NUAIRE

Smart 'S' Twin Fan Control System

Used with Quietwin fans

Installation and Maintenance

NUAIRE

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Leaflet No. 670963
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smart controls

Introduction

Note:
This information is general and the specific fan Installation & Maintenance leaflet supplied with each Quietwin unit should be referred to when setting up and commissioning.

If required, replacement leaflets for any Quietwin unit are available on request from the NuAire Technical Library Tel: 01222 858231

The NuAire Smart 'S' Twinfan Control system brings a totally new concept to twinfan control technology. Low voltage circuitry and wiring is employed between the fan and the plug in sensors and remote controls.
The low voltage 4 -core connecting cables can be installed without the use of expensive and unsightly housing conduits.

The twinfan is fitted with an integral control module which is connected via low voltage cables to the sensors and remote controls selected. All the mains supply and switching is housed in the control module located at the Quietwin fan unit.

Quietwin fans with the Smart 'S' control option are available in models suitable for internal (QTI & QTE) and external (QTE& QTR) applications.

Internal QTI units have their Smart control module mounted on the exterior sidewall of the casing.

Note that for weathering purposes the exterior (QTE & QTR) units have the main Smart control module mounted internally but feature a small exterior 'commissioning' box located on the outside of the case to allow speed and run on time etc. to be adjusted without removing the fans top cover.

Smart systems can be as simple or as comprehensive as the customer wishes to suit your specific application. Our Controls Application Service is ready to advise on your enquiry.

Controls Application Service (CAS)
A team of Engineers and technicians is available to provide pre and post order support.

We are on hand to provide help and advice from the most basic use of any NuAire equipment to the more complex applications, maximising on the versatility of our SMART and NetLink control products.

Telephone: **01222 858585**

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QUIETWIN WARRANTY (Smart Controls)

**12 Year Warranty (UK only)*

The 12 year warranty starts from the date of delivery and includes parts and labour for the first year. The labour element is subject to full, free and safe access to the equipment as recommended by the CDM regulations. The remaining 11 years covers replacement parts only.

** Only available on Quietwin when used with Smart Control linked to PIR Sensors. Installation must be registered with NuAire by completing the form provided in the fan unit Installation & Maintenance leaflet.*

Your Quietwin fan Installation & Maintenance leaflet incorporates a warranty registration form.
Please fill in the form and return to NuAire Service Department at the address below.

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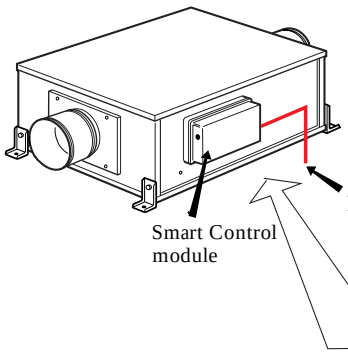


Fig. 1. Control module location on a QTI internal use Quietwin

Connecting unit to the mains 230v supply

Remove the control module cover (4 nylon fixings) Unscrew and remove the aluminium terminal cover plate, Feed the mains cable through the rubber grommet and connect your 230v supply to the terminals marked 'MAINS' (See fig. 2).

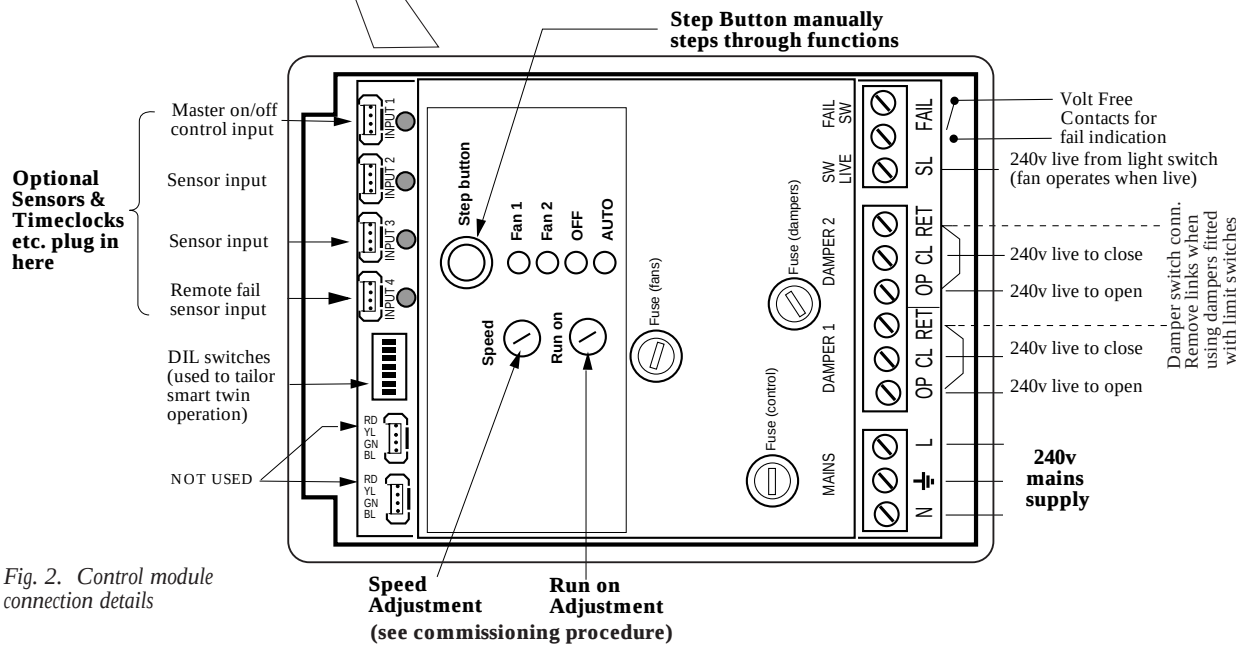


Fig. 2. Control module connection details

Smart Control wiring to Twinfan

Figure 2 above shows the inside of the case mounted Smart Control Module. All sensors and user controls / timeclock etc are 'plugged in' to the control module circuit board. Terminal connection strip is located on the right of the board. Note the mains connection terminals.

COMPREHENSIVE SMART SYSTEM

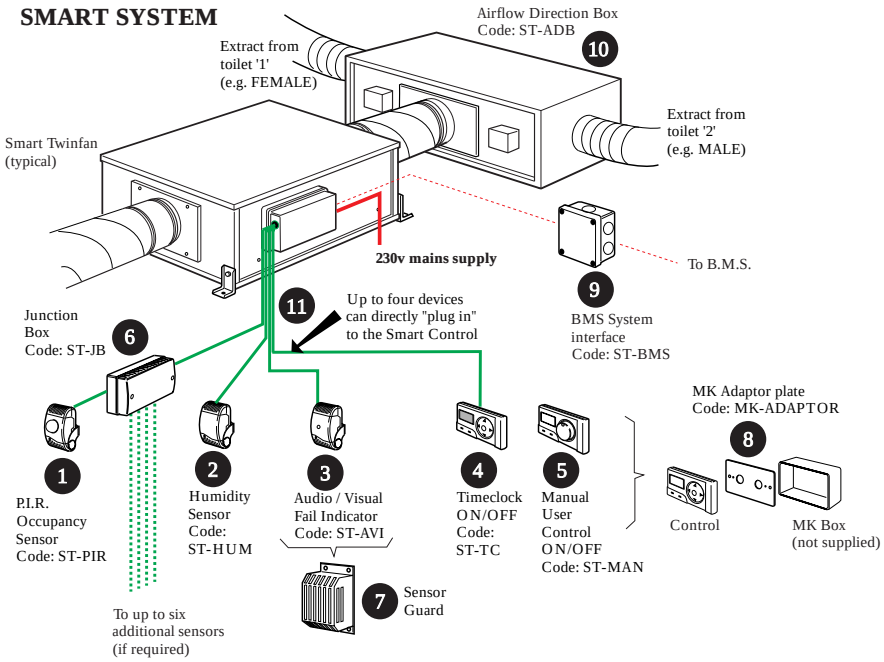


Fig. 3. Quietwin system showing additional options. QTI fan illustrated.

Options

List of available sensors, user controls and ancillaries for "S" option users with a reference to corresponding information leaflets

1. PIR Occupancy sensor, code: ST-PIR (Leaflet No: 670864)
2. Humidity sensor, code:ST-HUM (Leaflet No: 670865)
3. Audio / visual fail indicator, code:ST-AVI (Leaflet No: 670877)
4. Timeclock on / off, code: ST-TC (Leaflet No: 670866)
5. Manual user control, code ST-MAN (Leaflet No: refer to Nuaire)
6. Junction Box, code: ST-JB (Leaflet No: refer to Nuaire)
7. Sensor guard, code: refer to Nuaire (Leaflet No: refer to Nuaire)
8. MK Adaptor plate, code:: MK ADAPTOR (Leaflet No: refer to Nuaire)
9. BMS Interface, code:ST-BMS (Leaflet No: 6708697)
10. Airflow direction box, code: ST-ADB (Leaflet No: refer to Nuaire)
11. Low voltage comms cable 10m length (Leaflet No: refer to Nuaire)

Control Module Connections /Inputs and their uses (see fig 2)

SENSOR INPUT 1:
This is the Master on/off control input and is usually 'linked out' with a special plug unless:
A Timeclock can be connected into this input e.g. ST-TC
During ON times the unit is allowed to operate.
During OFF times the unit is off- zero duty.
Note: The ST-TC Timeclock must always be plugged into the fan mounted control module NOT into a ST-JB junction box.

SENSOR INPUTS 2, 3 & 4
Any sensor can be connected to these inputs to allow activation of the unit. If any of these inputs is activated, the unit will run at the maximum set duty. These sensors include ST-PIR, ST-HUM, ST-TEMP.
Note: Additional sensors may be added by using an ST-JB Junction Box.

SWITCH LIVE terminals
This acts just like the sensor inputs 2,3,4. If 230v ac is detected on the SW - Live terminals, the unit will run at the max. set duty

DAMPER terminals (2 sets)
When the fan is running at full duty, both these damper connections will be activated. i.e. power will be available on the OP terminals of the damper connections. The fan will not go to full duty until the RET terminals have 230v ac (Limit Switch).

FAILURE RELAY
This relay is normally closed when there are no faults. When faults occur this relay will open and break the circuit. This method of operation allows all types of failure to be detected for example 'Power failed', 'Fan/s fail.
This connection is a volt free switch. it can handle power up to 5A (230v) and is fused for protection.

NO FAULT:	The volt free switch is closed i.e. the two terminals are connected.
FAN FAULT:	The volt free switch is opened. i.e. the two terminals are disconnected.

Using the Step button (see fig 2).

Refer to the label on the controls inside cover for more guidance. Pressing the step button will sequence through the options and change the modes as follows:

1. FAN 1 in manual mode (used for commissioning)
2. FAN 2 in manual mode (used for commissioning)
3. SYSTEM OFF
4. SYSTEM IN AUTOMATIC (normal selection)

To clear a fail, press the STEP button until the fail has cleared.

IMPORTANT After commissioning, press the STEP button through until AUTO is illuminated.

System is now in automatic mode.

EXTERNAL USE QUIETWINS WITH THE SMART CONTROL OPTION ARE PROVIDED WITH A COMMISSIONING BOX ON THE OUTSIDE OF THE CASE The main control module is inside the fan (See fig 5).

Commissioning Procedure (see fig. 2).

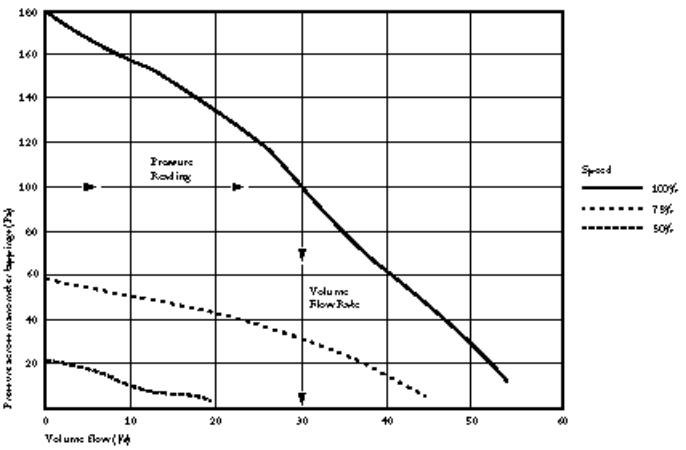
1. Switch on the supply to the QTI Quietwin fan.
2. Locate the control module panel **Care must be taken if the module has any covering panels removed as live 230v incoming supply terminals may be exposed.** Note covers MUST be properly replaced when commission ing has been completed.
3. Wait approximately 60 seconds for the system to complete its self test'
4. Press the step sequencing button several times until **only** the 'FAN 1' light is illuminated and the 'AUTO' light is off. (See detail of control panel Fig. 2).
5. Connect a manometer across the tappings provided on the outside of the fan casing. Reading the manometer and using the graph, determine the airflow. The fan is factory set at full speed. Using the rotary graduated control,reduce the speed to the desired setting (may require a screwdriver). **NOTE:** allow 30 seconds for the fan to reach the set speed.
6. **Set the Run on timer control.** (Adjustable 5-60 min). (See detail of control panel Fig. 2).
7. Press the step button through the sequence until 'AUTO' light shows.

COMMISSIONING IS NOW COMPLETE.

Using the graphs (SPECIFIC GRAPHS FOR YOUR QUIETWIN FAN ARE SHOWN IN THE FAN INSTALLATION & MAINTENANCE LEAFLET).

The graphs are designed to assist you in establishing an AIR VOLUME FLOW RATE for your fan installation.
The curves shown indicate performance at 100%, 75% and 50%.
Assuming that the ventilation system is installed and the fan is connected to all ductwork. Connect a manometer across the tappings provided on the outside of the fan unit casing.
The fan is factory set for full speed. With the fan operating at this full speed (100%) take a pressure reading in Pa from the manometer. Refer to the relevant graph for your size of unit and with your Pa figure, read across the graph to where the line intersects the 100% curve.
Drop a line vertically down from this point and the air volume flow is indicated on the base line of the graph.

See the fan Installation & Maintenance leaflet supplied.



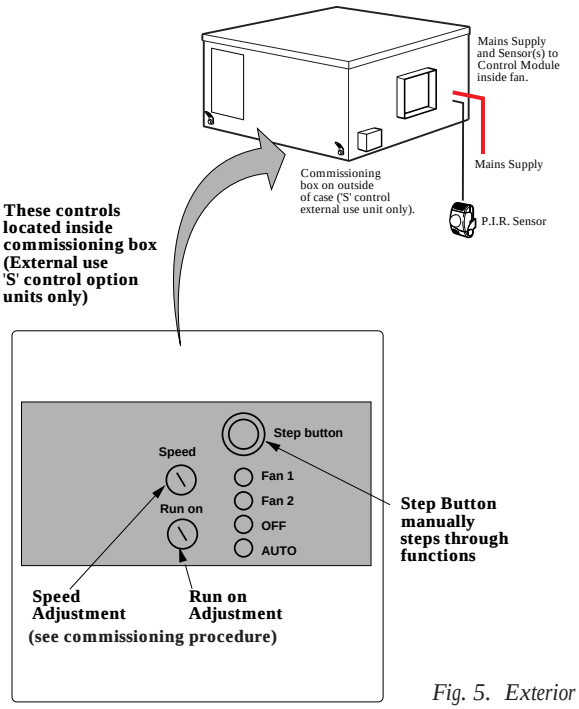


Fig. 5. Exterior commissioning control box panel.

QTE & QTR external use Quietwins with SMART 'S' control option.

The essential control difference with these fans is that they have the main control module inside the fan case.
A small commissioning box is provided on the outside of the case which contains the essential commissioning control buttons i.e. The 'STEP' button and the run on and speed adjustment controls. Figure 5 shows a typical QTR Quietwin and the details of the customers commissioning box.
Commissioning procedure is the same as that shown on page 3 for the internal use units.

Smart Twinfan DIL switch settings (see fig 2).

The Smart Twins operation can be individually tailored to suit your own particular application.

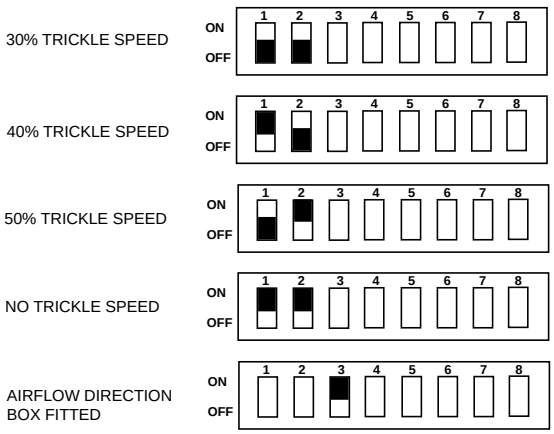
A label is attached to the inside of the control module cover detailing the various switch functions.

Refer also to switch settings shown opposite.

DEFAULT MODE:
The fan runs in trickle mode until the toilet is occupied

Switch 1 & Switch 2 .....Trickle mode and rate

Switch 3 .....2 way Damper Box fitted
ON = Damper Box fitted (split duty system)
OFF = No Damper Box fitted



Adding Sensors & Controls

Refer to page 2 of this leaflet for a list of sensors and user controls which are available for use with the Smart controlled Quietwin fans.

Sensors and user controls etc are supplied complete with specific installation details.

Additional general sales information on these optional ancillaries is shown in the NuAire 'TWINFANS' Sales / Technical brochure (Leaflet No 670808) available on request from the NuAire Technical Library Tel: 01222 858231.

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CE DECLARATION OF CONFORMITY

OCTOBER 1998

We declare that the equipment named below conforms to the requirements of EC Council Directive relating to Electromagnetic Compatibility

Designation of equipment :-	TWINFAN CONTROL
Equipment Types :-	SMART (S)
Relevant EC Council Directives :-	89/336/EEC, 92/31/EEC (EMC)
Applied Harmonised Standards :-	E50081-1, EN50082-1
Basis of Self Attestation :-	Quality Assurance to BS EN ISO 9001 BSI Registered Firm Certificate No. FM 149

Signature of manufacture representatives :-

		Name:	**Position:**	**Date:**
1)		C. Biggs	Technical Director	2. 10. 98
2)		M. Fussell	Manufacturing Director	2. 10. 98

Technical or commercial considerations may, from time to time, make it necessary to alter the design, performance and dimensions of equipment and the right is reserved to make such changes without prior notice.

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