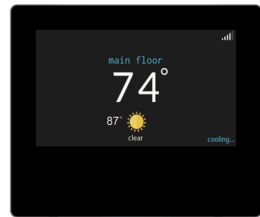


### ION™ SYSTEM CONTROL

**NOTE:** Ion™ System Control compatible with Ion™ System indoor equipment only.

US Patents: U.S. Pat No. 7,243,004, U.S. Pat No. 7,775,452, pointSET™ U.S. Pat No. 7,415,102



### ION™ SYSTEM CONTROL

The Ion™ System Control is the premium control center for premium Tempstar® communicating HVAC equipment. When you add an Ion™ System Control to a compatible variable speed furnace, fan coil, split system, or Ion System compatible geothermal product (when available), you will enjoy longer heating and cooling cycles at lower fan speeds for a more consistent temperature throughout your home. By adding a multi-stage, or 2-stage outdoor unit, you will enjoy extra benefits which include better humidity and temperature control as well as a more energy efficient comfort system. When paired with Ion™ Zoning controls, the Ion™ System Control allows you to create up to 8 zones of customized comfort.

The Ion™ Zoning system does not require a bypass damper, leaving air temperature (LAT) sensor, or field-installed power transformer.

Always install the latest version of software to enable all features of the system.

Over-the-Air software updates for Wi-Fi® models connected to the Ion™ server are automatically downloaded. Software updates via MicroSD are available at [www.IonComfort.com](http://www.IonComfort.com).

- **NOTE: The Ion™ Zoning System IS NOT compatible with all ICP communicating indoor equipment. For example, F9MV and F8MV two-stage, communicating gas furnaces are NOT compatible with the Ion™ Zoning System. See the Ion™ System Control product data for more information. (See Page 3.)**
- **NOTE: Only use modulating dampers provided by ICP for use with the Ion™ Zoning System. Dampers provided by other companies are NOT compatible with the Ion™ Zoning System.**
- **NOTE: Observer® System accessories, except for certain dampers (see damper list), are NOT compatible with the Ion Zoning System. Use the Observer® Zoning System, or equivalent, for non-compatible indoor units, such as non-communicating indoor units, or the F9MV and F8MV gas furnaces. The Observer® Zoning System may also be used in retrofit applications where it is impractical to change existing zone dampers.**

### INDUSTRY LEADING FEATURES/BENEFITS

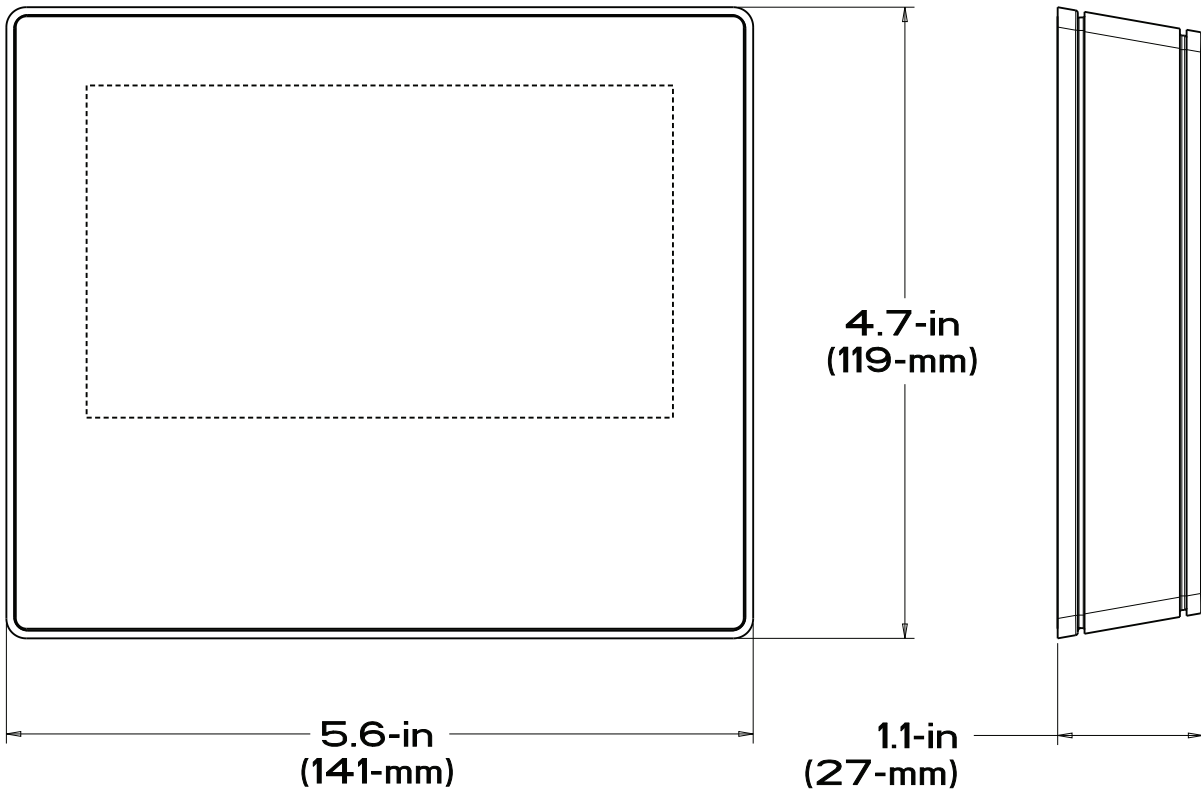
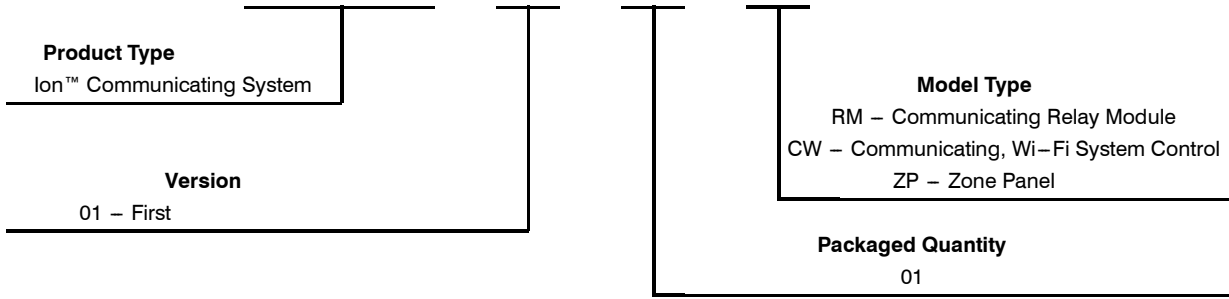
Tempstar's revolutionary Ion™ System Control is the smart control of the future. Its unique system self-configuration and diagnostics capabilities make installation and service fast and accurate, helping to avoid costly call-backs. The Ion™ System Control features a high resolution display, making it easier to read. Intuitive prompts let you program everything from humidity levels to fan speeds, giving you the ultimate control over your home comfort. Other features include:

- Recommended for use with the following products:
  - F9MA Communicating modulating gas furnace,
  - FCM4 Communicating variable-speed fan coil,
  - TVA9 Communicating, inverter-driven air conditioner
  - TVH8 Communicating, inverter-driven heat pump
- Limited functionality with F9MV and F8MV communicating, two-stage gas furnaces. (See Page 3.)
- 4-wire installation from each major component in the system
- 2-wire connection to Ion™ System two or more stage outdoor equipment
- Ion™ Zoning System compatibility
- Complete integration of the temperature, humidity and ventilation in every season
- For Zoned Systems, auto mode selection to satisfy simultaneous heating and cooling demands in different zones via more aggressive Auto Changeover algorithm--installer must enable
- 7-day programmability with Lifestyle Comfort Profiles and activity features; complies with California Title 24 programmability requirements
- Easy timed-override schedule
- Simplified vacation schedules
- Programmable fan by period
- Dirty Filter Detection
- Indoor Air Quality pop up service reminders
- General maintenance reminder messaging
- Wi-Fi® remote access capability
- Upload photo, dealer info, and software updates locally via MicroSD card. Software updates available automatically when connected to the Ion™ web server

Wi-Fi® is a registered trademark of Wi-Fi Alliance Corporation.  
Amazon Alexa is a trademark of Amazon, Inc. or its affiliates.

## MODEL NUMBER NOMENCLATURE

1    2    3    4    5    6    7    8    9    10  
**S   Y   S   T   0   1   0   1   C   W**



**Fig. 1 - Unit Dimensions**

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## PRODUCT DATA INFORMATION

### Compatible Communicating Products

Full functionality and recommended for use with the following products:

F9MA communicating, modulating gas furnace

FCM4 Communicating, variable-speed fan coil

TVA9 Communicating, inverter-driven air conditioner

TVH8 Communicating, inverter-driven heat pump

Limited functionality with F9MV and F8MV communicating, two-stage gas furnaces.

See the matrix below, for details:

Ion™ System Feature	Description	Operation with FCM4 fan coils and F9MA modulating gas furnaces (With full-feature ECM blower motor)	Operation with F9MV, F8MV two-stage gas furnaces (With PWM ECM blower motor)
<b>Zoning</b>	Divide home into up to eight zones for personalized comfort and energy savings.	Zoning features and benefits <b>Fully Supported</b> with these products containing full-feature ECM (ECM 3.0) motors	Zoning, and its associated features and benefits, <b>NOT AVAILABLE</b> with these products containing PWM ECM blower motors
<b>Zone Names</b>	Zones can be named by the homeowner; for example "Living Room," "Kitchen," "Bedrooms," etc..		
<b>Duct Assessment</b>	System measures percentage of airflow going to each zone.		
<b>Zoning Setup</b>	This feature allows the installer to adjust system parameters to optimize the setting for any particular installation, including airflow per zone. Allows the installer to enable/disable zoning, zone temperature offsets, airflow limits and duct assessment time.		
<b>Room Temperature Offset Adjustment</b>	This option allows actual temperature offset for each zone, allowing calibration (or deliberate mis-calibration) of each sensor.		
<b>Simultaneous Heat/Cool Demand</b>	Zoning system monitors heating and cooling needs for each zone, and forces system heat/cool operation to the opposite mode within a one-hour period to ensure comfort in all zones. May cause zoning systems to use additional energy to provide these feature, due to airflow between zones.		
<b>Zoning System Checkout</b>	The checkout allows the installer to run specific conditions in order to assess the proper functioning of the zoning system, such as zone airflow limits, zone damper/sensor checkout, zone duct assessment and zone sensor types checkout.		
<b>Low Ambient Cooling</b>	Allows compatible outdoor units to operate in cooling at outdoor temperatures below 55F without add-on accessories; see the outdoor equipment data sheet for details	<b>Available for specific outdoor units;</b> see the outdoor equipment data sheet for details	<b>Not Available;</b> Low ambient cooling available only with add-on accessories to the outdoor unit
<b>System Checkout</b>	The checkout allows the installer to run specific or multiple HVAC devices at specified settings in order to assess the proper functioning of the device(s).	<b>Fully Supported</b>	<b>Limited;</b> Displayed data limited to "airflow estimates," only.
<b>Filter Check</b>	The system periodically checks static pressure and can determine if a filter might be dirty, prompting the homeowner to inspect the air filter.	<b>Fully Supported;</b> Filter replacement notices based on either calendar time or system static pressure checks.	<b>Limited;</b> Filter replacement notices based on calendar time, only.
<b>Energy Usage and Tracking</b>	Tracks how much energy is used by the system for different time periods. Includes electrical and gas consumption.	<b>Fully Supported</b>	<b>Not Available;</b> Indoor fan energy consumption calculation is not available.
<b>Altitude Setting</b>	Adjust the furnace airflow to compensate for Altitude, based on setting entered by installer.	<b>Fully Supported</b>	<b>Not Available;</b> Airflow delivery NOT adjusted for installation altitude.
<b>Coil Freeze Protection</b>	Helps to keep indoor coils from freezing. Coil freeze mitigation action taken with significant rise of system static pressure. The system will turn off cooling when a possible freezing coil is declared.	<b>Fully Supported</b>	<b>Not Available;</b> No active protection from freezing coils.
<b>Blower RPM Report</b>	Indoor product reports current blower RPM. System monitors the circulating air blower RPM for diagnostic purposes, such as excess static pressure, and energy consumption reporting.	<b>Fully Supported</b>	<b>Not Available</b>
<b>System Static Pressure Report</b>	Indoor unit reports current system External Static Pressure (external to indoor unit). System monitors the system static pressure for diagnostic purposes, such as filter usage and coil freezing, and zoning system control.	<b>Fully Supported</b>	<b>Not Available</b>
<b>System CFM Control</b>	Controls the airflow delivered by the indoor section based on the heating or cooling capacity, and the indoor and outdoor conditions, such as humidity and temperature.	<b>Static-independent airflow control:</b> motor adjusted to maintain airflow across a wide range of static pressures; CFM actively controlled typically within 5% of demand up to 1.0" ESP (see equipment airflow tables for details)	<b>Limited;</b> Static-dependent airflow control: airflows varies with system static pressure, although significantly less than with PSC motors; see equipment airflow tables for details

## Remote Access Capability

Connect the Ion™ System Control to a local Wi-Fi® network with access to the Internet. Register the device at [www.lonComfort.com](http://www.lonComfort.com). See the instructions packaged with the product for more information. Once registered, the user has access to their system wherever an Internet connection is available

In addition, users can access the Ion system with the Amazon Alexa "My Ion" Smart Home Skill through their Amazon Echo, or other device. See the Amazon Alexa website, or the My Apps page of [www.lonComfort.com](http://www.lonComfort.com) for more information.

**NOTE:** The ability to remotely access and adjust the settings of the Ion™ System Control with the ICPUSA web and mobile applications is dependent on the compatibility of the user's computer, home network and/or mobile device, the Ion™ System Control, and/or the ICPUSA web server or other system interfaces with, and the availability of, the user's internet service provider or mobile device carrier service. ICP Corporation makes no representations or warranties, express or implied, including, to the extent permitted by applicable law, any implied warranty of merchantability or fitness for a particular purpose or use, about the compatibility of the user's computer, home network, and/or mobile device, with the Ion™ System Control, and/or the ICPUSA web server or other system interfaces, with, and the availability of, the user's internet service provider or mobile device carrier service, or that the ability to remotely access and adjust the settings of the Ion™ System Control will not be negatively affected by the network-related modifications, upgrades, or similar activity of the user's internet service provider or mobile device carrier service.

## Physical Characteristics

**Dimensions:** See drawing

**Appearance:** Black glass front, silver plastic body

## Electrical Characteristics/Communication

### **Input Volts/Amps 24VAC**

Each device in the Ion™ System has a four-pin connector labeled DX+ DX- C R. It is recommended that the following color code be used when wiring each device:

DX+ — Green = Data A+

DX- — Yellow = Data B-

C — White = 24VAC (Com)

R — Red = 24VAC (Hot)

Always verify that the IDU and ODU are well-grounded, and that there are less than 10 volts AC/DC as measured between the cabinets of the IDU and ODU, while the equipment is operating at full capacity. If there is a larger voltage difference between the cabinets of the IDU and ODU, recheck the equipment grounding.

## Environmental Requirements:

### **Operating Temperature/Relative Humidity:**

User interface and all sensors: 32°F to 104°F / 0°C to 40°C, 95% RH non-condensing

## Feature Specifications:

Temperature set point range: 50°F to 90°F / 10.0°C to 32.0°C

Separate heat and cool setpoints

Programming days: 7 day

Programming periods: Up to 5 periods per day

Smart Setback (with programming)

Activity feature

Non-Programmable (installer selectable)

Auto Changeover\* (may be disabled)

Simultaneous Heat Cool Demand Algorithm for zoned systems

Programmable fan (installer selectable)

Temperature sensor offsets (indoor and outdoor)

Humidity Sensor Offsets

Auto Changeover Timer (installer adjustable)

Smart Recovery (in heating and cooling)

Hold function

Copy functions: copy day of week; copy zones

Permanent memory

Humidity display and control

Dirty Filter Detection with compatible indoor equipment

\* See Installation Instructions for details on Auto Changeover and Simultaneous Heat/Cool Demand Algorithm operation.

## Wiring Requirements:

**Power supply:** 24VAC, 40 VA (minimum), 60 Hz, via indoor equipment communications connector. Zoning systems with a large number of dampers, especially multiple dampers per zone, may require a separate, dedicated, field-installed 24VAC power supply.

**Wiring material:** Standard thermostat wire 18 to 22 gauge. Use 18 AWG wiring for wire lengths over 25 feet. Shielded, twisted pair cable for the communication bus is optional, and may be helpful in electrically noisy environments, or for zoning systems with Smart Sensors (when available).

## CRM (Communicating Relay Module)

### Requirements:

IDU	Non-comm ODU	CRM required?
Furnace	1-stage A/C	No
Furnace	2-stage A/C	Yes
Furnace	1-stage HP	Yes
Furnace	2-stage HP	Yes
Fan Coil	1-stage A/C	No
Fan Coil	2-stage A/C	Yes
Fan Coil	1-stage HP	No
Fan Coil	2-stage HP	Yes

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## CONTROLS

Description	Part Number
Ion™ System Control with Wi-Fi® Remote Access Capability	SYST0101CW
Ion™ Communicating Relay Module (CRM)	SYST0101RM*
* Required for dual fuel applications with non-communicating heat pumps, and for use with 2-stage, non-communicating AC or HP.	

## ZONING CONTROLS

Description	Part Number
Ion™ Zoning System Damper Control Module (4 Zone)	SYST0101ZP†
NOTE: Each piece of the zoning equipment is purchased separately allowing for customization of the zoning application. † One Damper Control Module for up to 4 zones. A second Damper Control Module is required for zones 5–8.	

## OPTIONAL ACCESSORIES

Description	Part Number
Ion™ Remote Room Sensor - Wired (RRS)	SYSTXIIRRS01*
Decorative Trim Plate - White (six pack)	SYSTXNNWTP06†
Decorative Trim Plate - Black (six pack)	SYSTXNNBTP06†
Decorative Trim Plate - Silver (six pack)	SYSTXNNSTP06†
Equipment Communicating Communication Connector (DX+, DX-, C,R; 10 pack)	SYSTXGXRPGL10
Outdoor Air Temperature Sensor	TSTATXXSEN01-B
Wireless Access :Point (WAP)	SYSTXXXGWR01
* Not required for Zone 1, but may be used to remote sense indoor room temperature. † Backplate dimensions 6.83 in. (173.5 mm) wide X 5.97 in. (151.7 mm) high	

## ZONING ACCESSORIES AND REPLACEMENT PARTS

Description	Part Number
Duct Temperature Sensor	ZONEXX0DTS01
45° Actuator for Round Dampers	ZDAMPACT45DEG-R
90° Actuator for Rectangular Dampers	ZDAMPACT90DEG-R
Damper Control Module 1-amp Fuse	ATO1*
* Ordered from and warehoused by RC/Fast Parts	

## ROUND & RECTANGULAR DAMPERS

Description	Part Number	
Round Dampers	6 in.	ZDAMPRND06INCB
	8 in.	ZDAMPRND08INCB
	10 in.	ZDAMPRND10INCB
	12 in.	ZDAMPRND12INCB
	14 in.	ZDAMPRND14INCB
	16 in.	ZDAMPRND16INCB
Rectangular Dampers	8 in. X 10 in.	ZDAMPREC08X10B
	8 in. X 14 in.	ZDAMPREC08X14B
	8 in. X 18 in.	ZDAMPREC08X18B
	8 in. X 24 in.	ZDAMPREC08X24B
	10 in. X 10 in.	ZDAMPREC10X10B
	10 in. X 14 in.	ZDAMPREC10X14B
	10 in. X 18 in.	ZDAMPREC10X18B
	10 in. X 24 in.	ZDAMPREC10X24B

### SLIP-IN DAMPERS

Description	Part Number
Side mount, 8 X 8	DAMP SLS08X08-B
Bottom mount, 8 X 8	DAMP SLB08X08-B
Side mount, 8 X 10	DAMP SLS08X10-B
Bottom mount, 8 X 10	DAMP SLB08X10-B
Side mount, 8 X 12	DAMP SLS08X12-B
Bottom mount, 8 X 12	DAMP SLB08X12-B
Side mount, 8 X 14	DAMP SLS08X14-B
Bottom mount, 8 X 14	DAMP SLB08X14-B
Side mount, 8 X 16	DAMP SLS08X16-B
Bottom mount, 8 X 16	DAMP SLB08X16-B
Side mount, 8 X 18	DAMP SLS08x18-B
Bottom mount, 8 X 18	DAMP SLB08X18-B
Side mount, 8 X 20	DAMP SLS08X20-B
Bottom mount, 8 X 20	DAMP SLB08X20-B
Side mount, 8 X 22	DAMP SLS08X22-B
Bottom mount, 8 X 22	DAMP SLB08X22-B
Side mount, 8 X 24	DAMP SLS08X24-B
Bottom mount, 8 X 24	DAMP SLB08X24-B
Side mount, 10 X 10	DAMP SLS10X10-B
Bottom mount, 10 X 10	DAMP SLB10X10-B
Side mount, 10 X 12	DAMP SLS10X12-B
Bottom mount, 10 X 12	DAMP SLB10X12-B
Side mount, 10 X 14	DAMP SLS10X14-B
Bottom mount, 10 X 14	DAMP SLB10X14-B
Side mount, 10 X 16	DAMP SLS10X16-B
Bottom mount, 10 X 16	DAMP SLB10X16-B
Side mount, 10 X 18	DAMP SLS10X18-B
Bottom mount, 10 X18	DAMP SLB10X18-B
Side mount, 10 X 20	DAMP SLS10X20-B
Bottom mount, 10 X 20	DAMP SLB10X20-B
Side mount, 10 X 22	DAMP SLS10X22-B
Bottom mount, 10 X 22	DAMP SLB10X22-B
Side mount, 10 X 24	DAMP SLS10X24-B
Bottom mount, 10 X 24	DAMP SLB10X24-B
Side mount, 12 X 12	DAMP SLS12X12-B
Bottom mount, 12 X 12	DAMP SLB12X12-B
Side mount, 12 X 14	DAMP SLS12X14-B
Bottom mount, 12 X 14	DAMP SLB12X14-B
Side mount, 12 X 16	DAMP SLS12X16-B
Bottom mount, 12 X 16	DAMP SLB12X16-B
Side mount, 12 X 18	DAMP SLS12X18-B
Bottom mount, 12 X 18	DAMP SLB12X18-B
Side mount, 12 X 20	DAMP SLS12X20-B
Bottom mount, 12 X 20	DAMP SLB12X20-B
Side mount, 14 X 14	DAMP SLS14X14-B
Bottom mount, 14 X 14	DAMP SLB14X14-B
Side mount, 14 X 16	DAMP SLS14X16-B
Bottom mount, 14 X 16	DAMP SLB14X16-B
Side mount, 14 X 20	DAMP SLS14X20-B
Bottom mount, 14 X 20	DAMP SLB14X20-B
Side mount, 16 X 16	DAMP SLS16X16-B
Bottom mount, 16 X 16	DAMP SLB16X16-B
Bottom mount, 16 X 20	DAMP SLB16X20-B

Slip-In Dampers