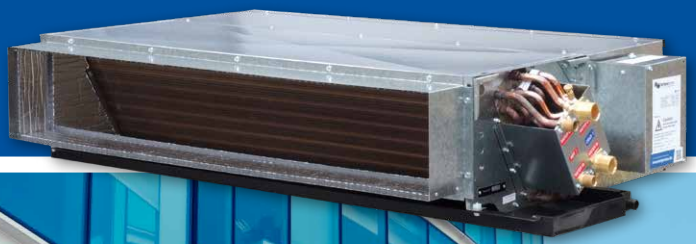
EC Motor Fan Coil Units

IMDL-Y Series

100 – 700 l/s



temperzone

QUALITY AIR CONDITIONING

Company Profile

Temperzone Limited is a leading manufacturer and distributor of quality air conditioning and ventilation products throughout the Western Pacific Rim. Corporate Head Office is located in New Zealand with factories in Auckland and Sydney. A network of offices, warehouses and distributors provide local support and representation in Australasia, South East Asia and China.

temperzone's aim is to provide the most competitively priced, reliable and efficient air conditioning equipment available to the international market. A privately owned company, temperzone Holdings Ltd, is the parent company of temperzone ltd (est.1956) in Auckland and temperzone Australia pty ltd in Sydney.

The wide range of temperzone products are manufactured in Auckland for markets in Australasia and Asia. This range includes air distribution items and fans for New Zealand. The Sydney headquarters acts as both a distribution centre and manufacturer of customised and larger standard air conditioning units specifically for Australia. temperzone's Asia Regional Head Office is located in Singapore. The combined group operations employ over 500 staff.

Temperzone's Fan Coil History

Temperzone have been manufacturing chilled water fan coil units for more than 45 years. The original RCMC units were superseded in the mid 1980's with a new breed of RCMC which were then superseded in the late 1990's with the IMDL range.

Prior to the development of temperzone's EC motor fancoils, units had all been manufactured with fixed single speed or multi-speed PSC motors. Any changes in the cooling or heating performance had been solely on the basis of varying the water flow by way of a 2-way or 3-way water regulating/ modulating valve. With the indoor fan running on a constant speed. This left considerable room for improvement in designing higher efficiency models.

It is time now to take a step forward with the new IMDL "Y" version with high efficiency EC (Electronically Commutated) motors. EC motors allow for the air flow to be controlled over a wider range either by the multiple speeds that are available or by the use of a 0 – 10V dc variable signal.

Speeds as high as 1500 rpm and as low as 500 rpm are available by dip switch selection in multi-speed or variable voltage signal.

By utilising the EC motor technology it is no longer necessary to have the 'S', 'M' and 'H' models, one model size suits all with the required speed range selected by dip switches

Key Features

- Energy Efficient EC Motor
- Significant Energy Savings
- Pressure Independent Fan Operation
- On-site Adjustable Fan Air Volume Controller
- Remote Fan Air Volume Adjustment Capability from BMS.

IMDL-Y Fan Coil Units

GENERAL

Fan coil units are an integral part of an overall air conditioning system where the energy transfer medium (i.e. chilled or hot water) is circulated by a central plant facility. temperzone offers an extensive range of ducted fan coil units. A variety of options and accessories are available to meet most air conditioning requirements. Low operating cost, energy efficient fan motors are used in all units. Easy installation and maintenance add to the cost effectiveness of temperzone IMDL Series fan coil units.

All IMDL fan coil units can be handed left or right. Unless otherwise ordered units will be supplied 'right handed' which is the standard handing, i.e. when facing the discharge side of the unit, the water and electrical connections are on the right hand side.

TYPICAL APPLICATIONS

Office Buildings

The low overall height of 260 mm makes them ideally suited to office building applications where false ceiling space is at a premium.

Hotels

IMDL units are extremely well suited for individual room control. A standard above ceiling installed unit with 3 speed control (available option) is normally used for this type of application.

Airport Terminal Buildings

temperzone fan coil units are gaining worldwide popularity in airport terminals. These complexes generally consist of a number of areas with very diverse occupancy and capacity requirements.

Hospitals

The majority of hospital rooms must have a separate and independent air conditioning system. This is to avoid bacterial cross contamination. temperzone fan coil units have been used successfully in these applications.

STANDARD FEATURES

Drain Tray

The drain tray is plastic and is removable for ease of cleaning and can be adjusted to slope when the unit is installed level.

Motors

High efficiency electronically commutated (EC) motors are fitted as standard on all units. Motors can be operated on three speeds (site changable) or 0-100% capacity using a 0-10V dc signal supplied by a BMS or sophisticated controller. The motors are resiliently mounted, self aligning and oiled for life.

Fans

Quiet low line, centrifugal type, double width, statically and dynamically balanced, multi-bladed impellers are used. The position and shape of the fan blades and housing has been developed after extensive testing to achieve minimum noise levels while maintaining a smooth pressure vs air flow curve.

Coils

Coils are manufactured in rifled copper tubing. All coils are thoroughly tested to 2100 kPa. Coil rows are staggered for maximum heat exchange. Three different coil configurations are available – refer table on page 5.

The coil fins are manufactured as a continuous plate, die formed from epoxy aluminium with a smooth corrugated surface, specially designed to overcome and prevent lint build up. The coil fins are mechanically bonded to the copper tubing which results in a rigid assembly and provides a permanent metallic contact between fins and tube for maximum heat transfer.

Casing

The casing is manufactured from high quality galvanised steel and internally insulated.

Insulation

Closed cell foam insulation has been used in the cabinet to ensure no particles are introduced into the air stream. The insulation is foil faced and meets the fire test standards AS 1530.3 (1989) and BS 476 parts 6 and 7. Open cell foam is used in the return air section for noise attenuation.

ELECTRICAL BOX

Wiring from the motors terminate in a terminal block in a sheetmetal enclosed electrical box. The box is supplied on the same side as the water connections, but can be changed on site to the opposite side.

STANDARD OPTIONS

1. Return Air Plenum (insulated) with Filter
   - filter is 13 mm thick, washable and rated EU2.
2. Multi-Outlet Supply Air Insulated Spigot
   - sized to suit flexible ducting.
3. Electric Heat
   - stainless steel finned element
   - mounted within the unit
   - factory fitted
   - complete with automatic and manual high temperature safety cutout thermostats required to meet AS/NZS 3350.2.40 1997.
   - 120 seconds fan run-on time (for heat dissipation) is built into the motor driver board and selected by dip switch.
   - Variable capacity control of electric heat via solid state relay (SSR).
4. Control switches
   - on/off and 3 speed rotary switches mounted in a standard or architrave type flush plate.

WIRING

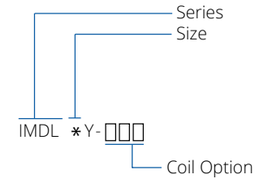
The electrical supply required (including voltage fluctuation limits) is:

1 phase 200-252 V a.c. 50 Hz with neutral and earth. Each IMDL unit is fully wired ready to accept the main power supply.

ORDER DETAIL

Coil Options:
3 - Three row coil for cooling
4 - Four row coil for cooling
3/1 - Three row cooling / one row heating
3E - Three row cooling coil + electric heat
4E - Four row cooling coil + electric heat

Note: Please specify on your order the size, fan motor type and coil option using the above codes.



Examples:

IMDL 130Y-3/1
IMDL 60Y-4

TECHNOLOGY

VAV

For the last 40 years virtually all fan coil units have operated with a constant fan speed and therefore constant air volume (CAV). Temperature changes in these units were achieved by the water valve, i.e. varying the water volume. With this design, energy was wasted due to fans constantly running at full speed, regardless of the requirement of the thermal zone served.

With temperzone's new range of VAV fan coil units, varying air volume results in greater efficiency.

Controls

The new EC motor version IMDL units allow for several methods of control allowing great flexibility to meet the demands of modern buildings expectations. The fan speed could be adjusted for instance as the first step of capacity control before adjusting water flow.

Three Speed Selection

The fans can be controlled just like their predecessors using three speed selection, high, medium and low. This option is selectable by dip switch and then by using further dip switch settings to select from the available speed ranges that are most suitable for the application.

Potentiometer

The fans could also be controlled by the fitting of a potentiometer to preset the required speed. This will be particularly useful during onsite commissioning to be able to adjust to obtain the desired air flow.

Indoor Fan Speed

The fan can be switched ON by selecting High, Medium or Low fan speed on the terminal block, or via BMS.

The fan speed can be controlled in two ways: 'Stepped' or 'Continuously Variable'.

Dip switches 1 to 5 and 7 on the Analogue Level Controller (ALC) determine the minimum and maximum fan speeds. The same 'Minimum rpm' and 'Maximum rpm' settings apply to both the 'Stepped' and 'Continuously Variable' control methods.

There are two fan speed ranges available using dip switch 7:

- Low, which is the default for low profile IMDL units &

- High, which is the default for in higher air flow IMD units.

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

1. *Stepped (3 Speed)*
   If using a 3-speed selection switch, the medium speed will always be half way between the maximum (High) and minimum (Low) speeds – as selected using the DIP switches 1 to 5.
2. *Continuously Variable (0-10V Control)*
   If using a variable 0–10V dc signal (from a BMS or sophisticated controller) the fans will not operate until a signal above 1.6V is received and will then start at the minimum voltage/speed set using DIP switches 1 to 5.

   A voltage below 1.6V DC applied across the '0V' and the '0-10V' input terminals will activate fan run on and after this the fan will stop.

   A control voltage of 2V will cause the fan to run at the 'Min. rpm' speed. A 10V DC signal will run the fan at the 'Max. rpm' speed. Control voltages between these two limits (2V –10V) can be used to achieve any desired speed between 'Min.' and 'Max.' rpm in a linear relationship so 6V gives you 'Med.' (halfway between 'Min.' and 'Max').

Note: Only one control method must be connected at any one time; either Stepped 3 Speed control or Continuously Variable 0-10V dc, **not both.**

The fan will run on at Low speed when there is no input signal for either 40 or 120 seconds, dependant on the DIP switch 6 setting, before stopping. **If electric heat is fitted, ensure that DIP switch 6 is set for 120 seconds.**

BMS

Many modern buildings these days have Building Management Sytems (BMS) and it is most desirable to control the fan speed variably to meet the building's load demands. The unit can accept a 0-10Vdc signal from the BMS or other sophisticated controller. This option is again selectable by dip switch and likewise so is the allowable speed range.

The BMS can be programmed to achieve various beneficial functions such as; maintaining high air flow when on heating first thing in the morning to avoid stratification within the space, reducing the air flow down to say 50 to 60% as a capacity control method prior to adjustment of the water flow.

Specification

Model	IMDL 40Y	IMDL 60Y	IMDL 90Y	IMDL 130Y
Nominal Air Flow High Speed @ 60 Pa external static (l/s) *	200	325	400	700
Fan type	forward curved centrifugal double inlet double width			
No. of fan scrolls	1	2	2	3
Motor type	Electronically Commutated (EC) DC direct drive			
Power Source **	1 Phase 230 VoltAC 50 Hz			
No. of motors	1	1	1	2
Motor Rating (W)	182	243	243	182 + 243
Full Load Amps (A)	1.4	1.8	1.8	1.4 + 1.8 (3.2)
Electric Heating (kW) ***	1.5	2.0	3.0	4.0
Max. Current with Electric Heat (A)	6.5	8.7	13.0	17.4
Heat Exchanger type	aluminium corrugated plate fins to expanded rifled copper tube			
Cooling/Heating Medium	chilled water or hot water			
Coil Rows Options	3 rows cooling + 1 row heating or 4 rows cooling or 4 rows cooling + electric heat			
Finish	zinc galvanised steel			
Test Pressure	2100 kPa			
Connection Sizes Cooling Coil (mm)	20 BSP Male (3/4")		25 BSP Male (1")	
Connection Sizes Heating Coil (mm)	15 BSP Male (1/2")			
Air Filter Type	washable G2 / EU2 (supplied Standard)			
No. of Air Filters	1	1	1	2
Air Filter Size (mm)	545 x 234 x 13	795 x 234 x 13	1045 x 243 x 13	725 x 243 x 13
Static to allow for Air Filter (Clean) at Nominal Air Flow (Pa)	21	24	29	30
Static to allow for wet surface coil (Pa)	16	18	13	14
Weight (3/1 row, incl. water) (kg)	25	34	46	67
Nett Weight (excl. water) (kg)	24	32	42	62
Shipping Weight approx. (kg)	25	34	45	65

Notes: -

* With no filters fitted and with a dry coil surface
** Voltage fluctuation limits 200 - 252 V
*** Option Only - Solid state relay control for variable capacity.

Summary of Choices

Size	40 / 60 / 90 / 130
Cooling and Heating Coil Configurations	3 Rows Cooling + 1 Row Heating
	4 Rows Cooling
	4 Rows Cooling + Electric Heating
Fan Run On Timer	EC motor driver has in built run on timer for all models 40sec. approx. and selectable to 120sec. when fitting electric heating.
Multi S/A Spigot	Optional Extra
Handing	Right (Standard) / Left

IMDL 40Y

Cooling Capacity kW

Entering Air Temperature 23.0°C db 17.0°C wb — **Nominal Air Flow 200 l/s**

Coil Rows	Water Flow l/s	Water Pressure Drop kPa	Entering Water Temperature °C									
			5		6		7		8		9	
			Total	Sensible	Total	Sensible	Total	Sensible	Total	Sensible	Total	Sensible
3	0.12	7.6	3.3	2.3	3.0	2.3	2.8	2.2	2.5	2.1	2.3	2.0
	0.19	17.6	3.9	2.6	3.6	2.5	3.3	2.4	3.0	2.2	2.7	2.1
	0.26	30.0	4.3	2.8	3.9	2.6	3.6	2.5	3.3	2.4	2.9	2.2
4	0.15	6.6	4.2	2.7	3.9	2.6	3.6	2.5	3.3	2.4	3.0	2.2
	0.25	16.3	4.9	3.0	4.6	2.9	4.2	2.7	3.9	2.6	3.5	2.4
	0.35	30.0	5.3	3.2	4.9	3.0	4.6	2.9	4.2	2.7	3.7	2.5

Entering Air Temperature 23.0°C db 17.0°C wb — **Air Flow 170 l/s**

Coil Rows	Water Flow l/s	Water Pressure Drop kPa	Entering Water Temperature °C									
			5		6		7		8		9	
			Total	Sensible	Total	Sensible	Total	Sensible	Total	Sensible	Total	Sensible
3	0.12	7.6	3.1	2.1	2.9	2.0	2.6	1.9	2.4	1.9	2.1	1.8
	0.19	17.6	3.6	2.3	3.3	2.2	3.0	2.1	2.8	2.0	2.5	1.9
	0.26	30.0	3.9	2.5	3.6	2.3	3.3	2.2	3.0	2.1	2.7	2.0
4	0.15	6.6	3.9	2.5	3.6	2.3	3.3	2.2	3.0	2.1	2.7	2.0
	0.25	16.3	4.4	2.7	4.1	2.6	3.8	2.4	3.5	2.3	3.1	2.2
	0.35	30.0	4.7	2.8	4.4	2.7	4.1	2.5	3.7	2.4	3.3	2.3

Entering Air Temperature 23.0°C db 17.0°C wb — **Air Flow 150 l/s**

Coil Rows	Water Flow l/s	Water Pressure Drop kPa	Entering Water Temperature °C									
			5		6		7		8		9	
			Total	Sensible	Total	Sensible	Total	Sensible	Total	Sensible	Total	Sensible
3	0.12	7.6	2.9	1.9	2.7	1.9	2.5	1.8	2.2	1.7	2.0	1.6
	0.19	17.6	3.3	2.1	3.1	2.0	2.8	1.9	2.5	1.8	2.3	1.7
	0.26	30.0	3.5	2.2	3.3	2.1	3.0	2.0	2.7	1.9	2.5	1.8
4	0.15	6.6	3.6	2.2	3.3	2.1	3.1	2.0	2.8	1.9	2.5	1.8
	0.25	16.3	4.0	2.4	3.7	2.3	3.4	2.2	3.1	2.0	2.8	1.9
	0.35	30.0	4.2	2.5	3.9	2.4	3.6	2.2	3.3	2.1	3.0	2.0

Heating Capacity

Electric Heating Option 1.5 kW

Entering Air Temperature 21.0°C db — **Nominal Air Flow 200 l/s**

Coil Rows	Water Flow l/s	Water Pressure Drop kPa	Entering Water Temperature °C								
			40	45	50	55	60	65	70	75	80
1	0.04	6.4	1.3	1.6	2.0	2.3	2.6	3.0	3.3	3.7	4.0
	0.07	17.4	1.5	1.9	2.3	2.7	3.1	3.5	3.8	4.2	4.6
	0.10	33.0	1.6	2.0	2.4	2.9	3.3	3.7	4.1	4.5	5.0

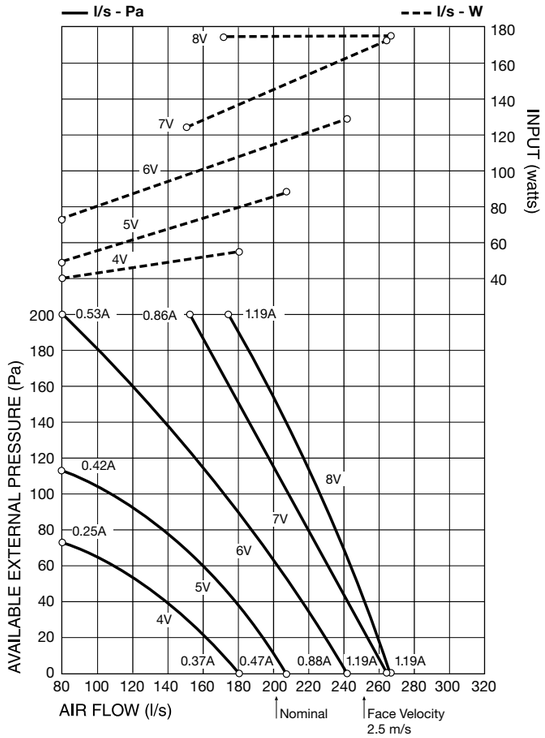
Entering Air Temperature 21.0°C db — **Air Flow 170 l/s**

Coil Rows	Water Flow l/s	Water Pressure Drop kPa	Entering Water Temperature °C								
			40	45	50	55	60	65	70	75	80
1	0.04	6.4	1.2	1.5	1.8	2.1	2.5	2.8	3.1	3.4	3.7
	0.07	17.4	1.4	1.7	2.1	2.5	2.8	3.2	3.6	3.9	4.3
	0.10	33.0	1.5	1.9	2.3	2.6	3.0	3.4	3.8	4.2	4.6

Entering Air Temperature 21.0°C db — **Air Flow 150 l/s**

Coil Rows	Water Flow l/s	Water Pressure Drop kPa	Entering Water Temperature °C								
			40	45	50	55	60	65	70	75	80
1	0.04	6.4	1.2	1.5	1.8	2.1	2.4	2.6	2.9	3.2	3.5
	0.07	17.4	1.3	1.6	2.0	2.3	2.7	3.0	3.4	3.7	4.0
	0.10	33.0	1.4	1.7	2.1	2.5	2.8	3.2	3.6	3.9	4.3

IMDL 40Y Air Handling



Note: Airflows are for dry coil. Reduce airflow by 10% in high moisture removal conditions.

Air flows given are for IMDL-Y units without filter installed.

Refer page 18 for filter pressure drop.

Sound Levels

Test Conditions: BS 848 PT2 1985
Installation Type A (free inlet and outlet)
Direct method of measurement (reverberant room)
Measured in decibels re 1 picowatt

Return Air Inlet + Case Breakout

Vdc	Sound Power SWL dB(A)	Octave Band Frequency Hz					
		125	250	500	1K	2K	4K
		Sound Power Levels (SWL) dB					
10	66	62	67	64	59	57	55
7	66	63	67	63	59	57	55
6*	63	62	65	61	57	54	52
5	60	58	61	57	55	50	48
4	56	55	59	54	51	46	43
3	50	49	52	49	45	40	35
2.2	44	48	47	43	38	32	26

Supply Air Outlet

Vdc	Sound Power SWL dB(A)	Octave Band Frequency Hz					
		125	250	500	1K	2K	4K
		Sound Power Levels (SWL) dB					
10	68	67	66	64	62	63	57
7	68	66	65	64	62	63	56
6*	65	64	63	61	60	60	54
5	62	61	59	57	57	56	49
4	58	57	56	54	53	52	45
3	52	53	51	48	48	46	37
2.2	46	50	48	43	41	39	30

*Nominal

IMDL 60Y

Cooling Capacity kW

Entering Air Temperature 23.0°C db 17.0°C wb — **Nominal Air Flow 330 l/s**

Coil Rows	Water Flow l/s	Water Pressure Drop kPa	Entering Water Temperature °C									
			5		6		7		8		9	
			Total	Sensible	Total	Sensible	Total	Sensible	Total	Sensible	Total	Sensible
3	0.11	8.2	4.4	3.4	4.0	3.3	3.7	3.2	3.3	3.1	3.0	2.9
	0.17	18.1	5.4	3.8	5.0	3.7	4.6	3.5	4.1	3.3	3.7	3.2
	0.23	30.6	6.0	4.1	5.6	3.9	5.1	3.7	4.6	3.5	4.1	3.4
4	0.15	8.5	5.9	4.0	5.4	3.9	5.0	3.7	4.6	3.5	4.1	3.4
	0.22	17.1	7.0	4.5	6.4	4.2	5.9	4.0	5.4	3.8	4.9	3.6
	0.30	29.4	7.7	4.8	7.1	4.5	6.6	4.3	6.0	4.1	5.4	3.8

Entering Air Temperature 23.0°C db 17.0°C wb — **Air Flow 300 l/s**

Coil Rows	Water Flow l/s	Water Pressure Drop kPa	Entering Water Temperature °C									
			5		6		7		8		9	
			Total	Sensible	Total	Sensible	Total	Sensible	Total	Sensible	Total	Sensible
3	0.11	8.2	4.2	3.2	3.9	3.1	3.6	3.0	3.2	2.9	2.9	2.8
	0.17	18.1	5.2	3.6	4.8	3.4	4.4	3.3	4.0	3.1	3.5	3.0
	0.23	30.6	5.7	3.8	5.3	3.7	4.9	3.5	4.4	3.3	3.9	3.1
4	0.15	8.5	5.6	3.8	5.2	3.6	4.8	3.5	4.4	3.3	4.0	3.1
	0.22	17.1	6.6	4.2	6.1	4.0	5.6	3.8	5.1	3.6	4.6	3.4
	0.30	29.4	7.2	4.4	6.7	4.2	6.2	4.0	5.7	3.8	5.1	3.6

Entering Air Temperature 23.0°C db 17.0°C wb — **Air Flow 250 l/s**

Coil Rows	Water Flow l/s	Water Pressure Drop kPa	Entering Water Temperature °C									
			5		6		7		8		9	
			Total	Sensible	Total	Sensible	Total	Sensible	Total	Sensible	Total	Sensible
3	0.11	8.2	4.0	2.9	3.7	2.8	3.4	2.7	3.1	2.6	2.8	2.5
	0.17	18.1	4.8	3.3	4.5	3.1	4.0	3.0	3.7	2.8	3.3	2.7
	0.23	30.6	5.3	3.5	4.9	3.3	4.5	3.1	4.1	3.0	3.6	2.8
4	0.15	8.5	5.3	3.4	4.9	3.3	4.5	3.1	4.1	3.0	3.7	2.8
	0.22	17.1	6.0	3.8	5.6	3.6	5.2	3.4	4.7	3.2	4.3	3.0
	0.30	29.4	6.5	4.0	6.1	3.8	5.6	3.6	5.1	3.4	4.6	3.2

Heating Capacity

Entering Air Temperature 21.0°C db — **Electric Heating Option 2.0 kW** — **Nominal Air Flow 330 l/s**

Coil Rows	Water Flow l/s	Water Pressure Drop kPa	Entering Water Temperature °C								
			40	45	50	55	60	65	70	75	80
1	0.04	8.1	1.8	2.3	2.8	3.2	3.7	4.2	4.7	5.2	5.7
	0.06	16.8	2.1	2.6	3.2	3.7	4.3	4.8	5.3	5.9	6.4
	0.08	28.1	2.2	2.8	3.4	4.0	4.6	5.2	5.7	6.3	6.9

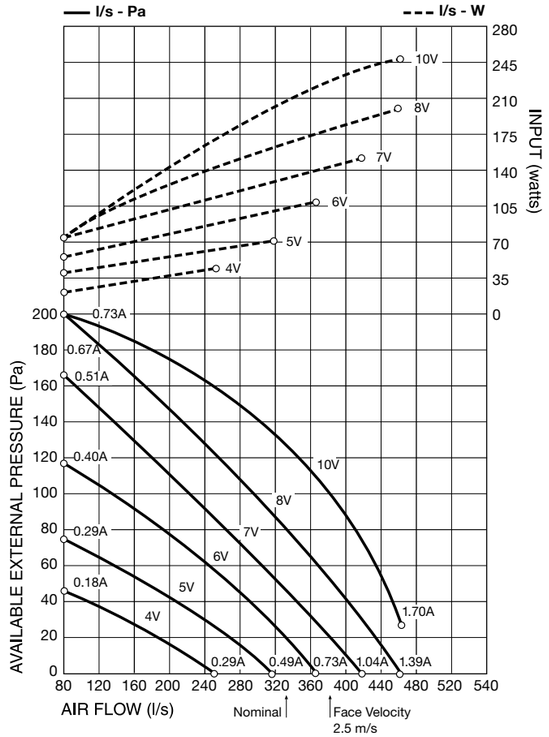
Entering Air Temperature 21.0°C db — **Air Flow 300 l/s**

Coil Rows	Water Flow l/s	Water Pressure Drop kPa	Entering Water Temperature °C								
			40	45	50	55	60	65	70	75	80
1	0.04	8.1	1.7	2.2	2.7	3.1	3.6	4.1	4.5	5.0	5.4
	0.06	16.8	2.0	2.5	3.0	3.6	4.1	4.6	5.1	5.7	6.2
	0.08	28.1	2.2	2.7	3.3	3.9	4.4	5.0	5.6	6.1	6.7

Entering Air Temperature 21.0°C db — **Air Flow 250 l/s**

Coil Rows	Water Flow l/s	Water Pressure Drop kPa	Entering Water Temperature °C								
			40	45	50	55	60	65	70	75	80
1	0.04	8.1	1.6	2.1	2.5	2.9	3.4	3.8	4.2	4.7	5.1
	0.06	16.8	1.9	2.4	2.8	3.3	3.8	4.3	4.8	5.3	5.8
	0.08	28.1	2.0	2.5	3.1	3.6	4.1	4.6	5.1	5.7	6.2

IMDL 60Y Air Handling



Note: Airflows are for dry coil. Reduce airflow by 10% in high moisture removal conditions.

Air flows given are for IMDL-Y units without filter installed.

Refer page 18 for filter pressure drop.

Test Conditions: BS 848 PT2 1985
Installation Type A (free inlet and outlet)
Direct method of measurement (reverberant room)
Measured in decibels re 1 picowatt

Sound Levels

Return Air Inlet + Case Breakout

Vdc	Sound Power SWL dB(A)	Octave Band Frequency Hz					
		125	250	500	1K	2K	4K
		Sound Power Levels (SWL) dB					
10	65	67	68	63	59	56	52
8	63	64	66	61	58	54	49
7*	61	62	63	59	55	51	47
6	58	60	61	56	52	48	43
5	54	56	56	53	48	44	38
4	50	52	53	50	43	39	31
3	46	49	50	45	39	35	27
2.2	44	51	48	42	37	31	24

Supply Air Outlet

Vdc	Sound Power SWL dB(A)	Octave Band Frequency Hz					
		125	250	500	1K	2K	4K
		Sound Power Levels (SWL) dB					
10	67	67	64	64	62	59	54
8	64	65	62	61	60	57	51
7*	62	63	60	59	57	54	48
6	58	60	57	56	54	51	45
5	56	57	54	54	51	47	40
4	51	53	50	50	45	43	33
3	45	48	49	43	38	35	25
2.2	44	53	46	41	36	33	25

*Nominal

IMDL 90Y

Cooling Capacity kW

Entering Air Temperature 23.0°C db 17.0°C wb — **Nominal Air Flow 400 l/s**

Coil Rows	Water Flow l/s	Water Pressure Drop kPa	Entering Water Temperature °C									
			5		6		7		8		9	
			Total	Sensible	Total	Sensible	Total	Sensible	Total	Sensible	Total	Sensible
3	0.25	9.9	7.0	5.2	6.5	4.9	6.0	4.7	5.4	4.5	4.9	4.3
	0.35	18.1	7.9	5.5	7.2	5.2	6.6	5.0	6.0	4.7	5.4	4.5
	0.45	28.5	8.4	5.7	7.8	5.5	7.2	5.2	6.6	5.0	5.9	4.7
4	0.30	8.2	8.3	5.9	7.7	5.6	7.0	5.4	6.4	5.1	5.8	4.9
	0.45	16.7	9.4	6.4	8.6	6.1	8.0	5.8	7.2	5.4	6.5	5.1
	0.60	28.5	9.9	6.7	9.2	6.3	8.5	6.0	7.7	5.7	5.9	5.3

Entering Air Temperature 23.0°C db 17.0°C wb — **Air Flow 350 l/s**

Coil Rows	Water Flow l/s	Water Pressure Drop kPa	Entering Water Temperature °C									
			5		6		7		8		9	
			Total	Sensible	Total	Sensible	Total	Sensible	Total	Sensible	Total	Sensible
3	0.25	9.9	6.6	4.7	6.1	4.5	5.6	4.3	5.1	4.1	4.6	3.9
	0.35	18.1	7.4	5.1	6.8	4.8	6.3	4.6	5.6	4.3	5.1	4.1
	0.45	28.5	7.9	5.3	7.3	5.0	6.7	4.8	6.0	4.5	5.4	4.2
4	0.30	8.2	7.8	5.4	7.2	5.2	6.7	5.0	6.0	4.7	5.4	4.4
	0.45	16.7	8.6	5.8	8.0	5.5	7.3	5.2	6.7	5.0	6.0	4.7
	0.60	28.5	9.2	6.1	8.5	5.8	7.8	5.4	7.1	5.1	6.4	4.8

Entering Air Temperature 23.0°C db 17.0°C wb — **Air Flow 290 l/s**

Coil Rows	Water Flow l/s	Water Pressure Drop kPa	Entering Water Temperature °C									
			5		6		7		8		9	
			Total	Sensible	Total	Sensible	Total	Sensible	Total	Sensible	Total	Sensible
3	0.25	9.9	6.0	4.2	5.6	4.0	5.1	3.8	4.7	3.6	4.2	3.4
	0.35	18.1	6.6	4.5	6.1	4.2	5.6	4.0	5.1	3.8	4.6	3.6
	0.45	28.5	7.0	4.6	6.5	4.4	5.9	4.2	5.4	3.9	4.9	3.7
4	0.30	8.2	7.1	4.8	6.5	4.6	6.0	4.3	5.5	4.1	4.9	3.8
	0.45	16.7	7.7	5.1	7.1	4.8	6.5	4.6	5.9	4.3	5.4	4.1
	0.60	28.5	8.1	5.3	7.5	5.0	6.9	4.7	6.3	4.4	5.6	4.2

Heating Capacity

Electric Heating Option 3.0 kW

Entering Air Temperature 21.0°C db — **Nominal Air Flow 400 l/s**

Coil Rows	Water Flow l/s	Water Pressure Drop kPa	Entering Water Temperature °C								
			40	45	50	55	60	65	70	75	80
1	0.10	10.3	3.3	4.2	5.0	5.9	6.8	7.7	8.6	9.4	10.3
	0.14	18.8	3.6	4.5	5.5	6.5	7.4	8.4	9.3	10.3	11.2
	0.18	29.4	3.8	4.7	5.7	6.7	7.6	8.6	9.6	10.6	11.6

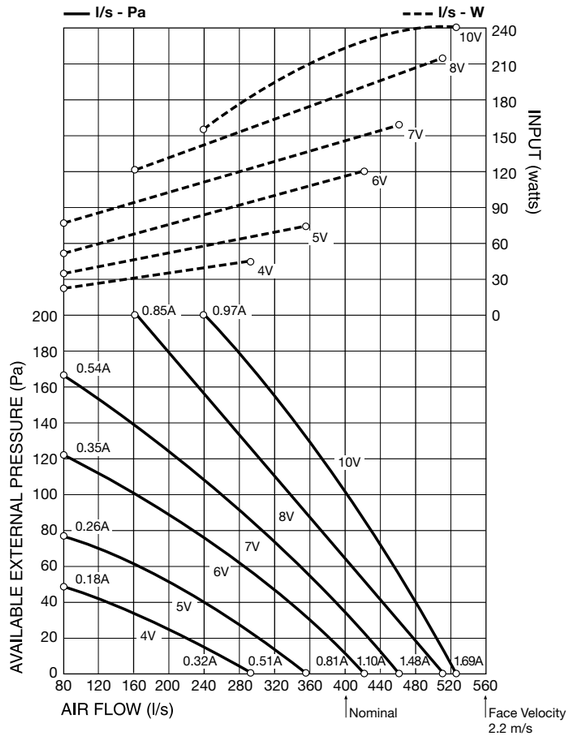
Entering Air Temperature 21.0°C db — **Air Flow 350 l/s**

Coil Rows	Water Flow l/s	Water Pressure Drop kPa	Entering Water Temperature °C								
			40	45	50	55	60	65	70	75	80
1	0.10	10.3	3.1	4.0	4.8	5.6	6.4	7.3	8.1	8.9	9.7
	0.14	18.8	3.4	4.3	5.1	6.0	6.9	7.8	8.7	9.6	10.4
	0.18	29.4	3.6	4.5	5.4	6.4	7.3	8.2	9.2	10.1	11.0

Entering Air Temperature 21.0°C db — **Air Flow 290 l/s**

Coil Rows	Water Flow l/s	Water Pressure Drop kPa	Entering Water Temperature °C								
			40	45	50	55	60	65	70	75	80
1	0.10	10.3	2.8	3.6	4.4	5.1	5.9	6.6	7.4	8.1	8.9
	0.14	18.8	3.1	3.9	4.7	5.5	6.3	7.1	7.9	8.7	9.5
	0.18	29.4	3.2	4.1	4.9	5.7	6.6	7.4	8.8	9.1	10.0

IMDL 90Y Air Handling



Note: Airflows are for dry coil. Reduce airflow by 10% in high moisture removal conditions.

Air flows given are for IMDL-Y units without filter installed.

Refer page 18 for filter pressure drop.

Sound Levels

Test Conditions: BS 848 PT2 1985
Installation Type A (free inlet and outlet)
Direct method of measurement (reverberant room)
Measured in decibels re 1 picowatt

Return Air Inlet + Case Breakout

Vdc	Sound Power SWL dB(A)	Octave Band Frequency Hz					
		125	250	500	1K	2K	4K
		Sound Power Levels (SWL) dB					
10*	65	67	68	63	59	56	52
8	63	64	66	61	58	54	49
7	61	62	63	59	55	51	47
6	58	60	61	56	52	48	43
5	54	56	56	53	48	44	38
4	50	52	53	50	43	39	31
3	46	49	50	45	39	35	27
2.2	44	51	48	42	37	31	24

Supply Air Outlet

Vdc	Sound Power SWL dB(A)	Octave Band Frequency Hz					
		125	250	500	1K	2K	4K
		Sound Power Levels (SWL) dB					
10*	67	67	64	64	62	59	54
8	64	65	62	61	60	57	51
7	62	63	60	59	57	54	48
6	58	60	57	56	54	51	45
5	56	57	54	54	51	47	40
4	51	53	50	50	45	43	33
3	45	48	49	43	38	35	25
2.2	44	53	46	41	36	33	25

*Nominal

IMDL 130Y

Cooling Capacity kW

Entering Air Temperature 23.0°C db 17.0°C wb — **Nominal Air Flow 650 l/s**

Coil Rows	Water Flow l/s	Water Pressure Drop kPa	Entering Water Temperature °C									
			5		6		7		8		9	
			Total	Sensible	Total	Sensible	Total	Sensible	Total	Sensible	Total	Sensible
3	0.20	8.5	8.5	7.1	7.9	6.9	7.2	6.6	6.7	6.4	6.1	6.1
	0.30	17.6	10.3	7.8	9.5	7.5	8.8	7.2	8.0	6.9	7.2	6.6
	0.40	29.5	11.6	8.4	10.7	8.0	9.9	7.7	9.0	7.3	8.1	6.9
4	0.30	10.5	11.4	8.7	10.6	8.3	9.7	8.0	8.9	7.6	8.0	7.3
	0.40	17.6	12.9	9.3	12.0	8.9	10.9	8.5	9.9	8.1	8.9	7.7
	0.50	26.3	13.9	9.8	12.8	9.3	11.8	8.9	10.7	8.5	9.7	8.0

Entering Air Temperature 23.0°C db 17.0°C wb — **Air Flow 525 l/s**

Coil Rows	Water Flow l/s	Water Pressure Drop kPa	Entering Water Temperature °C									
			5		6		7		8		9	
			Total	Sensible	Total	Sensible	Total	Sensible	Total	Sensible	Total	Sensible
3	0.20	8.5	8.0	6.3	7.4	6.0	6.8	5.8	6.2	5.6	5.6	5.3
	0.30	17.6	9.5	6.9	8.7	6.6	8.0	6.3	7.3	6.0	6.6	5.7
	0.40	29.5	10.5	7.3	9.7	7.0	8.9	6.7	8.1	6.3	7.4	6.0
4	0.30	10.5	10.5	7.6	9.7	7.3	8.9	7.0	8.2	6.7	7.4	6.3
	0.40	17.6	11.6	8.1	10.8	7.7	10.0	7.4	9.0	7.0	8.1	6.6
	0.50	26.3	12.4	8.5	11.5	8.1	10.5	7.6	9.6	7.2	8.6	6.8

Entering Air Temperature 23.0°C db 17.0°C wb — **Air Flow 425 l/s**

Coil Rows	Water Flow l/s	Water Pressure Drop kPa	Entering Water Temperature °C									
			5		6		7		8		9	
			Total	Sensible	Total	Sensible	Total	Sensible	Total	Sensible	Total	Sensible
3	0.20	8.5	7.4	5.6	6.9	5.3	6.3	5.1	5.8	4.8	5.2	4.6
	0.30	17.6	8.6	6.1	8.0	5.8	7.3	5.5	6.6	5.2	6.0	5.0
	0.40	29.5	9.4	6.4	8.7	6.1	8.0	5.8	7.3	5.5	6.5	5.2
4	0.30	10.5	9.5	6.7	8.8	6.4	8.1	6.1	7.4	5.7	6.7	5.4
	0.40	17.6	10.4	7.0	9.6	6.7	8.9	6.4	8.0	6.0	7.3	5.7
	0.50	26.3	10.9	7.3	10.1	6.9	9.3	6.6	8.5	6.2	7.7	5.9

Heating Capacity

Electric Heating Option 4.0 kW

Entering Air Temperature 21.0°C db — **Nominal Air Flow 650 l/s**

Coil Rows	Water Flow l/s	Water Pressure Drop kPa	Entering Water Temperature °C								
			40	45	50	55	60	65	70	75	80
1	0.08	9.0	4.1	5.2	6.3	7.3	8.4	9.5	10.6	11.7	12.7
	0.12	18.4	4.8	6.1	7.4	8.7	9.9	11.2	12.5	13.8	15.0
	0.16	30.8	5.3	6.7	8.1	9.5	10.9	13.3	13.7	15.1	16.5

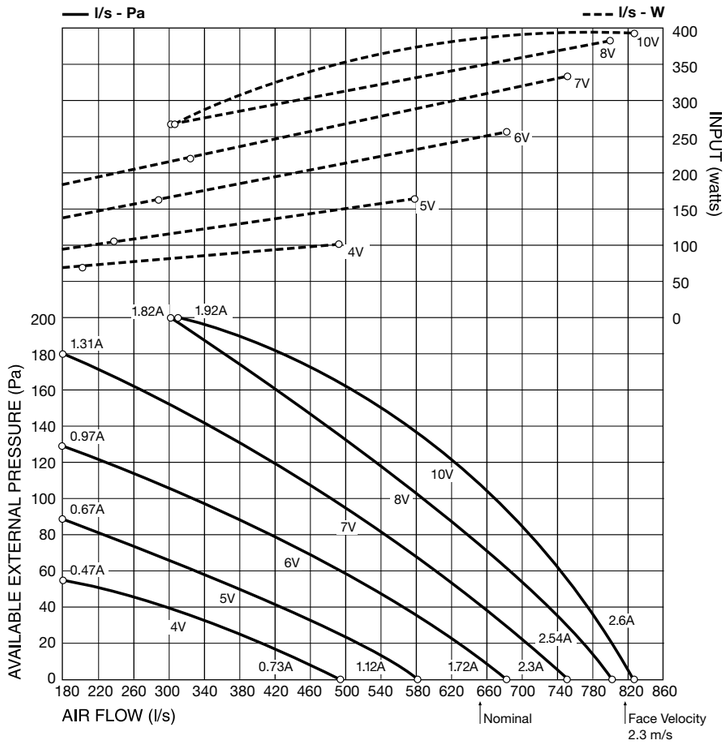
Entering Air Temperature 21.0°C db — **Air Flow 525 l/s**

Coil Rows	Water Flow l/s	Water Pressure Drop kPa	Entering Water Temperature °C								
			40	45	50	55	60	65	70	75	80
1	0.08	9.0	3.8	4.9	5.8	6.9	7.9	8.9	9.9	10.9	11.9
	0.12	18.4	4.4	5.6	6.8	7.9	9.1	10.2	11.4	12.6	13.7
	0.16	30.8	4.8	6.1	7.3	8.6	9.9	11.2	12.4	13.7	15.0

Entering Air Temperature 21.0°C db — **Air Flow 425 l/s**

Coil Rows	Water Flow l/s	Water Pressure Drop kPa	Entering Water Temperature °C								
			40	45	50	55	60	65	70	75	80
1	0.08	9.0	3.5	4.5	5.4	6.3	7.3	8.2	9.1	10.1	11.0
	0.12	18.4	4.0	5.1	6.2	7.2	8.3	9.4	10.4	11.5	12.5
	0.16	30.8	4.3	5.4	6.6	7.7	8.8	10.0	11.1	12.2	13.4

IMDL 130Y Air Handling



Note: Airflows are for dry coil. Reduce airflow by 10% in high moisture removal conditions.

Air flows given are for IMDL-Y units without filter installed.

Refer page 18 for filter pressure drop.

Test Conditions: BS 848 PT2 1985
Installation Type A (free inlet and outlet)
Direct method of measurement (reverberant room)
Measured in decibels re 1 picowatt

Sound Levels

Return Air Inlet + Case Breakout

Vdc	Sound Power SWL dB(A)	Octave Band Frequency Hz					
		125	250	500	1K	2K	4K
		Sound Power Levels (SWL) dB					
10	68	67	70	66	62	60	57
8*	67	66	69	65	60	59	56
7	67	66	69	64	60	58	56
6	64	63	66	61	57	55	53
5	61	60	63	58	55	52	50
4	57	57	60	55	51	48	45
3	52	52	54	50	46	42	38
2.2	46	50	50	44	38	34	29

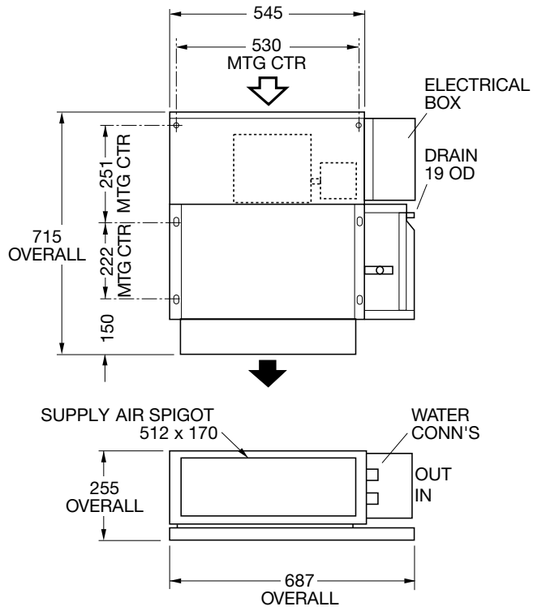
Supply Air Outlet

Vdc	Sound Power SWL dB(A)	Octave Band Frequency Hz					
		125	250	500	1K	2K	4K
		Sound Power Levels (SWL) dB					
10	71	69	68	66	66	65	58
8*	70	68	66	66	65	64	58
7	69	67	66	65	64	64	57
6	67	64	63	62	62	61	54
5	64	61	60	59	59	58	50
4	60	58	57	55	55	54	46
3	54	58	53	50	49	48	38
2.2	48	52	50	45	43	40	30

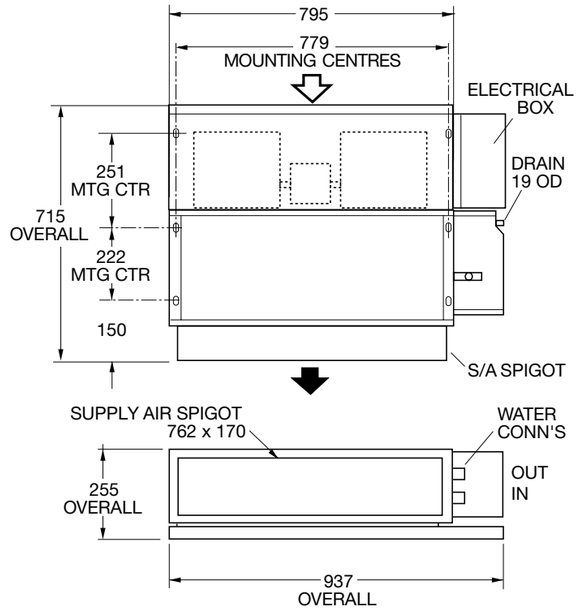
*Nominal

DIMENSIONS (mm) - Right hand models shown (not to scale)

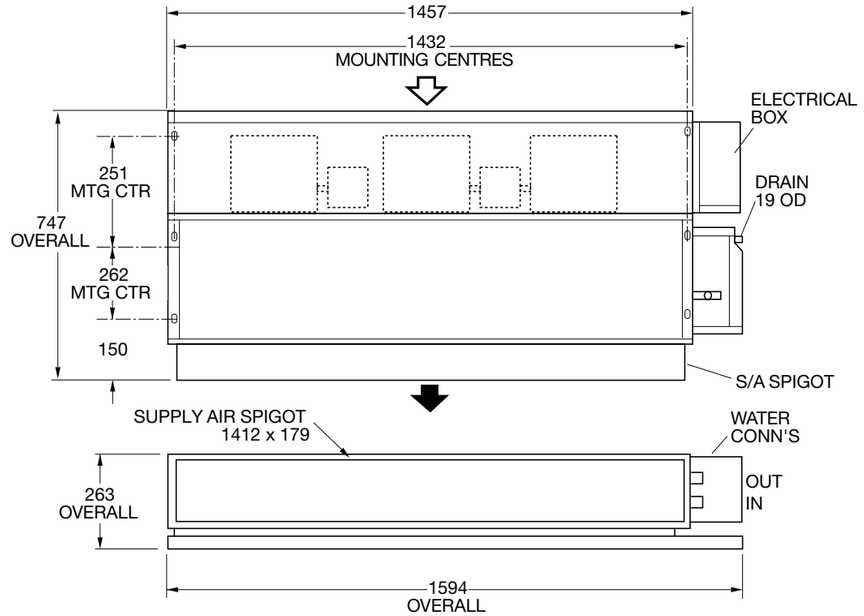
IMDL 40Y



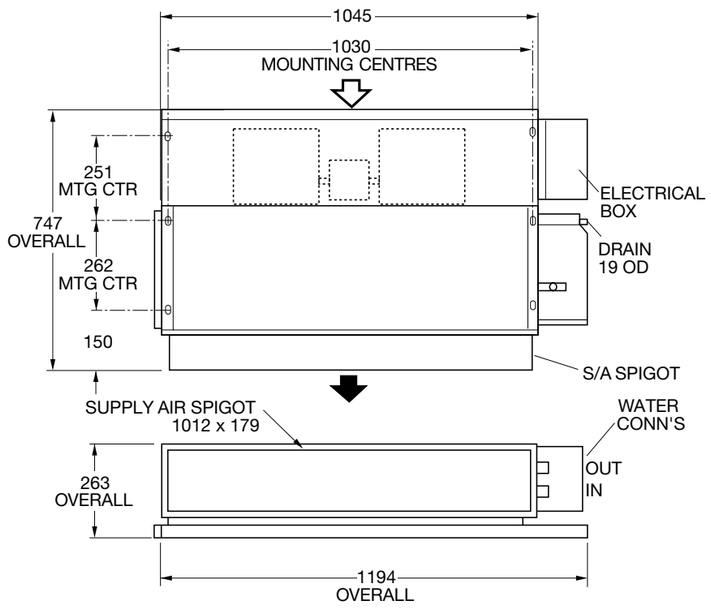
IMDL 60Y



IMDL 130Y

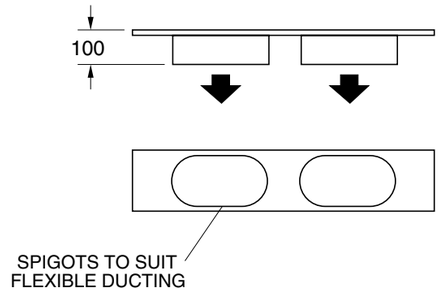


IMDL 90Y



Water Connections		
IMDL	**Cooling**	**Heating**
40Y	20 BSP Male (3/4")	13 BSP Male (1/2")
60Y	20 BSP Male (3/4")	13 BSP Male (1/2")
90Y	25 BSP Male (1")	13 BSP Male (1/2")
130Y	25 BSP Male (1")	13 BSP Male (1/2")

OPTIONAL SUPPLY AIR SPIGOTS



Model	Spigots
IMDL 40Y	200 dia (x2)
IMDL 60Y	250 dia (x2)
IMDL 90Y	250 dia (x3)
IMDL 130Y	250 dia (x4)

F ALC DIP Switch Settings

FACTORY SETTING

OFF		OFF ON	ON
Speed Setting	1		4.55V Max. Speed
	2		
	3		
Speed Range	4		2V Speed Range (Low = 2.55V)
	5		
Without Electric Heat (40s Fan run on)	6		With Electric Heat (120s Fan run on)
High Speed Range	7		Low Speed Range
LEAVE IN THIS POSITION	8		DO NOT USE

F Speed Setting and Range DIP Sw. options

Speed Setting			MAX Vdc		Speed Range		Vspan	
1	2	3	7		4	5	7	
			OFF	ON			OFF	ON
0	0	0	6.7	3	0	0	2	2
1	0	0	7.3	3.4	1	0	3	2.75
0	1	0	8	3.8	0	1	4.5	3.5
1	1	0	8.3	4.2	1	1	6	4.5
0	0	1	8.7	4.55				
1	0	1	9	4.95				
0	1	1	9.3	5.35				
1	1	1	10	5.75				

F NOTE: Unless off, minimum active voltage out limited to 2.2V DC when DIP Sw. 7 off, and to 1.2V DC when DIP Sw. 7 on.

Speed Setting (DIP Sw. 1 to 3) sets the max. speed/voltage (HIGH).
Speed Range (DIP Sw. 4 & 5) sets the difference between the max. speed and the min. speed/voltage (LOW).
With the 3 speed control the medium speed is always halfway between HIGH and LOW.

F

NOTE: Do NOT connect BOTH 3 speed L/M/H switch and also 0-10V (DC) signal.
Only ONE control method may be connected at a time.
If in doubt ask!

ALC	0-10V Limit Controller
FAN1	Impeller Assembly 146 Diameter
FAN2	Impeller Assembly 146 Diameter
PR	Power Relay

230/1/50 Supply

Client Protection & Isolation Switch

Client Supplied
1. On/Off Control
OR
2. Timeclock

On/Off

L1, A, N, ⏚, PR, ETH1, ETH2

W1: Blue, Brown, Green → N, L, E → FAN1: Red, White, Yellow, Blue

W2: Blue, Brown, Green → N, L, E → FAN2: Red, White, Yellow, Blue

FAN2 IN IMDL130Y ONLY

ALC

DIP Switch
Refer table for settings

INPUTS: Com, L, M, H, +V, 0V, In

OUTPUT: +V, 0V, Out

Alternative 3 speed switch: LOW, MED, HIGH → L, M, H, COM (TB5, TB3)

PR

0-10V (DC) Signal from BMS or other controller: 0V, 0-10V, TACHO FAN1, TACHO FAN2 → 0V, 0-10V, TACHO1, TACHO2 (TB4)

PR

REV	MODIFICATION	DATE	ECN	APVD
F	Removed third contact for PR between fan and L1; ALC software update - revise DIP Switch settings and notes	27-02-18	N4069	L.O.L.

Model	IMDL40Y	IMDL60Y	IMDL90Y	IMDL130Y
Fan full load current (FLA)	1.4A	1.8A	1.8A	3.2A

©temperzone Ltd 2015 temperzone | DO NOT SCALE - ASK | Client Wiring

Drawn: M.A.H. | Date: 18/06/2015 | Apprvd: SR

Title: IMDL 40Y-130Y Electrical Wiring Schematic

Drawing No: 291-000-896 SHEET 1 OF 1 | Rev: F

G ALC DIP Switch Settings

FACTORY SETTING

OFF		OFF ON	ON
Speed Setting	1		4.55V Max. Speed
	2		
	3		
Speed Range	4		2V Speed Range (Low = 2.55V)
	5		
Without Electric Heat (40s Fan run on)	6		With Electric Heat (120s Fan run on)
High Speed Range	7		Low Speed Range
LEAVE IN THIS POSITION	8		DO NOT USE

G Speed Setting and Range DIP Sw. options

Speed Setting			MAX Vdc		Speed Range		Vspan	
1	2	3	7		4	5	7	
			OFF	ON			OFF	ON
0	0	0	6.7	3	0	0	2	2
1	0	0	7.3	3.4	1	0	3	2.75
0	1	0	8	3.8	0	1	4.5	3.5
1	1	0	8.3	4.2	1	1	6	4.5
0	0	1	8.7	4.55				
1	0	1	9	4.95				
0	1	1	9.3	5.35				
1	1	1	10	5.75				

G NOTE: Unless off, minimum active voltage out limited to 2.2V DC when DIP Sw. 7 off, and to 1.2V DC when DIP Sw. 7 on.

Speed Setting (DIP Sw. 1 to 3) sets the max. speed/voltage (HIGH).
Speed Range (DIP Sw. 4 & 5) sets the difference between the max. speed and the min. speed/voltage (LOW).
With the 3 speed control the medium speed is always halfway between HIGH and LOW.

G

NOTE: Do NOT connect BOTH 3 speed L/M/H switch and also 0-10V (DC) signal.
Only ONE control method may be connected at a time.
If in doubt ask!

ALC	0-10V Limit Controller
EHC	Electric Heat Contactor
FAN1	Impeller Assembly 146 Diameter
FAN2	Impeller Assembly 146 Diameter
FROR	Fan Run On Relay
HE	Heater Element
HST	Auto High Temp. T/Stat
MST	Manual High Temp. T/Stat
PR	Power Relay
SSR	Solid State Relay

230/1/50 Supply

Client Protection & Isolation Switch

1. On/Off Switch
OR
2. Timeclock

On/Off

L1, L1, A, N, N, ⏚, 10, 11, PR, ETH1, ETH2

W1: Blue, Brown, Green → N, L, E → FAN1: Red, White, Yellow, Blue

W2: Blue, Brown, Green → N, L, E → FAN2: Red, White, Yellow, Blue

FAN2 IN IMDL130Y ONLY

FROR (7, 8)

EHC (1, 2, 1, 2)

SSR

HE

ETH1

NOTE: Do **NOT** apply **HEAT** signal if the **FAN** is **NOT** running.

MST (T1, T2) — PR (6, 9) — EHC (A1, A2)

TB2: COOL, COM, HEAT

24V AC

HST (T1, T2) — SSR (3+, -4)

ALC

DIP Switch
Refer table for settings

INPUTS: Com, L, M, H, +V, 0V, In

OUTPUT: +V, 0V, Out

FROR (6, 4)

Alternative 3 speed switch: LOW, MED, HIGH → L, M, H, COM (TB5, TB3)

PR (7, 4)

0-10V (DC) Signal from BMS or other controller: 0V, 0-10V, TACHO FAN1, TACHO FAN2 → 0V, 0-10V, TACHO1, TACHO2 (TB4)

PR (8, 5)

The fan speed can be determined from the TACHO signal (1 pulse/rev)

REV	MODIFICATION	DATE	ECN	APVD
G	Moved third contact for PR to fit in series with MST and EHC1, previously from L1	27-02-18	N4069	L.O.L.
G	ALC software update - revise DIP Switch settings and notes	27-02-18	N4069	L.O.L.

Model	IMDL40Y	IMDL60Y	IMDL90Y	IMDL130Y
Fan full load current (FLA)	1.4A	1.8A	1.8A	3.2A
Electric Heat current	6.5A	8.7A	13.0A	17.4A
Electric Heat kW	1.5	2.0	3.0	4.0

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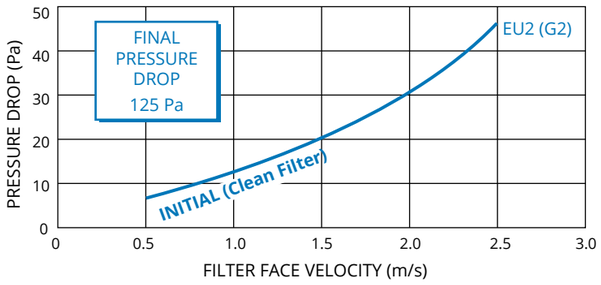
Drawn: M.A.H. | Date: 18/06/2015 | Apprvd: SR

Title: IMDL 40Y-130Y E.Heat c/w SSR Electrical Wiring Schematic

Drawing No: 291-000-898 SHEET 1 OF 1 | Rev: G

Filter Pressure Drop

EU2 rated filter media (standard)



Filter Area :

IMDL 40Y	0.13 m^2
IMDL 60Y	0.19 m^2
IMDL 90Y	0.25 m^2
IMDL 130Y	0.35 m^2

Suggested Specification

Furnish and install temperzone fan coil units as indicated on the schedule.

Base Unit The base unit shall be fabricated of galvanised steel and insulated with closed cell foam on the discharge side of the fan.

Motor Motors shall be electronically commutated (EC) type with the option of stepped speed control or 0-100% variable capacity using a 0-10V dc signal supplied by BMS or sophisticated controller.*

Coils Coils shall be comprised of die formed plate type aluminium fins mechanically bonded to high efficiency seamless inner rifled copper tubing. Water connections shall be male threaded. Cooling coils shall have a manual air vent.

Drain Tray The plastic drain tray shall have an adjustment for inducing a positive drainage with the unit level. The tray shall project under the entire length and width of the coil including headers and return bends. The entire drain tray shall be removable to enable a thorough clean.

Filters Filters shall be removable, 13 mm thick, washable, rated EU2, and mounted in a plastic frame. Filters may be slid out sideways when a return air duct is used.

Insultation The base unit shall be insulated with closed cell foam to ensure no particles are introduced into the air steam. Insulation shall be foil faced and meet fire test standards AS 1530.3 (1989) and BS 476 parts 6 & 7.

Noise Control Standard capacity units shall have a Sound Power Level (SWL) less than 55 dB(A). Return air plenums shall be insulated with open cell foam for noise attenuation.

Electric Heat Electric elements shall be fin-tube constructed of stainless steel and include both a manual and auto reset high temperature cutout switches (as required to meet AS/NZS 3350.2.40 1997) and have variable capacity control via Solid State Relay (SSR).

* The fan/motor may also be set to a single predetermined speed using a potentiometer.

Notes

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

temperzone

REGISTERED AS/NZS **ISO 9001:** 2008 SUPPLIER

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