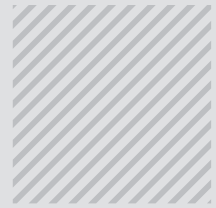




IOM MANUAL

Fan Coil Units



FCSU

OPERATION AND
MAINTENANCE MANUAL

COLAIR.NET.AU



**FAN COIL UNIT
IOM MANUAL**

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Operation and Maintenance Manual

**COLAIR IS COMMITTED TO
PROVIDING COMFORT AND
ASSURANCE WITH A CERTIFIED
AND QUALITY SOLUTION FOR
YOUR NEXT PROJECT OR DESIGN.**

QUALITY AIR MOVEMENT

Low profile double skin constructed fan coil unit with high static EC plug fans and AHRI certified coils for cooling and heating applications.

Colair double skin Fan Coil Units are designed in Malaysia and built for the Australian market by incorporating all Australian standards applicable. Colair Fan Coil Units provides a robust, low noise and customized solution that can achieve the design criteria corresponding to the desired designs. Colair Fan Coil Units are a low profile double skin constructed unit with high static EC plug fans and AHRI certified coils for cooling and heating applications.

Colair units are suitable for a wide range of commercial and industrial applications. The double skin compact robust design is efficient using electronically commutated fans, providing an ideal solution for balancing airflow and acoustically sensitive projects. Hospital and health facilities, shopping centres, tenancy fit-outs, hotels and apartments, office buildings, schools and universities are all benefiting from working with Colair Fan Coil Units for air side solutions.





GENERAL SAFETY GUIDELINES

Colair Fan Coil Units are a custom designed and built product to suit particular project requirements and are supplied in accordance with the approved construction drawings.

This operation manual is intended for use by installing contractor and service personnel working on the Colair units. Failure to comply with any of these requirements could result in serious damage to the equipment, the property in which it is installed, as well as severe personal injury or death to themselves and people at the site. It is expected that the personnel installing or servicing the Colair units are qualified accordingly to enable the individual to perform the assigned tasks properly and safely. It is essential that, prior to performing any task on this equipment, this individual shall have read and understood the on-product labels, this document and any referenced materials. The individual shall also be familiar with and comply with all applicable industry and governmental standards and any regulations pertaining to the task in question.

During installation, operation, maintenance and service of the Colair units, an individual may be exposed to certain components or conditions including, but not limited to: heavy objects, materials under pressure, rotating components and electrical voltage. Each of these items has the potential, if misused or handled improperly, to cause serious damage to property, equipment or personnel. It is the obligation and responsibility of the installer and operating service personnel to identify and recognize these inherent hazards, protect themselves, and proceed safely in completing their tasks.

INTENDED USE

Colair units are manufactured to create a desired indoor air quality, air temperature, humidity or to filter normal or contaminated air. Colair units are suitable for both indoor or outdoor operation, in a temperature range from 0°C to 40°C. Any operation outside of these conditions must be agreed in writing by Colair Pty Ltd.

Any additional changes to the supplied equipment of third party components will be the responsibility of the individual or company whom installed them.

WARRANTY OF THE PRODUCT

Please refer to warranty policy provided.

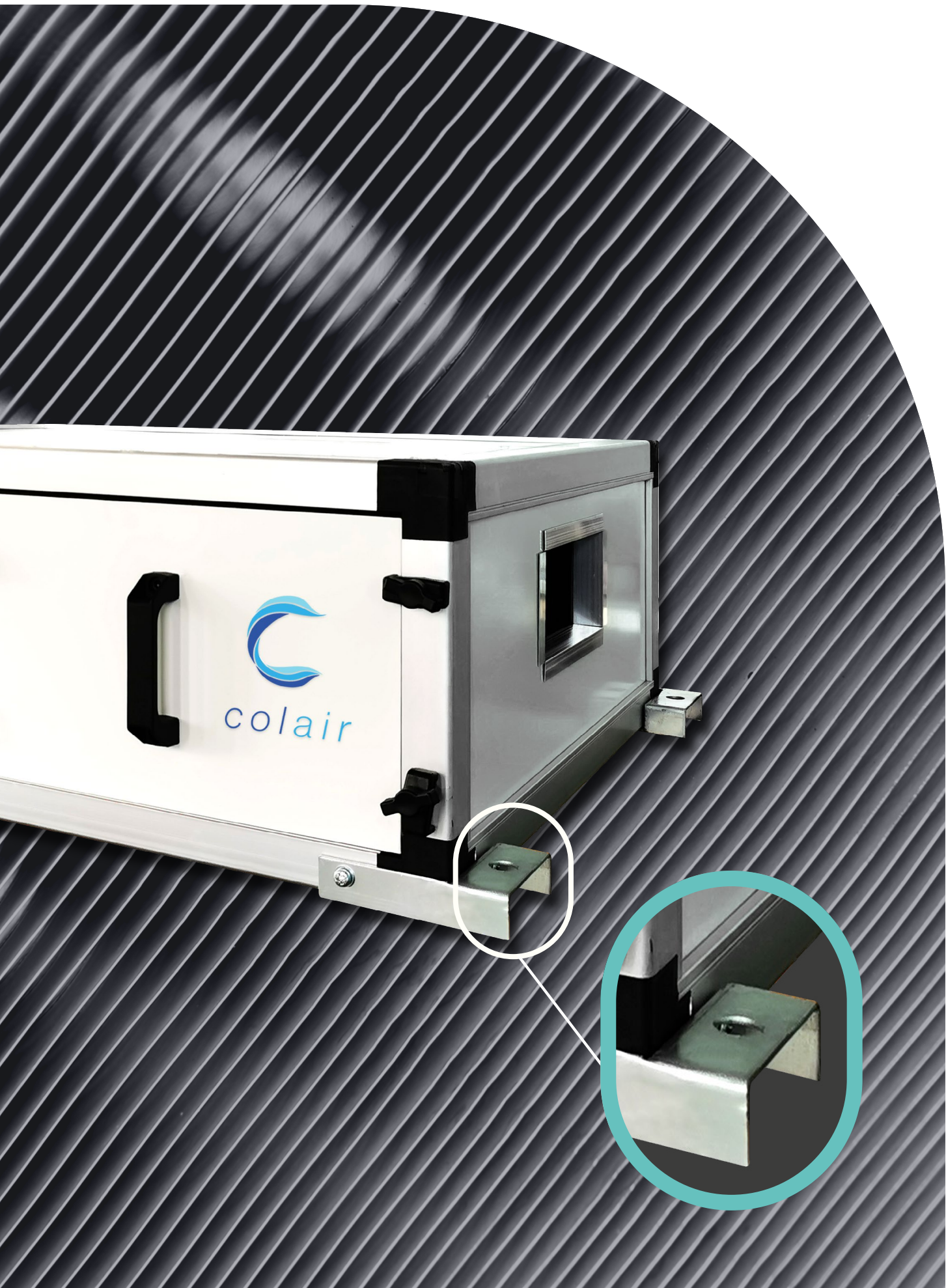
LIFTING THE FAN COIL UNITS

All Colair double skin FCU comes with hanging brackets as a standard feature.

Unit weights and dimensional information are found in the appendices and also the shopfloor drawings approved for standard units. For special dimensioned units, please refer to individual shopfloor drawings for more accurate information. Always adhere to safety codes and guidelines when lifting and mounting the hanging rods. Always ensure the correct size of rods, fasteners and vibration isolator (if any) is used by referencing to the bracket mounting dimension and weights provided.



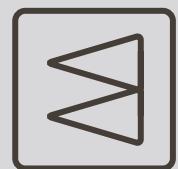
LIFTING POINTS



FILTER SECTION



1. The synthetic fibre filter is disposable with a thickness of 47mm. It needs to be serviced based on operational requirements and may deform over time requiring replacement.
2. A lack of maintenance might cause clogging on the filter and will subsequently reduce the AHU air flow rate.
3. The bag filter is used to filter fine dust that might not be visible thru normal vision. If not serviced regularly, could cause reduction in AHU air flow rate. If not serviced for a period of time, the risk of damage to the integrity of the panel structure of the AHU due to high negative section pressure created by the fan due to clogged filters.
4. Filters should be monitored by an appropriate device to determine when replacement or cleaning is required.
5. The recommended final pressure drop limit shall be 200Pa.

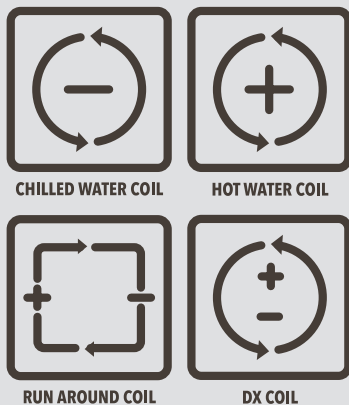


FILTERS

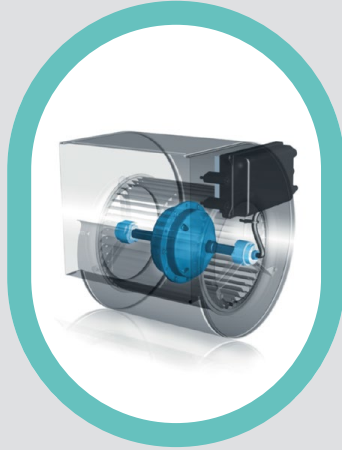
COIL SECTION



1. The coil section will consist of finned tubes heat exchanger (cooling and or heating coils) with a drain pan.
2. The finned tubes heat exchanger is made of aluminum fins mechanically bonded to a matrix of staggered copper tubes. The casing of the heat exchanger is made of thick aluminum sheet. The waterdistribution header to the heat exchanger is from copper material.
3. The finned tubes heat exchanger is a non-rotating component and does not require any part replacement. Should air handled by the AHU be of a corrosive nature the fins may deteriorate over time. Fin protection coating is highly recommended for such operation conditions.
4. Heat exchangers will require periodic cleaning to ensure operating efficiency and longevity. If coils have been treated, periodical inspections of the corrosion applied is recommended during the cleaning process. The corrosion treatment may need to be re-coated depending on the recommendations from the product manufacture applied. Details can be found on the label adjacent to the coil panel.
5. The drain pan is made from SS304 material in accordance with the AS3666. To ensure the best indoor air quality possible, cleanliness of the coil and drain pan is required. Regular maintenance and cleaning will be required.
6. During the regular service visits check obstructions in the drain pipe of the AHU.



FAN SECTION



1. Colair FCUs supplies fans include but are not limited to, direct driven centrifugal DIDW and EC Plug Fans.
2. All wiring connections shall be properly terminated and all conduits shall be sealed properly to ensure no air channelling through the conduit that might cause moisture ingression.
3. The power supply cable connection shall be ensured correct as per the wiring diagram provided in the appendices.
4. For safety and the correct operation the fan should not exceed the recommend rotationspeed.
5. Any works to the fan section shall only be carried out when the unit is not operational
6. and it is safe to enter the environment. Electrical isolation and lock out procedures
7. as per relevant codes of practice.
8. The fan assembly should be checked regularly for its vibration level.



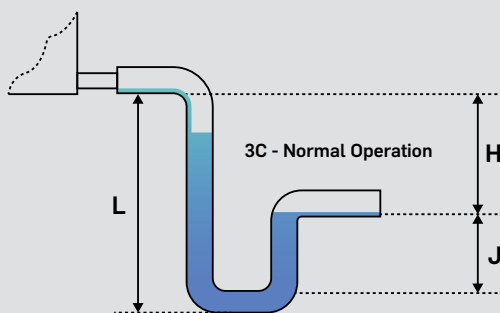
FANS

CONDENSATE DRAIN



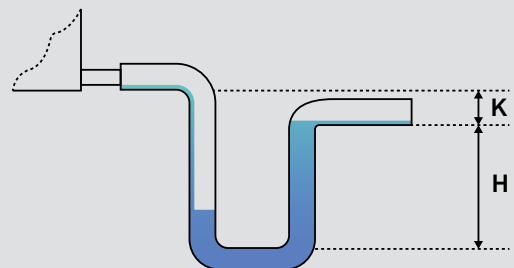
1. Each condenser drain must be equipped with a U-trap.
2. The following conditions are essential for correct operation.
3. At each drain a U-trap must be connected.
4. Several drains may not be connected to one U-trap.
5. The water from the U-trap must run in a funnel.
6. Before starting, fill the U-trap with water.
7. The heights H, J and L can be determined from the maximum negative pressure (p) and maximum pressure (p) in the section of the U-trap or be determined by the information on the technical data sheet as follows:

Negative Plenum Pressure



$H = (1'' \text{ for each } 1'' \text{ of maximum negative static pressure}) + 1''$
 $J = \text{half of } H$
 $L = H + J + \text{Pipe Diameter} + \text{Insulation}$

Positive Plenum Pressure



$K = \text{min. } 1/2''$
 $H = 1/2'' \text{ plus maximum total static pressure}$



UTRAP

OPTIONAL ACCESSORIES

Colair units may be supplied with optional accessories and may require the installing company to ensure all loose items remain with the unit.



UV rated viewing portholes



Magnehelic gauges and service lights



Heavy gauge hinges and lockable door handles



Extended stubs and additional insulation



VCD Actuator



Variable speed drive

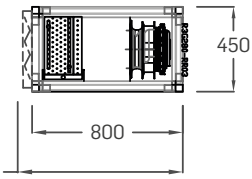


Safety cage

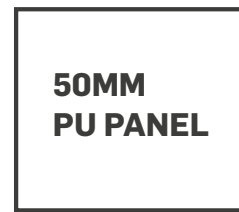
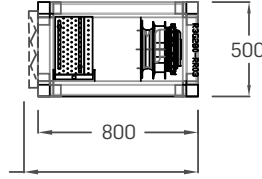


Access door safety switch

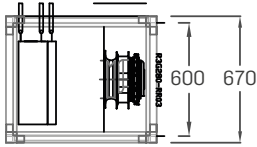
**875
WITH OPTIONAL
50MM FILTER**



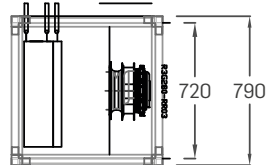
**925
WITH OPTIONAL
50MM FILTER**



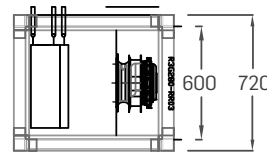
PFU-45-067
Max Flow: 330L/S



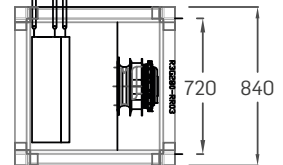
PFU-45-079
Max Flow: 430L/S



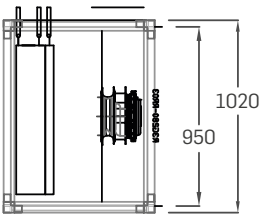
PFU-50-072
Max Flow: 330L/S



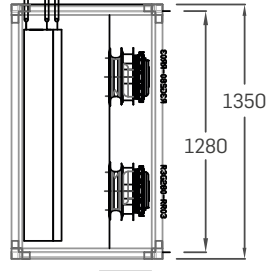
PFU-50-084
Max Flow: 430L/S



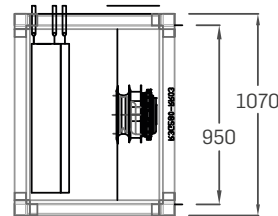
PFU-45-102 (One Fan)
Max Flow: 600L/S



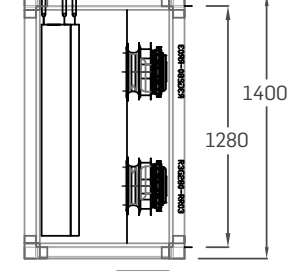
PFU-45-135
Max Flow: 850L/S



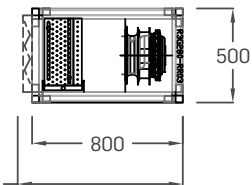
PFU-50-107 (One Fan)
Max Flow: 600L/S



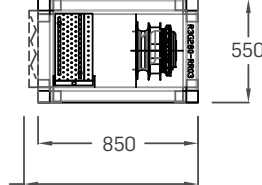
PFU-50-140
Max Flow: 850L/S



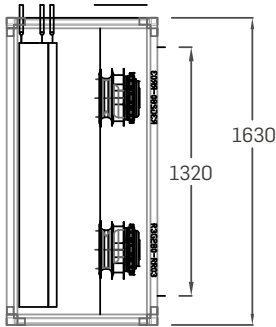
**875
WITH OPTIONAL
50MM FILTER**



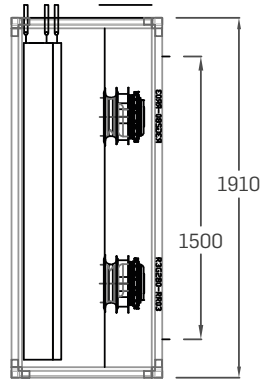
**925
WITH OPTIONAL
50MM FILTER**



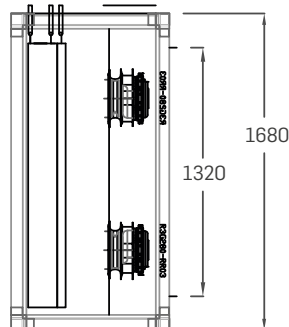
PFU-50-163
Max Flow: 1250L/S



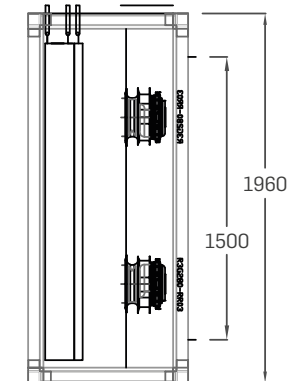
PFU-50-191
Max Flow: 1250L/S



PFU-55-168
Max Flow: 1250L/S



PFU-55-196
Max Flow: 1250L/S



Coil handing can be left or right as required for the installation.

4 ROW TECHNICAL PERFORMANCE

	Air flow rate	l/s	300	380	530	750	1100	1300
	Ext static pressure	Pa	250	250	250	250	250	250

COOLING	Coil rows	#	4	4	4	4	4	4
	Fin/in	#	12	12	12	12	12	12
	Face vel	m/s	2.2	2.2	2.2	2.2	2.2	2.2
	On coil temp (°c)	DB	25.0	25.0	25.0	25.0	25.0	25.0
		WB	18.0	18.0	18.0	18.0	18.0	18.0
	Off coil temp (°c)	DB	12.8	13.1	13.0	13.1	12.7	12.4
		WB	12.0	12.3	12.2	12.3	11.9	11.6
	Capacity (kw)	TOTAL	6.0	7.2	10.3	14.3	22.3	27.5
		SENSIBLE	4.2	5.1	7.2	10.1	15.3	18.6
	Water in	°C	6.0	6.0	6.0	6.0	6.0	6.0
	Water out	°C	12.0	12.0	12.0	12.0	12.0	12.0
	Water flow	l/s	0.24	0.29	0.41	0.57	0.89	1.09
	Water speed	m/s	0.94	0.76	0.81	0.75	1	1.24
Water pd	kPa	30	29	12	11	25	30	
Pipe conn	BSP	1/2	1/2	1	1	1	1-1/4	

HEATING	Coil row	#	1	1	1	1	1	1
	On coil temp (°c)	DB	20.0	20.0	20.0	20.0	20.0	20.0
	Off coil temp (°c)	DB	33.2	33.6	34.1	34.1	34.4	33.7
	Capacity (kw)	TOTAL	4.8	6.3	9.2	12.9	19.5	21.9
	Water in	°C	80	80	80	80	80	80
	Water out	°C	60	60	60	60	60	60
	Water flow	l/s	0.06	0.08	0.11	0.16	0.24	0.27
	Water pd	kPa	2	4	11	11	30	19
	Pipe conn	BSP	1/2	1/2	1/2	1/2	1/2	1/2

FAN	Fan speed control	#	EC	EC	EC	EC	EC	EC
	Drive type	#	DD PLUG	DD PLUG	DD PLUG	DD PLUG	DD PLUG	DD PLUG
	Fan+mtr qty	#	1	1	1	2	2	2
	Fan model	#	280	280	280	2x280	2x280	2x280
	Motor power	W	500	500	500	2x500	2x500	2x500
	Power rating	V/Ph/Hz	220-1-50	220-1-50	220-1-50	220-1-50	220-1-50	220-1-50

DIMENSIONAL	Model	25mm PU PANEL CASING	PFU-45-067	PFU-45-079	PFU-45-102	PFU-45-135	PFU-50-163	PFU-50-191
	Weight (kg)		75	83	98	129	156	173
	Dimension(mm) h-w-l		450-670-800	450-790-800	450-1020-800	450-1350-800	500-1630-800	500-1910-800
	Model	50mm PU PANEL CASING	PBU-50-073	PBU-50-084	PBU-50-107	PBU-50-140	PBU-55-168	PBU-55-196
	Weight (kg)		88	97	114	148	178	198
	Dimension(mm) h-w-l		500-730-800	500-840-800	500-1070-800	500-1400-800	550-1680-800	550-1960-800

6 ROW TECHNICAL PERFORMANCE

	Air flow rate	l/s	300	380	530	750	1100	1300
	Ext static pressure	Pa	250	250	250	250	250	250

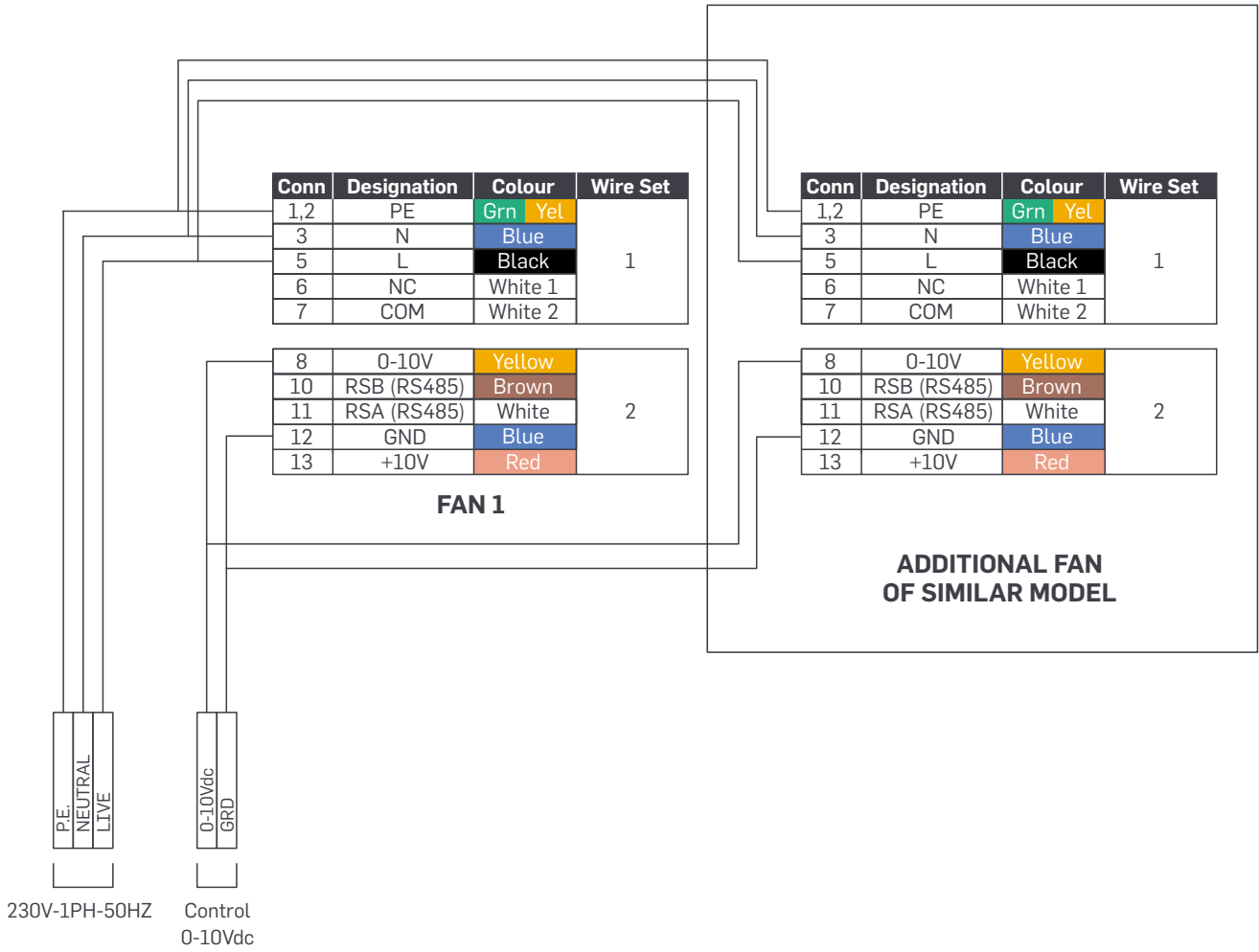
COOLING	Coil rows	#	6	6	6	6	6	6
	Fin/in	#	12	12	12	12	12	12
	Face vel	m/s	2.2	2.2	2.2	2.2	2.2	2.2
	On coil temp (°c)	DB	25.0	25.0	25.0	25.0	25.0	25.0
		WB	18.0	18.0	18.0	18.0	18.0	18.0
	Off coil temp (°c)	DB	10.9	10.4	10.5	10.4	10.8	10.4
		WB	10.6	10.2	10.2	10.1	10.5	10.1
	Capacity (kw)	TOTAL	7.2	9.6	13.3	19.0	26.9	33.1
		SENSIBLE	4.8	6.4	8.8	12.6	17.9	21.8
	Water in	°C	6.0	6.0	6.0	6.0	6.0	6.0
	Water out	°C	12.0	12.0	12.0	12.0	12.0	12.0
	Water flow	l/s	0.29	0.38	0.53	0.76	1.07	1.31
	Water speed	m/s	0.76	1.01	0.93	1	0.8	1
Water pd	kPa	30	29	29	25	16	26	
Pipe conn	BSP	1/2	1	1	1	1-1/4	1-1/4	

HEATING	Coil row	#	1	1	1	1	1	1
	On coil temp (°c)	DB	20.0	20.0	20.0	20.0	20.0	20.0
	Off coil temp (°c)	DB	33.2	33.6	34.1	34.1	34.4	33.7
	Capacity (kw)	TOTAL	4.8	6.3	9.2	12.9	19.5	21.9
	Water in	°C	80	80	80	80	80	80
	Water out	°C	60	60	60	60	60	60
	Water flow	l/s	0.06	0.08	0.11	0.16	0.24	0.27
	Water pd	kPa	2	4	11	11	30	19
	Pipe conn	BSP	1/2	1/2	1/2	1/2	1/2	1/2

FAN	Fan speed control	#	EC	EC	EC	EC	EC	EC
	Drive type	#	DD PLUG	DD PLUG	DD PLUG	DD PLUG	DD PLUG	DD PLUG
	Fan+mtr qty	#	1	1	1	2	2	2
	Fan model	#	280	280	280	2x280	2x280	2x280
	Motor power	W	500	500	500	2x500	2x500	2x500
	Power rating	V/Ph/Hz	220-1-50	220-1-50	220-1-50	220-1-50	220-1-50	220-1-50

DIMENSIONAL	Model	25mm	PFU-45-067	PFU-45-079	PFU-45-102	PFU-45-135	PFU-50-163	PFU-50-191
	Weight (kg)	PU PANEL	75	83	98	129	156	173
	Dimension(mm) h-w-l	CASING	450-670-800	450-790-800	450-1020-800	450-1350-800	500-1630-800	500-1910-800
	Model	50mm	PBU-50-073	PBU-50-084	PBU-50-107	PBU-50-140	PBU-55-168	PBU-55-196
	Weight (kg)	PU PANEL	88	97	114	148	178	198
	Dimension(mm) h-w-l	CASING	500-730-800	500-840-800	500-1070-800	500-1400-800	550-1680-800	550-1960-800

SINGLE PHASE FAN WIRING



NOTES

1. Unit might come with 1 fan or multiple.
2. Unit complete pre-wired from fan to terminal box inside the unit.
3. Required minimum single phase power supply and 0-10Vdc signal for fan.
4. Conn. NC-COM is fan alarm signal (Optional to be wired to site BMS).
5. Conn. 10-11 is modbus connection (Optional to be wired to site BMS).
6. If no external 0-10Vdc from BMS, can connect 10K Ohm Potentiometer to Conn. 8, 13 and com for speed control.

RECENT PROJECTS



Werribee Police



Holiday Inn



Kangan Tafe



Queen and Collins



Melbourne Uni
Student Precinct



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FOR