temperzone

TTS-11 Control Box Kit

for Ducted Split System Air Conditioners

Installation Instructions

GENERAL

The **temperzone** TTS-11 is a microprocessor air conditioning temperature controller. It is designed for use with the following **temperzone** Indoor Units: ISD 75Q–181Q, 221Q, 266Q.

The TTS-11's Wall Thermostat sends instructions to the TTS-11 Control Box which is mounted, either:
(a) on the side of the Indoor Unit, or
(b) in a remote location away from the unit.

In the event of a power failure a battery backup will maintain the real time clock and the integrity of the control data.

Note:
1. The TTS-11 is a single stage controller and therefore not suitable for use with the ISD 146QB, unless it is run as a single stage system on the same phase.
2. This controller is **not** compatible with older ISD 75Q–181Q units fitted with electric heat kits that do not include an air pressure safety switch.
3. Parts for the TTS-11 are not interchangeable with the previous model TTS-10.
4. We recommend you fit the TTS-11 indoor coil sensor before connecting any refrigeration pipework.
5. The communication lead will need to be extended for Control Box to Wall T/stat distances greater than 10 m.

TTS-11 CONTROL BOX KIT
Components:
1. TTS-11 Control Box c/w Controller board.
2. TTS-11 Wall Thermostat plaque, including wall mounting plate.
3. 10 m communication lead (plaque-to-Control box).
4. Indoor Coil Sensor on lead; 1.7 m.
5. Two AAA 1.5V alkaline batteries.
6. Wall thermostat screws.
7. Heat transfer paste.
8. Cable ties (x4).
9. Insulation tape 120 mm long
10. High temperature sleeving 150 mm long
11. Screws for mounting to unit (x4) 13 mm
11. Screws for remote mounting (x4) 20 mm
12. Insulation tape 120 mm long
13. TTS-11 Control Box–to–ISD indoor unit interconnecting lead (**A**); 1.7 m, 9 core for ISD 75Q–181Q, 221Q, 266Q.
14. *User's Operating Instructions* booklet.
15. TTS-11 Installation Instructions.

Optional
1. Infra Red remote control.
2. Remote air temperature sensor on lead; 1.7 m or 8 m.
3. Remote air temp. sensor housing.
4. Indoor Coil Sensor on lead; 11 m.
5. TTS-11 Control Box–to–OSA outdoor unit interconnecting lead (**B**); 12.5 m or 25 m; 7 core.

6. TTS-11 Control Box–to–ISD indoor unit interconnecting lead (**A**); 7 core for ISD 75Q–181Q; 11 m, 9 core for ISD 221Q, 266Q; 11 m.
7. Zone Sensing & Averaging Controller.
8. Zone Control 24V transformer.

Check that all items of the kitset are supplied and no damage has occurred to the items.

TTS-11 CONTROL BOX
Installation
The TTS-11 Control box can be mounted at either end of the ISD indoor unit, or at a distance from the unit. If the box is to be installed at a distance, ensure you have the appropriate length leads.
1. Isolate the ISD unit from power supply, then remove electrical box cover.
2. **IMPORTANT: Discard any grey jumper wires between terminal 4 and fan speed terminals.**
3. Mount TTS-11 Control box at either end of the ISD unit using the screws supplied, or remotely in an upright position. Remove the box cover.
4. Connect one end of the interconnecting lead (**A**) to the Control box terminals and the other end to your ISD unit as per wiring diagram, page 4.
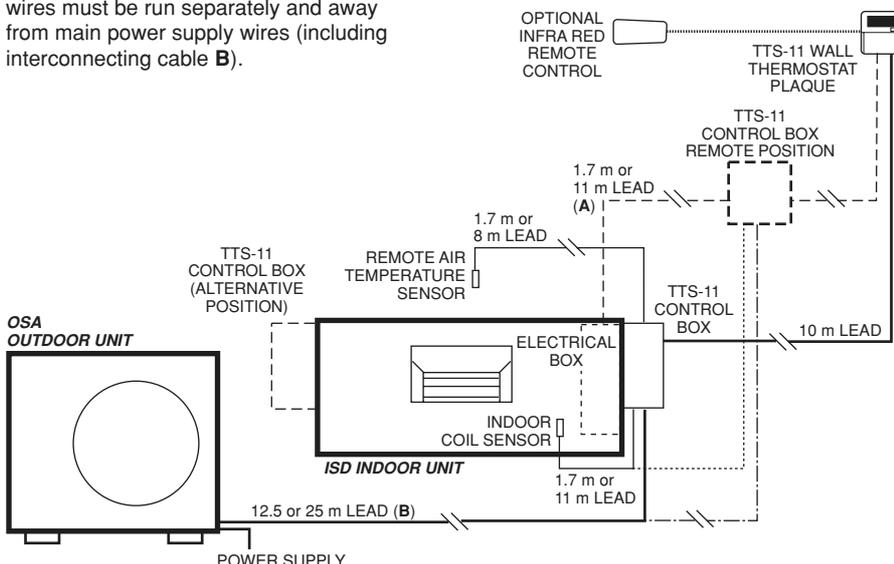   **Note**:
   a) The 9 core cable supplied is suitable for ISD 221/266 Q. For other ISD units, cut off the unused ends of the wires coloured: pink, grey and brown/white.
   b) The TTS-11 Wall Thermostat automatically switches the indoor fan off during de-ice, therefore no additional wiring is required to achieve this result.

Indoor Coil Sensor
5. Find the sensor pocket brazed on one of the coil's copper return bends nearest the electrical box.
6. Apply heat transfer paste (supplied) to the TTS-11 Controller Board's indoor coil sensor and the pocket entrance.
7. Insert the indoor coil sensor into the pocket and use the cable tie supplied to secure the sensor wire to the return bend so the sensor can not slip out.
8. Wrap the sensor pocket and tube using the supplied insulation tape, as shown in the wiring schematic on page 4.

9. Connect one end of the interconnecting cable (**B**) (supplied separately) to the Control box terminals and the other end to your OSA outdoor unit as per wiring diagram, page 4.

Fig. 1 TTS-11 Control Wiring

Note: Communication and sensor wires must be run separately and away from main power supply wires (including interconnecting cable **B**).

OPTIONAL INFRA RED REMOTE CONTROL
TTS-11 WALL THERMOSTAT PLAQUE
TTS-11 CONTROL BOX REMOTE POSITION
1.7 m or 11 m LEAD (**A**)
1.7 m or 8 m LEAD
TTS-11 CONTROL BOX (ALTERNATIVE POSITION)
REMOTE AIR TEMPERATURE SENSOR
TTS-11 CONTROL BOX
10 m LEAD
OSA OUTDOOR UNIT
ELECTRICAL BOX
INDOOR COIL SENSOR
ISD INDOOR UNIT
1.7 m or 11 m LEAD
12.5 or 25 m LEAD (**B**)
POWER SUPPLY

10. Remove the Wall Thermostat's communication lead from its box and connect one end of the communication lead to terminal block CN2 on the TTS-11 Controller board. Trace the remaining length of the lead to the wall thermostat's intended location.
If necessary extend the communication cable to reach. Use a shielded wire of the same cross section or larger. Solder the joint and use a heat shrink sleeve.

11. Ensure all communication and sensor wires are run separately and away from main power supply wires, including interconnecting cable **B**.

12. Replace the Control box and ISD electrical box covers.
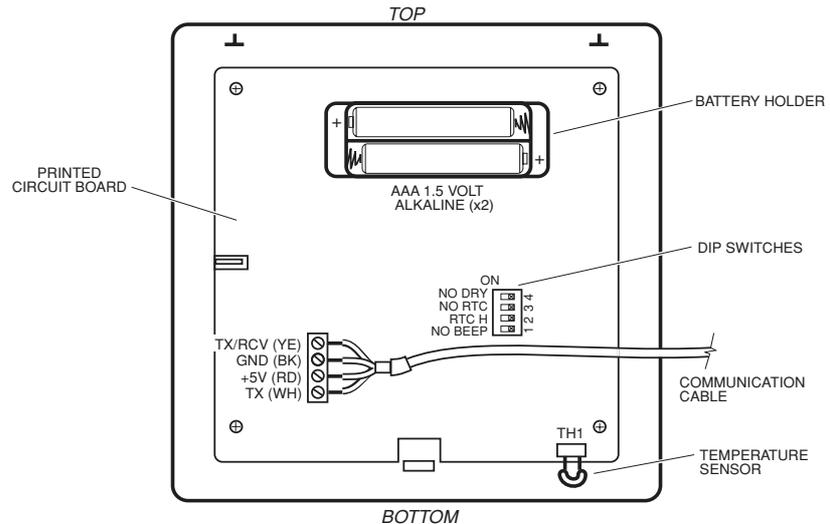
TTS-11 WALL THERMOSTAT
Separation from Wall Mounting Plate

Remove the thermostat body from the wall mounting plate by inserting the tip of a small flat screwdriver in the slot at the bottom centre of the thermostat body, and press vertically up (gently) against the holding catch. This will disengage the bottom of the thermostat body from the wall mounting plate and allow it to be lifted free.

Wall Mounting

The t/stat body must be located away from:
– cold drafts (including supply air)
– cold surfaces
– radiant heat sources (e.g. direct sunlight).

It must be mounted on a flat surface. Fixing it onto a distorted surface may damage it. This is particularly important on a brick wall. If the surface is uneven, place packing behind the wall mounting plate.

Use the wall mounting plate as a template for locating screw holes and cable entry point. If the interconnecting cable is to be located behind a wall, drill a hole through the wall, directly behind the rectangular slot provided on the wall mounting plate.
Seal the hole surrounding the cable to prevent any cold drafts coming out of the wall cavity.

Use the screws supplied to secure the wall mounting plate to the wall.

Setting the DIP switches

On the back of the thermostat's front panel, there are four DIP switches labelled 1 to 4 (refer figure 2). The ON position is the switch left position.

The DIP switch functions are listed in Table 1, with factory settings highlighted in bold lettering. Check the settings.

Before changing any DIP switch settings make sure that the battery is removed from the thermostat and supply power to Controller Board is turned off - if connected.

Ensure the DIP switches are set to meet your system's requirements. If using the IR remote control set DIP switches 1 and 2 to ON.

Fig. 2 — TTS-11 Wall Thermostat Rear View

Table 1 DIP Switch Settings

	DIP SWITCH			
	1	**2**	**3**	**4**
FUNCTION/S	NO BEEP	RTC H	NO RTC	NO DRY
Beep not required when keys pressed	ON			
Beep required when keys pressed	**OFF**			
Remote Control receiver not active		ON		
Remote Control receiver active		**OFF**		
Real Time Clock not required			ON	
Real Time Clock required			**OFF**	
Dry function is not required				ON
Dry function is required				**OFF**

Note: Factory settings are highlighted in bold.

Fig. 3 — TTS-11 Control Box

LEFT SIDE VIEW   FRONT VIEW   RIGHT SIDE VIEW
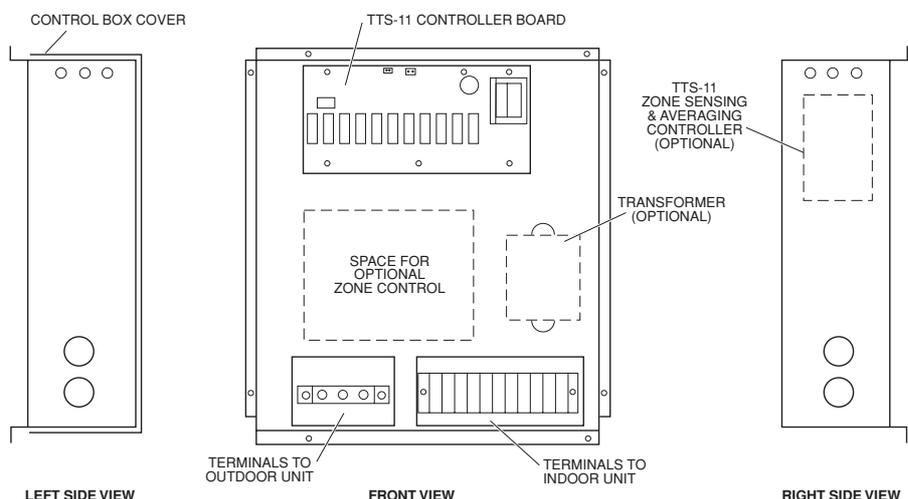
Communication Cable

Assuming the cable has already been connected at one end to the TTS-11 Controller board (Step 10 above), first check the cable is not live before proceeding.

Connect the free end of the communication cable to the thermostat's terminal block as per figure 2.

Fitting the Batteries

Insert the supplied batteries into the holder of the thermostat ensuring the positive ends are where indicated (refer figure 2).

Carefully clip the thermostat front panel back onto the wall mounting plate.

Cooling Only Systems

When used with a Cooling Only system, the TTS-11 user needs to confine their selections to 'Cool', 'Dry' and 'Fan' operation when using the MODE button – refer *User's Operating Instructions p.5*. If they were to select 'Heat' or 'Auto' mode, they could get cooling below the set temperature when the controller calls for heating.

The Key Lock feature can be used to confine the operation mode to 'Cool' only.

IR Remote Control (option)

An optional hand held infra red remote control is available. Ensure DIP switches are correctly set for using this device; refer *Setting DIP Switches* above.

Remote Air Temperature Sensor (option)

The air temperature sensor is by default located in the Wall plaque. An optional remote air temp. sensor is available so that the room temperature reading can be taken away from the wall plaque. The sensor lead is available in 1.7 m or 8 m lengths.

Connect the plugged end of the remote sensor into the Controller board as shown in the wiring diagram. This act automatically switches the active sensor to the remote location.

An optional TTS-11 Zone Sensing & Averaging Controller is available which will 'average' two of these sensors. Connect it to the Controller board as per the wiring diagram.

COMMISSIONING

Refer to Outdoor Unit and Indoor Unit Installation Instructions in order to complete the start-up and commissioning procedure for the complete air conditioning system.

Check that the wall thermostat is correctly wired and set at the desired temperature.

Demonstrate the Wall Thermostat to the owner/user, after having first thoroughly familiarised yourself with the *User's Operating Instructions*. This booklet is to remain with the owner/user.
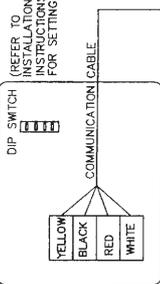
NOTE

The manufacturer reserves the right to change specifications at any time without notice or obligation.

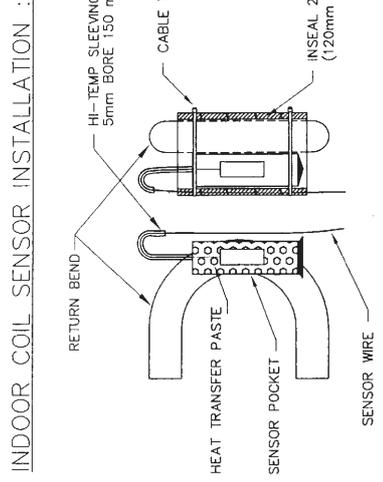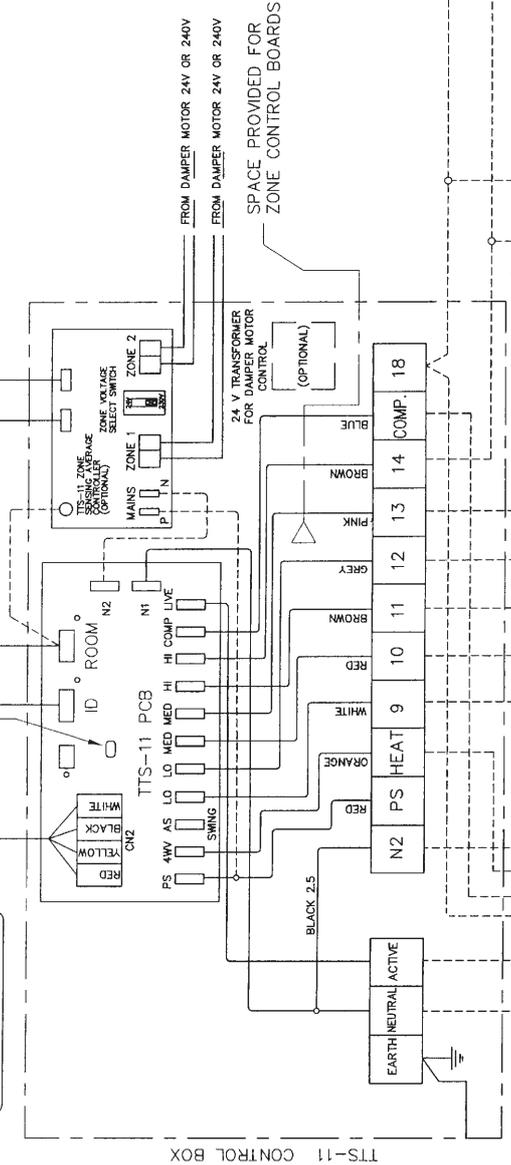*Refer to back page for Wiring Schematic.*

This pamphlet replaces the previous issue no. 2402 dated 08/04. Wiring revision D & E.

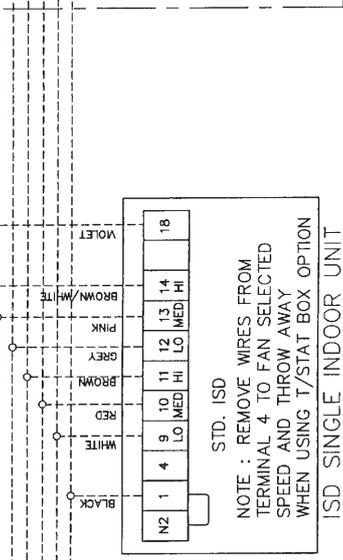NOTE: CHECK WIRING BEFORE SWITCHING ON, INCORRECT CONNECTION WILL DAMAGE MOTORS.

CLIENT WIRING
Interconnections between units by client. Double insulated multi-core cable.

INDOOR COIL SENSOR INSTALLATION :

CABLE TIE (X2)

HI-TEMP SLEEVING 5mm BORE 150 mm Lg.

INSEAL 24X3 (120mm Long.)

RETURN BEND

HEAT TRANSFER PASTE

SENSOR POCKET

SENSOR WIRE

NOTE : TERMINAL PS (POWER SUPPLY) ACTIVE ONLY WHEN THERMOSTAT ON.

JH JUMPER.
BRIDGED: INDOOR FAN RUNS ALL THE TIME
NOT BRIDGED: COOL MODE, INDOOR FAN OFF IN DEAD BAND

SENSOR

SENSOR

INDOOR COIL SENSOR

REMOTE

FROM DAMPER MOTOR 24V OR 240V

FROM DAMPER MOTOR 24V OR 240V

SPACE PROVIDED FOR ZONE CONTROL BOARDS

ZONE 2

ZONE VOLTAGE SELECT SWITCH

24 V TRANSFORMER FOR DAMPER MOTOR CONTROL (OPTIONAL)

TTS-11 ZONE USING CONTROLLER (OPTIONAL)

ZONE 1

MAINS P N

ROOM

ID

N1

TTS-11 PCB

HI COMP LIVE

HI

MED

LO

SWING

4WV   AS

PS

CM2
RED
YELLOW
BLACK
WHITE

DIP SWITCH (REFER TO INSTALLATION INSTRUCTIONS FOR SETTING).

TTS-11 WALL PLAQUE

COMMUNICATION CABLE
YELLOW
BLACK
RED
WHITE

TTS-11 CONTROL BOX

OSA OUTDOOR UNIT SINGLE SYSTEM

N2   PS   HEAT   COMP. 18

9   10   11   12   13   14

WHITE   RED   BROWN   GREY   PINK   BROWN   BLUE

EARTH   NEUTRAL   ACTIVE

BLACK 2.5

STD. ISD

N2	1	4	9	10	11	18
			LO	MED	HI	

BLACK   GREY   PINK   BROWN/WHITE   VIOLET

NOTE : REMOVE WIRES FROM TERMINAL 4 TO FAN SELECTED SPEED AND THROW AWAY WHEN USING T/STAT BOX OPTION

STD. ISD

N2	1	4	9	10	11	18
			LO	MED	HI	

BLACK   WHITE   RED   BROWN   VIOLET

NOTE : REMOVE WIRES FROM TERMINAL 4 TO FAN SELECTED SPEED AND THROW AWAY WHEN USING T/STAT BOX OPTION

STD. ISD — ISD SINGLE INDOOR UNIT

N2	1	4	9	10	11	12	13	14	18
			LO	MED	HI	LO	MED	HI	

BLACK   WHITE   RED   BROWN   GREY   PINK   BROWN/WHITE   VIOLET

NOTE : REMOVE WIRES FROM TERMINAL 4 TO FAN SELECTED SPEED AND THROW AWAY WHEN USING T/STAT BOX OPTION

NOTE : 9 CORE WIRE HAS BEEN SUPPLIED STANDARD :- WHEN USING FOR ONE MOTOR VERSION,WIRES PINK,GREY,AND BROWN WITH WHITE STRIPE MUST HAVE BOTH ENDS CUT OFF.

ISD UNIT TANDEM EVAPORATORS :- FIT COIL SENSOR TO ONE EVAP. ONLY. IF TWO DIFFERENT SIZE EVAPS, FIT TO BIGGER OF THE TWO.

OSA 146 OUTDOOR UNIT

SYSTEM 2

18
HEAT
COMP.
DE-ICE
ACTIVE
NEUTRAL

L   N   E

SYSTEM 1

18
HEAT
COMP.
DE-ICE
ACTIVE
NEUTRAL

L   N   E

POWER SUPPLY BOTH SYST. MUST BE OFF THE SAME PHASE.

18
HEAT
COMP.
DE-ICE
ACTIVE
NEUTRAL

L   N   E

POWER SUPPLY

ORANGE   WHITE   VIOLET   RED   BLACK