

# ISD 310KBY

## Ducted Split System Indoor Units

## Installation & Maintenance

### GENERAL

These ISD 310KBY indoor unit is designed to be coupled with the OSA 310RKTBV outdoor unit. Units must be installed in accordance with all national and local safety codes.

### Options

1. Filter Box c/w polypropylene net filter
2. Spring Mounting Kit

### AIR FILTRATION / FILTER BOX (Option)

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. If efficiency is less of a concern a Filter Box is available.

The Filter Box is installed by unscrewing the return air spigot and replacing it with the filter box. The three filter panels may be accessed from either side of the box. The filter box adds 90 mm to the depth of the unit.

### INSTALLATION

#### Positioning & Mounting

Provide 500 mm minimum clearance to both end panels. If the filter box option is to be used, allow adequate clearance for the three filters to be withdrawn from either side of the unit.

If low noise is a critical factor in the installation, refer to Figure 5 for noise isolation recommendations.

It is recommended that the unit be mounted using the spring mounting system, supplied as an optional extra (Fig.3). This system minimises transfer of vibration into the building structure.

If a more rigid installation can be tolerated, then suspend the unit using the four mounting straps supplied, as shown in Figure 4. Use the existing bolts, nuts & washers at the top corners of the unit.

Alternatively, the unit can be mounted on a suitable platform using vibration isolators.

The unit must be installed with the drain tray tilted about 10 mm along its length so that the drain connection is at the lowest point.

### Condensate Drain

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.2).

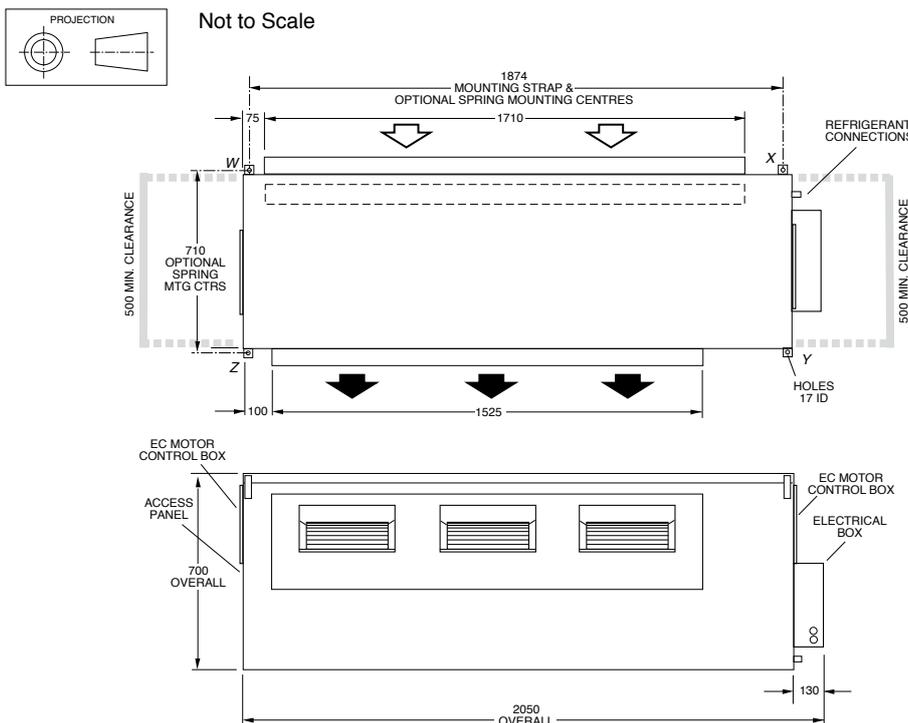
For long condensate pipe runs, fit a vent pipe near the drain trap. The top of the vent pipe must be at least 100 mm above the ISD unit's drain tray.

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.

### 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 on this pamphlet.

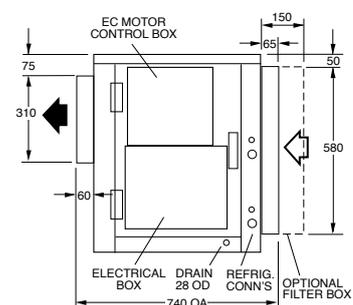
Fig.1 Dimensions (mm)



CORNER LOADS (kg)			
W	X	Y	Z
10	76	18	75

Net Weight 179 kg

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



## REFRIGERATION PIPING

### Pipe Connection Sizes & Type

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

Suction : 22 mm OD ( $\frac{7}{8}$ " 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 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.

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).

To make the indoor fan switch off during de-ice cycle, refer to the Outdoor Unit's installation instructions.

## 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 '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.

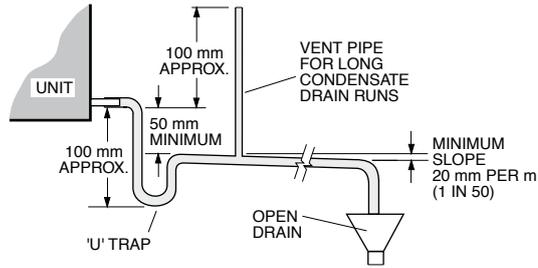
LOW will select the minimum rpm, HIGH will select the maximum rpm, MED will select mid-way between the two speeds. The speeds' separation depends on the setting of Analogue Level Controller (ALC) dip switches 4 & 5. The transitions between speeds are smooth.

### 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

Fig. 2



## Condensate Drain

Fig. 3 Spring Mounting

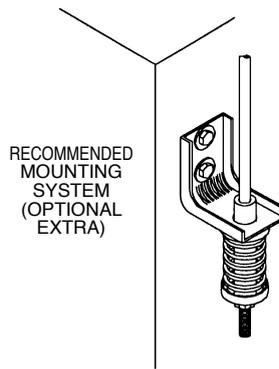
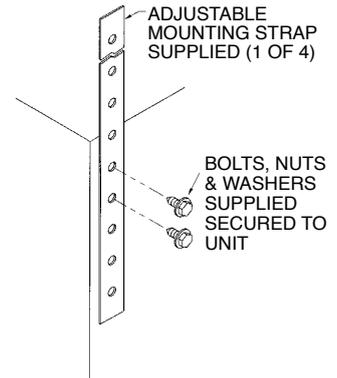


Fig. 4 Strap Mounting



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.

## COMMISSIONING

### Indoor Unit

1. Check that the thermostat is correctly wired and set at the desired temperature.
2. Check that any air filter (if fitted) is clean.
3. Check that the fan runs freely without vibration.
4. Check condensate drain for free drainage.
5. Run the unit in cooling and heating modes.

## 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 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.

### NOTE

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

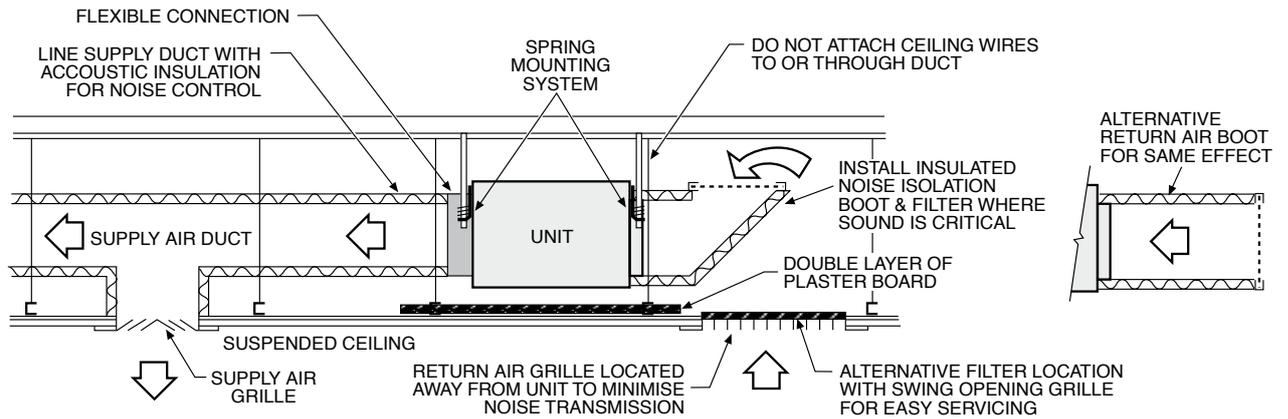
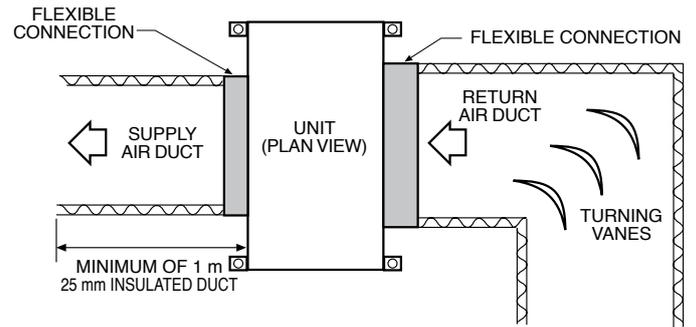
This pamphlet replaces the previous issue no. 3875 dated 10/14. Indoor Fan Speed setting; wiring revision E.

## Fig. 5 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. SHADDED AREA = DEFAULT SETTINGS

Indoor Fan Speed ALC DIP s/w settings

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

DIP Switch

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

DIP Switch

Run On

6	(sec)
0	40 Standard
1	120 Elec. Heat

DIP Switch 7 & 8 - OFF -

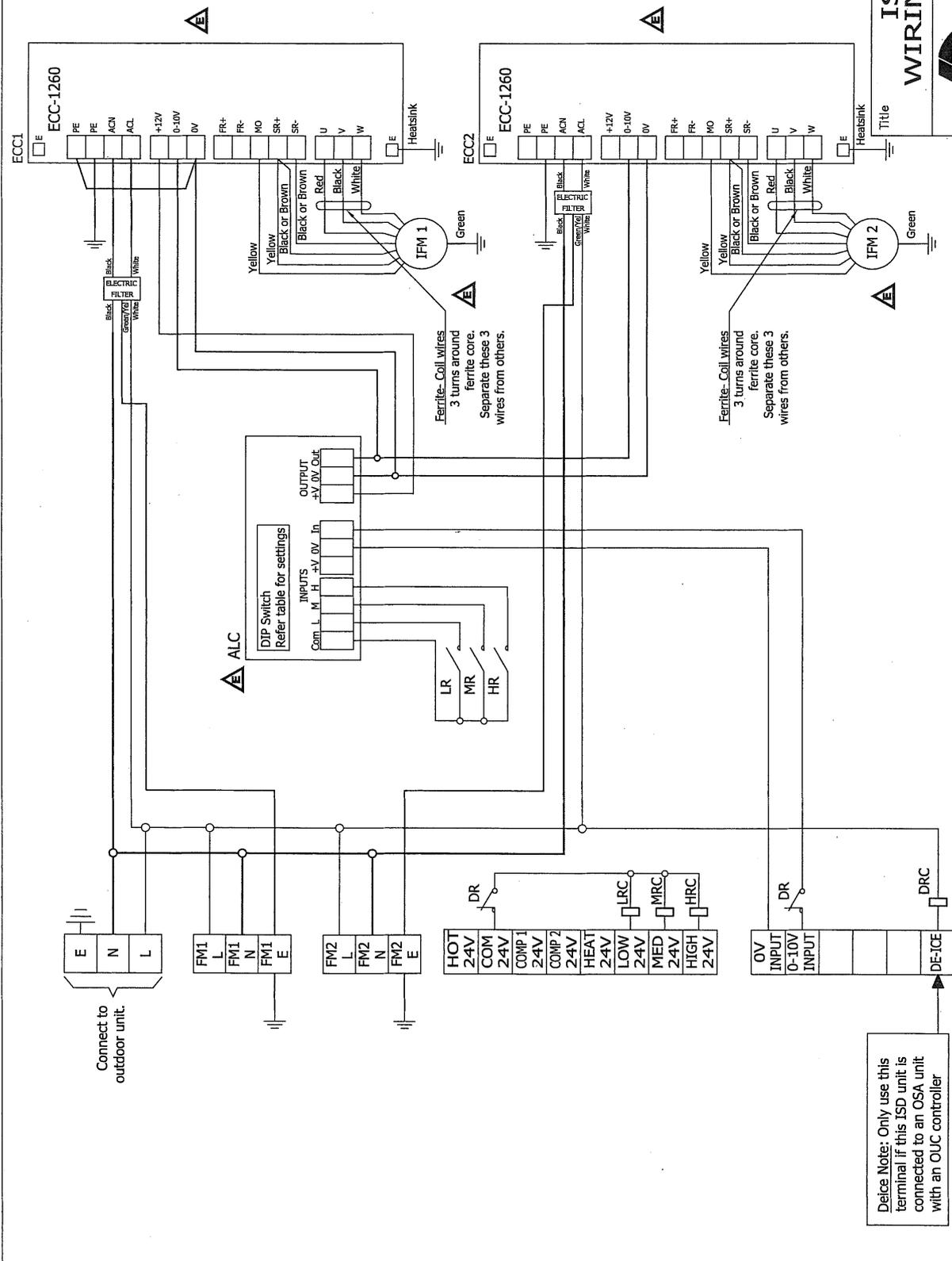
# ISD 310KBY WIRING SCHEMATIC



Drawn SDH	Date 28-01-11	Drawing No.	Revision
Scale	Aprvd [Signature]	525-424-602	E

Visit [www.temperzone.biz](http://www.temperzone.biz) for client wiring diagrams.

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

ISSUE	MODIFICATION	ECN	DATE	APRVD
E	Motors changed. ECC changed. ALC added.	N3632	28-11-14	KTT
D	IFM Amps max: 5.3 was 5.0, 8.5 was 6.0	N3615	24-10-14	S.D.H.
C	Set Dip 1, Switch No.3 to the "OFF" Position/Speed Selection Table Mod	N3113	13-09-12	CMW