INSTALLATION
OPERATION AND SERVICE MANUAL

PCE2 – VS SERIES

2 PIPE HYDRONIC CASSETTE
AIR CONDITIONERS

2009 V.1.3

INDEX

PCE2-VS SERIES
2 PIPE HYDRONIC CASSETTES

HYDRONIC CASSETTE

CASSETTE MODEL ASSIGNMENTS

P C E 2 - 0 4 - V S

S	230V/1PH/50HZ

P	CHILLED/HOT WATER, 4-PIPE
V	CHILLED/HOT WATER, 2-PIPE
VEH	CHILLED WATER, 2-PIPE WITH ELECTRIC HEATER

03	NOMINAL 2.83 KW
04	NOMINAL 3.40 KW
06	NOMINAL 4.26 KW
08	NOMINAL 4.73 KW
09	NOMINAL 5.80 KW
12	NOMINAL 7.76 KW
16	NOMINAL 8.58 KW

PCE2	HYDRONIC CASSETTE E SERIES

HYDRONIC CASSETTE

PCE2 – VS SERIES 3-SPEED SPECIFICATIONS

Model			PCE2-03	PCE2-04	PCE2-06	PCE2-08	PCE2-09	PCE2-12	PCE2-16
Number Of Fan Blowers			Single	Single	Single	Single	Twin	Twin	Twin
Total flow	H	m^3/hr	465	600	750	846	1098	1296	1650
	M		402	540	648	700	924	1176	1300
	L		330	410	588	550	858	1098	1100
Cooling Capacity*	H	Kw	2.83	3.40	4.26	4.73	5.80	7.76	8.58
	M		2.49	3.00	3.65	3.92	4.80	6.60	6.79
	L		2.06	2.37	3.36	3.13	4.46	5.40	5.31
Sensible Cooling Capacity	H	Kw	2.18	2.48	3.13	3.36	4.53	6.34	7.24
	M		1.96	2.26	2.81	2.97	3.95	5.70	6.27
	L		1.62	1.89	2.63	2.52	3.67	4.84	4.88
Heating Capacity **	H	Kw	3.26	3.91	4.87	5.31	7.12	9.11	10.18
	M		2.95	3.61	4.38	4.63	6.14	8.10	8.65
	L		2.55	2.95	4.08	3.88	5.77	6.90	7.00
Noise Level @ 1 M (H/M/L)		dB(A)	38/36/34	39/37/35	43/41/39	46/41/36	40/38/36	48/42/40	49/43/41
Power Supply		(V/Ph/Hz)	230/1/50						
Fan Motor Power		W	26	31	58	60	62	116	124
Fan Motor Running Current		A	0.15	0.17	0.24	0.32	0.34	0.48	0.64
Fan Motor Starting Current		A	0.34	0.44	0.76	0.89	0.88	1.52	1.77
Operation Control & Thermostat			Remote Control Handset & Wired Wall Pad						
Cooling Water Flow Rate		L/h	500	601	753	836	1025	1371	1516
Cooling Water Pressure Drop		kPa	9.5	12.8	10.9	13.1	29.3	27.6	31.4
Cooling Water Content		L	1.25	1.25	1.56	1.56	2.22	2.77	2.77
Cond. Drain Connection I.D.		mm(in)	19.05(3/4)						
Dimensions	L	mm	570	570	570	570	1130	1130	1130
	W	mm	570	570	570	570	600	600	600
	H	mm	250	250	290	290	250	290	290
Panel Dimensions (L x W x H)		mm	680×680×28				680x1240x28		
Gross Weight		Kg	31	31	33	33	52	59	59
Connection Method			Socket (Threaded Female)						
Water Connection	In	mm(in)	19.05(3/4)						
	Out	mm(in)	19.05(3/4)						

*Cooling: 27°C db/19°C wb entering air temperature, 7°C entering water and 12°C leaving water temperature with water flow rates as above.

**Heating: 20°C db entering air temperature, 50°C entering water temperature with water flow rates same as for the cooling test.

HYDRONIC CASSETTE

PCE2 – VS SERIES 5-SPEED SPECIFICATIONS

Model			PCE2-04	PCE2-06	PCE2-08	PCE2-09	PCE2-12	PCE2-16
Number Of Fan Blowers			Single	Single	Single	Twin	Twin	Twin
Total flow	5	m^3/hr	570	710	846	1080	1350	1650
	4		370	648	708	738	1236	1350
	3		300	600	648	600	1140	1238
	2		250	450	600	500	852	1140
	1		200	350	450	400	650	852
Cooling Capacity*	5	Kw	3.40	4.13	4.72	5.80	7.20	8.45
	4		2.30	3.80	4.13	4.34	6.70	7.20
	3		2.00	3.50	3.80	3.60	6.00	6.70
	2		1.72	2.79	3.50	3.10	4.78	6.00
	1		1.50	2.17	2.79	2.50	4.34	4.78
Sensible Cooling Capacity	5	Kw	2.57	3.20	3.57	4.53	5.67	6.37
	4		1.77	3.01	3.20	3.57	5.36	5.67
	3		1.47	2.84	3.01	2.94	4.99	5.36
	2		1.27	2.23	2.84	2.50	4.00	4.99
	1		1.10	1.84	2.23	2.00	3.68	4.00
Heating Capacity **	5	Kw	3.92	4.95	5.62	7.17	8.98	10.30
	4		2.84	4.63	4.95	5.34	8.36	8.98
	3		2.45	4.38	4.63	4.68	7.49	8.36
	2		2.10	3.41	4.38	4.03	5.96	7.49
	1		1.82	2.60	3.41	3.25	5.21	5.96
Noise Level @ 1 M (H/M/L)		dB(A)	37/34/32/30/27	44/40/38/32/29	46/44/40/35/30	39/35/33/31/28	45/41/39/33/31	47/45/41/39/33
Power Supply		(V/Ph/Hz)	230/1/50					
Fan Motor Power		W	50	58	66	100	116	132
Fan Motor Running Current		A	0.22	0.26	0.29	0.44	0.52	0.58
Fan Motor Starting Current		A	0.66	0.77	0.88	1.33	1.54	1.77
Operation Control & Thermostat			Remote Control Handset & Wired Wall Pad					
Cooling Water Flow Rate		L/h	601	732	836	1025	1373	1493
Cooling Water Pressure Drop		kPa	12.8	10.4	13.1	29.3	25.5	33.0
Cooling Water Content		L	1.25	1.56	1.56	2.22	2.77	2.77
Cond. Drain Connection I.D.		mm(in)	19.05(3/4)					
Dimensions	L	mm	570	570	570	1130	1130	1130
	W	mm	570	570	570	600	600	600
	H	mm	250	290	290	250	290	290
Panel Dimensions (L x W x H)		mm	680x680x28			680x1240x28		
Gross Weight		Kg	31	33	33	52	59	59
Connection Method			Socket(Threaded Female)					
Water Connection	In	mm(in)	19.05(3/4)					
	Out	mm(in)	19.05(3/4)					

*Cooling: 27°C db/19°C wb entering air temperature, 7°C entering water and 12°C leaving water temperature with water flow rates as above.

**Heating: 20°C db entering air temperature, 50°C entering water temperature with water flow rates same as for the cooling test.

HYDRONIC CASSETTE

COIL DATA

Model	Fin Height (mm)	Fin Length (mm.)		Fins per inch	No. of rows	No. of circuits	Tube Diameter
		Inner	Outer				
PCE2-03-04-VS	200	1196	1299	13	2	3	3/8”
PCE2-06-08-VS	250	1196	1299	13	2	4	3/8”
PCE2-09-VS	200	2148	2286	13	2	4	3/8”
PCE2-12-16-VS	250	2148	2286	13	2	6	3/8”

COOLING CAPACITY TABLES

PCE2-03-VS		TAI DB24℃-WB17.4℃						TAI DB27℃-WB19℃						TAI DB27℃-WB19.5℃						TAI DB28℃-WB21					
Twi	qa	Pf	Pfs	Tad	Taw	dPw	Qw	Pf	Pfs	Tad	Taw	dPw	Qw	Pf	Pfs	Tad	Taw	dPw	Qw	Pf	Pfs	Tad	Taw	dPw	Qw
°C	m3/h	kW	kW	°C	°C	kPa	l/h	kW	kW	°C	°C	kPa	l/h	kW	kW	°C	°C	kPa	l/h	kW	kW	°C	°C	kPa	l/h
5	452	2.79	2.02	10.9	10.5	9.7	503	3.45	2.39	11.3	10.7	14.0	622	3.68	2.38	11.4	10.8	15.6	663	4.41	2.49	11.7	10.9	21.7	795
	391	2.45	1.81	10.4	10.4	7.6	442	3.04	2.21	10.6	10.6	11.1	548	3.22	2.17	10.7	10.7	12.4	581	3.88	2.26	11	10.8	17.3	700
	323	2.02	1.50	10.4	10.4	5.0	364	2.51	1.80	10.6	10.6	7.3	452	2.70	1.81	10.6	10.6	8.5	487	3.23	1.90	10.7	10.7	11.8	583
6	452	2.44	1.88	11.8	11.5	7.7	439	3.11	2.26	12.1	11.6	11.8	561	3.33	2.25	12.3	11.7	13.2	602	4.05	2.35	12.6	11.9	18.7	730
	391	2.15	1.69	11.4	11.4	6.1	388	2.74	2.06	11.5	11.5	9.3	494	2.93	2.04	11.6	11.6	10.5	527	3.56	2.14	11.9	11.8	14.9	642
	323	1.76	1.39	11.4	11.4	4.0	318	2.26	1.70	11.5	11.5	6.1	408	2.46	1.71	11.5	11.5	7.3	444	2.95	1.78	11.7	11.7	10.0	532
7	452	2.08	1.73	12.7	12.4	5.6	374	2.77	2.14	12.9	12.5	9.5	500	3.00	2.12	13.1	12.6	10.8	540	3.68	2.21	13.4	12.8	15.7	665
	391	1.85	1.57	12.3	12.3	4.6	334	2.44	1.92	12.4	12.4	7.5	440	2.63	1.91	12.5	12.5	8.5	473	3.23	2.02	12.7	12.7	12.5	583
	323	1.51	1.27	12.3	12.3	2.9	272	2.02	1.59	12.4	12.4	4.9	364	2.22	1.61	12.4	12.4	6.0	401	2.67	1.66	12.7	12.7	8.2	481
8	452	1.72	1.52	14	13.3	4.0	309	2.39	2.01	13.7	13.5	7.4	431	2.61	1.99	13.9	13.6	8.6	471	3.31	2.09	14.2	13.7	13.1	597
	391	1.51	1.36	13.8	13.3	3.2	273	2.11	1.79	13.4	13.4	5.9	381	2.29	1.78	13.5	13.5	6.7	413	2.92	1.90	13.6	13.6	10.5	526
	323	1.23	1.10	13.8	13.3	2.0	223	1.74	1.48	13.4	13.4	3.8	315	1.92	1.48	13.4	13.4	4.7	346	2.41	1.56	13.6	13.6	6.9	435
9	452	1.35	1.31	15.3	14.2	2.3	244	2.01	1.88	14.5	14.4	5.3	362	2.22	1.86	14.7	14.5	6.4	401	2.94	1.96	15.0	14.6	10.5	530
	391	1.18	1.15	15.3	14.2	1.7	212	1.78	1.67	14.3	14.3	4.2	321	1.96	1.65	14.4	14.4	4.9	353	2.60	1.77	14.5	14.5	8.4	468
	323	0.96	0.93	15.3	14.2	1.1	173	1.47	1.37	14.3	14.3	2.7	265	1.62	1.36	14.4	14.4	3.3	291	2.16	1.47	14.5	14.5	5.6	389

TAI: Air in temperature
Twi: Fluid in temperature
Qw: Fluid flow rate in heat exchanger
Dpw: Pressure drop standard coil
Qa: Air flow

Pf: Total cooling capacity
Pfs: Sensible cooling capacity
Tad: Discharge air dry bulb temperature
Taw: Discharge air wet bulb temperature

Note: Design and specification are subject to change without prior notice for product improvement.

HYDRONIC CASSETTE

PCE2-04-VS		TAI DB24℃-WB17.4℃						TAI DB27℃-WB19℃						TAI DB27℃-WB19.5℃						TAI DB28℃-WB21					
Twi	qa	Pf	Pfs	Tad	Taw	dPw	Qw	Pf	Pfs	Tad	Taw	dPw	Qw	Pf	Pfs	Tad	Taw	dPw	Qw	Pf	Pfs	Tad	Taw	dPw	Qw
°C	m3/h	kW	kW	°C	°C	kPa	l/h	kW	kW	°C	°C	kPa	l/h	kW	kW	°C	°C	kPa	l/h	kW	kW	°C	°C	kPa	l/h
5	570	3.24	2.17	12.3	10.8	12.8	604	4.07	2.65	12.7	11.0	19.6	760	4.37	2.63	12.8	11.0	22.3	817	5.28	2.74	13.2	11.1	31.3	986
	498	2.84	1.99	11.6	10.7	10.2	530	3.59	2.43	12.0	10.9	15.7	672	3.78	2.40	12.0	11.0	17.2	707	4.63	2.50	12.5	11.0	24.6	865
	389	2.32	1.71	10.8	10.6	7.1	433	2.84	2.04	10.9	10.8	10.1	530	2.84	1.91	10.8	10.8	9.8	530	3.74	2.13	11.5	10.9	16.6	698
6	570	2.82	2.03	13.0	11.7	10.2	527	3.64	2.50	13.5	11.9	16.2	681	3.94	2.47	13.6	11.9	18.8	735	4.84	2.59	14.0	12.1	26.9	904
	498	2.49	1.85	12.5	11.6	8.2	466	3.22	2.28	12.8	11.8	13.0	601	3.45	2.26	12.9	11.9	15.0	645	4.22	2.37	13.3	12.0	21.0	788
	389	2.00	1.58	11.7	11.6	5.5	373	2.54	1.92	11.9	11.8	8.3	475	2.67	1.86	11.8	11.7	9.0	499	3.40	2.01	12.3	11.9	14.2	636
7	570	2.41	1.90	13.7	12.6	7.6	450	3.22	2.35	14.2	12.8	12.8	601	3.50	2.32	14.3	12.8	15.2	654	4.40	2.44	14.8	13.0	22.5	822
	498	2.15	1.72	13.3	12.5	6.1	401	2.84	2.14	13.6	12.7	10.2	530	3.12	2.12	13.8	12.7	12.8	583	3.81	2.23	14.1	13.0	17.3	712
	389	1.67	1.44	12.6	12.5	3.8	313	2.24	1.79	12.8	12.7	6.5	419	2.51	1.82	12.8	12.6	8.1	468	3.07	1.89	13.0	12.8	11.7	573
8	570	2.00	1.73	14.6	13.5	5.5	374	2.79	2.21	15.0	13.7	10.1	521	3.07	2.19	15.1	13.7	12.1	575	3.92	2.30	15.5	14.0	18.5	732
	498	1.77	1.54	14.4	13.4	4.4	331	2.44	2.00	14.5	13.7	7.9	456	2.71	1.99	14.6	13.7	9.9	507	3.42	2.10	14.9	13.9	14.4	640
	389	1.40	1.26	14.0	13.4	2.8	261	1.96	1.69	13.6	13.6	5.2	366	2.20	1.70	13.7	13.5	6.5	411	2.73	1.77	13.9	13.8	9.6	511
9	570	1.59	1.56	15.5	14.3	3.4	297	2.36	2.07	15.7	14.6	7.3	440	2.65	2.05	15.8	14.6	9.0	495	3.43	2.16	16.2	14.9	14.4	642
	498	1.39	1.36	15.5	14.3	2.6	260	2.04	1.85	15.4	14.6	5.5	381	2.30	1.86	15.3	14.6	7.0	430	3.04	1.96	15.7	14.8	11.5	567
	389	1.12	1.09	15.3	14.2	1.7	208	1.67	1.58	14.4	14.4	3.9	313	1.89	1.58	14.5	14.4	4.9	354	2.40	1.66	14.7	14.7	7.5	449

TAI: Air in temperature
Twi: Fluid in temperature
Qw: Fluid flow rate in heat exchanger
Dpw: Pressure drop standard coil
Qa: Air flow

Pf: Total cooling capacity
Pfs: Sensible cooling capacity
Tad: Discharge air dry bulb temperature
Taw: Discharge air wet bulb temperature

Note: Design and specification are subject to change without prior notice for product improvement.

PCE2-06-VS		TAI DB24℃-WB17.4℃						TAI DB27℃-WB19℃						TAI DB27℃-WB19.5℃						TAI DB28℃-WB21					
Twi	qa	Pf	Pfs	Tad	Taw	dPw	Qw	Pf	Pfs	Tad	Taw	dPw	Qw	Pf	Pfs	Tad	Taw	dPw	Qw	Pf	Pfs	Tad	Taw	dPw	Qw
°C	m3/h	kW	kW	°C	°C	kPa	l/h	kW	kW	°C	°C	kPa	l/h	kW	kW	°C	°C	kPa	l/h	kW	kW	°C	°C	kPa	l/h
5	722	3.66	2.52	12.3	11.0	10.6	744	4.70	3.05	12.9	11.1	16.6	954	4.99	3.02	13.0	11.2	18.5	1013	6.03	3.14	13.4	11.3	26.0	1225
	617	3.18	2.28	11.7	10.9	8.3	647	4.04	2.74	12.1	11.0	12.6	820	4.32	2.73	12.2	11.1	14.3	877	5.20	2.84	12.6	11.2	19.9	1057
	560	2.96	2.14	11.4	10.8	7.2	601	3.72	2.58	11.6	10.9	10.9	756	3.95	2.57	11.7	11.0	12.2	802	4.77	2.68	12.0	11.1	17.1	969
6	722	3.21	2.36	13.1	11.9	8.5	652	4.20	2.89	13.6	12.0	13.8	854	4.49	2.85	13.8	12.1	15.5	913	5.51	2.97	14.2	12.3	22.3	1119
	617	2.79	2.13	12.5	11.8	6.7	568	3.61	2.59	12.9	12.0	10.4	733	3.90	2.58	13.0	12.0	12.0	792	4.76	2.68	13.5	12.2	17.0	967
	560	2.58	2.00	12.2	11.7	5.8	525	3.32	2.44	12.5	11.9	9.0	675	3.58	2.43	12.6	11.9	10.3	728	4.37	2.53	12.9	12.1	14.7	888
7	722	2.76	2.19	13.8	12.7	6.4	560	3.71	2.72	14.3	12.9	10.9	753	4.00	2.68	14.5	13.0	12.4	813	4.99	2.80	14.9	13.2	18.5	1013
	617	2.40	1.98	13.2	12.6	5.0	488	3.18	2.44	13.7	12.9	8.2	645	3.48	2.44	13.8	12.9	9.7	707	4.32	2.51	14.3	13.1	14.1	877
	560	2.21	1.86	13.0	12.6	4.3	449	2.92	2.29	13.3	12.8	7.0	593	3.22	2.29	13.4	12.8	8.4	654	3.97	2.38	13.7	13.0	12.3	806
8	722	2.31	2.01	14.7	13.5	4.8	469	3.19	2.55	15.1	13.8	8.5	648	3.48	2.52	15.2	13.9	9.9	708	4.46	2.64	15.7	14.1	15.3	906
	617	1.99	1.77	14.4	13.5	3.6	405	2.73	2.30	14.5	13.8	6.4	555	3.03	2.28	14.6	13.8	7.7	616	3.86	2.38	15.0	14.0	11.7	785
	560	1.82	1.64	14.3	13.5	3.0	371	2.53	2.15	14.1	13.7	5.5	513	2.79	2.14	14.2	13.8	6.6	567	3.56	2.24	14.5	13.9	10.2	723
9	722	1.86	1.83	15.5	14.3	3.1	378	2.67	2.38	15.8	14.7	6.0	542	2.97	2.37	15.9	14.8	7.3	603	3.93	2.47	16.4	15.0	12.0	799
	617	1.58	1.55	15.5	14.3	2.2	322	2.29	2.16	15.2	14.7	4.5	465	2.58	2.13	15.3	14.7	5.7	525	3.41	2.24	15.7	14.9	9.3	693
	560	1.44	1.41	15.5	14.3	1.8	292	2.13	2.02	14.9	14.6	4.0	433	2.37	2.00	15.0	14.7	4.8	480	3.15	2.11	15.3	14.8	8.1	640

TAI: Air in temperature
Twi: Fluid in temperature
Qw: Fluid flow rate in heat exchanger
Dpw: Pressure drop standard coil
Qa: Air flow

Pf: Total cooling capacity
Pfs: Sensible cooling capacity
Tad: Discharge air dry bulb temperature
Taw: Discharge air wet bulb temperature

Note: Design and specification are subject to change without prior notice for product improvement.

HYDRONIC CASSETTE

PCE2-08-VS		TAI DB24℃-WB17.4℃						TAI DB27℃-WB19℃						TAI DB27℃-WB19.5℃						TAI DB28℃-WB21					
Twi	qa	Pf	Pfs	Tad	Taw	dPw	Qw	Pf	Pfs	Tad	Taw	dPw	Qw	Pf	Pfs	Tad	Taw	dPw	Qw	Pf	Pfs	Tad	Taw	dPw	Qw
°C	m3/h	kW	kW	°C	°C	kPa	l/h	kW	kW	°C	°C	kPa	l/h	kW	kW	°C	°C	kPa	l/h	kW	kW	°C	°C	kPa	l/h
5	810	4.64	3.06	12.8	11.0	13.2	836	5.89	3.70	13.5	11.2	20.0	1060	6.27	3.66	13.6	11.3	22.4	1127	7.60	3.83	14.0	11.4	32.0	1368
	665	3.87	2.69	12.0	10.9	9.4	696	4.88	3.24	12.6	11.1	14.2	878	5.20	3.21	12.6	11.1	16.0	937	6.24	3.39	12.8	11.3	22.4	1122
	522	3.09	2.31	11.0	10.8	6.3	557	3.93	2.78	11.3	10.9	9.7	707	4.16	2.76	11.4	11.0	10.7	750	4.91	2.87	11.4	11.1	14.5	884
6	810	4.04	2.86	13.6	11.9	10.4	727	5.27	3.50	14.2	12.1	16.6	948	5.63	3.46	14.3	12.2	18.7	1013	6.96	3.62	14.7	12.3	27.5	1252
	665	3.37	2.52	12.8	11.8	7.5	606	4.36	3.08	13.3	12.0	11.8	786	4.68	3.04	13.4	12.1	13.4	844	5.73	3.20	13.7	12.2	19.3	1032
	522	2.70	2.15	11.9	11.7	5.0	486	3.50	2.63	12.1	11.9	8.0	630	3.75	2.61	12.3	12.0	9.0	676	4.50	2.71	12.3	12.1	12.5	810
7	810	3.44	2.65	14.3	12.8	7.6	619	4.64	3.30	14.9	13.0	13.1	836	5.00	3.25	15.0	13.1	15.0	899	6.31	3.42	15.4	13.2	22.9	1136
	665	2.87	2.35	13.5	12.7	5.5	516	3.85	2.92	13.9	12.9	9.4	693	4.16	2.88	14.1	13.0	10.8	750	5.23	3.00	14.5	13.1	16.2	942
	522	2.31	1.99	12.7	12.6	3.7	415	3.07	2.47	12.9	12.8	6.3	553	3.34	2.46	13.1	12.9	7.2	601	4.09	2.54	13.2	13.0	10.4	735
8	810	2.89	2.46	15.0	13.6	5.7	520	3.98	3.11	15.6	13.9	10.2	717	4.34	3.07	15.7	14.0	11.9	781	5.61	3.22	16.1	14.2	18.7	1010
	665	2.40	2.11	14.6	13.5	4.0	432	3.32	2.73	14.7	13.8	7.3	598	3.63	2.71	14.9	13.9	8.6	654	4.69	2.83	15.3	14.0	13.5	844
	522	1.91	1.73	14.2	13.5	2.6	344	2.66	2.32	13.8	13.7	4.9	478	2.91	2.31	13.9	13.8	5.7	523	3.66	2.40	14.0	13.9	8.7	659
9	810	2.35	2.27	15.6	14.3	3.9	422	3.32	2.92	16.2	14.8	7.2	597	3.68	2.89	16.3	14.9	8.7	663	4.91	3.01	16.8	15.1	14.5	884
	665	1.93	1.88	15.6	14.3	2.5	348	2.79	2.55	15.5	14.7	5.2	502	3.09	2.53	15.6	14.8	6.3	557	4.14	2.65	16.0	14.9	10.7	746
	522	1.51	1.46	15.6	14.3	1.5	272	2.24	2.17	14.6	14.6	3.5	403	2.47	2.16	14.7	14.7	4.2	445	3.24	2.26	14.8	14.8	6.9	583

TAI: Air in temperature
Twi: Fluid in temperature
Qw: Fluid flow rate in heat exchanger
Dpw: Pressure drop standard coil
Qa: Air flow

Pf: Total cooling capacity
Pfs: Sensible cooling capacity
Tad: Discharge air dry bulb temperature
Taw: Discharge air wet bulb temperature

Note: Design and specification are subject to change without prior notice for product improvement.

PCE2-09-VS		TAI DB24℃-WB17.4℃						TAI DB27℃-WB19℃						TAI DB27℃-WB19.5℃						TAI DB28℃-WB21					
Twi	qa	Pf	Pfs	Tad	Taw	dPw	Qw	Pf	Pfs	Tad	Taw	dPw	Qw	Pf	Pfs	Tad	Taw	dPw	Qw	Pf	Pfs	Tad	Taw	dPw	Qw
°C	m3/h	kW	kW	°C	°C	kPa	l/h	kW	kW	°C	°C	kPa	l/h	kW	kW	°C	°C	kPa	l/h	kW	kW	°C	°C	kPa	l/h
5	1020	5.40	3.95	12.1	11.3	28.3	1009	6.89	4.78	12.6	11.5	43.7	1286	7.44	4.75	12.7	11.5	50.4	1389	9.04	4.94	13.1	11.6	71.7	1690
	837	4.49	3.46	11.3	11.2	20.3	839	5.79	4.20	11.6	11.3	32.1	1082	6.22	4.17	11.7	11.4	36.6	1163	7.47	4.35	12.0	11.5	50.9	1396
	767	4.19	3.24	11.1	11.1	17.7	783	5.31	3.93	11.3	11.3	27.2	991	5.71	3.93	11.3	11.3	31.3	1067	6.94	4.11	11.6	11.4	44.5	1297
6	1020	4.66	3.70	12.9	12.2	22.2	871	6.19	4.53	13.4	12.4	36.5	1156	6.72	4.49	13.5	12.4	42.4	1255	8.27	4.68	13.9	12.5	61.6	1546
	837	3.88	3.23	12.2	12.1	15.9	725	5.17	3.97	12.4	12.2	26.4	965	5.57	3.94	12.5	12.3	30.3	1041	6.83	4.12	12.8	12.4	43.7	1277
	767	3.59	2.99	12.1	12.1	13.6	672	4.76	3.70	12.2	12.2	22.6	890	5.14	3.69	12.2	12.2	26.2	960	6.37	3.88	12.5	12.3	38.3	1190
7	1020	3.92	3.45	13.6	13.1	16.0	732	5.49	4.29	14.1	13.2	29.3	1025	6.00	4.23	14.2	13.2	34.3	1120	7.50	4.42	14.6	13.4	51.4	1401
	837	3.27	2.99	13.0	13.0	11.4	611	4.54	3.74	13.2	13.1	20.7	848	4.92	3.72	13.3	13.2	24.0	919	6.20	3.88	13.6	13.3	36.4	1157
	767	3.00	2.74	13.0	13.0	9.4	560	4.22	3.47	13.0	13.0	17.9	788	4.57	3.45	13.1	13.1	21.0	853	5.79	3.66	13.3	13.2	32.1	1082
8	1020	3.25	2.99	15.0	13.9	11.4	607	4.62	4.00	14.9	14.2	21.9	864	5.15	3.97	15.0	14.2	26.5	961	6.65	4.16	15.4	14.4	41.9	1242
	837	2.73	2.57	14.5	13.8	8.1	510	3.85	3.42	14.4	14.1	15.5	718	4.26	3.48	14.2	14.1	18.8	796	5.51	3.65	14.5	14.3	29.8	1029
	767	2.54	2.38	14.4	13.7	6.9	474	3.55	3.15	14.3	14.0	13.1	664	3.93	3.21	14.1	14.1	16.1	734	5.14	3.42	14.2	14.2	26.1	960
9	1020	2.58	2.53	16.3	14.6	6.8	482	3.76	3.71	15.7	15.1	14.5	702	4.29	3.71	15.7	15.1	18.7	802	5.80	3.91	16.1	15.3	32.3	1083
	837	2.19	2.15	16.0	14.5	4.8	408	3.15	3.09	15.5	15.0	10.2	588	3.59	3.24	15.0	15.0	13.5	672	4.82	3.42	15.3	15.2	23.2	901
	767	2.07	2.02	15.8	14.4	4.4	387	2.89	2.84	15.5	15.0	8.3	539	3.29	2.96	15.0	15.0	11.2	615	4.48	3.18	15.1	15.1	20.0	837

TAI: Air in temperature
Twi: Fluid in temperature
Qw: Fluid flow rate in heat exchanger
Dpw: Pressure drop standard coil
Qa: Air flow

Pf: Total cooling capacity
Pfs: Sensible cooling capacity
Tad: Discharge air dry bulb temperature
Taw: Discharge air wet bulb temperature

Note: Design and specification are subject to change without prior notice for product improvement.

HYDRONIC CASSETTE

PCE2-12-VS		TAI DB24℃-WB17.4℃						TAI DB27℃-WB19℃						TAI DB27℃-WB19.5℃						TAI DB28℃-WB21					
Twi	qa	Pf	Pfs	Tad	Taw	dPw	Qw	Pf	Pfs	Tad	Taw	dPw	Qw	Pf	Pfs	Tad	Taw	dPw	Qw	Pf	Pfs	Tad	Taw	dPw	Qw
°C	m3/h	kW	kW	°C	°C	kPa	l/h	kW	kW	°C	°C	kPa	l/h	kW	kW	°C	°C	kPa	l/h	kW	kW	°C	°C	kPa	l/h
5	1375	7.31	5.58	12.5	11.3	27.1	1357	9.32	6.79	13.0	11.5	42	1730	10.06	6.74	13.1	11.5	48.6	1868	12.24	6.98	13.6	11.6	68.7	2273
	1171	6.36	5.03	11.9	11.2	21.0	1180	8.04	6.13	12.2	11.4	32.2	1493	8.66	6.07	12.3	11.4	36.9	1608	10.51	6.31	12.7	11.5	52.2	1951
	940	5.18	4.31	11.1	11.1	14.2	961	6.59	5.26	11.3	11.3	22	1223	7.07	5.25	11.3	11.3	25.2	1313	8.60	5.56	11.4	11.4	36.4	1596
6	1375	6.35	5.23	13.2	12.2	21.4	1180	8.35	6.41	13.8	12.4	34.8	1551	9.03	6.36	13.9	12.4	40.3	1676	11.14	6.60	14.4	12.6	58.4	2069
	1171	5.48	4.70	12.7	12.1	16.4	1018	7.16	5.78	13.0	12.3	26.4	1330	7.67	5.70	13.0	12.3	30.0	1424	9.59	5.97	13.5	12.5	44.5	1780
	940	4.45	3.98	12.1	12.1	10.9	825	5.86	4.94	12.2	12.2	18	1089	6.36	4.93	12.2	12.2	20.9	1181	7.84	5.23	12.4	12.4	30.9	1457
7	1375	5.40	4.87	13.9	13.0	15.7	1002	7.39	6.04	14.5	13.2	27.6	1371	8.00	5.98	14.6	13.3	31.9	1484	10.04	6.22	15.1	13.5	48	1865
	1171	4.61	4.38	13.4	13.0	11.8	855	6.28	5.43	13.8	13.2	20.6	1166	6.67	5.32	13.6	13.2	23.0	1239	8.66	5.64	14.3	13.4	36.8	1608
	940	3.71	3.66	13.0	13.0	7.6	689	5.14	4.61	13.1	13.1	13.9	954	5.65	4.61	13.1	13.1	16.6	1048	7.09	4.89	13.3	13.3	25.4	1317
8	1375	4.51	4.21	15.0	13.8	11.5	837	6.30	5.68	15.2	14.1	21.2	1169	6.91	5.63	15.3	14.2	25.0	1282	8.87	5.86	15.8	14.5	38.9	1648
	1171	3.85	3.70	14.7	13.8	8.5	714	5.36	4.87	14.7	14.1	15.6	995	5.86	5.03	14.5	14.1	18.5	1089	7.68	5.32	15.1	14.4	30	1425
	940	3.10	3.05	14.5	13.8	5.4	575	4.36	4.04	14.4	14.1	10.3	809	4.86	4.28	14.1	14.1	12.8	902	6.28	4.56	14.3	14.3	20.5	1166
9	1375	3.62	3.55	16.0	14.5	7.3	671	5.21	5.33	15.9	15.0	14.7	966	5.82	5.28	16.0	15.1	18.0	1080	7.70	5.50	16.5	15.4	29.7	1430
	1171	3.08	3.03	16.0	14.5	5.2	572	4.44	4.31	15.6	15.0	10.6	823	5.06	4.74	15.4	15.0	14.0	938	6.69	5.00	15.8	15.3	23.2	1242
	940	2.48	2.44	16.0	14.5	3.2	461	3.57	3.47	15.6	15.0	6.62	663	4.07	3.96	15.0	15.0	9.0	756	5.46	4.22	15.2	15.2	15.5	1014

TAI: Air in temperature
Twi: Fluid in temperature
Qw: Fluid flow rate in heat exchanger
Dpw: Pressure drop standard coil
Qa: Air flow

Pf: Total cooling capacity
Pfs: Sensible cooling capacity
Tad: Discharge air dry bulb temperature
Taw: Discharge air wet bulb temperature

Note: Design and specification are subject to change without prior notice for product improvement.

PCE2-16-VS		TAI DB24℃-WB17.4℃						TAI DB27℃-WB19℃						TAI DB27℃-WB19.5℃						TAI DB28℃-WB21					
Twi	qa	Pf	Pfs	Tad	Taw	dPw	Qw	Pf	Pfs	Tad	Taw	dPw	Qw	Pf	Pfs	Tad	Taw	dPw	Qw	Pf	Pfs	Tad	Taw	dPw	Qw
°C	m3/h	kW	kW	°C	°C	kPa	l/h	kW	kW	°C	°C	kPa	l/h	kW	kW	°C	°C	kPa	l/h	kW	kW	°C	°C	kPa	l/h
5	1628	8.23	6.34	12.9	11.6	32.2	1534	10.58	7.71	13.5	11.8	50.4	1972	11.47	7.66	13.6	11.8	58.7	2139	14.01	7.93	14.1	11.9	84.0	2612
	1296	6.67	5.48	12.0	11.5	22.0	1244	8.66	6.66	12.4	11.6	35.2	1615	9.21	6.59	12.5	11.7	39.3	1718	11.29	6.87	12.9	11.8	56.8	2105
	970	5.08	4.32	11.4	11.4	12.8	947	6.46	5.24	11.6	11.6	19.7	1203	7.00	5.26	11.6	11.6	23.0	1304	8.55	5.57	11.7	11.7	33.6	1594
6	1628	6.95	5.93	13.6	12.6	24.3	1296	9.36	7.29	14.2	12.7	40.9	1744	10.23	7.23	14.3	12.7	48.3	1903	12.72	7.51	14.8	12.9	71.1	2371
	1296	5.65	4.92	12.8	12.5	16.7	1054	7.55	6.30	13.2	12.6	28.5	1424	8.24	6.23	13.3	12.6	32.6	1527	10.24	6.51	13.7	12.8	48.1	1909
	970	4.32	3.84	12.4	12.4	9.7	805	5.74	4.93	12.5	12.5	16.1	1071	6.27	4.94	12.5	12.5	19.0	1168	7.77	5.24	12.7	12.7	28.4	1449
7	1628	5.68	5.52	14.3	13.5	16.4	1058	8.13	6.86	14.9	13.6	31.4	1516	9.00	6.81	15.0	13.6	37.9	1667	11.42	7.10	15.5	13.8	58.2	2130
	1296	4.64	4.37	13.6	13.4	11.3	864	6.44	5.94	13.9	13.5	21.7	1232	7.27	5.88	14.0	13.5	25.8	1335	9.19	6.14	14.4	13.7	39.3	1713
	970	3.56	3.37	13.3	13.3	6.5	663	5.03	4.63	13.4	13.4	12.5	938	5.54	4.62	13.4	13.4	15.0	1032	7.00	4.90	13.6	13.6	23.1	1304
8	1628	4.97	4.84	15.2	14.0	13.2	927	6.91	6.20	15.7	14.5	23.9	1288	7.70	6.39	15.7	14.5	29.2	1431	10.03	6.68	16.2	14.8	46.6	1869
	1296	4.01	3.85	14.8	14.0	8.7	748	5.48	5.20	15.1	14.4	15.9	1039	6.19	5.34	14.8	14.5	19.7	1143	8.09	5.77	15.2	14.7	31.6	1508
	970	3.05	2.93	14.7	13.9	4.9	569	4.21	3.98	14.9	14.4	9.0	785	4.72	4.13	14.4	14.4	11.4	880	6.16	4.56	14.6	14.6	18.5	1149
9	1628	4.27	4.17	16.0	14.5	9.9	795	5.69	5.53	16.4	15.3	16.3	1060	6.41	5.98	16.4	15.4	20.5	1195	8.63	6.26	16.9	15.7	35.0	1608
	1296	3.39	3.33	16.0	14.5	6.0	632	4.53	4.46	16.3	15.3	10.0	845	5.10	4.80	15.5	15.4	13.6	951	6.99	5.39	16.0	15.6	23.8	1302
	970	2.55	2.50	16.0	14.5	3.2	475	3.39	3.34	16.3	15.3	5.4	632	3.91	3.65	15.3	15.3	7.8	728	5.33	4.21	15.5	15.5	13.8	993

TAI: Air in temperature
Twi: Fluid in temperature
Qw: Fluid flow rate in heat exchanger
Dpw: Pressure drop standard coil
Qa: Air flow

Pf: Total cooling capacity
Pfs: Sensible cooling capacity
Tad: Discharge air dry bulb temperature
Taw: Discharge air wet bulb temperature

Note: Design and specification are subject to change without prior notice for product improvement.

ETHYLENE GLYCOL SOLUTIONS

Adding Ethylene Glycol to the water system so as to multiply the performance figures by the values given in the following table.

Freezing point (℃)						
	0	-5	-10	-15	-20	-25
Percentage of ethylene glycol in weight						
	0	12%	20%	28%	35%	40%
cPf	1	0.985	0.98	0.974	0.97	0.965
cQ	1	1.02	1.04	1.075	1.11	1.14
cdp	1	1.07	1.11	1.18	1.22	1.24

cPf: correction factor cooling capacity
cQ: correction factor flow rate
cdp: correction factor pressure drop

HEATING CAPACITY TABLES

PCE2-03-VS			TAI 18℃				TAI 20℃				TAI 22℃				TAI 24℃			
Twi	Two	qa	Pf	Tad	Qw	dPw	Pf	Tad	Qw	dPw	Pf	Tad	Qw	dPw	Pf	Tad	Qw	dPw
°C	°C	m3/h	kW	°C	l/h	kPa	kW	°C	l/h	kPa	kW	°C	l/h	kPa	kW	°C	l/h	kPa
45	40	465	2.97	37.7	509.0	8.4	2.71	38.1	464.0	7.1	2.47	38.5	423.0	6.1	2.23	38.9	382.0	5.1
		402	2.71	38.8	464.0	7.2	2.47	39.0	423.0	6.1	2.23	39.1	382.0	5.0	1.99	39.2	341.0	3.9
		332	2.34	39.7	401.0	5.5	2.15	40.0	368.5	4.7	1.94	40.1	332.0	3.9	1.73	40.2	295.5	3.1
50	40	465	3.13	38.8	268.0	2.7	2.88	39.1	246.9	2.3	2.62	39.4	224.0	1.9	2.36	39.7	201.1	1.5
		402	2.83	39.7	242.0	2.2	2.61	40.0	223.0	1.9	2.37	40.2	203.0	1.6	2.13	40.4	183.0	1.3
		332	2.47	40.9	211.0	1.7	2.28	41.2	195.0	1.5	2.07	41.3	177.4	1.3	1.86	41.4	159.8	1.1
70	60	465	5.70	55.8	488.0	7.8	5.46	56.2	468.0	7.3	5.20	56.5	445.7	6.6	4.94	56.8	423.4	6.0
		402	5.13	57.3	439.0	6.4	4.92	57.7	421.0	6.0	4.68	58.0	401.0	5.5	4.44	58.3	381.0	5.0
		332	4.46	59.6	382.0	5.0	4.30	60.0	368.0	4.7	4.09	60.0	350.0	4.3	3.88	60.0	332.0	3.9

TAI: Air in temperature
Twi: Fluid in temperature
Qw: Fluid flow rate in heat exchanger
Dpw: Pressure drop standard coil
Qa: Air flow
Pf: Total heating capacity
Tad: Discharge air temperature

Note: Design and specification are subject to change without prior notice for product improvement.

PCE2-04-VS			TAI 18℃				TAI 20℃				TAI 22℃				TAI 24℃			
Twi	Two	qa	Pf	Tad	Qw	dPw	Pf	Tad	Qw	dPw	Pf	Tad	Qw	dPw	Pf	Tad	Qw	dPw
°C	°C	m3/h	kW	°C	l/h	kPa	kW	°C	l/h	kPa	kW	°C	l/h	kPa	kW	°C	l/h	kPa
45	40	600	3.60	36.40	617	12.4	3.27	36.80	560	10.4	2.99	37.10	512	8.9	2.71	37.40	464	7.4
		540	3.35	37.00	574	10.9	3.05	37.40	522	9.2	2.76	37.80	473	7.7	2.47	38.20	424	6.2
		410	2.75	38.70	471	7.7	2.53	39.00	433	6.6	2.28	39.10	390	5.5	2.03	39.20	347	4.4
50	40	600	3.80	37.20	325	3.9	3.46	37.80	296	3.3	3.15	38.20	270	2.8	2.84	38.60	244	2.3
		540	3.50	38.00	300	3.4	3.22	38.40	276	2.9	2.94	38.80	252	2.5	2.66	39.20	228	2.1
		410	2.90	39.70	248	2.4	2.66	40.00	228	2.1	2.43	40.30	208	1.8	2.20	40.60	188	1.5
70	60	600	6.95	53.10	595	11.7	6.58	53.70	564	10.6	6.28	54.10	538	9.8	5.98	54.50	512	8.9
		540	6.40	54.60	549	10.0	6.10	54.90	522	9.2	5.82	55.20	498	8.5	5.54	55.50	474	7.8
		410	5.28	57.50	453	7.1	5.03	57.90	431	6.5	4.80	58.10	411	6.0	4.57	58.30	391	5.5

TAI: Air in temperature
Twi: Fluid in temperature
Qw: Fluid flow rate in heat exchanger
Dpw: Pressure drop standard coil
Qa: Air flow
Pf: Total heating capacity
Tad: Discharge air temperature

Note: Design and specification are subject to change without prior notice for product improvement.

HYDRONIC CASSETTE

PCE2-06-VS			TAI 18℃				TAI 20℃				TAI 22℃				TAI 24℃			
Twi	Two	qa	Pf	Tad	Qw	dPw	Pf	Tad	Qw	dPw	Pf	Tad	Qw	dPw	Pf	Tad	Qw	dPw
°C	°C	m3/h	kW	°C	l/h	kPa	kW	°C	l/h	kPa	kW	°C	l/h	kPa	kW	°C	l/h	kPa
45	40	750	4.48	36.40	768	10.4	4.08	36.80	700	8.7	3.69	37.20	632	7.3	3.30	37.60	564	5.9
		650	4.06	37.20	696	8.7	3.70	37.50	634	7.3	3.35	37.90	574	6.1	3.00	38.30	514	4.9
		590	3.80	37.70	651	7.7	3.46	38.10	593	6.5	3.13	38.30	536	5.4	2.80	38.50	479	4.3
50	40	750	4.68	37.20	401	3.2	4.28	37.60	366	2.7	3.91	38.10	335	2.3	3.54	38.60	304	1.9
		650	4.23	38.10	362	2.7	3.90	38.50	334	2.3	3.55	38.80	304	1.9	3.20	39.10	274	1.5
		590	3.98	38.70	341	2.4	3.65	39.00	312	2.1	3.31	39.30	283	1.7	2.97	39.60	254	1.3
70	60	750	8.56	53.10	733	9.5	8.17	53.60	700	8.7	7.77	54.00	666	8.0	7.37	54.40	632	7.3
		650	7.75	54.80	664	8.0	7.40	55.10	634	7.3	7.06	55.50	605	6.8	6.72	55.90	576	6.2
		590	7.26	56.00	622	7.1	6.92	56.20	593	6.5	6.58	56.40	564	5.9	6.24	56.60	535	5.4

TAI: Air in temperature
Twi: Fluid in temperature
Qw: Fluid flow rate in heat exchanger
Dpw: Pressure drop standard coil
Qa: Air flow
Pf: Total heating capacity
Tad: Discharge air temperature

Note: Design and specification are subject to change without prior notice for product improvement.

PCE2-08-VS			TAI 18℃				TAI 20℃				TAI 22℃				TAI 24℃			
Twi	Two	qa	Pf	Tad	Qw	dPw	Pf	Tad	Qw	dPw	Pf	Tad	Qw	dPw	Pf	Tad	Qw	dPw
°C	°C	m3/h	kW	°C	l/h	kPa	kW	°C	l/h	kPa	kW	°C	l/h	kPa	kW	°C	l/h	kPa
45	40	850	4.87	35.70	834	12.1	4.45	36.10	762.9	10.2	4.02	36.60	689	8.5	3.59	37.10	615.1	6.9
		700	4.26	36.80	730	9.5	3.90	37.10	668	8.1	3.53	37.50	605	6.8	3.16	37.90	542	5.4
		550	3.60	38.20	617	7.0	3.29	38.40	564	5.9	2.98	38.70	510	5.0	2.67	39.00	456	4.1
50	40	850	5.10	36.50	437	3.8	4.65	36.90	398.6	3.2	4.25	37.40	364	2.7	3.85	37.90	329.4	2.2
		700	4.44	37.60	380	2.9	4.10	38.00	351	2.5	3.73	38.40	319	2.1	3.36	38.80	287	1.8
		550	3.78	39.20	324	2.2	3.47	39.40	297	1.9	3.16	39.70	270	1.6	2.85	40.00	243	1.3
70	60	850	9.30	51.80	797	11.1	8.90	52.30	762	10.2	8.46	52.70	725	9.3	8.02	53.10	688	8.4
		700	8.17	54.00	700	8.8	7.80	54.30	668	8.1	7.41	54.70	635	7.4	7.02	55.10	602	6.7
		550	6.90	56.60	591	6.5	6.58	56.90	564	6.0	6.28	57.20	538	5.5	5.98	57.50	512	5.1

TAI: Air in temperature
Twi: Fluid in temperature
Qw: Fluid flow rate in heat exchanger
Dpw: Pressure drop standard coil
Qa: Air flow
Pf: Total heating capacity
Tad: Discharge air temperature

Note: Design and specification are subject to change without prior notice for product improvement.

HYDRONIC CASSETTE

PCE2-09-VS			TAI 18℃				TAI 20℃				TAI 22℃				TAI 24℃			
Twi	Two	qa	Pf	Tad	Qw	dPw	Pf	Tad	Qw	dPw	Pf	Tad	Qw	dPw	Pf	Tad	Qw	dPw
°C	°C	m3/h	kW	°C	l/h	kPa	kW	°C	l/h	kPa	kW	°C	l/h	kPa	kW	°C	l/h	kPa
45	40	1100	6.60	36.5	1131	33.0	6.06	37.0	1038	28.5	5.48	37.3	939	23.7	4.90	37.6	840	18.9
		900	5.76	37.7	987	25.9	5.25	38.0	900	21.9	4.76	38.3	816	18.3	4.27	38.6	732	14.7
		825	5.40	38.2	925	23.0	4.95	38.5	848	19.7	4.49	38.8	769	16.6	4.03	39.1	690	13.5
50	40	1100	7.00	37.6	600	10.6	6.43	38.0	551	9.0	5.90	38.5	505	7.8	5.37	39.0	459	6.6
		900	6.10	38.9	522	8.2	5.60	39.2	480	7.1	5.13	39.6	439	6.1	4.66	40.0	398	5.1
		825	5.74	39.4	492	7.4	5.30	39.8	454	6.4	4.83	40.1	414	5.4	4.36	40.4	374	4.4
70	60	1100	12.65	53.4	1084	30.6	12.12	54.0	1038	28.5	11.56	54.4	990	26.2	11.00	54.8	942	23.9
		900	11.00	55.7	942	23.8	10.52	56.0	901	21.9	10.04	56.4	860	20.3	9.56	56.8	819	18.7
		825	10.34	56.6	886	21.3	9.86	56.9	845	19.5	9.44	57.3	809	18.1	9.02	57.7	773	16.7

TAI: Air in temperature
Twi: Fluid in temperature
Qw: Fluid flow rate in heat exchanger
Dpw: Pressure drop standard coil
Qa: Air flow
Pf: Total heating capacity
Tad: Discharge air temperature

Note: Design and specification are subject to change without prior notice for product improvement.

PCE2-12-VS			TAI 18℃				TAI 20℃				TAI 22℃				TAI 24℃			
Twi	Two	qa	Pf	Tad	Qw	dPw	Pf	Tad	Qw	dPw	Pf	Tad	Qw	dPw	Pf	Tad	Qw	dPw
°C	°C	m3/h	kW	°C	l/h	kPa	kW	°C	l/h	kPa	kW	°C	l/h	kPa	kW	°C	l/h	kPa
45	40	1430	8.63	36.6	1479	28.7	7.90	37.0	1354	24.6	7.14	37.4	1224	20.4	6.38	37.8	1094	16.2
		1220	7.73	37.6	1325	23.6	7.08	37.9	1213	20.2	6.40	38.2	1097	16.8	5.72	38.5	981	13.4
		980	6.63	38.8	1136	17.9	6.06	39.1	1038	15.3	5.49	39.3	941	12.7	4.92	39.5	844	10.1
50	40	1430	9.10	37.6	780	9.1	8.38	38.1	718	7.9	7.64	38.5	654	6.65	6.90	38.9	590	5.44
		1220	8.15	38.7	698	7.4	7.52	39.0	644	6.5	6.87	39.3	588	5.5	6.22	39.6	532	4.54
		980	7.00	40	600	5.6	6.45	40.3	553	4.9	5.88	40.5	504	4.14	5.31	40.7	455	3.38
70	60	1430	16.52	53.6	1416	26.5	15.80	54.1	1354	24.6	15.06	54.5	1290	22.5	14.32	54.9	1226	20.4
		1220	14.80	55.5	1268	21.8	14.16	55.8	1213	20.2	13.50	56.1	1157	18.5	12.84	56.4	1101	16.8
		980	12.70	58	1088	16.6	12.12	58.2	1038	15.2	11.56	58.4	990	14	11.00	58.6	942	12.8

TAI: Air in temperature
Twi: Fluid in temperature
Qw: Fluid flow rate in heat exchanger
Dpw: Pressure drop standard coil
Qa: Air flow
Pf: Total heating capacity
Tad: Discharge air temperature

Note: Design and specification are subject to change without prior notice for product improvement.

HYDRONIC CASSETTE

PCE2-16-VS			TAI 18℃				TAI 20℃				TAI 22℃				TAI 24℃			
Twi	Two	qa	Pf	Tad	Qw	dPw	Pf	Tad	Qw	dPw	Pf	Tad	Qw	dPw	Pf	Tad	Qw	dPw
°C	°C	m3/h	kW	°C	l/h	kPa	kW	°C	l/h	kPa	kW	°C	l/h	kPa	kW	°C	l/h	kPa
45	40	1700	9.80	35.8	1680	36.7	8.96	36.3	1536	31.3	8.10	36.7	1388	26.0	7.24	37.1	1240	20.7
		1350	8.37	37.2	1434	27.6	7.65	37.5	1311	23.5	6.95	37.8	1191	19.8	6.25	38.1	1071	16.1
		1010	6.83	38.9	1170	19.2	6.24	39.1	1069	16.3	5.66	39.3	970	13.7	5.08	39.5	871	11.1
50	40	1700	10.33	36.8	885	11.6	9.52	37.2	816	10.0	8.64	37.7	740	8.4	7.76	38.2	664	6.8
		1350	8.84	38.2	757	8.74	8.10	38.5	694	7.4	7.40	39.0	634	6.4	6.70	39.5	574	5.4
		1010	7.22	40.1	618	6.1	6.64	40.3	569	5.2	5.98	40.8	512	4.3	5.32	41.3	455	3.4
70	60	1700	18.76	52.1	1608	33.9	17.88	52.5	1532	31.0	17.06	53.0	1462	28.6	16.24	53.5	1392	26.2
		1350	16.02	54.7	1373	25.5	15.30	55.0	1311	23.5	14.60	55.4	1251	21.6	13.90	55.8	1191	19.7
		1010	13.05	57.9	1118	17.6	12.50	58.1	1071	16.3	11.72	58.9	1004	14.5	10.94	59.7	937	12.7

TAI: Air in temperature
Twi: Fluid in temperature
Qw: Fluid flow rate in heat exchanger
Dpw: Pressure drop standard coil
Qa: Air flow
Pf: Total heating capacity
Tad: Discharge air temperature

Note: Design and specification are subject to change without prior notice for product improvement.

HYDRONIC CASSETTE

THE INSTALLATION MANUAL

HOT & CHILLED WATER SYSTEM AIR CONDITIONERS
First check the contents of the package.

FACTORY SUPPLIED ACCESSORIES
Check to ensure all factory supplied accessories are supplied with the unit.

FACTORY SUPPLIED ACCESSORIES	AMOUNT
LCD Remote control	1
Mounting Bracket (Already on the unit)	1
Installation manual	1
Batteries	2
External drain pan	1

The appliance should be installed in accordance with national wiring regulation.

SAFETY CONSIDERATIONS

1. When working on air conditioning equipment, observe precautions in this manual, and on plates and tables attached to the unit. Follow all safety codes and other safety precautions that may apply.
2. Installing and servicing air conditioning equipment should be done by trained and qualified service personnel only. Untrained personnel can perform only basic maintenance functions such as cleaning coils, filters and replacing filters.
3. Ensure that the electrical supply and frequency are adequate for the operating current required for this specific installation.

WARNING - Before any service or maintenance operations turn off the main power switch.

1. The manufacturer denies any responsibility and warranty shall be void if these installation instructions are not observed.
2. Never switch off the power main supply when unit is operating in the cooling cycle. To switch off the fan coil unit use only the ON-OFF button.
3. This avoids over-flow in the drain pan, by allowing the pump to drain any condensate water due to regulating valve losses when chiller is working.

OPERATING LIMITS

1. Power supply

Volt	Phase	Hz
230	1	50

2. Water circuit

- Minimum entering water temperature: +2 °C
- Maximum entering water temperature: +80 °C
- Water side maximum pressure: 1400 kPa (142 m.w.c)

HYDRONIC CASSETTE

BEFORE INSTALLATION

The installation site must be established by the system designer or other qualified professional, taking account of the technical requisites and current standards and legislation.

PCE2 fan coils must be installed by an authorized company only.

PCE2 fan coils are designed for installation in a false ceiling, for intake of fresh air from outside and for deviation of a small part of the treated air for discharge in a neighboring room.

They must be installed in such a way as to enable treated air to circulate throughout the room and in respect of the minimum distances required for technical maintenance operations.

1. It is advisable to place the unit close to the installation site without removing it from the packaging.
2. Do not put heavy tools or weights on the packaging.
3. Upon receipt, the unit and the packaging must be checked for damage sustained in transit and if necessary, a damage claim must be filed with the shipping company.
4. Check immediately for installation accessories inside the packaging.
5. Do not lift unit by the condensate drain discharge pipe or by the water connections; lift it by the four corners.(Fig.1)
6. Check and note the unit serial number.

Fig.1

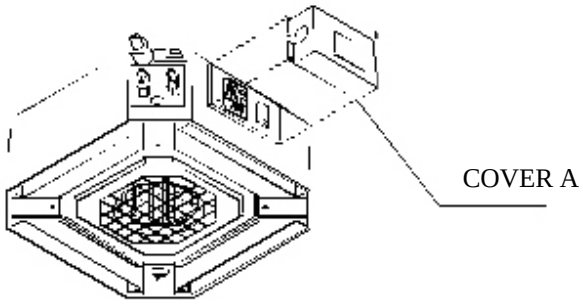
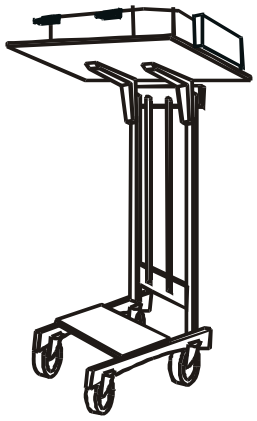


Fig.2



SELECT LOCATION

1. Do not install the unit in rooms where flammable gas or alkaline acid substances are present. Aluminum/copper coils and/or internal plastic components can be damaged irreparably.
2. Do not install in workshops or kitchens; oil vapors drawn in by treated air might deposit on the coils and alter their performance or damage the internal plastic parts of the unit.
3. Installation of the unit will be facilitated by using a stacker and inserting a plywood sheet between the unit and the elevated stacker.(Fig.2)
4. It is recommended to position the unit as centrally as possible in the room to ensure optimum air distribution. (Fig.3)
   Generally the best louver position is the one which allows air diffusion along the ceiling. Alternatively intermediate positions can be selected.
5. Check that it is possible to remove panels from ceiling in the selected position, to allow enough clearance for maintenance and servicing operations.

HYDRONIC CASSETTE

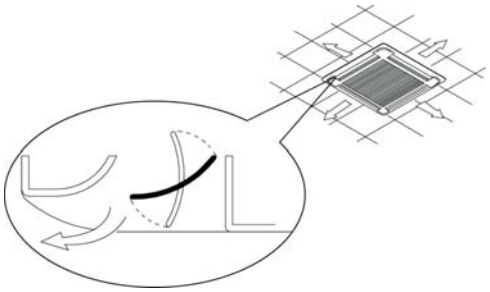


Fig.3

INSTALLATION LOCATION
INSTALL THE UNIT IN A POSITION:

1. Having sufficient strength to carry the weight of the unit.
2. Where the inlet and outlet grilles are not obstructed and the conditioned air is able to blow all over the room.
3. From where condensate can be easily run to drain.
4. Check the distance between the upper slab and false ceiling to ensure the unit will suit the distance. See Fig.4

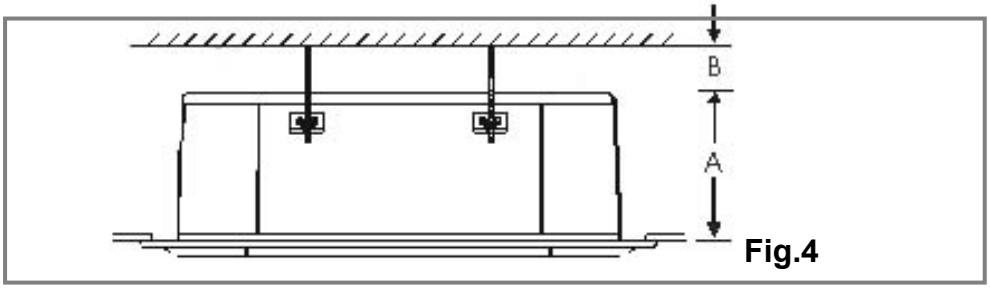


Fig.4

Model	A (mm.)	B (mm.)
PCE2-03/04/09	250	10 or more
PCE2-06/08/12/16	290	10 or more

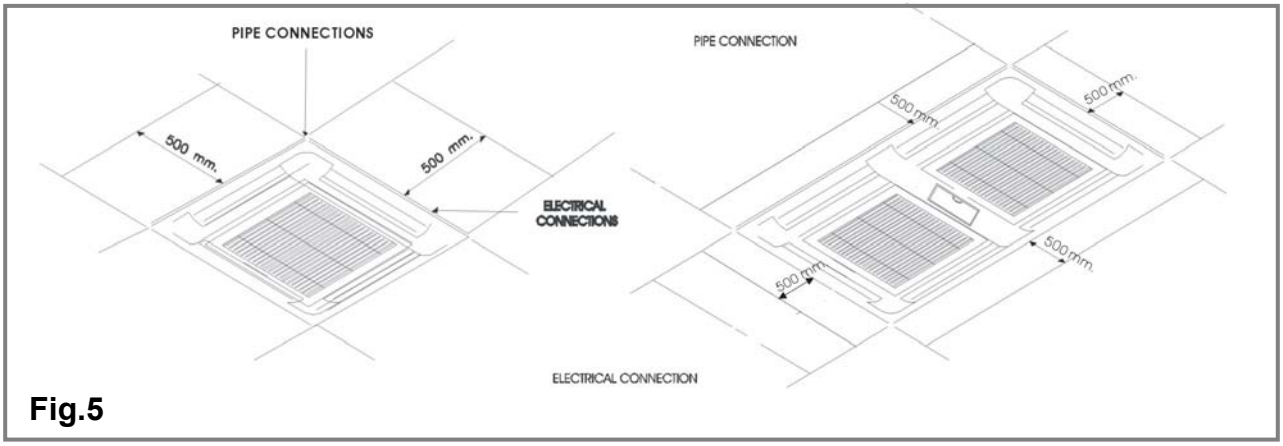
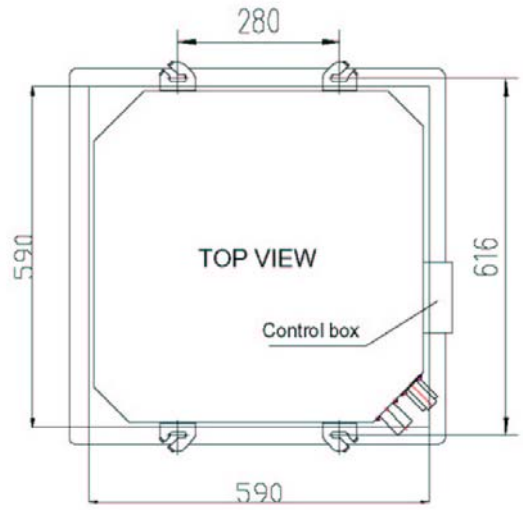


Fig.5

5. Ensure there is sufficient space around the unit to service it. See Fig.5

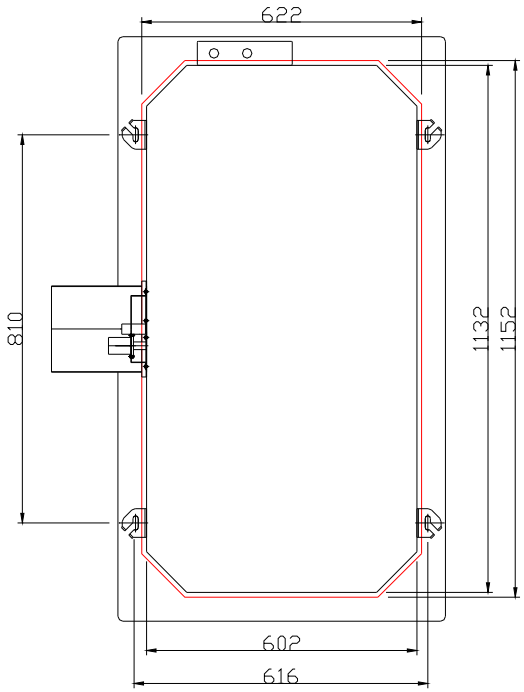
HYDRONIC CASSETTE

INSTALLATION METHOD
CASSETTE UNIT
Using the installation template open ceiling panels and install the suspension bolts as in Fig.6 below



590 x 590: Dimensions for opening
616×280: Suspension Bolts

MODELS	PCE2-03/04/06/08



622×1152: Dimensions for opening
616×810: Suspension Bolts

MODELS	PCE2-09/12/16

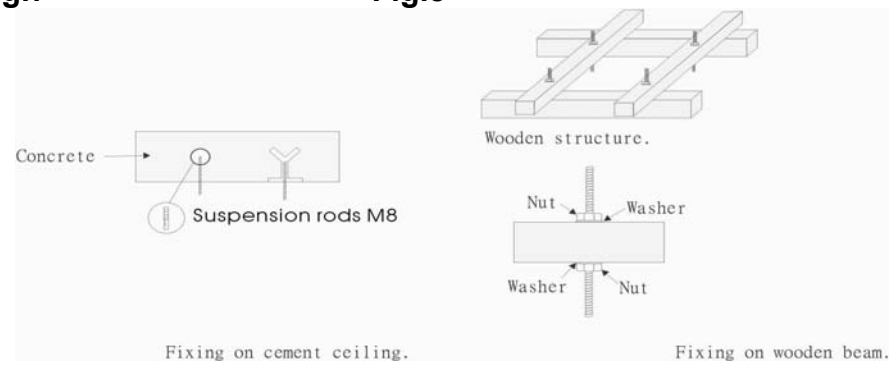
FIG. 6

HYDRONIC CASSETTE

OPENING DIMENSIONS AND POSITIONS FOR SUSPENSION BOLTS

1. Mark position of suspension rods, water lines and condensate drain pipe, power supply cables and remote control cable.
2. Supporting rods can be fixed, depending on the type of ceiling, as shown in Fig. 7 and Fig.8.
3. Fit suspension brackets supplied with the unit to the threaded rods (Fig.9).
4. Do not tighten nuts and counter nuts; this operation has to be done only after final leveling of the unit, when all the connections have been completed.

Fig.7 **Fig.8**



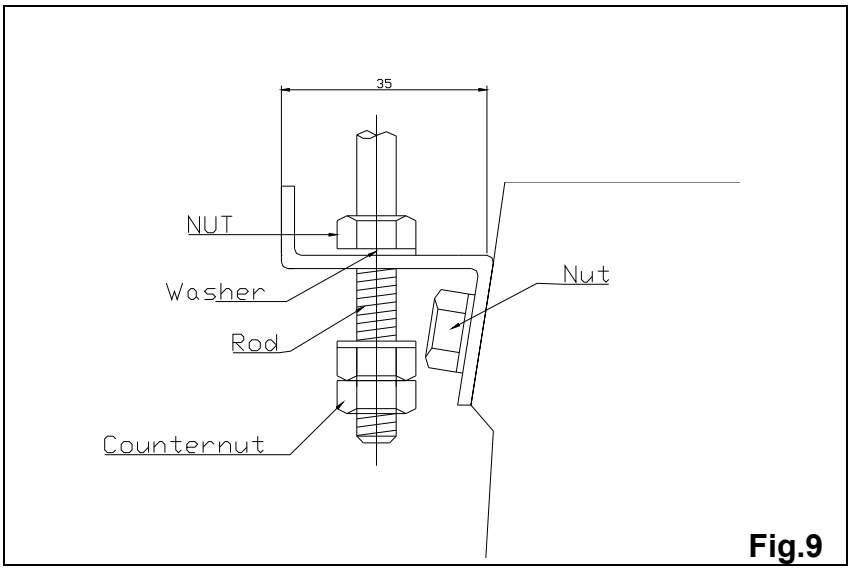


Fig.9

1. Ensure the ceiling is horizontally level, otherwise condensate water cannot drain.
2. The casing is fixed to the slab with 4 drop rods. The rods should have two nuts and washers to lock the unit in position. The Cassette brackets will then hook over the washers.
3. When lifting the Cassette into position care should be taken not to lift the unit by the drip tray, which could be damaged.
4. Lift unit (without the air panel) with care by its four corners only. Do not lift unit by the condensate drain discharge pipe or by the piping connections.
5. Incline unit (Fig.10, Fig.11, Fig.13, Fig.14) and insert it into the false ceiling. Insert the rods into the bracket slot. With minimum height (see table) false ceilings, it might be necessary to remove some T brackets of the false ceiling temporarily.

7. Using a level guide, line up the unit with a spirit level, and keep dimension between the body and the lower part of the false ceiling (Fig.12 Fig.15).
8. Line up the unit to the supporting bars of the false ceiling tightening the nuts and counter nuts of the threaded rods.
9. After connection of the condensate drain piping and piping connections, check again that the unit is level.

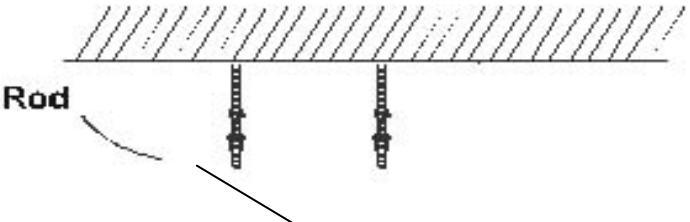


Fig.10

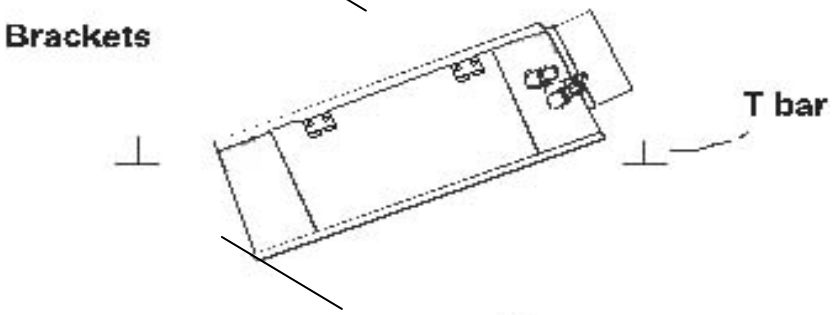


Fig.11

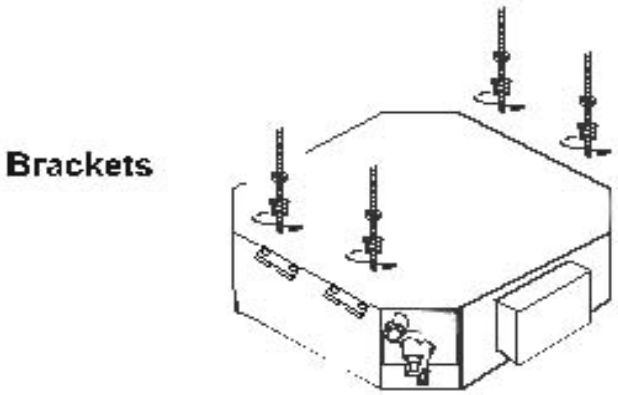
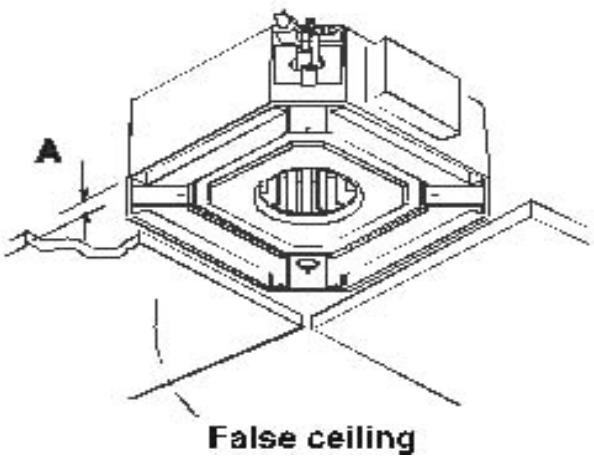


Fig.12



MODEL	PCE2/03/04/06/08
A (mm.)	3

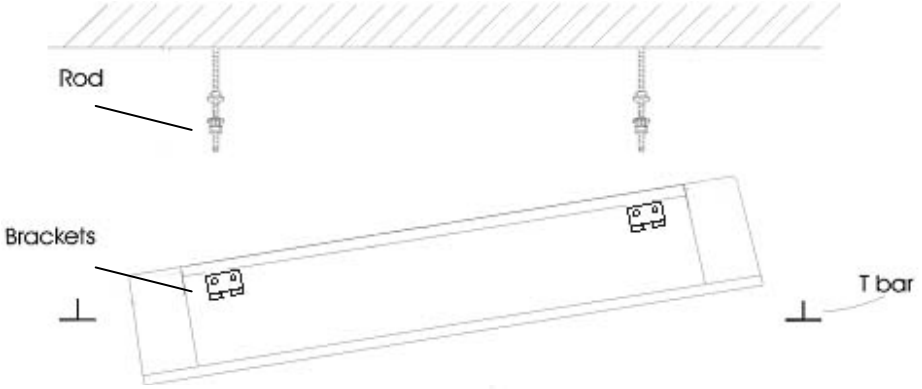


Fig. 13

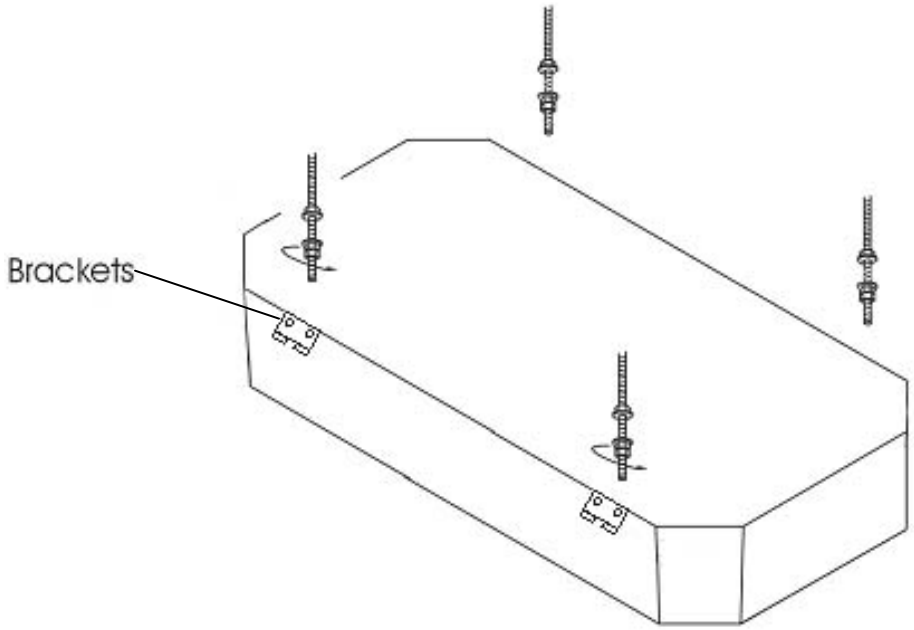


Fig. 14

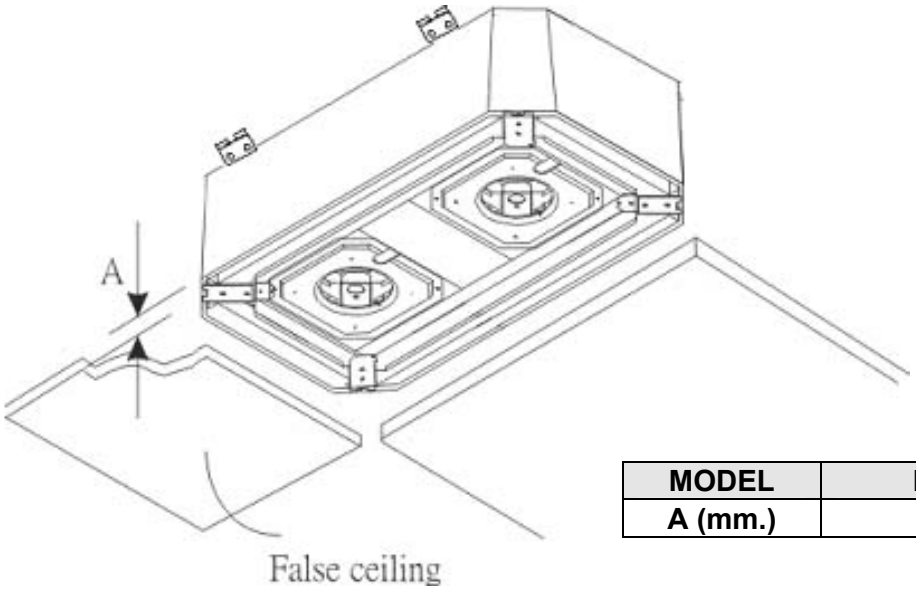


Fig. 15

MODEL	PCE2-09//12/16
A (mm.)	3

10. The spaces between the unit and ceiling can now be adjusted. Use the drop rods to make the adjustment.
11. Check to ensure the unit is level. The drain will then automatically be lower than the rest of the drip tray.
12. Tighten the nuts on the suspended rods.

HYDRONIC CASSETTE

DRAIN PIPE WORK
INDOOR UNIT

1. The unit is fitted with a condensate pump with a 500 mm. lift.
2. The unit is provided with 22 mm. bore flexible hose 300 mm. long.
3. The flexible hose should be fitted into a 22 mm O/S Φ. polyvinyl tube and sealed. The drain must be installed with a downward slope.
4. On completion the drain line should be insulated.

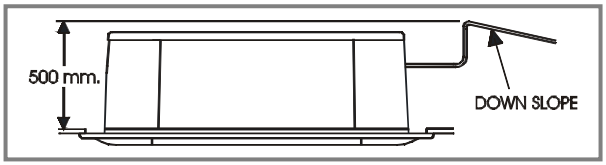
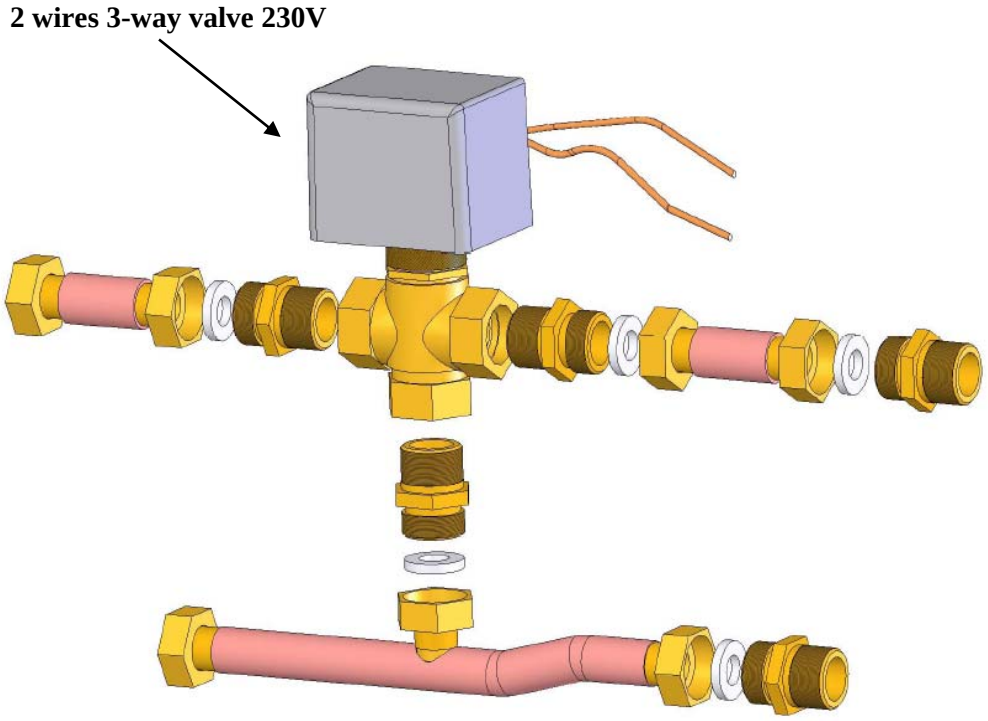


Fig. 16

WATER CONNECTIONS

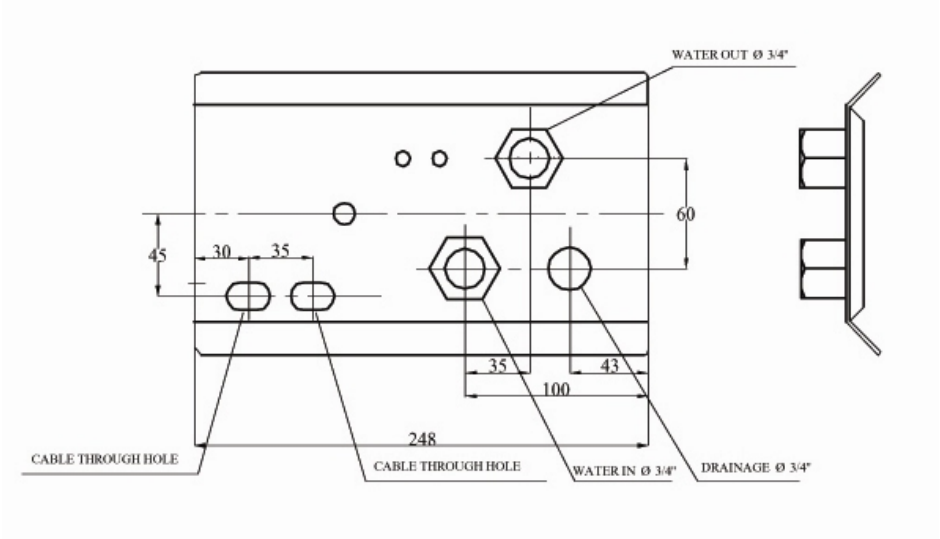
1. Water connections are fixed to the unit body to avoid breaks when pipes are connected to valve assemblies; it is advisable to tighten the connection with a spanner.
2. The upper coil connection is supplied with air purge screw, the lower connection with water purge screw, suitable for 8mm. wrench or screw-driver.
3. Coil is partially drainable; it is advisable to blow air into the coil for complete drainage.

PIPE CONNECTION KIT (OPTION)

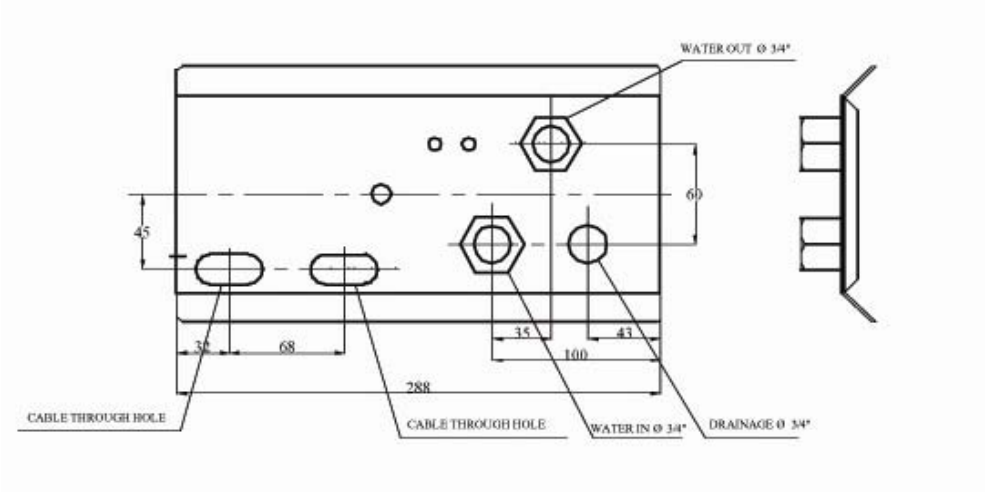


HYDRONIC CASSETTE

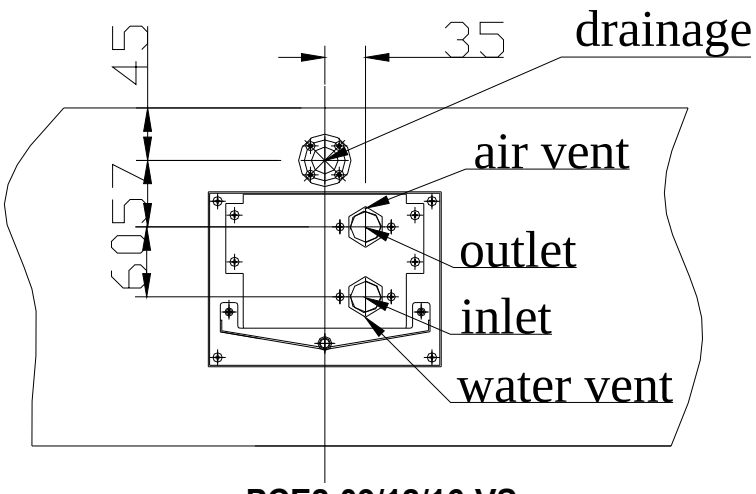
PIPE CONNECTION DIMENSIONAL DRAWINGS



PCE2-03/04-VS



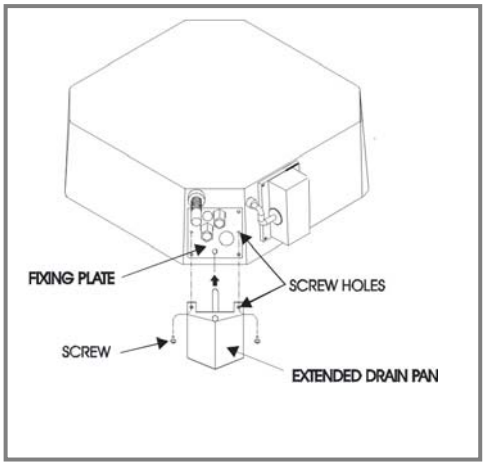
PCE2-06/08-VS

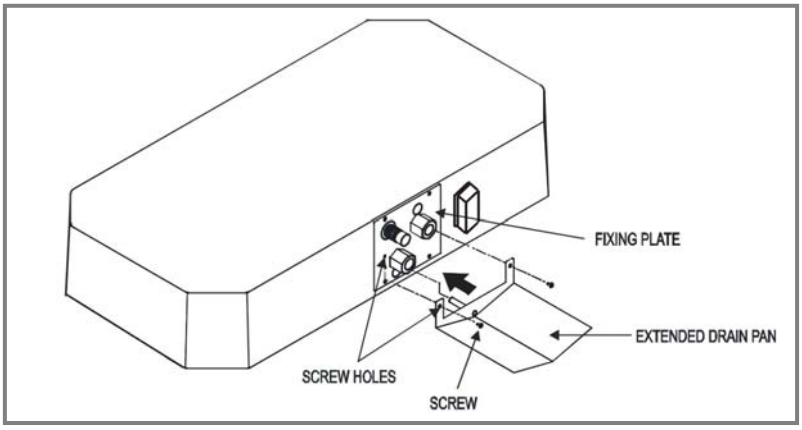


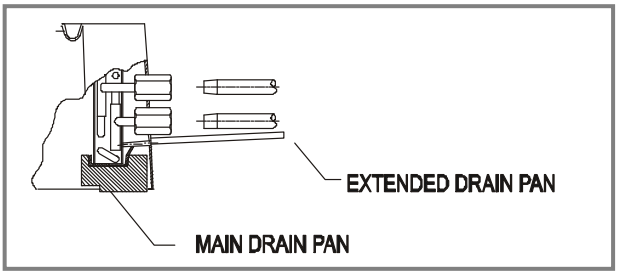
PCE2-09/12/16-VS

HYDRONIC CASSETTE

EXTENDED DRAIN PAN ACCESSORY

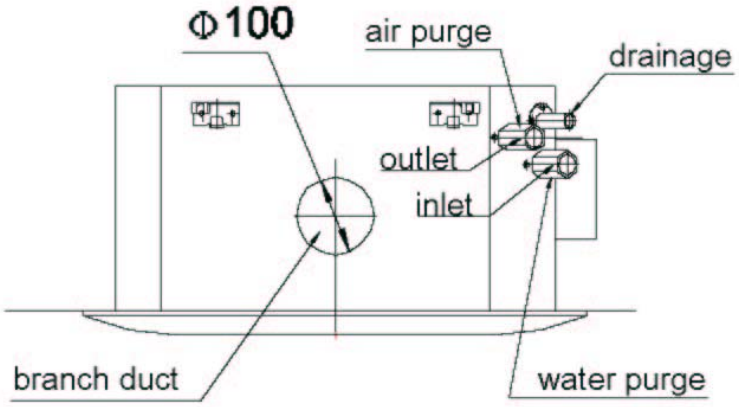






INSTALLATION PROCEDURES

1. Align the two (2) screw holes in the fixing plate to the two (2) holes in the external drain pan.
2. Make sure the drain pan is horizontal.
3. Tighten the two screws and making sure the external drain pan is installed flush with the fixing plate.



When the installation is completed, it is necessary to wrap connecting pipe with insulation to prevent leakage to ceiling tile.

ELECTRICAL WIRING

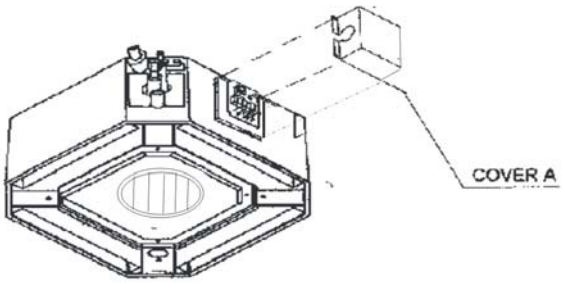
1. Remove cover A and install the connection wires.
2. After wiring is complete install cover A.

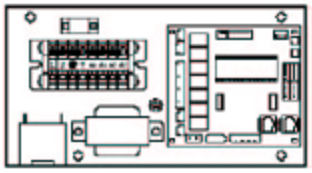
HYDRONIC CASSETTE

INTERCONNECTING WIRING

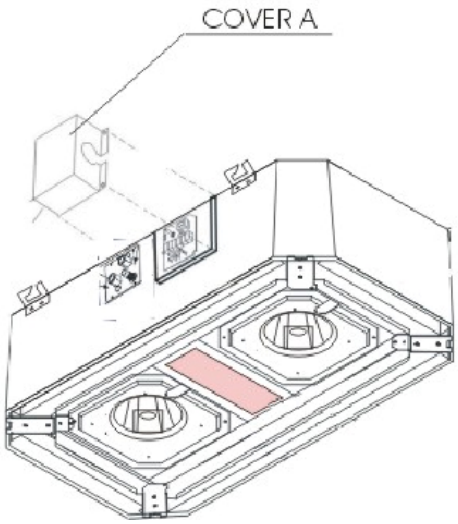
We recommend that screened cable be used in electrically noisy areas.

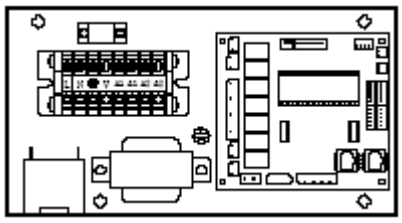
1. Always separate low voltage (5VDC) signal wires from power line (230 VAC) to avoid electro-magnetic disturbance of control system.
2. Do not install the unit where electromagnetic waves are directly radiated at the infra red receiver on the unit.
3. Install the unit and components as far away as is practical (at least 5 meters) from the electromagnetic wave source.
4. Where electromagnetic waves exist use shielded sensor cable.
5. Install a noise filter if any harmful noise exists in the power supply.





TERMINAL BLOCK
PCE2-03/04/06/08





TERMINAL BLOCK
PCE2-09/12/16

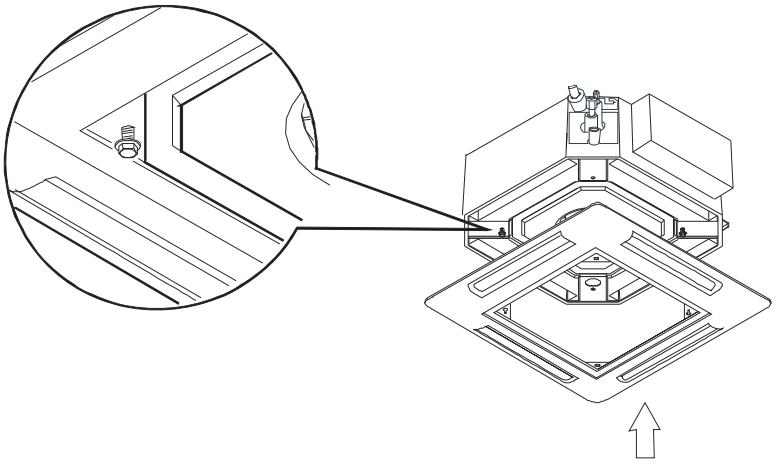


Fig. 17

MOUNTING FRONT PANEL ASSEMBLY

1. Remove return grille from front panel.
2. Move the front panel to casing.
3. Tighten 4 screws as shown in Fig 17,18

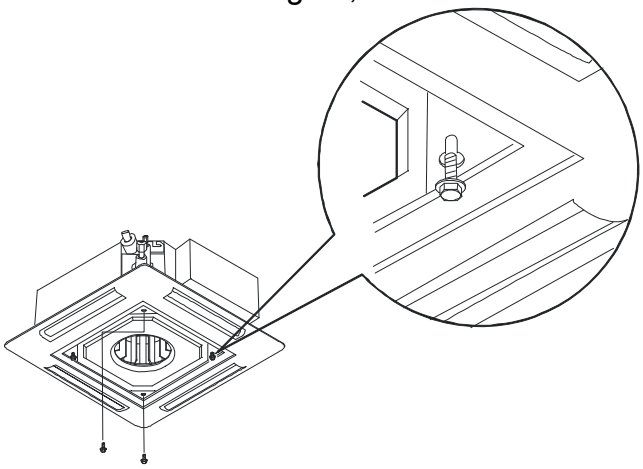


Fig. 18

FILTER REMOVAL

1. Unlock the two fasteners on the front panel.
2. Open the grille downward with care.
3. Pull the filter out along the slot.
4. Clean the filter and reassemble.

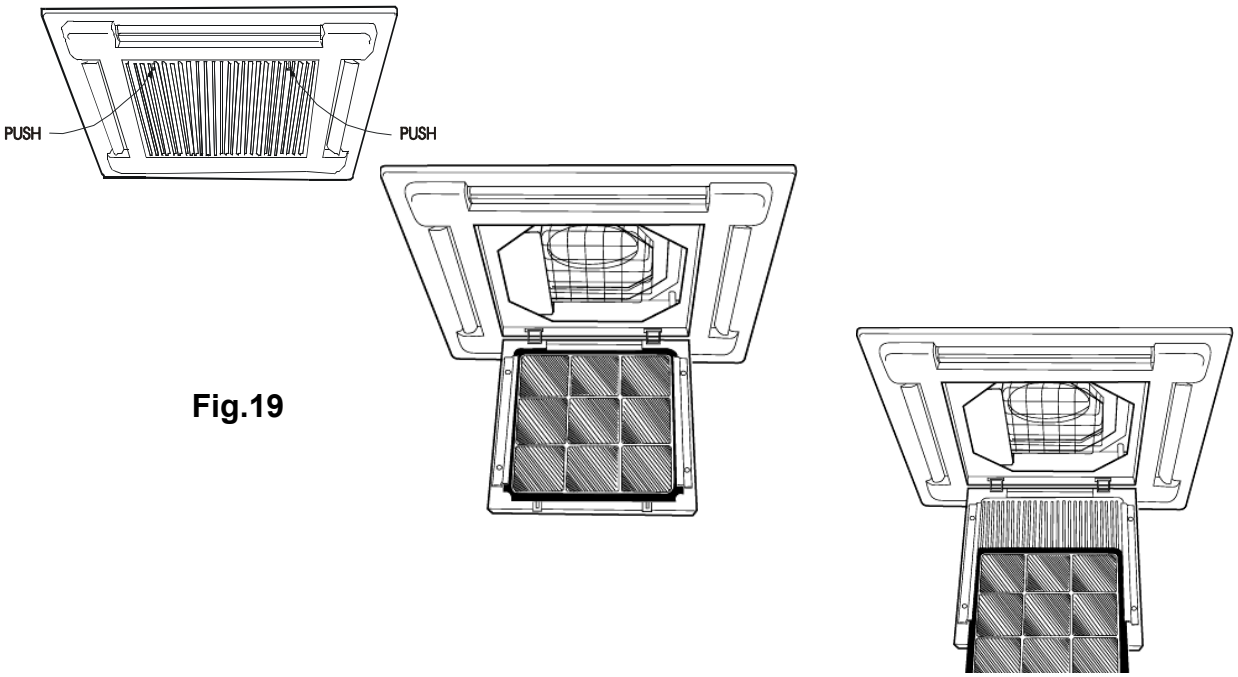


Fig.19

HYDRONIC CASSETTE

PRELIMINARY CHECKS BEFORE START-UP

1. The unit should not be started up until the system piping has been cleaned and all the air has been purged.
2. Check condensate drain pipe slope.
3. After you have connected the main power supply to the cassette unit, it is necessary to check the good function of the condensate water pump which is installed inside.
   Due to transport vibration, it might be possible that the float switch is hung up and the pump might not work in the correct way. For this reason, you have to do the following, to ensure good functioning of the unit:

a. Install the cassette unit in an absolute horizontal position.
b. Fill the internal drainpan (manually) with enough water to ensure the drain pump is working.
c. You can fill the drainpan by pouring water through the external drainpan.
   If everything is correct, the water will be pushed out into the pipe work you have installed. If the valve does not open, you have to make sure the float switch is not hung up inside the unit and you will have to loosen it by hand.

4. Make sure that air filter is clean and properly installed.
5. Ensure that voltage and current values correspond with the unit nameplate values; check electrical connections.
6. Verify that air outlets are not closed.

MAINTENANCE

1. Before performing any service or maintenance operations, turn off the main power switch.
2. The air filter is made of acrylic fiber and is washable in water. To remove filter simply open the intake grille by releasing the two catches. See Fig.19 and the section filter removal.
3. Check the filter periodically and before the operating season; clean or replace as necessary.

PROLONGED UNIT SHUT-DOWN

1. Prior to restarting the unit:
2. Clean or replace the air filters.
3. Check and remove any obstruction from the external drain pan and the internal drain pan.

EXTRA MAINTENANCE

1. The electrical panel is easily accessible by removing the cover panel.
2. The inspection or replacement of internal components such as; heat exchanger coil, condensate
3. Drain pump, float switch, involves the removal of the condensate drain pan. See Fig.20-25.
4. During the removal of the condensate drain pan protect the floor under the unit with a plastic sheet from condensate water that could be spilled.
5. Remove fixing screws of the drain pan fixture and remove condensate drain pan with care.

The appliance is intended to be maintained by qualified service personnel and located at a height of not less than 2.5m.

HYDRONIC CASSETTE

PCE2-03/04/06/08-VS

Fig.20

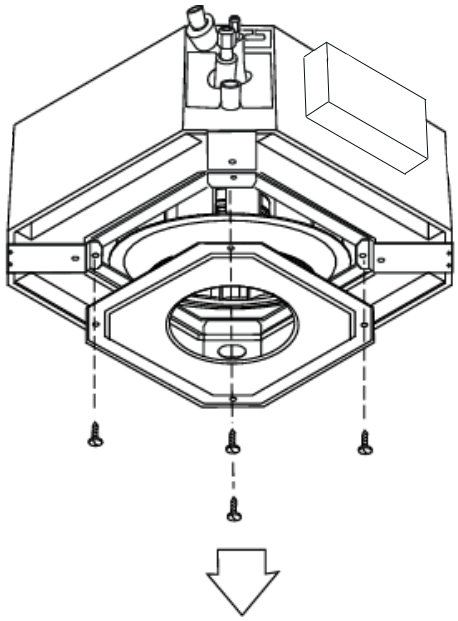
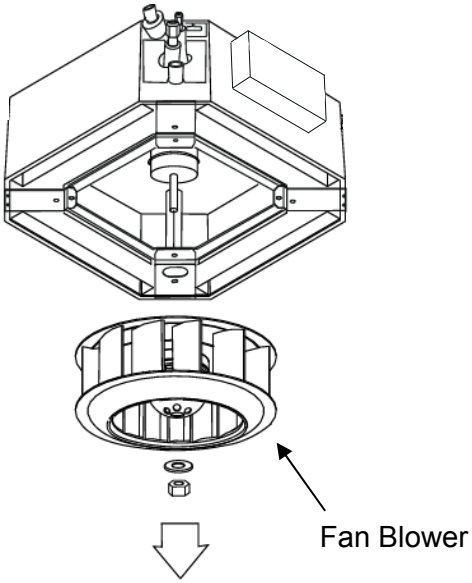
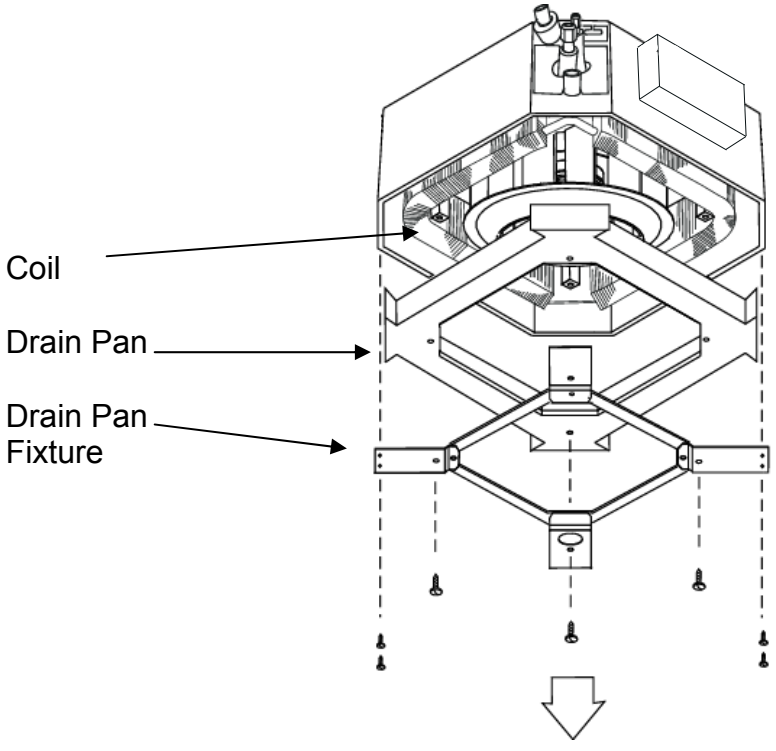


Fig.21



Fan blower Removal

Fig.22



Condensate drain pan removal

HYDRONIC CASSETTE

PCE2-09/10/12/16-VS

Fig. 23

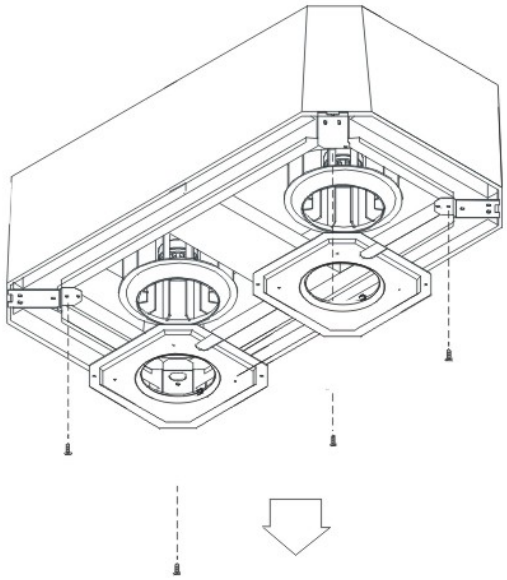
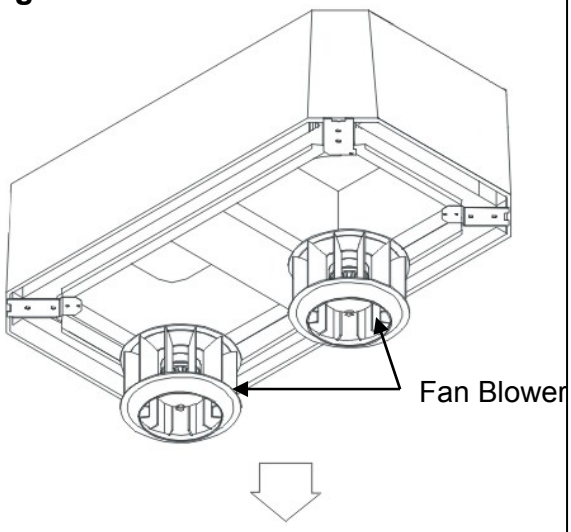
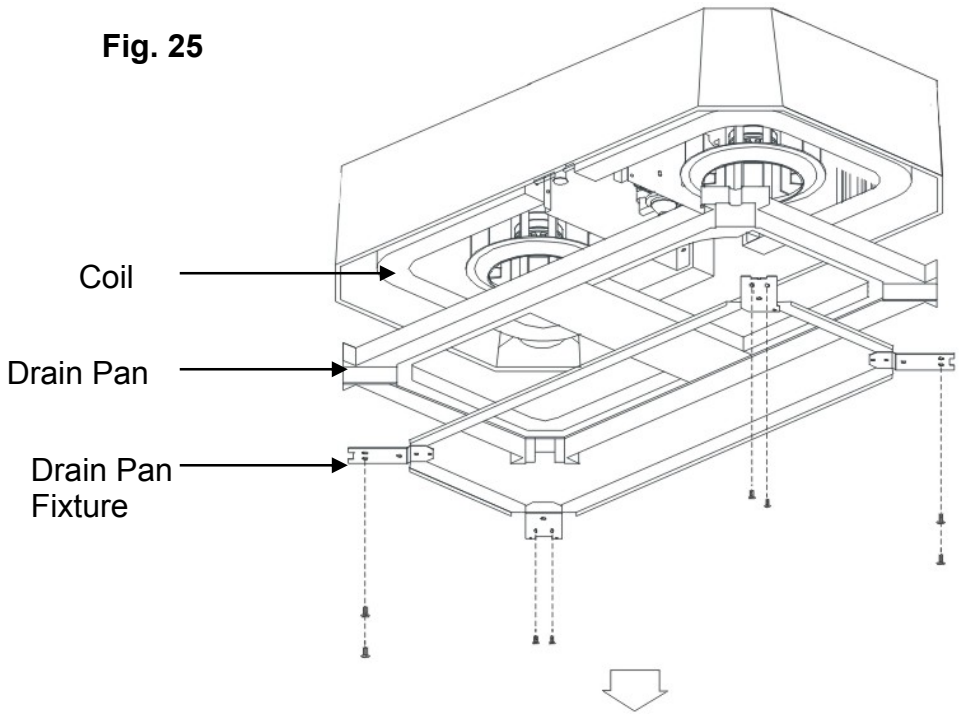


Fig. 24



Fan blower removal

Fig. 25



Condensate drain pan removal

FRESH AIR RENEWAL AND BRANCH DUCTING

1. The side opening allows separate ductwork to be installed for outside air intake and branch ducting. See Fig.26
2. Cut and remove anti-condensate insulating material.
3. Install your flanges and conduits to casing. Conduit can be flexible polyester with spring core or corrugated aluminium externally coated (dia.4 in.) with anti-condensate material (fiberglass 12-25 mm thickness).

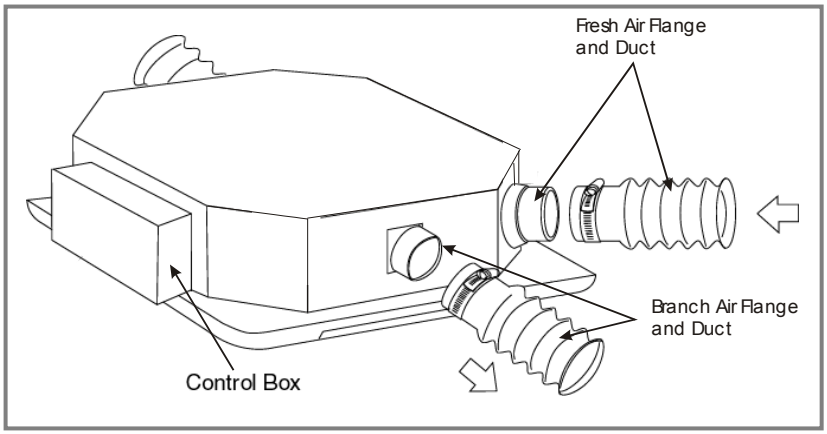
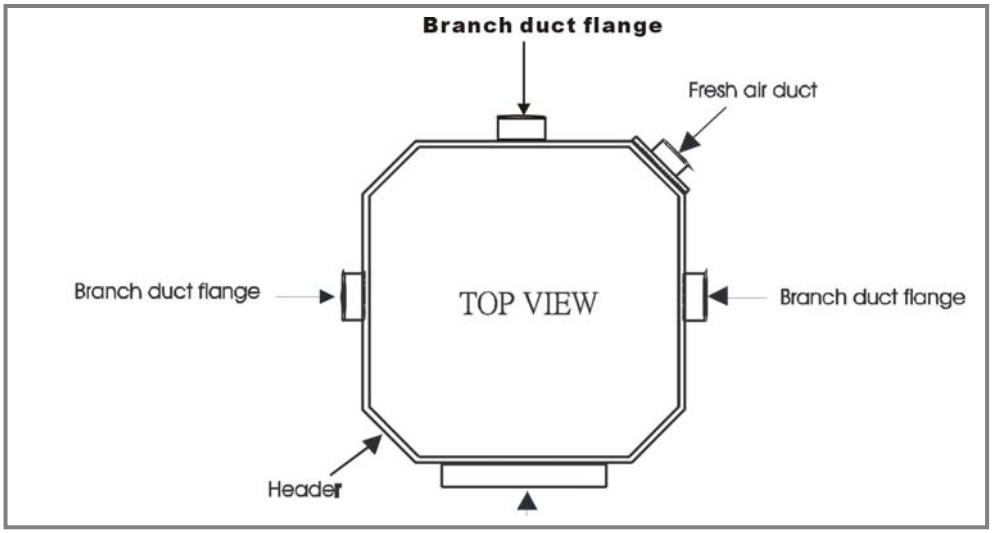


Fig. 26

Fresh air - There is one (1) opening for connecting a fresh air duct for PCE2-03-04-06-08,
There are two (2) openings for connecting fresh air ducts for PCE2-09-10-12-16.

Branch air - PCE2-03-04-06-08 : Two(2) openings each.
PCE2-09-10-12-16 : Four (4) openings each.

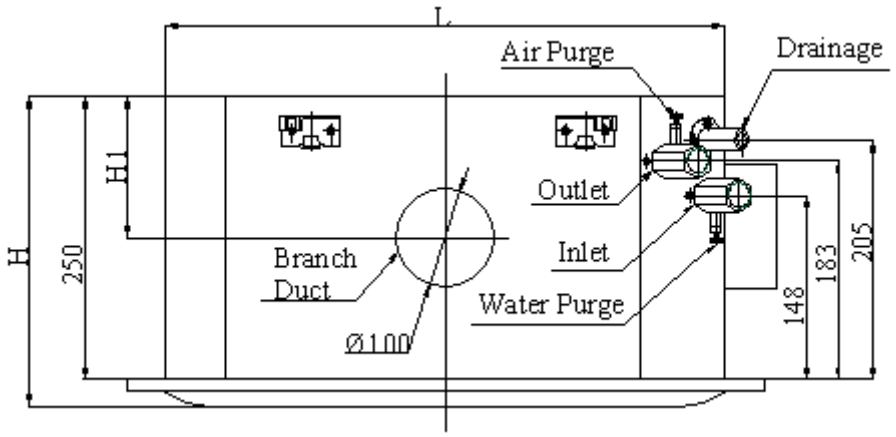
Order flanges (spigots) and blanking plates as accessories separately.



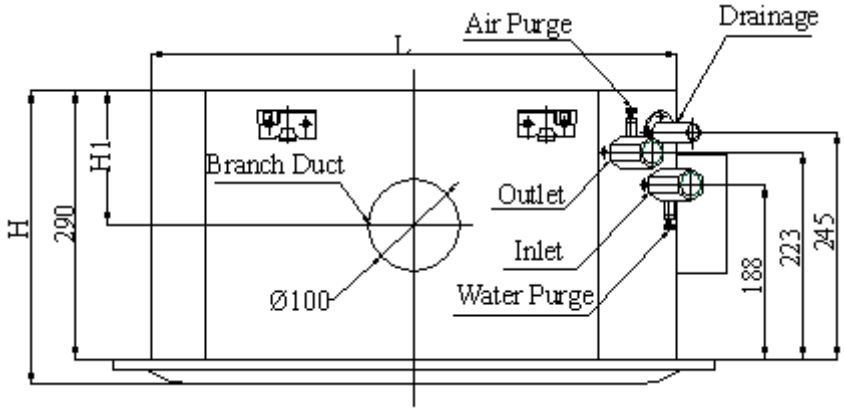
NOTE:

- Branch duct flange (Optional part)
- Fresh air duct flange (Optional part)
- Blanking plate (Optional part)

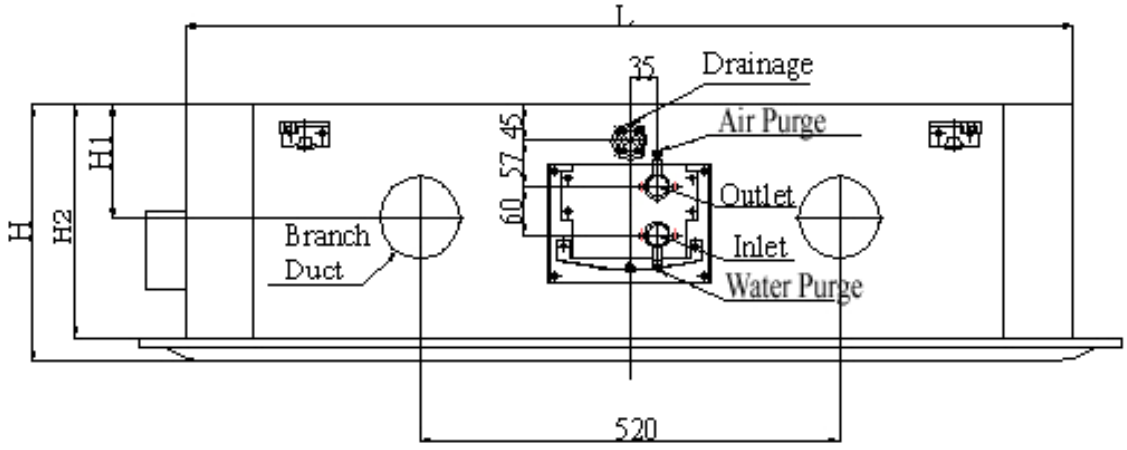
HYDRONIC CASSETTE



MODEL	L	H	H1
PCE2-03/04	570	278	125



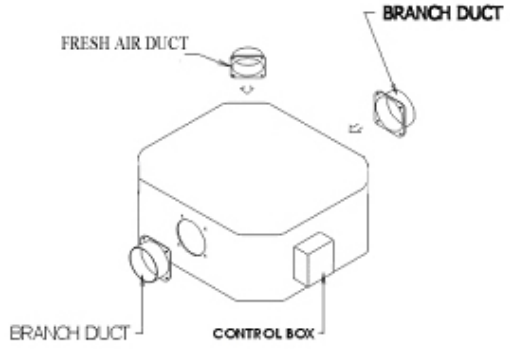
MODEL	L	H	H1
PCE2-06/08	570	318	145



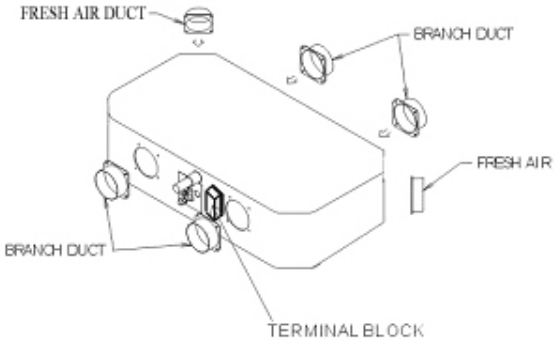
MODEL	L	H	H1	H2
PCE2-09	1130	278	125	250
PCE2-12/16	1130	318	140	290

HYDRONIC CASSETTE

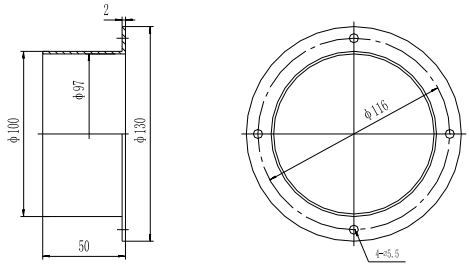
BRANCH DUCT AND FRESH AIR DUCT INSTALLATION



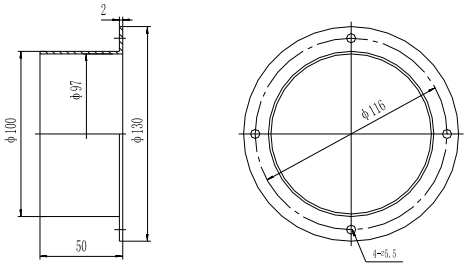
PCE-03/04/06/08



PCE-09/10/12/16



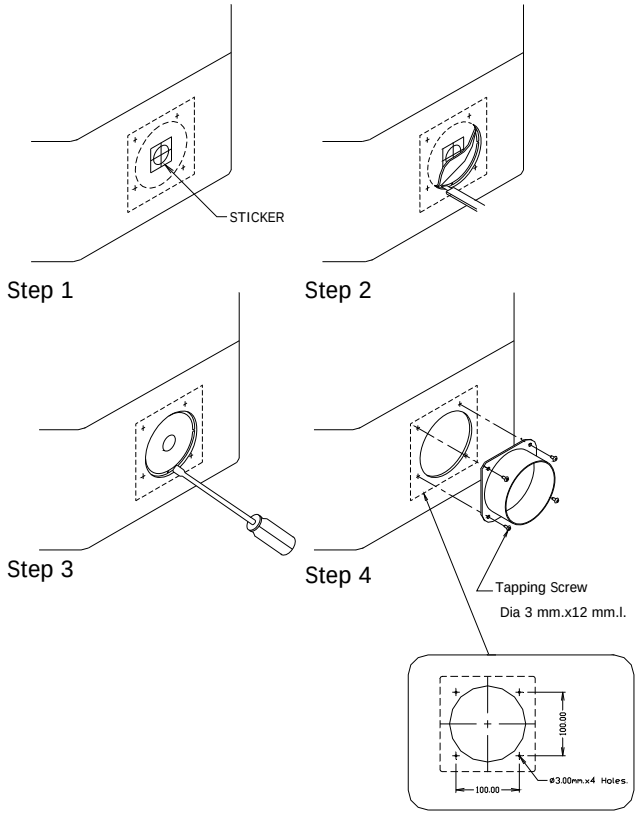
BRANCH DUCT DIMENSION



FRESH AIR DUCT DIMENSION

MODEL	BRANCH DUCT		FRESH AIR	
	Dia(mm)	QTY	Dia.(mm)	QTY
PCE2-03/04/06/08	100	2	100	1
PCE2-09/12/16	100	4	100	2

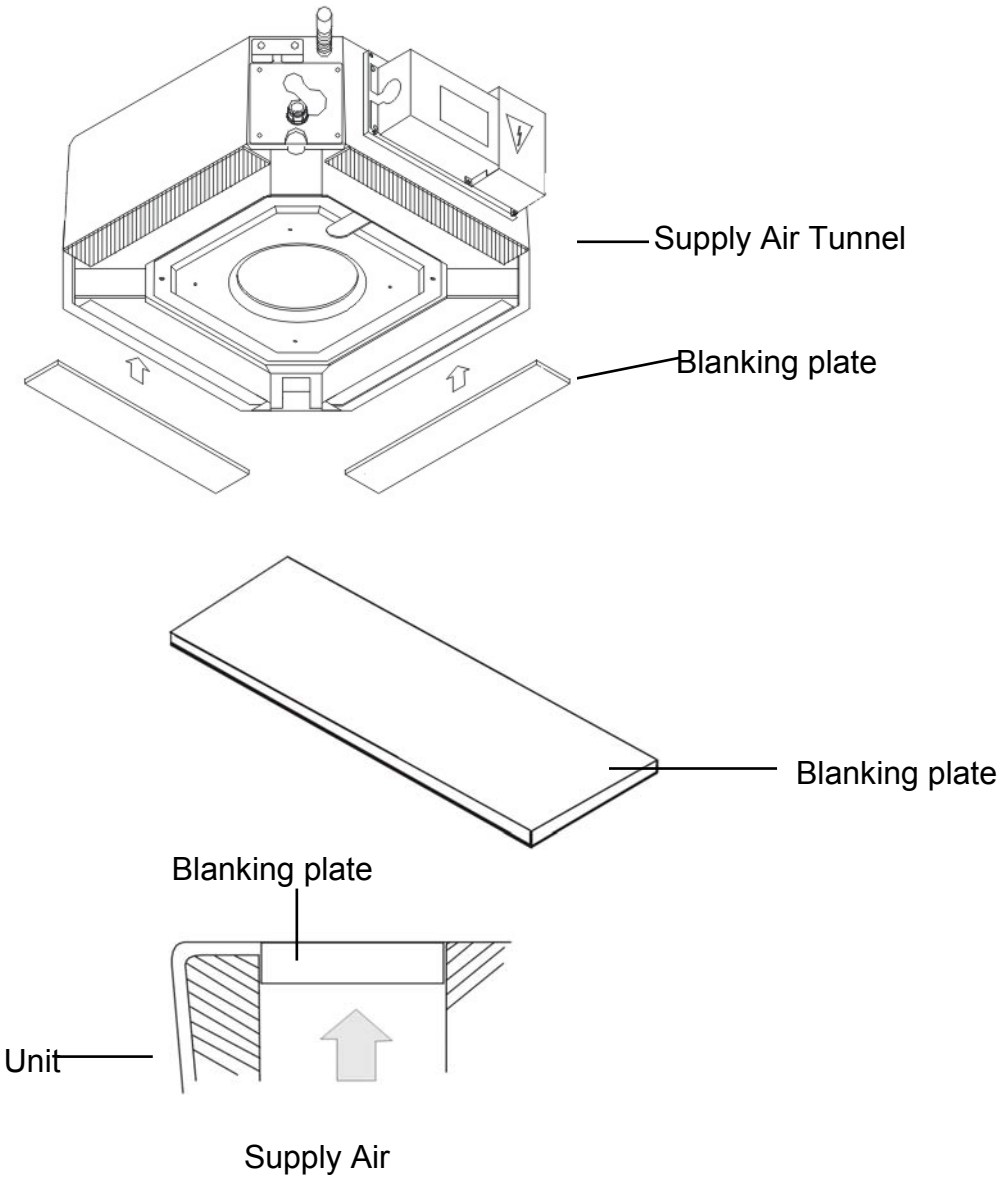
BRANCH DUCT AND FRESH AIR DUCT POSITIONS



1. Look for the yellow sticker on the casing for location of branch duct or fresh air intake connections.
2. The sticker is at the center of a knock out hole underneath the casing insulation. Use a cutter and follow along the pre-cut circular marking as shown and trim off the insulation.
3. Knock out the pre-cut hole.
4. Connect the flange on to the opening with Φ3 mm. x 12 mm. tapping screws.

HYDRONIC CASSETTE

BLANKING PLATES – See the following diagram and installation method.



HOW TO INSTALL

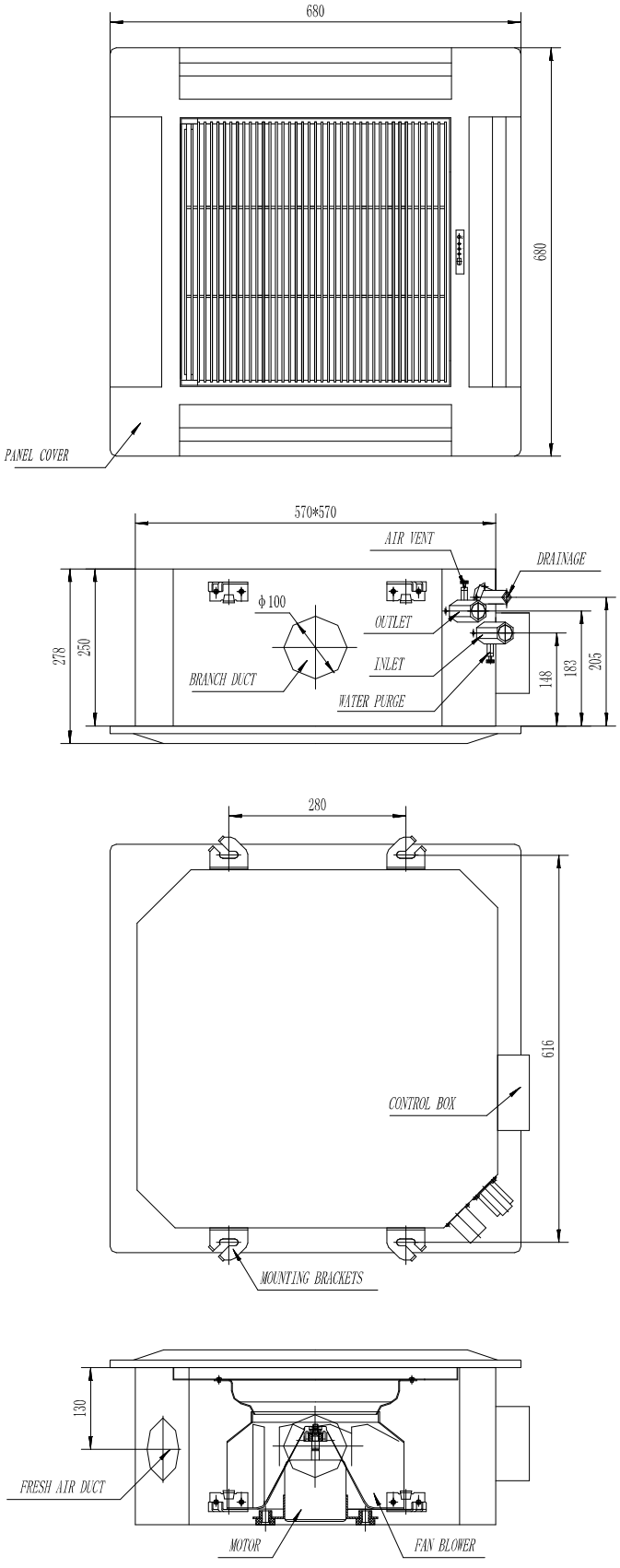
1. Peel off the cover paper to expose adhesive surface of the blanking plate.
2. Apply blanking plate on the supply air tunnel to cover the opening.
3. Press on the attaching area to firmly seal it.

MODEL	SIZE	L	H	H1
PCE2-03/04/06/08	Standard	380mm	8mm	50mm
PCE2-09/12/16	Long	380mm	8mm	50mm
PCE2-09/12/16	Short	360mm	8mm	50mm

HYDRONIC CASSETTE

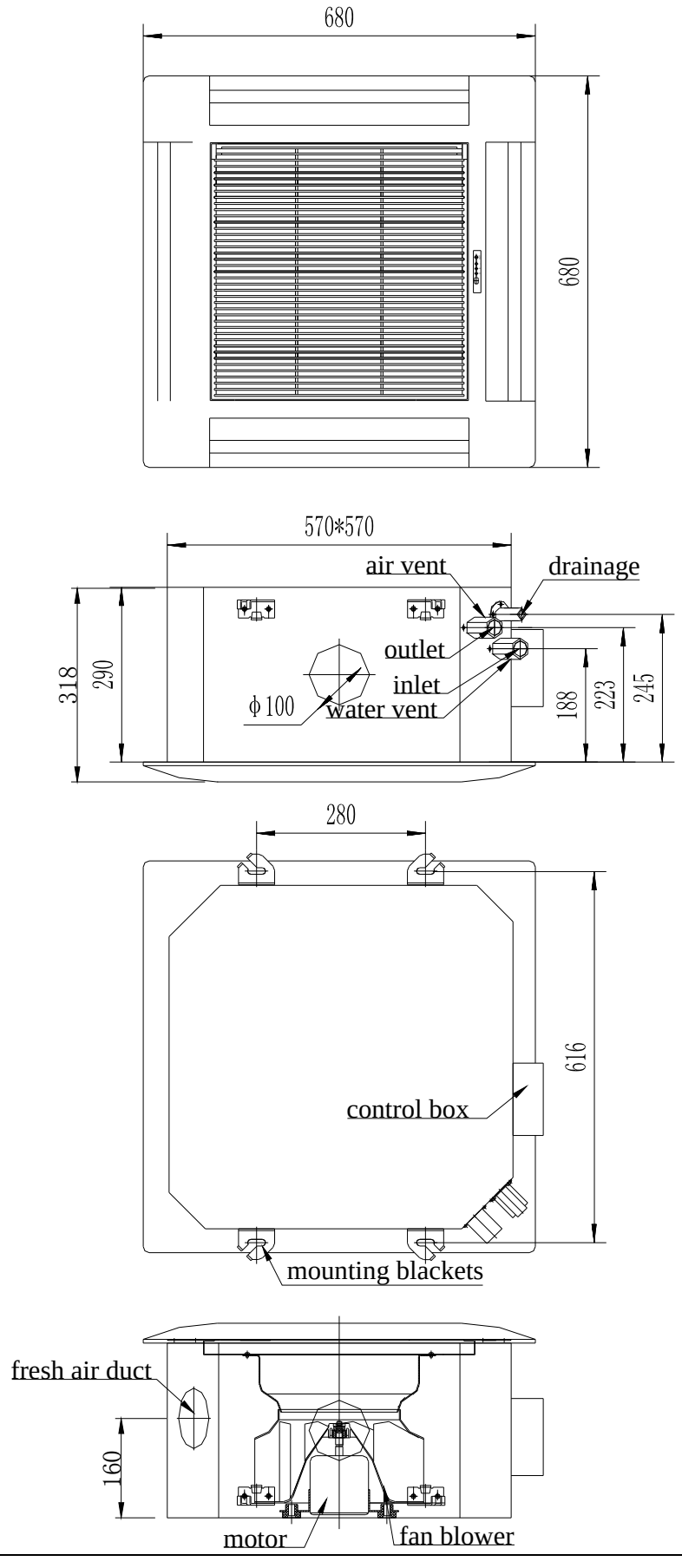
DIMENSIONAL DRAWINGS

PCE2-03/04-VS



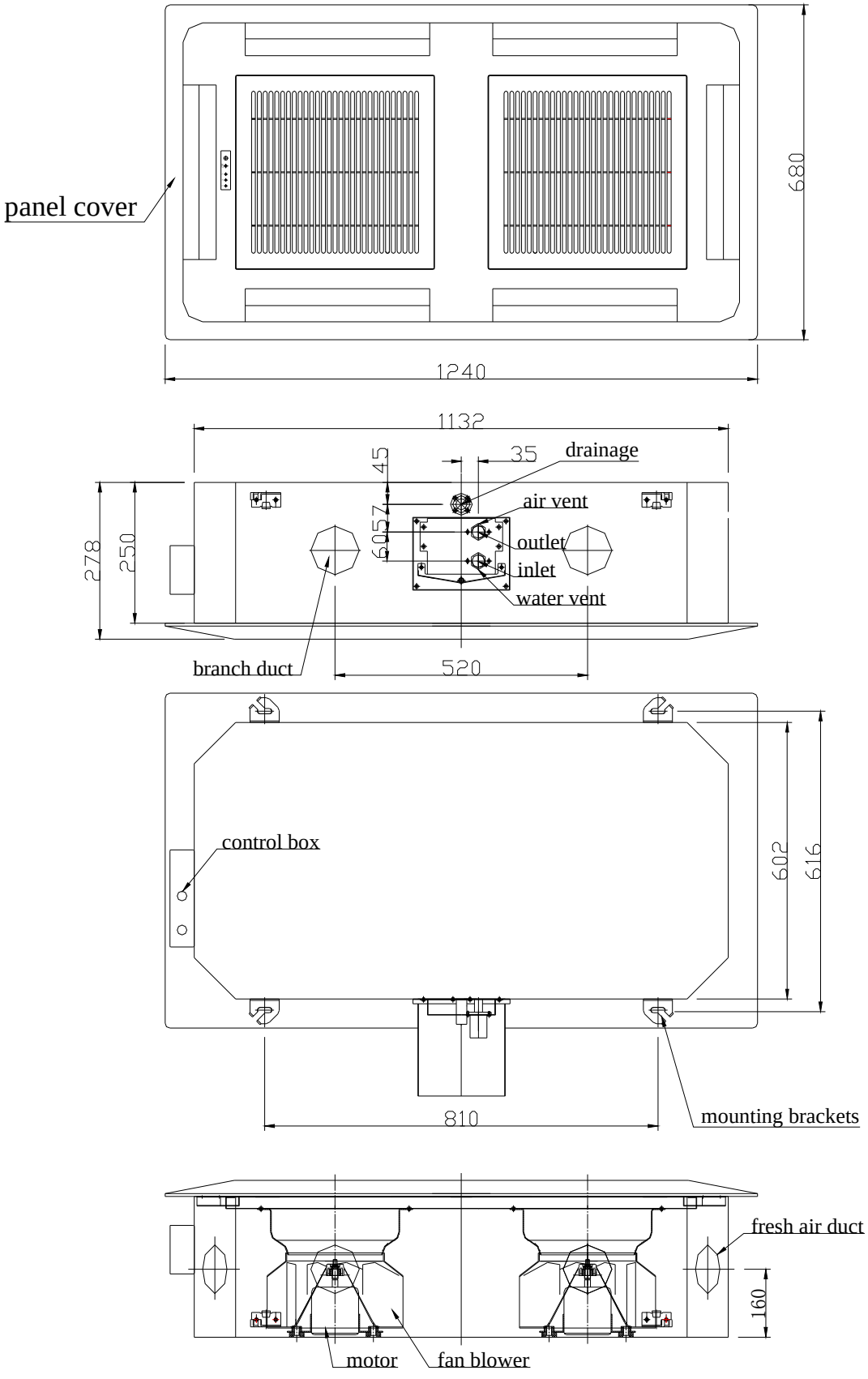
HYDRONIC CASSETTE

PCE2-06/08-VS



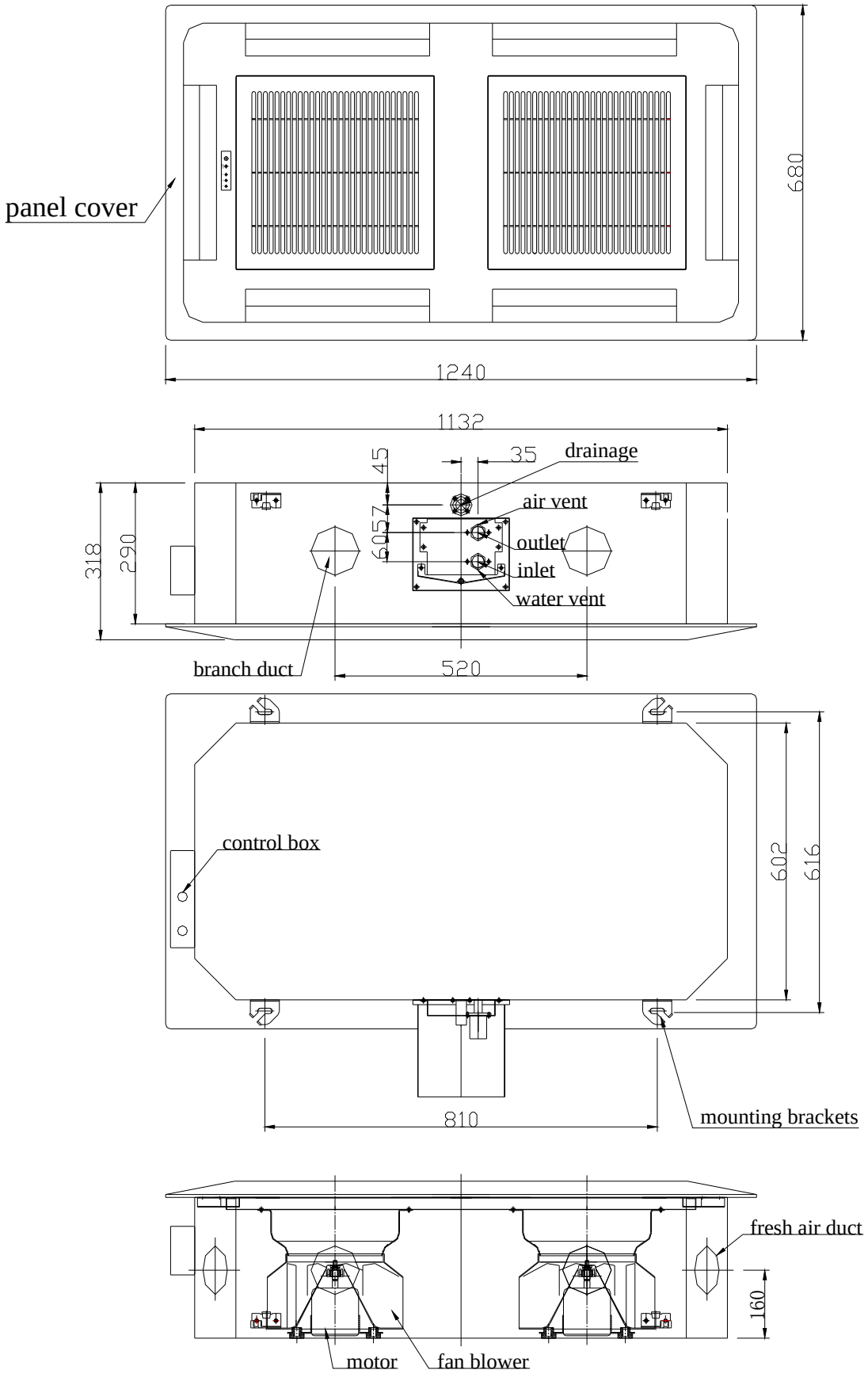
HYDRONIC CASSETTE

PCE2-09-VS



HYDRONIC CASSETTE

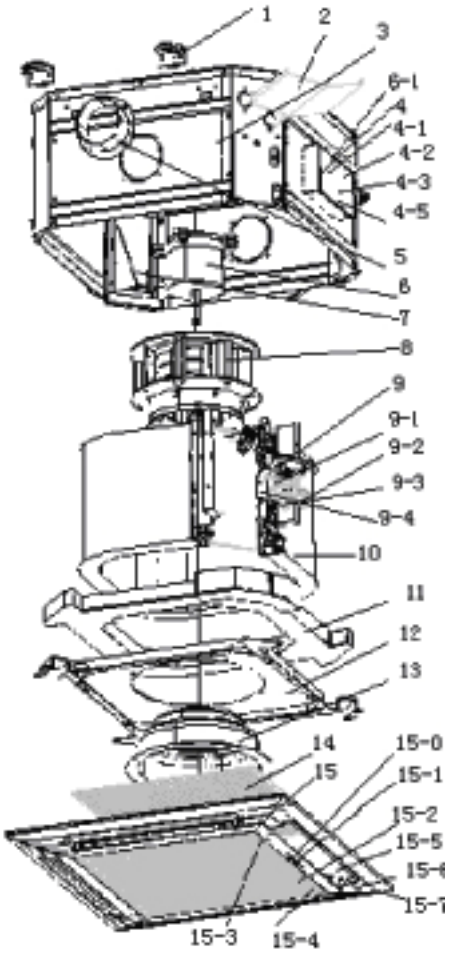
PCE2-10-12-16-VS



HYDRONIC CASSETTE

EXPLODED VIEW DRAWING

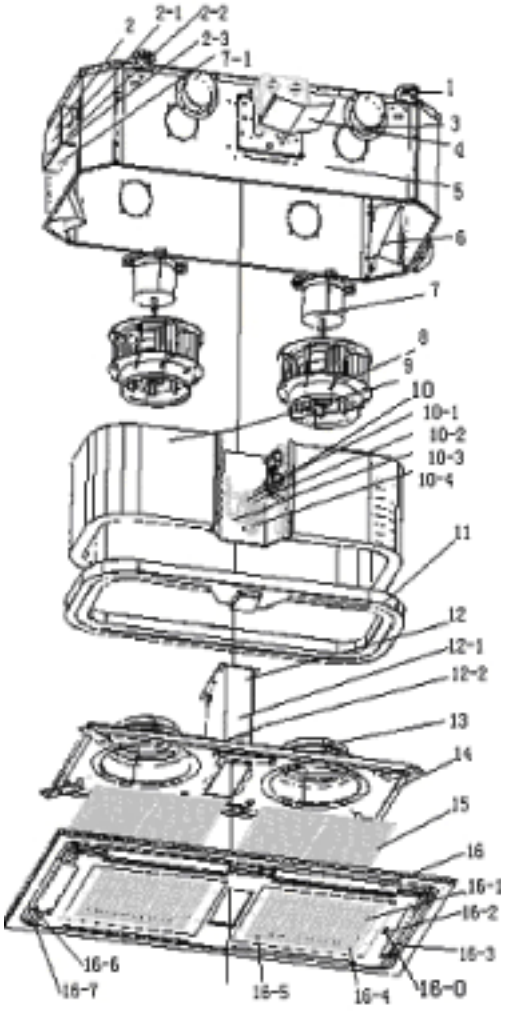
PCE2-03/04/06/08-VS



1	Mounting brackets
2	External drain pan
3	Casing
4	Control box
4-1	Main PCB
4-1-1	Room temperature sensor
4-1-2	Coil temperature sensor
4-2	Transformer
4-3	Terminal block
4-4	Remote handset
4-5	Wire clip
5	Branch duct
6	Fan motor (for PCE-03-04)
6	Fan motor (for PCE-06)
6	Fan motor (for PCE-08)
6-1	Motor capacitor (for PCE-03-04)
6-1	Motor capacitor (for PCE-06-08)
7	Fresh air outlet
8	Fan blower
9	Drain pump assembly
9-1	Drain pump fixture
9-2	Drain pump
9-3	Drainage tube
9-4	Float switch
10	Coil (PCE-03-04)
10	Coil (PCE-06-08)
11	Drain pan
12	Drain pan fixture
13	Venturi
14	Air filter
15	Cover panel assembly
15-0	Receiver display
15-1	Receiver label sticker
15-2	Grille
15-3	Bolt (Left)
15-4	Bolt (Right)
15-5	Swing Louver
15-6	Stepping motor
15-7	Fan bearing
16	Wired wall pad

HYDRONIC CASSETTE

PCE2-09/10/12/16-VS

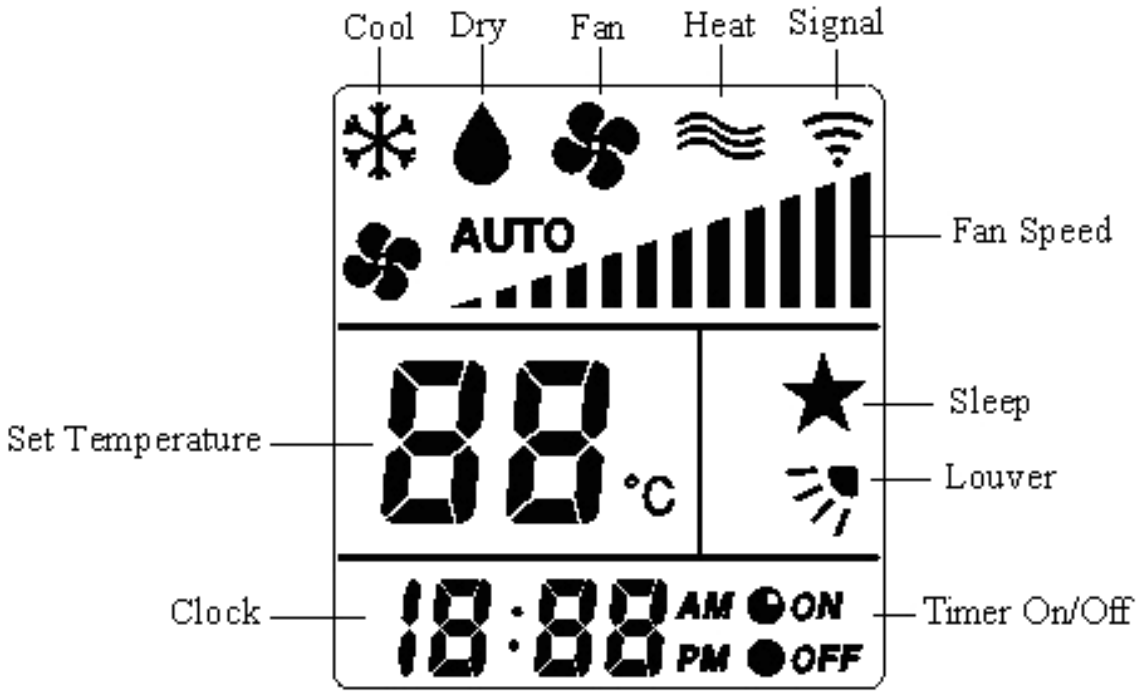


1 Mounting brackets
2 Outside wiring box
2-1 Terminal block
2-2 Invert Board
2-3 Wire clip
3 Branch duct
4 External drain pan
5 Casing
6 Fresh air outlet
7 Fan Motor (for PCE-09)
7 Fan Motor (for PCE-10-12)
7 Fan Motor (for PCE-16)
7-1 Fan Motor Capacitor (for PCE-09)
7-1 Fan Motor Capacitor (for PCE-10-12-16)
8 Fan blower
9 Coil
10 Drain Pump assembly
10-1 Pump fixture
10-2 Drain Pump
10-3 Drainage tube
10-4 Float switch
11 Drain pan
12 Inside control box
12-1 Transformer
12-2 Main PCB
12-2-1 Room temperature sensor
12-2-2 Coil temperature sensor
12-3 Remote handset
13 Venturi
14 Drain pan fixture
15 Air filter
16 Cover Panel assembly
16-1 Grille
16-2 Receiver label sticker
16-3 Swing Louver
16-4 Bolt（Right）
16-5 Bolt（Left）
16-6 Stepping motor
16-7 Fan bearing
17 Wired wall pad

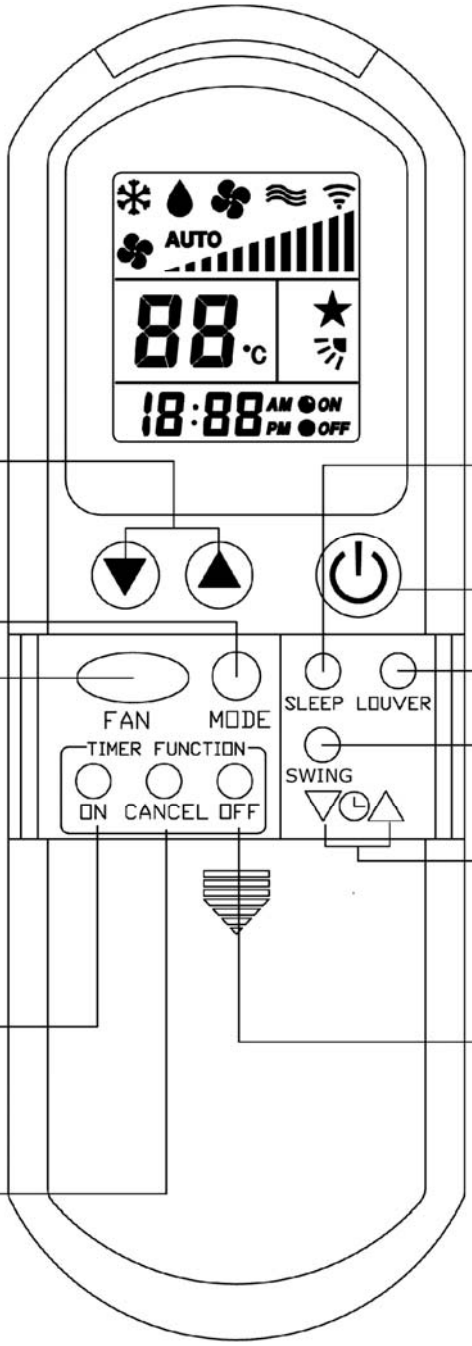
HYDRONIC CASSETTE

REMOTE CONTROL HANDSET

WIRELESS LCD HANDSET DISPLAY



HYDRONIC CASSETTE



Adjust Set Temperature
Press down or up button to decrease or increase the desired room temperature.
Note: Temperature can not be set in Fan mode.

Mode
Press this button to advance the mode in the following sequence:
Cool → Dry → Fan → Heat → Auto Cool-Heat
[Both Cool and Heat symbol light up]

Fan
Press this button to advance the fan speed as follows:
Auto → Low → Medium → High

Under Fan mode, only low, medium and high are available.
Under Dry mode, fan speed will be inhibited and will not be displayed.

On Timer
First press shows the last timer setting. Subsequent pressing will change the timer setting in 1 minute intervals. Hold down the On button continuously to increase the updating speed.

Cancel Timer
Press this button to cancel all timer settings.

Sleep
Press to activate the energy saving Sleep function which automatically adjusts the temperature to provide a more comfortable sleep, ie for use in bedrooms.

On/Off
Press to switch on or off the air conditioner.

Louver
Press this button to change louver angle to a fixed position 1,2,3,4, auto sweep or stop.

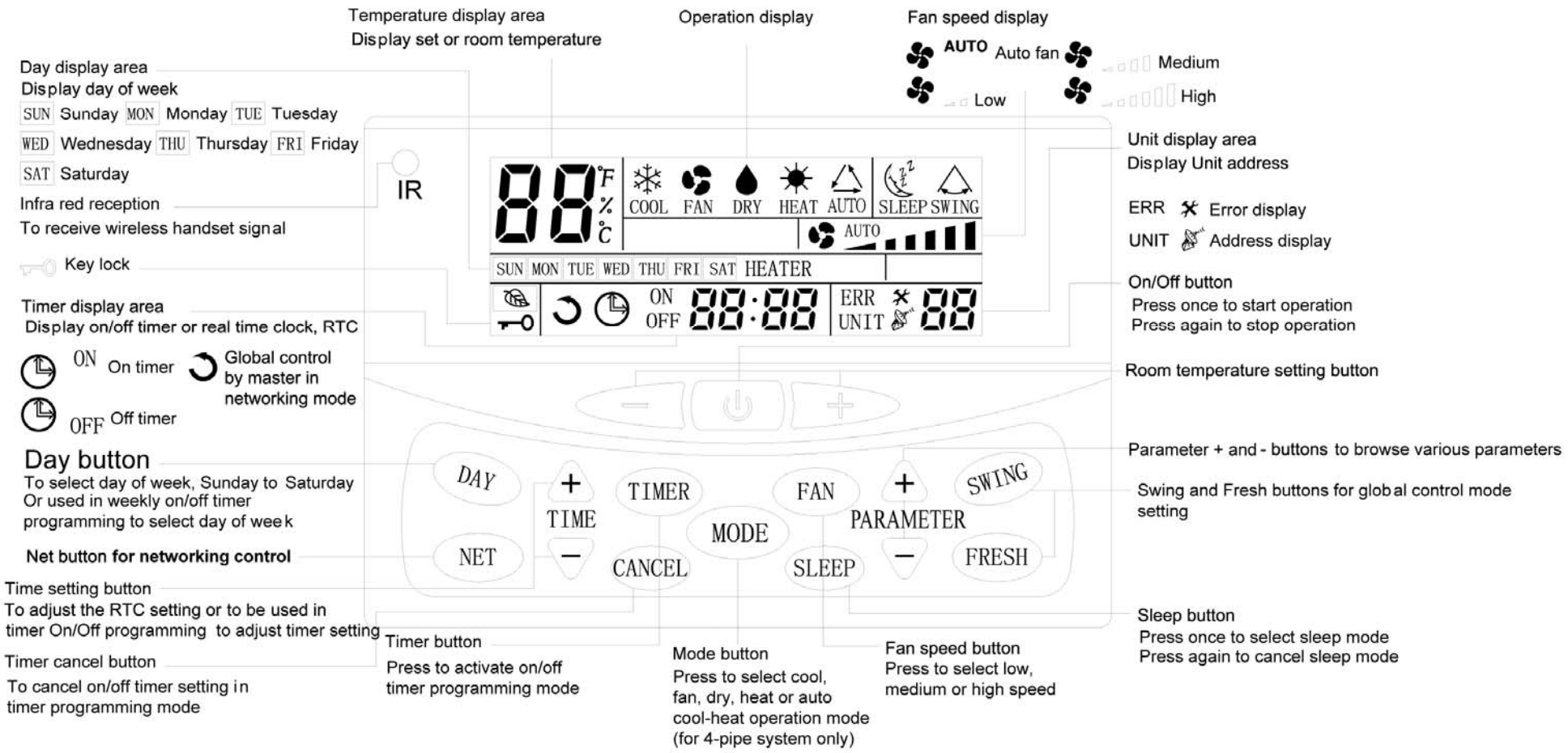
Swing
Press this button to turn on or off swing function.

Clock
Press down or up button for 2 seconds to activate. The current clock setting will decrease or increase at 1 minute intervals on each press.
The speed of interval updating increases after 4 seconds of continuous key press. It will update at high speed after 6 seconds of continuous key press.

Off Timer
First press shows the last timer setting. Subsequent pressing will change the timer setting in 1 minute intervals. Hold down the Off button continuously to increase the updating speed.

*****When unit with handset is master, settings are automatically sent to slaves;**
*****Auto Cool-Heat operation will be applicable in 4-pipe system only.**
*****Swing is not applicable to PCE2 models.**

WALL PAD DISPLAY



*****Wall pad will recognize the main board model automatically whether it is 2 pipes or 4 pipes. Auto Cool-Heat operation will be applicable in 4 pipe system only.**

*****When the wall pad is connected to the main board, air sensor inside the wall pad will be automatically set as primary source and the return air sensor from the unit will be disabled**

WALL PAD OPERATION

1) Clock display and setting

System has an accurate internal real time clock used for time indication and timer ON/OFF function. Real time clock display area indicates internal time clock which can be set by TIME or TIME button.

2) Day display and setting

The wall pad has day display function which is used for day indication and timer ON/OFF function. Day display icon indicates current day. Press DAY button to set day.

3) Timer ON/OFF setting

If master unit is in global control mode and on/off timer setting is reached, master unit will command the whole network to be on or off. Otherwise timer on/off is effective to the local unit only. The system supports 7 days on/off timer setting.

a) Press TIMER button once, and **ON** symbol blinking indicates on timer programming mode, day display area indicates the day for setting timer on. If on timer for this day is null, timer display area shows --:--, otherwise the on timer setting will be shown. Press TIME or TIME button to change the on timer setting. Press CANCEL key to cancel the current on timer selected and the timer display area will show --:--. Press DAY button to change the day the on timer is to be programmed.

b) Press TIMER button again, and **OFF** symbol blinking indicates off timer programming mode. The setting method is the same as on timer setting above.

c) Press TIMER button again, to exit timer on/off setting function.

d) Should there be any on or off timer being programmed, will light up. Should there be any unexecuted on or off timer for the current day, its corresponding **ON** or **OFF** icon will light up.

e) Hold down CANCEL button for 3 seconds to cancel all timer settings.

Timer set by master unit is as follows:-

1. Press NET button to enter into networking control mode. Unit area blinking indicates the slave unit under control. Press TIME or TIME to select the desired slave unit. Units that are off will be skipped automatically.
2. Press TIMER button once to enter into on timer programming mode. Press DAY button to select the required day of the week. Master unit will then retrieve the setting from the selected slave unit and timer display area will show “rEAd”. The on timer setting will be shown upon reading the data successfully. Press TIME or

TIME button to change the on timer setting.

3. Press TIMER button again to enter into off timer programming mode. Press DAY button to select the required day of the week. Master unit will then retrieve the setting from the selected slave unit and timer display area will show “rEAd”. The off timer setting will be shown upon reading the data successfully. Press TIME or TIME button to change the off timer setting.
4. Upon completion of changing timer settings for the selected day, press TIMER button again to exit timer programming mode. The settings will then upload to the selected slave unit. The next day of the week settings can be done only upon completion of sending data to the slave units. (Repeat steps 1~4 if setting is required for the next day of the week).
5. In Global control mode:
   - Pressing Master CANCEL button for 3 seconds will cancel all timer settings in all slave units.
   - Timer settings will be broadcast to all slave units.

Clock synchronization by master unit is as follows:

1. Press TIME and TIME buttons for 3 seconds to activate clock synchronization to all slave units. Master wall pad will respond with a beeping sound.

4) Key lock

In order to prevent unauthorized access to the system setting, a key lock function is provided to prevent mischief. Hold down and for 3 seconds to activate key lock, symbol lights up. Repeat the same to exit key lock. Only button is applicable in key lock mode.

5) Swing

Press SWING to activate or deactivate swing function.

6) Sleep

Press SLEEP button to activate or deactivate sleep setting. Sleep is valid in cool or heat modes only.

7) Temperature setting

Press or to enter into temperature setting mode, temperature display area blinks indicating the current set temperature. Press the above buttons to adjust the set temperature.

8) Mode setting

Press MODE button to change the operation mode.

9) Fan speed setting

Press FAN button to change the fan speed. Only low speed is available for dehumidification mode.

10) On/Off control

Press ⏻ to start or stop the air conditioner.

11) Networking Master - Slave control (only master unit wall pad can control other units on the network)

Press NET button to enter into networking control mode. Unit area blinking indicates the slave unit under control. Press TIME + or TIME − to select the desired slave unit; Units that are off will be bypassed automatically. Parameters that can be controlled are on/off, timer weekly program, set temperature, mode, fan speed, swing and sleep. Parameter operation methods are the same as above. Press NET button again to exit networking control mode.

Hold down SWING and FRESH buttons for 3 seconds to enter into global control mode, ↻ lights up. Repeat the same to exit global control mode. In global control mode, the settings of the master unit will be broadcast to all the slave units.

12) Unit operation parameters browsing

Hold down CANCEL and FAN buttons for 3 seconds to enter into operation parameters browsing mode. Unit display area shows the slave unit under browsing. Slave unit selection method is the same as networking control above. Press PARAMETER HUMIDIFY + or HUMIDIFY − to browse various parameters as follow:

Wall pad display temperature area	Wall pad display time area
C0	Return air temperature displayed
C1	Indoor coil temperature displayed
C2	DIP switch setting displayed
C3	Indoor coil 2 temperature

Press CANCEL button to exit.

13) Error indication

When faulty slave unit is detected, Master unit display area shows the faulty unit address, time area shows the error code and wall pad backlight changes to red color. Should there be multiple units having problems, addresses and error codes will be shown one after another.

Error code definition:

Error	Error code
Indoor coil sensor 2 faulty	E2
Return air sensor faulty	E3
Indoor coil sensor 1 faulty	E4
Indoor coil low temperature protection	E5
Indoor coil over heat protection	E6
Water pump faulty	E7
Local communication error	E8

For system without master-slave settings, wall pad will indicate unit error codes as above.

HYDRONIC CASSETTE

CONTROL SPECIFICATIONS

HOT AND CHILLED WATER CASSETTE
WITH MASTER-SLAVE CONTROL OR
WITH HOST COMPUTER CONTROL

1. ABBREVIATIONS AND DEFINITION OF INPUT & OUTPUT PORTS

Ts = Setting temperature
Tr = Room air temperature
Ti1 = Indoor coil temperature, ID1
Ti2 = Indoor coil temperature, ID2
MTV1 = Cool Motorized valve
MTV2 = Heat Motorized valve

I/O		2-Pipe	4-Pipe
Sensor	RM	Return air	Return air
Sensor	ID1	Indoor coil	Cold pipe indoor coil
Sensor	ID2	Reserved	Hot pipe indoor coil
Output	X2	AC Swing	MTV2
Output	X3	MTV1	MTV1
Output	X6	Low fan speed	Low fan speed
Output	X5	Medium fan speed	Medium fan speed
Output	X4	High fan speed	High fan speed
Output	X7	Water pump	Water pump
Output	X8	Heater	AC Swing

2. CONTROL SYSTEM OPERATION

2.A MASTER AND SLAVE UNIT FUNCTION

The control PCB can be set either as a master unit or slave unit.

2.A.1 MASTER UNIT FUNCTION

a) The master unit sends data on its setting to the slave unit.

b) The master unit settings are Unit ON/OFF, Mode, Fan Speed, Set Temperature, Swing Function, and Sleep Function for handset operation.

c) The master unit settings are Unit ON/OFF, Mode, Fan Speed, Set Temperature, Swing Function, Sleep Function and Weekly Timer ON/OFF program for wall pad operation.

2.A.2 SLAVE UNIT FUNCTION

a) The slave unit receives data on its settings from the master unit.

b) The slave unit is allowed to change to a locally desired setting by local controller as long as there are no subsequent changes to the settings of the master unit.

c) The slave units can be set individually for timer on and off function by handset or wall pad. The handset cannot override wall pad timer and clock setting.

When unit is power on, buzzer responds as below:

With MTV: The master unit will beep 3 times, and the slave unit will beep once.
Without MTV: The master unit will beep 4 times, and the slave unit will beep twice

2.A.3 MASTER – SLAVE INSTALLATION

HANDSET AS MASTER CONTROL UNIT:

a) Connect all the units PCBs according to the wire color and type of connector.
b) Select the master unit by closing the SW6 DIP switch on the main PCB
c) Ensure the SW6 DIP switch in the PCB of the slave unit is opened.
d) Switch on the units by connecting the main power supply.
e) Using handset set the operation parameters for the Master unit which will automatically send the settings to the slave unit.
f) Master unit will beep twice confirming receipt of commands while Slave unit will beep once.

WALLPAD AS MASTER CONTROL UNIT:

a) Connect all the units PCBs according to the wire color and type of connector.
b) Select the master unit by closing the SW6 DIP switch on the main PCB
c) Ensure the SW6 DIP switch in the PCB of the slave unit is opened.
d) Provide each slave unit an addressable code by closing SW1 – SW5 DIP switch according to the DIP switch chart.
e) Switch on the units by connecting the main power supply.
f) Using the wall pad set the operation parameters for the Master unit which will send the setting to the slave units based on Global-control communication or Addressable communication methods. For detail please see **2.A.6 MASTER-SLAVE COMMUNICATION METHOD** & **Wall pad operation item 11 Networking Master – Slave control on page 44**.
g) Master unit will beep twice confirming receipt of commands while Slave unit will beep once.

Important note: Please use **RJ-11-6P-4C** cable for setting up the Master-Slave network. (Picture of cable please refer to Appendix I type A)

2.A.4 MASTER-SLAVE CONFIGURATION

Master unit: close SW6 [DIP switch] before power on. Master will beep twice to the LCD wireless handset or LCD wall pad confirming receipt of commands. Each master can command up to 31 slave units.
Slave unit: open SW6 [DIP switch] before power on. Slave unit will beep once to the LCD wireless handset or LCD wall pad confirming receipt of commands.

Important note: Data loggers are not applicable to Master-Slave System.

2.A.5 MASTER-SLAVE CONTROL

Above control PCB can receive data from both wireless LCD handset and wired wall pad. Once wall pad is connected to the PCB, receiver from the unit will stop receiving signal from wireless LCD handset. LCD handset can only provide signal to Wall Pad receiver. When wall

pad is disconnected from the PCB for 5 seconds, it will revert to wireless LCD handset reception automatically.

2.A.6 MASTER-SLAVE COMMUNICATION METHOD

There are two modes for Master-slave structure.

Global Control communication
Master will broadcast the settings to all slave units. During normal operation, slave units can receive commands from its wireless handset and wall pad control panel. Upon reception of master global commands, all slave unit settings will be replaced by the master settings.

Addressable communication
Master controller must be LCD wall pad. Slave unit parameters are set as usual. Upon receiving the control commands from a master, the addressed slave unit settings will be replaced by the master settings.

DIP switch address setting: 1 for ON, 0 for OFF.

SW6	SW5	SW4	SW3	SW2	SW1	Unit No.	Remark
1	0	0	0	0	0	01	Master
0	0	0	0	0	0	01	Slave
0	0	0	0	0	1	02	Slave
0	0	0	0	1	0	03	Slave
0	0	0	0	1	1	04	Slave
0	0	0	1	0	0	05	Slave
0	0	0	1	0	1	06	Slave
0	0	0	1	1	0	07	Slave
0	0	0	1	1	1	08	Slave
0	0	1	0	0	0	09	Slave
0	0	1	0	0	1	10	Slave
0	0	1	0	1	0	11	Slave
0	0	1	0	1	1	12	Slave
0	0	1	1	0	0	13	Slave
0	0	1	1	0	1	14	Slave
0	0	1	1	1	0	15	Slave
0	0	1	1	1	1	16	Slave
0	1	0	0	0	0	17	Slave
0	1	0	0	0	1	18	Slave
0	1	0	0	1	0	19	Slave
0	1	0	0	1	1	20	Slave
0	1	0	1	0	0	21	Slave
0	1	0	1	0	1	22	Slave
0	1	0	1	1	0	23	Slave
0	1	0	1	1	1	24	Slave
0	1	1	0	0	0	25	Slave
0	1	1	0	0	1	26	Slave
0	1	1	0	1	0	27	Slave
0	1	1	0	1	1	28	Slave
0	1	1	1	0	0	29	Slave
0	1	1	1	0	1	30	Slave
0	1	1	1	1	0	31	Slave
0	1	1	1	1	1	32	Slave

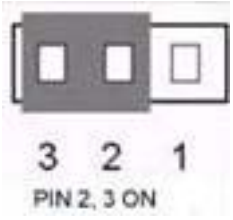
If master unit is equipped with wireless LCD handset only, it can only use Global-Control communication method. If it is equipped with LCD wall pad, it can use both communication methods.

2.B HOST COMPUTER CONTROL SYSTEM

A number of master units can be grouped together via data logger [router] to form a bigger network [1 up to 64 data loggers]. The maximum network size is 64 data loggers x 32 fan coils = 2048 fan coils connected to a computer based control system. Host computer can monitor and control every single unit; on/off, mode, set temperature, swing, sleep and fan speed and 365 days timer on/off program.

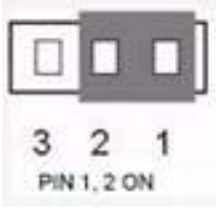
2.B.1 HOST COMPUTER SYSTEM INSTALLATION

a) Shunt jumper S7 on PCB for the last unit in network on RS485 bus. (Please refer to Appendix III).
b) Connect the power cable according to the wiring diagram on page 65.
c) Connect line A and B on CN2 of data logger to CN2 of the last fan coil PCB according to the wiring diagram on page 68 by using a RJ-11-6P-4C cable (please refer to Appendix I type B). Ensure Line A and B does not connect reversely. (For configuration of Data Logger please refer to Appendix II)
d) Each data logger contains a 3 way mini shunt jumper JP2. Short the position 2 & 3 as shown below and connect Line A and B on CN3 to RS485 port on the computer.



e) If more than one data logger is used (system with more than 32 units fan coil have to be connected), connect Line A and B on CN4 of Data logger no.1 to CN3 of Data logger no.2.

Important note: If the connection distance between Data Logger no.1 to the Last Data Logger e.g. Data Logger no.64 excess 300 meters, short position 1 & 2 on JP2 of the last Data logger as show below:



(For configuration of Network Topology please refer to Appendix III.)

f) Provide each data logger with an addressable code by closing S1 – S6 DIP switch according to the DIP switch chart below.

Important note: Please do not close SW6 [DIP switch on PCB] under Host Computer Control System as Master-Slave function is not applicable when using Computer Control System.

Data logger DIP switch address setting: 1 for ON, 0 for OFF.

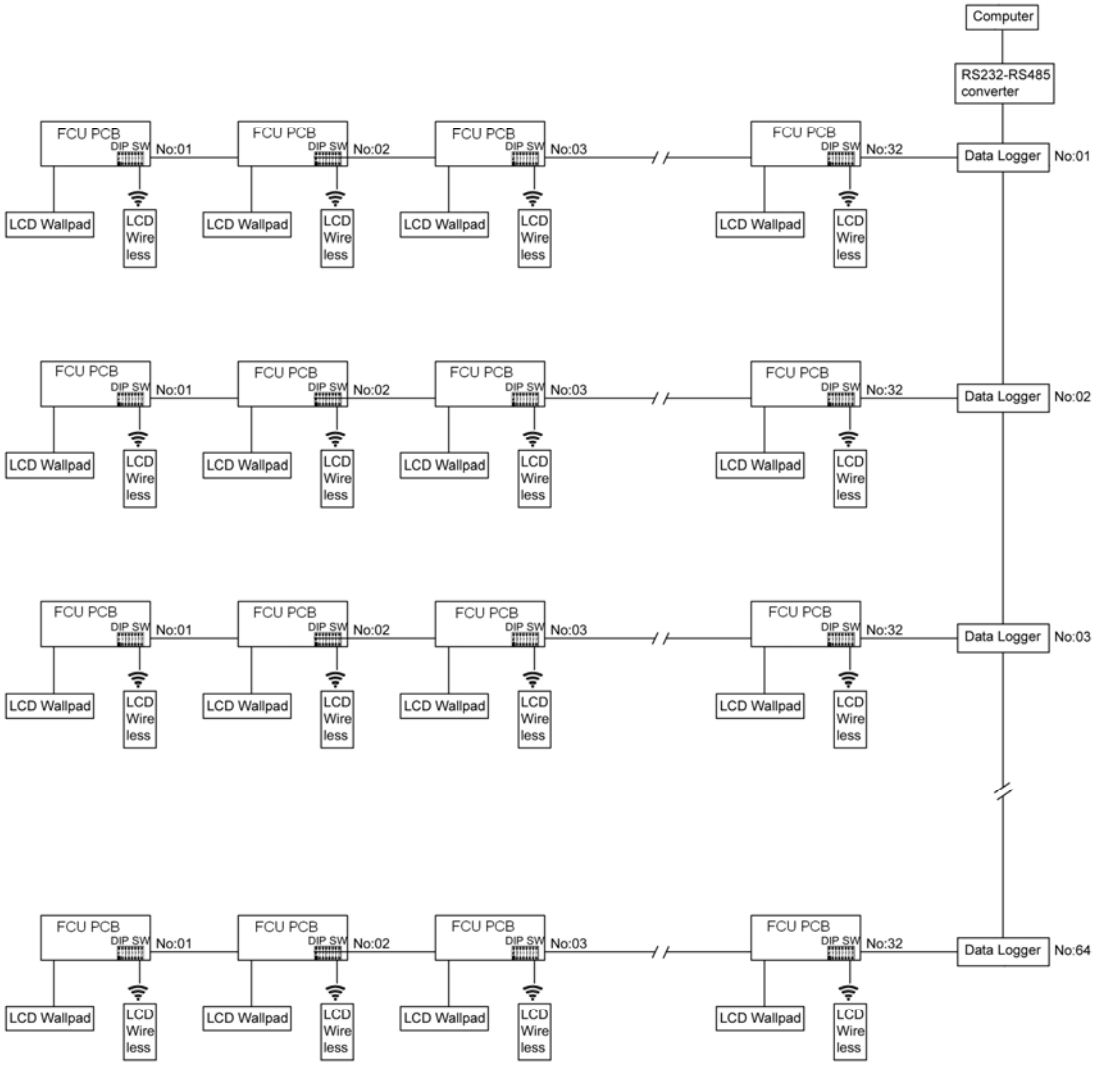
HYDRONIC CASSETTE

ID	S1	S2	S3	S4	S5	S6
1	0	0	0	0	0	0
2	0	0	0	0	0	1
3	0	0	0	0	1	0
4	0	0	0	0	1	1
5	0	0	0	1	0	0
6	0	0	0	1	0	1
7	0	0	0	1	1	0
8	0	0	0	1	1	1
9	0	0	1	0	0	0
10	0	0	1	0	0	1
11	0	0	1	0	1	0
12	0	0	1	0	1	1
13	0	0	1	1	0	0
14	0	0	1	1	0	1
15	0	0	1	1	1	0
16	0	0	1	1	1	1
17	0	1	0	0	0	0
18	0	1	0	0	0	1
19	0	1	0	0	1	0
20	0	1	0	0	1	1
21	0	1	0	1	0	0
22	0	1	0	1	0	1
23	0	1	0	1	1	0
24	0	1	0	1	1	1
25	0	1	1	0	0	0
26	0	1	1	0	0	1
27	0	1	1	0	1	0
28	0	1	1	0	1	1
29	0	1	1	1	0	0
30	0	1	1	1	0	1
31	0	1	1	1	1	0
32	0	1	1	1	1	1
33	1	0	0	0	0	0
34	1	0	0	0	0	1
35	1	0	0	0	1	0
36	1	0	0	0	1	1
37	1	0	0	1	0	0
38	1	0	0	1	0	1
39	1	0	0	1	1	0
40	1	0	0	1	1	1
41	1	0	1	0	0	0
42	1	0	1	0	0	1
43	1	0	1	0	1	0
44	1	0	1	0	1	1
45	1	0	1	1	0	0
46	1	0	1	1	0	1
47	1	0	1	1	1	0
48	1	0	1	1	1	1
49	1	1	0	0	0	0

50	1	1	0	0	0	1
51	1	1	0	0	1	0
52	1	1	0	0	1	1
53	1	1	0	1	0	0
54	1	1	0	1	0	1
55	1	1	0	1	1	0
56	1	1	0	1	1	1
57	1	1	1	0	0	0
58	1	1	1	0	0	1
59	1	1	1	0	1	0
60	1	1	1	0	1	1
61	1	1	1	1	0	0
62	1	1	1	1	0	1
63	1	1	1	1	1	0
64	1	1	1	1	1	1

HYDRONIC CASSETTE

HOST COMPUTER NETWORK



2.C HARDWARE CONFIGURATION

2.C.1. MOTORIZED VALVE CONFIGURATION

An on board mini shunt jumper S6 is used for this configuration.

S6	Motorized valve[MTV]
Short	With MTV
Open	No MTV

2.C.2. MODEL CONFIGURATION

An on board mini shunt jumper S3, S4, S5, S7 and DIP Switch are used for below configuration.

S3	Type
Short	Louver setting for PC2
Open	Louver setting for PCE/F2

S4	Type
Open	2-Pipe

S5	Preheat temperature
Short	28ºC
Open	36ºC

S7	Type
Short	Last unit on RS485 communication bus
Open	Other than above

DIP Switch		Model
SW7	SW8	
0	0	Cool-Heat
0	1	Cool-Heat + booster heater
1	0	Cooling only
1	1	Cool + primary heater

2.D. AIR CONDITIONER ON/OFF

There are 3 ways to turn the system on or off:
a) By the ON/OFF button on the handset or wired wall pad;
b) By the programmable timer on the handset or wired wall pad.
c) By the manual control button on the air conditioner.

2. E. POWER ON SETTING

a) When the power on signal is received by the air conditioner, the Mode, Fan Speed, Setting temperature and Swing setting will be the same as the handset setting before the last power off.

b) When the power on signal is received by the air conditioner, the Mode, Fan Speed, Setting temperature, Swing setting and Timer ON/OFF weekly program will be the same as wall pad setting before the last power off.

2. F. WITH MOTORIZED VALVE

2.F.1 COOL MODE

a) MTV2 and heater always off.
b) If Tr >= Ts+1ºC, cool operation is activated, MTV1 is turned on. Indoor fan runs at set speed.
c) If Tr = Ts, cool operation is terminated, MTV1 is turned off. Indoor fan runs at set speed.
d) The range of Ts is 16-30 ºC
e) Indoor fan speed can be adjusted for low, medium, high and auto.
f) When turned on, MTV1 requires 30 seconds before it is fully open.
g) When turned off, MTV1 requires 120 seconds before it is fully closed.
h) When the unit is turned off, indoor fan will delay for 5 seconds before it is turned off.

2.F.2. LOW TEMPERATURE PROTECTION OF INDOOR COIL

a) If Ti1 ≦ 2 ºC for 2 minutes, MTV1 is turned off. If indoor fan is set for low speed, it will run at medium speed. If it is set at medium or high speed, it will keep running at the same speed.
b) If Ti1 ≧ 5ºC for 2 minutes, MTV1 is turned on. Indoor fun runs at set speed.

2.F.3. FAN MODE

a) Indoor fan runs at the set speed while heater, MTV1 and MTV2 are turned off.
b) Indoor fan speed can be adjusted for low, medium and high.

2.F.4 HEAT MODE

2.F.4.1 HEAT MODE --- WITHOUT ELECTRICAL HEATER

a) MTV2 and heater always off.
b) If Tr <= Ts- 1 ºC, heat operation is activated, MTV1 is turned on. Indoor fan runs at the set speed.
c) If Tr >Ts, heat operation is terminated, MTV1 is turned off. Indoor fan repeatedly runs at low fan speed for 30 seconds and stops for 3 minutes.
d) The range of Ts is 16~30 ºC ◦
e) Indoor fan speed can be adjusted for low, medium, high and auto.
f) MTV will delay for 30 seconds before it is turned on.
g) MTV will delay for 120 seconds before it is turned off.

2.F.4.2 HEAT MODE --- WITH ELECTRICAL HEATER AS BOOSTER

a) MTV2 always off.
b) If Tr <= Ts- 1 ºC, heat operation is activated, MTV1 is turned on, electrical heater is turned on. Indoor fan runs at the set speed.
c) If Tr >Ts, heat operation is terminated, MTV1 is turned off. Electrical heater is turned off. Indoor fan repeatedly runs at low fan speed for 30 seconds and stops for 3 minutes.

d) If Ti1<40 ºC, the electrical heater is turned on. If 40<= Ti<45 ºC, the electrical heater is kept in its original state. If Ti>=45 ºC, the electrical heater is turned off.
e) The range of Ts is 16~30 ºC
f) Indoor fan speed can be adjusted for low, medium, high and auto.
g) MTV will delay for 30 seconds before it is turned on.
h) MTV will delay for 120 seconds before it is turned off.

2.F.4.3 HEAT MODE --- WITH ELECTRICAL HEATER AS PRIMARY HEAT SOURCE

a) MTV2 always off.
b) If Tr <= Ts– 1 ºC, heat operation is activated, MTV1 is off, Electrical heater is turned on. Indoor fan runs at set speed.
c) If Tr >Ts, heat operation is terminated, MTV1 remains off. Electrical heater is turned off. Indoor fan repeatedly runs at low fan speed for 30 seconds and stops for 3 minutes and repeats.
d) The range of Ts is 16~30 ºC
e) Indoor fan speed can be adjusted for low, medium, high and auto.

2.F.5 PRE-HEAT

2.F.5.1 PRE-HEAT --- WITHOUT ELECTRICAL HEATER

a) If Ti1<36 ºC [or 28ºC depends on S5 setting], when MTV1 is on, indoor fan remains off.
b) If Ti1>=38 ºC [or 30ºC depends on S5 setting], when MTV1 is on, indoor fan runs at set speed.
c) If indoor coil temperature sensor is damaged, pre-heat time is set for 2 minutes and indoor fan runs at set speed.

2.F.5.2 PRE-HEAT --- WITH ELECTRICAL HEATER

a) Indoor fan will turn on after the electrical heater is turned on for 10 seconds.

2.F.6. POST-HEAT

2.F.6.1 POST-HEAT --- WITHOUT ELECTRICAL HEATER

a). If Ti1≧38ºC, when MTV1 is off, indoor fan continues to run at set speed.
b). If Ti1<36ºC, when MTV1 is off. Indoor fan runs 30 seconds and stop 3 minutes repeatedly.
c) If indoor coil temperature sensor is damaged, post-heat time is set for 3 minutes with indoor fan running at set speed.

2.F.6.2 POST-HEAT --- WITH ELECTRICAL HEATER

a) Indoor fan will turn off after the unit has been off for 20 seconds.

2.F.7. OVER HEAT PROTECTION OF INDOOR COIL

a) If Ti1 >= 75 ºC, MTV1 is turned off, indoor fan remains on and runs at set speed.
b) If Ti1<70 ºC, MTV1 is turned on, indoor fan continues to operate at set speed.
c) If indoor coil temperature sensor is damaged, the protection mode will become obsolete and the unit will work as the Pre-heat and Post-heat set times.

2.F.8. DEHUMIDIFICATION MODE

a) MTV2 and heater always off.
b) If Tr >= 25 ºC, MTV1 will be ON for 3 minutes, and OFF for 4 minutes.
c) If 16 ºC < =Tr < 25 ºC, MTV1 will be ON for 3 minutes, and OFF for 6 minutes.
d) If Tr <16 ºC, MTV1 will be turned off for 4 minutes.
At the end of the above dehumidification cycle, system will decide the next dehumidification control option. Indoor fan will run at low speed throughout the dehumidification process.

2.G WITHOUT MOTORIZED VALVE

2.G.1. COOL MODE

a) Heater, MTV1 and MTV2 always off.
b) If Tr >= Ts+1 ºC, cool operation is activated. Indoor fan runs at set speed.
c) If Tr = Ts, cool operation is terminated. Indoor fan is turned off.
d) The range of Ts is16~30 ºC
e) Indoor fan speed can be adjusted for low, medium, high and auto.

2.G.2. PROTECTION OF INDOOR COIL

a) If Ti1 ≦ 2 ºC for 2 minutes, if indoor fan runs at low speed, it will run at medium speed. If indoor fan runs at medium or high speed, it will run at set speed.
b) If Ti1 ≧ 5 ºC for 2 minutes, Indoor fan runs at set speed.

2.G.3. HEAT MODE --- WITHOUT ELECTRICAL HEATER

a) Heater, MTV1 and MTV2 always off.
b) If Tr <= Ts– 1 ºC, heat operation is activated. The indoor fan is turned on and runs at set speed.
c) If Tr >Ts, heat operation is terminated. Indoor fan runs at low fan speed for 30 seconds, stops for 3 minutes and repeats.
d) The range of Ts is16~30 ºC
e) Indoor fan speed can be adjusted for low, medium, high and auto.

2.G.4. PRE-HEAT

a) If Ti1<36 ºC [or 28ºC depends on S5 setting]. Indoor fan remains off.
b) If Ti1>=38 ºC [or 30ºC depends on S5 setting], indoor fan runs at set speed.
c) If indoor coil temperature sensor is damaged, pre-heat time is set for 2 minutes, and indoor fan runs at set speed.

2.G.5. POST-HEAT

a) Indoor fan will turn off after the unit is turned off for 20 seconds.

2.G.6. OVER HEAT PROTECTION OF INDOOR COIL

a) If Ti1 >=75 ºC, while unit is on, Indoor fan remains on and runs at high speed.
b) If Ti1< 70 ºC, while unit is on, indoor fan remains on and runs at set speed.

c) If indoor coil temperature sensor is damaged, the protection mode will become obsolete and the unit will work according to the pre-heat set time.

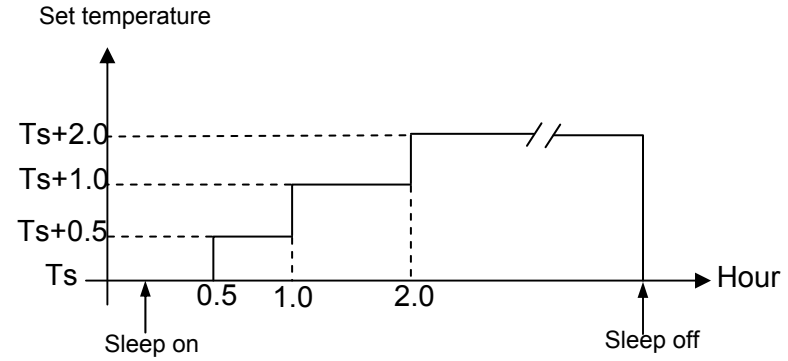
2.G.7. DEHUMIDIFICATION MODE

a) Heater, MTV1 and MTV2 always off.
b) If Tr>=25 ºC, fan will be ON for 3 minutes and OFF for 4 minutes.
c) If 16 ºC <=Tr<25 ºC, indoor fan will be ON for 3 minutes and OFF for 6 minutes.
d) If Tr <16 ºC, Indoor fan will be turned off.
At the end of the above dehumidification cycle, the system will decide the next dehumidification control option. Indoor fan will run at low speed throughout the dehumidification process.

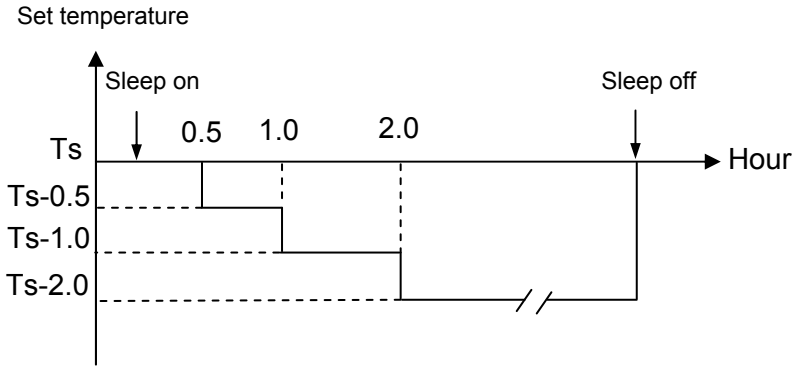
2.H. SLEEP MODE

a) Sleep mode can only be set in cool or heat modes.
b) In cool mode, after sleep mode is set, the indoor fan will run at low speed and Ts will increase 2 ºC during 2 hours.
c) In heat mode, after sleep mode is set, the indoor fan will run at set speed and Ts will decrease 2 ºC during 2 hours.
d) Changing of operation mode will cancel sleep mode.

The cool mode sleep profile is:

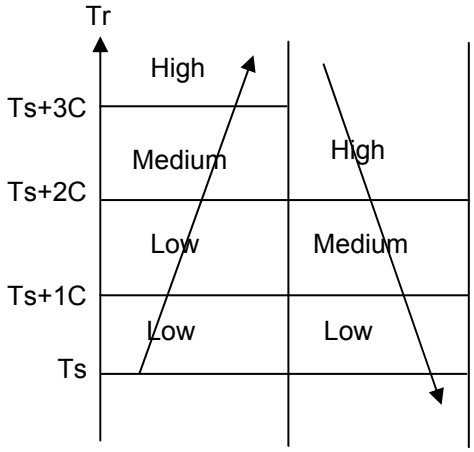


The heat mode sleep profile is:

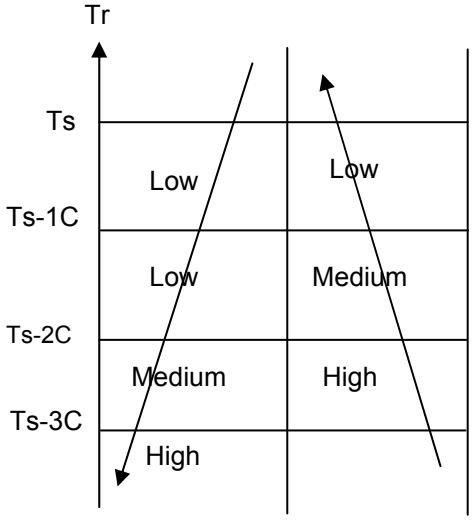


2.I. AUTO FAN SPEED

In cool mode, the fan speed cannot change until it has run at this speed for more then 30 seconds. Fan speed is regulated according to the profile below.



In heat mode, the fan speed cannot change until it has run at this speed for more then 30 seconds.



2.J LOUVER

There are 2 types of louver angle; Louver setting for PC2 and Louver setting for PCE/F2 depends on shunt jumper S3 configuration.

<u>Louver setting for PC2:</u>

Whenever indoor fan is running, louver can swing or stop at the desired position.
Louver angle: 0~29 º, opens clockwise with largest angle at 29 º.
Swing angle: 8~29 º, opens clockwise to 22º. Below are the 4 fixed positions which can be set from wireless LCD handset.

Position	Angle
1	8 º
2	15 º
3	22 º
4	29 º

For wired wall pad:
Louver angle: 0~29º, opens clockwise, and with biggest angle at 29º.
Louver angle: 8~29 º, opens clockwise to 22º. User may stop louver at any desired poison between 8~29º.

Louver setting for PCE/F2:

Whenever indoor fan is running, louver can swing or stop at the desired position.
Louver angle: 0~100 º, opens clockwise with largest angle at 100 º.
Swing angle: 35~100 º, opens clockwise to 68º. Below are the 4 fixed positions which can be set from wireless LCD handset.

Position	Angle
1	35 º
2	57 º
3	83 º
4	100 º

For wired wall pad
Louver angle: 0~100 º, opens clockwise, and with biggest angle at 100 º.
Louver angle: 35~100 º, opens clockwise to 68º. User may stop louver at any desired poison between 35~100 º.

2.K BUZZER

If a command is received by the air conditioner, the master unit will respond with 2 beeps for each setting, and the slave unit will respond with 1 beep.

2.L AUTO RESTART

The system uses non-volatile memory to save the present operation parameters when system is turned off or in case of system failure or cessation of power supply. Operation parameters when using handset are mode, set temperature, swing, and the fan speed. When using wall pad parameters are mode, set temperature, swing, and the fan speed when power supply resumes or the system is switched on again, the same operations as previously set will function.

2.M WATER PUMP

Water pump turns on when cooling or dehumidification modes are operating. It will remain on for 5 minutes after set point is reached or mode is changed.

2.N FLOAT SWITCH

This normally closed float switch is used to detect faults in the water pump system. Switch open confirmation delay is 5 seconds while switch closed confirmation is 60 seconds. Once the switch is confirmed open, the valve will close, the unit will stop, and the water pump will turn on for 5 minutes. Should the float switch be opened 2 times within 30 minutes, the unit will not be allowed to start. Turn off the unit to reset the fault provided that the switch has returned to closed position. If the float switch remains open service of the unit is required.

3.0 OPERATION OF CONTROL PANEL ON WATER CASSETTE

3. A ON/OFF BUTTON

a) In case handset is lost or wall pad is damaged, please use this button to select Cool →Heat→Off operation mode. Each press of the button changes mode.
b) In cool mode, the set temperature of the system is 24ºC with auto fan speed and swing. There are no timer and sleep modes.
c) In heat mode, the set temperature of the system is 24ºC with auto fan speed and swing. There are no timer and sleep modes.
d) Master unit that does not use LCD wall pad will globally broadcast.
Note: When button pressing is effective, master unit buzzer will beep twice and slave unit beeps once.

3. B LED lights

Indication - with Master-Slave Connection

For unit with handset only

Error message can be found in LED lights on unit body. Table below indicate the error code for master and all slave unit.

Table 1

For all units (both master and slave)	
Unit on	Red LED On
Unit off	Red LED Off
For master unit indicating defect status of all slave unit	
Unit 2 failure	Blink 2 times, stop 3 sec
Unit 3 failure	Blink 3 times, stop 3 sec
Unit 4 failure	Blink 4 times, stop 3 sec
Unit 5 failure	Blink 5 times, stop 3 sec
Unit 6 failure	Blink 6 times, stop 3 sec
Unit 7 failure	Blink 7 times, stop 3 sec
Unit 8 failure	Blink 8 times, stop 3 sec
Unit 9 failure	Blink 9 times, stop 3 sec
Unit 10 failure	Blink 10 times, stop 3 sec
Unit 11 failure	Blink 11 times, stop 3 sec
Unit 12 failure	Blink 12 times, stop 3 sec
Unit 13 failure	Blink 13 times, stop 3 sec
Unit 14 failure	Blink 14 times, stop 3 sec
Unit 15 failure	Blink 15 times, stop 3 sec
Unit 16 failure	Blink 16 times, stop 3 sec
Unit 17 failure	Blink 17 times, stop 3 sec
Unit 18 failure	Blink 18 times, stop 3 sec
Unit 19 failure	Blink 19 times, stop 3 sec
Unit 20 failure	Blink 20 times, stop 3 sec
Unit 21 failure	Blink 21 times, stop 3 sec
Unit 22 failure	Blink 22 times, stop 3 sec
Unit 23 failure	Blink 23 times, stop 3 sec
Unit 24 failure	Blink 24 times, stop 3 sec
Unit 25 failure	Blink 25 times, stop 3 sec
Unit 26 failure	Blink 26 times, stop 3 sec
Unit 27 failure	Blink 27 times, stop 3 sec
Unit 28 failure	Blink 28 times, stop 3 sec
Unit 29 failure	Blink 29 times, stop 3 sec
Unit 30 failure	Blink 30 times, stop 3 sec
Unit 31 failure	Blink 31 times, stop 3 sec
Unit 32 failure	Blink 32 times, stop 3 sec

For all units Green LED light	
Cool Mode	Green LED light On
Indoor coil sensor 2 failure	Blink 2 times, stop 3 sec
Return air sensor failure	Blink 3 times, stop 3 sec
Indoor coil sensor 1 failure	Blink 4 times, stop 3 sec
Indoor coil low temperature protection	Blink 5 times, stop 3 sec
Indoor coil over heat protection	Blink 6 times, stop 3 sec
Water pump failure	Blink 7 times, stop 3 sec

For unit with wall pad only
Error message can be found in both LED lights on unit body (please refer to table 1) and wall pad error indication. (Please refer to page 44 Error Indication)

Note: If the address of slave unit is not set (refer to page 47) LED lights and Wall pad of the master unit will not show the status of the defective slave unit.

Without Master-Slave connection
For unit with handset only

Table 2

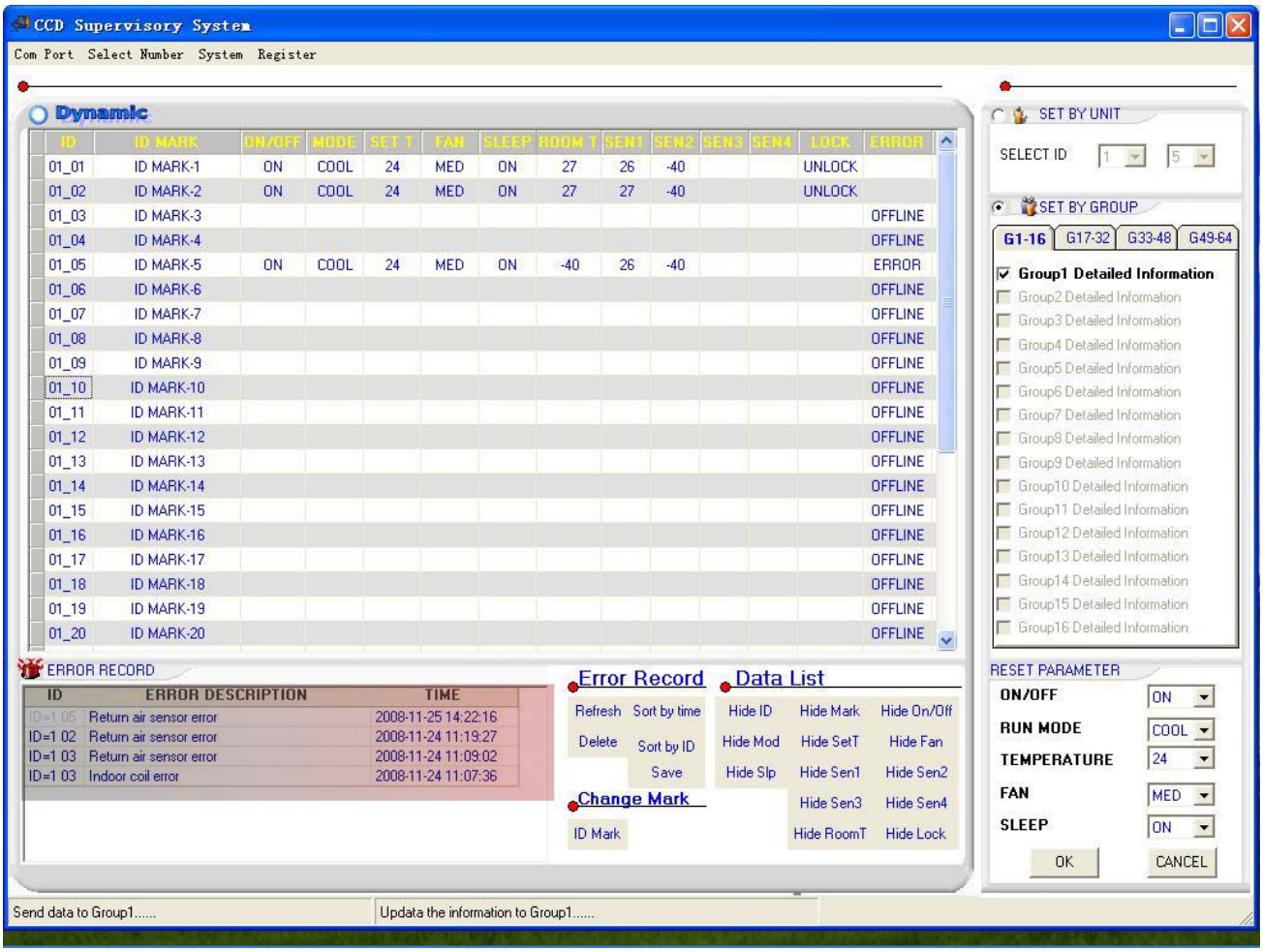
For all units Red LED light on the unit	
Unit On	Red LED On
Unit Off	Red LED Off

For all units Green LED light on the unit	
MTV on	LED light On
MTV off	LED light Off
Indoor coil sensor 2 failure	Blink 2 times, stop 3 sec
Return air sensor failure	Blink 3 times, stop 3 sec
Indoor coil sensor 1 failure	Blink 4 times, stop 3 sec
Indoor coil low temperature protection	Blink 5 times, stop 3 sec
Indoor coil over heat protection	Blink 6 times, stop 3 sec
Water pump failure	Blink 7 times, stop 3 sec

For unit with wall pad only
Error message can be found in both LED lights on the unit body (please refer to table 2) and on the wall pad error indication. (Please refer to page 44 Error Indication)

With Host Computer Connection

Error message with unit address is shown in the program as highlighted below:



HYDRONIC CASSETTE

SENSOR RESISTANCE R-T CONVERSION TABLE

R25: 10KΩ±1%
B25/85: 3977±1%

T	Rmin	Rnom	Rmax	T	Rmin	Rnom	Rmax
(℃)	(KΩ)	(KΩ)	(KΩ)	(℃)	(KΩ)	(KΩ)	(KΩ)
-30	174	182.7	191.8	4	26.11	26.9	27.71
-29	163.4	171.5	179.9	5	24.85	25.59	26.34
-28	153.6	161.1	168.9	6	23.65	24.35	25.05
-27	144.4	151.3	158.5	7	22.52	23.17	23.83
-26	135.8	142.2	148.9	8	21.45	22.06	22.68
-25	127.8	133.8	140	9	20.44	21.01	21.59
-24	120.3	125.8	131.6	10	19.48	20.02	20.55
-23	113.3	118.4	123.8	11	18.58	19.7	19.58
-22	106.7	111.5	116.5	12	17.71	18.18	18.65
-21	100.6	105.1	109.7	13	16.9	17.33	17.77
-20	94.9	99.03	103.3	14	16.12	16.53	16.94
-19	89.51	93.39	97.41	15	15.39	15.77	16.16
-18	84.5	88.11	91.85	16	14.69	15.05	15.41
-17	79.8	83.17	86.64	17	14.03	14.37	14.7
-16	75.39	78.53	81.76	18	13.41	13.72	14.03
-15	71.26	74.18	77.19	19	12.81	13.1	13.4
-14	67.37	70.1	72.9	20	12.24	12.52	12.79
-13	63.73	66.26	68.88	21	11.7	11.96	12.22
-12	60.3	62.67	65.1	22	11.19	11.43	11.67
-11	57.08	59.28	61.55	23	10.71	10.93	11.15
-10	54.05	56.1	58.22	24	10.24	10.45	10.66
-9	51.19	53.12	55.08	25	9.8	10	10.2
-8	48.51	50.3	52.14	26	9.374	9.57	9.765
-7	45.98	47.66	49.37	27	8.969	9.16	9.351
-6	43.61	45.17	46.77	28	8.584	8.77	8.957
-5	41.36	42.82	44.31	29	8.218	8.4	8.582
-4	39.25	40.61	42	30	7.869	8.047	8.225
-3	37.26	38.53	39.83	31	7.537	7.71	7.885
-2	35.38	36.56	37.78	32	7.221	7.39	7.56
-1	33.6	34.71	35.85	33	6.92	7.085	7.251
0	31.93	32.97	3402	34	6.633	6.794	6.956
1	30.35	31.32	32.3	35	6.36	6.517	6.675
2	28.85	29.76	30.68	36	6.099	6.252	6.407
3	27.44	28.29	29.15	37	5.85	6	6.151

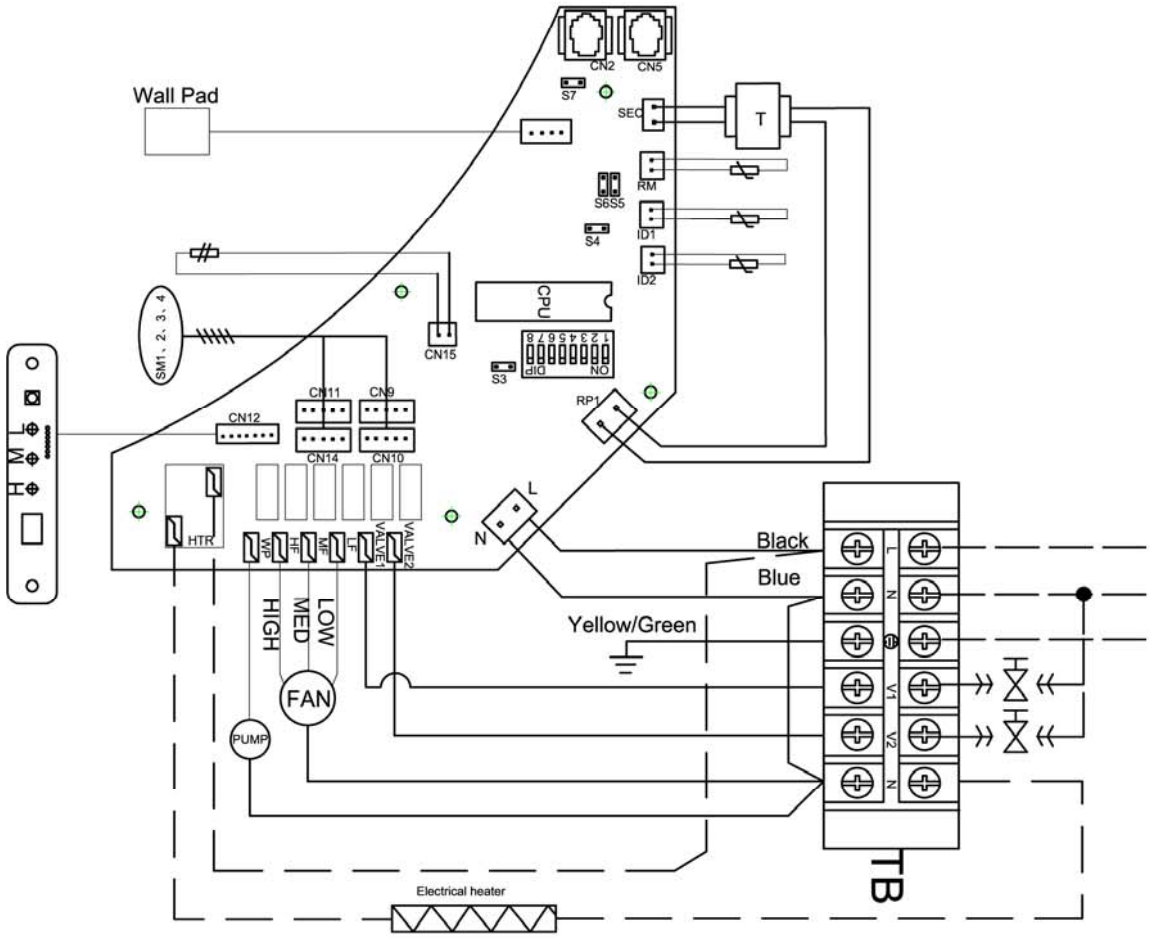
HYDRONIC CASSETTE

R25: 10KΩ±1%
B25/85: 3977±1%

T	Rmin	Rnom	Rmax	T	Rmin	Rnom	Rmax
(℃)	(KΩ)	(KΩ)	(KΩ)	(℃)	(KΩ)	(KΩ)	(KΩ)
38	5.614	5.759	5.907	75	1.417	1.474	1.532
39	5.387	5.53	5.673	76	1.37	1.426	1.482
40	5.172	5.31	5.451	77	1.326	1.379	1.434
41	4.966	5.101	5.238	78	1.282	1.335	1.389
42	4.769	4.901	5.034	79	1.241	1.292	1.344
43	4.582	4.71	4.84	80	1.201	1.25	1.302
44	4.402	4.527	4.654	81	1.162	1.211	1.261
45	4.231	4.353	4.477	82	1.125	1.172	1.221
46	4.067	4.186	4.307	83	1.089	1.135	1.183
47	3.911	4.027	4.144	84	1.055	1.1	1.146
48	3.761	3.874	3.989	85	1.021	1.065	1.111
49	3.618	3.728	3.84	86	0.9891	1.032	1.077
50	3.481	3.588	3.697	87	0.9582	1	1.044
51	3.35	3.454	3.561	88	0.9284	0.9697	1.012
52	3.225	3.326	3.43	89	0.8998	0.9401	0.9818
53	3.105	3.204	3.305	90	0.8721	0.9115	0.9522
54	2.99	3.086	3.185	91	0.8455	0.8839	0.9237
55	2.88	2.974	3.07	92	0.8198	0.8573	0.8961
56	2.774	2.866	2.959	93	0.795	0.8316	0.8696
57	2.673	2.762	2.854	94	0.7711	0.8069	0.8439
58	2.576	2.663	2.752	95	0.748	0.783	0.8192
59	2.483	2.568	2.655	96	0.7258	0.7599	0.7953
60	2.394	2.477	2.562	97	0.7043	0.7376	0.7722
61	2.309	2.39	2.472	98	0.6836	0.7161	0.7499
62	2.227	2.306	2.386	99	0.6635	0.6953	0.7283
63	2.149	2.225	2.304	100	0.6442	0.6752	0.7075
64	2.073	2.148	2.224	101	0.6255	0.6558	0.6874
65	2.001	2.074	2.148	102	0.6075	0.6371	0.6679
66	1.931	2.002	2.075	103	0.59	0.619	0.6491
67	1.865	1.934	2.005	104	0.5732	0.6015	0.631
68	1.801	1.868	1.937	105	0.5569	0.5846	0.6134
69	1.739	1.805	1.872				
70	1.68	1.744	1.81				
71	1.623	1.686	1.75				
72	1.569	1.63	1.692				
73	1.516	1.576	1.637				
74	1.466	1.524	1.583				

HYDRONIC CASSETTE
CONTROL AND POWER SUPPLY WIRING DIAGRAMS

PCE2-03, 04,-06, 08-VS



S3----S3 is used to set the louver angel.
Open - Louver setting for PCE2 cassette
Short - Louver setting for 2-way casette

S4----S4 is used to set 2-pipe or 4-pipe
Open - 2-Pipe system
Short - 4-Pipe system

S5----S5 is used to set the preheat temperature

S6----Open - Unit without Motoried valve
Short - Unit with Motorized valve

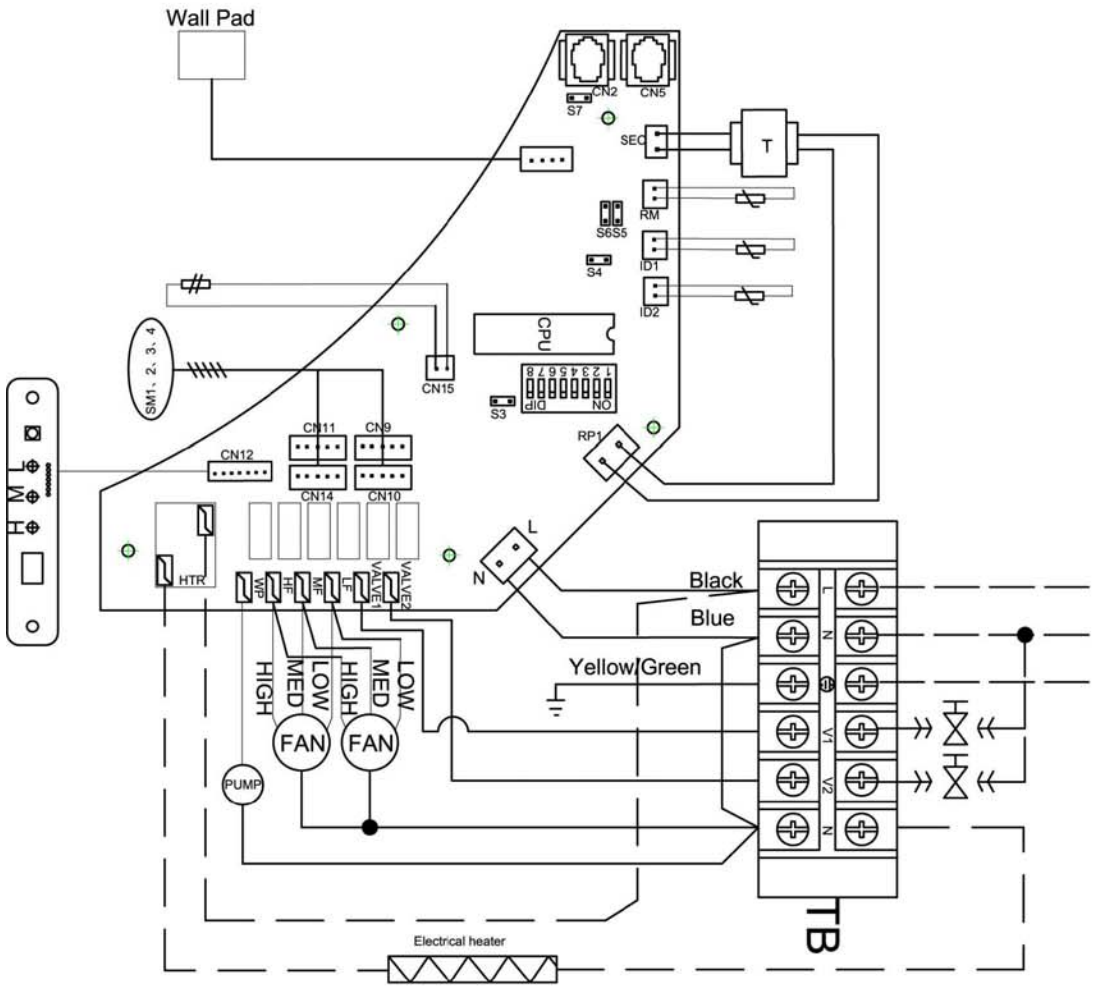
S7----Short - Last unit on RS485 communication bus
Open - Other than above

RP1----Transformer
L \N----Power supply
VALVE1----2-way valve
VALVE2----2-way valve(Hot water)
WP----Drainage pump
HTR----Electrical heater
HF----Fan motor high speed
MF----Fan motor medium speed
LF----Fan motor low speed
RM----Room TEMP. sensor
ID1----Indoor coil TEMP. sensor
ID2----Hot pipe coil TEMP. sensor
CN7----Wall pad
CN9、CN10、CN11、CN14----Stepping motor
CN12----Remote receiver
CN15----Float switch

Note: Electrical heater and 4-pipe system cannot be applied at the same time.

HYDRONIC CASSETTE

PCE2-09, 12, 16-VS

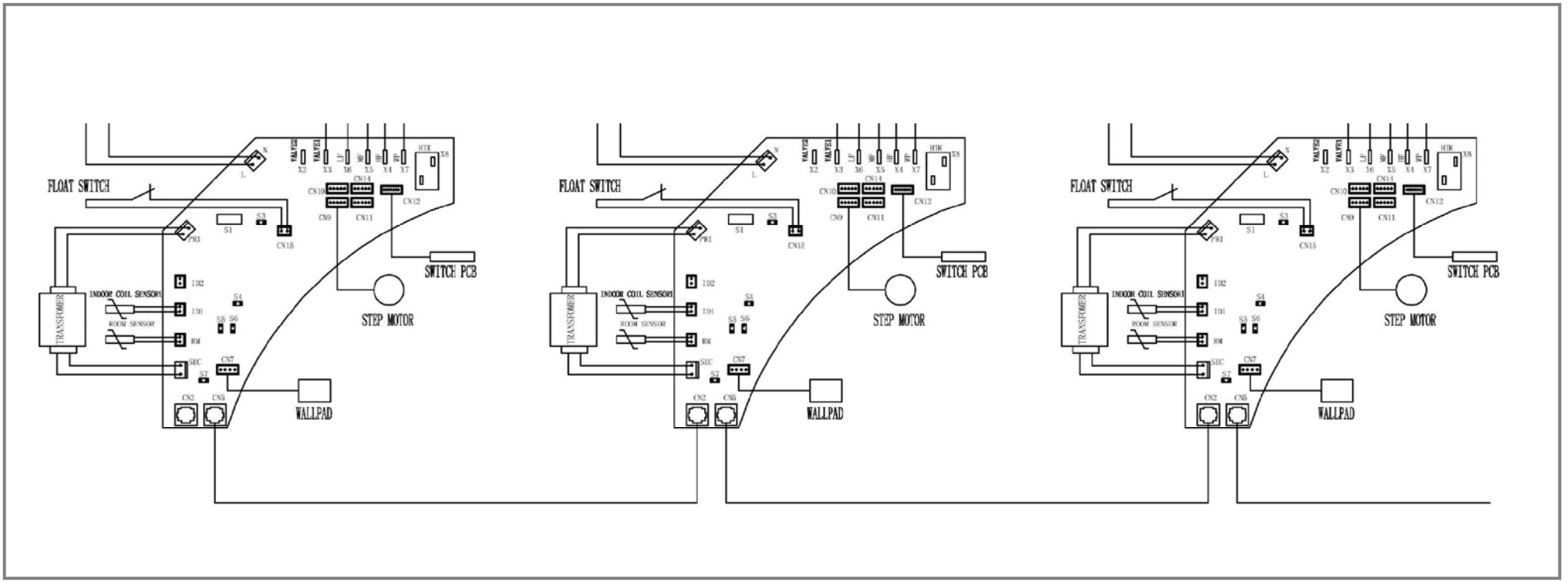


Legend:

S3----S3 is used to set louver angel
Open- Louver setting for PCE2 cassette
Short- Louver setting for 2-way cassete
S4----S4 is used to set 2-pipe or 4-pipe
Open - 2 pipe system
Short is 4 pipe system
S5----S5 is used to set preheat temperature
S6----Open - Unit without motoried valve
Short - Unit with motoried valve
S7----Short - last unit on RS485 communication bus
Open - other than above
RP1----Transformer
L \N----Power supply
VALVE1----2-way valve
VALVE2----2-way valve(Hot water)
WP----Drainage pump
HTR----Electrical heater
HF----Fan motor high speed
MF----Fan motor medial speed
LF----Fan motor low speed
RM----Room TEMP. sensor
ID1----Indoor coil TEMP. sensor
ID2----Hot pipe coil TEMP. sensor
CN7----Wall pad
CN9、CN10、CN11、CN14----Stepping motor
CN12----Remote receiver
CN15----Float switch

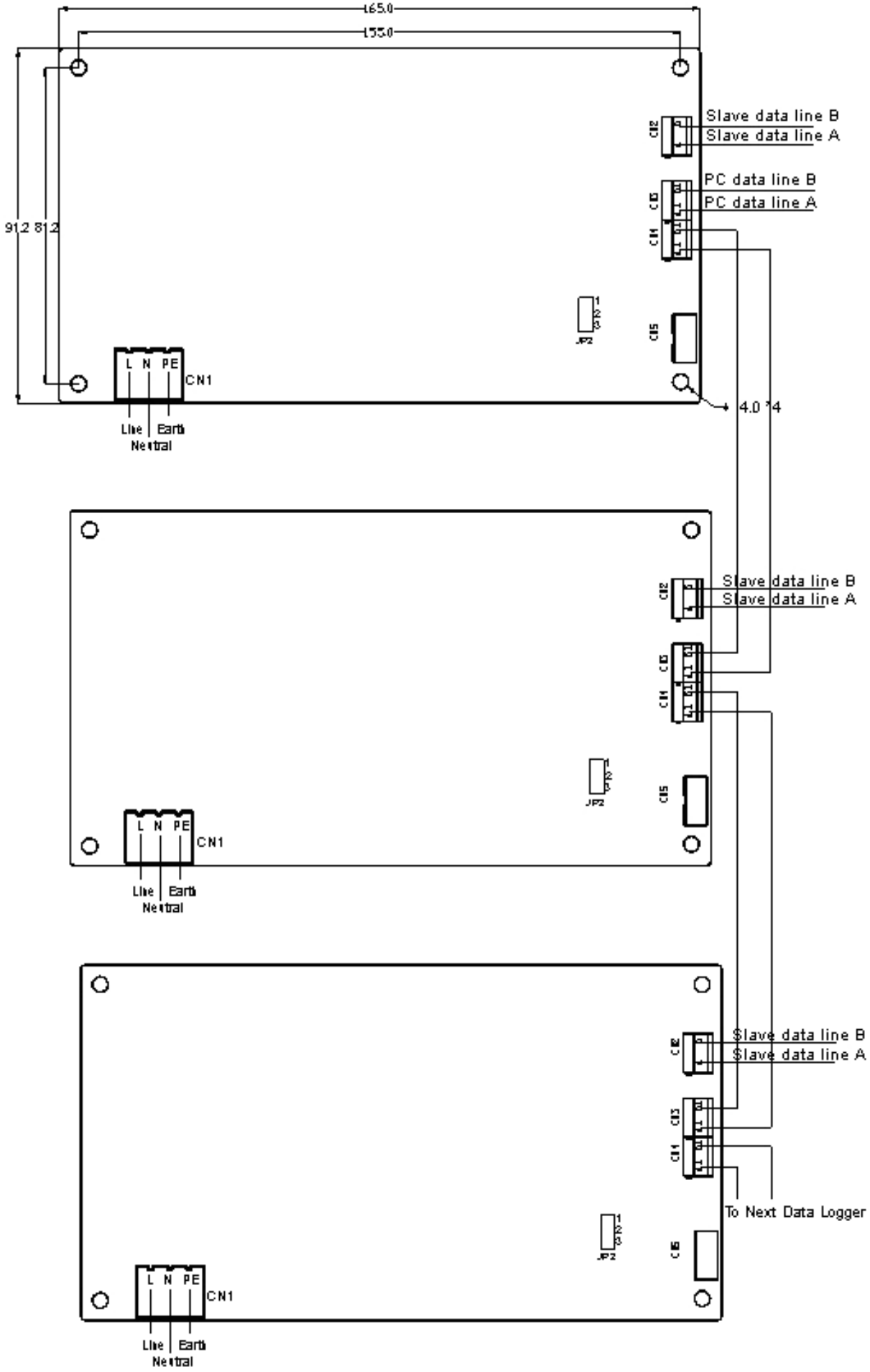
Note: Electrical heater and 4-pipe system cannot be applied at the same time.

HYDRONIC CASSETTE
MASTER-SLAVE CONTROL WIRING DIAGRAM



HYDRONIC CASSETTE

HOST COMPUTER CONTROL WIRING DIAGRAM



HYDRONIC CASSETTE

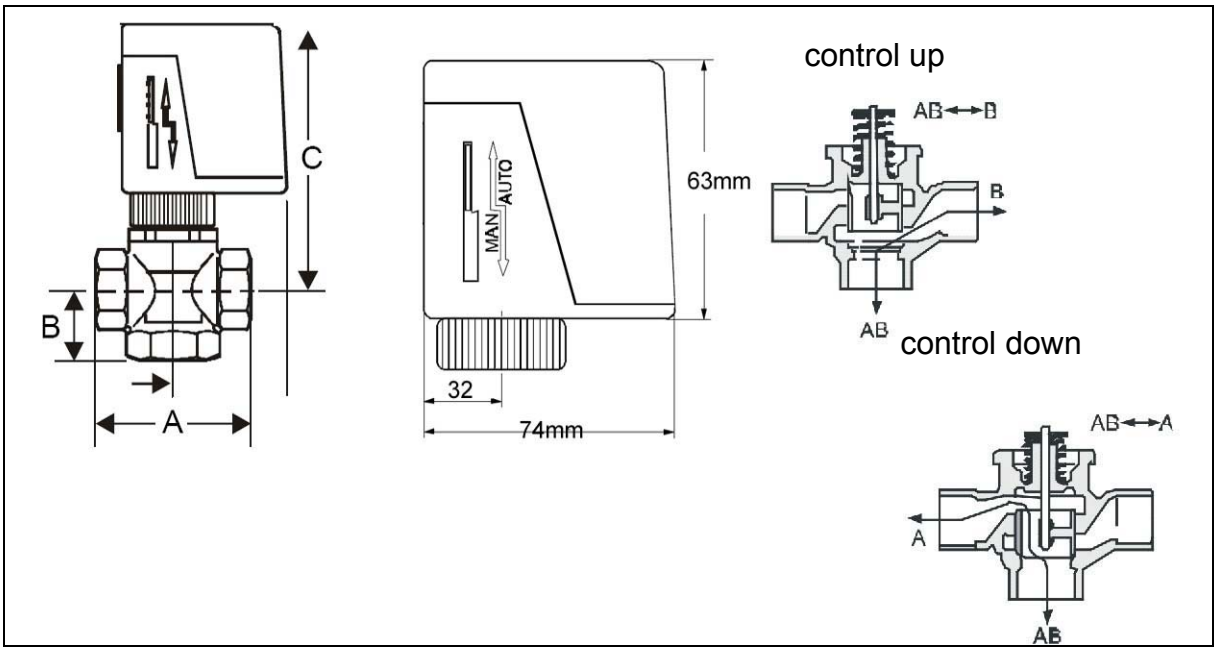
SOLENOID VALVE

The solenoid valve consists of a motor and a main body. The synchronous motor recovers by a spring and can be controlled by a handle. The main body adopts the piston system.

1. TECHNICAL DATA

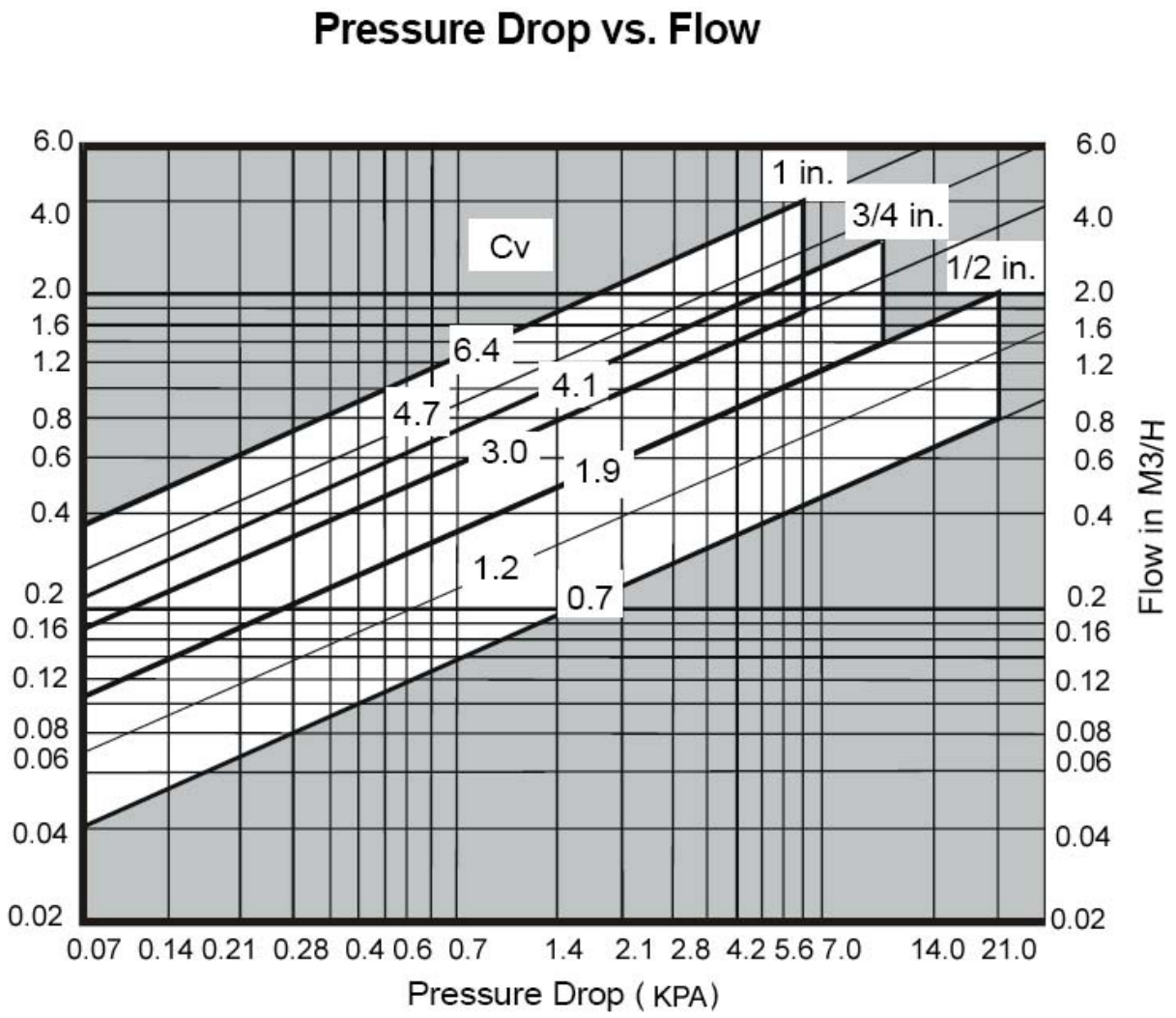
Power supply:	230VAC50Hz
Input:	5W
Electric machine type:	synchronous
Working pressure:	1.6Mpa
Ambient operating temperature:	0~65°C
Liquid temperature range:	1~95°C

2. 3 WAY VALVE



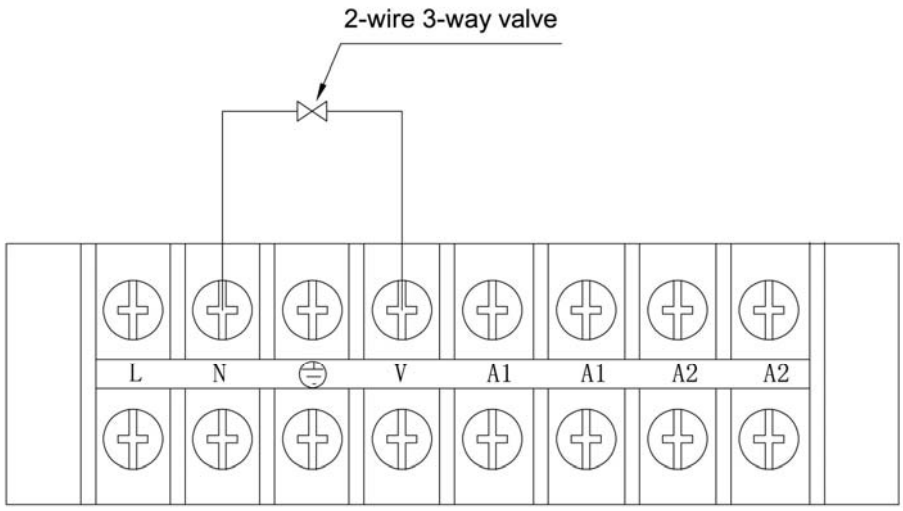
3. SPECIFICATION

ITEM	MODEL	DIAMETER		A	B	C
3 Way valves	VA-7010-8003-15	1/2"	DN15	55	29	98
	VA-7010-8003-20	3/4"	DN20	66	33	37
	VA-7010-8003-25	1"	DN25	98	102	104

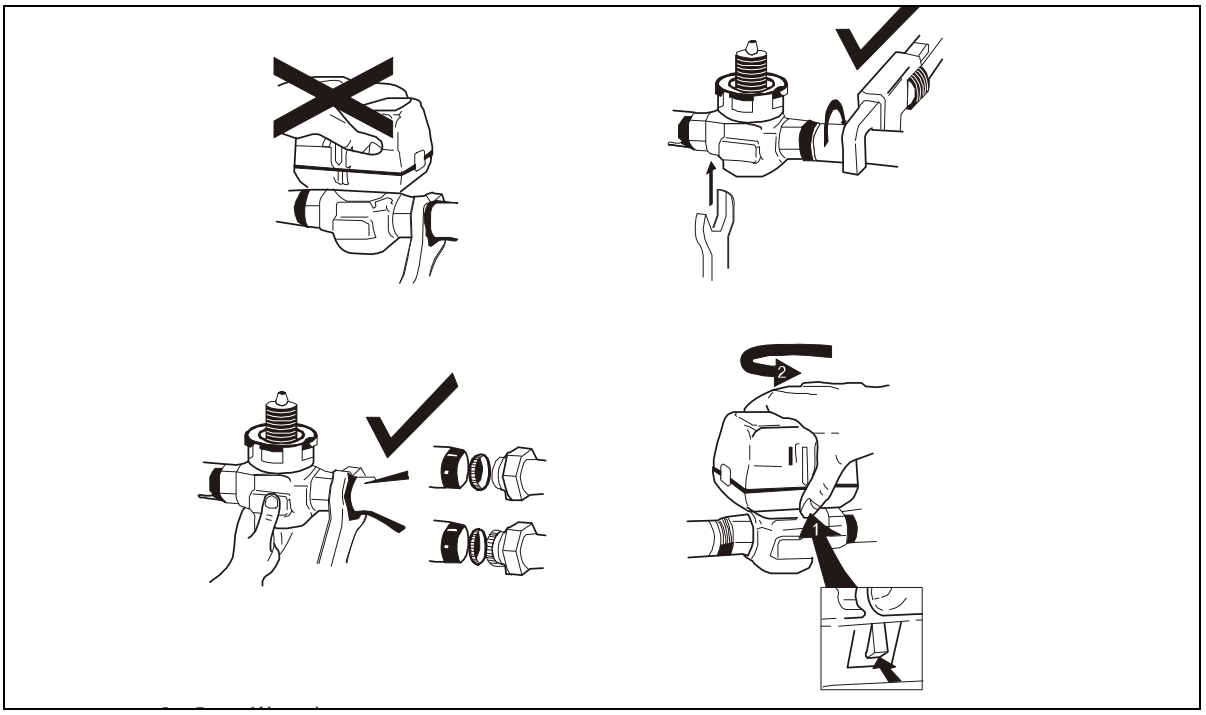


To convert Cv to Kvs, use formula below:
1 Kvs = 0.86 Cv

4. TERMINAL BLOCK WIRING DIAGRAM



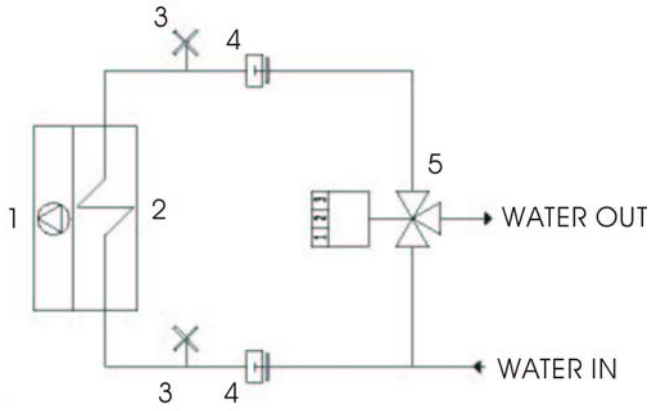
5. INSTALLATION



1. Before installation please read the manual carefully.
2. Installation must be carried out by qualified personnel following the instructions in this manual.
3. The motor must be kept on a horizontal level with the main body.

HYDRONIC CASSETTE

HYDRAULIC CONNECTION DIAGRAM



1. Fan 2. Heat exchanger 3. Air Vent 4. Joint 5. Solenoid

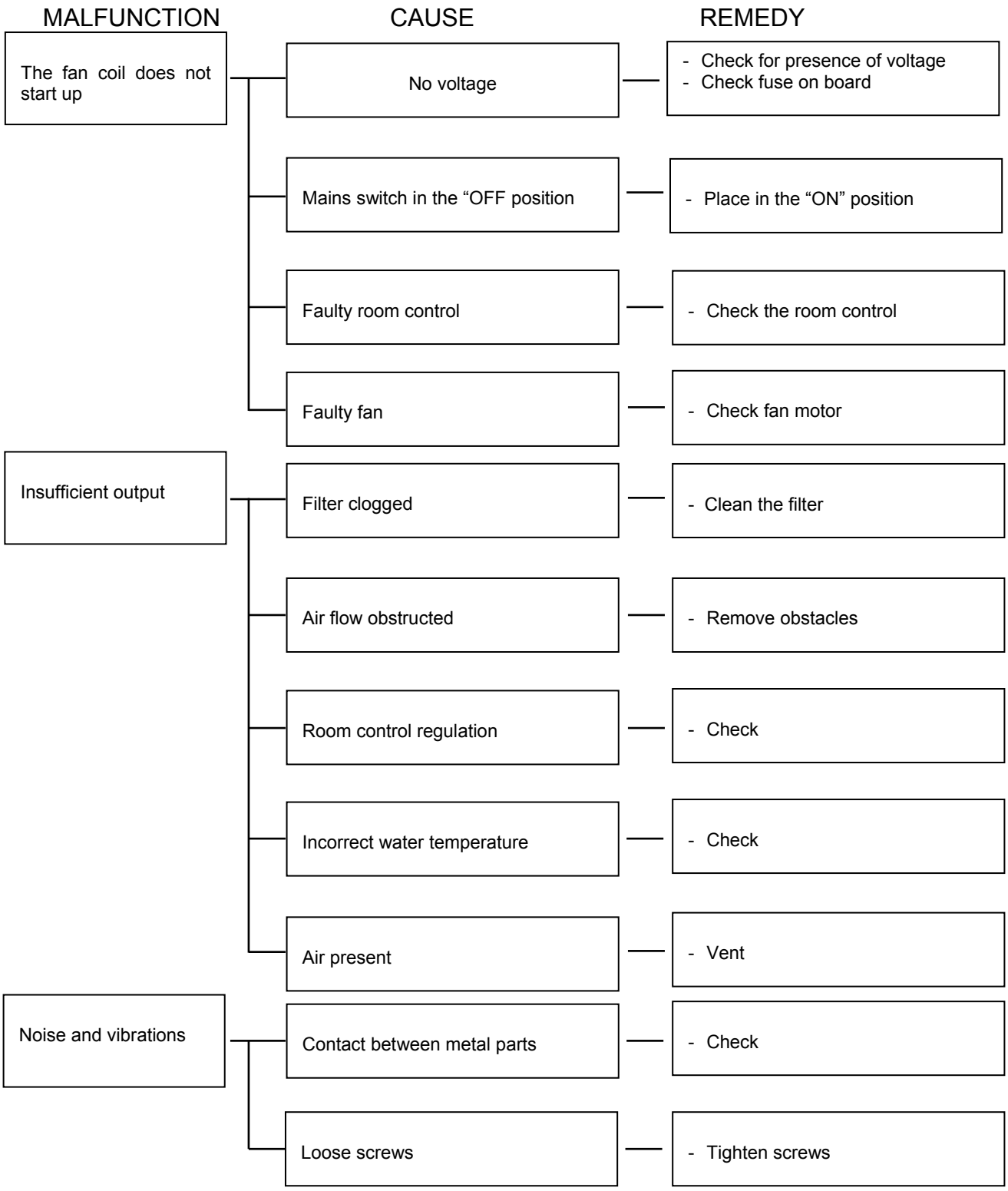
A SOLENOID VALVE (OPTIONAL) MUST BE FITTED TO CUT OFF WATER FLOW.

The choice and installation of components is the responsibility of the installer who should follow good working practice and legislation in force in the country concerned.

Particular types of water used for filling or topping up must be treated with appropriate treatment systems. For references values, see the table.

Reference values	
pH	6 – 8
Electrical conductivity	Less than 200 mV/cm (25°C)
Chlorine ions	Less than 50 ppm
Sulphuric acid ions	Less than 50 ppm
Total iron	Less than 0.3 ppm
Alkalinity M	Less than 50 ppm
Total hardness	Less than 35°f
Sulpur ions	none
Ammonia ions	none
Silicon ions	Less than 300 ppm

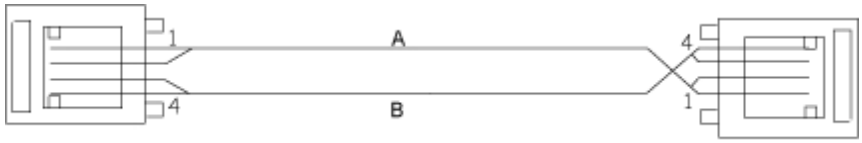
HYDRONIC CASSETTE

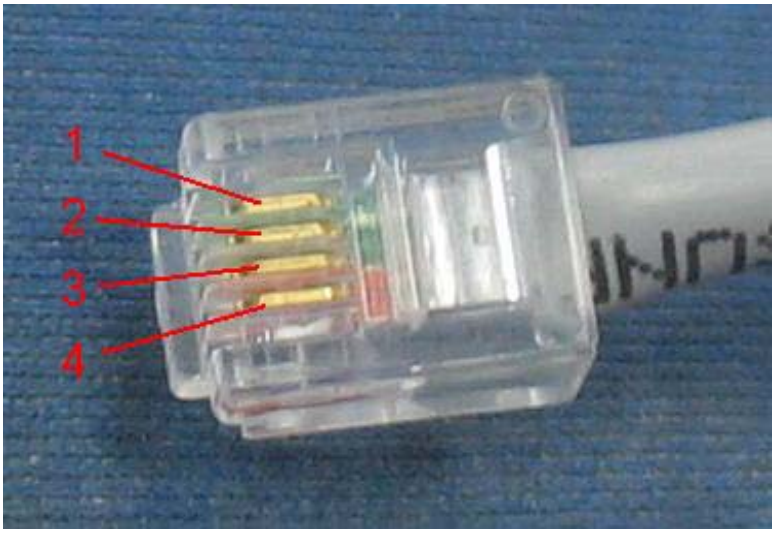


APPENDIX I

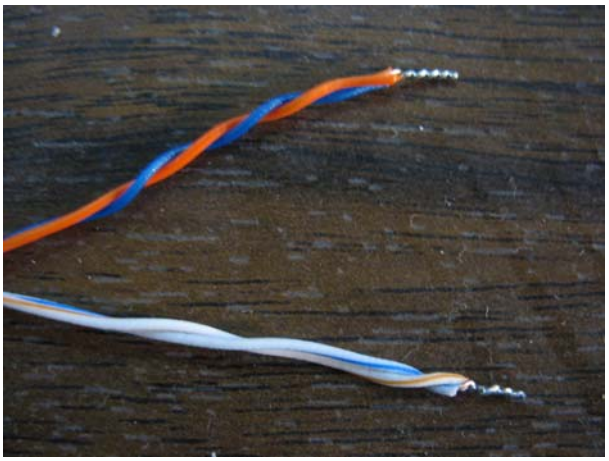
Master-Slave Communication Cabling: RJ-11-6P-4C

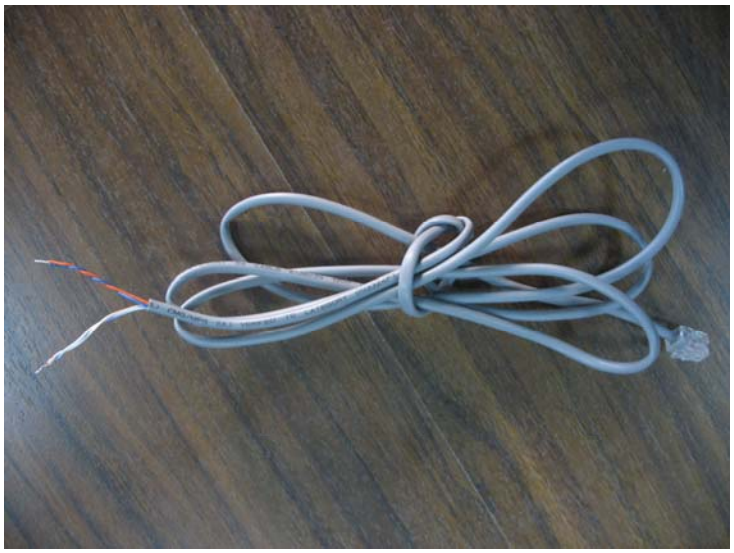
TYPE A - For connection between Fan Coils





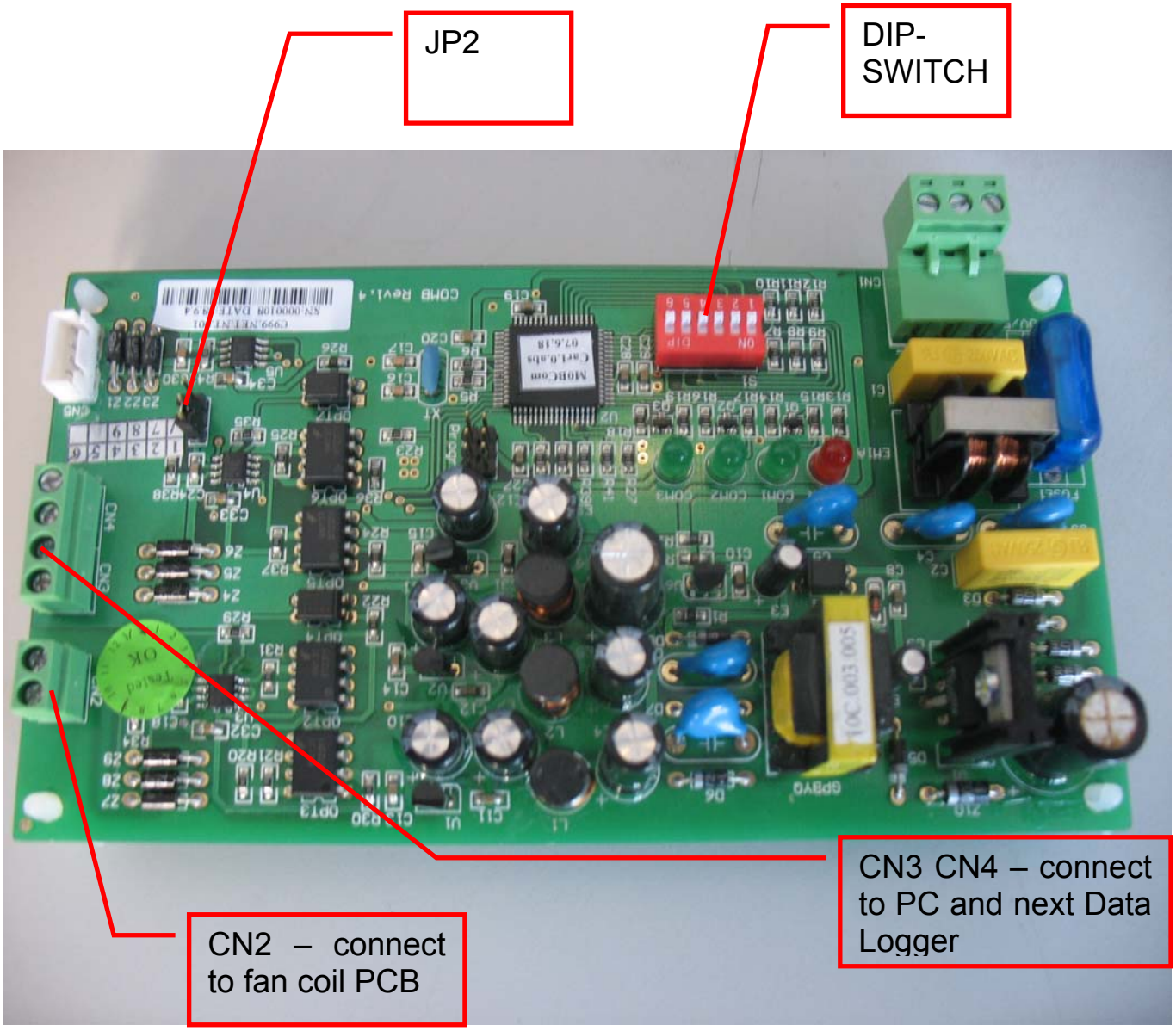
TYPE B – For connection between Fan Coil and Data Logger





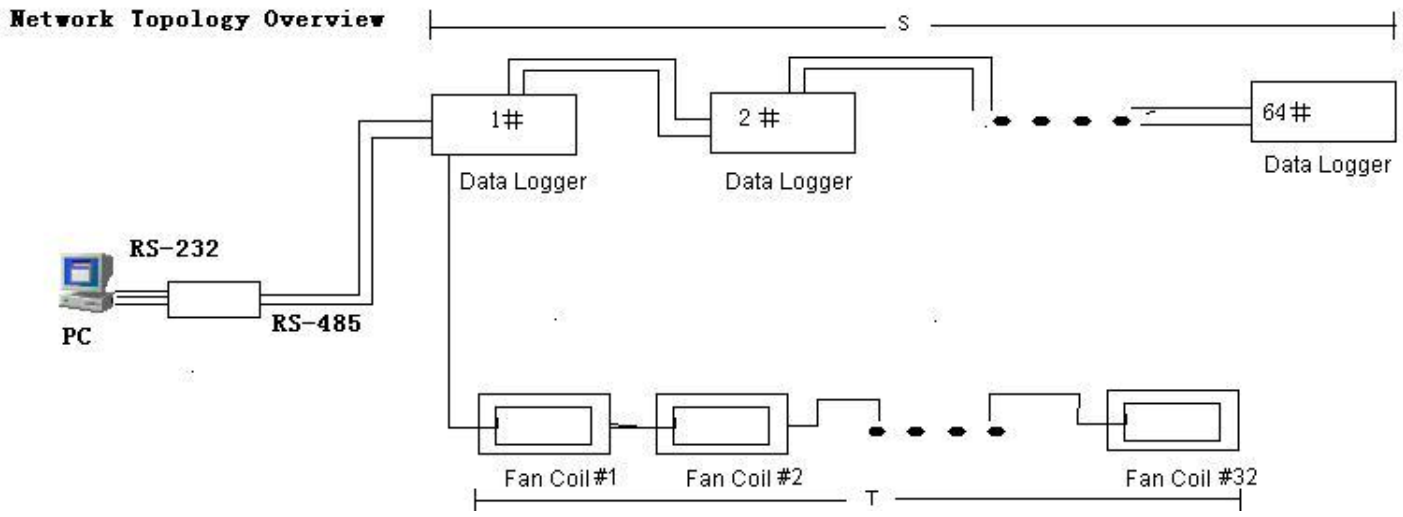
APPENDIX II

CONFIGURATION OF DATA LOGGER



APPENDIX III

Network Topology Overview



"S" stand for the wiring distance between the first data logger to the last data logger (Data Logger Bus)
"T" stand for the wiring distance between the first fan coil to the last fan coil (Fan Coil Bus)

Table below shows the jumper shorting position on JP2 (Data Logger) and S7 (PCB) under different distance situation to the bus connection.

	RS232 to RS485 converter with 120ohm termination resistor in built	RS232 to RS485 converter without 120ohm termination resistor in built
Data Logger Bus "S" < 300m	Short JP2 position 2, 3 on Data Logger	Short JP2 position 1, 2 on Data Logger
Data Logger Bus "S" >= 300m	Short JP2 position 1, 2 on Data Logger	Short JP2 position 1, 2 on Data Logger
Fan Coil Bus "T" < 150m	Do not short S7 on PCB	Short S7 on PCB
Fan Coil Bus "T" >= 150m	Short S7 on PCB	Short S7 on PCB

Note: the above wiring distance of 300m is just for the reference. Short position 1 &2 or 2 & 3 for the last data logger and S7 on PCB depends on the actual installation and quality of connection.

APPENDIX IV

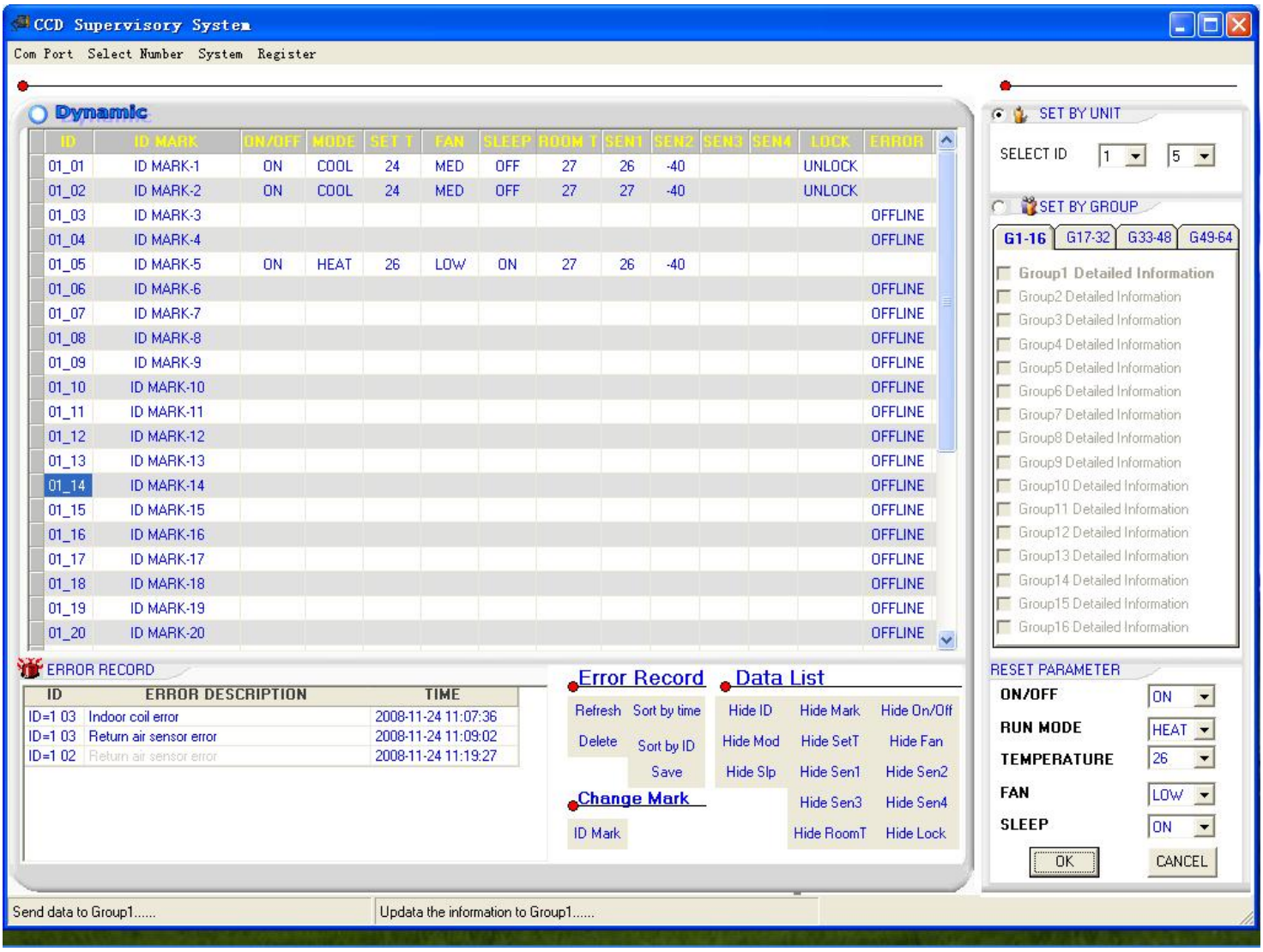
HOST COMPUTER CONTROL SOFTWARE GUIDELINES

1) Once software has been installed, start running it.

2) Please login to the system – for testing please choose “Maintenance” with password “666666”

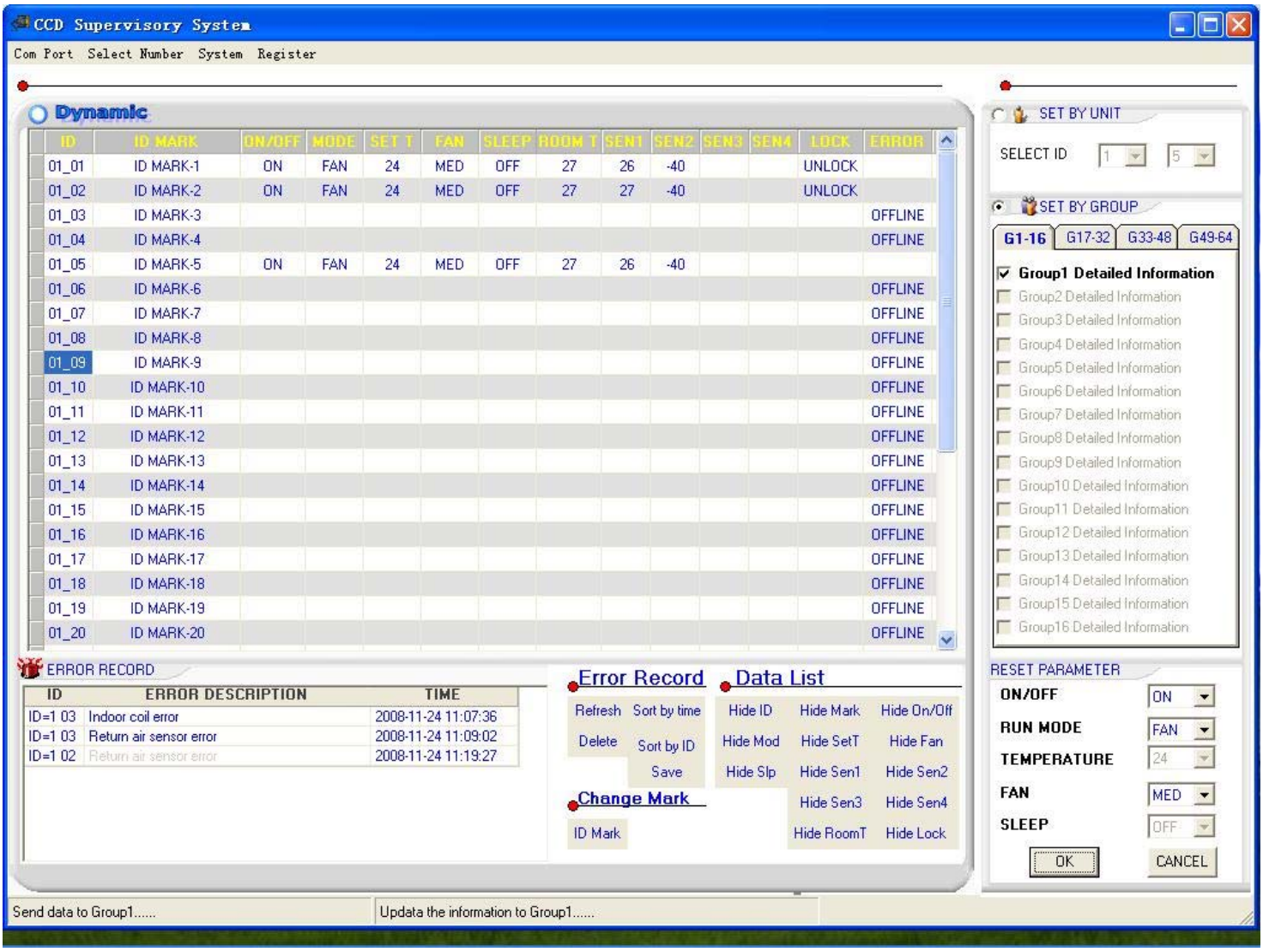
3) If fan coils were successfully connected to BMS system, their ID (according to the Dip-Switch setting on the unit) will shown on the program with status of the air-con e.g. On/Off, Mode etc.

4) Set the Addressable communication by first clicking the “SET BY UNIT”, select the target ID and provide them setting as same as below:



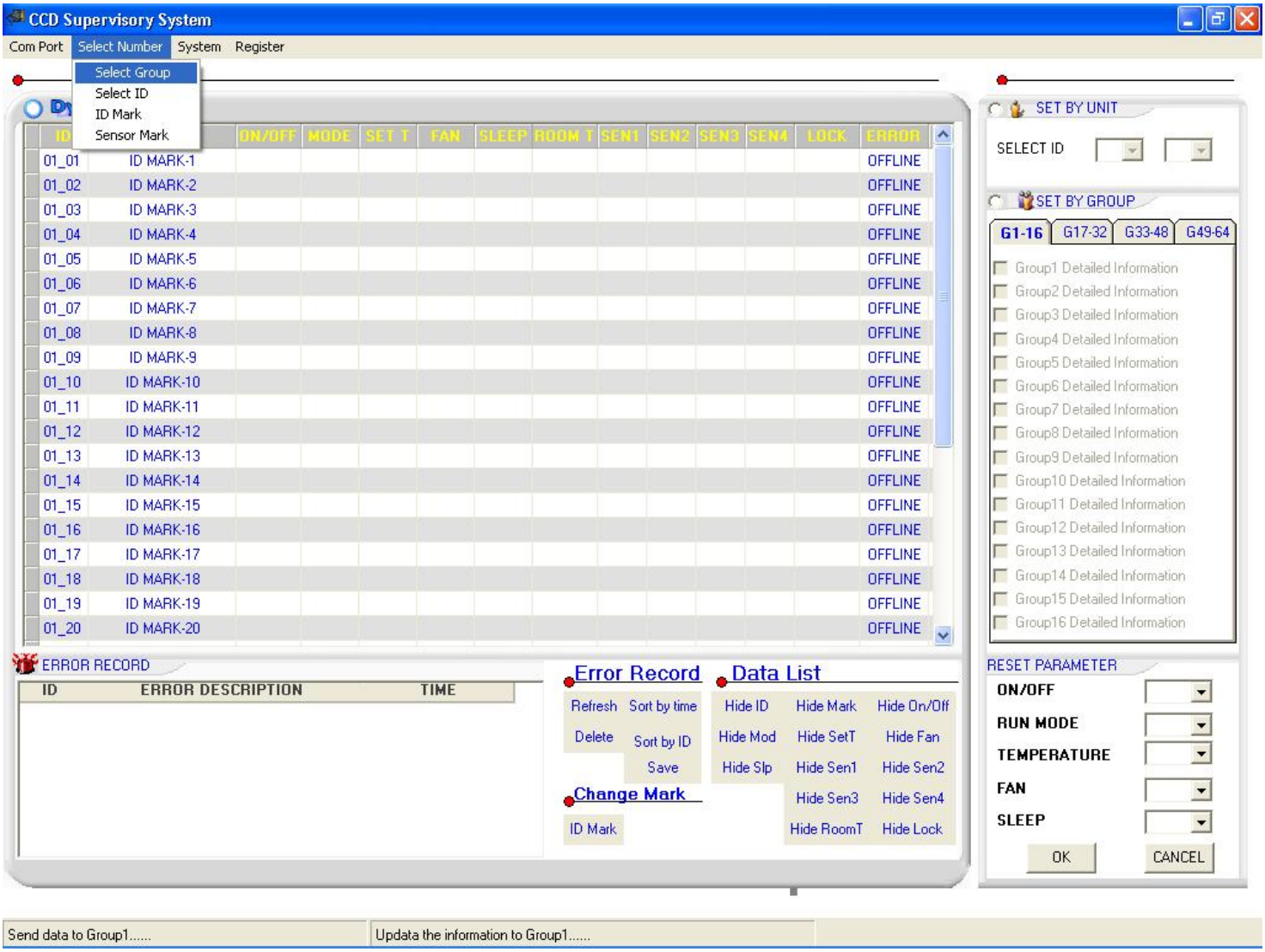
e.g. Select ID 1 & 5 as above means the setting will only send to unit with Dip-Switch setting no. 5 under the first group of Data Logger Bus network.

5) Set the Global Control communication by first clicking the “SET BY GROUP”, select the target group of Data Logger Bus, “Tick” the target group no. and provide them setting as same as below:



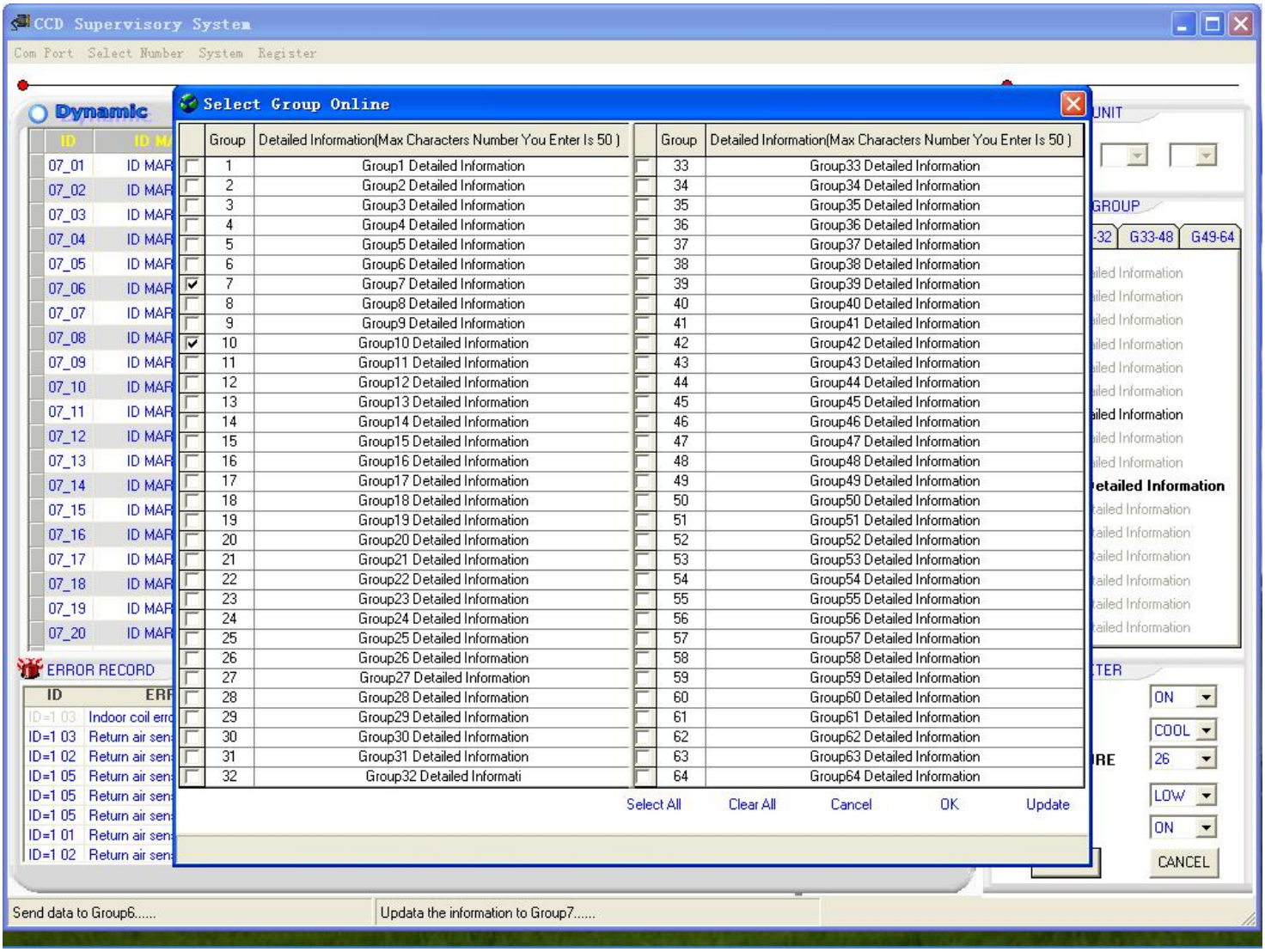
e.g. Select G1-16 and “Tick” Group 1 as above means the setting will only send to the units within the Data Logger Bus with Dip-Switch setting no. 1.

6) If more than 1 Data Loggers are used, please enable the function of the other data logger(s) by first click the “Select Group” and click “Select Group” as same as below:



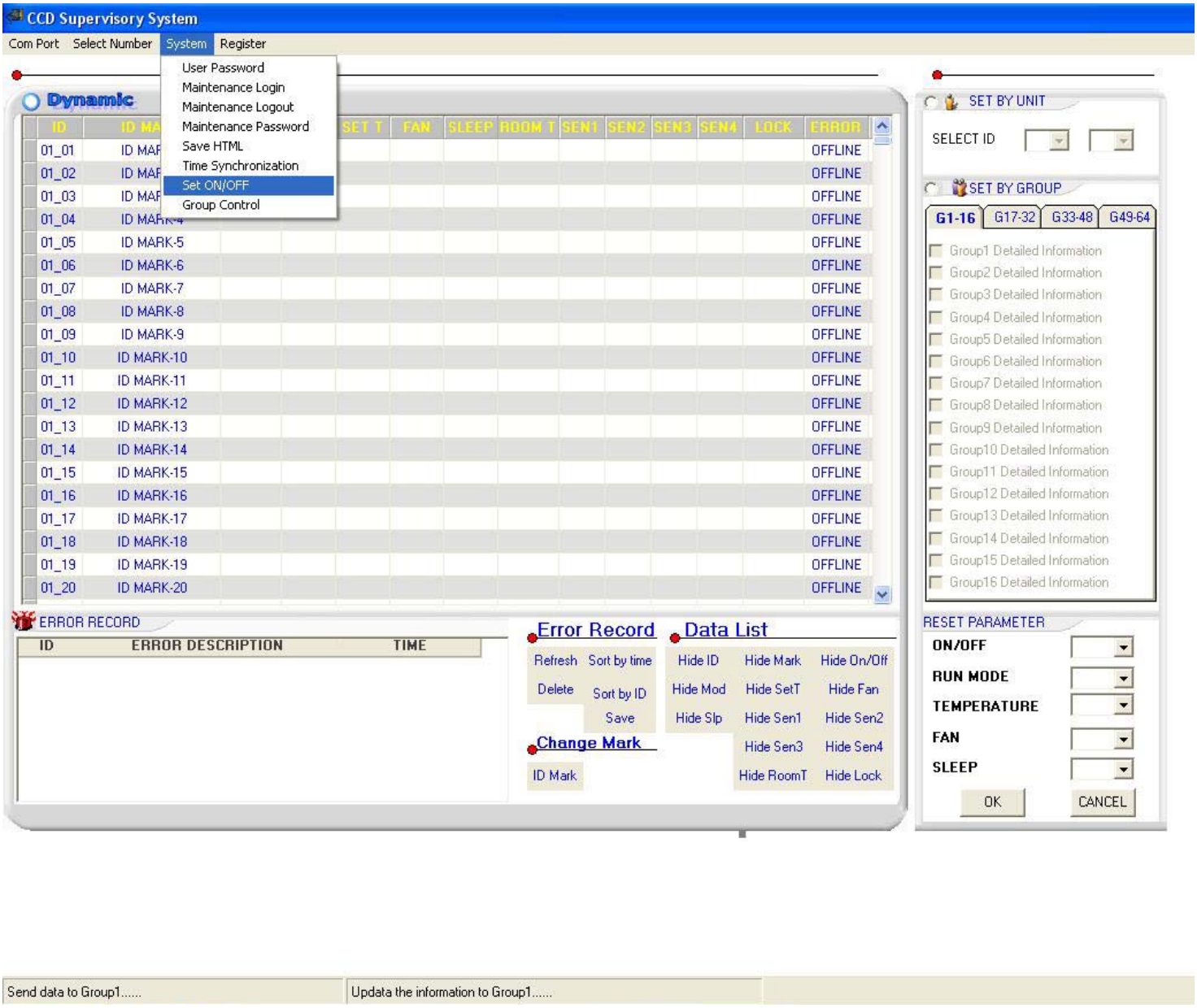
7) “Tick” the Group no. of Data Loggers which have connected to the BMS system according to the Dip-Switch setting on the Data Loggers.

Note: Please do not “tick” the group which has no connection to the BMS system as this will slow down the operation speed.

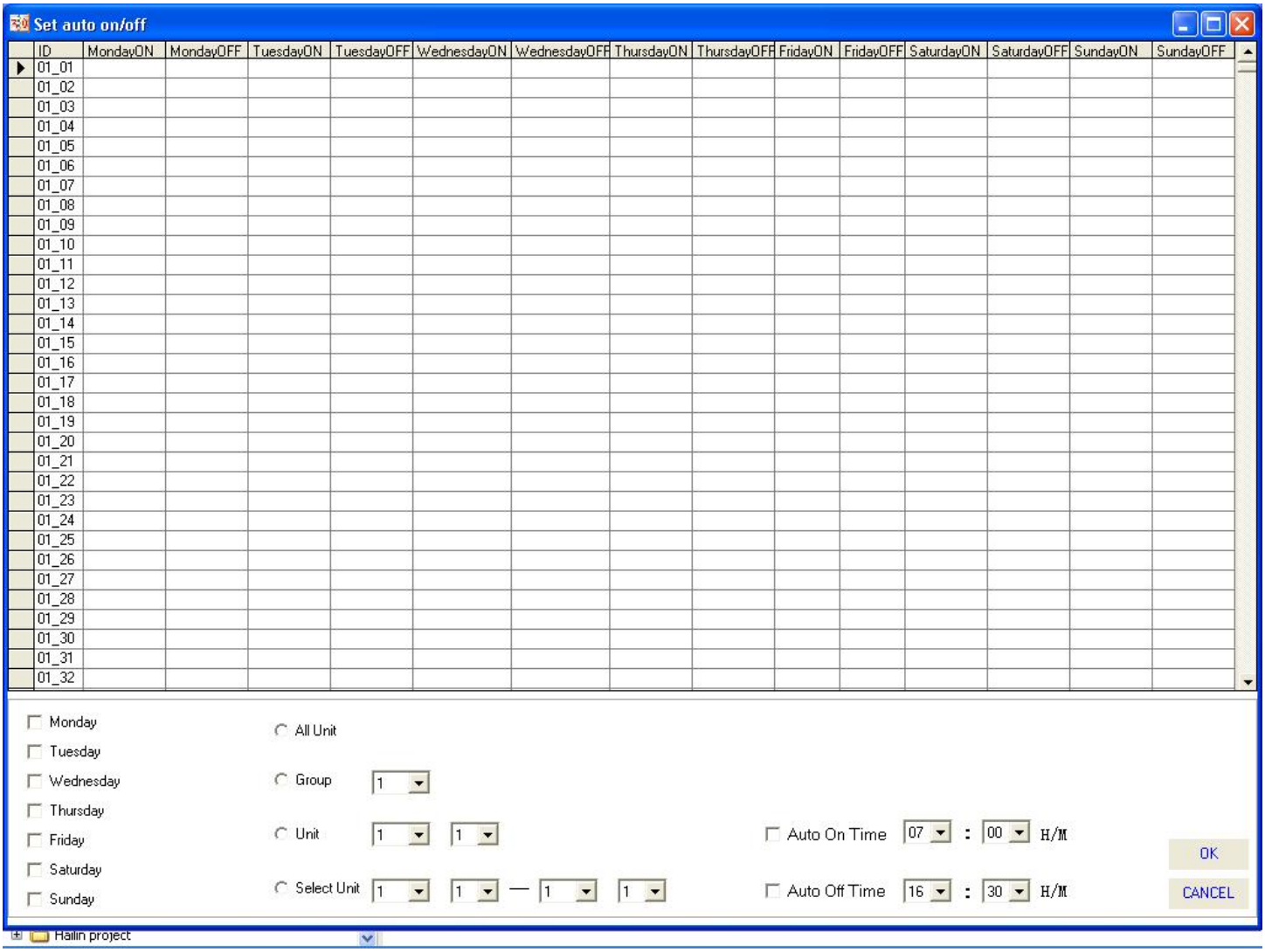


e.g. If there are only 2 data loggers connected to the BMS system which according to the Dip-Switch setting is no.7 and no.10 respectively. From the program as shows above, please tick the group no.7 and group no.10 so that both no.7 and no.10 data loggers are functioning.

8) Set the timer on/off by clicking “System”, select “Set ON/OFF” as below:



9) A box shows up with 7days selection. “Tick” the desired date of week.



10) After selecting the desired date of week, select the target unit either by a Group, a particular unit or a unit range. “Tick” the Auto On / Off Time to set the on/off timing of the desired date. Click “OK” to apply the setting.