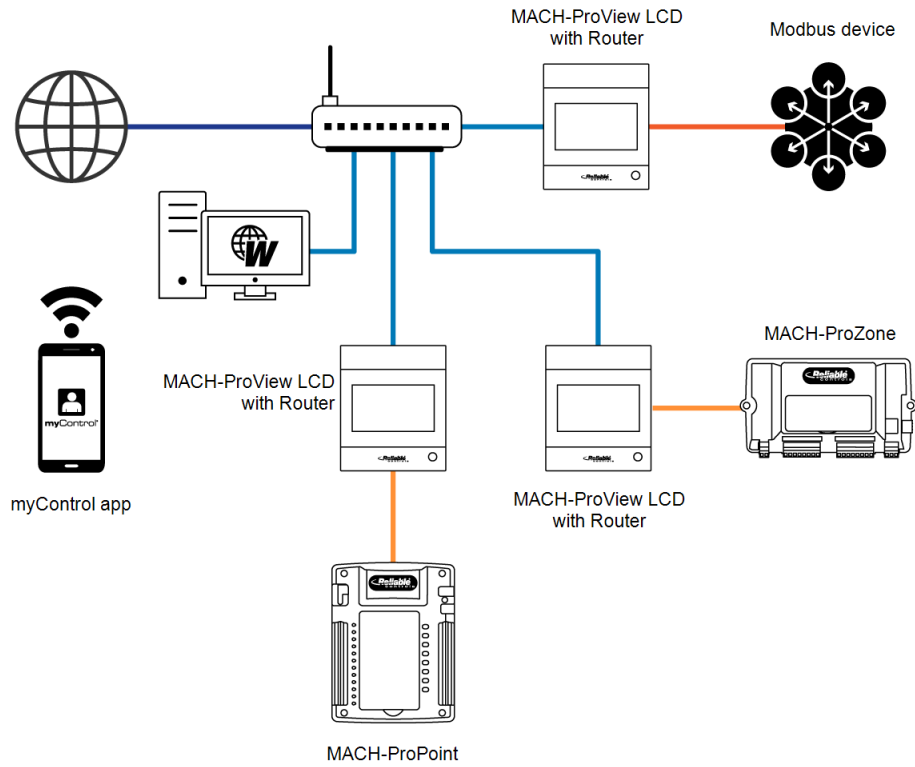


Backplate dimensions

APPLICATION DIAGRAMS

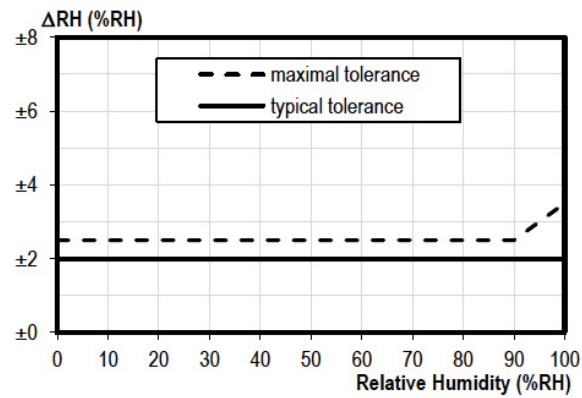


Wi-Fi network

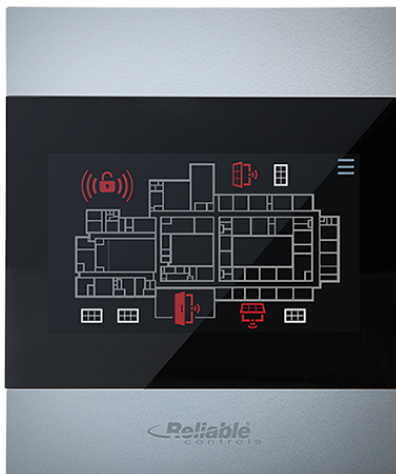


Ethernet network

HUMIDITY SENSOR CHART



INTEGRATED EQUIPMENTVIEWS



EQUIPMENTview example 1



EQUIPMENTview example 2

INTEGRATED EQUIPMENTVIEWS

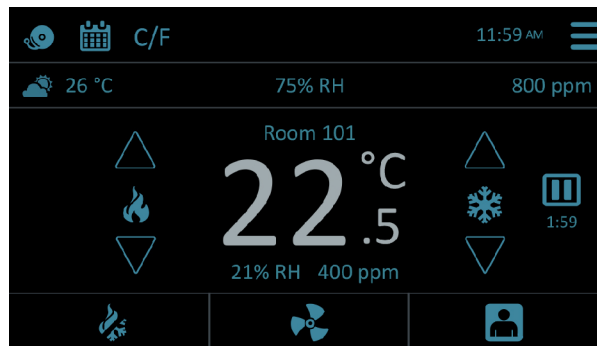


EQUIPMENTview example 3



SPACEview showing cooling setpoint

INTEGRATED EQUIPMENT VIEWS



STATview