Excel 10
W7754K,P,Q FCU CONTROLLERS

HONEYWELL EXCEL 5000 OPEN SYSTEM

SPECIFICATION DATA

FEATURES

- **LONMARK® HVAC profile #8020**
- **Stand-alone operation or on high-speed 78 kilobit Echelon® LONWORKS© network**
- **Uses Echelon LonTalk® protocol**
- **FTT10A Transceiver**
- **Direct connection of thermal actuators**
- **Direct connection to fan switch**
- **Direct and indirect connection to electrical heat**
- **Factory-configured default parameters**
- **Wide range of supported valves and actuators**
- **Interlocks and time delays to protect equipment**
- **Connected floating actuators exercised once a week**
- **Slim design fits into narrow fan coil units**
- **Terminals all on one side allow controllers to be positioned at back of fan coil unit**
- **Power supplied by power mains or 24 V**

DESCRIPTION

The W7754K,P,Q Controllers provide room temperature control for two- and four-pipe fan coil units with optional electrical heating coils (W7754K and W7754P) and can control single-, two-, or three-speed fans. The units are provided with default configuration settings from the factory and are fully operable upon installation. Using standard Echelon configuration tools, the units can be configured with job-specific settings. A variety of optional wall modules interface with the units 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.

GENERAL

The W7754 is a configurable fan coil unit application controller belonging to the Excel 10 product line for maintained zones. The W7754 covers a wide range of fan coil control applications and can operate as a stand-alone unit or networked using the standard Echelon LONWORKS® bus. Interfaces are provided for a wide range of actuator types. Heating systems can be water or electrical, and cooling systems can be chilled water supply or compressors. Extensive timing and interlock features make the W7754 especially suitable for systems using electrical heat and compressors.

Table 1. Overview of equipment (by model)

OS Number	power supply		digital outputs										digital inputs		analog inputs		
	230	24	1st relay	2nd relay	3rd relay	4th relay	triac (open OUT1)"	triac (close OUT1)	triac (open OUT2)	triac (close OUT2)	low-voltage PWM control of solid-state relay	LED	configurable digital input	digital input (window contact)	AI (fan speed + occupancy override switches)	analog input (room sensor)	analog input (set-point adjustment switch)
W7754K1001	X		X	X	X				X		X	X	X	X	X	X	X
W7754P1000	X		X	X	X	X	X	X	X	X			X	X	X	X	X
W7754Q1008		X	X	X	X	X	X	X	X	X			X	X	X	X	X

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
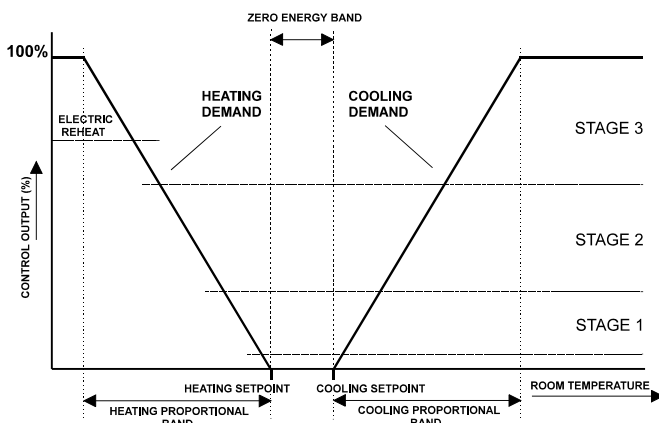- Heat and cool sequence
- All of the above, plus electrical reheat.

Fig. 1. Operational sequence

Modes of Operation

The units have the following modes of operation.

"Occupied" Mode

This is the normal operating condition for a room or zone when it is occupied. The controllers 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, when the switch is set to "auto," by the control algorithm. 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 within 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 controllers are configured for window open detection, they 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 controllers enable the heating circuit as frost protection.

Smoke Control

The fan can be turned ON or OFF by network command for smoke control.

Fan Failure

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

Changeover

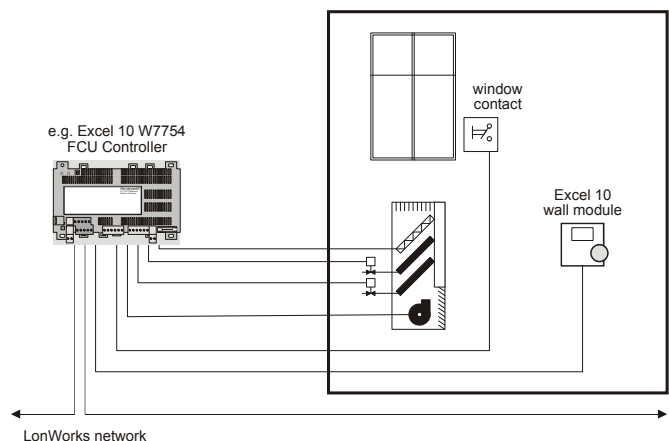The controllers operate two-pipe fan-coil units configured with a changeover input.

Fig. 2. Typical application

SPECIFICATIONS

Models
All three models are equipped with a minimum of three relays, one LED digital output, three digital inputs, and two analog inputs.

Input/Output

Table 2. Input/output specifications

	function/characteristics
1st digital input	all models; configurable (using LNS plug-in) to read input from hardwired window contact, occupancy sensor, etc.; suitable for dry contacts, only; max. voltage at open contact = 5 Vdc
1st analog input	all models; permanently configured to read input from hardwired wall module's temperature setpoint adjustment knob; enabled / disabled using **left** DIP switch
2nd analog input	all models; permanently configured to read input from hardwired wall module's room temperature sensor (for use with an NTC20k sensor, only; accuracy [w/o sensor] = 0.5 °C at 25 °C); enabled/disabled using **left** DIP switch
1st digital output	all models; permanently configured to write output to LED of hardwired wall module; enabled / disabled using **left** DIP switch; max. voltage = 5 Vdc; max. current = 5 mA
3rd analog input	all models; permanently configured to read input from hardwired wall module's 3-speed fan control knob and "occupancy override" button; enabled / disabled using **left** DIP switch
2nd digital input	all models; permanently configured to read input from window contact; enabled / disabled using **right** DIP switch; suitable for dry contacts, only; max. voltage at open contact = 5 Vdc
4th relay	W7754P,Q only; permanently configured to write output to hardwired electrical reheat coil; switching voltage = 24...230 Vac; switching current = 0.05...10 A
1st, 2nd, and 3rd relays	all models; permanently configured to write output to hardwired 3-speed fan; switching voltage = 24...230 Vac; switching current = 0.05...3 A (max. 3 A for all three relays together)
triac outputs	number varies according to model: permanently configured to write output to OUT1/2; switching voltage = 230 Vac (230-V models) or 24 Vac (24-V models), max. switching current = 0.5 A; max. peak (10 sec) current = 1 A
2nd digital output	W7754K, only; suitable for attachment to a solid-state relay (max. voltage = 12 Vdc; max. current = 12 mA at 10 Vdc) for low-voltage PWM control in high-current electrical reheat applications (see section "Accessories")

Power Supply
W7754K,P: 230 Vac +10%, -15%, 50/60 Hz
W7754Q: 24 Vac ±20%, 50/60 Hz

Power Consumption
See Table 2.

Hardware Design
Processor: Neuron 3150® running at 5 MHz, with 2 kB of RAM and 0.5 kB of EEPROM on chip.
Ext. memory: EPROM, 64 kB by 8.

Specified Sensing Temperature Range
32° to 104°F (0° to 40°C)

Approvals, Certifications, and Standards
Approvals and Certifications
- CE-approved
- Certified as per LonMark® Application Layer Guidelines V 3.0, thus interoperable with all other devices in open LONWORKS® networks (incl. 3rd-party devices)
- EUBAC-certified as follows:

  W7754P1000: 020885

  W7754Q1008: 020706

Classification according to EN60730-1
Environmental conditions: For use in home (residential, commercial, and light-industrial) environments
Pollution degree: Class 2
Protection against shock: Class 0 (without terminal cover) Class II (with terminal cover)
Software class: Class A

Classification according to EN60529
(Degree of Protection Provided by Enclosures)
Without terminal cover: IP20
With terminal cover: IP30

Ambient Environmental Limits
Operating temperature: 0 … +50 °C at 5…90% r.H.
Storage temperature: -40 … +70 °C at 5…90% r.H.

W7754P1000, W7754Q1008 Temperature Control Accuracy (CA)
(min. CA values requested by EUBAC for fan coil unit applications: ≤ 1.4 K)
FCU heating mode: 0.5 K
FCU cooling mode: 0.2 K

Dimensions (W x L x H)
Without terminal cover: W x L x H = 110 x 180 x 60 mm
With terminal cover: W x L x H = 130 x 180 x 60 mm

Weight
W7754K,P: 420 g; W7754Q: 260 g

Communications

The controllers use the LonTalk protocol. They support the LONMARK Functional Profile # 8020 "Fan Coil Unit Controller", version 2.0. Fig. 6 shows the implementation used.

The recommended wire size to be used for the LONWORKS Bus is level IV 22 AWG (Belden part no. 9D220150) or plenum rated level IV 22 AWG (Belden part no. 9H2201504) non-shielded, twisted pair, solid conductor wire.

FTT networks can be in bus, star, loop or any combination of these topologies.

Mounting Options

The controllers are suitable for mounting on a standard rail (DIN EN 50022-35 x 7,5), on walls/ceilings, as well as for installation in wiring cabinets or fuse boxes.

Accessories

- Excel 10 T7460 Wall Modules
- Excel 10 T7560 Wall Modules
- Excel 10 FTT/LPT 209541B Termination Module
- C7068A Return Air Sensor (Europe, only)
- M7410C Small Electric Linear Valve Actuator (Europe, only)
- Z100 Thermoelectric Actuator (Europe, only)
- XAL-COV-L Terminal Protection Covers (8 pcs. bulk)
- Solid-state relay from Carlo Gavazzi (part no.: RS1A23D25-P64) with 40-cm cable and plug, for 230 Vac and max. 25 A (AC_{rms})
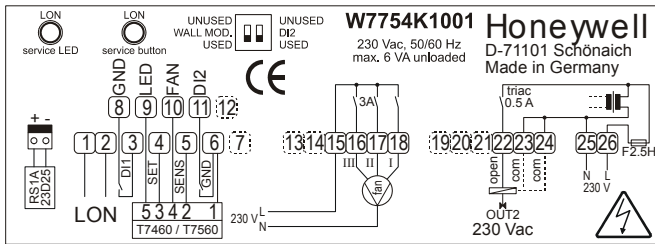- XAL-Term, LONWORKS connection/termination module for DIN rail
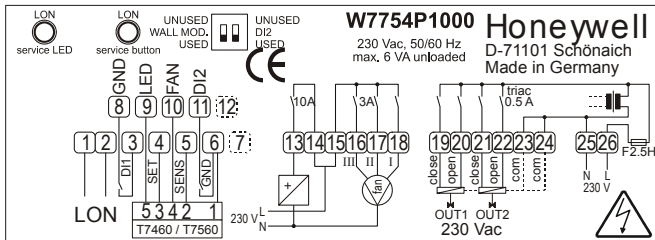
Fig. 3. W7754K sticker with input/output details

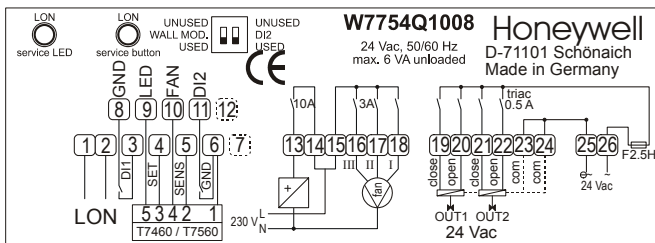
Fig. 4. W7754P sticker with input/output details

Fig. 5. W7754Q sticker with input/output details

⚠ CAUTION

In order to conform to IP30, when installed on walls or ceilings, the unit must be equipped with the optional terminal protection cover.

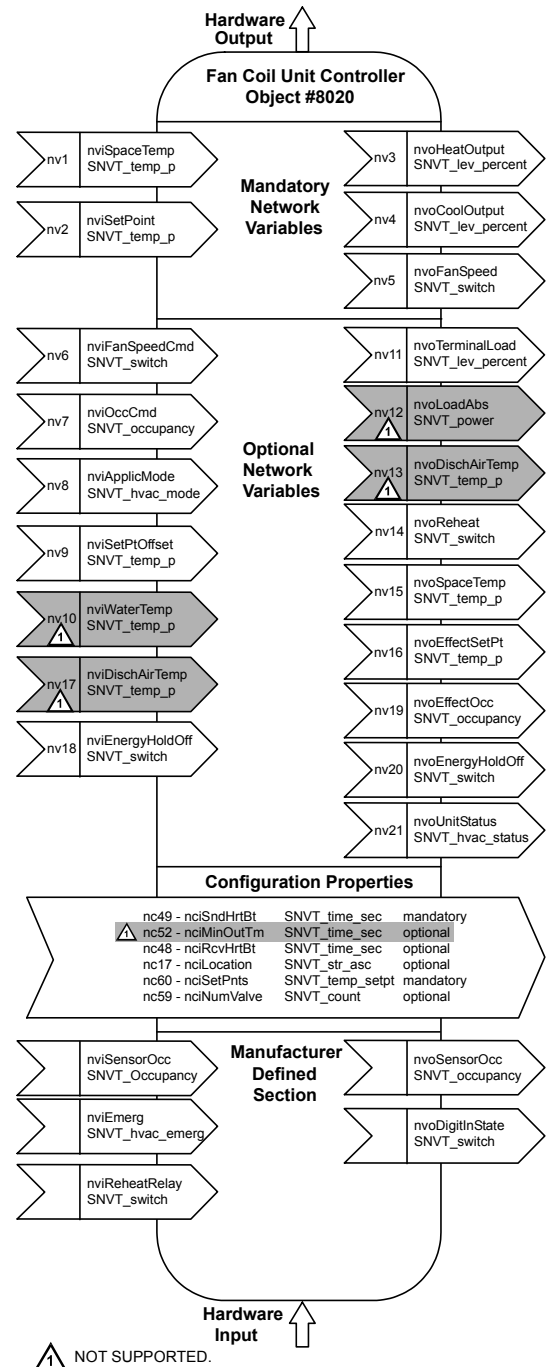
Fig. 6. LONMARK object details

⚠ NOT SUPPORTED.

Honeywell