R407c Refrigerant

DUNNAIR (Aust) Pty Ltd

PHE100

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	100.4	61.6	11.5	95.2	59.4	11.8	89.7	57.2	12.2	85.9	57.2	12.4
	18	103.9	55.6	12.1	98.6	53.4	13.0	92.8	50.9	13.3	89.2	49.3	13.6
	19	107.3	49.3	13.9	102.1	47.1	14.2	95.8	44.5	14.6	92.5	43.1	14.8
	20	111.7	42.7	14.8	105.8	40.3	15.3	99.5	37.8	15.7	95.8	36.3	16.0
23	17	100.8	73.6	11.4	95.6	71.6	11.8	90.1	69.2	12.1	86.3	67.7	12.4
	18	103.9	67.5	12.5	98.6	65.3	12.8	92.8	62.7	13.3	89.2	61.2	13.6
	19	107.3	61.2	13.7	102.1	59.0	14.1	96.0	56.5	14.5	92.5	55.0	14.8
	20	111.7	54.6	14.8	105.8	52.2	15.3	99.5	49.7	15.7	96.0	48.2	15.9
	21	115.8	48.1	15.9	109.6	45.6	16.3	103.4	43.0	16.7	99.5	41.4	17.1
25	17	101.8	84.7	11.3	96.6	82.3	11.6	91.2	79.8	12.1	87.7	78.2	12.3
	18	104.2	81.9	12.6	98.9	77.7	13.0	93.1	75.2	13.4	89.4	73.6	13.7
	19	107.5	78.0	13.7	102.1	70.9	14.1	96.0	68.5	14.5	92.4	67.0	14.7
	20	111.7	73.5	14.8	105.9	64.3	15.3	99.6	61.6	15.7	96.0	60.3	15.9
	21	115.8	68.6	15.9	109.6	53.6	16.3	103.4	54.9	16.7	99.5	53.6	17.0
27	17	103.4	93.9	11.2	96.7	91.2	11.5	93.4	88.0	11.9	90.0	86.0	12.2
	18	105.5	91.9	12.4	99.8	89.6	12.7	94.0	87.1	13.2	91.5	85.6	13.4
	19	108.7	85.3	13.5	102.4	82.9	13.9	96.3	80.5	14.3	92.8	79.0	14.5
	20	111.8	79.2	14.7	105.9	76.8	15.1	99.6	74.4	15.5	96.0	72.9	15.7
	21	115.8	71.8	15.9	109.8	69.4	16.3	103.4	66.7	16.7	99.7	65.4	17.0
29	17	106.2	97.1	11.1	101.4	98.5	11.5	96.0	94.6	11.9	92.2	92.2	12.1
	18	107.1	95.5	12.3	102.0	96.9	12.7	96.3	93.9	13.2	92.8	89.6	13.4
	19	108.7	93.8	13.6	103.2	95.8	13.9	97.1	93.2	14.3	93.2	88.0	14.6
	20	111.8	90.8	14.7	106.0	88.5	15.1	99.7	85.7	15.6	96.2	84.5	15.8
	21	115.8	83.7	15.9	109.8	81.4	16.3	103.4	78.7	16.7	99.7	77.3	17.0
31	17	109.6	108.6	10.7	105.0	104.3	11.1	99.3	99.3	11.5	96.2	96.2	11.7
	18	110.1	107.2	12.1	105.1	103.9	12.4	99.7	99.3	12.8	96.7	96.1	13.2
	19	110.7	106.2	13.4	105.5	103.5	13.8	99.7	98.8	14.2	96.7	96.1	14.4
	20	112.5	103.3	14.6	106.9	101.0	15.1	100.5	97.5	15.5	97.0	95.8	15.8
	21	115.9	96.5	15.9	110.0	94.1	16.3	103.4	95.5	16.7	99.8	90.0	17.1

Technical Specification PHE100 Economy Cycle Rooftop Package

Total Cooling Capacity (kW)	102.2	Number of Compressors	2
Sensible Cooling Capacity (kW)	82.9	Power V / Ph	415 / 3
Heating Capacity (kW)	98.5	Nominal Max. Current (A)	91.0
Nominal Evaporator Air Flow (l/s)	5500	Power Input (kW)	41.0
*Cooling cap entering air 27°/19°C (DB/WB) Ambient 35°C		** Heating cap entering air 21°C Outdoor ambient 7°C	

Cooling Performance Correction

Capacity	% Rated Air Flow				
	80	90	100	110	120
Total	0.95	0.98	1.00	1.02	1.04
Sensible	0.89	0.95	1.00	1.05	1.09

Heating Capacity

Amb. °C DB	0	4	8	12	18
Cap kW	77.2	85.2	98.7	108.4	130.4

Heating cap is based on 21°C DB. Frost formation will have greatest effect at amb 4 to 6°C. Above 8°C defrost is unlikely and a factor of 1 may be used.

Heating Performance Correction

% Air Flow	x	Return Air Temp °C	x	O/door 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

Compressors

Number Per Unit	2
Type	Hermetic Scroll
Nominal RPM	2900
Nominal Max. Amps	24.4 / 35.7
Locked Rotor Amps	2 × 145
Displacement (m^3/h)	2 × 37.69

Electrical Controls and Safeties

Indoor Fan Overload	Internal	Defrost Cycle Start °C	-4
Outdoor Fan Overload	Internal	Defrost Cycle End °C	10
Compressor Delay Timer	300 sec	Min. Defrost Cycle	33 mins
High Pressure Switch (kPa)	2800	Max. Defrost Period	4 mins
Low Pressure Switch (kPa)	100		

Standard Features

HP/LP Cutouts	Thermal Overload Protection
Crankcase Heater	Limit Start Timer
Automatic De-Ice	Indoor 25mm Insulation
Gas Separator	240 Volt Control

Evaporator Coil

Type	Copper tube alum. fins
Face Area (m^2)	1.13

Condenser Coil

Type	Copper tube alum. fins
Face Area (m^2)	2 × 1.92

Evaporator Fan

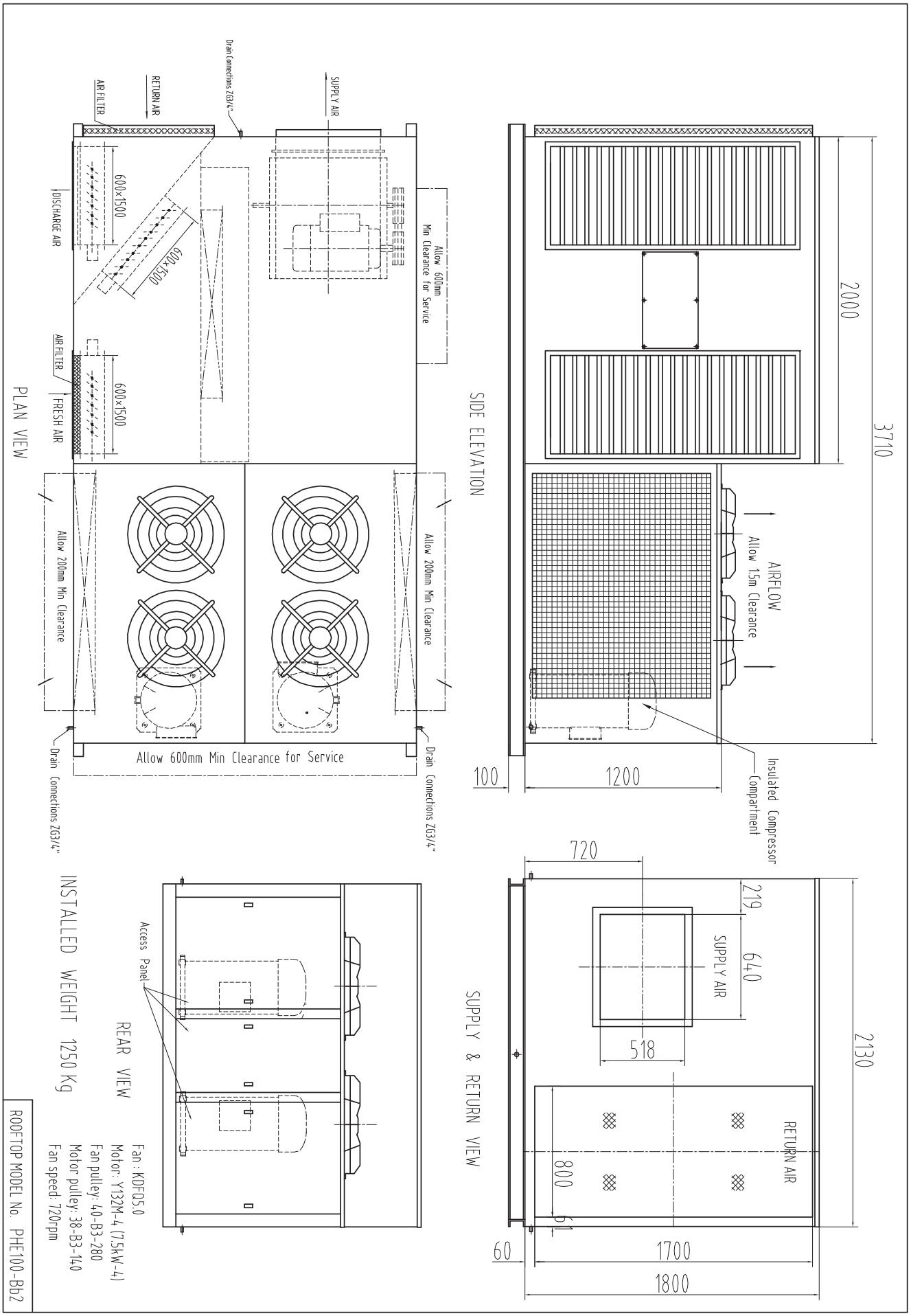
Number of Fans	1
Type	Centrifugal
Drive	Belt
Motor V / Ph / Hz	415 / 3 / 50
Motor Output Power (kW)	7.5
Max. Fan Speed (rpm)	720

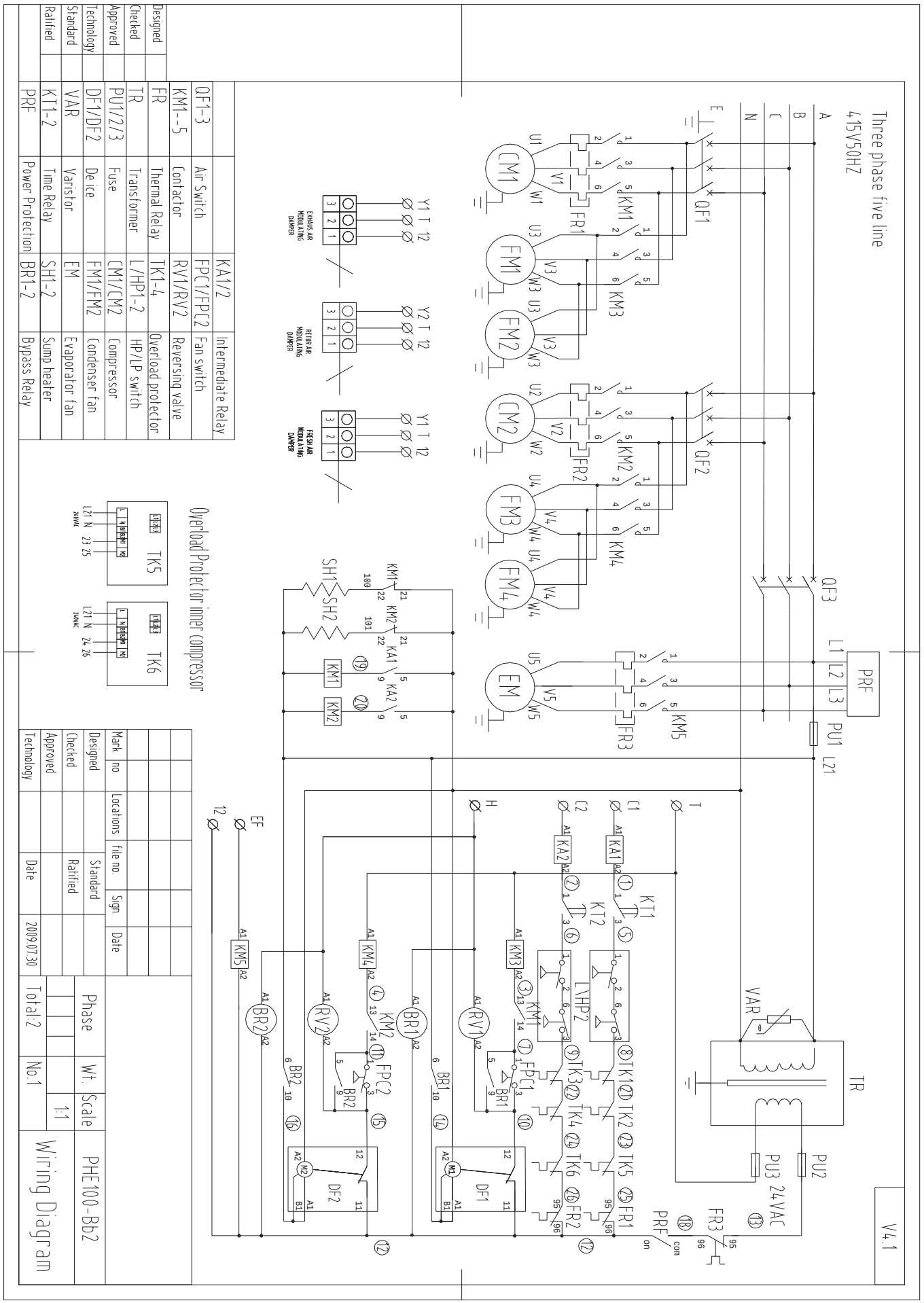
Condenser Fan

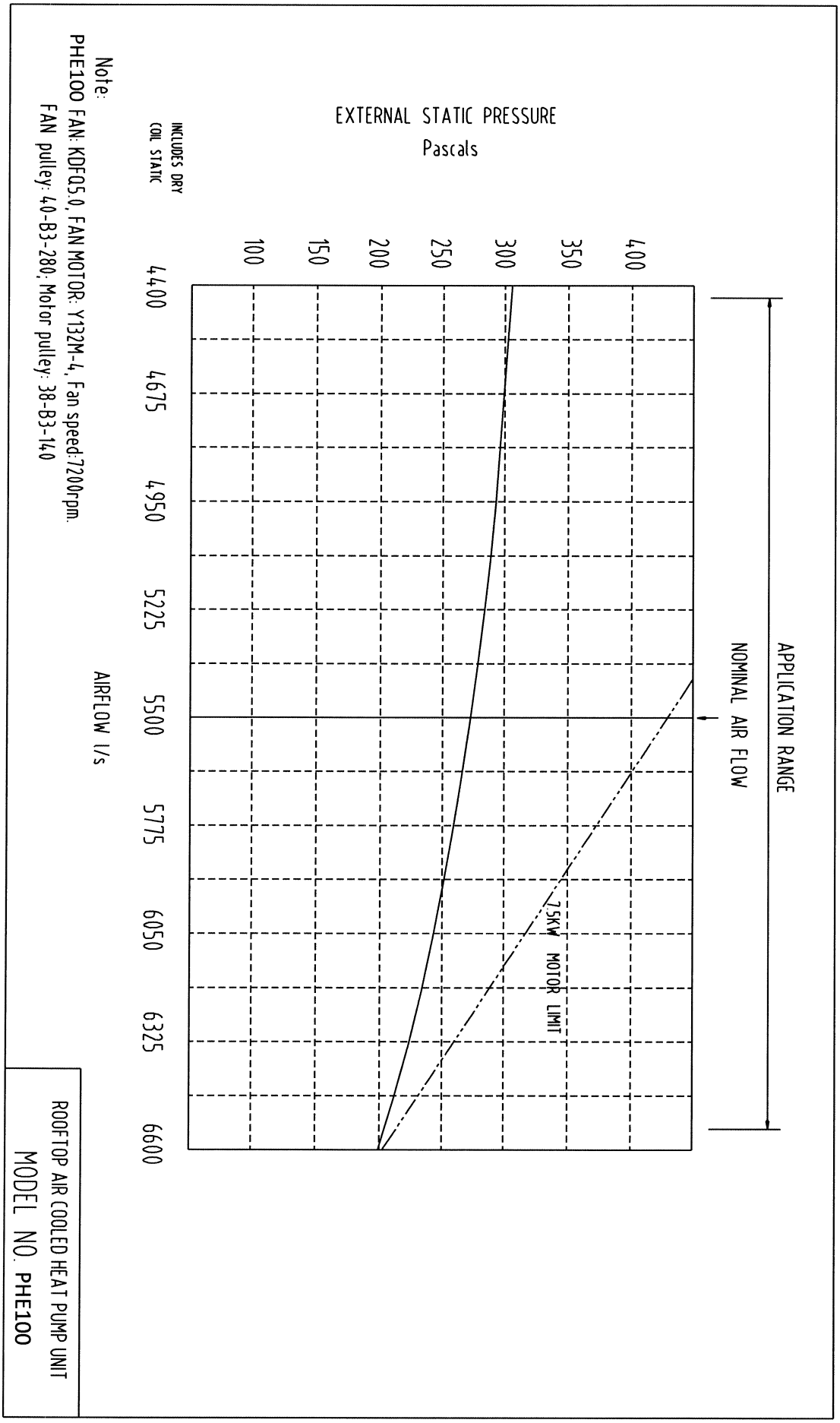
Number of Fans	4
Type	Axial
Drive	Direct
Motor Output Power (kW)	4 × 0.75
Motor V / Ph / Hz	415 / 3 / 50

Refrigerant System

Refrigerant Type	R407c
Nominal Charge Required	9.8 / 14.6kg
Service Connection	Rotor Lock Valve
Expansion Control	TX Valve


PLAN VIEW
SIDE ELEVATION
SUPPLY & RETURN VIEW
REAR VIEW
INSTALLED WEIGHT 1250 Kg
ROOFTOP MODEL No. PHE100-Bb2
Drain Connections ZG3/4"
SUPPLY AIR
RETURN AIR
AIR FILTER
DISCHARGE AIR
600x1500
600x450
Allow 600mm Min Clearance for Service
FRESH AIR
Allow 200mm Min Clearance
Allow 600mm Min Clearance for Service
Drain Connections ZG3/4"
Drain Connections ZG3/4"
2000
3710
AIRFLOW
Allow 1.5m Clearance
Insulated Compressor Compartment
100
1200
720
219
640
SUPPLY AIR
518
2130
RETURN AIR
800
60
1700
1800
Access Panel
Fan : KDFQ5.0
Motor: Y132M-4 (7.5kW-4)
Fan pulley: 40-B3-280
Motor pulley: 38-B3-140
Fan speed: 720rpm


Three phase five line
415V50HZ
V4.1
QF1-3 Air Switch
KM1--5 Contactor
FR Thermal Relay
TR Transformer
PU1/2/3 Fuse
DF1/DF2 De ice
VAR Varistor
KT1-2 Time Relay
PRF Power Protection
KA1/2 Intermediate Relay
FPC1/FPC2 Fan switch
RV1/RV2 Reversing valve
TK1-4 Overload protector
L/HP1-2 HP/LP switch
CM1/CM2 Compressor
FM1/FM2 Condenser fan
EM Evaporator fan
SH1-2 Sump heater
BR1-2 Bypass Relay
Overload Protector inner compressor
Designed
Checked
Approved
Technology
Standard
Ratified
Mark no
Locations
file no
Sign.
Date
2009.07.30
Phase
Wt.
Scale
1:1
Total:2
No.1
PHE100-Bb2
Wiring Diagram


EXTERNAL STATIC PRESSURE
Pascals
100
150
200
250
300
350
400
INCLUDES DRY COIL STATIC
4400
4675
4950
5225
5500
5775
6050
6325
6600
AIRFLOW l/s
APPLICATION RANGE
NOMINAL AIR FLOW
7.5KW MOTOR LIMIT
Note:
PHE100 FAN: KDFQ5.0, FAN MOTOR: Y132M-4, Fan speed:7200rpm.
FAN pulley: 40-B3-280; Motor pulley: 38-B3-140
ROOFTOP AIR COOLED HEAT PUMP UNIT
MODEL NO. PHE100

PHE100 Noise rate analysing chart

A Class: 81.5dB

Hz	dB
64Hz	86.1
125Hz	84.4
250Hz	78.2
500Hz	76.8
1000Hz	78.3
2000Hz	72.6
4000Hz	68.2
8000Hz	63.2

Noise rate analysing chart (A Class: 81.5dB) dB