



Unitary Controller (UNT1100 Series)

The Metasys® Unitary Controller (UNT1100 Series) is an addition to the popular Unitary (UNT) controller family. It is a versatile digital controller for packaged (rooftop) air handling units, unit ventilators, fan coils, heat pumps, and other terminal units. It can also be configured as a generic input/output device for basic point monitoring applications when used within a Metasys Network.

The UNT1100 Series has several enhancements over the standard UNT product. These features include: additional inputs, low ambient temperature operation, up to four analog outputs (model dependent), relay binary outputs, and an option for removable screw terminations.

Use the UNT1100 as a standalone controller or as part of a Metasys Network through a Network Control Module (NCM) or N30 supervisory controller.

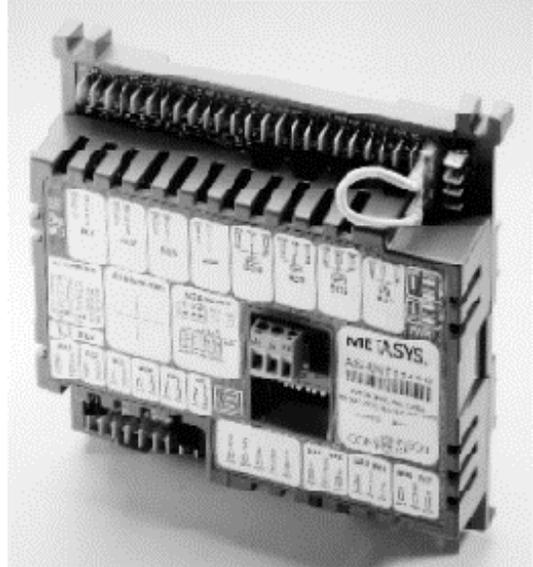


Figure 1: Unitary Controller (UNT1100 Series)

Features and Benefits	
<input type="checkbox"/> Standalone Control or Network Communications over N2 Bus	Provides cost effective control with optional system support for installation flexibility
<input type="checkbox"/> Built-in Control Program Library	Allows easy-to-create control program using a question/answer software format for job specific applications
<input type="checkbox"/> Expanded Point Capacity	Offers even greater application capability
<input type="checkbox"/> Relay Outputs	Features outputs that can be selected as either dry contact or power source type providing an economic advantage
<input type="checkbox"/> Removable Screw Termination Options	Allows fast installation and fast disconnection of an individual controller
<input type="checkbox"/> Light-Emitting Diode (LED) Indicators	Provides LEDs on communications and binary outputs for visual diagnostics
<input type="checkbox"/> Low Ambient Temperature Operation	Allows for applications that address a wide range of operating conditions

Flexible Hardware Packaging

The Unitary controller (UNT1100 Series) is available in different hardware sets to suit environmental and application needs.

Tables 1 and 2 describe the hardware similarities and differences between UNT1100 models and the standard UNT1xx controller.

Table 1: Unitary Controller Hardware Features--Similarities

Hardware Feature	Standard UNT1xx	New UNT1100 Series	Hardware Rating
Analog Inputs	6	6	RTD temperature elements (1000 ohm nickel, platinum, or silicon) adjustable 0 to 2K ohm setpoint potentiometers 0 to 5 VDC or 0 to 10 VDC transmitters—DIP switch selectable
Binary Inputs	4	6	24 VAC input
Zone Bus Communication	✓	✓	Removable screw terminal block, LED indication, 8-pin phone jack on controller
N2 Bus Communication	✓	✓	Removable screw terminal block, opto-isolated
Power Supply	✓	✓	24 VAC, removable screw termination

Table 2: Unitary Controller Hardware Features--Differences

Hardware Features	Standard UNT 1xx (model dependent)	UNT1108-0	UNT1126-0	UNT1144-0
Operating Temperature Rating UNT110-1, 111-1, 140-1, 141-1 UNT120-1, 121-1	0 to 60°C (32 to 140°F) -40 to 60°C (-40 to 140°F)	-40 to 60°C (-40 to 140°F)	-40 to 60°C (-40 to 140°F)	-40 to 60°C (-40 to 140°F)
Analog Outputs: 0 to 10 VDC @ 10 mA	0/2	0	2	4
Binary Outputs: 24 VAC Triacs @ 0.5 amperes or 0.8 amperes (limited total power) 24 VAC Relays @ 2A, 13A Inrush (Class 2) Source sinking or dry contact (jumper selectable)	6/8 0	0 8	0 6	0 4
Terminations (analog and binary input/outputs)	Quick Connects Spade Lugs (UNT110/120) or Screw Terminations (UNT140/141 only)	Quick Connects (Spade Lugs) w/Removable Screw Termination Option	Quick Connects (Spade Lugs) w/Removable Screw Termination Option	Quick Connects (Spade Lugs) w/Removable Screw Termination Option

Flexible Hardware Packaging

The UNT1100 Series controller can be configured to match most HVAC (Heating, Ventilating, and Air Conditioning) applications depending on the input/output points required. The UNT1100 controller is available in three models that include binary relay outputs (see Table 2). Quick connects (spade lugs) are standard input/output terminations that accommodate optional removable screw terminations on any point. All models are also rated for low ambient temperature operation frequently required for rooftop applications. All these great features allow you to provide an economical solution for most project applications.

Configuration Setup

The UNT1100 Series controllers provide the same great configuration format available with the standard UNT1xx products using the software tool HVAC PRO™ Release 8.01 or later. Configure the UNT1100 controller by responding to a series of yes, no, and multiple choice questions to assign setpoints and other parameters. **No previous software programming experience is required.**

The UNT1100 also has an HVAC PRO software library of standard control applications, including sequences and proportional-integral algorithms, which automatically configure a total system solution in response to your answers to the questions. The UNT1100 can enable several Air Handling Unit (AHU) applications and a pump lead/lag application. You can download the UNT1100 using one of several methods.

The fastest method to download the configuration to the UNT1100 Series controller is to use HVAC PRO software via the N2 communication bus. You can use HVAC PRO software either on a laptop computer plugged directly into the N2 communication bus (using an MM-CVT converter), or from the Operator Workstation (OWS). Simply assign the appropriate UNT1100 address location or device name, depending on the supervisory controller used, and download the configuration. You can select to download either a single controller or multiple controllers on a single N2 Bus.

You can also download UNT1100 controllers via the Zone Bus. This is a communication connection between the room sensor and the UNT1100 or between the motor actuator and the UNT1100. The Zone Bus uses a slower baud rate of communication than the N2 option.

Applications loaded into the UNT1100 are saved in nonvolatile E²PROM memory, so there is no need to reload software after a loss of power.

Once configured, the UNT1100 operating parameters, such as setpoints and tuning parameters, may be changed from the Zone Terminal Unit (ZTU) handheld device.

Easy Monitoring and Diagnostics with the Zone Terminal (AS-ZTU100-1)

The Zone Terminal Unit (ZTU) is a handheld person/controller interface to easily monitor and adjust UNT1100 parameters. The ZTU is designed for the user to view and make dynamic changes to setpoints. The ZTU plugs into a standard Johnson Controls zone sensor (i.e., TE-6700), or a TMZ1600 Room Sensor to communicate with the UNT1100 Series controller via the Zone Bus.

Light-Emitting Diode (LED)

All binary outputs have LEDs to indicate operation. A green LED verifies power and Zone Bus operation.

Metasys Network Configuration

To provide the greatest benefit to most installations, include the UNT1100 controller as part of a Metasys Network. Each UNT controller can connect to a supervisory controller and Operator Workstation via an N2 communication bus (Figure 2). You can program either a Network Control Module (NCM) or N30 Supervisory Controller to provide added energy management and supervisory control capabilities,

including optimal start, demand limiting, load rolling, runtime totalization, and more. Metasys Dynamic Data Access™ networking software, available from the NCM, makes all information from each UNT controller available throughout the facility. Dynamic Data Access software also makes sensor values, operating status, and any other parameter in the UNT controller available to operators anywhere in your facility.

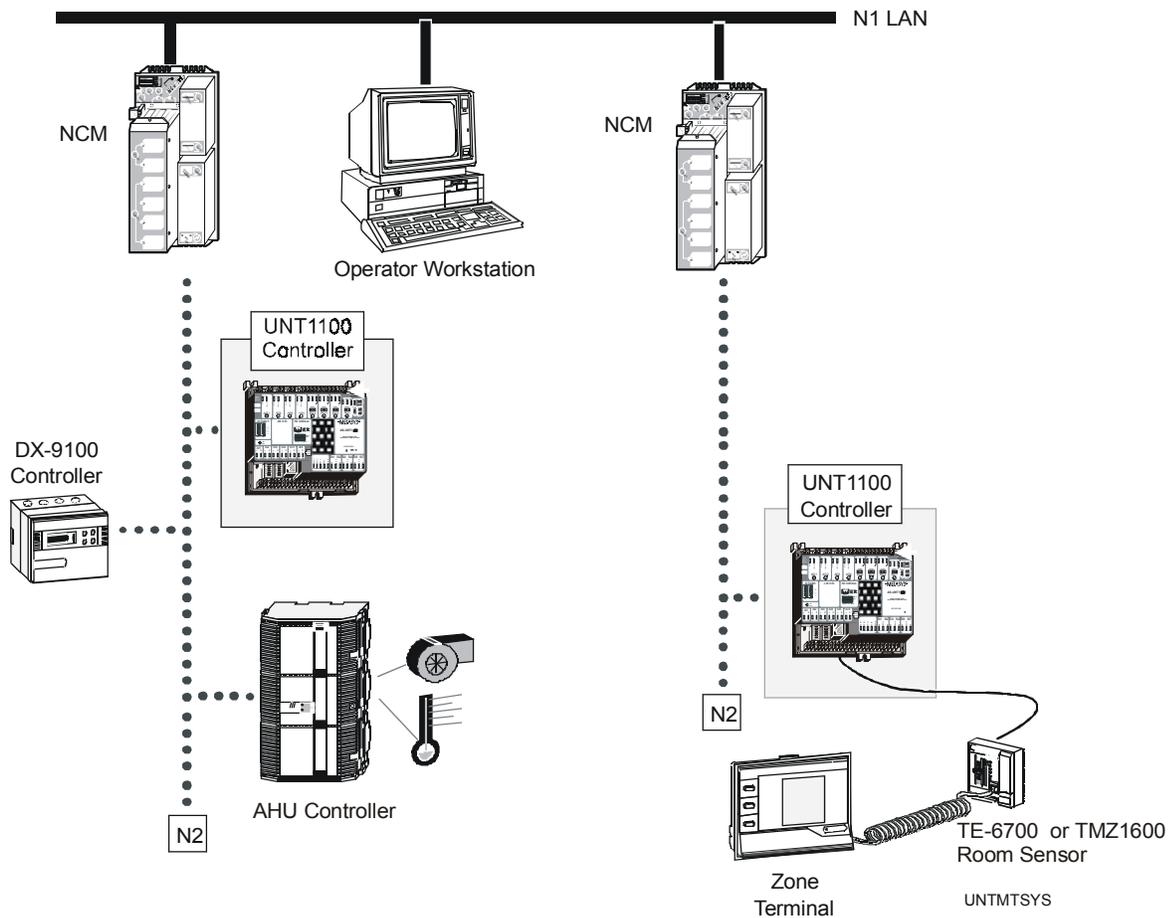


Figure 2: UNT1100 Controller in Metasys Network

Metasys N30 Configuration

Metasys N30 Supervisory Controller connects to the UNT controller over an independent N2 Bus (Figure 3). User access is through the

N30 System, which implements built-in energy management programs throughout the devices on the bus.

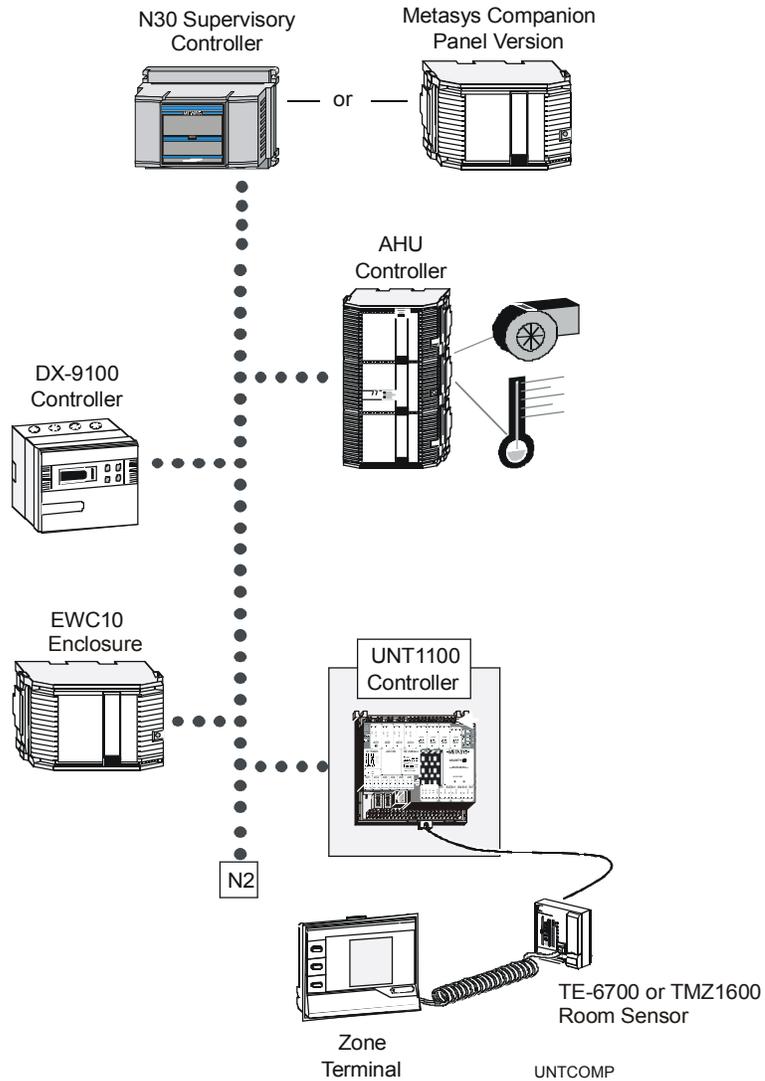


Figure 3: UNT1100 Controller in an N30 System

Application Flexibility

The UNT1100 controller provides most of the standard UNT1xx applications, and also provides additional analog outputs and relays for even more options. The binary relay outputs can be selected as either sourcing or dry contact via a hardware jumper.

In addition, using the HVAC PRO software, you can access sideloops that are separate from the main control logic. Refer to the *HVAC PRO User's Manual (FAN 637.5)* for further explanation of this powerful feature.

The UNT1100 controller offers a variety of zone sensor options that let you select the features appropriate for your building. The TE-6700 room sensor offering even faster response to changing zone conditions has replaced the familiar TE-6400 room sensor. The TMZ1600 room sensor provides an Liquid Crystal Display (LCD) to display zone conditions and allow user adjustments.

Whether you adjust the zone temperature in the space or remotely from an OWS, there are many sensor options available to best fit your zone control requirements. Depending on the TE-6700 room sensor selected, a Boost Mode option in HVAC PRO software may be available to provide maximum cooling or heating airflow upon command. The TMZ1600 room sensor offers a timed override when Occupancy mode is required for a specified duration.

Other options provide room lighting control to turn lights on or off based on an occupancy sensor, or scheduled commands issued from the network.

Controller Enclosure Options

The controller mounts easily to any surface using either direct mount or DIN rail. The common packaging for the UNT controller is the ENC100, EWC10 or EWC15. All are intended for indoor use, such as equipment rooms. Use a NEMA Type 4 weatherproof enclosure for UNT1100 applications requiring weather protection.

Table 3: Applications and Options

Application Classifications	Software Options
Primary Equipment Types	Unit vents ASHRAE Cycle 1 ASHRAE Cycle 2 ASHRAE Cycle 3 ASHRAE Cycle W Heat pumps Water to air Air to air Packaged rooftops Fan coils Generic point multiplexer
Primary Control Strategies	Room/zone control
Economizer Changeover Strategies	Dry bulb Outside air enthalpy Differential outside/return air temperature Outside air and return air enthalpy comparison Binary input from external economizer Supervisory network command
Mixed Air Control Strategies	Proportional output to outdoor air/room air damper actuator Binary output to economizer actuator Zone bus output to OA/RA damper actuator
Heating Configuration	Modulated single coil Staged electric heat (3-stage maximum) Modulated common heating/cooling coil Reversing valve logic for heat pumps Incremental
Cooling Configuration	Modulated single coil Staged direct expansion (2-stage maximum) Modulated common heating/cooling coil Reversing valve logic for heat pumps Incremental
Fan Start/Stop	Continuous operation Cycled with call for heating/cooling
Lighting Control	On and off outputs to lighting relay in conjunction with Occupied/Unoccupied mode
Unoccupied Control	Setup and setback Morning warmup and cooldown

Conclusion

The UNT1100 Series controller compliments the UNT product family by offering more control points, greater application flexibility, and installation savings. Based on reliability and consistent quality,

use the UNT when your projects require precise comfort control and energy management capabilities.

Specifications

Product	Separate Controllers AS-UNT1108-0 AS-UNT1126-0 AS-UNT1144-0		
Ambient Operating Conditions	-40 to 60°C (-40 to 140°F) 10 to 90% RH		
Dimensions (H x W x D)	165 x 163 x 56 mm (6.5 x 6.4 x 2.2 in.) without enclosure		
Ambient Storage Conditions	-40 to 70°C (-40 to 158°F) 10 to 90% RH		
Power Requirements	24 VAC, 50/60 Hz at 40 VA (per typical system)		
Shipping Weight	0.64 kg (1.4 lb)		
Standards Compliance	IEEE 472	IEEE 518	IEEE C62.41-1991 FCC Part 15, Subpart J, Class A UL 916
Agency Listings	UL Listed and CSA Certified as part of the Metasys Network.		
Accessories (Order Separately)			
Power Supply	(100 VA Transformer AS-XFR100) or (50 VA Transformer EN-EWC15-0)		
Zone Terminal	(AS-ZTU100-1)		
Enclosure Kit	(AS-ENC100-0) or (EN-EWC10-0) or (EN-EWC15-0)		
HVAC PRO Software Interface	(AS-CBLPRO-2)		
Removable Screw Terminations	(AS-TBKIT-0) (Kit consists of five of each plug type.) (AP-TBK1002-0) (2 position screw termination kit pkg/100) (AP-TBK1003-0) (3 position screw termination kit pkg/100)		
Zone Sensors	(TE-6700 Series, TE-6400 Series, or AP-TMZ1600-0 Room Sensor with LCD Display)		
RS-485 to RS-232 Converter	(MM-CVT101-0)		

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.



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