

Excel 10 W7751J Smart VAV Actuator

EXCEL5000 OPEN™
S Y S T E M

SPECIFICATION DATA



GENERAL

The W7751J Smart VAV Actuator is a factory-integrated Variable Air Volume (VAV) Box Controller and a 90 second ML6161B Direct-Coupled Actuator in the Excel 10 family product line. This VAV Box Controller provides Pressure Dependent damper control. VAV systems generally provide cool air only to the zones. The W7751J Controller provides two additional outputs that control a fan or VAV box reheat coils. The heaters can be staged electric or modulating hot water.

FEATURES

- Uses Echelon® LonWorks® network (LONWORKS® Bus) protocol.
- Free Topology Transceiver (FTT) high-speed 78 kilobit communications network.
- Compliant with VAV Device Object Type number 8010 functional LONMARK® profile.
- Capable of stand-alone operation, but can also use LONWORKS® Bus network communications.
- Designed for Pressure Dependent Single or Dual Duct Variable Air Volume (VAV) control.
- Provides Proportional Integral Derivative (PID) temperature control.
- Floating hot water, two-stage electric or modulating hot water heat.
- Factory configured via EEPROM with critical user parameter default values.
- Supports motion sensor interface, via network, for enhanced energy savings.
- Supports pressurize and depressurize, night purge, and morning warmup sequences.
- Actuator included in W7751J mounts directly onto VAV box damper shaft and has up to 70 lb-in. (8 Nm) torque, 90 degree stroke, and 90 sec. timing at 60 Hz.
- Both controller housing and actuator are UL plenum rated.

DESCRIPTION

The W7751J Smart VAV Actuator is a factory-integrated Variable Air Volume (VAV) Box Controller and a 90 second ML6161B Direct-Coupled Actuator in the Excel 10 family product line. This VAV Box Controller provides Pressure Dependent damper control. VAV systems generally provide cool air only to the zones. The W7751J Controller provides two additional outputs that control a fan or VAV box reheat coils. The heaters can be staged electric or modulating hot water.

Control techniques supported (heating and cooling):

- Up to two stages of electric or hot water heat.
- Floating hot water heat.
- Pulse width modulated heat.
- Floating damper output.

Additional control features:

- Occupied—Normal hours or if bypass invoked from a wall module during unoccupied hours.
- Unoccupied—Off hours.
- Occupancy sensor override and window open override (only via the network).

SPECIFICATIONS

Model

W7751J

The W7751J Smart VAV Actuator assembly is field mounted to the VAV box damper shaft similar to the mounting of a standard actuator. Field wiring 14 to 22 AWG (2.0 to 0.34 mm²) passes through conduit connecting to screw terminals, located under a snap-on cover, on the bottom of the controller.

Input/Output

The W7751J is a NEC Class 2 rated device. This listing makes sure that the power consumed by the W7751J or devices it directly controls must be limited to a sum total of 100 VA. (Any devices connected to the controller must obtain power from the same transformer.) Any hardware that will be driven by the Triac outputs must have a minimum current draw, when energized, of 25 mA at 20 Vac and a maximum current draw of 500 mA at 30 Vac.

Inputs:

- Space temperature sensor.
- Remote wall module setpoint input or duct air temperature sensor.
- Remote wall module override.

Outputs:

- Internally wired VAV actuator (floating +).
- Internally wired VAV actuator (floating -).
- Floating heat (+) or stage 1 heat.
- Floating heat (-) or stage 2 heat.

Power Supply

24 Vac with a valid range of 20 to 30 Vac at 50/60 Hz.

Power Consumption

6 VA maximum at both 50 and 60 Hz.

Hardware

CPU: Motorola or Toshiba 3150 Neuron® processor, containing three eight bit CPUs. Each Neuron has a unique 48-bit network identification number.

Memory Capacity:

The W7751J Smart VAV Actuator uses a 64K by 8 ROM/PROM, 512 bytes of EEPROM and 2K of RAM.

Differential Pressure Range

0 to 2.0 in. w.c. (0 to 0.5 kPa) maximum for the onboard flow sensor.

Specified Sensing Temperature Range

20K ohm NTC sensor temperature range of 45 to 99°F (7 to 37°C) with an allowable control setpoint range from 50 to 90°F (10 to 32°C) when initiated from the network and 55 to 85°F (13 to 29°C) when configured and connected to a T7770 Wall Module, or C7770A Air Temperature Sensor.

Status Information

See Table 1.

Table 1. W7751G Controller LED Status Information.

| LED Status | Controller Status |
|------------|--|
| Off | No power to processor |
| On | Non-operational or (not configured) |
| Slow Blink | Operational (communicating in normal state) |
| Fast Blink | An alarm is present or in (Manual Test Mode) |

Communications

The W7751J uses an FTT transformer-coupled communications port with manchester encoded data presented to controllers and devices on the LONWORKS® Bus at 78 kilobits per second (kbs) via Echelon® communication protocol. Using the transformer-coupled communications interface offers a much higher degree of common mode-noise rejection while assuring dc isolation. The LONWORKS® Bus is insensitive to polarity, eliminating installation errors due to miswiring.

The maximum LONWORKS® Bus network length up to 5000 ft (1524m). For LONWORKS® Bus network lengths greater than 5000 ft (1524m), see form 74-2865 LONWORKS® Bus Wiring Guidelines.

The maximum number of nodes per LONWORKS® Bus segment is 60.

Approved cable types for LONWORKS® Bus communications wiring is Level IV 22 AWG (0.34mm²) plenum or nonplenum rated unshielded, twisted pair, solid conductor wire.

Damper Shaft Mounting

The actuator on the W7751J mounts directly onto the VAV box damper shaft and has up to 70 lb. in. / 8 torque, 90 degree stroke, and 90 sec. timing at 60 Hz. The actuator is suitable for mounting onto a 3/8 in. (10 mm) square or round VAV box damper shaft, using the included 201391 Shaft Adapter, or onto a 1/2 in. (13 mm) square or round VAV box damper shaft. The minimum VAV box damper shaft length is 1-3/4 in. (45 mm). The W7751J is designed for vertical or horizontal mounting options with the exception that the wiring compartment may not be on top; these mounting options allow adequate air flow to keep the wiring compartment below 140°F (60°C).

LONMARK® Functional Profile

W7751J Controller supports the LonMark® Functional Profile number 8010 VAV Controller, version 1.0 (see Fig. 1).

Dimensions (H/W/D)

W7751J: 5-7/8 x 4-1/16 x 3-3/4 in. (149 x 103 x 95 mm).

Environmental Ratings

Operating Temperature: 32 to 125°F (0 to 50°C).
Shipping Temperature: -40 to 150°F (-40 to 65.5°C).

Relative Humidity

5% to 95% noncondensing.

Vibration

V2 level.

Corrosion

Office environment.

Approval Bodies

The W7751J is listed under UL 916 (E87741) and is also listed under cUL (E87741). The W7751J meets FCC part 15 Class B requirements. The W7751J 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

- Excel 10 T7770 Wall Modules.
- Excel 10 C7770A Air Temperature Sensor.
- Excel 15 W7760A Building Manager.
- Excel 10 Q7750A Zone Manager.
- Excel 10 Q7751A,B Router.
- Excel 10 Q7752A,B Serial Interface Adapter.
- Excel 10 Connector Cable 205979 from the Excel 10 Q7752A Serial Interface Adapter to Excel 10 Controller or Wall Module.
- 209541B Excel 10 Termination Module.
- 201052A,B,C Auxiliary Switches (one, two or three switches).

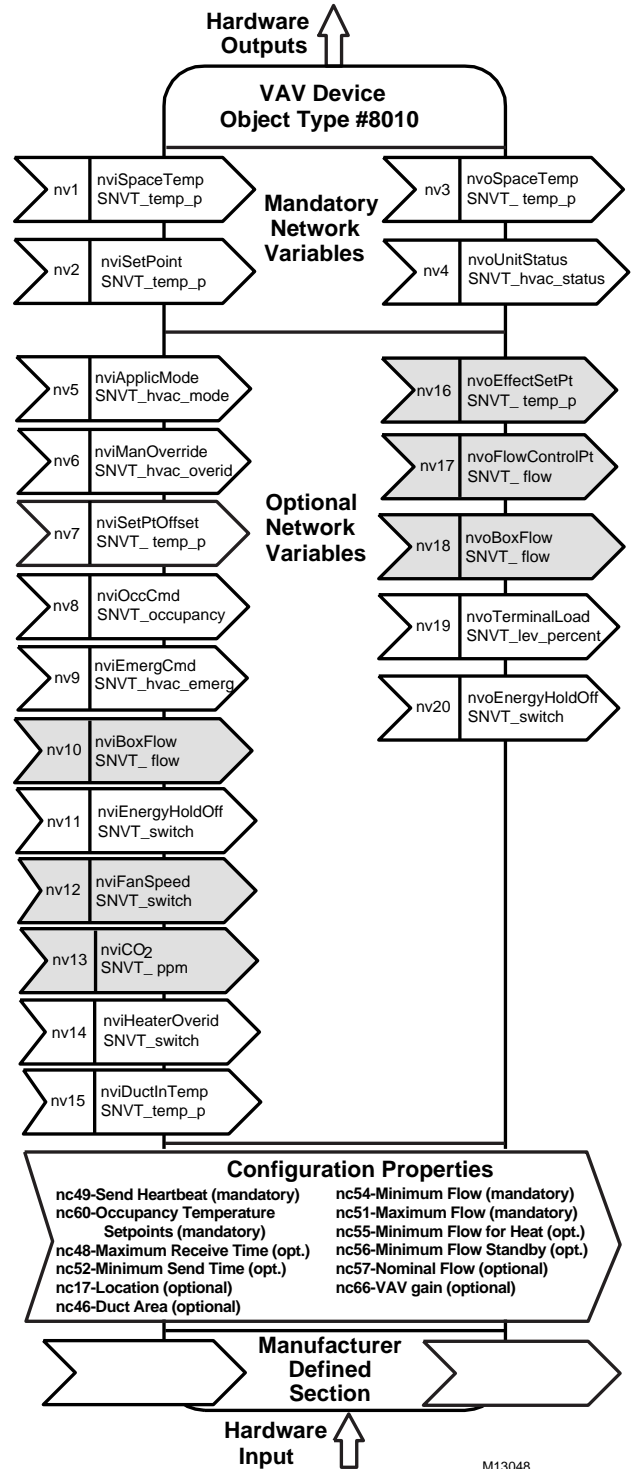


Fig. 1. Functional profile of LonMark® VAV object details (variables not implemented in Excel 10 Smart VAV II Actuator are greyed, or are in bold print in Configuration Properties).

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