R410a Refrigerant

DUNNAIR (Aust) Pty Ltd

PHSE18

Economy Cycle Rooftop Package

Performance Data

INDOOR COIL ENTERING AIR TEMP °C		OUTDOOR COIL ENTERING AIR TEMPERATURE °C											
		30°C			35°C			40°C			45°C		
DB °C	WB °C	Tot Cap KW	Sens Cap KW	LWB °C	Tot Cap KW	Sens Cap KW	LWB °C	Tot Cap KW	Sens Cap KW	LWB °C	Tot Cap KW	Sens Cap KW	LWB °C
21	17	15.2	10.8	11.2	14.6	10.5	11.4	14.0	10.3	11.7	13.4	8.4	12.1
	18	15.8	9.9	12.2	15.2	9.7	12.4	14.6	9.5	12.7	14.3	8.3	13.2
	19	16.4	9.1	13.2	15.8	8.8	13.4	15.1	8.6	13.7	14.8	7.8	14.2
	20	17.0	8.2	14.2	16.3	8.0	14.5	15.6	7.7	14.7	15.0	7.0	15.4
23	17	15.2	11.6	11.2	14.6	11.4	11.4	14.0	11.2	11.7	14.2	9.2	12.1
	18	15.8	10.8	12.2	15.2	10.5	12.4	14.6	10.3	12.7	14.3	8.3	13.1
	19	16.4	9.9	13.2	15.8	9.7	13.4	15.1	9.4	13.7	14.4	7.4	14.0
	20	17.0	9.1	14.2	16.3	8.8	14.5	15.6	8.5	14.7	14.8	6.8	15.0
	21	17.6	8.2	15.2	17.0	7.9	15.5	16.2	7.7	15.7	14.9	7.0	16.0
25	17	15.2	12.5	12.2	14.6	12.2	11.4	14.0	12.0	11.7	133	8.3	12.0
	18	15.8	11.6	13.2	15.2	11.4	12.4	14.6	10.3	12.7	14.0	8.0	13.0
	19	16.4	10.8	14.2	15.8	10.5	13.4	15.6	9.4	13.7	15.0	8.0	14.0
	20	17.0	9.9	15.2	16.3	9.7	14.5	16.2	8.5	14.7	15.0	7.0	15.0
	21	17.6	9.0	16.2	17.0	8.8	15.5	16.8	7.6	15.7	15.1	7.1	16.0
27	17	16.6	16.6	12.0	15.9	16.0	12.2	15.3	15.3	12.4	15.0	15.0	12.7
	18	17.2	15.5	13.0	16.5	15.2	13.2	15.8	14.9	13.4	15.1	14.1	13.7
	19	17.9	14.4	14.0	17.1	15.1	14.2	16.3	13.8	14.5	15.8	14.6	14.8
	20	18.4	13.3	15.1	17.7	13.8	15.3	16.9	12.8	15.5	16.1	15.1	18.8
	21	19.1	12.2	16.1	18.3	12.0	16.3	17.5	11.7	16.5	17.0	16.0	16.8
29	17	16.6	16.6	12.0	15.9	16.0	12.2	15.3	15.3	12.4	14.6	14.6	12.8
	18	17.2	15.5	13.0	16.5	16.5	13.2	15.8	15.8	13.4	15.0	14.4	13.8
	19	17.9	14.4	14.0	17.1	16.2	14.2	16.3	16.3	14.5	15.3	14.0	14.8
	20	18.4	13.2	15.1	17.7	15.1	15.3	16.9	14.8	15.5	16.1	15.0	15.8
	21	19.1	12.2	16.1	18.3	14.0	16.3	17.5	13.8	16.5	17.3	16.0	16.8
31	17	16.9	16.9	11.8	16.5	16.5	12.1	16.3	16.3	11.4	16.1	15.0	12.0
	18	17.2	17.2	12.8	17.1	17.1	13.1	16.9	16.9	12.4	16.1	15.0	12.8
	19	17.9	17.9	13.8	17.7	17.7	14.1	17.5	17.5	13.4	17.1	16.1	13.8
	20	18.5	18.5	14.8	18.3	18.4	15.1	18.4	18.0	14.4	17.4	16.1	14.8
	21	19.4	18.6	15.8	19.0	18.8	16.1	19.1	18.5	15.0	18.1	17.0	15.8

Capacity multipliers should be applied to the above capacities to adjust for reduced or increased air flow.

Technical Specification PHSE18 Economy Cycle Rooftop Package

Total Cooling Capacity (kW)*	17.1	Number of Compressors	1
Sensible Cooling Capacity (kW)*	15.1	Power Requirements (Volt / Phase)	415 / 3
Heating Capacity (kW)**	18	Normal Max. Current (Amps / Phase)	13.4
Nominal Evaporator Air Flow (l/s)	1000		
*Entering air @ 27/19°C and ambient 35°C		** Entering air @ 21°C DB and 7°C ambient	

Air Quantity Multiplying Factors

	% Rated Air Quantity-Nominal 1000 l/s				
Capacity	80	90	100	110	120
Total Cooling	0.95	0.98	1.00	1.02	1.04
Sensible Cooling	0.89	0.95	1.00	1.05	1.09

Heating Performance Data

Outdoor Coil Entering DB temp					
	0	4	8	12	18
Heating Capacity kW	12.7	14.4	18.4	19.8	21

Heating Performance Correction

% Rated Air Quality	Multiplier	Return Air Temp °C	Multiplier	Outdoor Air Temp °C	Approx. Defrost Factor
80	0.93	15	1.05	0	0.80
90	0.97	18	1.03	2	0.78
100	1.00	21	1.00	4–6	0.75
110	1.03	24	0.97	7	0.87
120	1.05	27	0.95	8	1.00

Compressor

Number Per Unit	1
Type	Scroll
RPM (Nom)	2900
Normal Max. Current (Amps / Phase)	10.6
Locked Rotor Current (Amps / Phase)	68
Displacement (m^3/h)	21

Electrical Controls and Safeties

High Pressure Switch (Setting kPa)	2800	Defrost	
Low Pressure Switch (Setting kPa)	100	Initiation Temperature (°C)	-4
Indoor Fan Overload	Internal	Termination Temperature (°C)	10
Outdoor Fan Overload	Internal	Min. Period Between De-Ice (min)	33
Compressor Delay Timer	300 sec	Max. De-Ice Period (min)	4

Standard Features

Manual reset high pressure and auto reset low pressure cutouts	
Thermal overload protection on all motors	Suction line accumulator
Compressor crankcase heater	Automatic de-ice system
Limit start timer (anti short cycling)	Thermally insulated indoor unit

Evaporator

Type	Copper Tube / Aluminium Fins
Face Area (m)	0.38
Air Quantity (l/s)	1000

Evaporator (Indoor)

Number of Fans	1
Type	Centrifugal
Drive	Direct
Motor Voltage / Phase / Frequency	415 / 3 / 50
Motor (kW) Standard	0.45
Maximum Fan Speed (rpm)	1070

Electrical

Power Requirements	3 Phase / 415V / 50Hz
Normal Max. Current (Amps / Phase)	13.4

Condenser

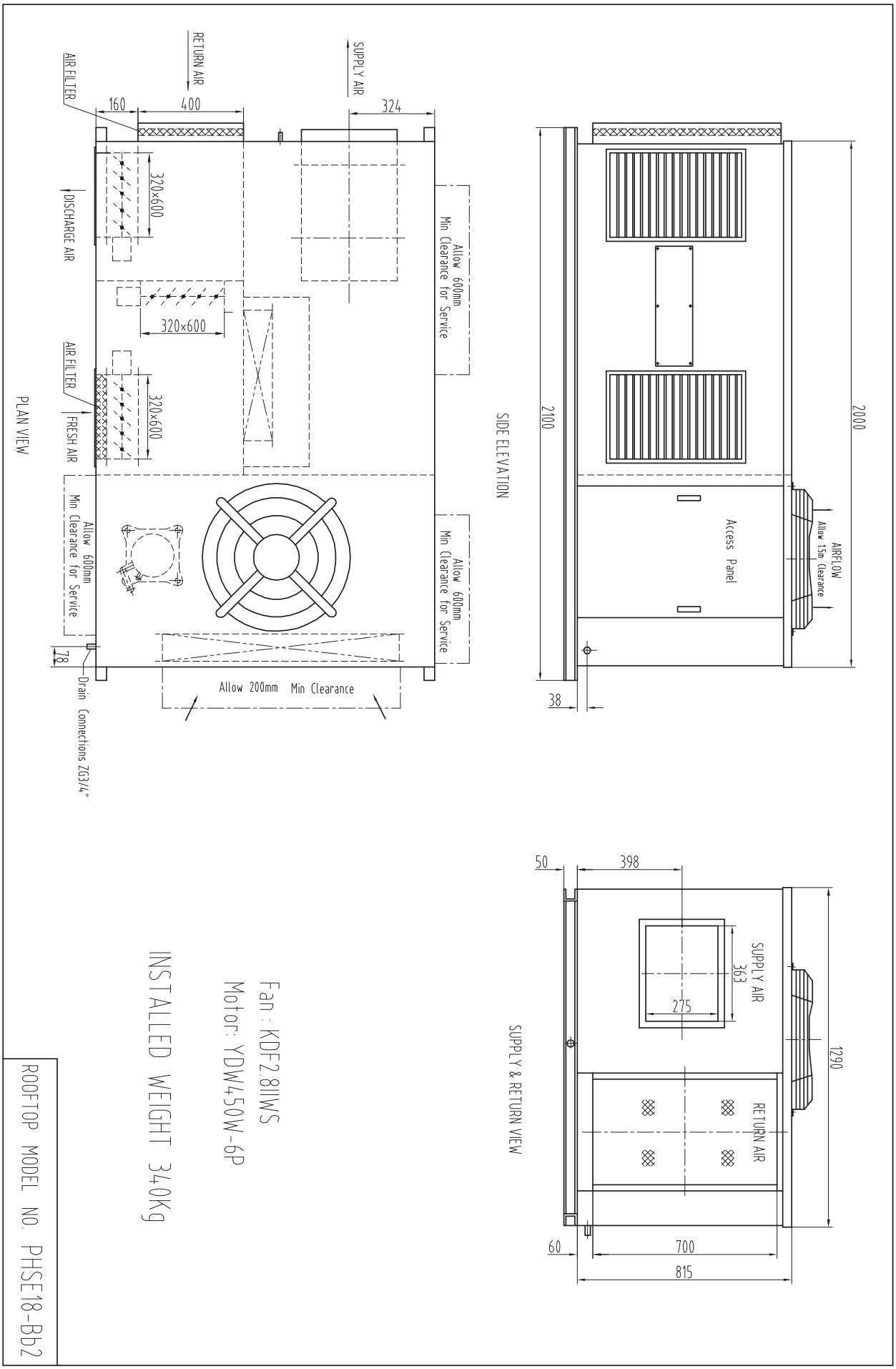
Type	Copper Tube / Aluminium Fins
Face Area	0.61

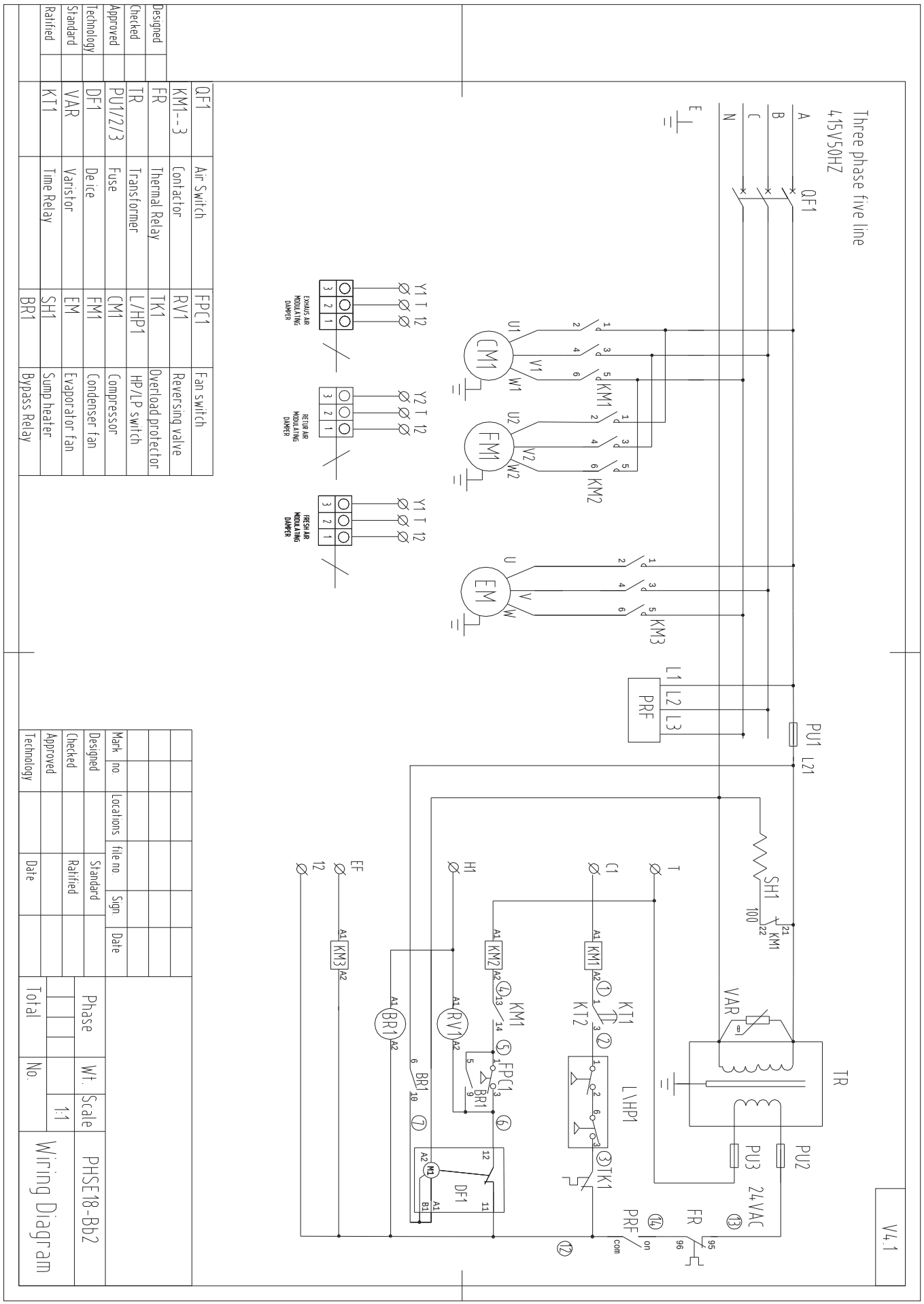
Condenser (Outdoor)

Number of Fans	1
Type	Axial
Drive	Direct
Motor Type	Enclosed
Motor Watts / rpm	300 / 950
Motor Voltage / Phase / Frequency	415 / 3 / 50

Refrigeration System

Refrigerant Type	R410a
Charge (kg)	5
Service Connections	Rotor Lock Valves
Expansion Control – in outdoor unit	TX Valve


RETURN AIR
SUPPLY AIR
AIR FILTER
160
400
324
320x600
DISCHARGE AIR
Allow 600mm Min Clearance for Service
320x600
AIR FILTER
320x600
FRESH AIR
Allow 600mm Min Clearance for Service
Allow 600mm Min Clearance for Service
78
Drain Connections ZG3/4"
Allow 200mm Min Clearance
PLAN VIEW
SIDE ELEVATION
2100
2000
Access Panel
AIRFLOW
Allow 15m Clearance
38
50
398
SUPPLY AIR
363
275
1290
RETURN AIR
60
700
815
SUPPLY & RETURN VIEW
Fan : KDF2.8IIWS
Motor: YDW450W-6P
INSTALLED WEIGHT 340Kg
ROOFTOP MODEL NO. PHSE18-Bb2



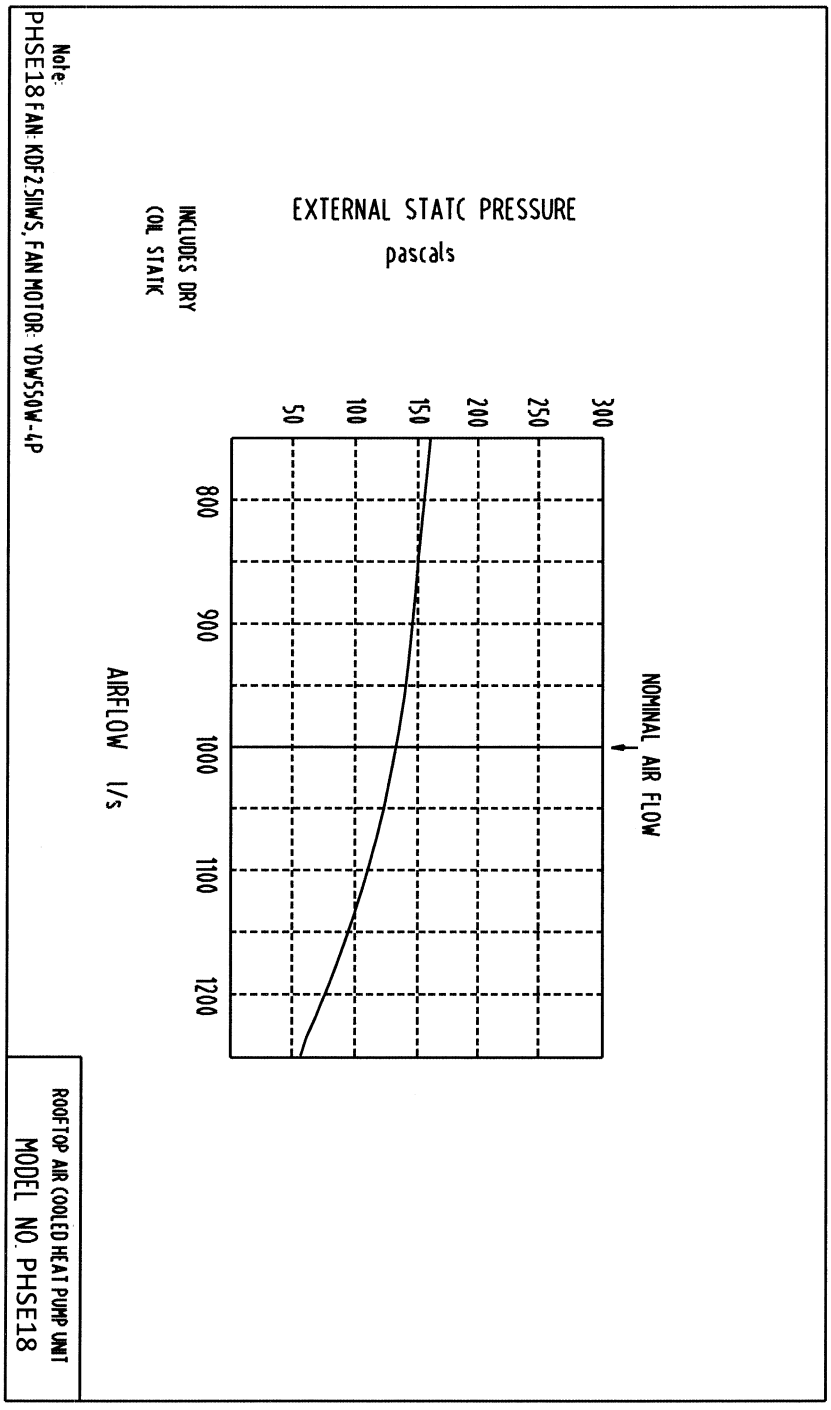
QF1	Air Switch
KM1--3	Contactor
FR	Thermal Relay
TR	Transformer
PU1/2/3	Fuse
DF1	De ice
VAR	Varistor
KT1	Time Relay
FPC1	Fan switch
RV1	Reversing valve
TK1	Overload protector
L/HP1	HP/LP switch
CM1	Compressor
FM1	Condenser fan
EM	Evaporator fan
SH1	Sump heater
BR1	Bypass Relay

Designed						
Checked						
Approved						
Technology						
Standard						
Ratified						

Mark	no	Locations	file no	Sign.	Date

Designed			Standard		
Checked			Ratified		
Approved					
Technology		Date			

Total			Phase	Wt.	Scale
					1:1
No.					
Wiring Diagram				PHSE18-Bb2	


EXTERNAL STATC PRESSURE
pascals
50
100
150
200
250
300
800
900
1000
1100
1200
AIRFLOW l/s
NOMINAL AIR FLOW
INCLUDES DRY COIL STATIC
Note:
PHSE18 FAN: KDF25IIWS, FAN MOTOR: YDW550W-4P
ROOFTOP AIR COOLED HEAT PUMP UNIT
MODEL NO. PHSE18

PHSE18 Noise rate analysing chart

A Class: 70.4dB

Hz	dB
64Hz	77.3
125Hz	72.1
250Hz	69.0
500Hz	66.2
1000Hz	65.9
2000Hz	61.1
4000Hz	55.5
8000Hz	47.2

Noise rate analysing chart (A Class: 70.4dB) dB