BEST A/V SYSTEMS
HUMIDIFICATION
HUMIDIFIERS

Tel. +886-2-2657-6518
Fax. +886-2-2657-6522
E-mail: hlckeng@ms51.hinet.net

Semi-Steamer Humidifier SEDI

GENERAL DESCRIPTION

Best A/V Semi-Steamer (SEDI) steam generator is designed to achieve the highest performance with minimal costs and produce the cleanest steam with electric energy source for use.

Featured with 8mm digital display and 0-100% linear process proportional controller; the four over-heat protections are designed for cost & time saving; stainless steel constructed frame and most fittings for long term operation; preheat & fixed-temperature functions to speed up humidification process; and a two-year limited warranty.

In short, this unique SEDI humidifier is a modern, state-of-art, and fully automatic self-generated for use in air conditioning and ventilating installations. And services as a precise control to accurately maintain the required humidity while operated at minimal cost and trouble-free and lasts for a long time humidification system.

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KEY FEATURES

Our focus on quality is evident in the construction of SEDI as followings, and accompanied with a two-year warranty that covers all parts:

Material:
The frame of SEDI is mainly made of stainless steel for a long-life span, weatherproof, corrosion-proof, and better look, and of course worth of the value.

Two Electronic Digital & Logical Module Controllers:

- One humidifying controller controls the vapor chamber operation and featured with
  - Ø 8mm Digital Alphanumeric display
  - Ø Proportional control, 0% - 100% proportioning output.
  - Ø Input signal: 4-20 mA or 0-10 VDC

Humidifying Controller

- The other one is vapor chamber temperature module controller, displays the set temperature and the actual vapor chamber temperature which is sensed by PT-100 Thermosensor, providing a clear, readiness and accurate reading. In the event of vapor chamber temperature is higher factory set temperature 105^{o}C then shall de-energize the humidifier and shall automatically re-energize when temperature below 100^{o}C.

Vapor Chamber Temperature Controller

Chamber Cover Switch:
Holds the power off temporarily when the cover is not properly closed, preventing from electric shock and burn. Shall automatically resume the power back when cover closed.

Chamber Cover Switch

Heating Elements:

- Low watt density ensures heating element life for many seasons.
- In the unlikely event of an element burnout, heating elements can be removed easily with a small wrench.
- The heater is made of INCOLOY, is excellent for DI/RO water (also adaptable to above 18MΩ pure water) heating system and corrosion-proof.
- Can bear high current and voltage.

Heating Elements

Supply of Water:
Reverse Osmosis or de-ionized water, (above 18MΩ pure water), for the best steam output. **If using at city water,** must equip one Timer-Operated Solenoid Valve (see below) for auto drainage to prevent mineral build-up and condensation.

Timer-Operated Solenoid Valve

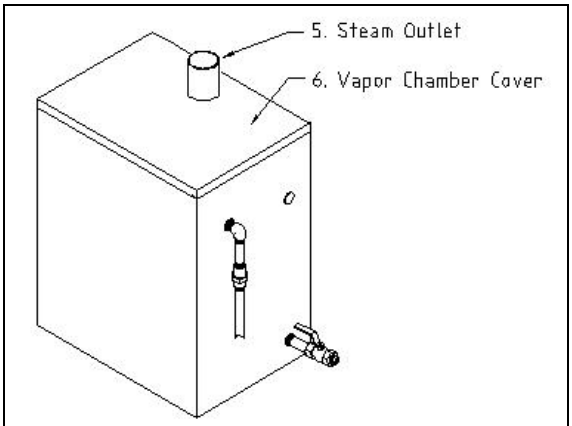
Earth Leakage Breaker:
(for ULDI & ULSW)
This unique breaker is with multiple functions as follows:
- Electric-Leakage breaker
- Over-Current breaker
- Short-Circuit breaker

Earth Leakage Breaker

Proven Performance:
Control can be up to ± 2% RH, if sensing location, sensor quality and temperature control are in good condition.

Application Flexibility - Capacity Range:
From 2.68 to 134 LPH (Liter Per Hour) for each unit

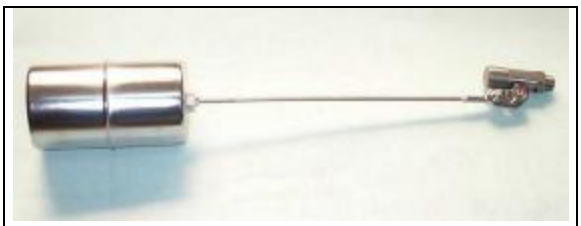
Steam Outlet:
Steam generated from the humidifier rises and exits through the steam outlet and travels to the dispersion panel. Features are:
- Made of stainless steel
- With electrolytic protection



Steam Outlet

Steam Hose (Optional):
- 17 bar (250psi) robust steam hose, high tensile steel cords
- EPDM, preventing loss of heat
- Rating: 17 bar / 236°C

Four Over-Heat Protections:
The SEDI provides four protections when over-heat occurs:
- Make-Up Water Float Valve – control water levels.



Make-Up Water Float Valve

- Ball Float / Low Water Switch – shall de-energize the humidifier when low water occurs and automatically re-energize when water level reaches factory-set level.

Ball Float / Low Water Switch

- PT-100 Thermosensor – display generated temperature; shall temporarily cutoff power when vapor chamber temperature is over-heated and automatically resume power back if chamber

temperature is below set-point temperature.

PT-100 Thermosensor

- Bimetal Temperature Protection Switch –This services as the final protection for over-heating. When vapor chamber temperature is higher than factory-set temperature of 110^{O}C, shall shut down the humidifier and require operator to make an inspection. Also need manually turn on the power to re-energize the humidifier.

Bimetal Temperature Protection Switch

In sum, these four protections are designed in a way to minimize the damages caused by overheat and hence to save a lot of money from replacing and downtime for customers.

SCR Controller:

Major advantages of SCR control are:

- 3-Phase SCR modulation
- No connection points, hence no sparking
- Easy to control
- Quiet operation
- Linear proportional control: modulating humidifier output from 0% to 100% of maximum capacity

This device provides an accurate and easy way in controlling the output of power.

SCR Controller

Make-Up Water Float Valve:

- Easy to operate
- Adjustable water level
- Withstand high temperature
- TFE seat, 100% tight close and leaking - proof.
- Auto refill
- Made of stainless steel
- Patented.

Fault Indicator:

- When low-water, unclosed cover, or over-heat occurs, the warning light shall be on to alarm the operator to inspect and fix the problem:
- Green light: indicate the evaporating chamber cover is not properly closed and automatically de-energizes humidifying process. Shall automatically re-energize the humidifier when cover closed.
- Orange light: indicate Low-Water occurs and automatically de-energizes humidifier. Shall then automatically re-energize the humidifier when Low Water removed. Need to check on if supply water is adequate and the float valve is functioning.
- Red light: indicate over-heat occurs and automatically de-energizes humidifying process. Shall automatically re-energize the humidifier when chamber temperature cools down below the temperature limit of 110^{o}C. Need to check on if supply water is adequate and float valve is functioning.

Two-Year Limited Warranty:

Best A/V SEDI humidifier warrants to the original user that its products will be free from defects in materials and workmanship for a period of two years after delivery.

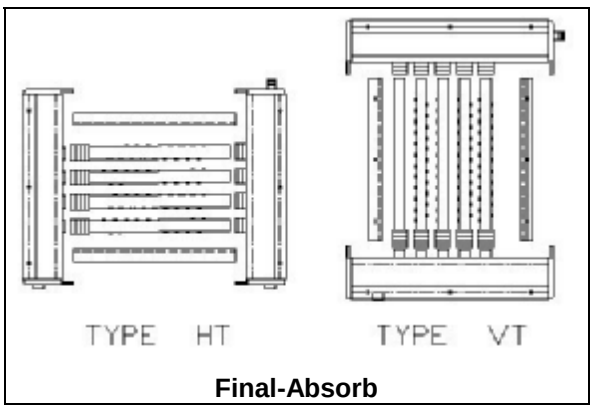
Vapor Chamber:

- Inner cabinet is made of stainless steel and seamed with same quality welding.
- Outer cabinet is made of zinc plate and with high temperature sponge insulation, preventing from possible heat loss and condensation.

Dispersion Panel (Optional):

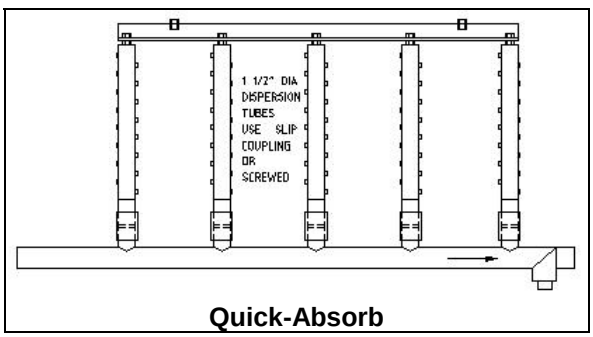
In order to obtain high efficiency dispersing of steam, equip the unique Best A/V Final-Absorb or Quick-Absorb dispersion tube panel is highly recommended.

- Final-Absorb is a rapid and drip-free, capable of installed within few inches upstream of fans, coils and similar devices, requiring short distance of steam absorption - less than 70mm, and made of stainless steel steam dispersion panel. It's a total solution for all steam absorption problems and especially suitable for tight space humidification applications. See detailed description on Final-Absorb section of this catalog.



Final-Absorb

- Quick-Absorb is an economic and ideal steam dispersion tube panel for limited absorption distance and middle capacity system. It is also made of stainless steel, a rapid and drip-free steam dispersion panel. Refer to the details described in Quick-Absorb section of this catalog.



Quick-Absorb

Optional features:

- Weather cover for outdoor mounting
- Nema-4 control cabinet (water-proof & dust-proof)
- 10" black-white LCD display monitor
- 6" TFT, STN color LCD display monitor
- 10"TFT, STN color LCD display monitor
- Air Flow Proving Switch
- Temperature sensor
- ± 2% RH humidity transmitter
- Electric High Limited Duct Humidistat
- Control cabinet door lock with key
- Control cabinet electric door interlock switch
- 304 S.S. Control cabinet
- RS 485 or 422 transducer
- Out-door control cabinet
- 316 S.S. Make-Up water Solenoid Valve

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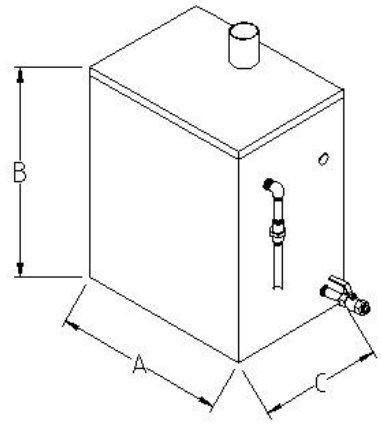
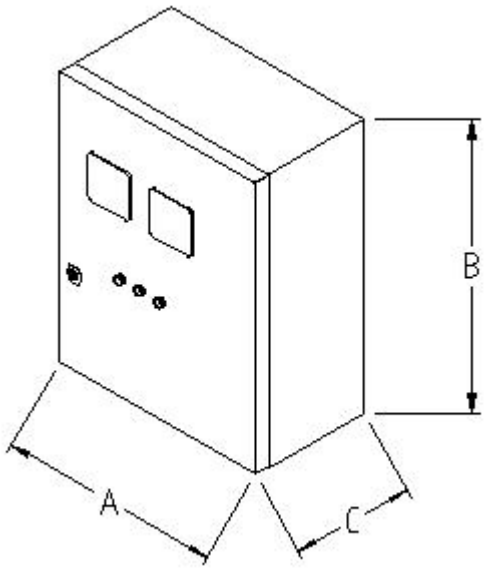
DIMENSIONS for VAPOR CHAMBER



MODEL	A	B	C
SEDI-1	530mm	760mm	450mm
SEDI-2	530mm	760mm	450mm
SEDI-3	530mm	760mm	550mm
SEDI-4	530mm	760mm	550mm

DIMENSIONS for CONTROL CABINET



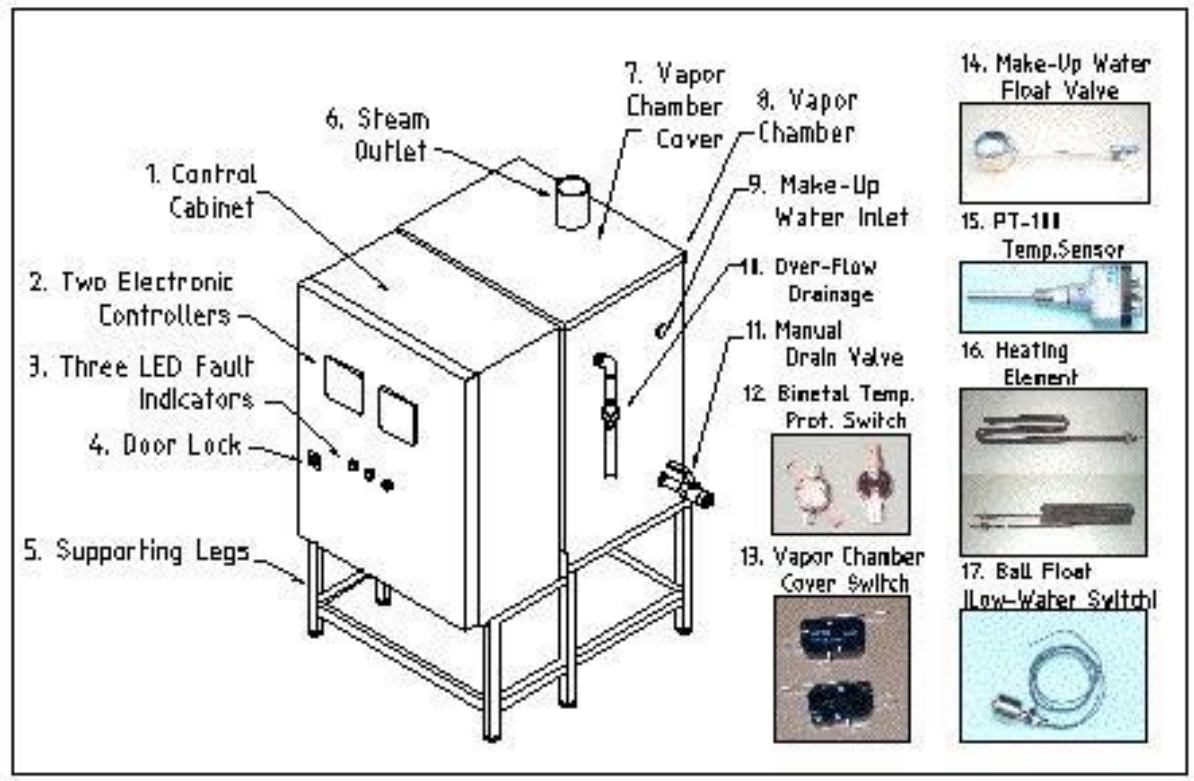
MODEL	A	B	C
SEDI-1	500mm	700mm	250mm
SEDI-2	500mm	700mm	250mm
SEDI-3	600mm	800mm	250mm
SEDI-4	600mm	800mm	250mm

COMPONENTS AND MATERIALS:

Materials

No.	PART	MATERIAL
1	Control Cabinet	Steel with Powder painting
2	LED Electronic Controller	
3	LED Fault Indicator	
4	Door Lock	Plastic
5	Supporting Legs (optional)	Iron with black painting
6	Steam Outlet	Stainless Steel 304
7	Vapor Chamber Cover	Inner cover - Stainless Steel 316L Outer cover - Steel with red painting
8	Vapor Chamber	Inner cabinet - Stainless Steel 316L Outer cabinet - Steel with red painting
9	Make-Up Water Inlet	Stainless Steel 304
10	Over-Flow Drainage	Stainless Steel 304
11	Manual Drain Valve	Stainless Steel 304 & Steel & Plastic
12	Bimetal Temperature Protection Switch	Metal And Heat-Proof Plastic
13	Vapor Chamber Cover Switch	AG Metal Alloy & high temperature Plastic
14	Make-Up Water Float Valve	Stainless Steel 304 & high temperature PFE
15	PT-100 Temperature Sensor	Stainless Steel 304 & Steel & Plastic
16	Heating Element	INCOLOY
17	Ball Float / Low-Water Switch	Stainless Steel 304

Components:



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SEDI Semi-Steamer Steam Humidifier

Mechanical Specifications and Capacities Data for each Unit / Chamber

Model Number		Steam Capacity (Kg/Hr)	Heater (Qty)	SCR (Qty)	Current Draw (Amps)							KW
					Single-Phase				Three-Phase			
					110V	220V	380V	480V	220V	380V	480V	
SEDI	**2-1**	2.68	1	1	18	9	5.3	4.2				2
	3-1	4.0	1	1	27	14	7.9	6.3				3
	4-1	5.4	1	1	36	18	11	8.3				4
	5-1	6.7	1	1	45	23	13	10				5
SEDI	**8.3-1**	11	1	1		37	22	17.3	21.8	12.6	10	8.3
	9-1	12	3	1		41	24	19	24	14	10.8	9
	12-1	16	3	1				25.0	32	18	14.4	12
	16-1	21.4	3	1				33.3	42	24	19.2	16
	21-1	28	3	1				43.8		32	25.3	21
	25-1	33.5	3	1						38	30.1	25
SEDI	**12-2**	16	6	1		55	32	25.0	31.5	18	14.4	12
	18-2	24	6	1		82	47	37.5	47	27	21.7	18
	24-2	32	6	1				50.0	63	36	28.9	24
	32-2	43	6	1				66.7	84	49	38.5	32
	42-2	56	6	1				87.5		64	50.5	42
	50-2	67	6	1						76	60.1	50
SEDI	**18-3**	24	9	1		82	47	37.5	47	27	21.7	18
	27-3	36	9	1		123	71	56.3	71	41	32.5	27
	36-3	48	9	1				75.0	94	55	43.3	36
	48-3	64.4	9	1				100.0	126	73	57.7	48
	63-3	85	9	1				131.3		96	75.8	63
	75-3	100.6	9	1						114	90.2	75
SEDI	**24-4**	32	12	1		109	63	50.0	63	36	28.9	24
	36-4	48	12	1		163	75	75.0	94	55	43.3	36
	48-4	64.4	12	1				100.0	126	73	57.7	48
	64-4	86	12	1				133.3	168	97	77.0	64
	84-4	113	12	1				175.0		128	101.0	84
	100-4	134	12	1							120.3	100

- Max. Load: 12 heaters each Chamber, any capacities within the range can be easily changed and selected.
- Three-Phase Power Supply Connection. All heater loads are delta wired.
- Kilogram of steam per hour (from 10℃ water to 100℃ saturated steam).
- Water pressure must be between 2.5 ~ 3.5 kg/cm^2.

Capacity Notes:

- Approximately 90 kcal are required to raise the temperature of one kilo gram of water from 10 ℃ to 100℃.
  And required an additional 539 kcal to change one kilogram of water to steam vapor.
- Equipped with an addition of 25mm rigid foil faced fiberglass insulation on all exterior surfaces of the vapor chamber (except the upper side), ensuring humidifier's efficiency and saving energy costs from loss of heat.
- To improve condensation steam loss from hoses and tubes, applying following guidelines:
  - Ø Vapor hose: 0.02 kg/m/hr
  - Ø Insulated pipe: 0.0067 kg/m/hr
  - Ø Dispersion tubes: 0.067 kg/m/hr

OPERATION

Followings are operating principles/process:

Chamber Temperature Setting:

- PV: indicate the temperature in the vapor chamber
- SV: indicate the set-point temperature
- Resetting the set-point temperature:
  - Press "<" till the 1st digital blinking
  - Press "^" till the wanted figure appear
  - Repeat above two steps to complete setting for 2nd and/or 3rd digital figure
  - Finally press "SET" button when finish the setting

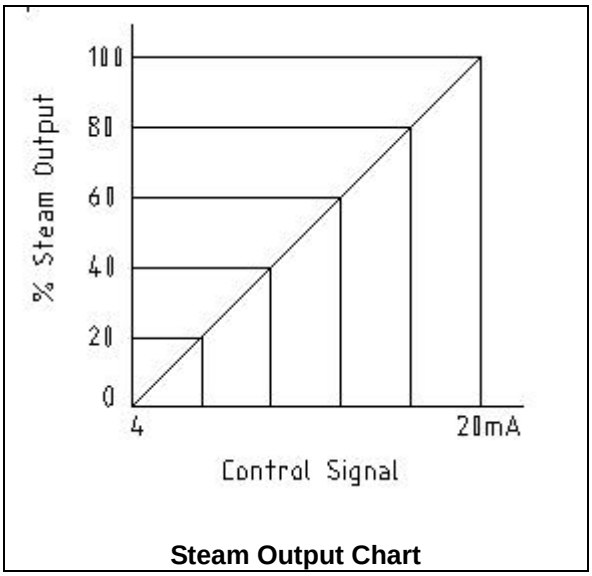
Note: SV setting shall not exceed the 110°C over-heat limit, if set-point temperature is larger than over-heat limit of 110°C, will cause damage to the humidifier or operation disorder.

Vapor Chamber Temperature Controller

Linear Proportional Control Setting:

- Manual Control:
  - Turn the "Manual/Auto Switch" to manual side, then
  - Press "SET" button, till PV shows OUTL, then
  - Press "<" till 1st digital blinking,
  - Press "Λ" or "V" till the wanted figure appear, then and/or
  - Repeat above last two steps to complete setting for 2nd and/or 3rd figure/s.
  - Press "SET" when finish the setting.
- Auto Control: accepts 4-20mA or 0-10V signal from computer center, and displays % of output from vapor humidifier.
- See Diagram SEDI-1 for reference.

Humidifying Controller



Steam Output Chart

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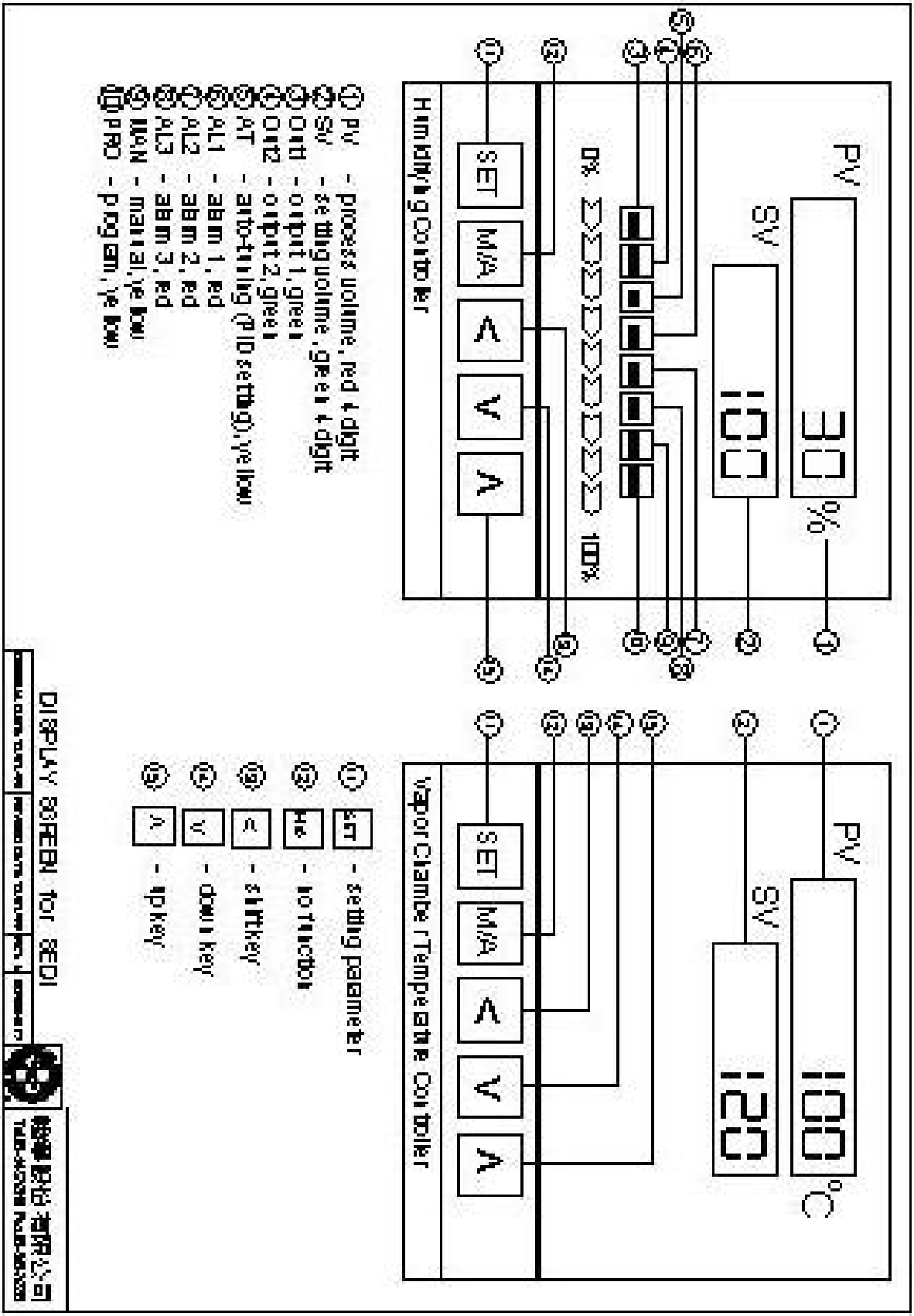
Diagram SEDI-1



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INSTALLATION

Followings are principles of installation:

- Only qualified personnel should perform all installation procedures.
- Leaving enough space for safety operating, installing, repairing, and maintaining.
- Highly recommend to having a short distance between the unit and the dispersion tube panel.
- When combining different capacity of humidifier should use proper size of draining piping or valves to ensuring a sound draining system.
- Access to electric source, supply water, and sanitary waste for draining system.
- Drainage piping material: must use metal piping to withstand the high temperature of condensate.
- Make-Up water pressure: must between 2.5 ~ 3.5 Kg/cm^2G.
- Make-Up water inlet: must have at least 30cm stainless steel piping or high temperature (at least should stand 100^OC) piping connected into vapor chamber's make-up water inlet. Do not use PVC piping at this section, since the vapor chamber generates high heat that can damage the PVC piping and cause water leakage.