MDL SOLUTIONS

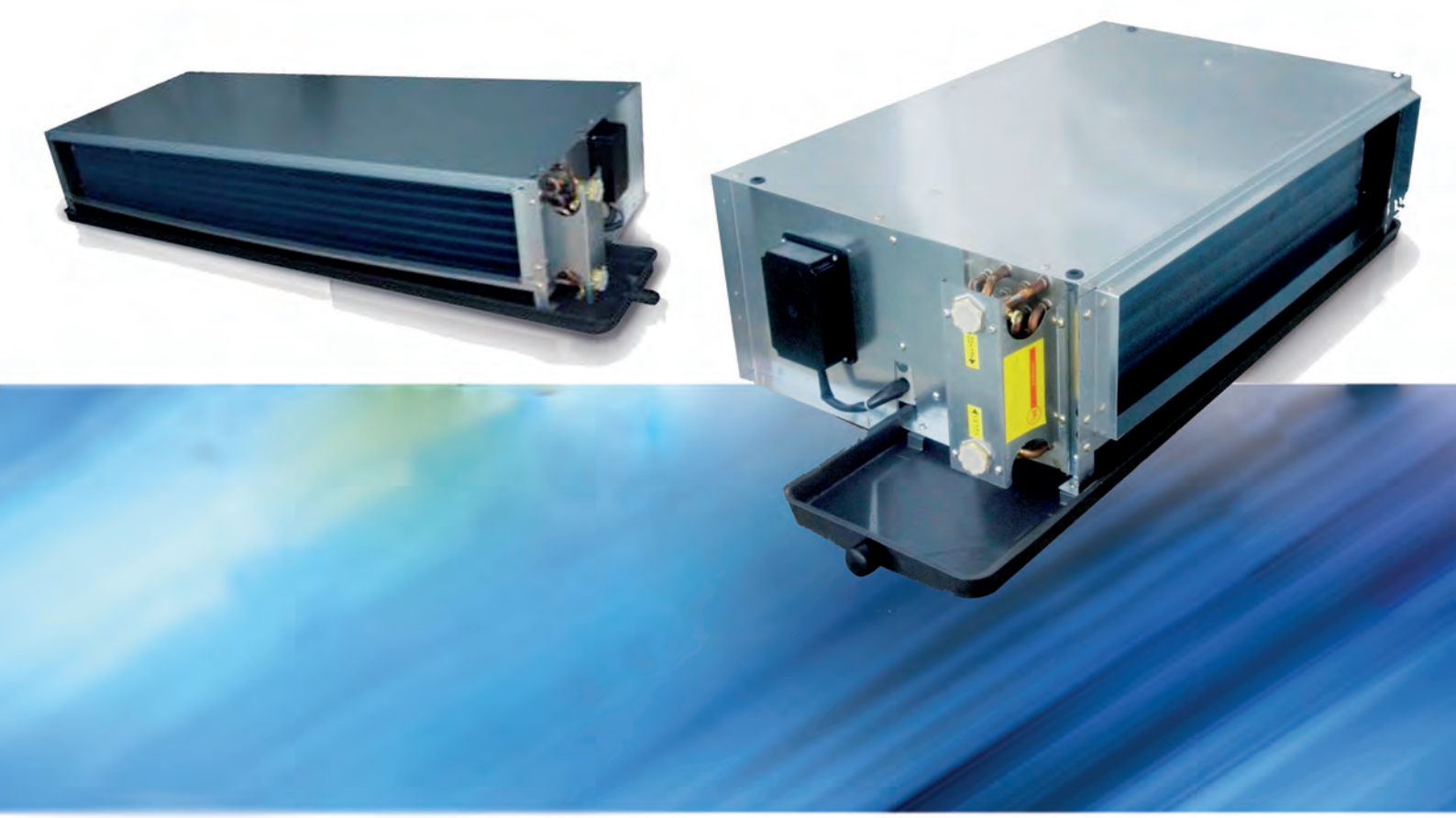
AHRI

ECO LSTAT AMV SERIES

INSTALLATION, OPERATION & SERVICE MANUAL

PDWA - V / P- AECM MOTOR

V - 2pipe / P - 4pipe (Optional 1 row coil)



INVESTING IN QUALITY, RELIABILITY & PERFORMANCE.

ISO 9001 QUALITY

Every product is manufactured to meet the stringent requirements of the internationally recognized ISO 9001 standard for quality assurance in design, development and production.

World Leading Design and Technology

Equipped with the latest air-conditioning test rooms and manufacturing technology, our factories in China produce over 2,000,000 air conditioning units each year, all conforming to the highest international standards of quality and safety.

ETL SAFETY STANDARDS

All products conform to UL standard for Safety for Heating and Cooling Equipment UL1995 4th Edition, October 14, 2011;

All products conform to CSA standard for Safety for Heating and Cooling Equipment CSA C22.2 No.236-11, 4th Edition, October 14 2011.

The Highest Standards of Manufacturing

In order to guarantee the very highest standards and performance, we manage every stage in the manufacturing of our products. Throughout the production process we maintain strict control, starting with our extensive resources in research and development through to the design and manufacture of almost every individual component, from molded plastics to the assembly of units and controllers.

WEEE MARK

All products conform to the "**WEEE**" directive to guarantee correct standards of environmental solutions.

Quality Controlled from Start to Finish

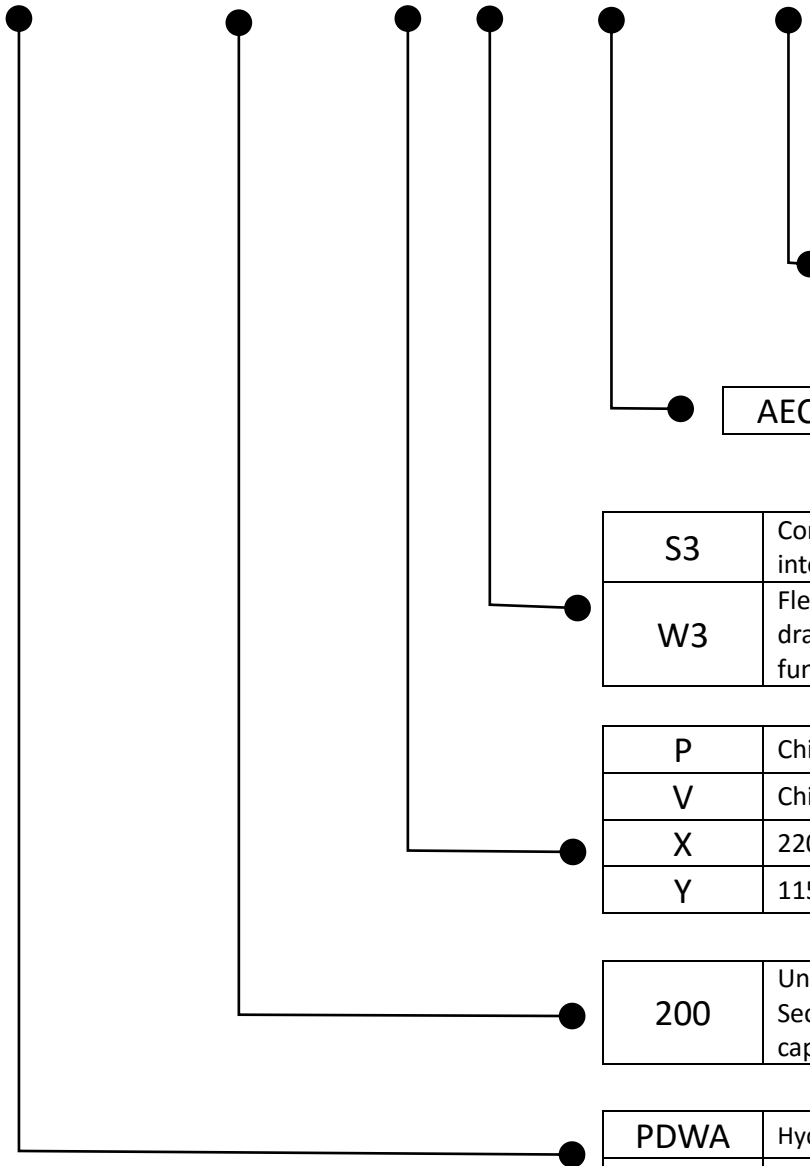
Our highly trained staff and strict quality control methods enable us to produce products with an exceptional reputation for reliability and efficiency, maintained over many years. As well as full CE certification and ISO 9001, several products ranges have UL / ETL safety approval in the USA and Canada, ROHS compliance for Europe, giving you the confidence of knowing our company is the right choice when selecting air conditioning equipment.

ALWAYS MAKE SURE THIS MANUAL REMAINS WITH THE UNIT. READ THIS MANUAL BEFORE PERFORMING ANY OPERATION ON THE UNIT.

Table of Content

Model Code Nomenclature

PDWA(4R) - 200 - VX W AECM L



L	Left hand (default)
R	Right hand

AECM	EC motor configuration

S3	Complete function on board PCB with integrated group control functionality
W3	Flexible function on board PCB with drain-pump, louver and zone control functionality

P	Chilled/Hot Water, 4-Pipe
V	Chilled/Hot Water, 2-Pipe
X	220V/1Ph/60Hz
Y	115V/1Ph/60Hz

200	Unit Sizes. See General Specification Section A for cooling and heating capacities

PDWA	Hydronic Ducted Fan Coil
3R	3 rows
4R	4 rows
3+1R	3 rows with 1 row of heating coil

A. Technical Data

A.1. General Description

The Duct Fan Coil is designed to meet and exceed the demanding requirements for efficiency and quiet operation.

STRUCTURE
The structure is made from heavy gauge galvanized steel panels with couplings for the connection of ducting and a gravity drain pan with insulation for condensation. Fire resistant insulation is optional for internal case to provide both thermal and acoustic insulation. Insulation is also fitted on the top of coil.

Condensate Pans-Positive sloped drain pans are steel with powder finish, coated with self-extinguishing closed cell expanded polyethylene with thermal properties. The drain pan is with drain pipe NPT 3/4" (standard on the same side of coil connections).

Coils-Constructed with seamless copper tubes and headers. The tubes are mechanically expanded into corrugated aluminum fin material for a permanent primary to secondary surface bond. Coils are tested at 360 PSI and recommended for operation at 120 PSI. Coils include manual air vent and water purge.

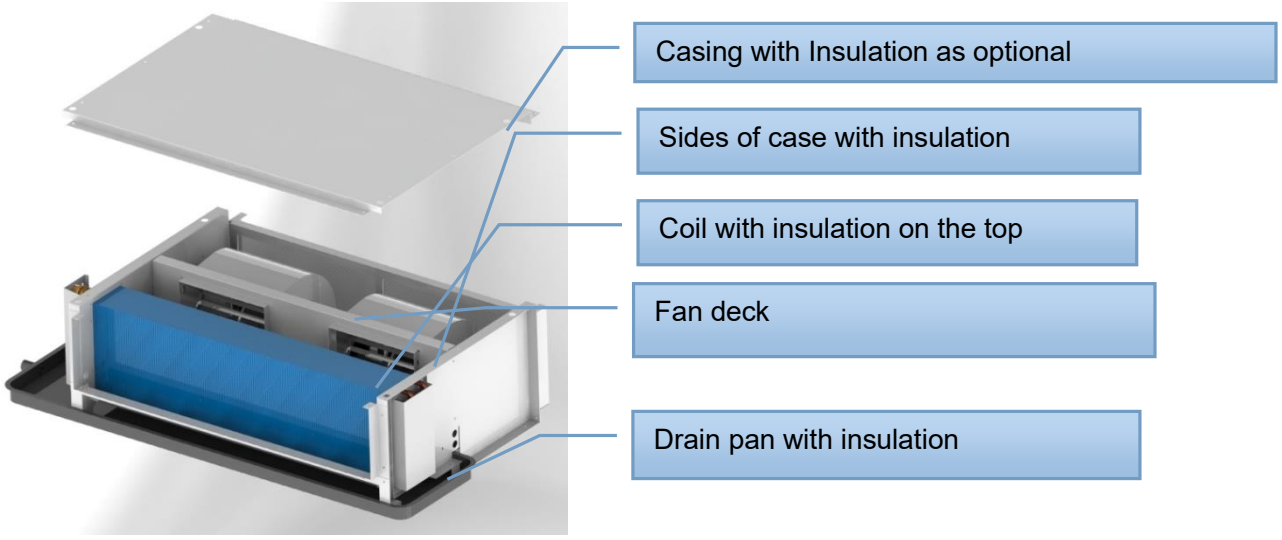
Fan Wheels-Housing-are double inlet forward curved centrifugal type. Wheels are statically and dynamically balanced for smooth, quite operation. The housing is constructed from heavy gauge galvanized steel with die-formed inlet cones.

EC motor-The unit is using EC motor include driven controls PCB, a constant torque, permanent magnet, brushless DC motor with preliminary 3-speed setting that allow for precise air balancing. The driven PCB need cooperate with thermostat.

Air filter- is easily removable and washable and is made from self-extinguishing acrylic with an efficiency of class Merv 2-4.

Microprocessor controls (S3 type)— The PCB (printed circuit board) microprocessor control board relays control the operation of the indoor-fan motor, water valves (ON/OFF or modulating) and electric heater (if fitted), to maintain room conditions at a user-defined set point. Temperature settings, fan speeds and other control functions can be changed by the infrared handset or wired wall pad.

Electro-mechanical controls (W3 type)— A 24VAC signal from the thermostat which working power is from C and R or from indoor room to terminal G(G/G0/G1) supplies power to the blower motor. When G(G/G0/G1) is powered ON, the vane motor is working and open the vane at maximum position. When G(G/G0/G1) is powered OFF, the vane motor will close the vane. The condensate pump will run continuously, as long as coil temperature is less than 59°F. Alarm interlock relay for unit failure notification in limited PCB. Normally open or normally closed contacts are available for field connection.



A.2. General Specification

A.2.1. 2-pipe / 4-pipe Cooling Performance

PDWA(3R)-[size]-V~-AECM (3-Row Coil) All Capacity are based on nominal CFM.

PDWA(3R)-[SIZE]-V~-AECM	COOLING CAPACITY (1000BTU/H)									
	SIZE	NOMINAL AIR FLOW CFM	45F ENTERING WATER							
			GPM	PD (Ft.wg)	80F D.B. (67F W.B.)			75F D.B. (63F W.B.)		
					TH	SH	TR	TH	SH	TR
	200	200	1.0	2.1	6.3	4.5	12.5	5.0	3.9	9.9
			1.5	4.3	7.2	4.8	9.5	5.7	4.2	7.5
			2.0	7.1	7.7	5.1	7.6	6.1	4.4	6.0
	300	300	1.5	4.8	9.3	6.6	12.3	7.4	5.8	9.8
			2.0	7.9	10.2	7.0	10.2	8.1	6.1	8.0
			2.5	11.6	10.8	7.2	8.6	8.6	6.3	6.8
	400	400	2.0	2.9	11.9	8.5	11.8	9.4	7.5	9.3
			2.5	4.2	12.8	8.9	10.2	10.2	7.8	8.1
			3.0	5.8	13.5	9.2	8.9	10.7	8.0	7.1
	500	500	2.5	4.6	14.8	10.5	11.8	11.8	9.3	9.4
			3.0	6.4	15.8	10.9	10.5	12.5	9.6	8.3
			3.5	8.3	16.6	11.2	9.4	13.1	9.8	7.4
	600	600	3.0	6.9	17.8	12.6	11.8	14.2	11.1	9.4
			3.5	9.1	18.8	13.0	10.7	14.9	11.4	8.5
			4.0	11.4	19.6	13.3	9.7	15.5	11.7	7.7
	800	800	3.5	5.5	23.0	16.5	13.1	18.3	14.6	10.4
			4.5	8.4	25.3	17.5	11.2	20.0	15.4	8.8
			5.5	12.0	26.8	18.2	9.7	21.3	15.9	7.7
	1000	1000	4.0	2.4	26.1	19.4	13.0	20.8	17.2	10.3
			5.0	3.6	28.6	20.4	11.4	22.7	18.0	9.0
			6.0	4.9	30.5	21.2	10.1	24.2	18.7	8.0
	1200	1200	5.0	3.8	31.7	23.2	12.6	25.2	20.6	10.0
			6.0	5.2	34.1	24.2	11.3	27.0	21.3	8.9
			7.0	6.7	35.9	25.0	10.2	28.5	22.0	8.1
	1400	1400	7.0	9.8	42.1	29.3	10.6	33.4	25.7	8.4
			8.0	10.0	42.4	29.4	10.5	33.6	25.8	8.3
			9.0	12.4	43.9	30.0	9.7	34.8	26.3	7.7
	1600	1600	8.0	10.9	46.4	32.6	11.5	36.8	28.7	9.1
			9.0	13.3	48.3	33.4	10.7	38.3	29.4	8.4
			10.0	16.1	49.9	34.1	9.9	39.5	29.9	7.8

Remark:

TH-total cooling capacity
SH-sensible cooling capacity
TR-water temperature rise

PDWA(3R)-[SIZE]-V~-AECM

COOLING CAPACITY (1000BTU/H)									
SIZE	NOMINAL AIE FLOW CFM	42F ENTERING WATER							
		GPM	PD (Ft.wg)	80F D.B. (67F W.B.)			75F D.B. (63F W.B.)		
				TH	SH	TR	TH	SH	TR
200	200	1.2	3.0	7.5	5.0	12.5	6.1	4.4	10.2
		1.8	6.0	8.4	5.4	9.3	6.8	4.8	7.5
		2.4	9.8	8.8	5.6	7.3	7.2	4.9	6.0
300	300	1.8	6.6	11.1	7.3	12.3	9.0	6.5	10.0
		2.4	10.9	12.0	7.7	10.0	9.7	6.8	7.9
		3.0	16.2	12.6	8.0	7.7	10.2	7.0	6.8
400	400	2.2	3.4	13.8	9.3	12.5	11.2	8.2	10.1
		2.8	5.2	14.8	9.7	10.6	12.1	8.6	8.6
		3.4	7.3	15.6	10.1	9.1	12.6	8.9	7.4
500	500	2.8	5.7	17.3	11.6	12.3	14.1	10.3	10.0
		3.4	8.0	18.4	12.0	10.8	14.9	10.7	8.7
		4.0	10.7	19.1	12.4	9.5	15.5	10.9	7.7
600	600	3.4	8.7	20.9	13.9	12.2	17.0	12.3	10.0
		4.0	11.6	21.9	14.3	10.9	17.8	12.7	8.9
		4.6	14.8	22.7	14.7	9.8	18.4	13.0	8.0
800	800	4.0	6.9	27.2	18.3	13.5	22.1	16.3	11.0
		5.0	10.3	29.2	19.2	11.6	23.8	17.0	9.5
		6.0	14.1	30.7	19.9	10.2	24.9	17.6	8.3
1000	1000	4.5	3.0	30.8	21.3	13.7	25.1	19.1	11.1
		5.5	4.2	33.2	22.4	12.0	27.0	19.9	9.8
		6.5	5.7	35.0	23.2	10.7	28.5	20.5	8.7
1200	1200	5.5	4.5	36.9	25.4	13.4	30.1	22.7	10.9
		6.5	6.0	39.3	26.4	12.0	31.9	23.5	9.8
		7.5	7.7	41.1	27.2	10.9	33.4	24.1	8.9
1400	1400	7.5	9.1	46.4	31.1	12.3	37.8	27.7	10.0
		8.5	11.3	48.3	31.9	11.3	39.3	28.3	9.2
		9.5	13.7	49.9	32.6	10.5	40.5	28.9	8.5
1600	1600	8.5	12.2	53.1	35.5	12.4	43.2	31.5	10.1
		9.5	14.8	55.0	36.3	11.5	44.7	32.2	9.4
		10.5	7.7	56.6	37.0	10.7	46.0	32.8	8.7

Remark:

TH-total cooling capacity
SH-sensible cooling capacity
TR-water temperature rise

PDWA(4R)-[size]-V~-AECM (4-Row Coil) All Capacity are based on nominal CFM.

PDWA(4R)-[SIZE]-V~-AECM	COOLING CAPACITY (1000BTU/H)								
	SIZE	NOMINAL AIR FLOW CFM	45F ENTERING WATER						
			GPM	PD (Ft.wg)	80F D.B. (67F W.B.)			75F D.B. (63F W.B.)		
					TH	SH	TR	TH	SH	TR
	200	200	1.5	1.9	7.9	5.3	10.5	6.2	4.7	8.3
			2.0	3.1	8.5	5.6	8.5	6.7	4.9	6.7
			2.5	4.6	8.9	5.8	7.1	7.0	5.0	5.6
	300	300	2.0	3.5	11.3	7.7	11.2	8.9	6.7	8.9
			2.5	5.1	12.0	8.0	9.6	9.5	7.0	7.6
			3.0	7.1	12.5	8.3	8.3	9.9	7.2	6.6
	400	400	2.5	2.6	14.2	9.9	11.4	11.3	8.7	9.0
			3.5	4.6	15.7	10.5	9.0	12.5	9.2	7.1
			4.5	7.2	16.6	10.9	7.4	13.2	9.5	5.8
	500	500	3.0	3.9	17.6	12.2	11.7	14.0	10.8	9.3
			4.0	6.4	19.2	12.9	9.6	15.2	11.3	7.6
			5.0	9.5	20.3	13.4	8.1	16.0	11.7	9.4
	600	600	4.0	7.0	21.9	15.0	10.9	17.4	13.1	8.7
			5.0	10.3	23.3	15.6	9.3	18.5	13.6	7.4
			6.0	14.0	24.3	16.0	8.1	19.2	13.9	6.4
	800	800	4.5	3.7	27.7	19.4	12.3	22.0	17.1	9.8
			6.5	7.1	31.1	20.9	9.6	24.6	18.2	7.6
			8.5	11.3	33.1	21.7	7.8	26.1	18.9	6.1
	1000	1000	5.0	4.7	32.7	23.3	13.1	26.0	20.6	9.4
			7.0	8.5	36.8	25.0	10.5	29.2	21.9	8.3
			9.0	13.2	39.3	26.1	8.7	31.1	22.8	6.9
	1200	1200	6.0	3.1	37.8	27.2	12.6	30.0	24.0	10.0
			8.0	5.2	42.0	28.9	10.5	33.3	25.4	8.3
			10.0	7.6	44.7	30.1	8.9	35.4	26.3	7.1
	1400	1400	8.0	6.1	47.3	33.0	11.8	37.5	29.1	9.4
			10.0	9.0	50.8	34.5	9.1	40.3	30.3	8.0
			12.0	12.4	53.4	35.6	8.9	42.2	31.1	7.0
	1600	1600	12.0	13.4	59.1	39.8	9.8	46.8	34.9	7.8
			14.0	17.6	61.4	40.8	8.7	48.6	35.7	6.9
			16.0	22.2	63.2	41.6	7.9	50.0	36.3	6.2

Remark:

TH-total cooling capacity
SH-sensible cooling capacity
TR-water temperature rise

PDWA(4R)-[SIZE]-V~-AECM

COOLING CAPACITY (1000BTU/H)									
SIZE	NOMINAL AIR FLOW CFM	42F ENTERING WATER							
		GPM	PD (Ft.wg)	80F D.B. (67F W.B.)			75F D.B. (63F W.B.)		
				TH	SH	TR	TH	SH	TR
200	200	2.0	3.2	9.5	6.1	9.4	7.7	5.3	7.7
		2.5	4.7	9.9	6.2	7.9	8.0	5.5	6.4
		3.0	6.4	10.1	6.4	6.7	8.2	5.6	5.5
300	300	2.5	5.2	13.4	8.7	10.7	10.9	7.7	8.7
		3.0	7.1	14.0	8.9	9.3	11.4	7.9	7.5
		3.5	9.3	14.4	9.1	8.2	11.7	8.0	6.6
400	400	3.0	3.6	16.9	11.1	11.2	13.8	9.8	9.1
		4.0	5.9	18.1	11.6	9.0	14.7	10.2	7.3
		5.0	8.7	18.9	12.0	7.5	15.3	10.5	6.1
500	500	3.5	5.1	20.7	13.6	11.8	16.9	12.1	9.6
		4.5	8.0	22.1	14.2	9.8	18.0	12.6	8.0
		5.5	11.3	23.0	14.6	7.7	18.7	12.9	6.8
600	600	4.5	8.6	25.4	16.5	11.2	20.6	14.6	9.1
		5.5	12.3	26.6	17.1	9.7	21.6	15.1	7.8
		6.5	16.4	27.5	17.5	7.6	22.3	15.4	6.9
800	800	5.0	4.5	32.3	21.4	12.9	26.3	19.0	10.5
		7.0	8.1	35.4	22.8	10.1	28.8	20.1	7.8
		9.0	12.6	37.3	23.6	7.7	30.3	20.8	6.7
1000	1000	6.0	6.6	39.3	26.1	13.1	32.0	23.2	10.6
		8.0	10.9	42.7	27.6	10.6	34.7	24.4	7.4
		10.0	16.1	44.9	28.6	7.1	36.4	25.2	7.3
1200	1200	7.0	4.1	45.0	30.2	12.8	36.7	26.9	10.4
		9.0	6.4	48.7	31.8	10.8	39.6	28.2	7.2
		11.0	9.1	51.2	33.0	9.3	41.6	29.1	7.5
1400	1400	9.0	7.6	55.2	36.4	12.2	44.9	32.4	9.9
		11.0	10.8	58.4	37.9	10.6	47.5	33.5	7.4
		13.0	14.4	60.7	38.9	9.3	49.3	34.4	7.6
1600	1600	13.0	15.6	67.4	43.5	10.3	54.8	38.5	8.4
		15.0	20.0	69.6	44.5	9.2	56.5	39.3	7.5
		17.0	25.0	71.3	45.3	8.4	57.9	40.0	6.8

Remark:

TH-total cooling capacity
SH-sensible cooling capacity
TR-water temperature rise

A.2.2. **2-pipe / 4-pipe Heating Performance**

PDWA(3R)-[size]-V~-AECM (3-Row Coil)

PDWA(3R)-[SIZE]-VX-AECM	HEATING CAPACITY (1000BTU/H)							
	SIZE	NOMINAL AIR FLOW CFM	GPM	PD (Ft.wg)	ENTERING WATER TEMP.			
					180F	160F	140F	120F
	200	200	1.0	1.6	16.1	13.2	10.2	7.3
			1.5	3.2	16.9	13.8	10.7	7.6
			2.0	5.3	17.3	14.1	11.0	7.8
	300	300	1.5	3.6	23.5	19.2	14.9	10.6
			2.0	5.9	24.4	19.9	15.4	11.0
			2.5	8.8	24.9	20.3	15.8	11.2
	400	400	2.0	2.2	30.5	24.9	19.3	13.7
			2.5	3.2	31.4	25.6	19.9	14.1
			3.0	4.4	32.0	26.1	20.3	14.4
	500	500	2.5	3.5	37.7	30.8	23.9	17.0
			3.0	4.8	38.7	31.5	24.5	17.4
			3.5	6.3	39.3	32.1	24.9	17.7
	600	600	3.0	5.2	45.0	36.7	28.5	20.3
			3.5	6.9	45.9	37.5	29.1	20.7
			4.0	8.7	46.6	38.0	29.5	21.0
	800	800	3.5	4.1	59.8	48.8	37.8	26.9
			4.5	6.4	61.9	50.5	39.2	27.9
			5.5	9.1	63.3	51.7	40.1	28.6
	1000	1000	4.0	1.8	70.9	57.8	44.8	31.8
			5.0	2.7	73.6	60.0	46.5	33.1
			6.0	3.7	75.4	61.5	47.7	33.9
	1200	1200	5.0	2.8	84.4	68.8	53.3	37.9
			6.0	3.9	86.9	70.9	54.9	39.1
			7.0	5.1	88.7	72.3	56.1	39.9
	1400	1400	7.0	6.1	102.1	83.3	64.6	46.0
			8.0	7.7	103.9	84.8	65.8	46.8
			9.0	9.4	105.3	86.0	66.7	47.5
	1600	1600	8.0	8.3	116.3	94.9	73.6	52.4
			9.0	10.2	118.1	96.4	74.8	53.2
			10.0	12.3	119.5	97.6	75.7	53.9

PDWA(4R)-[size]-V~-AECM (4-Row Coil)

PDWA(4R)-[SIZE]-V~-AECM	HEATING CAPACITY (1000BTU/H)							
	SIZE	NOMINAL AIR FLOW CFM	GPM	PD (Ft.wg)	ENTERING WATER TEMP.			
					180F	160F	140F	120F
	200	200	1.5	1.4	18.9	15.4	12.0	8.5
			2.0	2.3	19.3	15.8	12.3	8.7
			2.5	3.4	19.6	16.0	12.4	8.9
	300	300	2.0	2.6	27.4	22.3	17.3	12.3
			2.5	3.8	27.9	22.8	17.7	12.6
			3.0	5.3	28.3	23.1	18.0	12.8
	400	400	2.5	1.9	35.5	28.9	22.4	16.0
			3.5	3.5	36.7	30.0	23.2	16.6
			4.5	5.4	37.4	30.5	23.7	16.9
	500	500	3.0	2.9	43.8	35.7	27.7	19.7
			4.0	4.8	45.1	36.9	28.6	20.4
			5.0	7.1	45.9	37.5	29.1	20.8
	600	600	4.0	5.2	52.9	43.2	33.5	23.9
			5.0	7.8	54.0	44.1	34.3	24.4
			6.0	10.7	54.8	44.8	34.7	24.8
	800	800	4.5	2.8	69.9	57.0	44.2	31.5
			6.5	5.3	72.6	59.3	46.0	32.8
			8.5	8.5	74.1	60.6	47.0	33.5
	1000	1000	5.0	3.6	84.4	68.9	53.4	38.0
			7.0	6.4	87.9	71.8	55.7	39.7
			9.0	10.0	89.9	73.4	57.0	40.6
	1200	1200	6.0	2.4	98.9	80.7	62.5	44.5
			8.0	3.9	102.7	83.8	65.0	46.3
			10.0	5.8	105.0	85.7	66.5	47.4
	1400	1400	8.0	4.6	118.4	96.6	74.9	53.3
			10.0	6.8	121.4	99.1	76.9	54.8
			12.0	9.4	123.5	100.8	78.3	55.8
	1600	1600	12.0	10.2	139.0	113.5	88.1	62.8
			14.0	13.4	140.9	115.1	89.3	63.7
			16.0	27.0	142.3	116.2	90.2	64.3

PDWA(3R+1)-[size]-P~-AECM (3R for cooling+1R for heating)

PDWA(3R+1)-[SIZE]-P~-AECM	HEATING CAPACITY (1000BTU/H)							
	SIZE	NOMINAL AIR FLOW CFM	GPM	PD (Ft.wg)	ENTERING WATER TEMP.			
					180F	160F	140F	120F
	200	200	0.3	0.4	6.8	5.5	4.3	3.0
			0.5	1.0	7.7	6.2	4.8	3.4
			0.7	1.8	8.1	6.6	5.1	3.6
	300	300	0.4	0.8	7.1	5.8	4.5	3.2
			0.6	1.6	7.6	6.2	4.8	3.4
			0.8	2.6	7.9	6.4	5.0	3.5
	400	400	0.6	1.8	12.9	10.5	8.1	5.8
			0.8	2.9	13.8	11.3	8.7	6.2
			1.0	4.3	14.4	11.7	9.1	6.5
	500	500	0.8	3.2	16.2	13.2	10.2	7.3
			1.0	4.7	17.0	13.9	10.8	7.6
			1.2	6.5	17.6	14.4	11.1	7.9
	600	600	1.0	0.8	18.7	15.2	11.8	8.3
			1.2	1.0	19.6	15.9	12.3	8.7
			1.4	1.4	20.2	16.4	12.7	9.0
	800	800	1.0	1.0	24.0	19.6	15.1	10.7
			1.5	2.1	26.7	21.8	16.9	12.0
			2.0	3.4	28.3	23.0	17.9	12.7
	1000	1000	1.5	2.2	30.8	25.1	19.4	13.8
			2.0	3.6	32.9	26.8	20.8	14.8
			2.5	5.4	34.2	27.9	21.6	15.4
	1200	1200	1.8	3.2	36.2	29.5	22.8	16.2
			2.2	4.5	37.9	30.9	23.9	17.0
			2.6	6.1	39.2	31.9	24.7	17.6
	1400	1400	2.0	0.4	39.6	32.2	24.8	17.6
			2.5	0.5	42.0	34.2	26.4	18.7
			3.0	0.7	43.8	35.6	27.5	19.5
	1600	1600	2.5	0.6	46.4	37.7	29.1	20.6
			3.0	0.8	48.6	39.5	30.5	21.6
			3.5	1.1	50.2	40.8	31.6	22.4

Notes:

1: Ratings at 70 degree F entering air temp.

2: Contact factory for capacities at other conditions.

A.2.3. **Cooling/heating capacity corrections**

AIR FLOW (CFM) FACTORS			
% Nominal air flow CFM	**Total cooling**	**Sensible cooling**	**Heating**
40	0.551	0.522	0.499
50	0.646	0.617	0.596
60	0.731	0.704	0.686
70	0.808	0.786	0.771
80	0.878	0.861	0.851
90	0.941	0.933	0.927
100	1.000	1.000	1.000
110	1.054	1.064	1.069
120	1.104	1.125	1.136
130	1.150	1.183	1.199
140	1.194	1.239	1.261
150	1.234	1.292	1.319

Notes:

1: above factors are based on the same water flow.

A.2.4. **2-pipe /4-pipe blower performance**

PDWA(3R)-[SIZE]-V~-AECM	AIR FLOW (CFM) vs EXTERNAL STATIC PRESSURE (3ROW 220V or 115V/1Ph/60Hz EC motor)											
	SIZE	RPM	Power input (W)	FAN SPEED	EXTERNAL STATIC PRESSURE (in.wg)							
					0.1	0.15	0.2	0.25	0.30	0.4	0.45	0.5
	200	900	42	L	267	242	217	191	163	107		
		1050	50	M	312	288	263	237	211	155	126	
		1200	60	H	367	343	318	292	265	210	181	151
	300	1000	48	L	268	245	222	197	172	120		
		1250	62	M	377	351	324	297	269	209	178	147
		1380	70	H	489	452	413	374	333	247	202	156
	400	900	65	L	347	325	302	279	255	205	178	151
		1050	87	M	480	452	423	393	362	298	264	229
		1200	96	H	603	565	527	487	446	360	316	269
	500	950	72	L	484	449	412	375	336	254	212	168
		1100	97	M	626	594	562	529	494	422	385	346
		1250	106	H	705	668	630	590	550	464	420	374
	600	1000	91	L	573	546	518	488	458	395	362	328
		1250	104	M	737	695	653	609	563	469	419	368
		1350	120	H	934	877	817	756	694	562	493	422
	800	950	101	L	684	647	608	568	527	442	397	351
		1200	118	M	912	865	818	768	717	611	555	498
		1300	150	H	1173	1107	1040	970	898	748	669	589
	1000	950	121	L	920	861	800	737	673	537	467	394
		1200	145	M	1208	1145	1080	1013	944	800	724	647
		1300	175	H	1328	1258	1185	1109	1032	870	785	698
	1200	1100	143	L	1190	1127	1062	994	925	780	705	627
		1250	173	M	1394	1324	1252	1177	1101	940	856	770
		1350	205	H	1460	1391	1320	1247	1171	1013	931	846
	1400	1100	184	L	1337	1308	1278	1248	1216	1151	1116	1081
		1250	210	M	1606	1558	1509	1458	1405	1296	1238	1179
		1350	245	H	1774	1714	1651	1587	1521	1383	1311	1237
	1600	1100	203	L	1748	1679	1608	1535	1460	1303	1221	1136
		1250	230	M	1862	1792	1720	1645	1568	1408	1324	1238
		1350	280	H	2002	1936	1868	1798	1726	1574	1495	1414

PDWA(4R)-[SIZE]-V~-AECM PDWA(3R+1)-[SIZE]-V~-AECM	AIE FLOW (CFM) vs EXTERNAL STATIC PRESSURE (3ROW 220V or 115V/1Ph/60Hz EC motor)											
	SIZE	RPM	Power input (W)	FAN SPEED	EXTERNAL STATIC PRESSURE (in.wg)							
					0.1	0.15	0.2	0.25	0.30	0.4	0.45	0.5
	200	900	42	L	247	222	196	169	141			
		1050	50	M	293	268	242	216	189	132	102	
		1200	60	H	347	323	297	271	243	187	157	
	300	1000	48	L	250	227	202	177	152			
		1250	62	M	356	330	302	274	245	185	153	
		1380	70	H	460	421	382	341	299	211	165	
	400	900	65	L	329	307	284	260	235	184	157	128
		1050	87	M	457	429	399	368	337	271	236	199
		1200	96	H	573	535	495	454	412	325	279	230
	500	950	72	L	456	420	382	344	304	221	177	130
		1100	97	M	601	568	535	501	466	392	354	312
		1250	106	H	676	638	598	558	516	429	383	334
	600	1000	91	L	551	523	494	464	433	369	335	299
		1250	104	M	704	661	618	573	526	429	378	324
		1350	120	H	888	829	769	706	642	507	437	361
	800	950	101	L	654	616	576	536	494	406	360	311
		1200	118	M	875	827	778	728	676	566	509	448
		1300	150	H	1120	1053	984	913	839	685	605	519
	1000	950	121	L	873	812	750	686	620	481	409	331
		1200	145	M	1158	1093	1027	958	887	740	662	579
		1300	175	H	1272	1199	1125	1048	968	802	715	622
	1200	1100	143	L	1140	1075	1008	939	868	720	642	559
		1250	173	M	1338	1266	1192	1116	1037	873	787	695
		1350	205	H	1405	1334	1261	1186	1109	947	863	772
	1400	1100	184	L	1314	1284	1254	1223	1191	1123	1088	1050
		1250	210	M	1568	1519	1468	1416	1362	1250	1191	1128
		1350	245	H	1726	1664	1600	1535	1467	1326	1252	1173
	1600	1100	203	L	1693	1623	1550	1475	1398	1237	1153	1063
		1250	230	M	1806	1734	1660	1584	1505	1341	1255	1163
		1350	280	H	1949	1882	1812	1740	1666	1511	1430	1344

A.2.5. **Product Specification in Accordance with AHRI Standard 440**

A.2.5.1 PDWA(3R)-V-AECM Hydronic Ducted Unit 3-row coil 2-pipe with EC Motor

		PDWA(3R)-V~-[Size]-AECM				200	300	400	500	600	800	1000	1200	1400	1600
Unit Configuration		Configuration				2-pipe									
		Number Of Fan Blowers				Single		Twin			Four			Three	Four
		Operation Control				~S: Complete function onboard PCB with integrated group control functionality.									
						~W: Flexible function onboard PCB with drain pump, louver and zone control functionality.									
Performance Data	**Air**	Air Flow	H	3	CFM	265	333	446	550	694	898	1032	1171	1521	1726
			M	2		211	269	362	494	563	717	944	1101	1405	1568
			L	1		163	172	255	336	458	527	673	925	1216	1460
		External Static Pressure	H	3	in.wg	0.30									
			M	2		0.30									
			L	1		0.30									
	Cooling	Cooling Capacity	H	3	BTU/H	8237	10460	13168	16275	20314	27181	29455	33339	43326	49395
			M	2		6866	8819	11187	14977	17254	22767	27510	31793	40734	45851
			L	1		5584	6142	8450	11022	14670	17793	21087	27755	36390	43350
		Sensible Cooling Capacity	H	3		5626	7097	9077	11163	13892	18489	20409	23041	29764	33804
			M	2		4665	5957	7671	10247	11747	15415	19019	21940	27934	31316
			L	1		3771	4110	5745	7475	9944	11971	14454	19072	24875	29563
	Heating	Heating Capacity	H	3	BTU/H	13179	16736	21069	26040	32502	43490	47128	53342	69322	79032
			M	2		10986	14110	17899	23963	27606	36427	44016	50869	65174	73362
			L	1		8934	9827	13520	17635	23472	28469	33739	44408	58224	69360
		Max. Electric Heater Capacity @ 220V				3400	3400	10200			10200				
	Sound	Sound Pressure Level (outlet)			dB(A)	40/38/37	44/43/40	43/41/37	45/43/39	49/47/44	44/43/39	47/46/44	52/48/44	52/48/44	54/52/50
		Sound Pressure Level(Inlet + Radiated)				43/41/40	47/46/43	46/44/40	48/46/42	52/50/47	47/46/42	50/49/47	55/51/47	55/51/47	57/55/53
		Sound Power Level (outlet)				49/47/46	53/52/49	52/50/46	55/53/48	58/56/51	53/52/48	57/56/53	61/57/54	61/57/53	63/61/60
		Sound Power Level(Inlet + Radiated)				52/50/49	56/55/52	55/53/49	58/56/51	61/59/54	56/55/51	60/59/56	64/60/57	64/60/56	66/64/63
	Electrical	Fan Motor Power	H		W	60	70	96	106	120	150	175	205	245	280
			M			50	62	87	97	104	118	145	173	210	230
			L			42	48	65	72	91	101	121	143	184	203
		Fan Motor Running Current @ 220V	H		A	0.545	0.636	0.873	0.964	1.091	1.364	1.591	1.864	2.227	2.545
		Fan Motor Running Current @ 115V	H		A	1.090	1.272	1.746	1.928	2.182	2.728	3.182	3.728	4.454	5.090
	Hydraulic	Water Flow Rate	3		GPM	1.65	2.09	2.63	3.25	4.06	5.42	5.88	6.64	8.64	9.84
			2			1.37	1.76	2.23	2.98	3.44	4.53	5.48	6.34	8.12	9.15
			1			1.11	1.23	1.68	2.20	2.93	3.55	4.20	5.53	7.26	8.64
		Pressure Drop	3		ft.wg	5.00	8.47	4.63	7.30	11.70	11.70	4.67	6.17	11.50	15.63
			2			3.67	6.30	3.50	6.33	8.80	8.60	4.20	5.70	10.33	13.73
			1			2.57	3.40	2.16	3.73	6.67	5.60	2.65	4.50	8.50	12.47
		Heating water flow			GPM	Same as cooling mode									
		Heating pressure drop	3		ft.wg	4.00	6.77	3.71	5.84	9.36	9.36	3.73	4.93	9.20	12.51
			2			2.93	5.04	2.80	5.07	7.04	6.88	3.36	4.56	8.27	10.99
			1			2.06	2.72	1.73	2.99	5.33	4.48	2.12	3.60	6.80	9.97
		Water content			gal	0.19	0.23	0.27	0.31	0.35	0.51	0.55	0.59	0.68	0.75
Construction and Packing Data		Water Connections	Type			Socket(NPT Threaded Female)									
			In		in.	NPT3/4"									
			Out												
		Condensate Drainage Connection													
		Dimensions	L		in.	29.7	33.7	37.6	45.5	49.4	65.2	69.1	73.0	69.1	77.0
			W			21.7								24.4	
			H			9.8								11.8	
		Net Weight			lbs	37	51	53	62	68	79	95	99	112	132

Notes:

1: Rated in accordance with AHRI standard 440.

2: Cooling conditions (2-pipe or 4-pipe)
- Return air temperature: DB 80°F/WB 67°F.
- Inlet/ outlet water temperature: 45/55°F.

3: Heating conditions (2-pipe)
- Return air temperature: 70F.
- Inlet water temperature: 140F
- Water flow-rate: Same as cooling mode

A.2.5.2 PDWA(4R)-V-AECM Hydronic Ducted Unit 4-row coil 2-pipe with EC Motor

		PDWA(4R)-V~-[Size]-AECM				200	300	400	500	600	800	1000	1200	1400	1600
Unit Configuration		Configuration				2-pipe									
		Number Of Fan Blowers				Single		Twin			Four			Three	Four
		Operation Control				~S: Complete function onboard PCB with integrated group control functionality.									
						~W: Flexible function onboard PCB with drain pump, louver and zone control functionality.									
Performance Data	Air	Air Flow	H	3	CFM	297	382	495	598	769	984	1125	1261	1600	1812
			M	2		242	302	399	535	618	778	1027	1192	1468	1660
			L	1		196	202	284	382	494	576	750	1008	1254	1550
		External Static Pressure	H	3	in.wg	0.20									
			M	2		0.20									
			L	1		0.20									
	Cooling	Cooling Capacity	H	3	BTU/H	10343	13436	16796	20406	25932	33805	38554	41666	53172	60563
			M	2		8770	11100	14087	18645	21720	27939	35814	39815	49631	56434
			L	1		7350	7944	10646	14174	18113	21799	27685	34764	43693	53398
		Sensible Cooling Capacity	H	3		7028	9071	11448	13840	17554	22868	26036	28466	36114	40992
			M	2		5926	7452	9547	12611	14628	18794	24135	27161	33640	38121
			L	1		4939	5282	7151	9508	12137	14561	18523	23610	29503	36014
	Heating	Heating Capacity	H	3	BTU/H	16549	21498	26874	32650	41491	54088	61686	66666	85075	96901
			M	2		14032	17760	22539	29832	34752	44702	57302	63704	79410	90294
			L	1		11760	12710	17034	22678	28981	34878	44296	55622	69909	85437
		Max. Electric Heater Capacity @ 220V				3400	3400	10200			10200				
	Sound	Sound Pressure Level (outlet)			dB(A)	40/38/37	44/43/40	43/41/37	45/43/39	49/47/44	44/43/39	47/46/44	52/48/44	52/48/44	54/52/50
		Sound Pressure Level(Inlet + Radiated)				43/41/40	47/46/43	46/44/40	48/46/42	52/50/47	47/46/42	50/49/47	55/51/47	55/51/47	57/55/53
		Sound Power Level (outlet)				49/47/46	53/52/49	52/50/46	55/53/48	58/56/51	53/52/48	57/56/53	61/57/54	61/57/53	63/61/60
		Sound Power Level(Inlet + Radiated)				52/50/49	56/55/52	55/53/49	58/56/51	61/59/54	56/55/51	60/59/56	64/60/57	64/60/56	66/64/63
	Electrical	Fan Motor Power	H		W	60	70	96	106	120	150	175	205	245	280
			M			50	62	87	97	104	118	145	173	210	230
			L			42	48	65	72	91	101	121	143	184	203
		Fan Motor Running Current @ 220V	H		A	0.545	0.636	0.873	0.964	1.091	1.364	1.591	1.864	2.227	2.545
		Fan Motor Running Current @ 115V	H		A	1.090	1.272	1.746	1.928	2.182	2.728	3.182	3.728	4.454	5.090
	Hydraulic	Water Flow Rate	3		GPM	2.04	2.66	3.33	4.04	5.14	6.69	7.62	8.24	10.52	11.98
			2			1.73	2.20	2.79	3.69	4.30	5.53	7.08	7.88	9.81	11.16
			1			1.45	1.57	2.11	2.81	3.58	4.31	5.48	6.88	8.64	10.56
		Pressure Drop	3		ft.wg	3.25	5.70	4.23	6.50	10.73	7.43	9.90	5.47	9.83	13.33
			2			2.45	4.10	3.14	5.57	7.90	5.33	8.70	5.03	8.73	11.80
			1			1.81	2.32	1.94	3.47	5.77	3.50	5.57	4.00	7.00	10.73
		Heating water flow			GPM	Same as cooling mode									
		Heating pressure drop	3		ft.wg	2.60	4.56	3.39	5.20	8.59	5.95	7.92	4.37	7.87	10.67
			2			1.96	3.28	2.51	4.45	6.32	4.27	6.96	4.03	6.99	9.44
			1			1.45	1.86	1.55	2.77	4.61	2.80	4.45	3.20	5.60	8.59
		Water content			gal	0.25	0.31	0.36	0.41	0.47	0.68	0.73	0.78	0.91	1.00
Construction and Packing Data		Water Connections	Type			Socket(NPT Threaded Female)									
			In		in.	NPT3/4"									
			Out												
		Condensate Drainage Connection													
		Dimensions	L		in.	29.7	33.7	37.6	45.5	49.4	65.2	69.1	73.0	69.1	77.0
			W			21.7								24.4	
			H			9.8								11.8	
		Net Weight			lbs	37	51	53	62	68	79	95	99	112	132

Notes:

1: Rated in accordance with AHRI standard 440.

2: Cooling conditions (2-pipe or 4-pipe)

- Return air temperature: DB 80°F/WB 67°F.
- Inlet/ outlet water temperature: 45/55°F.

3: Heating conditions (2-pipe)

- Return air temperature: 70F.
- Inlet water temperature: 140F.
- Water flow-rate: Same as cooling mode

A.2.5.3 PDWA(3R+1)-V-AECM Hydronic Ducted Unit 4-row coil 4-pipe with EC Motor

		PDWA AECM (3R+1) P-[Size]				200	300	400	500	600	800	1000	1200	1400	1600
Unit Configuration		Configuration				4-pipe									
		Number Of Fan Blowers				Single		Twin			Four			Three	Four
		Operation Control				~S: Complete function onboard PCB with integrated group control functionality.									
						~W: Flexible function onboard PCB with drain pump, louver and zone control functionality.									
Performance Data	Air	Air Flow	H	3	CFM	297	382	495	598	769	984	1125	1261	1600	1812
			M	2		242	302	399	535	618	778	1027	1192	1468	1660
			L	1		196	202	284	382	494	576	750	1008	1254	1550
		External Static Pressure	H	3	in.wg	0.20									
			M	2		0.20									
			L	1		0.20									
	Cooling	Cooling Capacity	H	3	BTU/H	8988	11646	14286	17348	21979	29170	31452	35284	44989	51235
			M	2		7663	9684	12061	15905	18531	24264	29320	33773	42099	47866
			L	1		6461	7011	9212	12217	15560	19095	22945	29637	37238	45383
		Sensible Cooling Capacity	H	3		6158	7927	9878	11927	15070	19887	21853	24442	30954	35113
			M	2		5225	6559	8295	10906	12646	16462	20324	23363	28910	32743
			L	1		4384	4709	6282	8313	10567	12874	15777	20418	25483	31000
	Heating	Heating Capacity	H	3	BTU/H	9940	12094	15391	18474	21796	29892	33782	37565	43287	49203
			M	2		8154	10220	13190	17060	18677	25277	31659	36090	40759	46275
			L	1		7007	7642	10321	13388	15929	20363	25278	32018	36495	44101
	Sound	Sound Pressure Level (outlet)			dB(A)	40/38/37	44/43/40	43/41/37	45/43/39	49/47/44	44/43/39	47/46/44	52/48/44	52/48/44	54/52/50
		Sound Pressure Level (Inlet + Radiated)				43/41/40	47/46/43	46/44/40	48/46/42	52/50/47	47/46/42	50/49/47	55/51/47	55/51/47	57/55/53
		Sound Power Level (outlet)				49/47/46	53/52/49	52/50/46	55/53/48	58/56/51	53/52/48	57/56/53	61/57/54	61/57/53	63/61/60
		Sound Power Level (Inlet + Radiated)				52/50/49	56/55/52	55/53/49	58/56/51	61/59/54	56/55/51	60/59/56	64/60/57	64/60/56	66/64/63
	Electrical	Fan Motor Power	H		W	60	70	96	106	120	150	175	205	245	280
			M			50	62	87	97	104	118	145	173	210	230
			L			42	48	65	72	91	101	121	143	184	203
		Fan Motor Running Current @ 220V	H		A	0.545	0.636	0.873	0.964	1.091	1.364	1.591	1.864	2.227	2.545
		Fan Motor Running Current @ 115V	H		A	1.090	1.272	1.746	1.928	2.182	2.728	3.182	3.728	4.454	5.090
	Hydraulic	Water Flow Rate	3		GPM	1.78	2.30	2.82	3.44	4.34	5.77	6.23	6.97	8.89	10.13
			2			1.52	1.92	2.39	3.15	3.66	4.80	5.80	6.69	8.32	9.46
			1			1.28	1.39	1.82	2.41	3.07	3.77	4.53	5.86	7.37	8.97
		Pressure Drop	3		ft.wg	5.73	10.07	5.23	8.07	13.23	13.03	5.20	6.70	12.13	16.43
			2			4.37	7.30	3.93	6.93	9.83	9.47	4.60	6.23	10.80	14.60
			1			3.26	4.20	2.47	4.40	7.27	6.27	3.02	4.97	8.73	13.30
		Hot water flow rate	3		GPM	0.47	0.60	0.77	0.92	1.09	1.49	1.68	1.87	2.16	2.46
			2			0.41	0.51	0.66	0.85	0.93	1.26	1.58	1.81	2.03	2.31
			1			0.35	0.38	0.52	0.67	0.79	1.02	1.26	1.60	1.82	2.20
		Heating pressure drop	3		ft.wg	0.91	1.58	2.69	4.07	0.88	2.04	2.69	3.43	0.42	0.57
			2			0.71	1.18	2.05	3.53	0.67	1.52	2.40	3.20	0.38	0.51
			1			0.54	0.71	1.33	2.31	0.51	1.04	1.62	2.59	0.31	0.47
		cooling water content			gal	0.19	0.23	0.27	0.31	0.35	0.51	0.55	0.59	0.68	0.75
		heating water content				0.06	0.08	0.09	0.10	0.12	0.17	0.18	0.20	0.23	0.25
Construction and Packing Data		Water Connections	Type			Socket(NPT Threaded Female)									
			In		in.	NPT3/4"									
			Out												
		Condensate Drainage Connection													
		Dimensions	L		in.	29.7	33.7	37.6	45.5	49.4	65.2	69.1	73.0	69.1	77.0
			W			21.7								24.4	
			H			9.8								11.8	
		Net Weight			lbs	37	51	53	62	68	79	95	99	112	132

Notes:

1: Rated in accordance with AHRI standard 440.

2: Cooling conditions (2-pipe or 4-pipe)
- Return air temperature: DB 80°F/WB 67°F.
- Inlet/ outlet water temperature: 45/55°F.

3: Heating conditions (4-pipe)
- Return air temperature: 70F.
- Inlet water temperature: 180/140F.

A.2.6. **Unit sound data**

Sound pressure

Sound Pressure in 1/3 Octave-bands under ESP 50Pa.(unit: dB)	Size	200			300			400			500			600		
	Speed	**H**	**M**	**L**	**H**	**M**	**L**	**H**	**M**	**L**	**H**	**M**	**L**	**H**	**M**	**L**
	31.5Hz	-0.1	-2.9	-3.2	2.9	2.0	2.0	10.1	7.9	15.0	3.7	-0.3	1.0	-0.7	-0.1	-2.2
	63Hz	9.5	5.8	7.8	8.8	6.1	6.1	14.4	13.2	14.6	7.6	8.0	4.2	12.8	12.5	6.7
	125Hz	19.7	15.9	16.6	23.3	22.2	22.2	16.2	16.6	18.3	23.0	22.2	16.0	27.5	22.2	19.1
	250Hz	24.0	21.7	21.8	28.5	24.9	24.9	30.9	30.3	26.3	29.7	29.2	24.0	35.2	28.8	27.0
	500Hz	33.8	31.9	31.2	40.1	35.7	35.7	35.5	34.2	29.9	39.0	37.9	33.1	43.2	39.7	36.6
	1000Hz	33.0	30.0	29.7	36.0	30.3	30.3	37.1	35.0	30.2	39.1	36.4	31.7	42.1	36.3	33.5
	2000Hz	29.3	26.7	26.0	33.0	27.9	27.9	31.9	30.2	25.2	35.4	33.9	27.9	39.6	34.5	31.1
	4000Hz	22.0	18.2	16.4	24.7	18.3	18.3	24.6	22.0	17.4	28.2	25.8	18.1	33.7	27.5	22.7
	8000Hz	10.7	7.3	7.2	15.4	8.7	8.7	13.7	10.9	6.6	18.9	15.9	8.3	24.9	18.2	12.8
	16000Hz	-6.0	-7.2	-3.3	-2.1	-1.2	-1.2	-2.5	-3.7	-3.8	-0.6	-2.6	-5.3	6.0	-1.0	-5.0
	A-weight sound pressure LP dBA	**42.9**	**40.7**	**40.2**	**46.5**	**45.9**	**42.6**	**45.4**	**43.8**	**39.8**	**48.3**	**46.3**	**41.5**	**52.0**	**47.1**	**44.4**

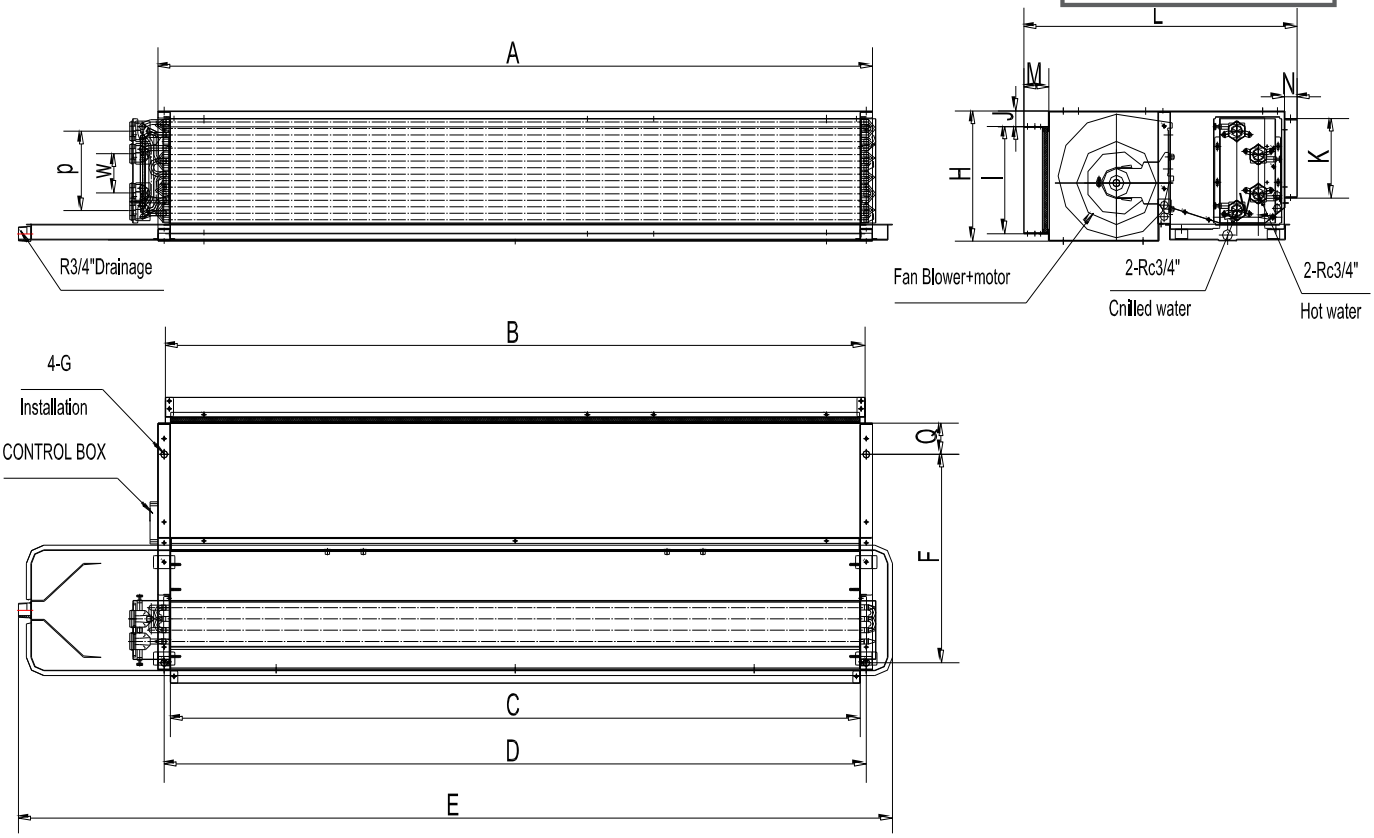
Sound Pressure in 1/3 Octave-bands under ESP 50Pa.(unit: dB)	Size	800			1000			1200			1400			1600		
	Speed	**H**	**M**	**L**	**H**	**M**	**L**	**H**	**M**	**L**	**H**	**M**	**L**	**H**	**M**	**L**
	31.5Hz	-0.9	7.5	-4.9	-0.1	2.6	2.0	3.9	4.9	0.5	4.8	1.0	1.3	3.4	3.0	5.7
	63Hz	12.9	13.9	8.6	13.3	11.8	9.5	13.6	11.8	10.3	14.5	10.5	12.1	21.9	20.0	16.0
	125Hz	20.6	18.9	18.6	25.4	26.7	24.5	32.5	29.3	27.2	31.4	28.3	25.9	34.5	32.3	29.2
	250Hz	31.5	31.4	25.8	34.0	32.7	29.6	40.4	35.2	31.4	39.0	34.0	31.9	41.1	41.0	35.7
	500Hz	37.0	37.7	32.9	42.2	40.8	37.9	44.8	42.4	39.5	45.2	41.6	37.3	46.3	46.1	43.7
	1000Hz	38.5	37.4	33.0	39.5	38.1	34.8	44.0	40.8	36.6	43.0	38.8	35.2	47.1	44.3	43.2
	2000Hz	35.6	33.8	28.6	38.7	36.8	31.7	42.3	38.1	33.8	42.6	38.5	34.1	45.4	43.0	41.3
	4000Hz	29.4	27.2	18.6	31.3	30.1	23.8	37.5	32.8	27.4	38.3	33.2	27.7	40.5	38.4	36.0
	8000Hz	13.9	12.0	6.6	21.1	18.9	11.8	30.3	26.2	18.5	29.5	24.1	17.4	33.2	30.1	27.2
	16000Hz	-3.1	-3.8	-5.6	2.2	0.2	-3.7	10.2	4.3	-1.8	10.7	4.5	-1.5	13.1	9.6	6.0
	A-weight sound pressure LP dBA	**46.9**	**45.9**	**42.0**	**50.3**	**49.3**	**46.7**	**54.6**	**50.6**	**47.3**	**54.6**	**50.6**	**46.6**	**56.8**	**55.1**	**53.0**

Sound power

Sound Power in 1/3 Octave-bands under ESP 50Pa.(unit: dB)	Size	200			300			400			500			600		
	Speed	**H**	**M**	**L**	**H**	**M**	**L**	**H**	**M**	**L**	**H**	**M**	**L**	**H**	**M**	**L**
	31.5Hz	9.2	6.3	6.0	12.2	11.2	11.2	19.5	17.1	24.2	12.9	8.9	10.2	8.6	9.1	7.1
	63Hz	18.8	15.0	17.0	18.0	15.3	15.3	23.7	22.5	23.8	16.8	17.2	13.5	22.0	21.7	15.9
	125Hz	29.0	25.1	25.9	32.6	31.4	31.4	25.5	25.8	27.5	32.2	31.5	25.2	36.7	31.4	28.3
	250Hz	33.3	31.0	31.0	37.7	34.1	34.1	40.2	39.6	35.5	38.9	38.5	33.3	44.4	38.0	36.3
	500Hz	43.1	41.1	40.4	49.3	45.0	45.0	44.8	43.4	39.1	48.3	47.2	42.3	52.4	48.9	45.8
	1000Hz	42.4	39.2	38.9	45.2	39.5	39.5	46.4	44.2	39.4	48.3	45.7	40.9	51.3	45.5	42.7
	2000Hz	38.6	36.0	35.3	42.3	37.2	37.2	41.3	39.4	34.4	44.6	43.1	37.1	48.9	43.7	40.3
	4000Hz	31.4	27.4	25.7	33.9	27.5	27.5	33.9	31.2	26.6	37.5	35.1	27.3	42.9	36.7	31.9
	8000Hz	20.0	16.5	16.4	24.7	18.0	18.0	23.0	20.1	15.8	28.1	25.1	17.5	34.2	27.4	22.0
	16000Hz	3.4	2.0	5.9	7.1	8.0	8.0	6.8	5.6	5.4	8.6	6.6	3.9	15.3	8.3	4.2
	A-weight sound power Lw dBA	**52.2**	**50.0**	**49.5**	**55.8**	**55.1**	**51.8**	**54.7**	**53.1**	**49.1**	**57.6**	**55.6**	**50.7**	**61.2**	**56.3**	**53.6**

Sound Power in 1/3 Octave-bands under ESP 50Pa.(unit: dB)	Size	800			1000			1200			1400			1600		
	Speed	**H**	**M**	**L**	**H**	**M**	**L**	**H**	**M**	**L**	**H**	**M**	**L**	**H**	**M**	**L**
	31.5Hz	8.4	16.8	4.4	9.1	11.9	11.3	13.1	14.1	9.7	14.0	10.2	10.5	12.6	12.2	15.0
	63Hz	22.1	23.1	17.8	22.5	21.1	18.7	22.8	21.0	19.6	23.7	19.7	21.4	31.1	29.3	25.3
	125Hz	29.8	28.1	27.8	34.7	35.9	33.7	41.7	38.5	36.4	40.6	37.5	35.1	43.7	41.5	38.4
	250Hz	40.8	40.6	35.1	43.2	41.9	38.8	49.6	44.4	40.6	48.2	43.2	41.2	50.4	50.2	45.0
	500Hz	46.2	47.0	42.1	51.4	50.0	47.1	54.0	51.7	48.8	54.4	50.8	46.5	55.5	55.4	52.9
	1000Hz	47.8	46.6	42.2	48.7	47.4	44.0	53.2	50.1	45.8	52.2	48.0	44.5	56.3	53.5	52.4
	2000Hz	44.8	43.0	37.8	47.9	46.0	41.0	51.5	47.3	43.0	51.8	47.7	43.4	54.6	52.2	50.5
	4000Hz	38.6	36.5	27.8	40.6	39.4	33.0	46.8	42.0	36.7	47.5	42.4	37.0	49.7	47.6	45.3
	8000Hz	23.2	21.3	15.8	30.3	28.2	21.0	39.5	35.4	27.7	38.8	33.4	26.6	42.4	39.3	36.4
	16000Hz	6.2	5.4	3.6	11.5	9.5	5.5	19.5	13.5	7.4	19.9	13.7	7.7	22.3	18.8	15.2
	A-weight sound power Lw dBA	**56.1**	**55.1**	**51.3**	**59.5**	**58.5**	**55.9**	**63.8**	**60.0**	**56.5**	**63.8**	**59.8**	**55.8**	**66.1**	**64.4**	**62.2**

A.3. **Physical data**



Model	A	B	C	D	E	F	G	H	I
PDWA-200	21.06	19.88	19.09	20.08	29.72	15.75	ϕ1/2"	9.84	8.07
PDWA-300	25.00	23.82	23.03	24.02	33.66	15.75	ϕ1/2"	9.84	8.07
PDWA-400	28.94	27.76	26.97	27.95	37.60	15.75	ϕ1/2"	9.84	8.07
PDWA-500	32.87	31.69	30.91	31.89	45.47	15.75	ϕ1/2"	9.84	8.07
PDWA-600	36.81	35.63	34.84	35.83	49.41	15.75	ϕ1/2"	9.84	8.07
PDWA-800	52.56	51.38	50.59	51.57	65.16	15.75	ϕ1/2"	9.84	8.07
PDWA-1000	56.50	55.31	54.53	55.51	69.09	15.75	ϕ1/2"	9.84	8.07
PDWA-1200	62.01	60.83	60.04	61.02	73.03	15.75	ϕ1/2"	9.84	8.07
PDWA-1400	56.50	55.31	54.53	55.51	69.09	18.50	ϕ1/2"	11.81	10.04
PDWA-1600	66.73	65.55	64.76	65.75	76.97	18.50	ϕ1/2"	11.81	10.04

Model	J	K	L	M	N	P	Q	V	W
PDWA-200	1.18	5.91	21.65	1.97	0.98	5.98	2.36	1.70	2.95
PDWA-300	1.18	5.91	21.65	1.97	0.98	5.98	2.36	1.70	2.95
PDWA-400	1.18	5.91	21.65	1.97	0.98	5.98	2.36	1.70	2.95
PDWA-500	1.18	5.91	21.65	1.97	0.98	5.98	2.36	1.70	2.95
PDWA-600	1.18	5.91	21.65	1.97	0.98	5.98	2.36	1.70	2.95
PDWA-800	1.18	5.91	21.65	1.97	0.98	5.98	2.36	1.70	2.95
PDWA-1000	1.18	5.91	21.65	1.97	0.98	5.98	2.36	1.70	2.95
PDWA-1200	1.18	5.91	21.65	1.97	0.98	5.98	2.36	1.70	2.95
PDWA-1400	1.18	7.87	24.41	1.97	0.98	7.95	2.36	1.70	4.92
PDWA-1600	1.18	7.87	24.41	1.97	0.98	7.95	2.36	1.70	4.92

(All dimensions shown in inch)

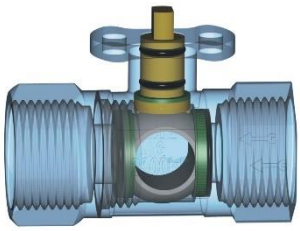
A.4. Valve Information (optional parts)

A.4.1. On/Off Valve Model Definitions

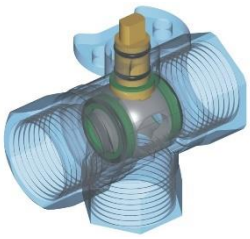
SGS14HFCA-23030101
3-way ball valve with ¾" inch connectors and on/ off motorized actuator
SGS14HFCA-23030102
2-way ball valve with ¾" inch connectors and on/ off motorized actuator

Specifications	Materials
Medium: Cool/Hot water or 60% glycol Structure: Two way or Three way Operating Mode: On/Off Power Supply: AC24V Power Consumption: 6W (during valve position change) Running Times: 15 sec. Pipe Fitting: NPT internal thread	Body: Forged brass, nickel plated Ball: Chrome plated brass Stem: Brass Seats: Fiberglass reinforced Teflon PTFE Seal: 2 EPDM O-rings, lubricated Pressure Rating: 2MPa Media Temp. Range: 34°F to 203°F (1°C to 95°C) Max. Differential Pressure: 1MPa Protection Grade: IP65 Types: 2-way Valve, 3-way Valve (base)

Structure Schematic of Valve Bodies



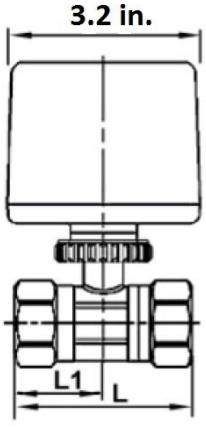
2- way Valve



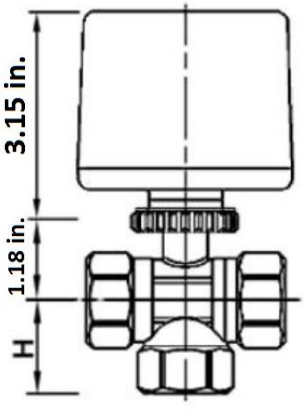
3- way Valve (base)

Wiring Diagrams

Dimension



2-way Valve



3-way Valve

Size	Kv Value	L	L1	H
3/4" (DN20)	7.50	2.6	1.3	1.42

(All dimensions shown in inch)

A.4.2. **Modulating Valve Model Definitions**

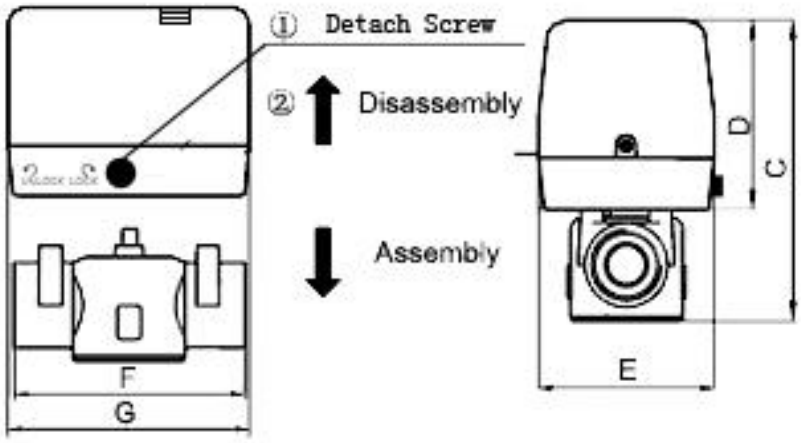
SGS14HFCA-23050201
3/4" inch 2-way modulating valve and 24VAC actuator with 0-10VDC input which is used with unit
SGS14HFCA-23050202
3/4" inch 3-way modulating valve and 24VAC actuator with 0-10VDC input which is used with unit
SGS14HFCA-25020101
1 set stainless steel hose and copper piping connection kit for 3/4" 3-way
SGS14HFCA-25020102
1 set stainless steel hose and copper piping connection kit for 3/4" 2-way

Technical Data

- 24V AC power supply
- 0~10VDC control signal
- Bi-directional modulating proportional control.
- Working media: cool/hot water or with 60% glycol
- Media Temp. Range: 34°F to 203°F (1°C to 95°C)
- Rating pressure：2.0MPa
- Max. Differential Pressure：0.3MPa
- Opening or closing time：50 sec.（50Hz）、40 sec.（60Hz）
- Connection: NPT internal thread

Dimensions

Size	Type	Kv Value	Dimension (inch)				
			C	D	E	F	G
3/4”	2-way	4.6	4.53	2.87	2.64	3.50	3.54
3/4”	3-way	4.6	5	2.87	2.64	3.50	3.54



A.5. Low voltage 24V controls (optional parts)

Model	Description	Photo
SGS14HFCA-27000201	Mechanical Thermostat used for 2-pipe unit • 3-speed control • 1 on/off valve control	
SGS14HFCA-27000202	Mechanical Thermostat used for 4-pipe unit • 3-speed control • 2 on/off valves control	
SGS14HFCA-27000203	Digital Thermostat used for 2-pipe unit • 3-speed control • 1 on/off valve control • Auto changeover	
SGS14HFCA-27000204	Digital Thermostat used for 4-pipe unit • 3-speed control • 2 on/off valves control • Auto changeover	
SGS14HFCA-27000205	Digital Thermostat used for 2-pipe unit • 3-speed control • 1 modulating valve control • Auto changeover	
SGS14HFCA-27000206	Digital Thermostat used for 4-pipe unit • 3-speed control • 2 modulating valves control • Auto changeover	
SGS14HFCA-27000207	Digital Thermostat used for 2-pipe/4-pipe unit • 3-speed control • 2 on/off valves control • Auto changeover • Timer mode: 7 days 4 events	

B. Safety Precautions

- When installing, performing maintenance or servicing the air conditioning equipment, observe the precautions stated in this manual, in addition to those stated in the labels attached to the unit.
- Ensure all local and national safety codes, laws, regulations, as well as general electrical and mechanical safety guidelines are followed for installation, maintenance and service.
- The appliance is for indoor use only.
- Ensure the correct mains supply, with respect to the rating label on the unit is used.
- Power supply should be incorporated in the fixed wiring and must have a contact separation gap of at least 3mm in between each active phase of conductors.
- If the supply cord is damaged, it must be replaced by qualified personnel.
- Installing and servicing air conditioning equipment should be done by qualified service personnel only.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or persons lacking in experience and knowledge of the appliance, unless they have been given supervision or instruction concerning it.
- Children should be supervised to ensure they do not play with the appliance.
- User of this appliance is responsible for his/her own safety.
- Warranty shall be voided if installation instructions and safety precaution stated in this manual are not observed.
- Never cut off the mains supply when unit is under operation. The unit should only be switched off by using the ON-OFF button on the control interface.

CAUTIONS

Before any service or maintenance operations turn off the mains electrical supply.

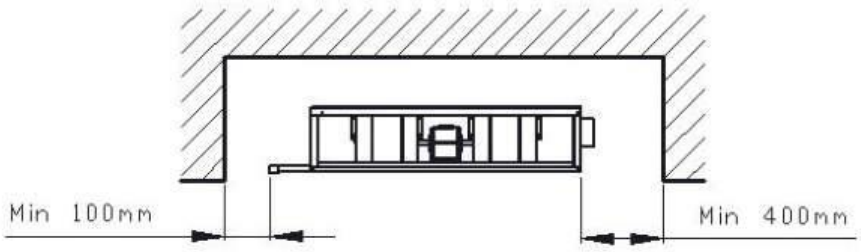
DO NOT turn OFF the main power supply when the unit is working. Turn off the unit BEFORE turning off the main power.

B.1. Installation

B.1.1. Location

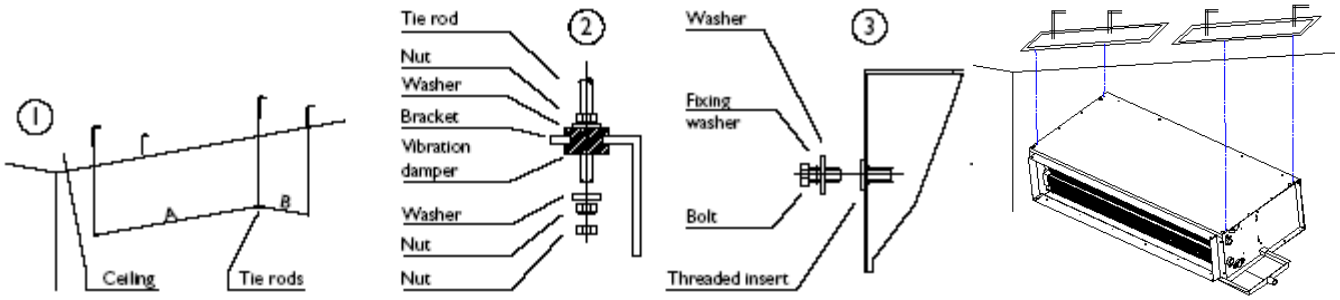
Before installation and running the unit, please check the following:

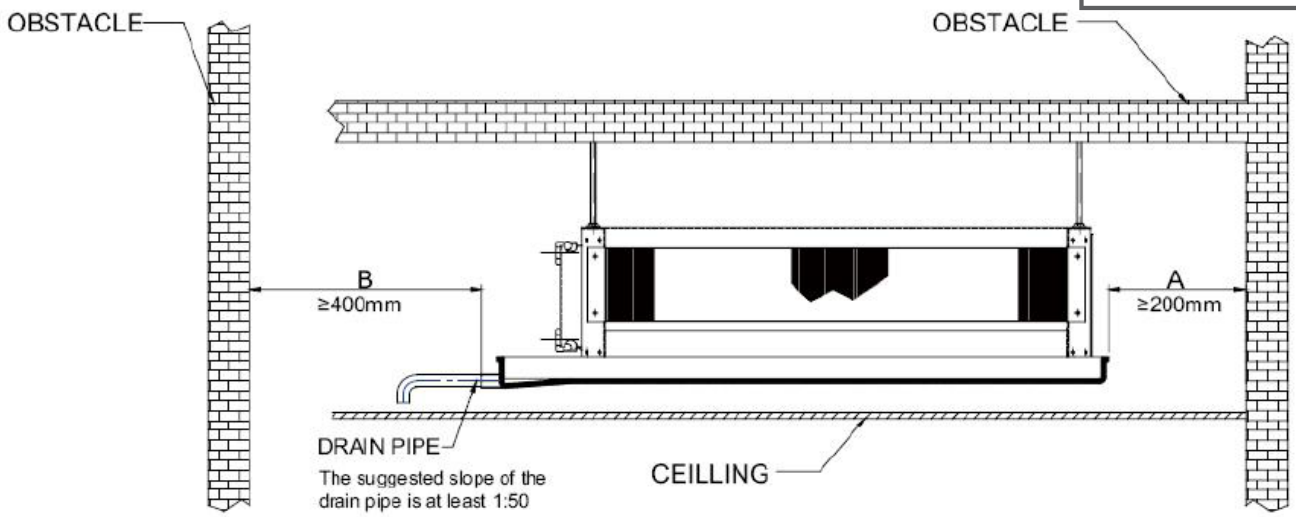
1. There must be enough space for the unit installation and maintenance. Please refer the unit's outlines and dimensions and the minimum distance between the unit and the obstacle.
2. Please ensure enough space for piping connection and electrical wiring.
3. Check whether the hanging rods can support weight of the unit (see specification table for weight of the unit).
4. The unit must be installed horizontally to ensure proper operation and condensate draining.
5. The external static pressure of the ducting must be within the design static pressure range.
6. Confirm that the unit has been switched OFF before installing or servicing the unit



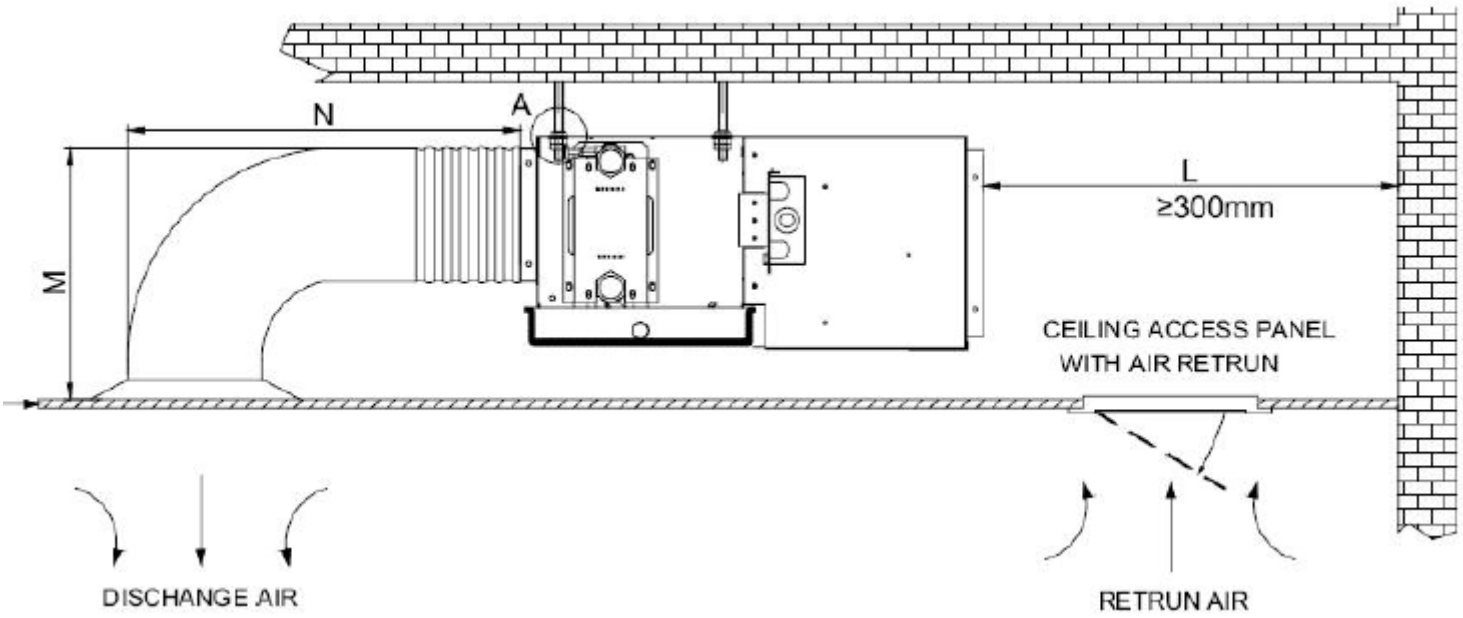
B.1.2. Unit Installation

1. The unit is designed to be installed in a concealed ceiling. Installation and maintenance should be performed by qualified persons who are familiar with local codes and regulations, and experienced with this type of appliance.
2. Please refer to picture below illustrates the installation procedure.





Caution:
Make sure the top of the unit is level after installation. The drain pan is designed with a little gradient to facilitate drainage.



Caution:
Dimension M and N was determined by air duct design. Air duct should be fire-proof. Please refer to concerned country national and local regulation.
Circulatory air pressure drop should be approximately equal to the External Static Pressure.

Mini 12 in

B.1.3. **Insulation**

1. The insulation design and materials should be complying with local and national codes and regulations.
2. Chilled water pipes and all parts on the pipes should be insulated.
3. It is also necessary to insulate the air duct.

B.1.4. **Air Duct Connection**

1. Circulatory air pressure drop should be within External Static Pressure.
2. Galvanized steel air ducts are suitable.
3. Make sure there is no leak of air.
4. Air duct should be fire-proof, refer to concerned country national and local regulations.

B.1.5. **Pipe Connection**

1. Using suitable fittings as water pipe connections with reference to the outline and dimensions.
2. The water inlet is on the bottom while outlet on top.
3. The connection must be concealed with rubberized fabric to avoid leakage.
4. Drain pipe can be PVC or steel.
5. Tightening torque should not be too high when connecting water pipes, in order to avoid brass deformation or water-leakage by torsion split.
6. The suggested slope of the drain pipe is at least 1:50.

CAUTIONS

When connecting pipe to fan coil unit, do not bend or reposition the coil header for alignment purposes. This could cause a tubing fracture resulting in a water leak when water pressure is applied to the system.

B.1.6. **Wiring**

1. Wiring connection must be done according to the wiring diagram on the unit.
2. The unit must be GROUNDED well.
3. An appropriate strain relief device must be used to attach the power wires to the terminal box.
4. A 0.787 inch hole is designed on the terminal box for field installation of the strain relief device.
5. Field wiring must be complied with the national security regulations.
6. A main switch or other means for disconnection, having a contact separation in all poles, must be incorporated in the fixed wiring in accordance with the
relevant local and national legislation.

C. Maintenance

C.1. General Maintenance

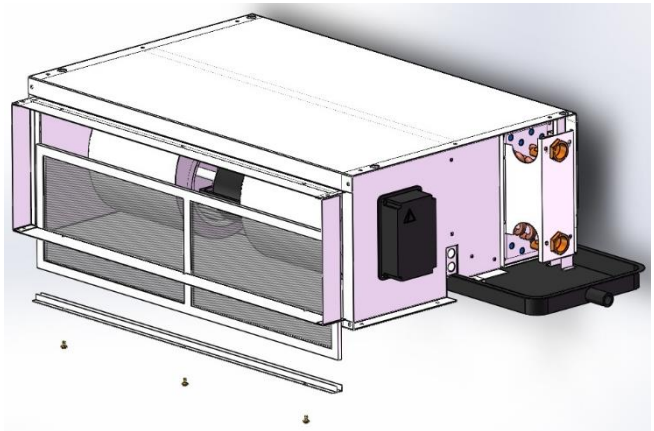
1. Installation and maintenance should be performed by qualified persons who are familiar with local codes and regulations, and experienced with this type of appliance.
2. Confirm that the unit has been switched OFF before installing or servicing the unit.
3. A good general maintenance plan will avoid losses and unexpected shutting down of the equipment.
4. Dirty filters reduce air flow as well as unit performance. Thus changing or cleaning the filters is very important. Check the cleanliness of filter and replace or clean as required monthly.
5. Coils should be cleaned from dust, dirt or lint with compressed air or water. They can be brushed with a soft brush and vacuum cleaner.
6. Water coil not used during winter season should be drained, or anti-freezing solution should be added to the water circuit to avoid freezing.

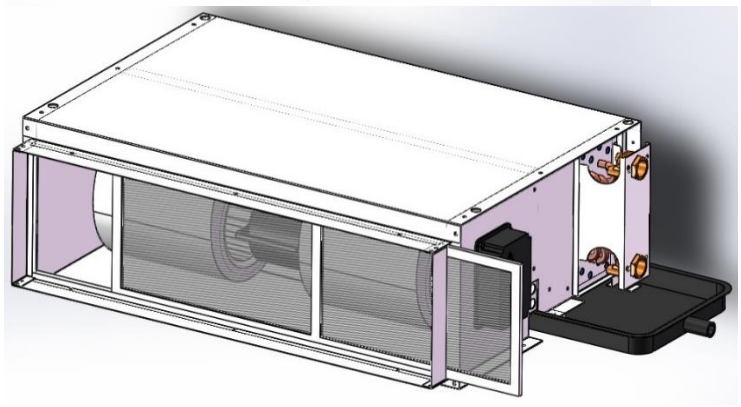
C.2. Regular Maintenance

1. Inspect and clean condensate drain pan to avoiding clogging of drainage by dirt, dust, etc. Inspect drainage piping to ensure the proper condensate flow.
2. Check and clean the coil. Clean the coils with low pressure water jet or low pressure air.
3. Clean and tighten all the wiring connections.
4. Drain out the system water and check for buildup of mineral deposits.

C.3. Filter Cleaning

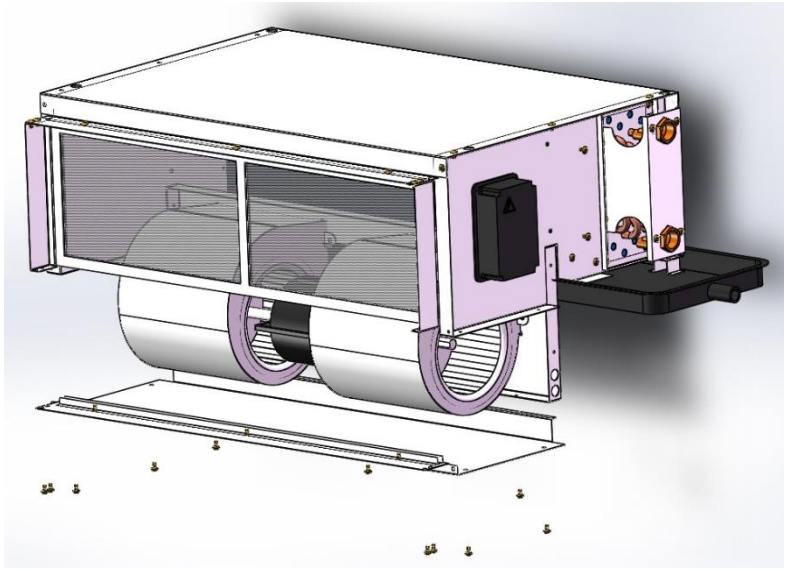
1. Remove the filter from the bottom or side.
2. Clean the filter with a brush, or with water.
3. Put back the filter by sliding it back into the groove.





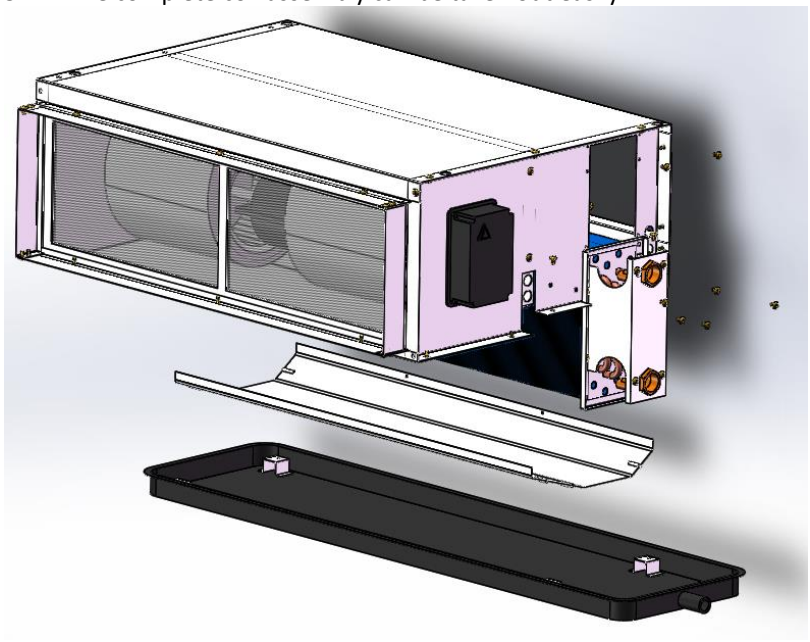
C.4. Fan-Motor Assembly Maintenance

1. Remove the screws for Bottom panel.
2. Remove the 4-screws on the both side.
3. The complete fan-motor assembly can be taken out easily



C.5. Coil Maintenance or interchange the connection

1. Remove 4 screws for to remove the drain pan;
2. Remove 6 screws on the both side to remove drain guide;
4: Remove 4 screws on the both side of coil mounting brackets;
5. The complete coil assembly can be taken out easily



D. Control Specifications: Complete Function PCB - S3 Type Co

Abbreviations

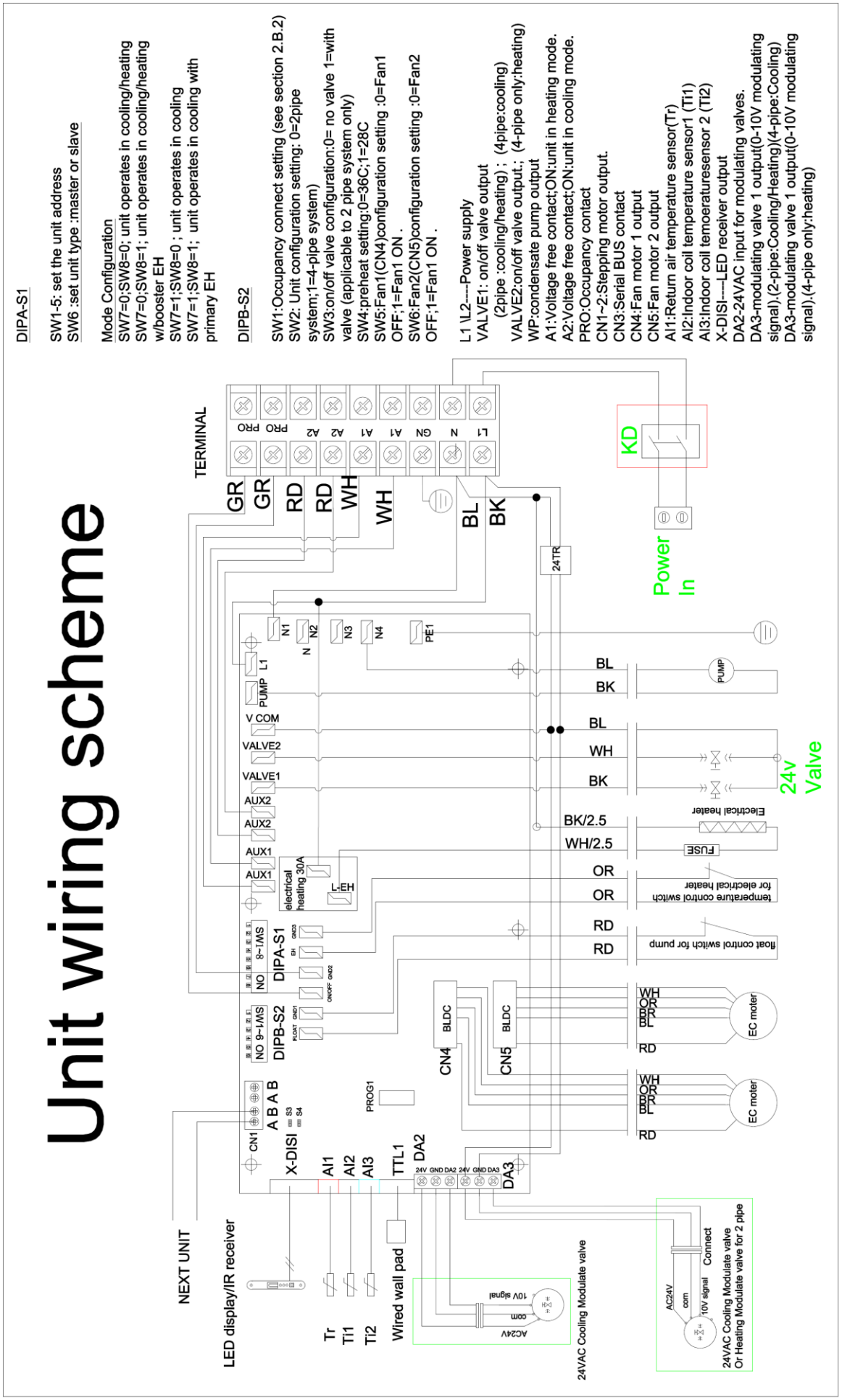
Ts = Setting temperature
Tr = Room air temperature
Ti1 = Chilled water coil temperature
Ti2 = Hot water coil temperature
AUX1 = Hot water free contact
AUX2 = Chilled water free contact
MTV1 = Chilled water valve
MTV2 = Hot water valve

D.1. I/O Port Definitions

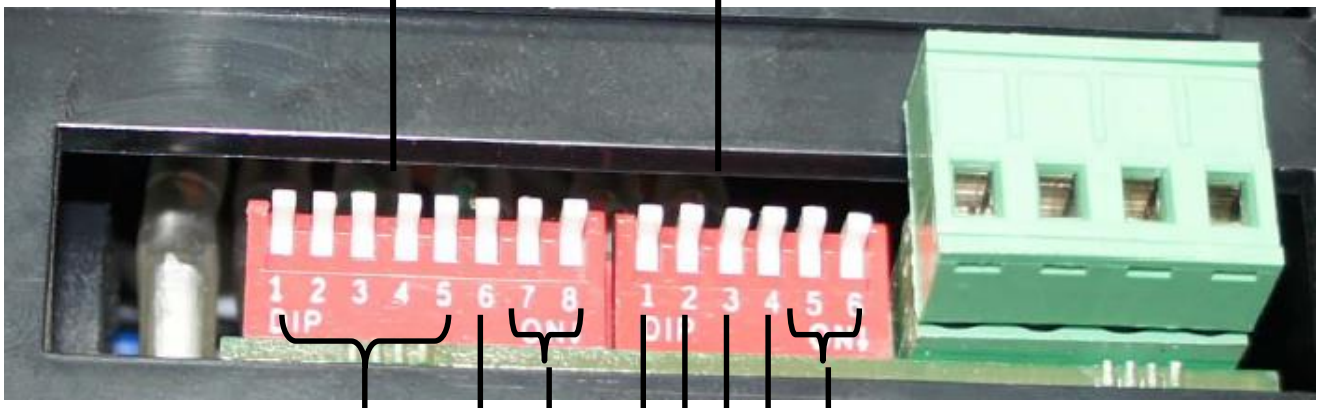
I/O		Code	2-Pipe	4-Pipe
Analogue Input	Return air sensor	AI1	Return air temperature (Tr)	
	2-pipe coil circuit sensor	AI2	Chilled / hot water coil circuit (Ti1)	Chilled water coil circuit (Ti1)
	Hot water Sensor	AI3	N/A	Hot water coil circuit (Ti2)
Input	LED display / IR receiver	X-DIS 1	Digital communication port to LED display / IR receiver board.	
	Wired wall pad	TTL1	Digital communication port to wired wall-pad board.	
Digital input	Occupancy contact	ON/OFF	Window contacts: for remote ON/OFF (when DIPB SW1=1). Economy mode contacts: for remote activation of economy mode (when DIPB SW1=0).	
	Float switch	Float	Voltage-free (NC)	
	Electrical heater safety switch	EH	Voltage-free (NC). The contact is closed before the EH is turned on.	
Power input	Phase	L1	Power supply: 220V/1Ph/60HZ or 115V/1Ph/60Hz	
	Neutral	N1		
	Earth	PE1		
Voltage output	Fan 1	CN4	Fan 1 driver	
	Fan2	CN5	Fan 2 driver and motor connection port.	
	Valve1	MTV1	2-pipe coil circuit valve output – chilled / hot water valve. Voltage output (L)	2-pipe coil circuit valve output – chilled water valve. Voltage output (L)
	Valve2	MTV2	Reserved	4-pipe coil circuit valve output – hot water valve. Voltage output (L)
	Water pump	PUMP	Power supply to condensate pump Voltage output (L)	
	Voltage of electrical heater (Live)	L-EH	Voltage output (L), maximum 30A [See wiring diagram, cross check with supplier].	

I/O		Code	2-Pipe	
Output	Auxiliary contact 2	AUX2	Cooling mode signal relay (NO). Voltage free contact. To ensure the sensitivity of the connection, please make sure max wiring length < 100ft.	
	Auxiliary contact 1	AUX1	Heating mode signal switch (NO). Voltage free contact. To ensure the sensitivity of the connection, please make sure max wiring length < 100ft.	
	Serial BUS port	CN3	Master-slave network serial connection OR MODBUS / local PC host network serial connection.	
	24VAC power input	24VAC	24VAC external power supply (modulating valve applications only).	
	Modulating valve output 1	DA2	Connection to DC modulating valve on 2-pipe coil circuit - chilled / hot water.	Connection to DC modulating valve on 4-pipe coil circuit - chilled water.
	Modulating valve output 2	DA3	N/A	Connection to DC modulating valve on 4-pipe coil circuit - hot water.

D.2. Wiring Diagram



D.3. Configuration Settings



SW1-SW5 Network address setting

Master / Slave setting
SW6=1 **Master**
SW6=0 **Slave**

SW7/SW8 Operating mode
SW7=0 Cooling and heating modes available
SW8=0

SW7=0 Cooling and heating modes available,
SW8=1 with EH functioning as booster

SW7=1 Cooling mode only available
SW8=0

SW7=1 Cooling and heating modes available,
SW8=1 with EH functioning as primary

SW5/SW6 Fan Qty setting
SW5=0 Single fan application
SW6=1

SW5=1 Twin fans application
SW6=1

Preheat temperature setting
SW4=1 82.4ºF
SW4=0 96.8ºF

230VAC on/off valve setting
SW3=1 With valve
SW3=0 No valve

2-pipe/4-pipe system configuration
SW2=1 4-pipe system
SW2=0 2-pipe system

PR-O contact setting
SW1=1 Window contact (remote on/off)
When PROs closed for 10 minutes, unit enters standby mode.
When PROs opened, unit resumes operation.
SW1=0 Economy contact
When PROs closed, dead-band condition is increased from “Tr=Ts+/-1” to “Tr=Ts+/-7.2”.

Note: 0 = OFF
1 = ON

AIR CONDITIONER ON/OFF

There are 3 ways to turn the system on or off:

a) By the ON/OFF button on the remote 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.

AUTO-RESTART

The system uses a 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.

The restored parameter data-set depends on the type of user interface.

a) Handset only user interface:

When the power on signal is received by the air conditioner and no wired wall-pad is installed, the Mode, Fan Speed, Set temperature and Louver/Swing setting will be the same as the handset setting before the last power off.

b) Wall-pad only OR wall-pad and handset user interface:

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

D.4. Control Logic For 2-Pipe System

D.4.1. With Valve Configuration

COOL MODE

a) MTV2, AUX1 and electric heater are always off.
b) If Tr ≥ Ts+1.8ºF (or +7.2 ºF if economy contact is activated), cool operation is activated, MTV1 and AUX2 are turned on. Indoor fan runs at set speed.
c) If Tr < Ts, cool operation is terminated, MTV1 and AUX2 are turned off. Indoor fan runs at set speed.
d) The range of Ts is 61-86ºF
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.

LOW TEMPERATURE PROTECTION OF INDOOR COIL

a) If Ti1 ≤ 35.6 ºF for 2 minutes, MTV1 and AUX2 are 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 ≥ 41ºF for 2 minutes, MTV1 and AUX2 are turned on. Indoor fun runs at set speed.

FAN MODE

a) Indoor fan runs at the set speed while heater, MTV1, MTV2, AUX1 and AUX2 are turned off.
b) Indoor fan speed can be adjusted for low, medium and high.

HEAT MODE

Heat mode without electrical heater

a) MTV2, AUX2 and electric heater are always off.
b) If Tr ≤ Ts-1.8ºF (or -7.2ºF if economy contact is activated), heat operation is activated, MTV1 and AUX1 are turned on. Indoor fan runs at the set speed.
c) If Tr > Ts, heat operation is terminated, MTV1 and AUX1 are turned off. Indoor fan runs at 200rpm.
d) The range of Ts is 61-86ºF。
e) Indoor fan speed can be adjusted for low, medium, high and auto.
f) MTV1 will delay for 30 seconds before it is turned on.
g) MTV1 will delay for 120 seconds before it is turned off.

Heat mode with electrical heater as booster

a) MTV2 and AUX2 are always off.
b) If Tr ≤ Ts-1.8ºF (or -7.2ºF if economy contact is activated), heat operation is activated, MTV1 and AUX1 are turned on. Indoor fan runs at the set speed.
c) If Tr > Ts, heat operation is terminated, MTV1 and AUX1 are turned off. Indoor fan runs at 200rpm
d) If Ti1 < 104ºF, the electrical heater is turned on. If 104ºF ≤ Ti1 < 113 ºF, the electrical heater is kept original state. If Ti1 ≥ 113 ºF, the electrical heater is turned off.
e) The range of Ts is 61-86ºF
f) Indoor fan speed can be adjusted for low, medium, high and auto.
g) MTV1 will delay for 30 seconds before it is turned on.
h) MTV1 will delay for 120 seconds before it is turned off.

Heat mode with electrical heater as primary heat source

a) MTV1, MTV2, and AUX2 are always off
b) If Ti2 ≤ 86ºF (or Ti2 is damaged or disconnected), AND if Tr ≤ Ts-1.8ºF (or -7.2ºF if economy contact is activated), heat operation is activated, electrical heater and AUX1 are turned on. Indoor fan runs at set speed.
c) If Tr > Ts, heat operation is terminated, Electrical heater and AUX 1 are turned off. Indoor fan runs at 200rpm.
d) The range of Ts is 61~86 ºF
e) Indoor fan speed can be adjusted for low, medium, high and auto.

Over-heat protection of indoor coil in heat mode

a) If Ti1 ≥ 167 ºF, MTV1, AUX2 and EH are turned off, indoor fan runs at high speed, even in standby mode.
b) If Ti1 < 158ºF, unit will keep at original state.
c) If indoor coil temperature sensor is damaged, the protection mode will be overridden and the Pre-heat and Post-heat set times will be used instead.

PRE-HEAT

Pre-heat without electrical heater

a) If Ti1 < 97ºF [or < 82ºF is selected by DIPB-S2 position SW4], MTV1 and AUX1 are on, indoor fan runs at 200rpm.
b) If Ti1 ≥ 100 ºF [or ≥ 86ºF is selected by DIPB-S2 position SW4], MTV1 and AUX1 are 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.

Pre-heat with electrical heater

a) If indoor fan speed ≥ 300rpm, electrical heater will turn on.

POST-HEAT

Post-heat without electrical heater

a) If Ti1 ≥ 100ºF, MTV1 and AUX 1 are off, indoor fan continues to run at set speed.
b) If 96 °F ≤ Ti1 ≤ 100 °F, MTV1 and AUX1 are off. Indoor fan keeps original state.
c) If Ti1 < 96ºF, MTV1 and AUX1 are off. Indoor fan runs at 200rpm.
d) If indoor coil temperature sensor is damaged, post-heat time is set for 3 minutes with indoor fan running at set speed.

Post-heat with electrical heater

a) Indoor fan will run at 200rpm before the unit turns off for 20 seconds.

Over-heat protection of indoor coil in post-heat

a) If Ti1 ≥ 167ºF, MTV1 and AUX1 are off, indoor fan remains on and runs at high speed.
b) If Ti1 < 158ºF, MTV1 and AUX1 are 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 and Post-heat program.

DEHUMIDIFICATION MODE

a) MTV2, AUX1 and heater are always off.
b) If Tr ≥ 77 ºF, MTV1 and AUX2 will be ON for 3 minutes, and OFF for 4 minutes.
c) If 61 ºF ≤ Tr < 77 ºF, MTV1 and AUX2 will be ON for 3 minutes, and OFF for 6 minutes.
d) If Tr < 61 ºF, MTV1 and AUX2 will be turned off for 4 minutes.
e) 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.

AUTOMODE

Auto cool/heat/heat with electric heater as booster

a) Every time the unit is turned on, MTV1 is on, AUX1, AUX2 and fan are off. MTV2 and heater are always off.

b) After 120sec, subsequent operation mode is decided according to following program:
   i. If the coil temperature sensor (Ti1) ≥ 97°F, MTV1, AUX1 and fan turn on or off according to HEAT mode.
   ii. If Ti1 < 97°F, MTV1, AUX2 and fan turn on or off according to COOL mode.

c) Unit remains in AUTO COOL or AUTO HEAT mode throughout the operating cycle until the user changes the mode manually or restarts the unit.

d) Should there be failure of Ti1 sensor, auto mode is not allowed.

Auto heat with electric heater as primary heat source / all configuration auto changeover

a) If current running mode is auto cool mode, the control logic will change over to auto heat mode when all the following conditions are met:
   i. Ts-Tr ≥ 1.8°F (or 7.2 ºF if economy contact is activated)
   ii. MTV1 has stop ≥ 10 min.

b) If current running mode is auto heat mode, it will change over to auto cool mode when all the following conditions are met:
   a) Tr-Ts ≥ 1.8°F (or 7.2ºF if economy contact is activated)
   b) MTV1 has stop ≥ 10 min.

Note: Auto cool or auto heat operation are the same as cool or heat mode respectively.

D.4.2. **Without Valve Configuration**

COOL MODE

a) Electric heater, AUX1, MTV1 and MTV2 are always off.
b) If Tr ≥ Ts+1.8 ºF (or +7.2ºF if economy contact is activated), cool operation is activated, AUX2 is on. Indoor fan runs at set speed.
c) If Tr < Ts, cool operation is terminated, AUX2 is off. Indoor fan is turned off.
d) The range of Ts is 61-86 ºF
e) Indoor fan speed can be adjusted for low, medium, high and auto.

Note: When the unit is turned off, indoor fan will delay for 5 seconds before it is turned off.

LOW TEMPERATURE PROTECTION OF INDOOR COIL

a) If Ti1 ≤ 36 ºF for 2 minutes, AUX2 is off. If low speed is selected via user interface, indoor fan runs at medium speed. If medium or high speed is selected via user interface, indoor fan runs at set speed.
b) If Ti1 ≥ 41 ºF for 2 minutes, AUX2 is on. Indoor fan runs at set speed.

FAN MODE

a) Indoor fan runs at the set speed while heater, AUX1, AUX2, MTV1 and MTV2 are turned off.
b) Indoor fan speed can be adjusted for low, medium and high.

HEAT MODE

Heat mode without electrical heater

a) MTV1, MTV2, AUX2 and heater always off.
b) If Tr ≤ Ts-1.8 ºF (or -7.2 ºF if economy contact is activated), heat operation is activated, AUX1 is turned on. Indoor fan runs at the set speed.
c) If Tr > Ts, heat operation is terminated, AUX1 is turned off. Indoor fan runs at 200rpm.
d) The range of Ts is 61-86 ºF.
e) Indoor fan speed can be adjusted for low, medium, high and auto.

Heat mode with electrical heater as booster

a) MTV1, MTV2 and AUX2 are always off.
b) If Tr ≤ Ts-1.8 ºF (or -7.2 ºF if economy contact is activated), heat operation is activated, AUX1 is turned on. Indoor fan runs at the set speed.
c) If Tr > Ts, heat operation is terminated, AUX1 is turned off. Indoor fan runs at 200 rpm.
d) If Ti1 < 104 ºF, the electrical heater is turned on. If 104 ≤ Ti1 < 113 ºF, the electrical heater is kept original state. If Ti1 ≥ 113 ºF, the electrical heater is turned off.
e) The range of Ts is 61-86 ºF.
f) Indoor fan speed can be adjusted for low, medium, high and auto.

PRE-HEAT

Pre-heat with electrical heater

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

POST-HEAT

Post-heat with and without electrical heater

a) AUX1 is off. Electrical heater is turned off.
b) Indoor fan will turn off after the unit is turned off for 20sec.

Over heat protection of indoor coil in post-heat

a) If Ti1 ≥ 167ºF, AUX1 is turned off, indoor fan remains on and runs at high speed.
b) If Ti1 < 158 ºF, AUX1 is turned on, indoor fan remains and runs 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 program.

DEHUMIDIFICATION MODE

a) MTV1, MTV2, AUX1 and heater always off.
b) If Tr ≥ 77 ºF, indoor fan and AUX2 will be ON for 3 minutes, and OFF for 4 minutes.
c) If 61 ºF ≤ Tr < 77 ºF, indoor fan and AUX2 will be ON for 3 minutes, and OFF for 6 minutes.
d) If Tr < 61 ºF, indoor fan and AUX2 will be turned off for 4 minutes.
e) 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

AUTOMODE
Not available.

D.5. Control Logic For 4-Pipe System

Note: 4-pipe system must always be equipped with 2 valves.

COOL MODE

a) MTV2, AUX1 and Electrical Heater always off.
b) If Tr ≥ Ts+1.8 ºF (or +7.2 ºF if economy contact is activated), cool operation is activated, MTV1 and AUX2 are turned on. Indoor fan runs at set speed.
c) If Tr < Ts, cool operation is terminated, MTV1 and AUX2 are turned off. Indoor fan runs at set speed.
d) The range of Ts is 61-86 ºF
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.

LOW TEMPERATURE PROTECTION OF INDOOR COIL

a) If Ti1 ≤ 36 ºF for 2 minutes, MTV1 and AUX2 are 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 ≥ 41 ºF for 2 minutes, MTV1 and AUX2 are turned on. Indoor fun runs at set speed.

FAN MODE

a) Indoor fan runs at the set speed while heater, MTV1, MTV2, AUX1 and AUX2 are turned off.
b) Indoor fan speed can be adjusted for low, medium and high.

HEAT MODE

Without Electrical Heater

a) MTV1, AUX2 and heater always off.
b) If Tr ≤ Ts-1.8 ºF (or -7.2 ºF if economy contact is activated), heat operation is activated, MTV2 and AUX1 are turned on. Indoor fan runs at the set speed.
c) If Tr > Ts, heat operation is terminated, MTV2 and AUX1 are turned off. Indoor fan runs at 200rpm.
d) The range of Ts is 61-86 ºF.
e) Indoor fan speed can be adjusted for low, medium, high and auto.
f) MTV2 will delay for 30 seconds before it is turned on.
g) MTV2 will delay for 120 seconds before it is turned off.

With Electrical Heater as Booster

a) MTV1 and AUX2 are always off.
b) If Tr ≤ Ts-1.8 ºF (or -7.2 ºF if economy contact is activated), heat operation is activated, MTV2 and AUX1 are turned on. Indoor fan runs at the set speed.
c) If Tr > Ts, heat operation is terminated, MTV2 and AUX1 are turned off. Indoor fan runs at 200rpm.
d) If Ti2 < 104 ºF, the electrical heater is turned on. If 104 ºF ≤ Ti2 < 113 ºF, the electrical heater is kept original state. If Ti2 ≥ 113 ºF, the electrical heater is turned off.
e) The range of Ts is 61-86 ºF
f) Indoor fan speed can be adjusted for low, medium, high and auto.
g) MTV2 will delay for 30 seconds before it is turned on.
h) MTV2 will delay for 120 seconds before it is turned off.

PRE-HEAT

Without Electrical Heater

a) If Ti2 < 97 ºF [or 82 ºF depends on DIP setting], when MTV2 and AUX1 are on, indoor fan remains off.
b) If Ti2 ≥ 100 ºF [or 86 ºF depends on DIP setting], when MTV2 and AUX1 are 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.

With Electrical Heater

a) If indoor fan speed ≥ 300 rpm, electrical heater is turned on

POST HEAT

Without Electrical Heater

a) If Ti2 ≥ 100 ºF, when MTV2 and AUX 1 are off, indoor fan continues to run at set speed.
b) If 97 °F ≤ Ti2 ≤ 100 °F, when MTV2and AUX1 are off. Indoor fan keeps original state.
c) If Ti2 < 97ºF, MTV2 and AUX1 are off. Indoor fan runs at 200 rpm.
d) If indoor coil temperature coil is damaged, post-heat time is set for 3 minutes with indoor fan running at set speed.

With Electrical Heater

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

OVER HEAT PROTECTION OF INDOOR COIL

a) If Ti2 ≥ 167 ºF, MTV2 and AUX1 are turned off, indoor fan remains on and runs at high speed.
b) If Ti2 < 158 ºF, MTV2 and AUX1 are turned 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 as the Pre-heat and Post-heat set times.

DEHUMIDIFICATION MODE

a) MTV2, AUX1 and heater always off.
b) If Tr ≥ 77 ºF, MTV1 and AUX2 will be ON for 3 minutes, and OFF for 4 minutes.
c) If 61 ºF ≤ Tr < 77 ºF, MTV1 and AUX2 will be ON for 3 minutes, and OFF for 6 minutes.
d) If Tr < 61 ºF, MTV1 and AUX2 will be turned off for 4 minutes.
e) 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.

AUTOMODE

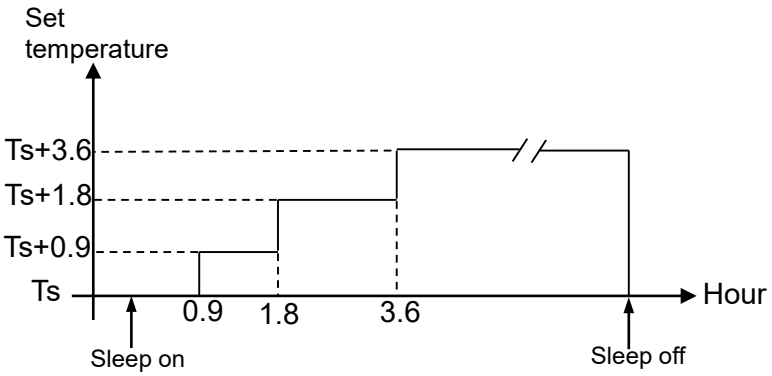
a) If current running mode is AUTO COOL mode, it will change over to AUTO HEAT mode upon satisfy all the conditions below:
    i. Ts - Tr ≥ 1.8°F (or -7.2 ºF if economy contact is activated)
    ii. MTV1 has stop ≥ 10 min.
b) If current running mode is AUTO HEAT mode, it will change over to AUTO COOL mode upon satisfy all the conditions below:
    i. Tr - Ts ≥ 1.8°F (or +7.2 ºF if economy contact is activated)
    ii. MTV2 has stop ≥ 10 min.

Note: AUTO COOL or AUTO HEAT operations are the same as COOL or HEAT mode respectively.

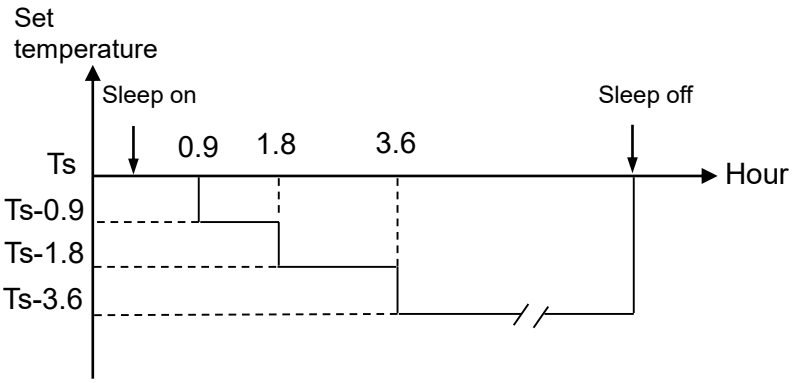
D.6. Sleep Mode

a) The sleep mode can only be set when the unit is in cool mode or heat mode.
b) If the sleep mode is activated when the unit is in cooling, the indoor fan will run at low speed and Ts will increase 2.6 ºF during 2 hours.
c) If the sleep mode is activated when the unit is in heating, the indoor fan will run at set speed and Ts will decrease 3.6 ºF during 2 hours.
d) Changing the mode of operation will cancel the sleep mode.

The cool mode sleep profile is:



The heat mode sleep profile is:

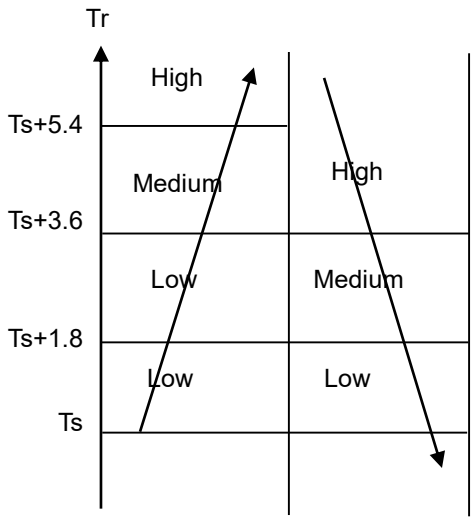


D.7. Auto Fan Speed

COOL MODE

Fan speed cannot change until it has run at this speed for more than 30 seconds.

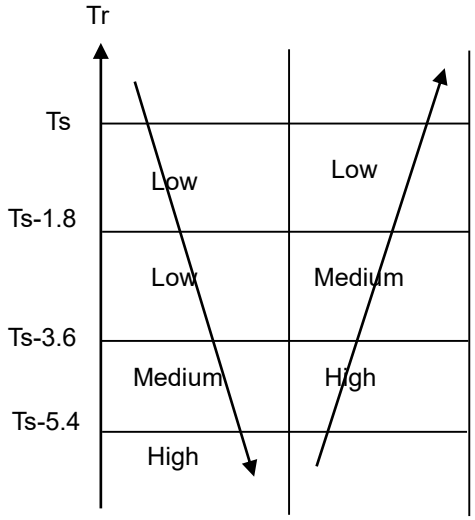
Fan speed is regulated according to the profile below.



HEAT MODE

Fan speed cannot change until it has run at this speed for more than 30 seconds.

Fan speed is regulated according to the profile below.



After 30 seconds the fan speed is modulated according to the difference between the room temperature and the set temperature. The controller adjusts the motor signal input from 0 to 5VDC by PID calculation at every 10 seconds interval. The air flow is adjusted from 15% to100%.

D.8. Modulating Valve Control Under Energy Saving Mode

If the modulating valve is used, the water flow is adjusted from 0 to 100% according to the room temperature and set temperature. The controller adjusts the modulating valve signal input from 0-10VDC by PID calculation every 10 seconds interval.

D.9. 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.

D.10. 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 are mode, set temperature, swing louver's position, and the fan speed. When power supply resumes or the system is switched on again, the same operations as previously set will function.

D.11. On/Off Switch On The Front Panel

- This is a tact switch to select Cool→Heat→Off operation mode.
- In COOL mode, the set temperature of the system is 75 ºF with auto fan speed and swing. There are no timer and sleep modes.
- In HEAT mode, the set temperature of the system is 75 ºF with auto fan speed and swing. There are no timer and sleep modes.
- Master unit that does not use wall pad will globally broadcast.

NOTE

When button pressing is effective, master unit buzzer will beep twice and slave unit beeps once.

D.12. Drain Pump

- Drain pump turns ON if thermostat cut in during cooling or dehumidification cooling cycle. It remains on for at least 5 minutes after thermostat cut out. During mode change from cooling to non-cooling mode, water pump will on for minimum 5 minutes.

CAUTION

If the system is turned off at the circuit breaker (or main power supply), the drain pump will not work.

D.13. Float Switch

Float-switch opens before turning on.

- If float switch (N/C) is opened before the unit is turned on. MTV1 is off. Drain pump and indoor fan will operate. After float switch is closed, MTV1 is on.

Float switch is opened, when unit is on.

- If float switch is opened continuously ≥ 5 seconds, drain pump will work and MTV1 remain off. When the float switch is closed, the drain pump will run for an additional 5 minutes. If the float switch is opened for 10 minutes continuously, MTV1 will remain off. Indoor fan runs at set speed and system reports error.

Float switch is opened, when unit is off.

- If the float switch is opened, the drain pump will work. When the float switch is closed, the drain pump will run for an additional 5 minutes. If the float switch is opened for 10 minutes continuously, system reports error.

D.14. Electric Heater Safety Switch

- Before the electrical heater is turned on, the EH safety switch must be closed and motor RPM is more than 300RPM. If this contact is opened for ≥ 1 second or fan RPM is less than 300RPM, heater will be turned off immediately and report error. Once the contact is returned to close position ≥ 60 seconds, reset the error and heater will start again.
- When EH safety switch is opened ≥ 3 times within 60 minutes, heater is not allowed to start anymore. Turn off the unit to reset the fault provided that the switch has returned to closed position.

D.15. LED Indication and Error Description

LED receiver in ABS housing with 0.5m (SGS14HFCA-01010101) or 1.8m (SGS14HFCA-01010102) pre-wiring

Complete Function PCB		
Fan speed setting	LED indication	Condition
High speed	Red LED On	Normal
Medial speed	Yellow LED On	Normal
Low speed	Green LED On	Normal

For all units - Green LED			
Error Description	Blink	Reason	Remedy
Electrical heater failure	Green LED blink 1 times, stop 3 sec	*Only for unit with EH.* EH protection switch is opened.	1. Change fan speed to high. 2. Replace the damaged protection switch of EH.
Indoor coil sensor 2 failure	Green LED blink 2 times, stop 3 sec	Ti2 sensor unplugged or damaged.	1. Check Ti2 plug is connected or not. 2. Check sensor's resistance is correct or not.
Return air sensor failure	Green LED blink 3 times, stop 3 sec	Room sensor unplugged or damaged.	1. Check Tr plug is connected or not. 2. Check sensor's resistance is correct or not.
Indoor coil sensor 1 failure	Green LED blink 4 times, stop 3 sec	Ti1 sensor unplugged or damaged.	1. Check Ti1 plug is connected or not. 2. Check sensor's resistance is correct or not.
Indoor coil low temperature protection	Green LED blink 5 times, stop 3 sec	Water temperature is lower than 37.4 ºF.	Check the water temperature.
Indoor coil over heat protection	Green LED blink 6 times, stop 3 sec	Water temperature is higher than 158 ºF.	Check the water temperature
Water pump failure	Green LED blink 7 times, stop 3 sec	Float switch is opened.	1. Check the condensate water pipe connected or not. 2. Check the pump functioned or not.
EC motor failure(CN4)	Green LED blink 9 times, stop 3 sec	No EC motor feedback	1. Check DIPB-SW5 and SW6 setting. 2. Check the EC motor.
EC motor failure(CN5)	Green LED blink 10 times, stop 3 sec	No EC motor feedback	1. Check DIPB-SW5 and SW6 setting. 2. Check the EC motor.

D.16. **LED indication on Master/Slave connection**

For master unit indicating defect status of all slave units. Error message can be found in LED lights on master unit.

Master unit LED		
Unit No.	**Blink**	**Remedy**
Unit 2 failure	RED LED blink 2 times, stop 3 sec	Check unit 2 communication plug and fix it
Unit 3 failure	RED LED blink 3 times, stop 3 sec	Check unit 3 communication plug and fix it
Unit 4 failure	RED LED blink 4 times, stop 3 sec	Check unit 4 communication plug and fix it
Unit 5 failure	RED LED blink 5 times, stop 3 sec	Check unit 5 communication plug and fix it
Unit 6 failure	RED LED blink 6 times, stop 3 sec	Check unit 6 communication plug and fix it
Unit 7 failure	RED LED blink 7 times, stop 3 sec	Check unit 7 communication plug and fix it
Unit 8 failure	RED LED blink 8 times, stop 3 sec	Check unit 8 communication plug and fix it
Unit 9 failure	RED LED blink 9 times, stop 3 sec	Check unit 9 communication plug and fix it
Unit 10 failure	RED LED blink 10 times, stop 3 sec	Check unit 10 communication plug and fix it
Unit 11 failure	RED LED blink 11 times, stop 3 sec	Check unit 11 communication plug and fix it
Unit 12 failure	RED LED blink 12 times, stop 3 sec	Check unit 12 communication plug and fix it
Unit 13 failure	RED LED blink 13 times, stop 3 sec	Check unit 13 communication plug and fix it
Unit 14 failure	RED LED blink 14 times, stop 3 sec	Check unit 14 communication plug and fix it
Unit 15 failure	RED LED blink 15 times, stop 3 sec	Check unit 15 communication plug and fix it
Unit 16 failure	RED LED blink 16 times, stop 3 sec	Check unit 16 communication plug and fix it
Unit 17 failure	RED LED blink 17 times, stop 3 sec	Check unit 17 communication plug and fix it
Unit 18 failure	RED LED blink 18 times, stop 3 sec	Check unit 18 communication plug and fix it
Unit 19 failure	RED LED blink 19 times, stop 3 sec	Check unit 19 communication plug and fix it
Unit 20 failure	RED LED blink 20 times, stop 3 sec	Check unit 20 communication plug and fix it
Unit 21 failure	RED LED blink 21 times, stop 3 sec	Check unit 21 communication plug and fix it
Unit 22 failure	RED LED blink 22 times, stop 3 sec	Check unit 22 communication plug and fix it
Unit 23 failure	RED LED blink 23 times, stop 3 sec	Check unit 23 communication plug and fix it
Unit 24 failure	RED LED blink 24 times, stop 3 sec	Check unit 24 communication plug and fix it
Unit 25 failure	RED LED blink 25 times, stop 3 sec	Check unit 25 communication plug and fix it
Unit 26 failure	RED LED blink 26 times, stop 3 sec	Check unit 26 communication plug and fix it
Unit 27 failure	RED LED blink 27 times, stop 3 sec	Check unit 27 communication plug and fix it
Unit 28 failure	RED LED blink 28 times, stop 3 sec	Check unit 28 communication plug and fix it
Unit 29 failure	RED LED blink 29 times, stop 3 sec	Check unit 29 communication plug and fix it
Unit 30 failure	RED LED blink 30 times, stop 3 sec	Check unit 30 communication plug and fix it
Unit 31 failure	RED LED blink 31 times, stop 3 sec	Check unit 31 communication plug and fix it
Unit 32 failure	RED LED blink 32 times, stop 3 sec	Check unit 32 communication plug and fix it

E. Networking System

E.1. Master – Slave Network

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

MASTER UNIT FUNCTION

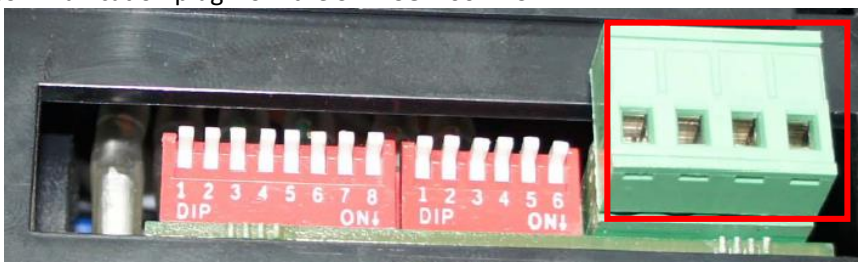
a) The master unit sends data on its setting to the slave unit.
b) The master unit settings are Unit ON/OFF, Mode, Fan Speed, Timer, Set Temperature, Swing Function, and Sleep Function for handset operation.
c) The master unit settings are Unit ON/OFF, Mode, Fan Speed, Timer, Set Temperature, Swing Function, and Sleep Function for wall pad operation.

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.

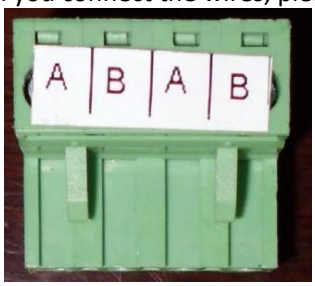
E.1.1. **Master – Slave Network Setup**

1) Disconnect the communication plug from the SK-NCGH-001-ECM



2) Communication plug

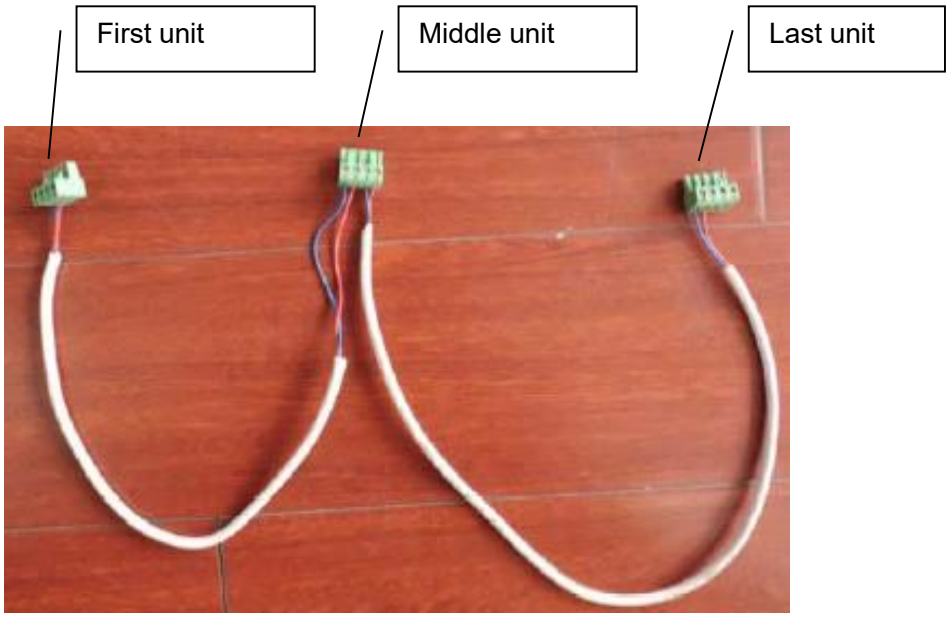
A, B, A, B is printed on the main PCB. When you connect the wires, please ensure connection of A to A and B to B.

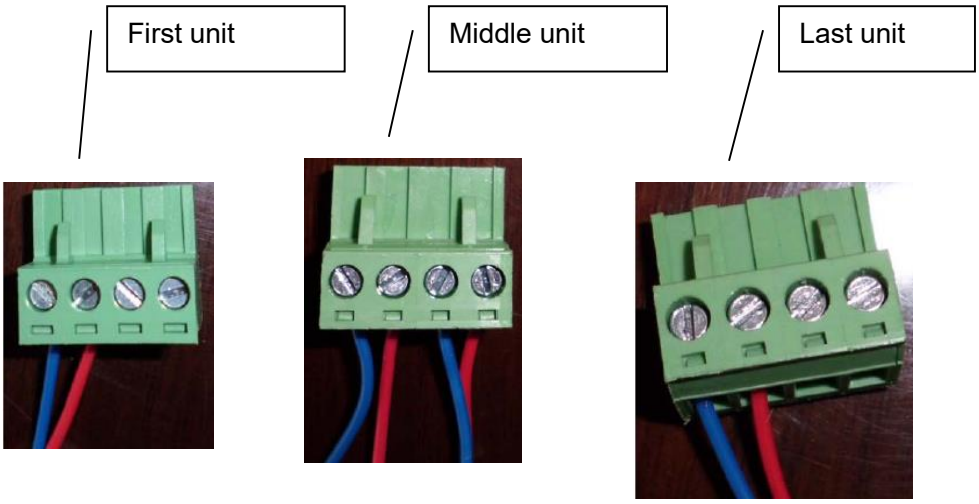


3) Connection wire

3.1) If the total length of wire is more than 1000m, please use shielded wire in order to protect the signal transmission.

3.2) Complete wire connection

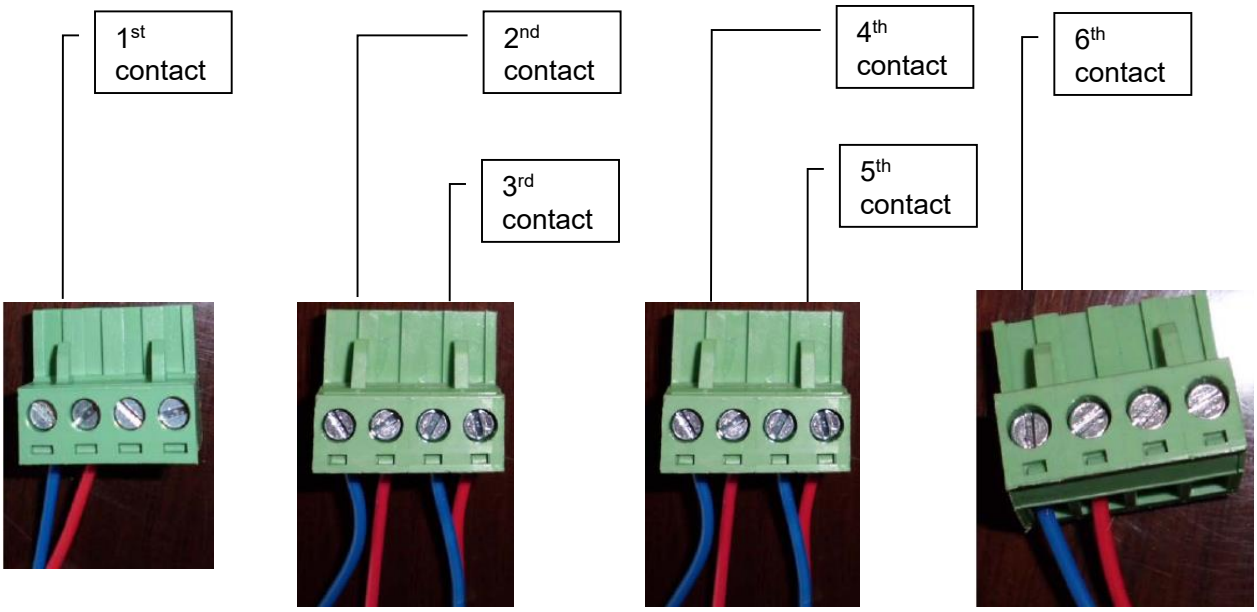




3.3) Wire connection check

3.3.1) After wire connection complete, please check the wire colour is correspondence.

3.3.2) Check the wire contact by using a multimeter.



3.3.3) Check 1 and 2, 3 and 4, 5 and 6 to be sure connections correct.

3.3.4) If the resistance between two wire contacts is too high, please check and reconnect the wire contacts.

4) Reconnect the communication plug to control box

Using Remote Control Handset to Set Master Control Unit:

a) Connect all the units PCBs according to the wire color and type of connector.
b) Select the master unit by setting DIPA-S1 SW6 to ON (=1) in the PCB.
c) Ensure the DIPA-S1 SW6 is set to OFF (=0) in the PCB on each slave unit.
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.

Using Wall pad to Set Master Control Unit:

a) Connect all the units PCBs according to the wire color and type of connector.
b) Select the master unit by setting DIPA-S1 SW6 to ON (=1) in the PCB.
c) Ensure the DIPA-S1 SW6 is set to OFF (=0) in the PCB on each slave unit.
d) Provide each slave unit an addressable code by configuring SW1 – SW5 of DIPA-S1 according to the DIP switch setting table.
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.
g) Master unit will beep twice confirming receipt of commands while Slave unit will beep once.

MASTER-SLAVE CONTROL

The control PCB can receive data from both wireless LCD handset and wired wall pad.

E.1.2. **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.

DIPA-S1 address setting: ON=1, OFF=0.

DIPA-S1 SW6	DIPA-S1 SW5	DIPA-S1 SW4	DIPA-S1 SW3	DIPA-S1 SW2	DIPA-S1 SW1	Unit No.	Remark
1	0	0	0	0	0	01	Master
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 handset only, it can only use Global-Control communication method. If it is equipped with wall pad, it can use both communication methods.

E.2. **Open Modbus protocol**

Transfer Mode: RTU, BAUD Rate: 9600bps, 8 data bit, 1 stop bit, None parity bit

The communications require a delay between reading an answer and sending the next command of 80ms. All temperature is equal to reading data*10 accuracy: 1 degree F.

Supported Functions:

Function Code	Function Description
01(01H)	Read Coils
02(02H)	Read Discrete Inputs
03(03H)	Read Holding Registers
04(04H)	Read Input Registers
05(05H)	Write Single Coil
06(06H)	Write Single Register
15(0FH)	Write Multiple Coils
16(10H)	Write Multiple Registers
255(FFH)	Extended Commands which is used to test

Valid Error code table:

Error code	Description	Definition
01 (01H)	Invalid commands	Received commands beyond valid commands
02 (02H)	Invalid data address	Data addresses beyond valid data address
03 (03H)	Invalid data	Data beyond definition range
04 (04H)	Write data not succeed	Write data not succeed

Coils table:

Description	Address	Type*	Remark
Unit ON/OFF	100000	R/W	
Sleep mode	100001	R/W	
Louver swing	100002	R/W	
Reserved	100003		
Reserved	100004		
Reserved	100005		
Reserved	100006		
Reserved	100007		
Reserved	100008		
Reserved	100009		
Reserved	100010		
Reserved	100011		
Reserved	100012		
Reserved	100013		
Reserved	100014		
Reserved	100015		

** R = read only, W = write only, R/W = read and write.*

Discrete table:

Description	Address	Type*	Remark
MTV1	200000	R	
MTV2	200001	R	
AUX1	200002	R	
AUX2	200003	R	
Condensate pump	200004	R	
Electrical heater	200005	R	
Wired wall pad	200006	R	
PRO	200007	R	
Float switch	200008	R	
Reserved	200009	R	
EH protection switch	200010	R	
Internal actually running and unit Unit ON/OFF	200011	R	Testing purpose only.

** R = read only, W = write only, R/W = read and write.*

Holding Register table:

Description	Address	Type*	Remark
Mode setting	300000	R/W	Cooling mode = 01(H) Humidify mode = 02(H) Fan mode = 04(H) Heating mode = 08(H) Auto mode = 10(H)
Fan speed setting	300001	R/W	Low speed = 04(H) Medium speed = 02(H) High speed = 01(H) Auto fan speed = 07(H)
Louver swing setting	300002	R/W	Position 1 = 01(H) Position 2 = 02(H) Position 3 = 03(H) Position 4 = 04(H) Auto = 0F(H) Stop = 00(H)
Setting temperature	300003	R/W	60.8~86 degree F (actual*10 format)
Address setting	300004	R	Set by dip-switch, reading only
Reset	300005	W	=0x33 reset error
Week	300006	W	Calibration wired wall pad and set timer function
Hour	300007	W	Calibration wired wall pad and set timer function
Minute	300008	W	Calibration wired wall pad and set timer function
Second	300009	W	Calibration wired wall pad and set timer function
Hours in Timer on	300010	R/W	Timer ON
Minute in Timer on	300011	R/W	Timer ON
Hours in Timer off	300012	R/W	Timer OFF
Minute in Timer off	300013	R/W	Timer OFF
Icon of Timer ON or OFF	300014	R/W	BIT0 = Icon of Timer ON BIT1 = Icon of Timer OFF 1 = enable 0 = disable
Super low speed rpm	310000	R/W	200~1500
Low speed rpm	310001	R/W	200~1500
Medium speed rpm	310002	R/W	200~1500
High speed rpm	310003	R/W	200~1500
RPM setting	310004	R/W	0~2000 (used to test，0 = disable)
Temperature sampling time	310005	R/W	2~100, default:5S
Factor of auto fan speed	310006	R/W	2~150, default:20
Factor of modulating valve	310007	R/W	2~250, default:150

** R = read only, W = write only, R/W = read and write.*

Input Register table:

Description	Address	Type*	Remark
Dip switch 1 status	400000	R	
Dip switch 2 status	400001	R	
Room temperature sensor	400002	R	
Ti1 temperature sensor	400003	R	
Ti2 temperature sensor	400004	R	
Error code	400005	R	Bit0 = Room temperature sensor error Bit1 = Ti1 temperature sensor error Bit2 = Ti2 temperature sensor error Bit3 = Float switch error Bit4 = Indoor coil low temperature protection Bit5 = Indoor coil over heat protection Bit6 = Reserved Bit7 = Electrical heater failure Bit8 = Motor1 Error Bit9 = Motor2 Error Bit10 = System parameters error Bit11 = Reserved Bit12 = Reserved Bit13 = Reserved Bit14 = Reserved Bit15 = Reserved
Fan speed status	400006	R	Low = 04(H) Medium = 02(H) High = 01(H)
Mode status	400007	R	Cooling mode = 01(H) Dehumidify mode = 02(H) Fan mode = 04(H) Heating = 08(H)
Setting temperature status	400008	R	Testing only
Room temperature in wall pad status	400009	R	
Room temperature in main PCB status	400010	R	
Unit type	400011	R	4-pipe = 03, 2-pipe = 02 This setting is configured by dip switch
EC motor 1# RPM	400012	R	
EC motor 2# RPM	400013	R	

** R = read only, W = write only, R/W = read and write.*

F. Control Specifications: Flexible Function PCB - W3 Type Cor

Used in all PDWA- [V/P] **W3** unit configurations.

F.1. Features

a. Condensate management with valve protection and NC alarm contact.

b. Integrated fan relays for zone control applications.

c. ON/OFF thermostat input and low-voltage modulating fan speed input flexibility.

d. Simple error diagnostic and LED error display.

F.2. I/O Port Definitions

I/O		Code	2-Pipe	4-Pipe
Analogue input	Coil temperature sensor	AI1	Cooling / heating coil sensor (Ti1)	Cooling only coil sensor (Ti1)
Voltage input	High fan speed	H	24VAC input signals from wired thermostat	
	Medium fan speed	M		
	Low fan speed	L		
	Phase	L	220V/1Ph/60Hz 115V/1Ph/60Hz.	
	Neutral	N		
	Earth	GND		
	Auto ON/OFF	AUTO	24VAC input signal from wired thermostat, activates modulating control mode	
Signal Input	Modulating signal	+/-	Low voltage modulating signal input (standard 0~5VDC; optional 0~10VDC)	
Digital input	Programming interface	TTL	Low voltage digital signal input for board programming	
	Float switch	Float	Voltage-free (NC)	
Voltage output	Water pump	WP	Voltage output (L)	
	EC motor	CN4	5-wire connection with 230 or 115VAC power supply to EC motor and 0-5VDC modulating signal output	
	Stepping motor	CN1-2	Low-voltage output	
Digital output	LED display	X-DIS	Low-voltage output	
Voltage-free output	Alarm		Voltage-free alarm contact: (a) Standard configuration is (NC).	

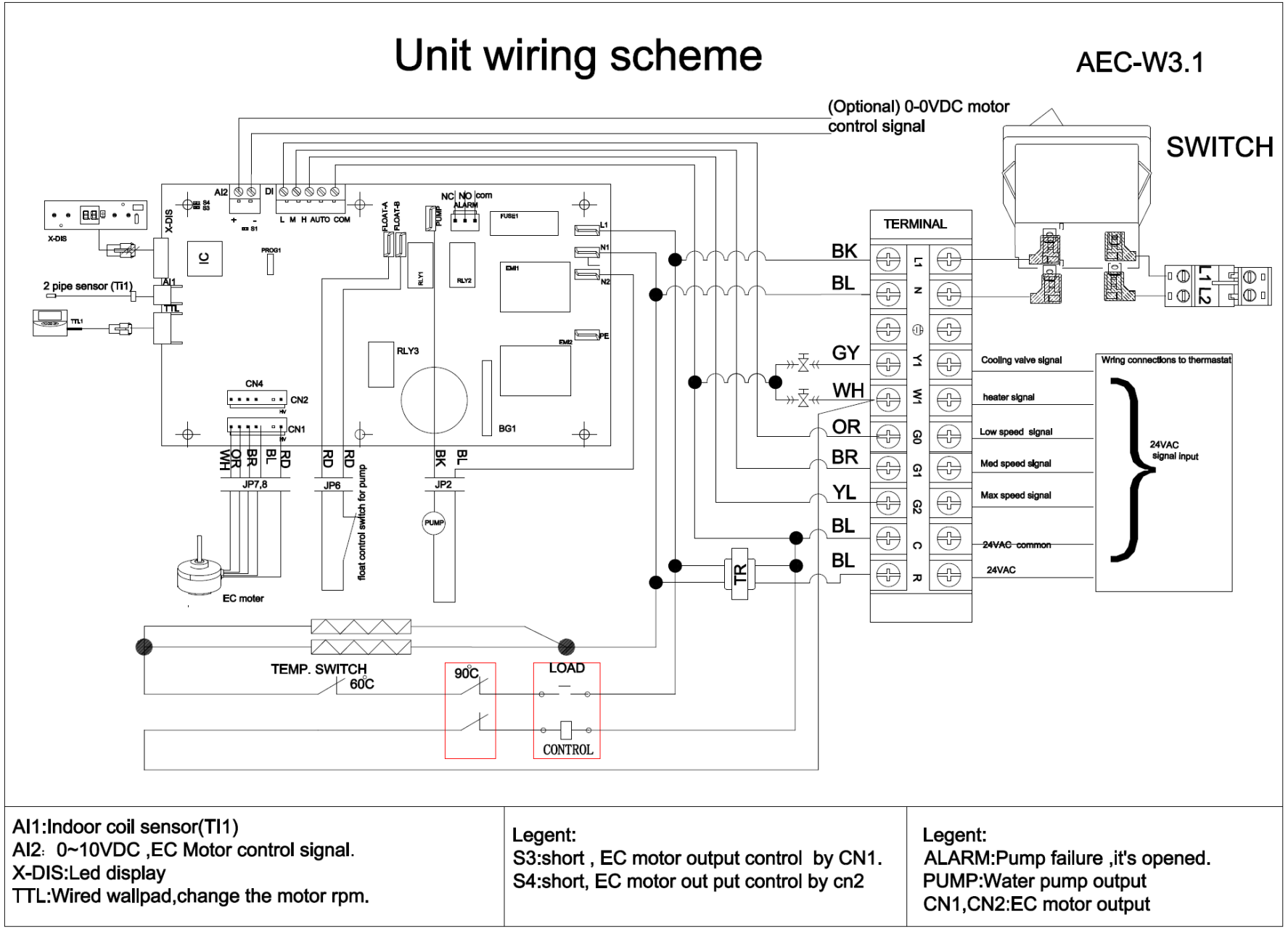
F.3. Onboard configuration

The PCB can be configured for different modulating signal inputs.

Refer to jumper configuration table below.

Code	State	Description
S1	Open	PCB configured for 0~5VDC modulating signal input.
S1	Closed	PCB configured for 0~10VDC modulating signal input.
S3	N/A	Reserved
S4	N/A	Reserved

F.4. **Wiring Diagrams**



AI1:Indoor coil sensor(TI1) AI2: 0~10VDC ,EC Motor control signal. X-DIS:Led display TTL:Wired wallpad,change the motor rpm.	Legent: S3:short , EC motor output control by CN1. S4:short, EC motor out put control by cn2	Legent: ALARM:Pump failure ,it's opened. PUMP:Water pump output CN1,CN2:EC motor output

F.5. Control logic specification

F.5.1. Unit power ON/OFF

i. The unit is turned ON when any of the fan speed inputs (H/M/L) are ON, OR Auto ON/OFF signal input is ON.

ii. The unit is turned OFF only if all of the fan speed inputs (H/M/L) are OFF AND Auto ON/OFF signal input is OFF.

F.5.2. Alarm protection and error display

i. If the float switch is open for 5 minutes, the (NC) voltage-free alarm contact shall be open, the (NO) voltage free alarm contact shall be closed.

ii. If the float switch is open for 10 minutes, the LED display reports a condensate management failure (see table below).

F.5.3. Drain-pump run management

i. When the unit turns ON:
   a) if Ti1 < 59 ºF, the drain pump turns ON.
   b) If Ti1 ≥ 59 ºF, the drain pump turns OFF.

ii. When the unit turns OFF and the drain pump is ON:
   a) The drain pump will remain ON for 5 minutes, before the drain pump turns OFF.

iii. At any time:
   a) if the float switch is OPEN, the drain pump will turn ON.
   b) if the float switch is OPEN and then CLOSES, the drain pump will remain ON for 5 minutes, and then turn OFF.

F.5.4. Swing and louver control

i. When the unit is OFF, the louvers are closed (angle at 100º against vertical).

ii. When the unit turns ON, the louvers open (angle at 87º against the horizontal).

iii. When the unit turns OFF, the louver returns to a closed position (100º against the vertical).

F.5.5. Modulating signal input

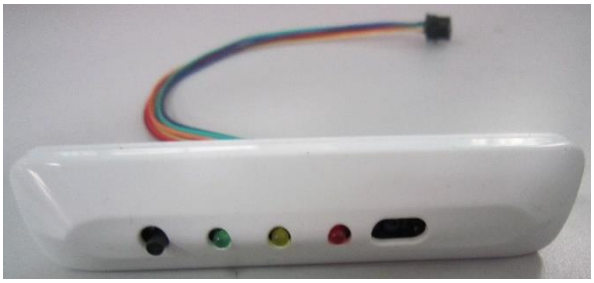
i. When the “Auto ON/OFF” 24VAC input is ON, the fan motor rpm speed shall be modulated by the “+/-” low voltage modulating signal input.

ii. The standard configuration is for 0~5VDC modulating signal input.

iii. The optional configuration is for 0~10VDC modulating signal. To set the PCB to the optional configuration, the S1 jumper must be closed.

F.6. LED Indication and Error Description

LED receiver in ABS housing with 0.5m (SGS14HFCA-01010101) or 1.8m (SGS14HFCA-01010102) pre-wiring

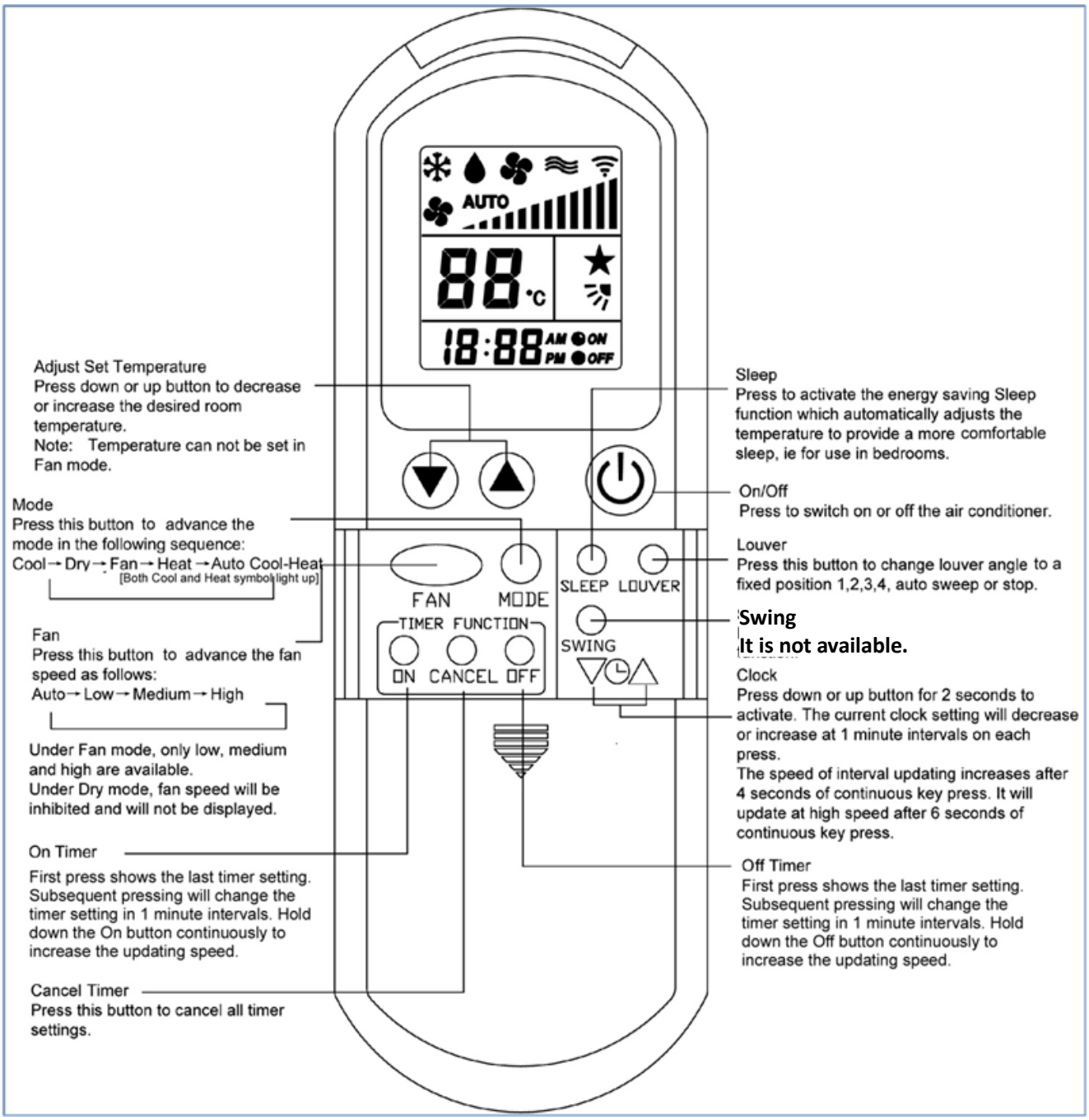


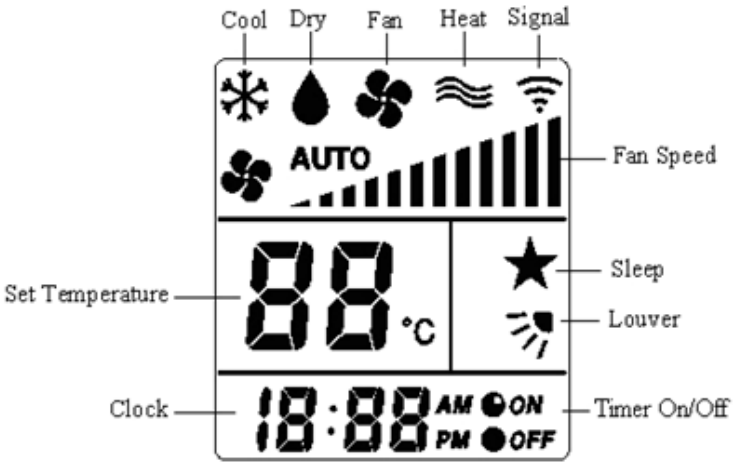
Flexible Function PCB		
Fan speed setting	LED indication	Condition
High speed	Red LED On	Normal
Medial speed	Yellow LED On	Normal
Low speed	Green LED On	Normal

For all units - Green LED blinks			
Item	**Blink**	**Reason**	**Remedy**
Indoor coil sensor 1 failure	Green LED blink 4 times, stop 3 sec	Ti1 sensor connection is not good or damaged.	1. Check Ti1 plug is good or not. 2. Check sensor's resistor is good or not.
Water pump failure	Green LED blink 7 times, stop 3 sec	Float switch is opened.	1. Check the condensate water pipe good or not. 2. Check the pump good or not.
EC motor failure	Green LED blink 9 times, stop 3 sec	No EC motor feedback	1. Check DIPB-SW5 and SW6 setting. 2. Check the EC motor

G. User Interface

G.1. Remote Handset





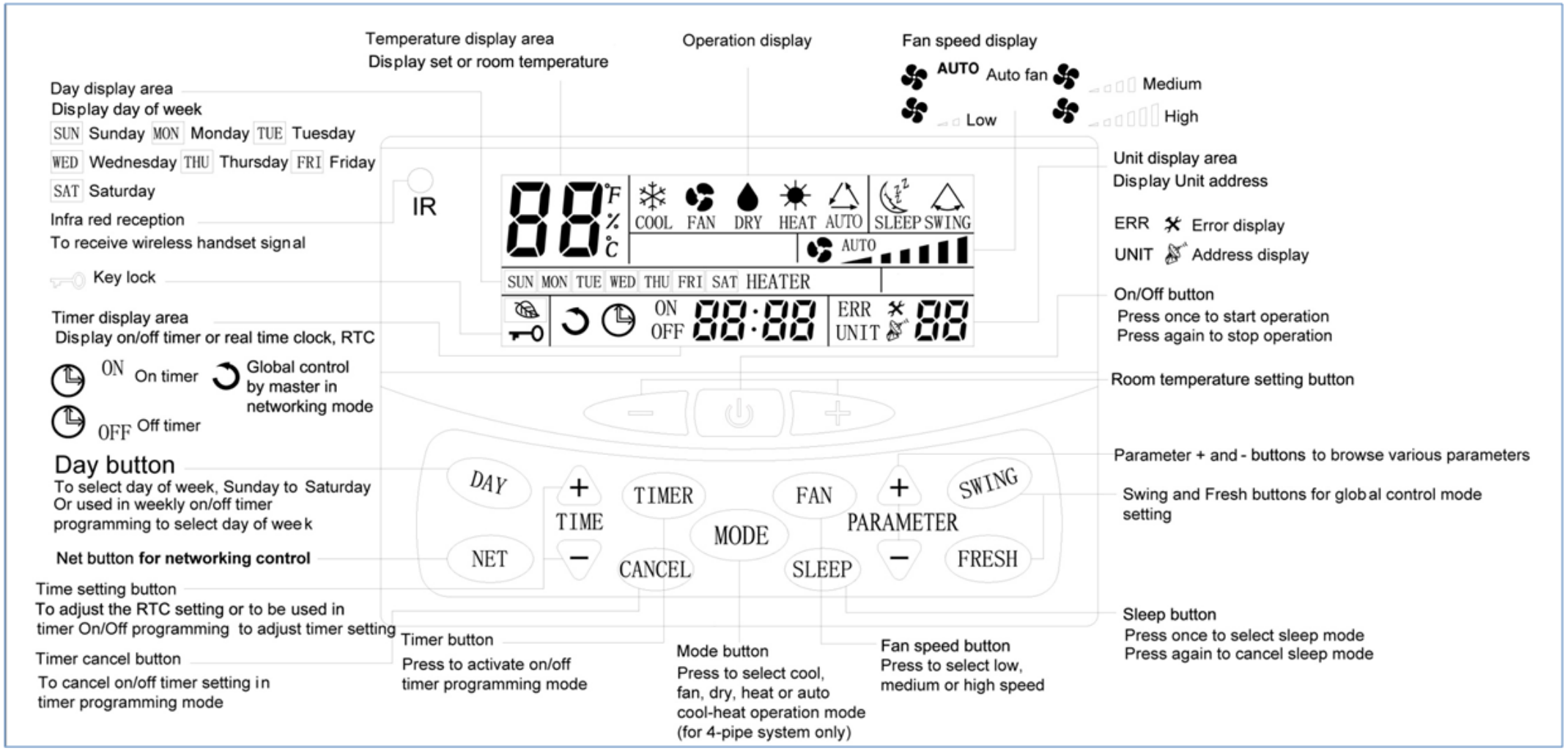
Attention

When unit with handset is master, settings are automatically sent to slaves;
Auto Cool-Heat operation will be applicable in 4-pipe system only.

Use “Swing” is not applicable.

AHRI version only use degree F setting.

G.2. **Wired Wall Pad**



Attention

- Wall pad will recognize the main board model automatically whether it is 2-pipe or 4-pipe system.
- Auto Cool-Heat operation is applicable in 4-pipe system only.
- When the wall pad is installed wall-pad temperature sensor automatically overrides the default return air sensor (attached to unit return air grille).
  AHRI version only use degree F setting.

G.2.1. **Wall Pad Operation Guidelines**

a) Clock display and setting

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

b) Day display and setting

The wall pad has a 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.

c) Timer ON/OFF setting

If the master unit is in global control mode and the ON/OFF timer setting is selected, the master unit will command the whole network to be on or off. Otherwise the ON/OFF timer affects the local unit only. The system supports individual ON/OFF timer settings for each day of the week.

- Press TIMER button once, and ON symbol blinking indicates ON timer programming mode. The day display area indicates which day the timer is being set for. If there is no preset ON timer, the timer display area shows --:--, otherwise the previous setting will be shown. Press TIME or TIME button to change the ON timer setting. Press CANCEL key to cancel the current ON timer setting and the timer display area will show --:--. Press DAY button to change the day the ON timer is to be programmed for.
- Press TIMER button again, and OFF symbol blinking indicates OFF timer programming mode. The setting method is the same as the ON timer setting above.
- Press TIMER button again, to exit the ON/OFF timer setting function.
- Should there be any ON or OFF timer settings programmed, will light up. Should there be any unexecuted ON or OFF timer settings for the current day, its corresponding ON or OFF icon will light up.
- Hold down CANCEL button for 3 seconds to cancel all timer settings.

d) Timer set by master unit is as follows:

- 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.
- 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 the 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 of the slave unit.
- 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 the

display area will show “rEAd”. The OFF timer setting will be shown upon reading the data s

TIME or TIME button to change the OFF timer setting of the slave unit.

- 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’s 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).

- In Global control mode:

- Pressing the master unit’s CANCEL button for 3 seconds will cancel in all timer settings in all slave units.
- Timer settings will be broadcast to all slave units.

e) Clock synchronization by master unit is as follows:

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.

f) Key lock

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

g) Swing

Not applicable.

h) Sleep

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

i) Temperature setting

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

j) Mode setting

Press MODE button to change the operation mode.

k) Fan speed setting

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

l) On/Off control

Press ⏻ to start or stop the unit.

m) 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's display are 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, ↻ will 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.

n) Unit operation parameters browsing

Hold down CANCEL and FAN buttons for 3 seconds to enter into operation parameters browsing mode. Unit's display area shows the address of the slave unit being viewed. Slave unit selection method is the same as in networking control above. Press PARAMETER or PARAMETER 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.

o) Error indication

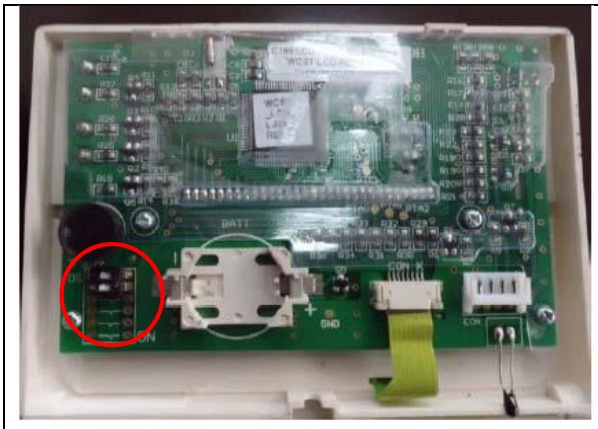
When a faulty slave unit is detected, the master unit's display area shows the faulty unit address, the time area shows the error code and the wall pad backlight changes to the color red. Should there be multiple units having problems, addresses and error codes will be shown one after another.

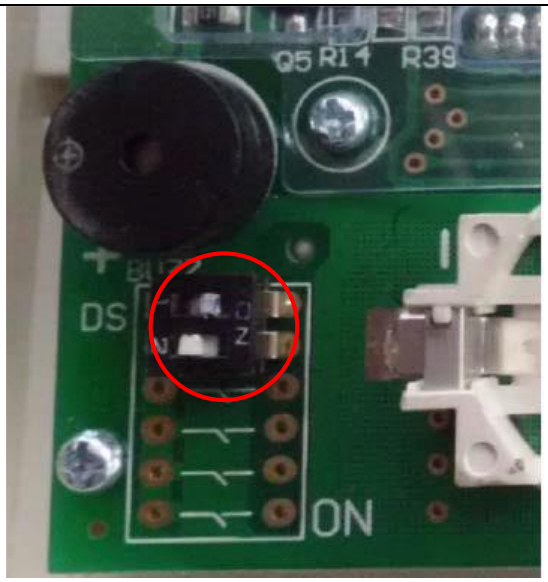
Error code definition:

Error	Error code
Electrical heater faulty	E1
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
Float switch alarm	E7
Local communication error	E8

G.2.2. **EC unit RPM setting**

1) Turn Off the unit.
2) Open wall pad's back cover, two DIP switches are appeared.
3) Turn the DIP switch 1 to "ON" position.





4) Wired wall pad LED will be shown as following;

This is the speed level setting.
d0 means low speed
d1 means medium speed
d2 means high speed
Press PARAMETER + / - button to select.

This is the motor RPM setting.
Press TEMP. + / - button to increase the RPM setting by 10RPM step.

5) After finish the RPM setting, turn the DIP switch 1 to "OFF" position. The Wired wall pad display will resume normal.

H. Sensor Resistance R-T Conversion Table

Resistance : R (77°F) = 10KΩ ± 1%
Beta Constant : B (77/185) = 3977 ± 1%

T (°F)	Rmin (KΩ)	Rnom (KΩ)	Rmax (KΩ)	T (°F)	Rmin (KΩ)	Rnom (KΩ)	Rmax (KΩ)
-22	174	182.7	191.8	39.2	26.11	26.9	27.71
-20.2	163.4	171.5	179.9	41	24.85	25.59	26.34
-18.4	153.6	161.1	168.9	42.8	23.65	24.35	25.05
-16.6	144.4	151.3	158.5	44.6	22.52	23.17	23.83
-14.8	135.8	142.2	148.9	46.4	21.45	22.06	22.68
-13	127.8	133.8	140	48.2	20.44	21.01	21.59
-11.2	120.3	125.8	131.6	50	19.48	20.02	20.55
-9.4	113.3	118.4	123.8	51.8	18.58	19.7	19.58
-7.6	106.7	111.5	116.5	53.6	17.71	18.18	18.65
-5.8	100.6	105.1	109.7	55.4	16.9	17.33	17.77
-4	94.9	99.03	103.3	57.2	16.12	16.53	16.94
-2.2	89.51	93.39	97.41	59	15.39	15.77	16.16
-0.4	84.5	88.11	91.85	60.8	14.69	15.05	15.41
1.4	79.8	83.17	86.64	62.6	14.03	14.37	14.7
3.2	75.39	78.53	81.76	64.4	13.41	13.72	14.03
5	71.26	74.18	77.19	66.2	12.81	13.1	13.4
6.8	67.37	70.1	72.9	68	12.24	12.52	12.79
8.6	63.73	66.26	68.88	69.8	11.7	11.96	12.22
10.4	60.3	62.67	65.1	71.6	11.19	11.43	11.67
12.2	57.08	59.28	61.55	73.4	10.71	10.93	11.15
14	54.05	56.1	58.22	75.2	10.24	10.45	10.66
15.8	51.19	53.12	55.08	77	9.8	10	10.2
17.6	48.51	50.3	52.14	78.8	9.374	9.57	9.765
19.4	45.98	47.66	49.37	80.6	8.969	9.16	9.351
21.2	43.61	45.17	46.77	82.4	8.584	8.77	8.957
23	41.36	42.82	44.31	84.2	8.218	8.4	8.582
24.8	39.25	40.61	42	86	7.869	8.047	8.225
26.6	37.26	38.53	39.83	87.8	7.537	7.71	7.885
28.4	35.38	36.56	37.78	89.6	7.221	7.39	7.56
30.2	33.6	34.71	35.85	91.4	6.92	7.085	7.251
32	31.93	32.97	3402	93.2	6.633	6.794	6.956
33.8	30.35	31.32	32.3	95	6.36	6.517	6.675
35.6	28.85	29.76	30.68	96.8	6.099	6.252	6.407
37.4	27.44	28.29	29.15	98.6	5.85	6	6.151

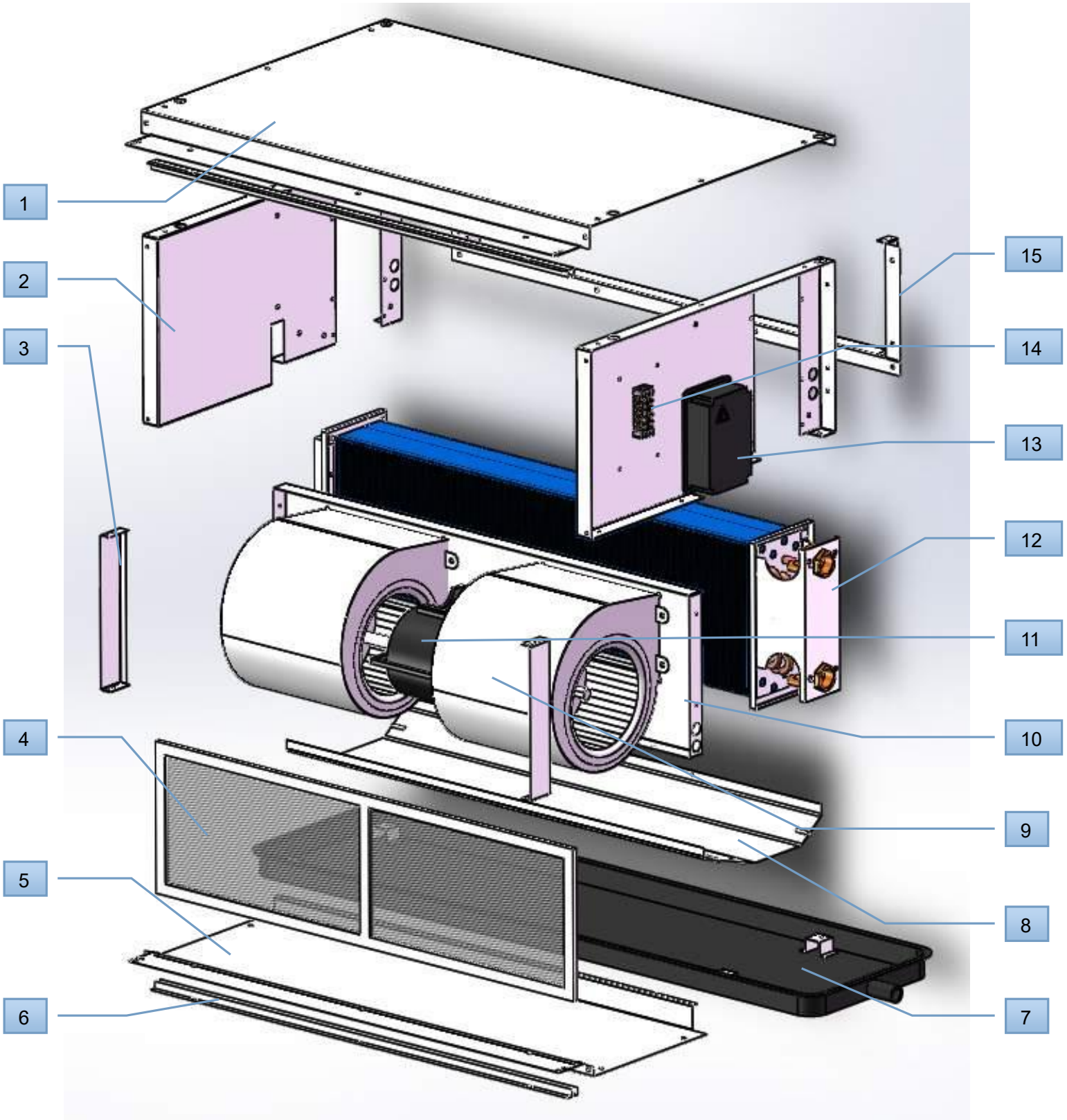
Resistance : R (77°F) = 10KΩ ± 1%
Beta Constant : B (77/185) = 3977 ± 1%

T	Rmin	Rnom	Rmax	T	Rmin	Rnom	Rmax
(°F)	(KΩ)	(KΩ)	(KΩ)	(°F)	(KΩ)	(KΩ)	(KΩ)
100.4	5.614	5.759	5.907	167	1.417	1.474	1.532
102.2	5.387	5.53	5.673	168.8	1.37	1.426	1.482
104	5.172	5.31	5.451	170.6	1.326	1.379	1.434
105.8	4.966	5.101	5.238	172.4	1.282	1.335	1.389
107.6	4.769	4.901	5.034	174.2	1.241	1.292	1.344
109.4	4.582	4.71	4.84	176	1.201	1.25	1.302
111.2	4.402	4.527	4.654	177.8	1.162	1.211	1.261
113	4.231	4.353	4.477	179.6	1.125	1.172	1.221
114.8	4.067	4.186	4.307	181.4	1.089	1.135	1.183
116.6	3.911	4.027	4.144	183.2	1.055	1.1	1.146
118.4	3.761	3.874	3.989	185	1.021	1.065	1.111
120.2	3.618	3.728	3.84	186.8	0.9891	1.032	1.077
122	3.481	3.588	3.697	188.6	0.9582	1	1.044
123.8	3.35	3.454	3.561	190.4	0.9284	0.9697	1.012
125.6	3.225	3.326	3.43	192.2	0.8998	0.9401	0.9818
127.4	3.105	3.204	3.305	194	0.8721	0.9115	0.9522
129.2	2.99	3.086	3.185	195.8	0.8455	0.8839	0.9237
131	2.88	2.974	3.07	197.6	0.8198	0.8573	0.8961
132.8	2.774	2.866	2.959	199.4	0.795	0.8316	0.8696
134.6	2.673	2.762	2.854	201.2	0.7711	0.8069	0.8439
136.4	2.576	2.663	2.752	203	0.748	0.783	0.8192
138.2	2.483	2.568	2.655	204.8	0.7258	0.7599	0.7953
140	2.394	2.477	2.562	206.6	0.7043	0.7376	0.7722
141.8	2.309	2.39	2.472	208.4	0.6836	0.7161	0.7499
143.6	2.227	2.306	2.386	210.2	0.6635	0.6953	0.7283
145.4	2.149	2.225	2.304	212	0.6442	0.6752	0.7075
147.2	2.073	2.148	2.224	213.8	0.6255	0.6558	0.6874
149	2.001	2.074	2.148	215.6	0.6075	0.6371	0.6679
150.8	1.931	2.002	2.075	217.4	0.59	0.619	0.6491
152.6	1.865	1.934	2.005	219.2	0.5732	0.6015	0.631
154.4	1.801	1.868	1.937	221	0.5569	0.5846	0.6134
156.2	1.739	1.805	1.872				
158	1.68	1.744	1.81				
159.8	1.623	1.686	1.75				
161.6	1.569	1.63	1.692				
163.4	1.516	1.576	1.637				
165.2	1.466	1.524	1.583				

I. Troubleshooting

Symptoms	Cause	Remedy
The fan coil does not start up	No voltage	- Check for presence of voltage
	Mains switch in the “OFF position	- Place in the “ON” position
	Faulty room control	- Check the room control
	Faulty fan	- Check fan motor
Insufficient output	Filter clogged	- Clean the filter
	Air flow obstructed	- Remove obstacles
	Room control regulation	- Check the room air sensor
	Incorrect water temperature	- Check the water source
	Air present	- Check the air vent
Noise and vibrations	Contact between metal parts	- Check for loosening parts
	Loose screws	- Tighten screws

J. Exploded Diagram



Item	Description
1	Top Panel
2	Right side panel
3	Return air flange
4	Filter
5	Bottom panel
6	Filter fixture
7	Drain pan
8	Drain guide
9	Fan blower
10	Fan deck
11	Motor
12	Coil
13	Control box
14	Terminal block
15	Discharge flange

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