

# ISD 280KY (c/w EC motor and Indoor Coil Sensor)

## Ducted Split System Indoor Units

## Installation & Maintenance

### GENERAL

These ISD 280KY indoor units are designed to be coupled with the OSA 280RKT outdoor units. Units must be installed in accordance with all national and local safety codes.

### Options

1. Spring Mounting Kit
2. Spigot Plate Adaptor: Ø400mm (4 spigots) part no. 525-411-705

### SAFETY DRAIN TRAY

The unit is supplied with an in-built safety drain tray to protect your ceiling against accidental damage.

### AIR FILTRATION

As air filtration requirements vary, filters are not supplied with the unit. Filters should ideally be installed on the return air side of the unit, no closer than 500mm from the back of the unit and easily accessible for cleaning. To maximise the efficiency of air flow, the return air filter should be twice the area of the ISD unit's return air spigot/s.

### SEPARABLE (Option)

Each model is made up of two parts, a fan section and a coil section (refer fig.2). Separation permits ease of installation through small man holes (minimum 550 mm sq. clear aperture). To separate, undo the screws holding the two parts together. Disconnect the two sensor wires that run between the two parts at the control board. Remember to reconnect these two wires to the same place when re-assembling. Make sure the contact seals are tightly sealed all the way around when reassembling the two sides.

It may be desirable in some applications to keep the two separate parts of the unit apart and joined by ducting, eg over a ceiling joist. A pair of the optional Spigot Plate Adaptors are available to facilitate this option. Two additional fixed mounting brackets are supplied with each adaptor.

### INSTALLATION

#### Positioning & Mounting

Provide 500 mm minimum clearance to both ends of the unit.

If low noise is a critical factor in the installation, refer to Figure 6 for noise isolation recommendations.

It is recommended that the unit be mounted using the spring mounting system, supplied as an optional extra (Fig.7). This system minimises transfer of vibration into the building structure.

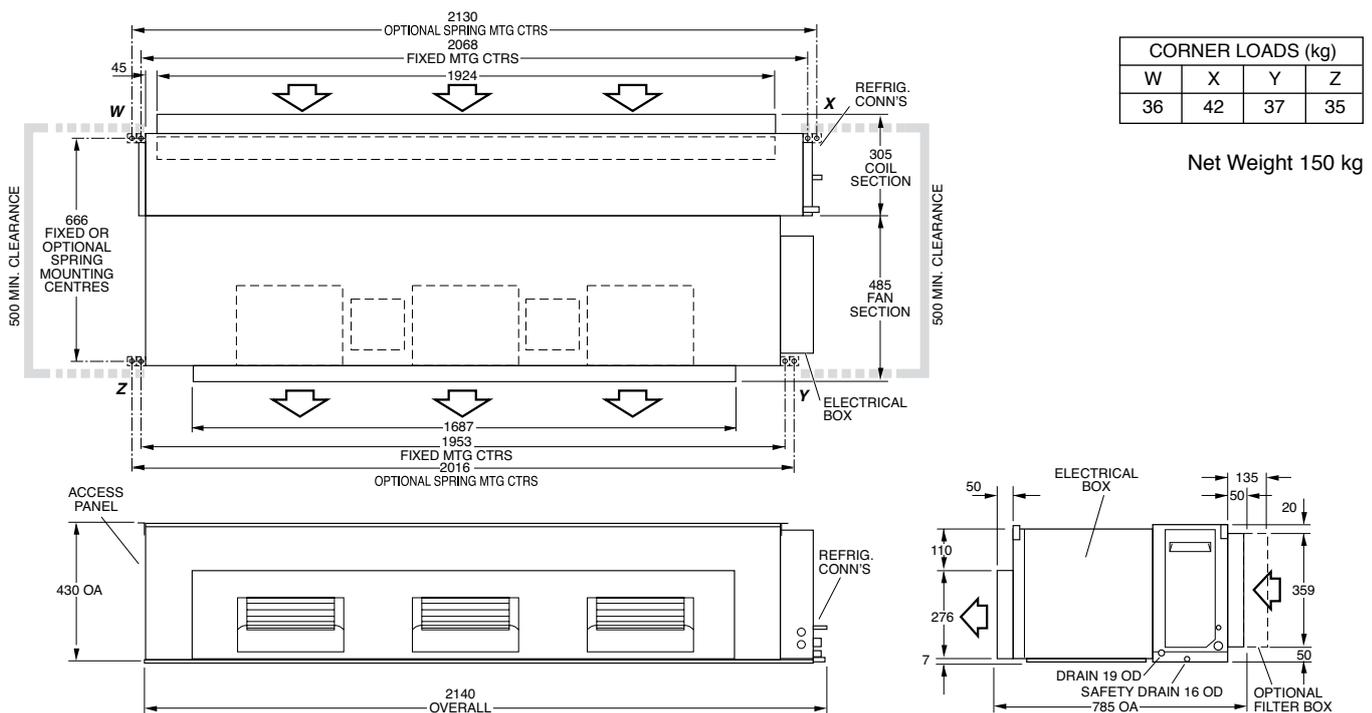
If a more rigid installation can be tolerated, then suspend the unit from four threaded rods (not supplied) attached to the ceiling. Four 'L' shaped brackets are supplied on the unit to facilitate this method. These brackets must first be unscrewed, reversed and resecured to enable rod attachment.

The unit has a built-in sloping drain tray, therefore mount it level.

When finally positioned, tighten the lock nuts on the mounting rods from above and below the mounting flange to give a firm installation (see Fig. 4).

**Fig. 1 Dimensions (mm)**

Not to Scale



## Condensate Drains

The condensate drain should be trapped outside the unit cabinet. The trap should have a vertical height of at least 50 mm. The drain should have a slope of at least 1 in 50 and must not be piped to a level above the unit drain tray. (Refer Fig.5).

For long condensate pipe runs, fit a vent pipe near the drain trap. The top of the vent pipe must be at least 100 mm above the ISD unit's drain tray.

It is essential that the drainage system for the evaporator is checked by pouring water in the drain tray and seeing that it discharges at the end of the drain and does not overflow the drain tray.

Connect the safety drain tray drain pipe to a suitable drain line with an appropriate slope to allow free drainage. This drain line does not require trapping. Test the drain with water to ensure it clears safely.

## INDOOR-OUTDOOR UNIT CONNECTIONS

Refer to the relevant OSA Outdoor Unit 'Installation & Maintenance' pamphlet for piping instructions. For wiring connections, refer to the Outdoor Unit wiring diagram in conjunction with the ISD wiring diagram in this pamphlet.

## REFRIGERATION PIPING

### Pipe Connection Sizes (mm OD) & Type

Liquid: 13 ( $\frac{1}{2}$ " sweat)

Suction: 28 ( $\frac{9}{8}$ " sweat)

The ISD is shipped from the factory with a pressurised holding charge of nitrogen. Immediately before removing any brazed pipe connection's seal, reduce the holding charge to atmospheric pressure.

**Warning:** Failure to do so may cause injury.

Refer to the Outdoor Unit 'Installation & Maintenance' pamphlet for evacuation procedure and piping requirements.

## ELECTRICAL WIRING

The electrical supply required (via the Outdoor Unit) is specified on the Outdoor Unit's wiring diagram.

Electrical work must be carried out by a qualified electrician in accordance with local supply authority regulations and the wiring diagram.

This unit includes a coil temperature sensor (yellow) fitted to a pocket on the coil. This must be connected to the UC7 Controller terminal 'IC' in the outdoor unit using the 25 m extension lead supplied.

In a free blow or low resistance application, beware of exceeding the fan motor's full load amp limit (refer Outdoor Unit's wiring diagram).

**Note:** The SAT-2 Controller automatically switches the indoor fan off during de-ice, therefore no additional wiring is required to achieve this result.

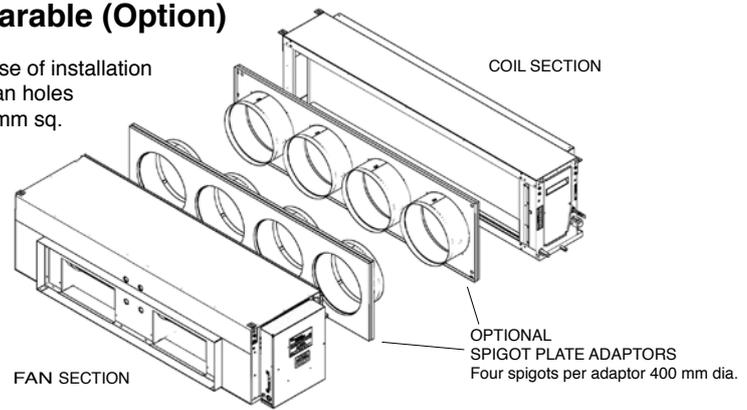
## INDOOR FAN SPEED

The Indoor fan can be switched ON by selecting High, Medium or Low fan speed on the terminal block, or via BMS. This can be done without starting the compressor.

The indoor fan speed can be 'Stepped' or 'Continuously Variable'. Dip switches 1 to 5 on the Analogue Level Controller (ALC) determine the minimum and maximum fan speeds. The same 'Minimum rpm' and

## Fig. 2 Separable (Option)

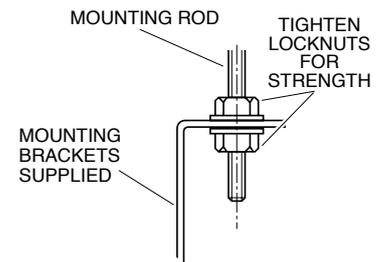
Separable for ease of installation through small man holes  
– minimum 550 mm sq. clear aperture



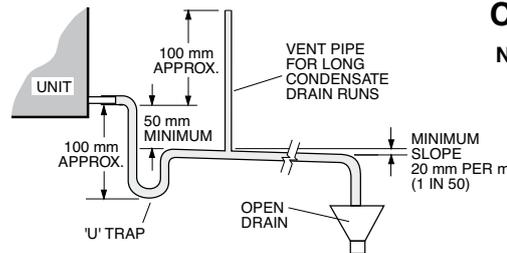
## Fig. 3 Spring Mounting



## Fig. 4 Solid Mounting



## Fig. 5



## Condensate Drain

**Note:** The Safety Drain Tray does not require trapping.

'Maximum rpm' settings apply to 'Stepped' and 'Continuously Variable'.

The default settings for max. fan speed and fan speed range are highlighted on the Wiring Schematic.

### 1. Stepped (3 Speed)

Connecting the Hot 24V power terminal to one (and only one at a time) of the LOW, MED or HIGH speed terminals sets a single fan speed. Connecting the 24V power terminal through a 3 speed switch (not supplied) will allow manual speed selection.

LOW will select the minimum rpm, HIGH will select the maximum rpm, MED will select mid-way between the two speeds. The speeds' separation depends on the setting of Analogue Level Controller (ALC) dip switches 4 & 5. The transitions between speeds are smooth.

### 2. Continuously Variable (0-10V Control)

This option is active when 0.5V or more is input to the ALC Controller's 0-10V input terminal.

A voltage below 1.6V DC applied across the '0V' and the '0-10V' input terminals will stop the indoor fan. A control voltage of 2V or more will cause the fan to run at the 'Min. rpm' speed. The 'Min. rpm' depends on the setting of Analogue Level Controller (ALC) dip switches 4 & 5. A 10V DC signal will run the fan at the 'Max. rpm' speed. Control voltages between these two limits can be used to

achieve any desired speed between 'Min.' and 'Max.' rpm.

If the air returning to the indoor unit is regularly expected to be above 50%RH, then the coil face velocity should be limited to be 2.5 m/s or less (refer Air Handling graph in Technical Data pamphlet).

High humidity levels can occur in tropical or subtropical conditions, and/or when heavily moisture laden fresh air is introduced. Select a fan speed that avoids water carry-over problems.

## THERMOSTATS

A dedicated neutral line is required where electronic or anticipator thermostats are used when you choose to have indoor fan off in de-ice.

## COMMISSIONING

### Indoor Unit

1. Check that the thermostat is correctly wired and set at the desired temperature.
2. Check that the air filter (if fitted) is clean.
3. Check that the fan runs freely without vibration.
4. Check condensate drain and safety drain tray for free drainage.

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

## MAINTENANCE

### Weekly For First Four Weeks

1. Check air filter (if fitted); vacuum clean as necessary.
2. Check condensate drain for free drainage.

### Monthly

Check air filter (if fitted); vacuum clean as necessary.

### Six Monthly

1. Check condensate drain and safety drain tray for free drainage.
2. Check heat exchanger coil; vacuum or brush clean as necessary.

3. Check the tightness of the fan.
4. Check that fan motor is free running.
5. Check tightness of electrical connections.
6. Check air supply at diffuser outlets.

## WARNING

This unit is designed for use ONLY with the refrigerant HFC-410A (R410A). The use of other refrigerants is NOT authorised or approved by the manufacturer and may cause operational problems such as poor performance and efficiency, loss of capacity, degradation of materials and refrigerant leaks.

**The use of flammable or explosive materials as a refrigerant creates the additional risks of fire and explosion which may result in property damage, personal injury or death.**

## NOTE

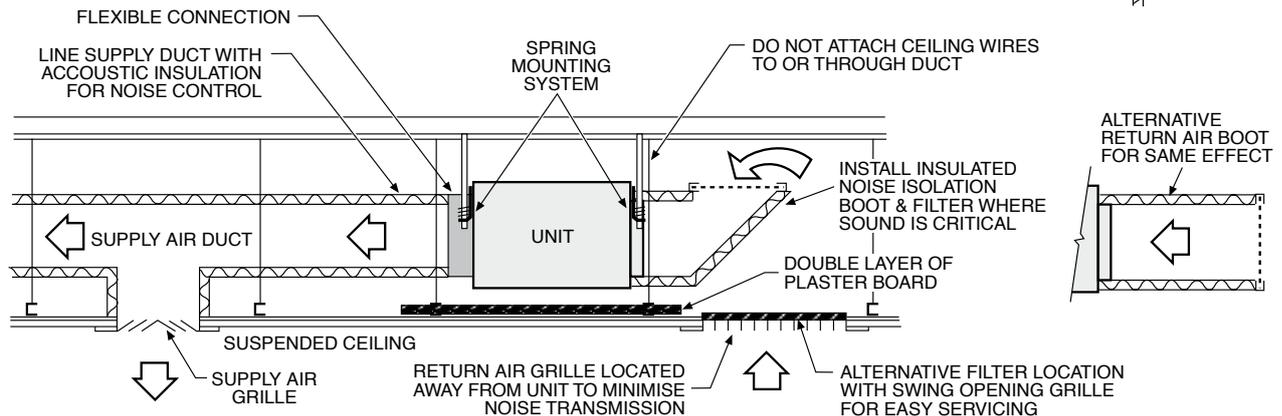
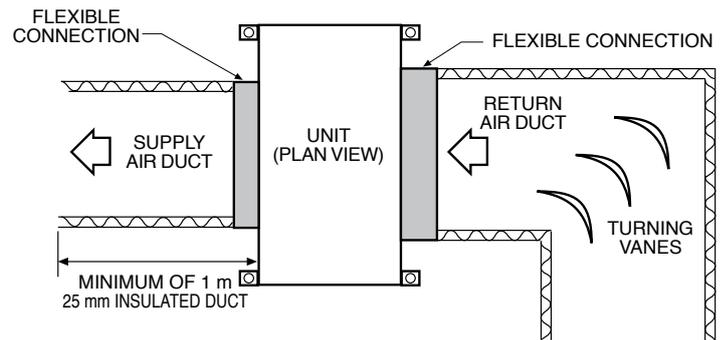
The manufacturer reserves the right to change specifications at any time without notice or obligation. Certified dimensions available on request.

This pamphlet replaces the previous issue no. 3819 dated 12/14.  
Wiring revision C.

## Fig. 7 Application Considerations

### Recommendations for Noise Isolation - particularly for high static installations:

1. Avoid installing units, with non-ducted return air, directly above spaces where noise is critical.
2. Use flexible connections between unit and rigid ducting.
3. Use generously sized acoustically lined ducts.
4. If generous duct size is not possible, use turning vanes on bends to reduce air turbulence (regenerated noise).
5. Use 90° bends in ducting to significantly assist in noise reduction.



ALC	Analogue Level Controller
DR	De-ice Relay
ECC	EC Motor Controller
HR	Hi Speed Relay
IFM	Indoor Fan Motor
LR	Low Speed Relay
MR	Med Speed Relay

IFM 1 amps (max)	5.0A
IFM 2 amps (max)	8.0A

DO NOT USE ANY OTHER DIP SWITCH COMBINATIONS EXCEPT THOSE SHOWN IN THE TABLE BELOW.  
SHADED AREA = DEFAULT SETTINGS

Indoor Fan Speed ALC DIP s/w settings

DIP Switch	
Max Speed Setting	Max Fan RPM
1 2 3	RPM
0 0 0	1000
1 0 0	1100
0 1 0	1200
1 1 0	1250
0 0 1	1300
1 0 1	1350
0 1 1	1400
1 1 1	1500

DIP Switch

Speed Range	Fan Range RPM
4 5	RPM
0 0	300
1 0	450
0 1	600
1 1	900

DIP Switch

Run On	(sec)
0	Standard
1	120 Elec. Heat

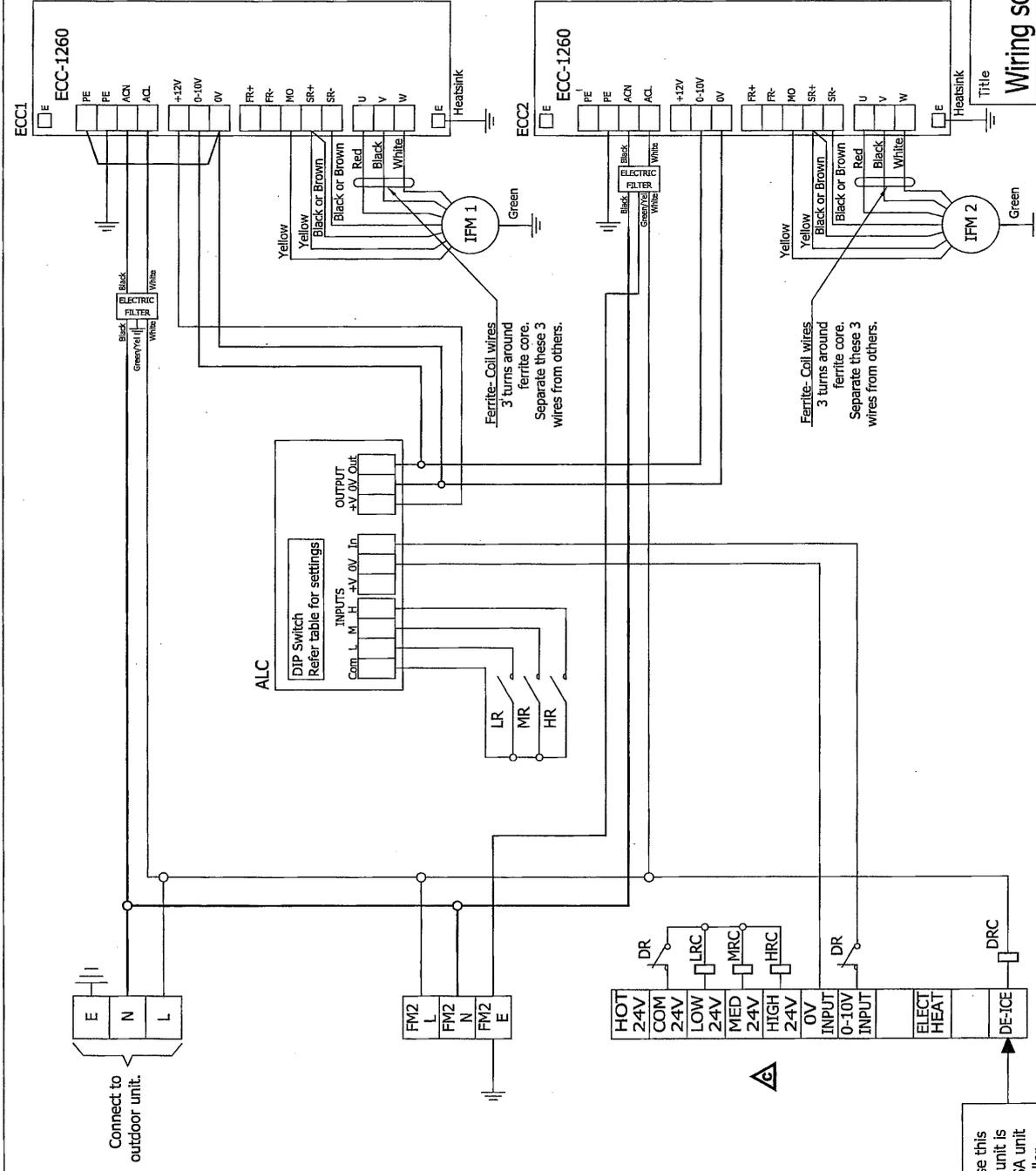
DIP Switch 7 & 8 - OFF -

ISD 280KY  
Wiring schematic (c/w indoor coil sensor)



Drawn S.D.H.	Date 13-03-12	Drawing No.	Revision
Scale	Aprvd [Signature]	291-000-050	C

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Sensor note:  
This unit comes with:  
- Coil sensor (yellow) fitted to sensor pocket on coil.  
- 25m extension lead 201-000-049 (for connection to OSA unit, UCT terminal IC).

Device Note: Only use this terminal if this ISD unit is connected to an OSA unit with an OUC controller

ISSUE	MODIFICATION	EC/N	DATE	APRVD
C	Standardising Terminal Label	N3657	20-01-15	K.T.T.
B	ECC changed, Fan motor changed, ALC added.	N3632	26-11-14	K.T.T.
A	Set Dip 1, Switch No.3 to the 'OFF' Position/Speed Selection Table Mod	N3113	12-09-12	J.S.L.