

ATC1510 introduction

The Johnson Controls® Advanced Terminal Unit Controller (ATC) 1510 is a programmable controller specifically designed for terminal unit equipment.

The ATC is tailored to meet the most demanding requirements in terms of comfort and energy efficiency. The controller features a long list of Johnson Controls patents and best practices that help you achieve lower engineering and commissioning costs, and grant superior reliability and efficiency.

When you use the on-board power sources for the ancillary field devices, you can reduce installation costs, because you need fewer components, such as transformers and wires. In addition, you can utilize the cable strain relief and optional safety cover to install the ATC without an additional cabinet, where regulation allows, which also cuts installation costs.

The controller's field-selectable communications protocols, BACnet® and N2, make the ATC suitable for both new and retrofit installations because they provide a cost effective upgrade and modernization path for customers who are using existing N2 controllers.

Features and benefits

Standard hardware and software platform

Uses a hardware and software design that is common throughout the family line of Metasys field controllers. Installation and commissioning is quicker and cheaper because of the support for standardized wiring practices and installation workflows. Minimal technical training is sufficient because there is a single tool for control applications, commissioning, and troubleshooting.

Universal Inputs and Configurable Outputs

Multiple signal options provide input/output flexibility.

Line power supply with on-board power for field devices

Reduces the number of components required, which lowers total installation costs.

Cable strain relief and optional safety covers

Enables installation without the need for an electrical box, which lowers installation costs, where regulation allows.

Switchable communication protocols

With the Controller Configuration Tool (CCT), you can configure ATCs to communicate using either the BACnet MS/TP or the N2 field bus networking protocol. This makes ATCs suitable for new and retrofit installation, providing higher flexibility, thus protecting investments.

Standard BACnet protocol

BACnet Testing Laboratories (BTL) listed and certified, which ensures interoperability with other Building Automation System (BAS) products that use the widely accepted BACnet standard.

End-of-Line (EOL) switch

Enables equipment controllers to be terminating devices on the communications bus.

Default state for input/output wiring validation

You can validate the wiring of the input and output terminals prior to the download of an application file.

Background transfer coupled with enable/disable logic options in CCT

Saves time for the field technicians, enables productivity, and minimizes equipment disruption, because the controllers operate while file updates take place in the background. You can leave the application disabled until the system is ready to run.

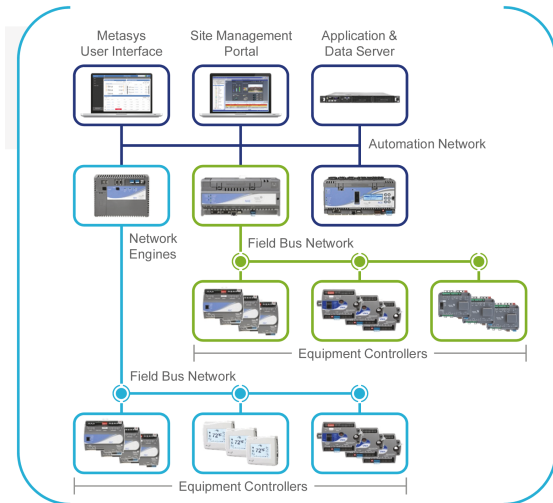
Optional local user interface display

Allows convenient monitoring and adjusting capabilities at the local device.

Network diagram with controllers

The ATC1510 controllers are designed to integrate seamlessly into the Metasys system by connecting and communicating directly with a Network Automation Engine (NAE) or a Network Control Engine (NCE). This seamless integration of equipment controllers with Metasys supervisory controllers enables building operators to monitor and adjust the ATCs directly from the Metasys system UI. In addition, service personnel can view controller information locally through an optional local controller display (MS-DIS1710-0), or through the optional Mobile Access Portal (MAP) Gateway.

Figure 1: Metasys System with controllers

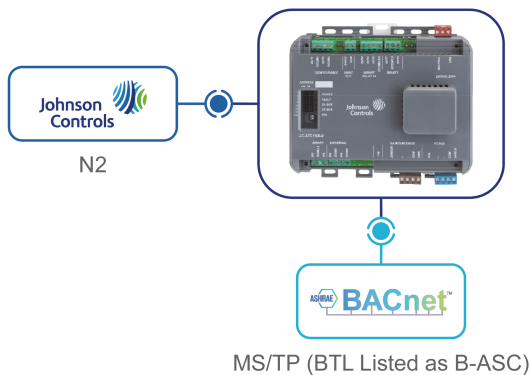


Communication protocols

The ATCs communicate using the standard BACnet protocol. The BACnet protocol is a standard for ANSI, ASHRAE, and the International Standards Organization (ISO) for building controls. ATCs are BTL-tested and listed as BACnet Application Specific Controllers (B-ASCs).

Field Controller (FC) bus

You can use CCT release 13.0 or later to configure the FC bus communications protocol in the ATC as either standard BACnet, or as N2. Switchable communications protocols provide a cost effective upgrade and modernization path for customers who have existing N2 controllers.



As ATC supports widely accepted and recognized standard protocols, users can integrate ATCs seamlessly into any supervisory system that supports BACnet MS/TP.

Sensor Actuator (SA) bus

The ATC models also feature a dedicated field device layer communication bus, the SA bus. An application can use the SA bus for integrating NS Series network sensors.

Hardware and installation

The ATCs are line-powered at 240 VAC 50/60 Hz and capable of switching externally powered dedicated onboard Triacs and Relay Outputs.

You can mount the controller on a DIN rail with the integral mounting clips, or you can mount it on a flat surface with three screws. You can mount the controller on a flat surface in only one orientation: the side that contains the outputs and the power input must be facing upwards. This orientation ensures proper ventilation.

The IP20 covers and cable strain reliefs have been designed to permit surface mounting in certain countries. If IP20 covers are not in use, or if local regulations do not allow surface mounting, mount the controller in or on a panel.

The ATC supplies power for field devices (24 VAC at 500 mA) for valve and damper actuators and sensors.

The ATC features bright, color-coded LEDs, visible on the controller cover that indicate the status of the power supply, communications bus, as well as a variety of fault conditions to aid troubleshooting the controller and the bus.

The ATC also features removable, color-coded, keyed, and labeled terminal block plugs for the power supply and communications bus terminals, which facilitate installing and servicing the controllers.

Point types

The following table lists the ATC1510 point types.

Table 1: ATC point types

Point type	Number
Binary input	2
Universal input	4
Binary output	2
Configurable output	3
Relay output (5 A)	3
Relay output (10 A)	1
Total	15

Physical features

The following figure shows the ATC1510 physical features.

Figure 2: ATC physical features

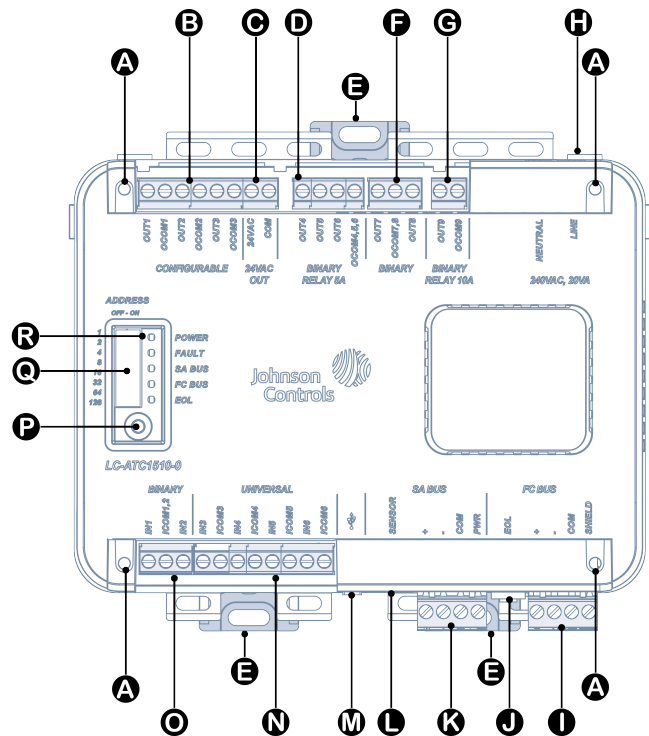


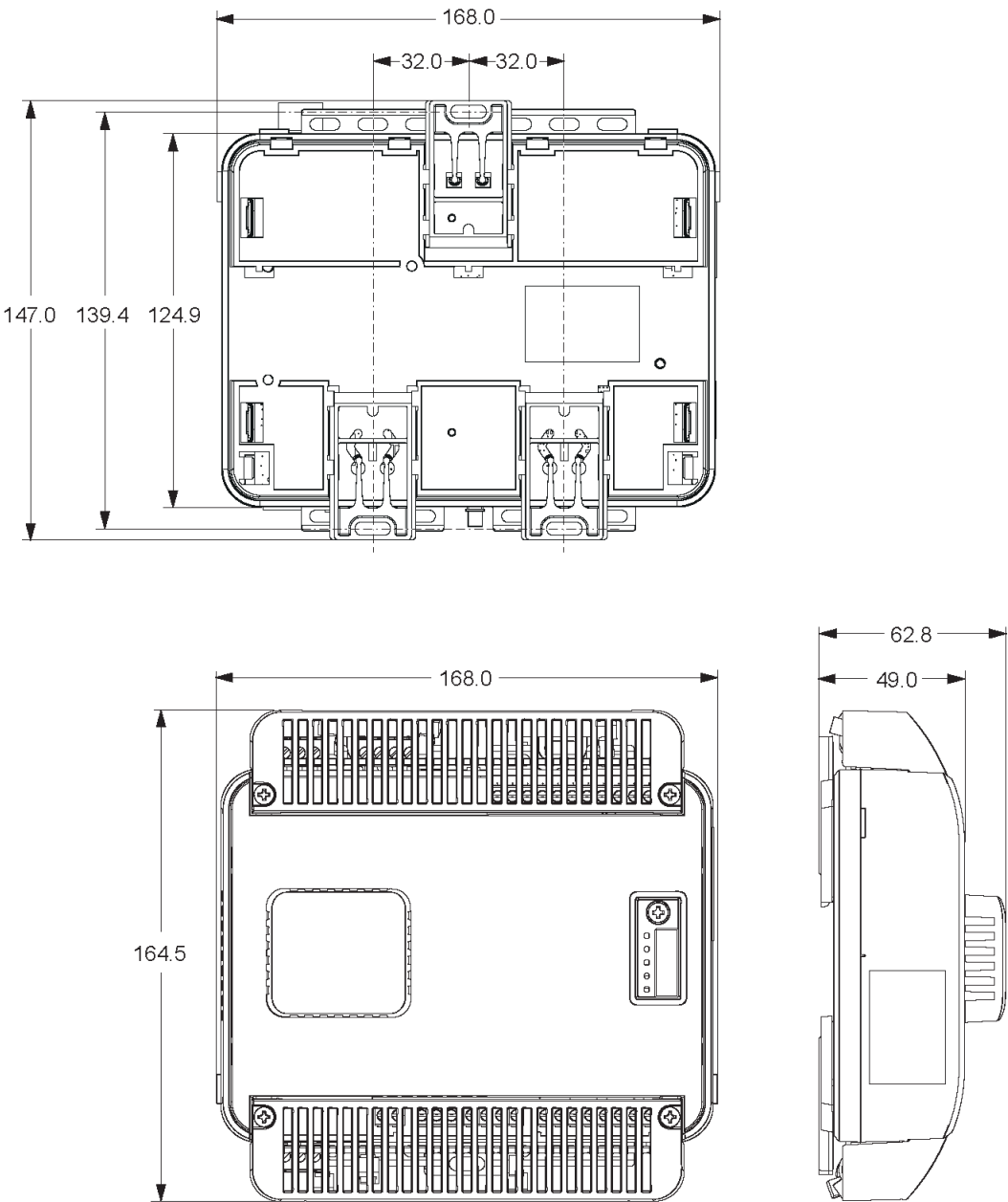
Table 2: Advanced Terminal Unit Controller Physical Features

Callout	Physical Feature: Description and Reference
A	IP 20 cover screw attachment holes
B	Configurable outputs
C	24 VAC out
D	5 A relay outputs
E	DIN clips
F	Triac outputs
G	10 A relay output
H	240 VAC power input
I	FC Bus
J	FC Bus EOL switch
K	SA Bus
L	SA Bus RJ12
M	USB (not in use)
N	Universal inputs
O	Binary inputs
P	Cover screw
Q	Address switch
R	Status LEDs

Dimensions

The following figures show the dimensions of the ATC1510.

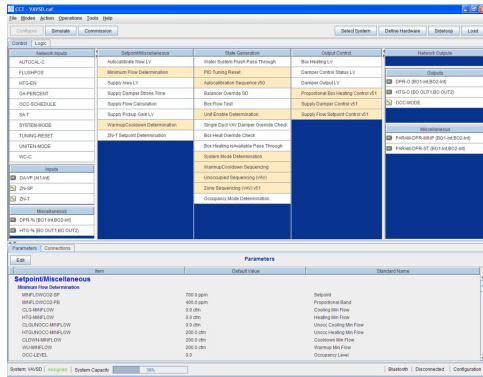
Figure 3: ATC1510 dimensions, mm



Controller Configuration Tool (CCT)

The CCT is used in conjunction with the Metasys system to configure, simulate, and commission the ATC1510 controllers.

Figure 4: CCT user interface



Note: The MS-FCP-0 equipment controller firmware package files are required for CCT to configure and commission the controllers. The firmware package files also allow you to upgrade an existing controller to the latest firmware release available for that controller. Beginning at CCT Release 13, the firmware package files are orderable separately. They are obtained from the Metasys software licensing portal, and are loaded and licensed on the computer/server that is running CCT.

Configuration mode allows you to select a number of mechanical and control logic options through System Selection Trees for typical air handling, terminal unit, VAV box, and central plant mechanical systems. When required, you can customize the standard logic provided by the system selection process to meet your specialized control logic requirements. Configuration mode also allows you to customize certain display options available to controllers that use a local controller display.

Simulation mode allows you to review, run, or simulate the application logic as if you were commissioning a live system. You can make adjustments to setpoints, inputs, or sensors during a simulation session to validate the logic before assigning the configuration to a specific controller.

Commissioning mode manages the downloading of files to the controllers through multiple network connection points. You can connect using the MAP Gateway, the BTCVT between your laptop and the MS/TP or N2 field bus, or using the Ethernet Passthru mode in conjunction with the SCT through an NAE or NCE.

Note:

- Ethernet Passthru is not available on controllers configured for N2 communications.
- The MAP Gateway serves as a replacement for the BTCVT, which is no longer available for purchase, but continues to be supported.

After downloading the files to the controllers, you can use the commissioning mode to validate the sensor and

control point interfaces and adjust key setpoints and setup parameters.

Mobile Access Portal (MAP) Gateway

The MAP Gateway is a pocket-sized web server that provides a wireless mobile user interface for the ATC. The MAP Gateway is small, lightweight, easy to use, and it joins the rapidly expanding list of Johnson Controls products that leverage the power of mobility and smart devices to improve daily operations.

Offering many-to-one, multi-client connectivity, the MAP Gateway gives users access to any device that is on a connected BACnet MS/TP field bus. The MAP Gateway solution is conveniently sized, has a built-in wireless access point and an intuitive, browser-based interface, with which users can access advanced features like alarms and point configuration.

The wireless connection on the MAP Gateway allows users to be up to 31 m away indoors and up to 91 m away outdoors (line of sight), while using a supported mobile device.

You can use the MAP Gateway as a portable device while you move from site to site, depending on the needs and workflow. To use the MAP gateway with the ATC, plug it into the SA bus port on the ATC. The MAP Gateway can receive power through the SA bus, or through an optional AC power supply.

You can access the MAP Gateway user interface either over Wi-Fi or an existing Ethernet network on site.

Network sensors

The NS Series Network Sensor offering includes zone sensors and discharge air sensors that are designed to function directly with ATCs.

Several models of the NS Series Network Zone Sensors monitor room temperature. Options are available to also monitor zone humidity, carbon dioxide (CO₂), local temperature setpoint adjustments, and other variables. This data is transmitted to a field controller on the SA Bus.

The NS Series Network Zone Sensors include models with a temperature setpoint dial and LCD with which occupants can view the zone temperature, view and adjust the zone temperature setpoint. A fan mode push button is included to set the desired fan speed (auto, off, low, medium, or high).

The sensors provide an occupancy override function, with which the users can signal the controller that the zone is occupied to override the scheduled mode. Some models have DIP switches to set a unique address for applications that require multiple sensors.

For communication wiring flexibility, the wires connecting the network zone sensor to a controller can be terminated using a modular jack or screw terminals.

Each network zone sensor includes an SA Bus access port to allow accessories to access the SA Bus. The SA bus port allows accessories to service or commission the connected controller or gain access to any other controller on the same FC Bus.

The NS Series Network Discharge Air Sensors are electronic duct sensors. Models in this series monitor the

duct temperature, and transmit this data to controllers on the SA Bus.

Ordering information

Contact your Johnson Controls representative to order the ATC1510 or any related products. See the following tables for the product codes and descriptions.

Table 3: ATC1510 ordering information

Product code	Description
LC-ATC1510-0	Advanced Terminal Controller, 15 point

Table 4: Accessories (order separately)

Product code	Description
LC-IP20	Advanced Terminal unit Controller IP20 Safety Terminal Cover Kit
TL-MAP1810-OPE	Portable MAP Gateway - includes MAP Gateway, RJ-12 cable, protective shell, and lanyard
MS-FCP-0	Metasys Field Controller Firmware Package Files for CCT

Go to Virtual Branch to select sensors, actuators, valves, and other products:

<https://be-ebusiness.eu.johnsoncontrols.com/>

Technical Specifications

Table 5: Advanced Terminal Unit Controller

Specification	Description
Product Code Number	LC-ATC1510-0 Advanced Terminal Controller, 15 point
Supply Voltage	240 VAC, 50/60 Hz (L1, L2)
Power Consumption	20 VA Max
Ambient Conditions	Operating: 0°C to 40°C (32°F to 104°F); 10% to 95% RH noncondensing Storage: -40°C to 85°C (-40°F to 185°F); 5% to 95% RH noncondensing
Addressing	BACnet® MS/TP: Valid field controller device addresses 4–127 (Device addresses 0–3 and 128–255 are reserved and not valid field controller addresses.) N2: Valid field controller device addresses 1 to 254 (Device address 255 is reserved for the broadcast address and not a valid field controller address.)
Communications Bus (FC, SA)	BACnet MS/TP and N2 through RS-485: FC Bus between the supervisory controller and field controller SA Bus between controller, network sensors and other sensor/actuator devices, includes a 15 VDC, 210 mA power supply for bus devices Same circuit as modules logic circuitry +15 VDC, 200 mA SELV, Limited Power (<15 Watts), Class 2
Processor	Renesas® RX631 32-bit microcontroller, 2 MB Flash, 128 KB RAM
External Memory	16 MB flash memory and 8 MB RAM

Table 5: Advanced Terminal Unit Controller

Specification	Description
Input and Output Capabilities	Binary Input (BI): Dry Contact Maintained Pulse Counter/Accumulator Mode (30 Hz) Dry Contacts; SELV, Limited Power (<15 Watts), Class 2 Universal Input (UI): user-Configurable, 3 available modes: Voltage Input: 0 VDC to 10 VDC Resistive (0k ohm to 600k ohm), qualified sensors: 0-2k ohm potentiometer, RTD (1k Ni, 1k Pt, A99B Si), NTC (10k Type L, 2.252k Type 2) Dry-contact maintained binary Same circuit as modules logic circuitry +15 VDC, 100 mA SELV, Limited Power (<15 Watts), Class 2 OR 0 V to 10 V or 0 kΩ to 10 kΩ or Dry Contact closure; SELV, Limited Power (<15 Watts), Class 2 Configurable Output (CO): User-Configurable, 2 available modes: Voltage Output: 0 VDC to 10 VDC, 10 mA; Same circuit as modules logic circuitry (0 V to 10 V or 4 mA to 20 mA); SELV, Limited Power (<15 Watts), Class 2 Triac Output: 24 VAC, 500 mA (Externally sourced); Isolated circuits; SELV, 24 VAC, 0.5 A resistive; Not-limited power (>15 Watts) Class 2 24 VAC out for actuator power (VAC_P): 24 VAC @ 500mA Same circuit as modules logic circuitry 24 VAC, SELV; Not-limited power (>15 Watts) Class 2, 0.5 A 5 A Relay Output (5A RO) (K1, K2, K3): Single-Pole, Single-Throw, Normally Open 240 VAC, 5 A Resistive, 50k cycles 240 VAC, 0.66FLA/4LRA, 50k cycles Shared common terminal between all 5A ROs Binary Output Triac (BO): 24 VAC or 240 VAC, 500 mA Resistive Externally powered Shared common terminal between all BO Triacs 10 A Relay Output (10A RO) (K8): Single-Pole, Single-Throw, Normally Open 240 VAC, 10 A Resistive, 100k cycles For the line-voltage-capable outputs, ensure that they are wired correctly before applying power.
Input and Output Count	2 BI, 4 UI, 3 CO, 3 RO (5 A), 2 BO, 1 RO (10 A)
Analog Input/Output Resolution	Analog Input: 12-bit resolution Analog Output: 15-bit resolution
Terminations	Input/Output: Screw terminals FC Bus: 4-wire pluggable Screw Terminal Block SA Bus: 4-wire pluggable Screw Terminal Block and RJ-12, 6-pin modular jack
Mounting	Mount the controller using a 35 mm DIN rail, or three screws and the integral mounting clips on the controller. Ensure that the controller is mounted so that the side with the outputs/power-input is "up". If IP20 covers are not in use, or if local regulations do not allow surface mounting, the controller must be mounted in or on a panel. The IP20 covers and cable strain reliefs have been designed to permit surface mounting in certain countries.

Table 5: Advanced Terminal Unit Controller

Specification	Description
Dimensions (H x W x D)	165 x 130 x 63 mm including terminals and mounting clips 165 x 165 x 63 mm (With IP20 Cover)
Weight	0.6 kg (1 lbs 5 oz)
Compliance 	Europe: Johnson Controls declares that this product is also in compliance with the essential requirements and other relevant provisions of the EMC Directive and Low Voltage Directive (IEC/EN60730-1) Declared as an Electronic Independently-Mounted Control for mounting in or on a panel BACnet International: BACnet Testing Laboratories (BTL) Protocol Revision 18 Listed BACnet Application Specific Controller (B-ASC)
Additional Product Declarations	
Information	Description
Purpose of Control	Operating Control
Construction of control and whether the control is electronic	All Models: Electronic Independently Mounted Control - Intended to be mounted in a remote panel
No. of cycles	See: Input and Output Capabilities
TYPE 1 or TYPE 2 action	TYPE 1.C (Micro-interruption) for relays
External Pollution Situation	All Models: Pollution Degree 2
RATED IMPULSE VOLTAGE	4000 V
Ball Pressure temperature	90°C
BINARY - RELAY (Outputs)	Reference all relay commons to the same pole of the supply circuit
BINARY - Triacs (Outputs)	Reference all triac commons to the same pole of the supply circuit

Product warranty

This product is covered by a limited warranty, details of which can be found at www.johnsoncontrols.com/buildingswarranty.

Software terms

Use of the software that is in (or constitutes) this product, or access to the cloud, or hosted services applicable to this product, if any, is subject to applicable end-user license, open-source software information, and other terms set forth at www.johnsoncontrols.com/techterms. Your use of this product constitutes an agreement to such terms.

Single point of contact

APAC	Europe	NA/SA
JOHNSON CONTROLS C/O CONTROLS PRODUCT MANAGEMENT NO. 32 CHANGJIJANG RD NEW DISTRICT WUXI JIANGSU PROVINCE 214028 CHINA	JOHNSON CONTROLS WESTENDHOF 3 45143 ESSEN GERMANY	JOHNSON CONTROLS 507 E MICHIGAN ST MILWAUKEE WI 53202 USA

Contact information

Contact your local branch office: www.johnsoncontrols.com/locations

Contact Johnson Controls: www.johnsoncontrols.com/contact-us