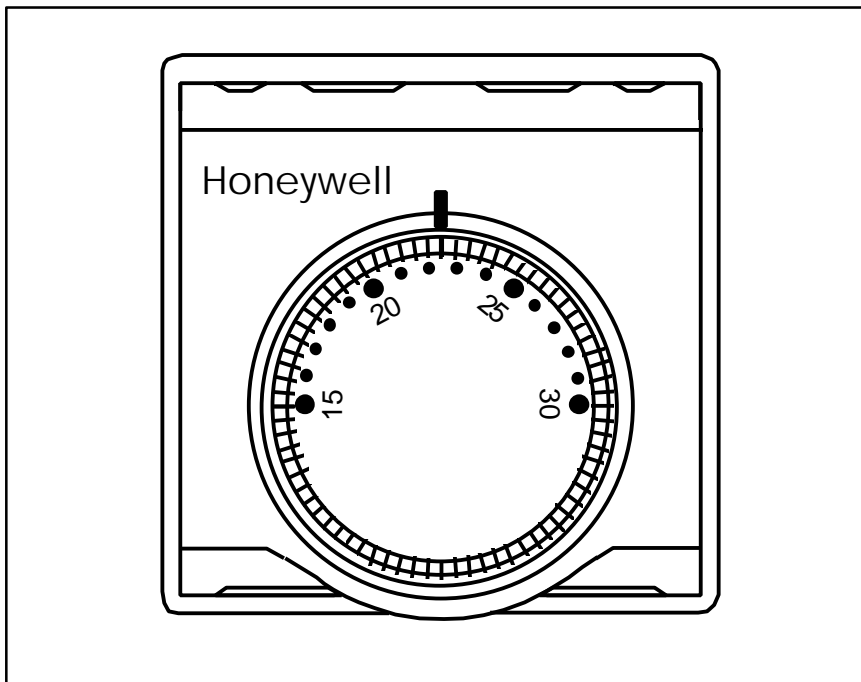


## T8392

### LOW VOLTAGE MODULATING CONTROLLERS

#### PRODUCT SPECIFICATION SHEET



The T8392A range of electronic controllers is designed for individual zone control of terminal units in fan coil and air conditioning systems.

The controller provides modulating position control of a valve or damper for a single stage system, e.g. a 2-pipe fan coil installation.

It can control in cooling or heating modes, or with seasonal heat/cool changeover operation. Heat/cool changeover can be activated by a remote switch, or automatically at each terminal unit by a pipe thermostat positioned on the system supply water pipe.

The control setpoint can be adjusted remotely, by resistance input, or by voltage input, depending on the model. A range of remote input modules are available for this function.

The T8392A is suitable for mounting in the room, or in the terminal unit.

## FEATURES

- Attractive modern styling makes T8392 ideal for locating in the occupied space, particularly in offices and hotels.
- Proportional + Integral (P+I) modulating control form ensures close temperature control under all operating conditions.
- Automatic heat/cool changeover is achieved by using a remote switch, or a pipe thermostat (S4390A1004).
- Control setpoint can be adjusted by  $\pm 3^{\circ}\text{C}$  using a remote setpoint adjustment module (Q978A1014, Q978A1022, Q979B1011 or Q979C1028).
- Proportional band fixed at  $2^{\circ}\text{C}$ .
- Suitable for mounting either on the terminal unit or on the wall (surface or wall-box mounting).
- Wiring access from the rear, and surface wiring knockouts at the top and sides.
- Locking front cover.
- Sensor options are : On-board, Wall mounted (Q979A1012), or Remote/return air (T8109A1006).
- Quick-connect remote sensor.
- Mounts on Q6360A1025 fan speed switching sub-base to allow manual fan speed control
- Control 'time-out' feature to protect actuator motor.
- Range of accessories
  - adjustable setpoint stops F42006646-001
  - universal wall-plate F42007789-001
  - switching sub-base Q6360A1025
  - remote sensor T8109A1006 (alternative to F42006053-001)
  - fixed setpoint pipe-stat S4390A1004
  - variable setpoint pipe-stat L641B1004
  - wall mounted sensor Q979A1012
  - remote setpoint modules Q979B1011, Q978A1014
  - remote setpoint + sensor Q979C1028, Q978A1022
  - tamperproof cover F42007110-001
- CE Certified.

# SPECIFICATIONS

Model	On-board Sensor	Remote Sensor T8109A supplied in pack	Auto Heat/Cool Changeover	Remote Setpoint Adjustment (Resistance Input)	Remote Setpoint Adjustment (Voltage Input)
T8392A1101	✓		✓	✓	
T8392A1119		✓	✓	✓	
T8392A1127	✓		✓		✓
T8392A1135		✓	✓		✓

**Application** Control of 2-pipe fan-coils and other single stage terminal units.

**Power Supply** 24 V~ (+10%, -15%), 50...60 Hz

**Outputs** 24 V~, 0.3A max, to power up to 10 x M7410C actuators in parallel.

**Control Form** P+I modulating 3-position. Proportional band 2°C (fixed). Reset time 30 minutes (fixed). Actuator speed factory set at 2.5 minutes (for M7410C actuators).

**Setpoint Range** 15...30°C

**Control Stability** ±0.5°C at 22.5°C

**Sensors** Choice of on-board, return air, or wall-mounted temperature sensor to suit the applications requirements.

**Fan Speed Switching** Possible by mounting T8392A onto the Q6360A1025 sub-base.

**Mounting** Wall mounting - surface or wall box. Appliance mounting also possible.

**Remote Setpoint Adjustment (Resistance Input)** T8392A1101 / T8392A1119 only 0...50Ω using Q979B and Q979C modules, or a custom 50Ω potentiometer, giving ±3°C adjustment.

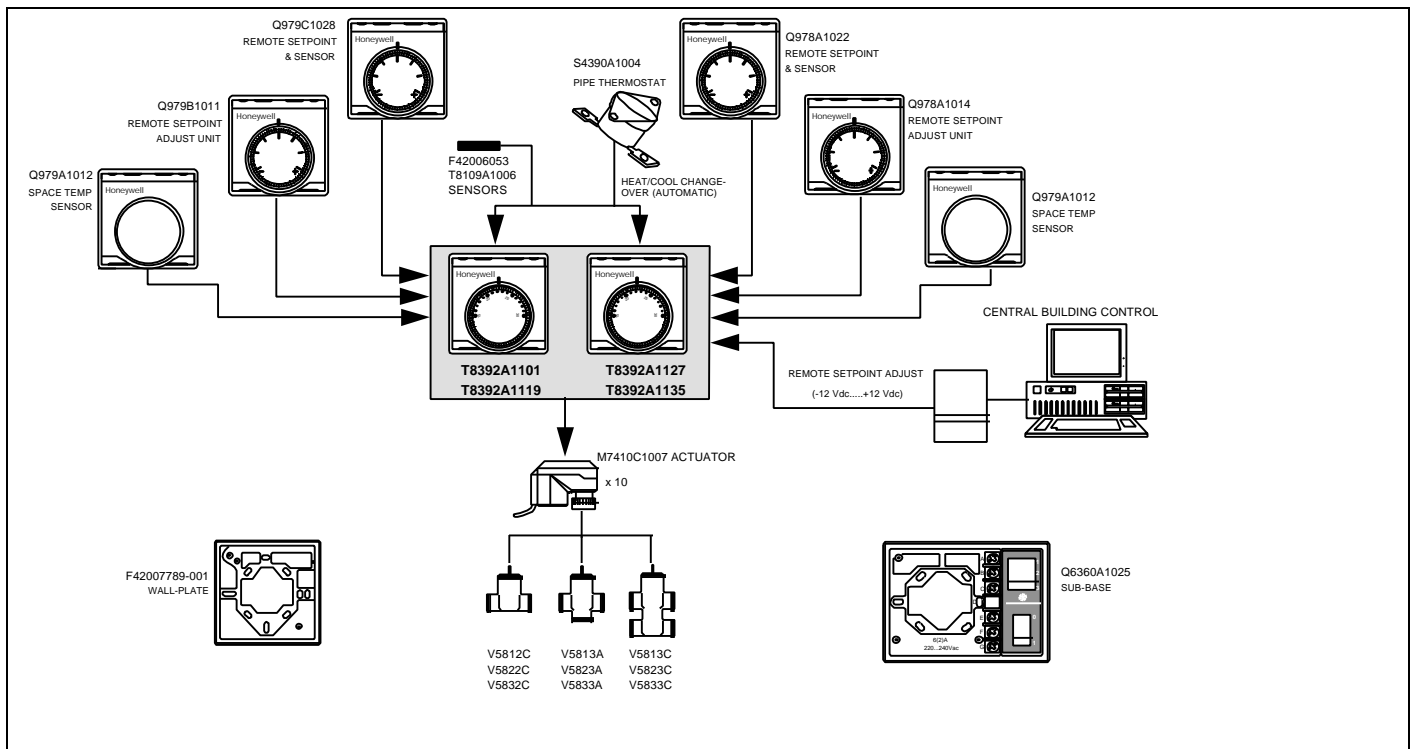
**Remote Setpoint Adjustment (Voltage Input)** T8392A1127 / T8392A1135 only ±3Vdc using Q978A modules, giving ±3°C, or ±12Vdc, giving ±12°C using a remote voltage input.

**Wiring** Terminals accept wiring up to 1.5mm<sup>2</sup>.

**Dimensions** Plastic 2-piece housing, dimensions 83 x 83 x 40 mm (w x h x d).

**Environmental Requirements** Operating range 0...40°C. Shipping / storage range -30...70°C. Humidity ≤90%rh, non-condensing.

# SYSTEM ARCHITECTURE



# INSTALLATION

## Location

The T8392A modulating controller can either be installed in the space to be controlled, or in the fan-coil or air-conditioning appliance. The table below summarises the options for controller location and sensor type.

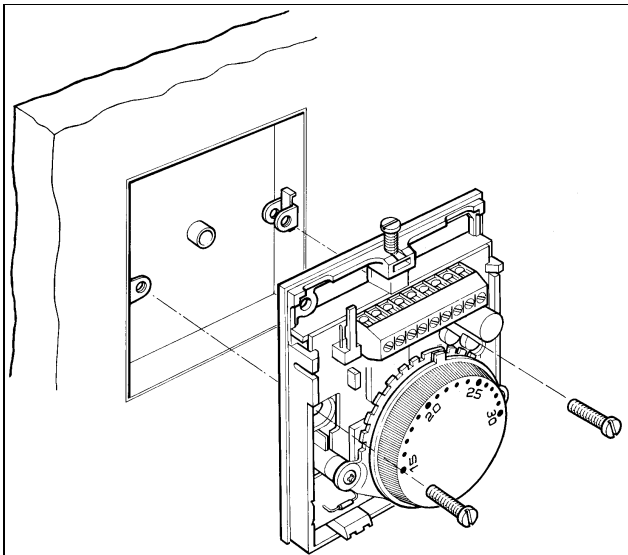
Controller Location	Type of Sensor		
	On-board	Wall mount Q979A	Return air T8109A
Wall mounted	✓		✓
Appliance mounted		✓	✓

In order to sense the space temperature correctly, the controller with on-board sensor, or the wall-mounted sensor must be positioned where there is good air circulation, on an inside wall about 1.5m above the floor. Do not position them where they could be influenced by draughts or radiant heat from the sun or other equipment, as this will adversely affect the control performance.

Where used, the return air sensor should be positioned in the return air flow inside the appliance, or in the return air duct of the system.

## Mounting

Surface mounting is possible using any pair from the 4 mounting holes. The horizontal hole pitch of 60mm suits many standard wall-boxes. For wall-boxes of differing pitch, a universal wall-plate F42007789-001 is available. Where line voltage fan-speed switching is required, the



## Wiring

The T8392A controller has screw-in terminals that accept wires up to 1.5mm<sup>2</sup>. Refer to the wiring schematics on page 4 for detailed wiring information.

When using the Q6360A1025 sub-base for fan-speed switching, all line voltage wiring connections should be made to the sub-base before the controller is installed or wired. Line voltage sub-base wiring and low voltage controller wiring should be clearly separated, and must comply with all relevant local electrical codes.

# OPERATION

## P+I Control

The T8392 controller maintains the space temperature at the setpoint by modulating the position of a valve (or damper) to meet the cooling or heating demand. There is a proportional control band of 2°C, which for cooling is 0..+2°C above the setpoint, and for heating is 0...-2°C below the setpoint. Whenever the measured temperature goes outwith the proportional band, the valve (or damper) will be driven fully open or fully closed.

The actuator can be driven in the open direction, or in the closed direction, via 2 separate outputs on the controller. T8392A applies voltage pulses of varying time duration to each output to accurately position a control valve or damper. The duration of each pulse depends on the difference between the measured temperature and the setpoint temperature, and how long this deviation has existed. Any sustained temperature deviation will be eliminated by the Integral control action.

## Heat/Cool Changeover

### Automatic

Two terminals are supplied for connection of a pipe thermostat (S4390A), which is then attached to the system supply water pipe. When the water changes from heated to chilled, the control operation changes automatically from heating to cooling in response.

### Manual

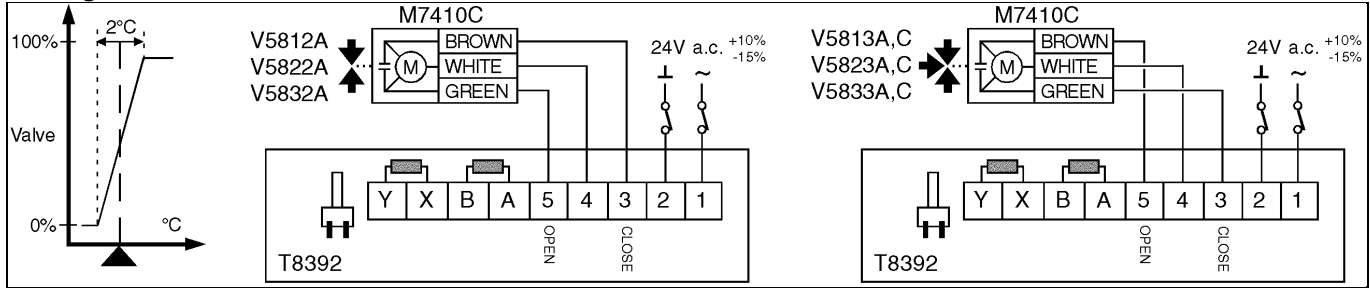
This feature can also be implemented by a manual switch connected to the same terminals. When the switch is open the controller provides heating, and when it is closed it provides cooling.

## Motor Control 'Time-out'

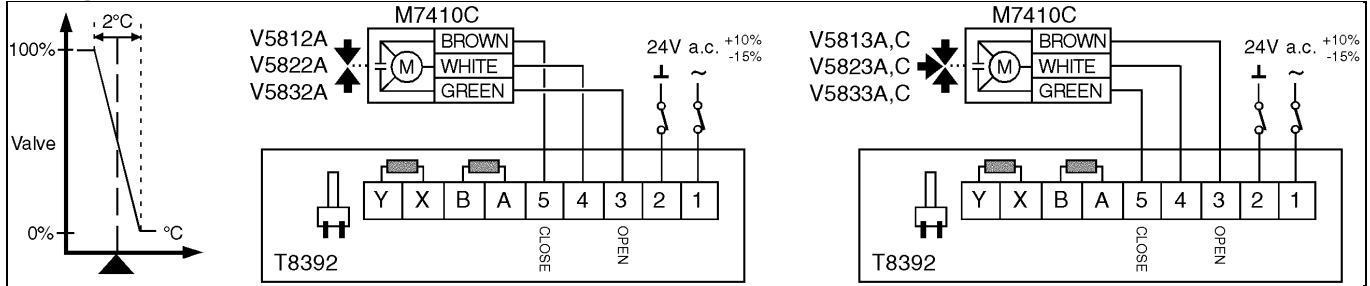
T8392A has a 'time-out' feature to protect the actuator motor when the valve or damper is fully open or fully closed. This 'time-out' operates after any control output has been driven continuously for approximately 4 minutes. The 'time-out' function is also reset by the heat/cool changeover signal.

# WIRING SCHEMATICS

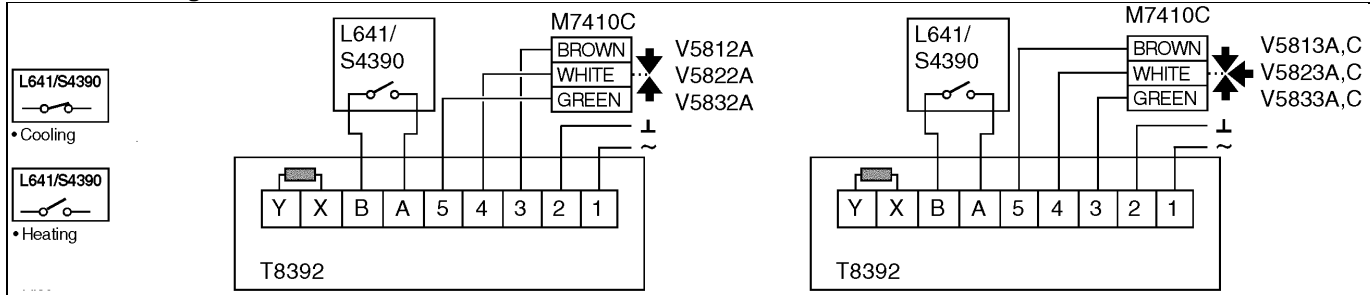
## Cooling



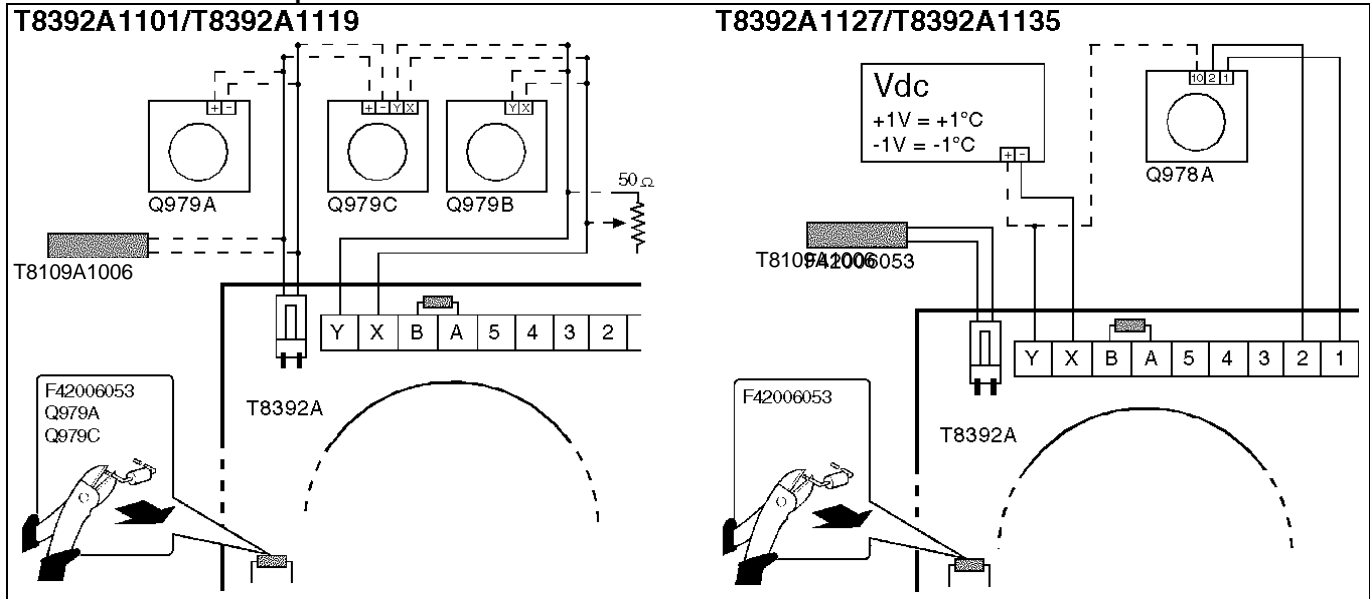
## Heating



## Heat/Cool Changeover



## Connection of Remote Input Units



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