York Commercial Comfort System (YCCS)

Technical Guide

The York Commercial Comfort System (YCCS) improves occupant comfort by providing reliable zoning control of standard York rooftop units. The YCCS features advanced Direct Digital Control (DDC) controllers bundled with York commercial equipment, actuators, sensors, and damper assemblies. YCCS applications include single zone and Change-Over Bypass (COBP) systems. The innovative control algorithms provide superior temperature control of Heating, Ventilating, and Air Conditioning (HVAC) equipment.

Figure 1: YCCS Zoning Application

Table 1: Features and Benefits

Features	Benefits
Innovative Touchscreen User Interface (UI)	Provides a simple centralized interface without the need for additional hardware.
Familiar Controls Components	Minimize the time needed to install and commission the HVAC system.
Factory Mounted and Wired Equipment Assemblies	Save installation time and cost with pre-assembled and pre-configured controller and actuator systems.
Adjustable Logic Parameters	Optimize HVAC zone control of a system.
Advanced DDC Zone Controllers with Auto-Tuning Capability	Provide reliable zone control with minimal commissioning time.
Factory Loaded and Self-Configuring Components	Eliminate software commissioning tools, which reduces installation time and cost.
Simple Common Language User Interface	Allows non-technical staff to easily understand the user interface.

YCCS Components

The YCCS control network contains System Manager, Zone Coordinators, York Universal RTU Controllers, VAV boxes, zone damper assemblies, zone sensors, and bypass damper assemblies. Figure 2 shows an example of the YCCS network.

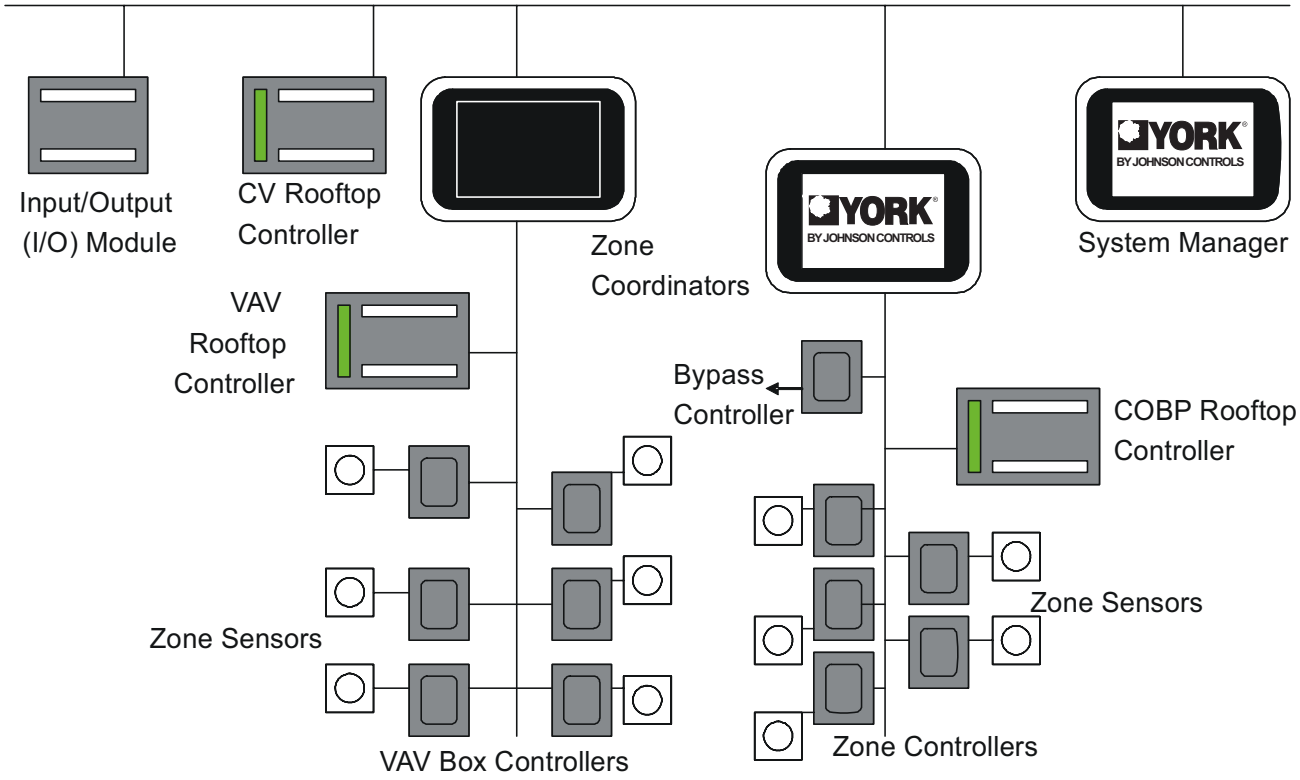


Figure 2: YCCS Network

Controllers

The controllers consist of a System Manager (SM) and/or Zone Coordinator (ZC). They feature an intuitive color touchscreen for interfacing with the entire building providing the ability to schedule, trend, and adjust parameters. The controllers have predefined point lists for the appropriate mechanical equipment configuration used within the facility. The ZC also contains zone voting logic that reads individual zone requirements and places the rooftop unit into the required heating or cooling mode. You can access the controllers with a remote user interface via a standard Web browser on any computer connected to the building network.

System Manager (SM)

Figure 3 shows a YCCS System Manager.

Figure 3: YCCS System Manager (SM)

The SM requires no programming and controls up to 24 constant volume rooftop units, 10 ZCs, and 4 Input/Output (I/O) modules. The SM self-configures the user interface via the Master-Slave/Token-Passing (MS/TP) bus.

The System Manager (SM) brings an entirely new generation of Building Automation System (BAS) technology to light commercial systems. The SM is a building level controller that manages facilities using information and Internet technology. As a key component of the York Commercial Comfort System, the SM communicates with York 3 through 65 Ton rooftop units.

The SM supports a comprehensive set of supervisory features and functions for small commercial facilities. A single SM within a building provides monitoring and control, alarm, trending, management, scheduling, and simple data storage.

The SM has an embedded color touchscreen user interface and also supports connected Web browsers for remote monitoring. The SM provides provisions for e-mail alarm messages through the onboard Ethernet connection or optional modem.

Features

- Color touchscreen user interface
- Remote browser-based user interface
- Supervision of York equipment controller networks
- Multiple connection options for data access via a standard Ethernet Transmission Control Protocol/ Internet Protocol (TCP/IP) or serial interface with optional modem

The SM software is specifically designed to meet the needs of building owners and managers to efficiently monitor and control all the mechanical and electrical systems in a typical building such as:

- York 3 through 65 Ton rooftop units
- Zoning systems using the Zone Coordinator (ZC)
- Auxiliary points using the Input/Output Module (IOM)
- 3rd party rooftop units using the Universal Rooftop Unit (RTU) controller

The SM monitors equipment by collecting data from the field control devices, then coordinating the required commands and sending them to the equipment at the required priority.

Zone Coordinator

Figure 4 shows the Zone Coordinator.

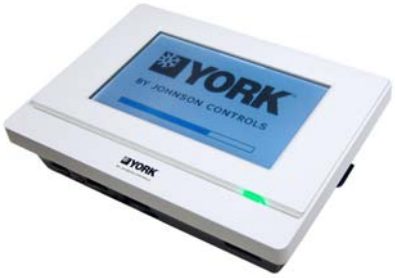


Figure 4: YCCS Zone Coordinator (ZC)

The Zone Coordinator (ZC) requires no programming and coordinates the heating and cooling mode determination for up to 24 individual zones. The ZC uses the MS/TP bus to communicate with the SM and self-configures the user interface based on the controllers connected to the network.

The ZC is a system level controller that manages HVAC zoning systems in smaller facilities using information and Internet technology. As a key component of the YCCS, the ZC communicates with YCCS terminal devices such as YCCS zone and bypass damper assemblies; and York 3 through 65 Ton rooftop units.

The ZC supports a comprehensive set of supervisory features and functions for small commercial facilities. A single ZC within a building provides monitoring and control, alarm, trending, management, scheduling, and simple data storage for a simple zoning system. In facilities with multiple zoning systems, multiple zone coordinators can be networked with a System Manager (SM) to provide coordinated BAS functions.

The ZC has an optional color touchscreen user interface and also supports connected Web browsers for remote monitoring. It provides provisions for e-mail alarm messaging through the onboard Ethernet connection or optional modem.

Features

- Optional color touchscreen user interface for stand-alone zoning systems
- Remote browser-based user interface
- Supervision and control of York single packaged units and YCCS terminal devices
- Multiple connection options for data access via a standard Ethernet TCP/IP or serial interface with optional modem

The ZC is specifically designed to meet the needs of building owners and managers to efficiently monitor and control all the mechanical and electrical systems in a typical building such as:

- York 3 through 65 Ton rooftop units
- YCCS zone and bypass damper assemblies
- YCCS Variable Air Volume (VAV) assemblies

The ZC monitors zone heating and cooling demand by collecting data from the zone terminal devices. The ZC then determines the mode of operation for the single packaged unit and commands it appropriately.

York Rooftop Units

The factory-mounted YCCS rooftop controller features control of heating, cooling, and economizer functions.

Zone/Bypass Damper Assemblies

The zone and bypass dampers are temperature control and pressure control devices that include the damper and control components in a factory assembled configuration. The assembly includes the round or rectangular damper, configured Direct Digital Control (DDC) controller, electric actuator, and pressure sensor (in the bypass damper only), National Electrical Manufacturers' Association (NEMA) Type 1 enclosure, and optional power transformer. The controllers are application specific, factory programmed digital controllers that communicate via the BACnet® MS/TP protocol. Both the zone and bypass controllers operate as part of a larger zoning system and provide zone and pressure control for the appropriate mechanical equipment.

The zone damper modulates in response to temperature variations relative to a user defined space temperature setpoint. The bypass damper modulates to maintain supply duct static pressure setpoint.

Features

- Factory mounted and wired control components reduce installation time
- Fast response actuator drives the damper from full open to full close (90) in 60 seconds to reduce commissioning time
- Continuous loop tuning provided by Pattern Recognition Adaptive Control (PRAC) technologies
- Available in both round and rectangular configurations

Round Damper Assemblies

The round damper assemblies feature superior design, solid molded damper shaft, and control enclosure.

Superior Design

The round zone damper is a 22 gauge round unit. An automated manufacturing process produces damper blades to exact specifications. The dampers are designed for low noise operation with minimal friction loss and a tight closure seal. Air valve leakage is less than 1% of rated capacity at 3 inch W.G. inlet pressure.

Solid Molded Damper Shaft

The solid damper shaft is molded using a high-impact, high-strength composite material. It is designed to eliminate condensation on the extended portion that penetrates the unit casing. The shaft allows a more secure attachment to the damper actuator, since the set screws adhere to this material better than metal. The high impact material gives the shaft superior impact strain resistance compared to cast metal shafts. The damper blade is mounted on the damper shaft and connected by means of an integral molded sleeve. The shaft rotates in low friction, self-lubricating bearings.

Control Enclosure

The zone and bypass damper assembly include a NEMA Type 1 galvanized steel (22 gauge) enclosure for factory mounting of the direct digital controller, damper actuator, differential pressure sensor (in bypass damper only), and an optional multi-tap primary/24 VAC secondary transformer.

Rectangular Damper Assemblies

Superior Design

The rectangular damper offers sturdy, steel construction with interlocking frame design. The unit frame is constructed of 5 x 1 x 16 in. (127 x 25 x 1.6 mm) gauge galvanized steel hat channel reinforced with corner braces for structural strength equal to the 13 gauge (2.28). Low profile 3 1/2 x 3/8 x 16 gauge (89 x 10 x 1.6) galvanized steel channel top and bottom frame on dampers under 330 mm (13 in.) high. Damper locks together without bolts, screws, or rivets that could shake loose. The frame corners are internally braced to reduce racking.

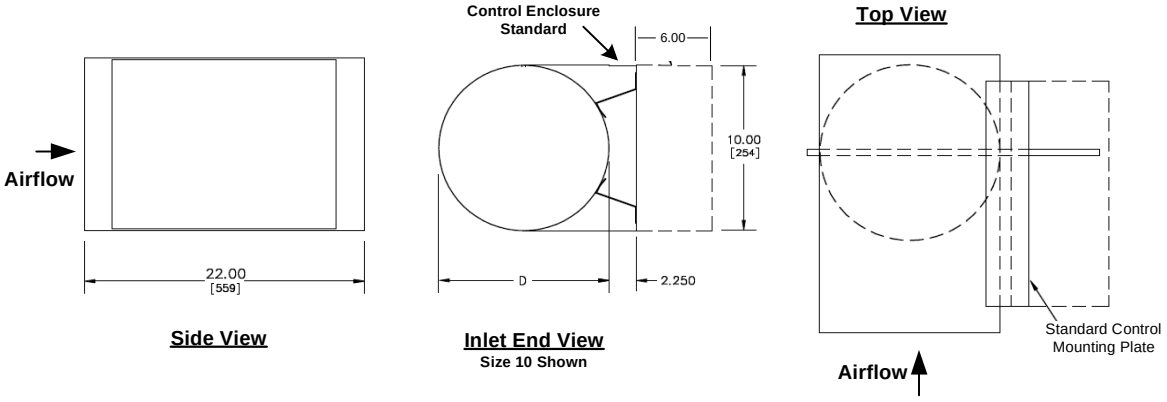
Damper Blades

Blades are 152 mm (6 in.) wide, 16 (1.6) gauge galvanized steel approximately 152 mm (6 in.) on center with parallel action.

Damper Shaft

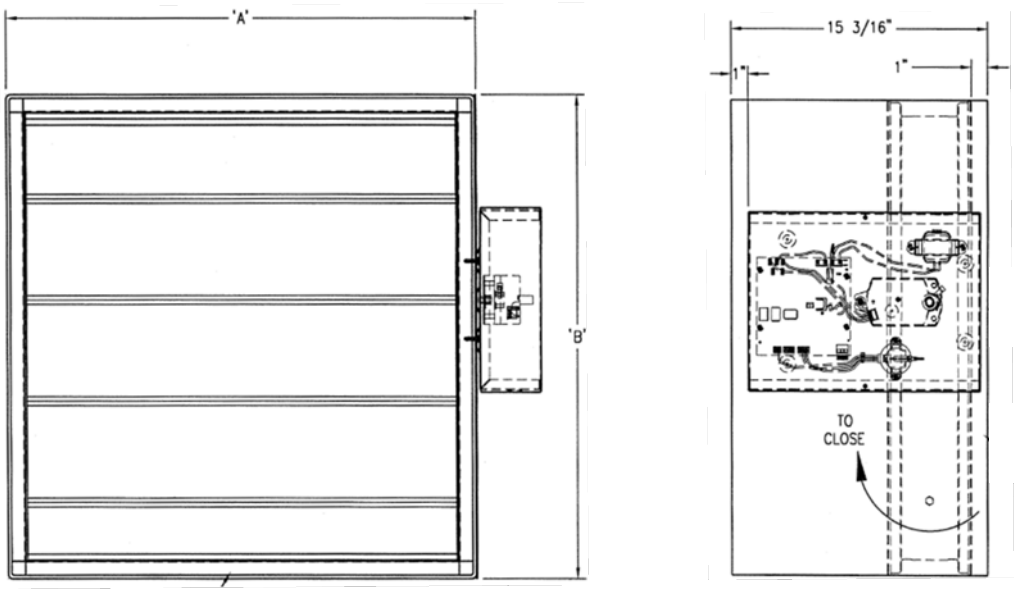
A 1/2 inch plated steel hex axles positively lock to blades without screws or welds. Non-stick, non-corrosive bearings assure long life and ease of operation. Axles and bearings combine with a shake proof linkage for low maintenance operation.

Figure 5 shows the round damper assembly dimensions. Figure 6 shows the rectangular damper assembly dimensions.



Unit Size	06	08	10	12	14	16
Dimension - D	5.88”	7.88”	9.88”	11.88”	13.88”	15.88”

Figure 5: Round Damper Assembly Dimensions



Zone Damper Size AxB
8"x12"
8"x14"
8"x16"
10"x16"
10"x20"
14"x18"

Bypass Damper Size AxB
14"x12"
16"x16"
20"x20"
30"x30"

Figure 6: Rectangular Damper Assembly Dimensions

Zone Damper Assemblies

Figure 7 shows a YCCS Zone Damper Assembly.

Figure 7: YCCS Zone Damper Assembly

The advanced DDC controller modulates the zone damper. The controller reads zone temperature sensor information and modulates the zone damper to adequately heat or cool the area. Damper parameters can be modified from default settings through the SM or ZC. Information at the controller level can be viewed through the touchscreen user interface at the supervisory controller or remotely via a computer with an Internet browser.

Bypass Damper Assembly

Figure 8 shows a bypass damper assembly.

Figure 8: YCCS Bypass Damper Assembly

The bypass damper regulates static pressure through the system. As building load is satisfied, and the zone dampers in the system begin to modulate closed, static pressure increases in the ductwork. As system static pressure rises above the setpoint, the DDC controller modulates the bypass damper open, allowing excess airflow from the supply side to the return side of the single packaged unit. This eliminates excessive system static pressure, prevents the generation of noise at the diffusers, and prevents the loss of temperature control in the zones. Table 2 lists the Zone/Bypass Controller Point Type and Counts.

Table 2: Zone/Bypass Controller Point Type and Counts

Point Type	Zone Controller	Bypass Controller
Analog Input (AI)	AI - 1 (Resistive) Zone Temp/Occ AI-2 (Resistive) Zone Setpoint	
Binary Output (BO)	BO-1 (Triac) Actuator +	BO-1 (Triac) Actuator +
	BO-2 (Triac) Actuator -	BO-2 (Triac) Actuator -

Zone Sensor

Figure 9 shows a zone sensor.

Figure 9: Zone Sensor

The zone sensor uses a highly accurate nickel sensor. The zone sensor features: screw terminal wiring connection, override button for temporary occupancy, optional warmer cooler setpoint adjustment, and wall-plate for convenient wall-box mounting.

Split-Bobbin Transformer

The split-bobbin transformers offer a choice of primary voltages.

Accessories

Additional YCCS accessories include a Universal Rooftop Unit (RTU) controller and an input/output module.

Universal Rooftop Unit (RTU) Controller

Use the Universal Rooftop Unit (RTU) controller to control existing 2 heat, 2 cool single packaged units and integrate them into a YCCS control network. The RTU controller includes provisions for field mounting, up to 2 stages for heating and cooling, and advanced control algorithms to simplify commissioning and provide highly accurate control.

The Universal RTU controller is an application specific digital controller that communicates via BACnet® MS/TP protocol to a YCCS System Manager. The controller features pre-configured applications for constant volume single zone and constant volume change-over bypass single packaged units manufactured by other HVAC suppliers.

Features

- Integrates third party manufactured RTU within a new YCCS network
- Configuration for constant volume single zone or changeover/bypass operation

- Up to two stages of heating and cooling are available, as well as a supply fan command enable manufacturers using standard thermostat connections
- Automatic discovery feature allows for easy controller integration by YCCS System Manager
- Continuous loop tuning provided by patented Pattern Recognition Adaptive Control (PRAC) technologies

Table 3 shows the SPU point types.

Table 3: RTU Point Types

Point Type	Signals Accepted	YK-PEC1001-0	YK-PEC1002-0
Analog Input (AI)	Resistive 1k Ohm, Voltage 0-10 VDC	AI-1 Zone Temperature/Temporary Occupancy AI-2 Zone Setpoint AI-3 Generic Temp (optional) AI-4 Zone RH (optional) AI-5 Zone CO^2 (Optional) AI-6 Discharge Temperature (optional) AI-7 Return Temperature (optional) AI-8 Outdoor Temperature (optional)	AI-1 unavailable AI-2 unavailable AI-3 Generic Temp (optional) AI-4 Zone RH (optional) AI-5 Zone CO^2 (optional) AI-6 Discharge Temperature AI-7 Return Temperature (optional) AI-8 Outdoor Temperature (optional)
Analog Output (AO)	Unavailable	AO -1 unavailable	AO-1 unavailable
Binary Input (BI)	Dry Contact	BI-1 Occupied/Unoccupied Input BI-2 Fan Status BI-3 Filter Status	BI-1 Occupied/Unoccupied Input BI-2 Fan Status BI-3 Filter Status
Binary Output (BO)	24 VAC Triac	BO-1 Supply Fan BO-2 Cooling 1 BO-3 Cooling 2 BO-4 Heating 1 BO-5 Heating 2 BO-6 unavailable BO-7 unavailable	BO-1 Supply Fan BO-2 Cooling 1 BO-3 Cooling 2 BO-4 Heating 1 BO-5 Heating 2 BO-6 unavailable BO-7 unavailable

I/O Module

Figure 10 shows an I/O Module.

Figure 10: Input/Output Module

The I/O Module (IOM) is a simple point multiplexor that provides monitoring of up to 2 analog inputs, 2 binary inputs, and scheduling of up to 4 binary outputs.

The IOM uses the SM to monitor and control auxiliary points in a facility. Monitor input points using the SM and schedule binary output points with the SM scheduling feature.

Features

- ability to integrate facility loads, such as lighting or exhaust fans, into building occupancy schedules
- circuitry and connectors for the 2 Analog Inputs (AI), 2 Binary Inputs (BI), and 4 Binary Outputs (BO)

IOM Point Type and Counts

Table 4 shows the IOM YCCS Point Type and Counts.

Table 4: IOM Point Type and Counts

Point Type	Signals Accepted	LC-IOM100-0
Analog Input (AI)	1k Ohm Nickel RTD, 0-10 VDC for RH or CO_2	2
Binary Input (BI)	Dry Contact Maintained Mode	2
Binary Output (BO)	24 VAC Triac Output	4

Table 5: Round Damper Assembly Construction Components

Damper Part	Construction Component
Frame	22 gauge galvanized steel valve body with embossed beads. Withstands 125 hour salt spray test per ASTM B-117.
Blade	Full circular closed cell gasket secured between two pieces of 22 gauge sheet metal.
Damper Shaft	Molded solid damper shaft constructed of high-impact, high-strength composite material.
Bearing	Low friction self-lubricating bearings
Seal	Full circular closed cell gasket
Temp Limits	32 to 122°F (0 to 50°C)

Table 6: Rectangular Damper Assembly Construction Components

Damper Part	Construction Component
Frame	5 x 1 x 16 inch gauge galvanized steel hat channel reinforced with corner braces for structural strength equal to 13 gauge.
Blade	6 inches wide, 16 gauge galvanized steel approximately 6 inches on center, parallel action
Damper Shaft	1/2 inch plated steel hex axles
Bearing	Corrosion resistant, molded synthetic sleeve type
Temp Limits	32 to 122°F (0 to 50°C)

Table 7: Round Damper Assemblies Selection Chart

Damper Size (Area - SqFt)	6 inch (0.188)	8 inch (0.338)	10 inch (0.532)	12 inch (0.769)	14 inch (1.05)	16 inch (1.375)
Air Velocity Through Damper (FPM)	**Zone Damper/Bypass Only Airflow - CFM**					
750 FPM - Zone	141	254	399	577	788	1031
1000 FPM - Zone	188	338	532	769	1050	1375
1250 FPM - Zone	235	423	665	961	1313	1718
1500 FPM - Bypass only	282	507	798	1154	1575	2062
1750 FPM - Bypass only	329	592	931	1346	1838	2405
2000 FPM - Bypass only	376	676	1064	1538	2100	2749
2250 FPM - Bypass only	423	761	1197	1730	2363	3094

Table 8: Rectangular Damper Assemblies Selection Chart

Damper Size W x H inches (Area - SqFt)	Zone Damper Assembly					
	8 x 12 in. (0.42)	8 x 14 in. (0.5)	8 x 16 in. (0.58)	10 x 16 in. (0.77)	10 x 20 in. (1.00)	14 x 18 in. (1.33)
Air Velocity Through Damper (FPM)	**Damper Airflow - CFM**					
750 FPM	315	375	435	478	750	998
1000 FPM	420	500	580	770	1000	1330
1250 FPM	525	625	725	963	1250	1633

Damper Size W x H inches (Area - SqFt)	Bypass Damper Assembly			
	14 x 12 in. (0.83)	16 x 16 in. (1.36)	20 x 20 in. (2.25)	30 x 30 in. (5.44)
Air Velocity Through Damper (FPM)	**Damper Airflow - CFM**			
1500 FPM	1245	2040	3375	8160
1750 FPM	1453	2380	3938	9520
2000 FPM	1660	2720	4500	10880
2250 FPM	1868	3060	5063	12240

Table 9: Zone and Bypass Damper Assembly Part Numbers (Part 1 of 4)

Product Code Number		Description	Weight (lb)
Round Zone Damper Assemblies (Pressure Depend)	**UZR-06-0C**	6 in. round zone damper, actuator, controller (no transformer)	16.3
	UZR-06-1C	6 in. round zone damper, actuator, controller (120/208/240-24 VAC Transformer)	18.3
	UZR-06-2C	6 in. round zone damper, actuator, controller (277/480-24 VAC Transformer)	18.3
	UZR-08-0C	8 in. round zone damper, actuator, controller (no transformer)	18.3
	UZR-08-1C	8 in. round zone damper, actuator, controller (120/208/240-24 VAC Transformer)	20.3
	UZR-08-2C	8 in. round zone damper, actuator, controller (277/480-24 VAC Transformer)	20.3
	UZR-10-0C	10 in. round zone damper, actuator, controller (no transformer)	20.3
	UZR-10-1C	10 in. round zone damper, actuator, controller (120/208/240-24 VAC Transformer)	22.3
	UZR-10-2C	10 in. round zone damper, actuator, controller (277/480-24 VAC Transformer)	22.3
	UZR-12-0C	12 in. round zone damper, actuator, controller (no transformer)	21.3
	UZR-12-1C	12 in. round zone damper, actuator, controller (120/208/240-24 VAC Transformer)	23.3
	UZR-12-2C	12 in. round zone damper, actuator, controller (277/480-24 VAC	23.3
	UZR-14-0C	14 in. round zone damper, actuator, controller (no transformer)	22.3
	UZR-14-1C	14 in. round zone damper, actuator, controller (120/208/240-24 VAC Transformer)	24.3
	UZR-14-2C	14 in. round zone damper, actuator, controller (277/480-24 VAC Transformer)	24.3
	UZR-16-0C	16 in. round zone damper, actuator, controller (no transformer)	25.3
	UZR-16-1C	16 in. round zone damper, actuator, controller (120/208/240-24 VAC Transformer)	27.3
	UZR-16-2C	16 in. round zone damper, actuator, controller (277/480-24 VAC Transformer)	27.3

Table 9: Zone and Bypass Damper Assembly Part Numbers (Part 2 of 4)

Product Code Number		Description	Weight (lb)
Round Bypass Damper Assemblies (Includes Differential Pressure Transducer for monitoring Duct Pressure)	**UBR-10-0C**	10 in. round bypass damper, actuator, controller, DP (no transformer)	20.6
	UBR-10-1C	10 in. round bypass damper, actuator, controller, DP (120/208/240-24 VAC Transformer)	22.6
	UBR-10-2C	10 in. round bypass damper, actuator, controller, DP (277/480-24 VAC Transformer)	22.6
	UBR-12-0C	12 in. round bypass damper, actuator, controller, DP (no transformer)	21.6
	UBR-12-1C	12 in. round bypass damper, actuator, controller, DP (120/208/240-24 VAC Transformer)	23.6
	UBR-12-2C	12 in. round bypass damper, actuator, controller, DP (277/480-24 VAC Transformer)	23.6
	UBR-14-0C	14 in. round bypass damper, actuator, controller, DP (no transformer)	22.6
	UBR-14-1C	14 in. round bypass damper, actuator, controller, DP (120/208/240-24 VAC Transformer)	24.6
	UBR-14-2C	14 in. round bypass damper, actuator, controller, DP (277/480-24 VAC Transformer)	24.6
	UBR-16-0C	16 in. round bypass damper, actuator, controller, DP (no transformer)	25.6
	UBR-16-1C	16 in. round bypass damper, actuator, controller, DP (120/208/240-24 VAC Transformer)	27.6
	UBR-16-2C	16 in. round bypass damper, actuator, controller, DP (277/480-24 VAC Transformer)	27.6

Table 9: Zone and Bypass Damper Assembly Part Numbers (Part 3 of 4)

Product Code Number		Description	Weight (lb)
Rectangular Zone Damper Assemblies (Pressure Depend)	UZD-008X012-0C	8 x 12 in zone damper with actuator, controller (no transformer)	5.3
	UZD-008X012-1C	8 x 12 in. zone damper, actuator, controller (120/208/240-24 VAC Transformer)	7.3
	UZD-008X012-2C	8 x 12 in. zone damper, actuator, controller (277-480-24 VAC Transformer)	7.3
	UZD-008X014-0C	8 x 14 in. zone damper with actuator, controller (no transformer)	6.0
	UZD-008X014-1C	8 x 14 in. zone damper, actuator, controller (120/208/240-24 VAC Transformer)	8.0
	UZD-008X014-2C	8 x 14 in. zone damper, actuator, controller (277-480-24 VAC Transformer)	8.0
	UZD-008X016-0C	8 x 16 in zone damper with actuator, controller (no transformer)	6.6
	UZD-008X016-1C	8 x 16 in. zone damper, actuator, controller (120/208/240-24 VAC Transformer)	8.6
	UZD-008X016-2C	8 x 16 in. zone damper, actuator, controller (277-480-24 VAC Transformer)	8.6
	UZD-010X016-0C	10 x 16 in zone damper with actuator, controller (no transformer)	7.9
	UZD-010X016-1C	10 x 16 in. zone damper, actuator, controller (120/208/240-24 VAC Transformer)	9.9
	UZD-010X016-2C	10 x 16 in. zone damper, actuator, controller (277-480-24 VAC Transformer)	9.9
	UZD-010X020-0C	10 x 20 in. zone damper with actuator, controller (no transformer)	9.6
	UZD-010X020-1C	10 x 20 in. zone damper, actuator, controller (120/208/240-24 VAC Transformer)	11.6
	UZD-010X020-2C	10 x 20 in. zone damper, actuator, controller (277-480-24 VAC Transformer)	11.6
	UZD-014X018-0C	14 x 18 in. zone damper with actuator, controller (no transformer)	11.8
	UZD-014X018-1C	14 x 18 in. zone damper, actuator, controller (120/208/240-24 VAC Transformer)	13.8
	UZD-014X018-2C	14 x 18 in. zone damper, actuator, controller (277-480-24 VAC Transformer)	13.8

Table 9: Zone and Bypass Damper Assembly Part Numbers (Part 4 of 4)

Product Code Number		Description	Weight (lb)
Rectangular Bypass Damper Assemblies (Includes Differential Pressure Transducer for monitoring Duct Pressure)	UBD-014X012-0C	14 x 12 in. bypass damper, actuator, controller, DP (no transformer)	8.6
	UBD-014X012-1C	14 x 12 in. bypass damper, actuator, controller, DP (120/208/240 - 24 VAC Transformer)	10.6
	UBD-014X012-2C	14 x 12 in. bypass damper, actuator, controller, DP (277/480-24 VAC Transformer)	10.6
	UBD-016X016-0C	16 x 16 in. bypass damper, actuator, controller, DP (no transformer)	12.2
	UBD-016X016-1C	16 x 16 in. bypass damper, actuator, controller, DP (120/208/240 - 24 VAC Transformer)	14.2
	UBD-016X016-2C	16 x 16 in. bypass damper, actuator, controller, DP (277/480-24 VAC Transformer)	14.2
	UBD-020X020-0C	20 x 20 in. bypass damper, actuator, controller, DP (no transformer)	18.4
	UBD-020X020-1C	20 x 20 in. bypass damper, actuator, controller, DP (120/208/240 - 24 VAC Transformer)	20.4
	UBD-020X020-2C	20 x 20 in. bypass damper, actuator, controller, DP (277/480-24 VAC Transformer)	20.4
	UBD-030X030-0C	30 x 30 in. bypass damper, actuator, controller, DP (no transformer)	39.1
	UBD-030X030-1C	30 x 30 in. bypass damper, actuator, controller, DP (120/208/240 - 24 VAC Transformer)	41.1
	UBD-030X030-2C	30 x 30 in. bypass damper, actuator, controller, DP (277/480-24 VAC Transformer)	41.1

Table 10: YCCS Accessories

YCCS Component	Accessory Part Number	Description
SM, ZC, and IOM Controller	Y65T42-0	Transformer, 120/208/240 VAC primary to 24 VAC secondary, 40 VA hub mount, Class 2
Zone/Bypass Controller	Y65T54-0	Transformer UL Class 2, 40 VA, 120/208/240 24 VAC
	Y65F13-0	Transformer UL Class 2, 40 VA, 277/480 24 VAC
Universal SPU, Zone and Bypass Damper Assembly	TE-68NT-0NN0S	Wall Temperature Sensor, 1 k ohm, Nickle with Temporary Occupancy Button
	TE-68NT-1NN0S	Wall Temperature Sensor, 1 k ohm, Nickle with Warmer/Cooler Temperature Adjust and Temporary Occupancy Button
	FTG18A-600R	Static pressure remote mounted sensing probe (zone and bypass damper assemblies only)
	Y65T42-0	Transformer, 120/208/240 VAC primary to 24 VAC secondary, 40 VA hub mount, Class 2 (RTU only)
	P32AC-2C	Differential Pressure Switch for sensing pressure and airflow in ducts. Refer to the *P32 Series Sensitive Pressure Switch Catalog Page (LIT-1927195)* and *Installation Instruction* (*LIT-125435*) for additional information
	CSD-CA1G0-1	Split Core Current Switch, LED, Adjustable (RTU only)
	TE-6311M-1	1000 Ohm Ni Duct Mount Temperature Sensor (RTU only)
	TE-6313P-1	1000 Ohm Ni Outdoor Mount Temperature Sensor (RTU only)

Technical Specifications

System Manager (SM) and Zone Coordinator (ZC)

Product Code Number	York Commercial Comfort System (YCCS): **System Manager** YK-SMU200-0 (without modem), YK-SMU210-0 (with modem) **Zone Coordinator** YK-ZCU100-0 (without modem and LCD), YK-ZCU110-0 (with modem, without LCD) YK-ZCU200-0 (without modem, with LCD), YK-ZCU210-0 (with modem and LCD)
Power Supply Requirement	Dedicated nominal 24 VAC, Class 2 power supply (North America) at 50/60 Hz (20 VAC minimum)
Power Consumption	20-30 VAC @ 10 VA
Ambient Conditions	Ambient Operating Temperature: -40 to 70°C, (-40 to 158°F), 5% to 95% RH noncondensing Ambient Storage Temperature: -40 to 85°C, (-40 to 185°F), 10% to 90% RH noncondensing
Processor	192 MHz Renesas™ SH4 7760 RISC processor
Memory	128 MB Flash nonvolatile memory for operating system, configuration data, and operations data storage and backup 128 MB Synchronous Dynamic Random Access Memory (SDRAM) for operations data dynamic memory
Housing	Plastic housing material: ABS + polycarbonate UL94-5VB Protection: IP20 (IEC 60529)
Mounting	With screws on a flat surface or a four square box
Dimensions (Height x Width x Depth)	250 x 190 x 60 mm (9.8 x 7.5 x 2.4 in.)
Shipping Weight	approximately 1.97 lb
Compliance	**United States** UL Listed, File E107041, CCN PAZX, UL 916 FCC Compliant to CFR47, Part 15, Subpart B, Class A
	Canada UL Listed, File E107041, CCN PAZX7, CAN/CSA C22.2 No. 205, Signal Equipment Industry Canada Compliant, ICES-003
	European Union CE Mark, EMC Directive 89/336/EEC, in accordance with EN 61000-6-4 (2001) Generic Emission Standard for Heavy Industrial and EN 61000-6-2 (2001) Generic Immunity Standard for Heavy Industrial Environment
	Australia and New Zealand C-Tick Mark, Australia/NZ Emissions Compliant

Universal Rooftop Unit (RTU) Controller

Product Code Number	York Commercial Comfort System (YCCS): **Universal Rooftop Unit Controller:** YK-PEC1001-0 (single zone application) YK-PEC1002-0 (changeover/bypass application)
Power Supply Requirement	20 - 30 VAC @ 50 to 60 Hz, Class 2 power supply or Safety Extra Low Voltage (SELV) at 50/60 Hz (20 VAC minimum)
Power Consumption	3 VA maximum (not including external loads)
Ambient Conditions	Ambient Operating Conditions: -40 to 70°C (-40 to 158°F); 10 to 90% RH noncondensing Ambient Storage Conditions: -40 to 85°C (-40 to 185°F); 10 to 90% RH
Processor	20 MHz Renesas™ H8S2398 processor
Memory	1 MB Flash nonvolatile memory for operating system, configuration data, and operations data storage and backup 512 k Synchronous Random Access Memory (SRAM) for operations data dynamic
Housing	Plastic housing material: ABS + polycarbonate UL94-5VB Protection: IP20 (IEC 60529)
Mounting	On a flat surface with screws
Dimensions (Height x Width x Depth)	165 x 165 x 56 mm (6.5 x 6.4 x 2.2 in.)
Shipping Weight	approximately 0.70 lb
Compliance	**United States** UL Listed, File E107041, CCN PAZX, UL 916 FCC Compliant to CFR47, Part 15, Subpart B, Class A
	Canada UL Listed, File E107041, CCN PAZX7, CAN/CSA C22.2 No. 205, Signal Equipment Industry Canada Compliant, ICES-003
	European Union CE Mark, EMC Directive 89/336/EEC, in accordance with EN 61000-6-4 (2001) Generic Emission Standard for Heavy Industrial and EN 61000-6-2 (2001) Generic Immunity Standard for Heavy Industrial Environment
	Australia and New Zealand C-Tick Mark, Australia/NZ Emissions Compliant

IOM Controller (Part 1 of 2)

Product Code Number	York Commercial Comfort System (YCCS) **Input/Output Module: YC-IOM100-0**
Power Supply Requirement	24 VAC
Power Consumption	4 VA (not including external loads)
Ambient Conditions	Ambient Operating Conditions: 0 to 50°C (32 to 122°F) Ambient Storage Conditions: -40 to 85°C (-40 to 185°F)
Processor	20 MHz Renesas™ H8S2398 processor
Memory	1 MB Flash nonvolatile memory for operating system, configuration data, and operations data storage and backup 512 K Synchronous Random Access Memory (SRAM) for operations data dynamic memory
Housing	Plastic housing material: ABS + polycarbonate UL94-5VB Protection: IP20 (IEC 60529)
Mounting	On a flat surface with screws
Dimensions (Height x Width x Depth)	144 x 150 x 53 mm (5.7 x 5.9 x 2.1 in.)

IOM Controller (Part 2 of 2)

Shipping Weight	approximately 0.3 lb
Compliance	**United States** UL Listed, File E107041, CCN PAZX, UL 916 FCC Compliant to CFR47, Part 15, Subpart B, Class A
	Canada UL Listed, File E107041, CCN PAZX7, CAN/CSA C22.2 No. 205, Signal Equipment Industry Canada Compliant, ICES-003
	European Union CE Mark, EMC Directive 89/336/EEC, in accordance with EN 61000-6-4 (2001) Generic Emission Standard for Heavy Industrial and EN 61000-6-2 (2001) Generic Immunity Standard for Heavy Industrial Environment
	Australia and New Zealand C-Tick Mark, Australia/NZ Emissions Compliant

Zone/Bypass Controller

Product Code Number	York Commercial Comfort System (YCCS) **Zone Controller:** S1-LC-ZEC100-0 **Bypass Damper Assembly:** S1-LC-BYP100-0
Power Supply Requirement	20 - 30 VAC @ 50 to 60 Hz, Class 2 power supply or Safety Extra Low Voltage (SELV) at 50/60 Hz (20 VAC minimum)
Power Consumption	Zone Damper Assembly: 3 VA (not including external loads) Bypass Assembly: 2 VA (not including external loads)
Ambient Conditions	Ambient Operating Conditions: 0 to 50°C (32 to 122°F); 10 to 90% RH noncondensing Ambient Storage Conditions: -40 to 85°C (-40 to 185°F); 10 to 90% RH
Processor	20 MHz Renesas™ H8S2398 processor
Memory	1 MB Flash nonvolatile memory for operating system, configuration data, and operations data storage and backup 512 k Synchronous Random Access Memory (SRAM) for operations data dynamic memory
Housing	Plastic housing material: ABS + polycarbonate UL94-5VB Protection: IP20 (IEC 60529)
Mounting	On a flat surface with screws on three mounting clips
Dimensions (Height x Width x Depth)	140 x 140 x 25 mm (5.5 x 5.5 x 1.0 in.)
Shipping Weight	approximately 0.3 lb
Compliance	**United States** UL Listed, File E107041, CCN PAZX, UL 916 FCC Compliant to CFR47, Part 15, Subpart B, Class A
	Canada UL Listed, File E107041, CCN PAZX7, CAN/CSA C22.2 No. 205, Signal Equipment Industry Canada Compliant, ICES-003
	European Union CE Mark, EMC Directive 89/336/EEC, in accordance with EN 61000-6-4 (2001) Generic Emission Standard for Heavy Industrial and EN 61000-6-2 (2001) Generic Immunity Standard for Heavy Industrial Environment
	Australia and New Zealand C-Tick Mark, Australia/NZ Emissions Compliant

Bypass DP Transducer

Product Code Number	S1-263G-005-JC6
Power Requirement	5.0 VDC
Pressure Range	0 to 5.0 w.c.
Overpressure limit	15.0 w.c.
Output Voltage	0.5 to 4.5 VDC into load impedance of 25,000 ohms
Accuracy	Linearity: ± 1.0% full span maximum Hysteresis: ± 0.05% full span maximum
Dimensions (Height x Width x Depth)	25.4 x 68.8 x 63.5 mm (1.0 x 2.71 x 2.5 in.)

Damper Actuator

Product Code Number	S1-M9104-AGA-3S
Power Requirement	24 VAC + 25%/ - 20% @ 50 to 60 Hz, 2.1 VA Supply, Class 2
Control Type	Floating control without timeout
Input Signal	24 VAC + 25%/ - 20% @ 50 to 60 Hz, 2.1 VA Supply, Class 2
Running Torque	35 lb·in
Dimensions (Height x Width x Depth)	132.08 x 71.1 x 58.4 mm (5.2 x 2.8 x 2.3 in.)

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