

Excel 10

W7752D,E,F,G FAN COIL UNIT CONTROLLERS



SPECIFICATION DATA



FEATURES

- LonMark® HVAC profile #8020.
- Stand-alone operation or on high speed 78 kilobit Echelon® Bus (E-Bus) network.
- Uses Echelon LonTalk® protocol.
- Direct connection of thermal actuators.
- Direct connection to fan switch.
- Direct connection to electric heat.
- Factory-configured default parameters.
- Wide range of supported valves and actuators.
- Interlocks and time delays to protect equipment.
- Slim design fits into narrow fan coil units.
- Terminations all on one side allow controller to be positioned at back of fan coil unit.
- Power supplied by power mains.

GENERAL

The W7752D,E,F and G Controllers are communicating mains-powered Fan Coil Unit Controllers in the Excel 10 product line. They cover a wide range of fan coil control applications. The controllers can operate as stand-alone units or networked using the standard Echelon LONWORKS® bus. Interfaces are provided for a wide range of actuator types. Heating systems can be water or electric, and cooling systems can be chilled water supply or compressors. Extensive timing and interlock features make the W7752 especially suitable for systems using electric heat and compressors.

Table 1. FCU Controller models.

OS number	Power input	Reheat relay
W7752D2xxx	230 Vac	X
W7752E2xxx	230 Vac	
W7752F2xxx	115 Vac	X
W7752G2xxx	115 Vac	

DESCRIPTION

The W7752D,E,F and G are LonMark compliant Fan Coil Unit Controllers in the Excel 10 family product line. These controllers provide room temperature control for two and four pipe fan coil units with optional electric heating coils (W7752D,F) and can control single, two or three speed fans. The controller is provided with default configuration settings from the factory and is fully operable on installation. Using standard Echelon configuration tools, the controller can be configured with job-specific settings. A variety of optional wall modules interface with the FCU controllers and provide any or all of the following: setpoint adjustment, fan speed adjustment, and an occupancy bypass button. All wall modules include a space temperature sensor, however a remote C7068A return air sensor can also be used.

Table 2. Supported output types.

Output	Options
Heating	Floating, thermal, PWM, on/off, multi-stage electric.
Cooling	Floating, thermal, PWM, on/off, multi-stage compressor.
Fan	On/off, 2-speed, 3-speed
Electric reheat	On/off



Sequences

Heat and cool sequences can be selected to be active or not active, giving a total of eight different sequence options (each can be with or without fan control):

- Heat only
- Cool only
- Heat/cool changeover
- Heat and cool sequence
- All of the above with electric reheat.

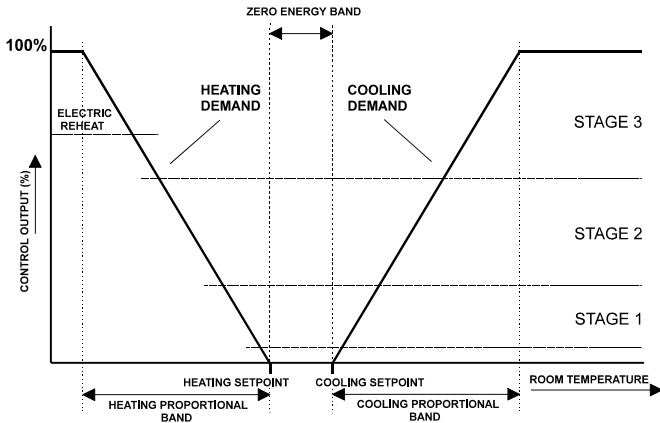


Fig. 1. Operational sequence.

Modes of Operation

The controller has the following modes of operation.

Occupied mode

This is the normal operating condition for a room or zone when it is occupied. The controller can be switched into this mode by a network command, by the room occupancy sensor, or by a bypass button on the wall module. In the occupied mode the fan is controlled by the setting of the fan speed switch on the wall module or by the control algorithm when the switch is set to "auto." The fan can be configured to remain on or turn off during the zero energy band.

Standby mode

The standby mode saves energy by reducing heating or cooling demand during periods where the room is temporarily unoccupied. In this mode the fan is switched off during the zero energy band.

Unoccupied mode

This mode is used for longer unoccupied periods, such as at night or during weekends and holidays.

Window open

If the controller is configured for window open detection, the controller automatically disables heat and cool control until the window is closed again. Frost protection remains active.

Frost protection

If the temperature drops below 46°F (8°C), the controller enables the heating circuit as frost protection.

Smoke control

The fan can be turned on or off by network command for smoke control.

Fan fail

When configured with an air flow detector, the controller protects equipment by disabling the system when the fan fails.

Changeover

The controller operates two-pipe FCUs configured with a changeover input.

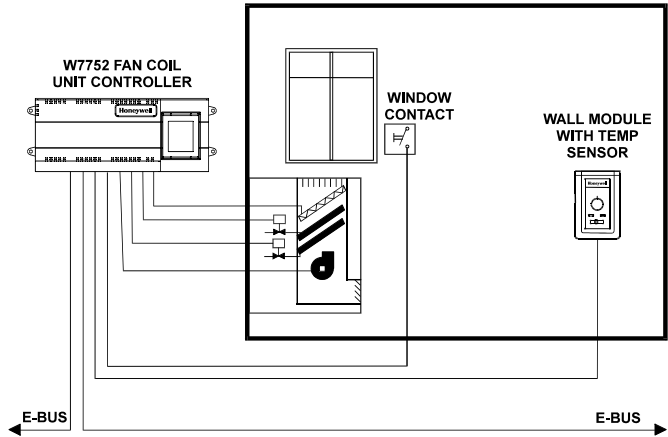


Fig. 2. Typical application.

SPECIFICATIONS

Models:

The W7752D and W7752E are 230 Vac versions and are identical except for one additional relay in the W7752D for switching electric heat coils. The W7752F and W7752G are 115 Vac versions of the W7752D and W7752E, respectively.

Input/Output:

Table 3. Input/output specifications.

Inputs:	Function	Characteristics
Digital	Window/occupancy/changeover/air flow	closed ≤ 400 ohm, open ≥ 10K ohm
Analog/Digital ¹	Fan speed/override	resistor network
Analog	Temperature sensor	20K ohm NTC
Analog ¹	Setpoint adjustment	10K ohm
Outputs:		
Digital ¹	Override LED	0 / 5 Vdc
Triac (2 pairs) ²	Heat and cool	24 Vac, 250 mA max continuous, 650 mA max surge (≤ 30 sec)
Relay (3)	Fan switching	20 to 253 Vac, 3 A max
High power relay ³	Electric heat (resistive load)	20 to 300 Vac, 10A max, 6A max (UL916)

¹ Wall Module connection only.

² See Table 2 for output type options.

³ W7752D,F only.

Power Supply:

W7752D and W7752E:
230 Vac + 10%, -15%, 50/60 Hz.
W7752F and W7752G:
115 Vac + 10%, -15%, 50/60 Hz.

Power Consumption:

W7752D and W7752E:
30 VA maximum.
W7752F and W7752G:
30 VA maximum.

Hardware design:

Processor:
Neuron 3150 running at 5 MHz, with 2K of RAM and 0.5K of EEPROM on chip.
External memory:
EPROM, 64K by 8.
Transformer (mounted on PCB):
16 VA with thermal fuse

Specified Sensing Temperature Range:

32° to 104°F (0° to 40°C)

Environmental Ratings:

Operating temperature:
32° to 122°F (0° to 50°C)
32° to 104°F (0° to 40°C) for UL916
Shipping/storage temperature:
-40° to 158°F (-40° to 70°C)
Relative humidity:
5% to 95% noncondensing

Dimensions:

4-1/8 x 10-1/8 x 2-1/2 in. (101 x 257 x 60 mm)

Communications:

W7752 controllers use a transformer-coupled E-Bus port to communicate at 78 kilobits per second via Echelon LonTalk protocol. As with other Excel 10 2000-series controllers, the W7752 controllers use free topology transceivers (FTT). The E-Bus is insensitive to polarity, eliminating wiring errors during installation.

The recommended wire size to be used for the E-Bus is level IV 22 AWG (Belden part number 9D220150) or plenum rated level IV 22 AWG (Belden part number 9H2201504) nonshielded, twisted pair, solid conductor wire.

FTT networks can be in bus, star, loop or any combination of these topologies. See E-Bus Wiring Practices, form number 74-2865, for more information including maximum lengths.

Mounting Options:

W7752 Controllers can be snapped onto standard EN 50 022 DIN rail, 1-3/8 by 9/32 in. (35 mm by 7.5 mm), or they can be mounted directly on a panel with four screws. They must be mounted inside the fan coil unit box for safety reasons due to the presence of 115/230 Vac at the terminal block.
LonMark

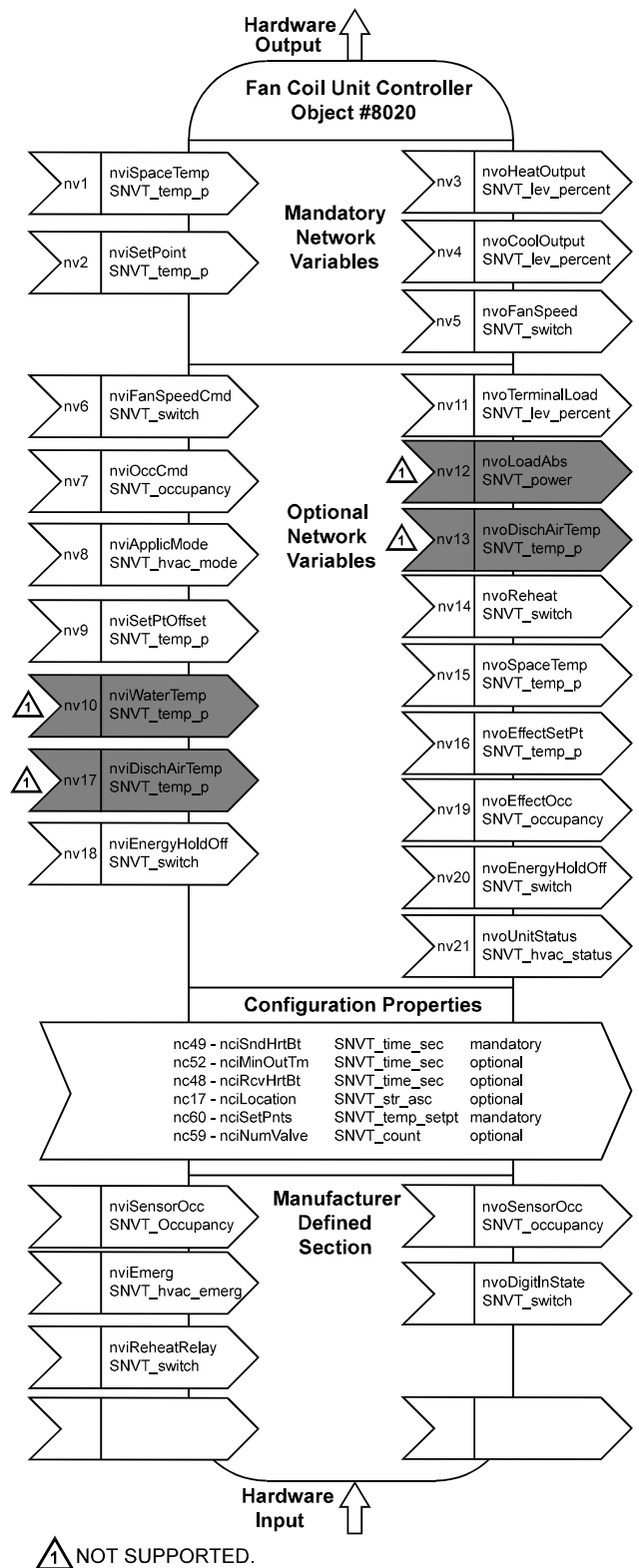


Fig. 3. LonMark object details.

Functional Profile

W7752 controllers support the LonMark Functional Profile #8020 “Fan Coil Unit Controller”, version 2.0 (see fig. 3).

Approvals and Standards:

CE
 UL916
 EN50081-1
 EN50082-1
 meets FCC part 15 class B requirements

Accessories:

Excel 10 T7770 Wall Modules
 Excel 10 FTT/LPT 209541B Termination Module
 C7068A Return Air Sensor (Europe only)
 M7410C Small Electric Linear Valve Actuator (Europe only)
 Z100 Thermolectric Actuator (Europe only)

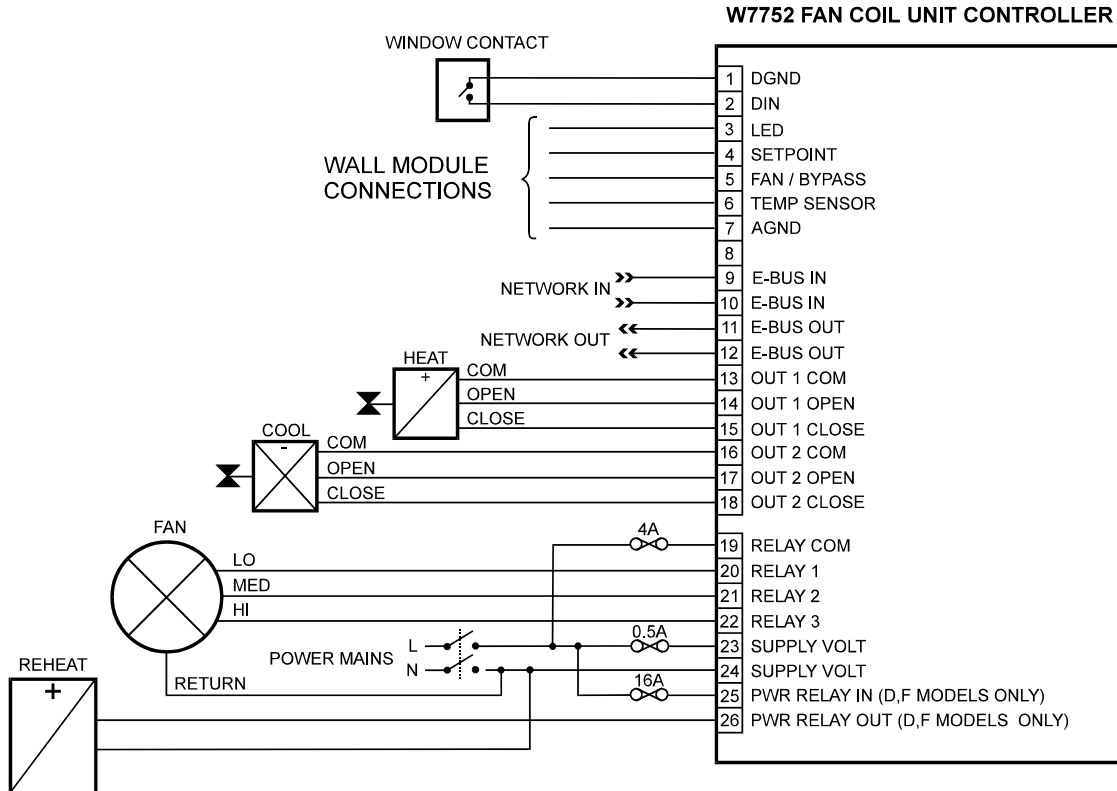


Fig. 4. Input/output details.

Table 4. Output assignments for various actuator types.

Output type	Out 1 Terminal			Out 2 Terminal		
	13	14	15	16	17	18
Floating	24 Vac	open	close	24 Vac	open	close
1-stage	24 Vac	on/off	—	24 Vac	on/off	—
2-stage	24 Vac	stage 1	stage 2	24 Vac	stage 1	stage 2
3-stage	24 Vac	stage 1	stage 2	24 Vac	stage 1	stage 2
		stage 3			stage 3	
PWM	24 Vac	PWM	—	24 Vac	PWM	—
Thermal	24 Vac	on/off	—	24 Vac	on/off	—

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