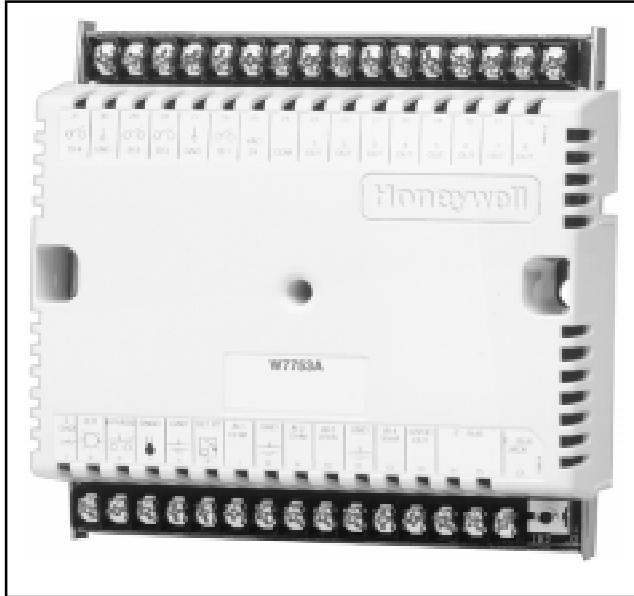


## Excel 10 W7753A Unit Ventilator Controller



### SPECIFICATION DATA



### FEATURES

- Designed for both staged heating/cooling control and modulating heating/cooling control.
- Capable of stand-alone operation and has enhanced features available when using the E-Bus network communications.
- Uses Echelon® LonWorks® network (E-Bus) communications protocol.
- Free Topology Transceiver (FTT) network technology is insensitive to polarity, simplifying installation.
- High-speed 78 kilobit communications network.
- Compliant with Echelon® LonMark® HVAC Interoperability standard for Unit Ventilator Controllers (Functional Profile number 8080, see Fig. 1).
- 120 controllers per Q7750A Excel 10 Zone Manager.
- Factory configured via EEPROM with critical user parameter default values.
- Controls auxiliary inputs and outputs for use with LonMark® Free Topology Transceiver (FTT) controllers.
- Motion sensor interface for enhanced energy savings.
- Window sensor input for additional energy savings.

### GENERAL

The W7753A is the Unit Ventilator Controller in the Excel 10 product line family. The Unit Ventilator is a LonMark® compliant device designed to monitor/control HVAC equipment, lighting, and other miscellaneous loads in a distributed network.



## SPECIFICATIONS

The W7753A is field mounted at or near the sensors and actuators that it monitors and controls. The W7753A can be mounted using DIN rail and two each 2TK2D Augat DIN rail adapters (purchase locally). Field wiring 14 to 22 AWG (2.0 to 0.34 mm<sup>2</sup>) attaches to screw terminals. To access the network for E-Bus communications an operator plugs into the E-Bus jack with a 205979 Connector Cable.

## Control Techniques Supported

### Output capacity:

W7753A—Eight Triac digital outputs

- Floating (Series 60) heating, cooling, and mixed-air damper control.
- PWM heating, cooling, and mixed-air damper control.
- Fan control techniques, up to three fan speeds.
- Remote connection of various actuators.

## Inputs/Outputs

The W7753A Controller supports the following hardware features:

- Four 20 Kohm NTC (10,000 through 80,000 ohm) or PT3000\* (250 through 12,000 ohm) resistive analog inputs.
- Two 0.2 to 10 Vdc or 4 to 20 mA (user selectable) voltage/current analog inputs.
- Four dry contact digital inputs.
- Eight 24 Vac Triac digital outputs (500 mA MAX).
- One 22 Vdc power supply for auxiliary devices with a maximum current of 50 mA.

## Analog Inputs

### Space Temperature:

Type: RTD.

Supported Sensors: T7770A,B,C,D,E,F,G Wall Modules or a T7780 Digital Display Wall Module (DDWM). Setpoint potentiometer.

### Discharge Air Temperature:

Type: RTD.

Supported Sensors: C7100A1015\*, C7770A1006, C7031B1033, C7031C1031, C7031D1062, C7031F1018, C7031J1050, C7031K1017.

### Outdoor Air Temperature:

Type: RTD.

Supported Sensors: C7170A1002.

### Return Air Temperature:

Type: RTD.

Supported Sensors: C7100A1015\*, C7770A1006, C7031B1033, C7031C1031, C7031D1062, C7031F1018, C7031J1050, C7031K1017.

### Mixed Air Temperature:

Type: RTD.

Supported Sensors: C7100A1015\*, C7770A1006, C7031B1033, C7031C1031, C7031D1062, C7031F1018, C7031J1050, C7031K1017.

### Outdoor Air Humidity:

Type: Voltage/Current.

Supported Sensors: C7600B1000 and C7600B1018 (2 to 10V), C7600C1008 (4 to 20mA).

### Return Air Humidity:

Type: Voltage/Current.

Supported Sensors: C7600B1000 and C7600B1018 (2 to 10V), C7600C1008 (4 to 20mA).

### Outdoor Air Enthalpy:

Type: Current.

Supported Sensors: C7400A1004 (4 to 20mA).

### Return Air Enthalpy:

Type: Current.

Supported Sensors: C7400A1004 (4 to 20mA).

### Air Filter Differential Pressure:

Type: Voltage.

Supported Sensors: Third party 2 to 10V, 0 to 5 inw (0 to 1.25 kPa) differential pressure sensors.

### CO<sub>2</sub> Sensor (Indoor Air Quality):

Type: Voltage.

Supported Sensors: C7242B (or equivalent) third party 0 to 10V, 0 to 2000 ppm CO<sub>2</sub> sensors.

### CO<sub>2</sub> or CO Sensor (Outdoor Air Quality):

Type: Voltage.

Supported Sensors: C7242B (or equivalent, third party 0 to 10V, 0 to 2000 ppm CO<sub>2</sub> sensors).

Engelhard 2551 CO sensor (or equivalent, third party 0 ppm at 4 mA and 300 ppm at 20mA).

Accuracy: ±50 ppm. Resolution: ±20 ppm.

### Monitor Sensor for network use:

Type: Voltage.

Supported Sensors: Third party 2 to 10V, 2 to 10 volts displayed.

### Fan Speed Switch uses:

One Analog Input.

\* The PT3000 sensor is not recommended for floating control (real time - discharge or return temperature configured as space sensor). The PT3000 sensor is intended for monitoring only.

## Digital Inputs

Dry-contact inputs are sensed using a 9 milliamp at 4.8 volts detection circuit. It is very important that the device used contains high quality, noncorroding contacts with resistivity that does not degrade; that is, increase over time. Use noble metal (such as gold or silver), or pimpled or sealed contacts to assure consistent, long-term operation.

Four of the following Digital Inputs (DIs) can be configured when using the W7753A:

- Fan Status: Contact Closed = Fan on
- IAQ Switch: Contact Closed = Poor Air Quality
- Time Clock: Contact Closed = Occupied Mode; Contact Open = Unoccupied Mode
- Economizer Enable Signal: Contact Closed = Economizer Enabled for cooling use
- Bypass Pushbutton: Contact Closed = Zone Configuration Bypassed
- Smoke Monitor: Contact Closed = Smoke Detected
- Dirty Filter: Contact Closed = Dirty Filter
- Shutdown Signal: Contact Closed = Shut off all equipment
- Occupancy Switch: Contact Closed = Room is Occupied; Contact Open = Room is Unoccupied
- Window Monitor: Contact Closed = Window is Closed
- Aquastat: Contact Closed = Space Temperature met
- Freezestat: Contact Closed = Freezing Temperature in system
- Drip Pan Monitor: Contact Closed = Drip Pan Full or Plugged
- Monitor Sensor: Contact Closed = Network Down

## Triac Outputs

Triac Outputs on the W7753A Model:

- Power ratings: 20 Vac to 30 Vac at 25 mA MIN to 500 mA MAX current for any voltage.

## Power Supply Requirements

24 Vac with a valid range of 20 to 30 Vac at 50/60 Hz. Controller uses 6 VA maximum at both 50 and 60 Hz.

## CPU

Motorola or Toshiba 3150 Neuron™ processor, containing three eight-bit CPU's. Each Neuron has a unique 48-bit network identification number.

## Memory Capacity

The W7753A Controller uses a 64K ROM/PROM (16K reserved for network operations, 48K used by a control algorithm code).

512 bytes EEPROM  
2K RAM

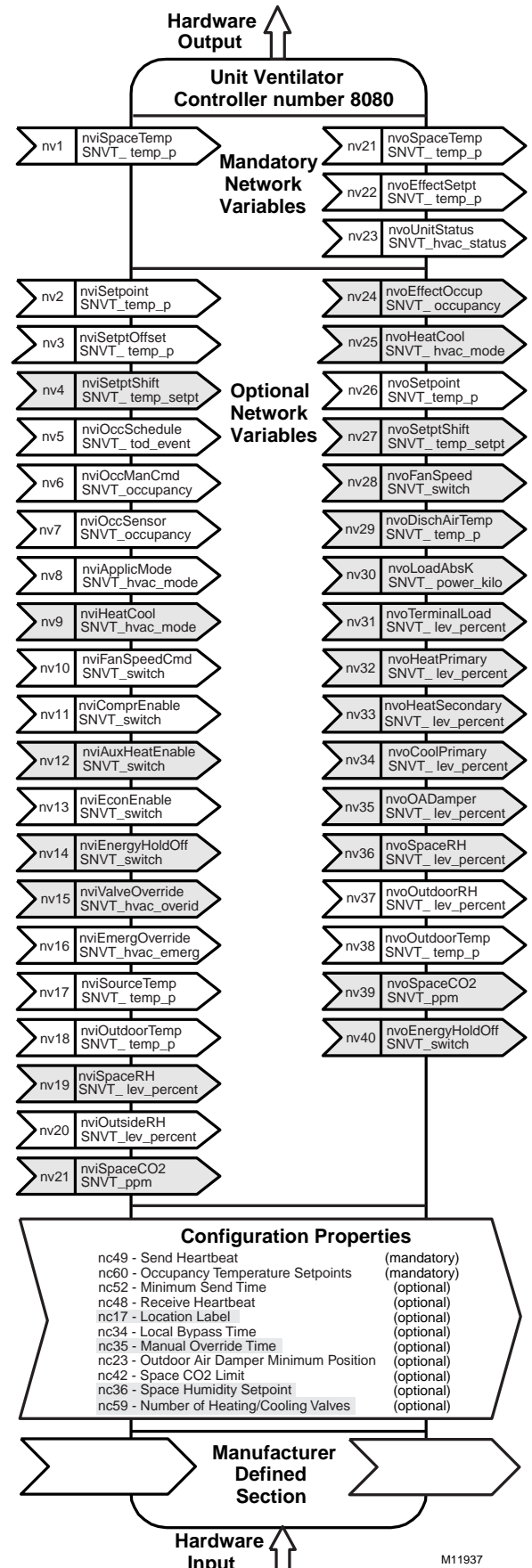


Fig. 1. Functional Profile of LonMark® Unit Ventilator object details (variables not implemented in Excel 10 UV are greyed).

## Specified Space Temperature Sensing Range

55° to 85°F (13° to 29°C) when configured and connected to a T7770A,,B,C,D,E,F,G Wall Modules or a T7780 (DDWM).

## Communications

The W7753A Device uses a FTT transformer-coupled communications port running at 78 kilobits per second (kbs). Using the transformer-coupled communications interface offers a much higher degree of common mode-noise rejection while assuring dc isolation. The E-Bus is insensitive to polarity, eliminating installation errors due to miswiring.

The maximum E-Bus network length is 5000 ft (1524m). With the addition of a Q7751A Router, the maximum length of the E-Bus network can increase to 10,000 ft (3048m).

The maximum number of nodes per E-Bus segment is 60.

The maximum number of nodes per Q7750A Zone Manager FTT network is 120.

Approved cable types for E-Bus communications wiring is Level IV 22 AWG (0.34 mm<sup>2</sup>) plenum or nonplenum rated unshielded, twisted pair, solid conductor wire. For nonplenum areas, use Level IV 22 AWG (0.34mm<sup>2</sup>) such as U.S. part AK3791 (one pair) or U.S. part AK3782 (two pair). In plenum areas, use plenum-rated Level IV 22 AWG (0.34 mm<sup>2</sup>) such as U.S. part AK3791 (one pair) or U.S. part AK3792 (two pair). Additionally, Echelon® approved cable can be used. Contact Echelon® Corp. Technical Support for the recommended vendors of Echelon® approved cables.

W7753A Controllers compliant with the LonMark® Functional Profile number 8080 for the Unit Ventilator, version 1.0.

### Dimensions (H/W/D):

W7753A: 5-5/8 x 6 x 2-1/8 in. (143 x 152 x 54 mm).

### Environmental Ratings:

Operating Temperature: -40° to 150°F (-40° to 65.5°C).

Shipping Temperature: -40° to 150°F (-40° to 65.5°C).

### Relative Humidity:

5% to 95% noncondensing.

### Vibration:

V2 level compliant.

### Corrosion:

**The W7753A is not sealed against corrosive vapors or compounds.****Approval Bodies:**

- The W7753A is listed under UL 916 (E87741) and is also listed under cUL (E87741).
- The W7753A meets FCC part 15 Class B requirements.
- The W7753A conforms to requirements per European Consortium standards EN50081-1 (CISPR 22 Class B) and EN 50082-1 (IEC 801-2, IEC 801-3 and IEC 801-4) for CE mark labeling.

### Accessories:

- T7770A,B,C,D,E,F,G Wall Modules.
- T7780 Digital Display Wall Module.
- Excel 10 C7770A Air Temperature Sensor.
- Excel 10 Q7750A FTT Zone Manager.
- Excel 10 Q7751A,B Router.
- Excel 10 Q7752A Serial Interface.
- Excel 10 205979 Connector Cable from the Excel 10 Q7752A Serial Interface to an Excel 10 Controller or Wall Module.
- Excel 10 Q7740A,B FTT Repeaters
- 209541B FTT Termination Module

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**Honeywell**

#### Home and Building Control

Honeywell Inc.  
Honeywell Plaza  
P.O. Box 524  
Minneapolis, MN 55408-0524

#### Home and Building Control

Honeywell Limited-Honeywell Limitee  
155 Gordon Baker Road  
North York Ontario  
M2H 3N7

#### Home and Building Control Products

Honeywell AG  
Böblinger Straße 17  
D-71101 Schönaich  
Phone (49-7031) 637-01  
Fax (49-7031) 637-493

