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SEUNGIL ELECTRONICS

PRODUCT CATALOG

2023

KOREA No.1
SEUNGIL
ELECTRONICS Co.,Ltd.

SEUNGIL ELECTRONICS

We, Seungil Electronics, was founded in 1987 and since then, we have always tried our best to provide finest quality product such as Electrode Steam Humidifier, Inverter, Temp/Humidity transmitter, PC–Monitoring System, and Micom controller. We have wide experience in HVAC industrial field in Korea. We strive to provide dependable performance of our equipment. And as a result we have developed export, we will continue to provide the quality product and customer service.

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OH-Series

〉OVERVIEW

OEM type humidifiers that are designed to have the structure and the systems that allow the humidifier to be applicable in AHU or ACU. This series products have been selected by leading domestic and foreign companies because of their special features. They have wide capacity range and allow proportional control (4–20mA / 0–10V) without external electrical device due to a dedicated controller (E–HUMS) adopted.

〉CLASSIFICATION

O	H				–	
SERIES		CAPACITY				POWER

〉FEATURES

INSTALLATION	Floor/Wall mounting – both available. One–touch connection for 1/4 inch copper pipe. Direction changeable for drain connection.
MANUAL DRAIN	In addition to the drain pump, a manual drain lever is installed for convenient inspection.
ON/OFF, MODULATION CONTROL	Various controller available – OEM controller (E–HUMS), AHU controller (STHAV, ST31), Stand alone type controller (SI–HUMP)
REPULSION TYPE DRAIN PUMP	A strong drain pump is applied to prevent clogging by sludge, prolonging product life and minimizing service occurrence.
PLUG–IN SCHEME	The humidification cylinder, drain pump, water supply valve, and power connector are designed in a plug–in type rather than a fixed type, so inspection is convenient.

OH-Series

max. 4kg/h	SPEC	OH004-1	OH004-2	OH004-3	OH004-6	OH004-7
	Power supply	1P 220V 60Hz	3P 220V 60Hz	3P 380V 60Hz	1P 230V 50Hz	3P 380V 50Hz
	Capacity	4 [kg/h]				
	Consumption	3.0 [kW]				
	Rated current	13.7 [A]	7.9 [A]	4.6 [A]	13.7 [A]	4.6 [A]
	Cylinder	CY004-1	CY004-2	CY004-3	CY004-3	CY004-3
	W×D×H/Weight	240×232×456 / 3.7kg				
	Water Inlet	1P 220VAC, 1/4inch for copper pipe & water purifier hose, 2~8 [bar]				
	Drain	1P 220VAC, ID22 [mm]Heat resistance hose, 8 ℓ /min				

max. 8kg/h	SPEC	OH006-1	OH008-2	OH008-3	OH008-7
	Power supply	1P 220V 60Hz	3P 220V 60Hz	3P 380V 60Hz	3P 380V 50Hz
	Capacity	6 [kg/h]	8 [kg/h]		
	Consumption	4.5 [kW]	6.0 [kW]		
	Rated current	20.5 [A]	15.8 [A]	9.1 [A]	
	Cylinder	CY006-1	CY008-2	CY008-3	
	W×D×H/Weight	240×232×516 / 4.2kg			
	Water Inlet	1P 220VAC, 1/4inch for copper pipe & water purifier hose, 2~8 [bar]			
	Drain	1P 220VAC, ID22 [mm]Heat resistance hose, 8 ℓ /min			

max. 15kg/h	SPEC	OH015-2	OH015-3	OH015-7
	Power supply	3P 220V 60Hz	3P 380V 60Hz	3P 380V 50Hz
	Capacity	15 [kg/h]		
	Consumption	11.3 [kW]		
	Rated current	29.5 [A]	17.1 [A]	
	Cylinder	CY015-2	CY015-3	
	W×D×H/Weight	290×256×576 / 5.5kg		
	Water Inlet	1P 220VAC, 1/4inch for copper pipe & water purifier hose, 2~8 [bar]		
	Drain	1P 220VAC, ID22 [mm]Heat resistance hose, 8 ℓ /min		

max. 45kg/h	SPEC	OH030-2	OH045-3	OH045-7
	Power supply	3P 220V 60Hz	3P 380V 60Hz	3P 380V 50Hz
	Capacity	30 [kg/h]	45 [kg/h]	
	Consumption	22.5 [kW]	33.8 [kW]	
	Rated current	59.1 [A]	51.3 [A]	
	Cylinder	CY030-2	CY045-3	
	W×D×H/Weight	360×330×665 / 14.5kg		
	Water Inlet	1P 220VAC, 1/4inch for copper pipe & water purifier hose, 2~8 [bar]		
	Drain	1P 220VAC, ID22 [mm]Heat resistance hose, 8 ℓ /min		

BH-Series

〉OVERVIEW

BH-series is a stand-alone humidifier with a new design and technology that maximizes the various needs of customers and user convenience. With an advanced European design and structure, it can be installed in air-conditioning facilities and indoor places that require humidification. It provides 9 different operation modes and multi-input as standard, and it can be configured from small capacity (2kg/h) to large capacity (360kg/h) through interlocking operation (Master/Slave) between up to 8 units. Provides a temperature control function by NTC so that it can be used in personal SPA function facilities using the generated steam.

〉CLASSIFICATION

B	H				-		
SERIES		CAPACITY				POWER	NON-STANDARD

〉FEATURES

INSTALLATION	Provides 9 kinds of operation modes accepts any user's requirements. -REMOTE -LOCAL -PROPORTIONAL
HIGH LIMIT SENSOR	The humidification capacity can be controlled by configuring a separate humidity sensor in the discharge duct to suppress the symptoms of overhumidification inside the duct due to changing seasons or excessive humidification requirements. (OPTION)
ON/OFF, MODULATION CONTROL	Using Seungil Electronics' exclusive controller for electrode steam humidifier, not only basic ON/OFF operation but also capacity control by proportional input is possible.
MASTER / SLAVE	Based on 4, 8, 15, 45kg/h units, a wide range of humidification systems can be easily configured through interlocking operation between equipment. (2~360kg/h)
MULTI INPUT	To accommodate the variety of humidity sensor or remote control, 5 different input methods are provided as standard. (4-20mA/0-20mA), (2-10VDC/0-10VDC), (NTC)

BH-Series

max. 4kg/h	SPEC	BH004-1	BH004-2	BH004-3	BH004-7
	Power Supply	1P 220V 60Hz	3P 220V 60Hz	3PN 60Hz 380-415V	3PN 50Hz 380-415V
	Capacity	4 [kg/h]			
	Consumption	3.0 [kW]			
	Rated Current	13.7 [A]	7.9 [A]	4.6 [A]	
	Cylinder	CY004-1	CY004-2	CY004-3	
	Control Power	1P 220-240VAC, 24VAC			
	W×D×H/Weight	400×280×622 / 20kg			
	Water Inlet	1/4inch for copper pipe & water purifier hose 2~8 [bar]			
	Drain	ID22 [mm]Heat resistance hose, 8 ℓ /min			
	Option	Steam nozzle, Steam hose, FANUNIT, Humidity probe, NTC, Floor Mounting Leg			

max. 8kg/h	SPEC	BH008-2	BH008-3	BH008-7
	Power Supply	3P 220V 60Hz	3PN 60Hz 380-415V	3PN 50Hz 380-415V
	Capacity	8 [kg/h]		
	Consumption	6 [kW]		
	Rated Current	15.8 [A]	9.1 [A]	
	Cylinder	CY008-2	CY008-3	
	Control Power	1P 220-240VAC, 24VAC		
	W×D×H/Weight	400×280×622 / 21kg		
	Water Inlet	1/4inch for copper pipe & water purifier hose, 2~8 [bar]		
	Drain	ID22 [mm]Heat resistance hose, 8 ℓ /min		
	Option	Steam nozzle, Steam hose, FANUNIT, Humidity probe, NTC, Floor Mounting Leg		

max. 15kg/h	SPEC	BH015-2	BH015-3	BH015-7
	Power Supply	3P 220V 60Hz	3PN 60Hz 380-415V	3PN 50Hz 380-415V
	Capacity	15 [kg/h]		
	Consumption	11.3 [kW]		
	Rated Current	29.5 [A]	17.1 [A]	
	Cylinder	CY015-2	CY015-3	
	Control Power	1P 220-240VAC, 24VAC		
	W×D×H/Weight	400×280×682 / 23kg		
	Water Inlet	1/4inch for copper pipe & water purifier hose, 2~8 [bar]		
	Drain	ID22[mm]Heat resistance hose, 8 ℓ /min		
	Option	Steam nozzle, Steam hose, FANUNIT, Humidity probe, NTC, Floor Mounting Leg		

max. 45kg/h	SPEC	BH030-2	BH045-3	BH045-7
	Power Supply	3P 220V 60Hz	3PN 60Hz 380-415V	3PN 50Hz 380-415V
	Capacity	30 [kg/h]	45 [kg/h]	
	Consumption	22.5 [kW]	33.8 [kW]	
	Rated Current	59.1 [A]	51.3 [A]	
	Cylinder	CY030-2	CY045-3	
	Control Power	1P 220-240VAC, 24VAC		
	W×D×H/Weight	520×350×750 / 40kg		
	Water Inlet	1/4inch for copper pipe & water purifier hose, 2~8[bar]		
	Drain	ID22[mm]Heat resistance hose, 8 ℓ /min		
	Option	Steam nozzle, Steam hose, FANUNIT, Humidity probe, NTC, Floor Mounting Leg		

BH-Series

max. 90kg/h	SPEC	BH060-X	BH090-X
	Power Supply	3P 220V	3P 380 – 690V
	Capacity	60[kg/h]	90[kg/h]
	Consumption	45.0[kW]	67.5[kW]
	Rated Current	118.1[A]	102.6[A] / 380V
	Cylinder	CY030-2×2cycle	CY045-3×2cycle
	Control Power	1P 220VAC / TR built-in (380V)	
	W×D×H/Weight	920×387×932 / 67kg (Height 488mm base provided)	
	Water Inlet	2~8[bar], 15A socket	
	Drain	ID22[mm]Heat resistance hose, 8 ℓ /min, 25A socket	
	Control Method	On/Off, Proportional (capacity) control	

max. 135kg/h	SPEC	BH135-X
	Power Supply	3P 380 – 690V
	Capacity	135 [kg/h]
	Consumption	101.3 [kW]
	Rated Current	153.9 [A] / 380V
	Cylinder	CY045-3×3cycle
	Control Power	1P 220VAC / TR built-in (380V)
	W×D×H/Weight	1,500×605×1480 / 165kg
	Water Inlet	2~8 [bar], 15A socket
	Drain	25A socket
	Control Method	On/Off, Proportional (capacity) control

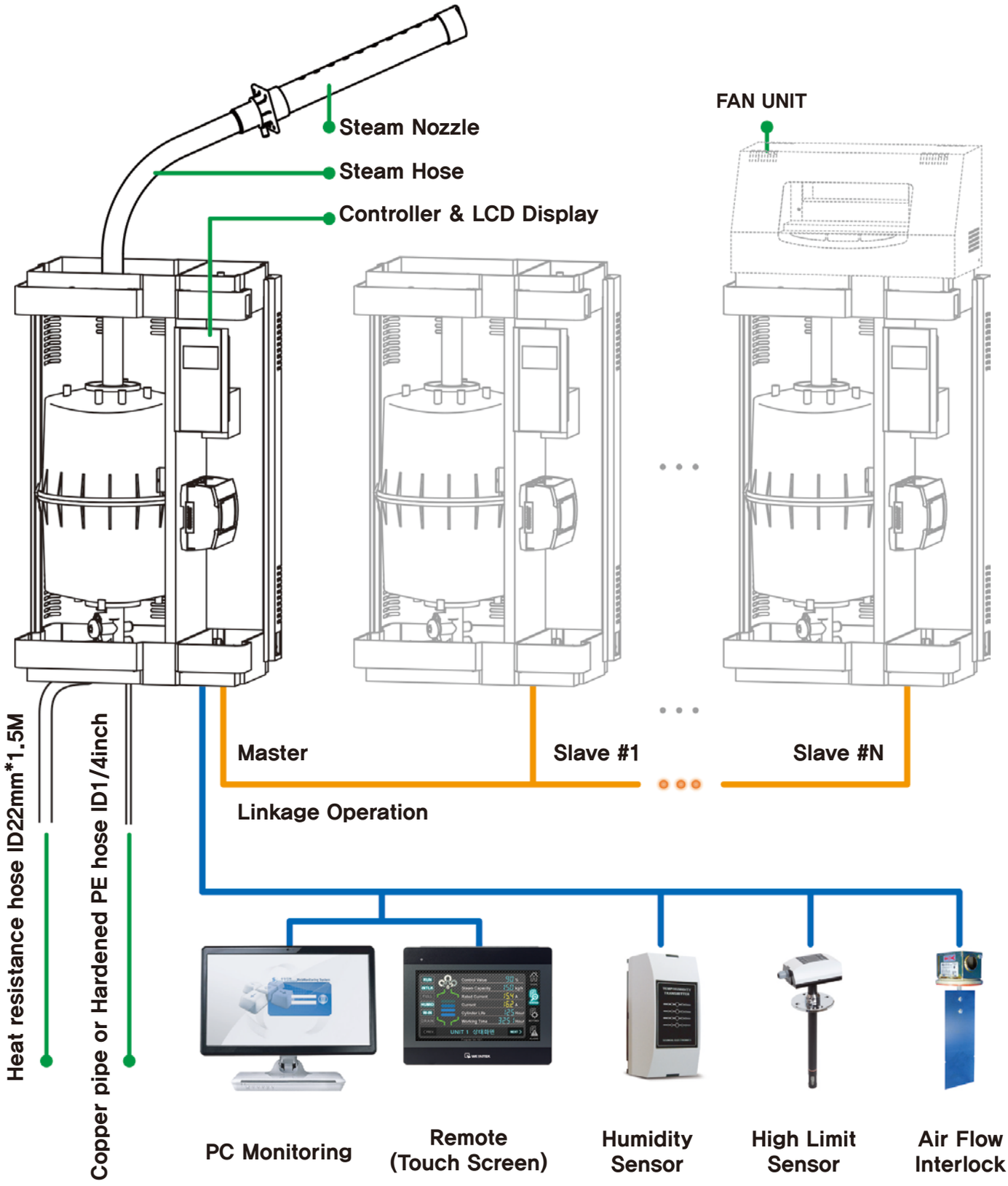
※ This product is a non-standard management product according to the needs of the consumer.

max. 270kg/h	SPEC	BH180-X	BH270-X
	Power Supply	3P 380V – 690V	3P 380 – 690V
	Capacity	180 [kg/h]	270 [kg/h]
	Consumption	135 [kW]	202.5 [kW]
	Rated Current	205 [A] / 380V	308 [A] / 380V
	Cylinder	CY045-3×4cycle	CY045-3×6cycle
	Control Power	1P 220VAC / TR built-in (380V)	
	W×D×H/Weight	1300×680×2100	1700×840×2100
	Water Inlet	2~8 [bar], 20A socket	2~8 [bar], 20A socket
	Drain	50A socket	50A socket
	Control Method	On/Off, Proportional (capacity) control	

※ This product is a non-standard management product according to the needs of the consumer.

BH-Series

〉 COMPOSITION



BH-Series All-in-one fan unit

max. 4kg/h	SPEC	BH004-1F	BH004-2F	BH004-3F	BH004-7F
	Power Supply	1P 220V 60Hz	3P 220V 60Hz	3PN 60Hz 380-415V	3P 50Hz 380-415V
	Capacity	4 [kg/h]			
	Consumption	3.0 [kW]			
	Rated Current	13.7 [A]	7.9 [A]	4.6 [A]	
	Cylinder	CY004-1	CY004-2	CY004-3	
	Control Power	1P 220VAC / TR built-in(380V)			
	W×D×H/Weight	400×280×820 / 67kg (Height 300mm base seperated)			
	Water Inlet	1/4nch for copper pipe & water purifier hose 2~8 [bar]			
	Drain	ID22 [mm] Heat resistance hose, 8 ℓ /min			
	Control Method	On/Off, Proportional (capacity) control			
	Humidity Sensor	SMX-RA-A4, 4~20mA			
	Blower fan	Air volume : 2CMM, 48dB			

max. 8kg/h	SPEC	BH008-2F	BH008-3F	BH008-7F
	Power Supply	3P 220V 60Hz	3PN 60Hz 380-415V	3P 50Hz 380-415V
	Capacity	8 [kg/h]		
	Consumption	6 [kW]		
	Rated Current	15.8 [A]	9.1 [A]	
	Cylinder	CY008-2	CY008-3	
	Control Power	1P 220VAC / TR built-in(380V)		
	W×D×H/Weight	400×280×820 / 67kg (Height 300mm base seperated)		
	Water Inlet	1/4nch for copper pipe & water purifier hose, 2~8 [bar]		
	Drain	ID22 [mm] Heat resistance hose, 8 ℓ /min		
	Control Method	On/Off, Proportional (capacity) control		
	Humidity Sensor	SMX-RA-A4, 4~20mA		
	Blower fan	Air volume : 2CMM, 48dB		

max. 15kg/h	SPEC	BH015-2F	BH015-3F	BH015-7F
	Power Supply	3P 220V 60Hz	3PN 60Hz 380-415V	3P 50Hz 380-415V
	Capacity	15[kg/h]		
	Consumption	11.3[kW]		
	Rated Current	29.5[A]	17.1[A]	
	Cylinder	CY015-2	CY015-3	
	Control Power	1P 220VAC / TR built-in(380V)		
	W×D×H/Weight	400×280×880 / 33kg (Height 300mm base seperated)		
	Water Inlet	1/4nch for copper pipe & water purifier hose, 2~8 [bar]		
	Drain	ID22 [mm]Heat resistance hose, 8 ℓ /min		
	Control Method	On/Off, Proportional (capacity) control		
	Humidity Sensor	SMX-RA-A4, 4~20mA		
	Blower fan	Air volume : 4.2CMM, 48dB		

※ This product is a non-standard management product according to the needs of the consumer.

〉TIP

MODEL	20℃ / 40%	20℃ / 50%	25℃ / 40%	25℃ / 50%	30℃ / 40%	30℃ / 50%
max. 4kg/h	181㎡	132㎡	122㎡	99㎡	92㎡	72㎡
max. 8kg/h	347㎡	264㎡	247㎡	198㎡	181㎡	145㎡
max. 15kg/h	628㎡	495㎡	476㎡	363㎡	347㎡	264㎡

※ This data is a value calculated by a theoretical formula and may vary depending on site conditions (outside air, ventilation, cooling load),etc.

WH-Series

〉 OVERVIEW

WH-series is a compact type electrode steam humidifier. With a new design that breaks away from the existing electrode steam humidifier, the height of the product is lowered by more than 50%, so it can be easily installed in air conditioners or air conditioners/ heaters. The external appearance of the product is composed of a ratio similar to that of the existing electric humidifier, so it is convenient to apply alternatively to the electric humidifier.

〉 CLASSIFICATION

W	H				–			

SERIES CAPACITY POWER PARTS

〉 FEATURES

INSTALLATION	Due to the characteristics of the humidifier, it is a horizontal structure that breaks away from the basic common sense of the electrode steam humidifier type, which has been developed and produced only in a vertical structure, and minimizes the installation space by half the height of the existing 8kg/h humidifier.
QUICK RESPONSE	Since it consists of 6 electrodes, the initial operation is more than doubled with the same cross-sectional area, and the response is very good. (within 15 minutes of reaching the first rating based on tap water)
ELECTRODE	By improving the electrode material with a special alloy, it generates clean steam by minimizing rust caused by self-corrosion.
MAINTENANCE	To increase the convenience of cleaning and removing sludge from the inside of the humidification cylinder, the cylinder connection part has a locking lid structure.

〉 SPECIFICATION

SPEC	WH004-1	WH008-3	
Power supply	1P 220V	3P 220V	3P 380V
Capacity	4[kg/h]	8[kg/h]	
Consumption	3.0[KW]	6.0[KW]	
Rated current	13.6[A]	15.8[A]	9.1[A]
Cylinder	CW004-1	CW008-3	
W×D×H/Weight	502x180x300 / 3.9kg *CA:5.3kg		
Supply valve	1P 220VAC, 1/4nch for copper pipe, 2~8[bar]		
Drain valve	1P 220VAC, OD13mm		

1. This product must be installed on the drain plate.
2. "CA" at the last code of specification means "Controller mounted model" . ex) WH008-3CA

Electrode steam humidifier accessories

〉CLASSIFICATION

K			–					

MODEL CODE　　SPEC CODE

〉ACCESSORIES

WATER SUPPLY VALAVE / KSV-1105

POWER	220V 50/60Hz
CURRENT	35mA
FLOW	10L/min
WEIGHT	124g
PRESSURE	1-10 Bar
INLET	3/4inch, PM
OUTLET	OD10.5mm

DRAIN VALVE / KDV-1 (For WH Series)

POWER	220V 50/60Hz
CURRENT	80mA
FLOW	3.5L/min
WEIGHT	132g
INLET	OD16mm
OUTLET	OD13mm

STEAM NOZZLE / KNS

4kg/h	KNS-230 (300mm)
8kg/h	KNS-240 (400mm)
15kg/h	KNS-350 (500mm)
45kg/h	KNS-470 (700mm)

STEAM HOSE

	KSH-22	KSH-30	KSH-45
CYLINDER	Max. 4~8kg/h	Max. 15kg/h	Max. 30~45kg/h
ID	22mm	30mm	45mm
THICKNESS	4.5mm	5.25mm	6mm
OD	31mm	40.5mm	57mm
TEMP.	-25~105℃		
MATERIAL	[Inside] TPV + Galvanized steel spring [Outside] TPV + Polyester fiber		
CURVE RADIUS	75mm	85mm	120mm

DRAIN PUMP

	KDP-4511	KDP-1511
POWER	220V 60Hz	220V 50Hz
CURRENT	0.2A	
FLOW	8L/min	
WEIGHT	534g	
HEAD	1.5M	
INLET	13mm	
OUTLET	18mm	

CONDENSING HOSE/ KCH-09

ID	9mm
THICKNESS	2mm
OD	13mm
MATERIAL	Silicone
COLOR	Dark Gray
TEMP.	-25~180℃

CONTROLLER / E-HUMS

POWER	100-250VAC 50/60Hz
W×D×H	152 x 120 x 50
WEIGHT	150g

CONTROLLER / EM2

POWER	24VAC 50/60Hz
W×D×H	136 x 110 x 66
WEIGHT	110g

POWER CONNECTOR

	KPC-5	KPC-6
SPEC	ID 5mm	ID 6mm
CLAMP	HEXA WRENCH M6	
CURRENT	690VAC 45A	
WIRE	1.5sq - 10sq	

CYLINDER

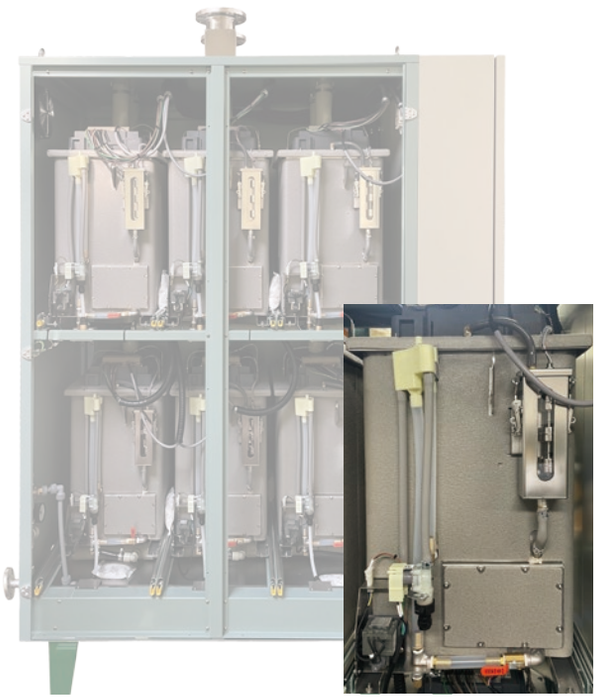
Max. 4kg/h		Max. 6,8kg/h		Max. 15kg/h		Max. 30,45kg/h		Max. 4,8kg/h	
									
Ø200mm/height:290mm weight:0.9kg		Ø200mm/height:350mm weight:1.1kg		Ø252mm/height:416mm weight:2kg		Ø320mm/height:515mm weight:5.8kg		WxDxH:320x170x290mm weight:1.4kg	
CY004-1	1~ 220V	CY006-1	1~ 220V	CY015-2	3~ 220V	CY030-3	3~ 220V	CW008-3	3~ 220V -380V
CY004-2	3~ 220V	CY008-2	3~ 220V						
CY004-3	3~ 380V	CY008-3	3~ 380V	CY015-3	3~ 380V	CY045-3	3~ 380V	CW004-1	1~220V

Electric Steam Humidifier (Resistive)

〉 OVERVIEW

Electric steam humidifiers (RH-series) are optimized for environments (disadvantages) where electrode steam humidifiers are difficult to apply, and can be used in environments where pure water is supplied or in chamber facilities that require precise humidity control.

[RH270-X]



[RU045-X]

〉 CLASSIFICATION

R	H	2	7	0	-	X	X	◀ Stand Alone type (humidification unit + control box)
R	U	0	4	5	-	X	X	◀ Humidification unit
	SERIES		CAPACITY (380V STANDARD)			SPEC CODE		

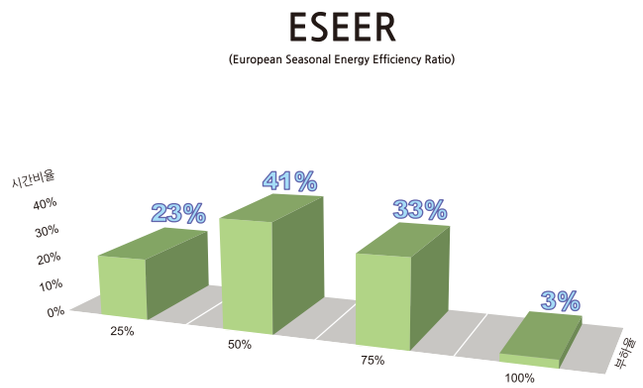
〉 SPECIFICATION

HUMIDIFICATION	Due to the boiling water humidification method, there is no bacterial propagation, and clean humidification is possible because there is no corrosion and rust before and after humidification.
D.I. WATER USABLE	Unlike the electrode type, since the heater is used as a humidifying heat source, humidification is possible even when pure water(deionized water) is supplied, and the service cycle is prolonged.
TITANIUM HEATER	Corrosion caused by impurities is minimized by using a titanium heater with high strength and corrosion resistance.
DRAIN PUMP	An automatic drainage system through the accumulation of evaporation was applied. The generation of sludge inside the humidifier is minimized through the high torque drain pump, and there is no restriction or blockage by sludge, and there is no leakage.
SAFETY DEVICES	It is safe by installing a number of water level sensors, temperature sensors, and electrical safety devices.

DC INVERTER COMPRESSOR SYSTEM

ADVANTAGES

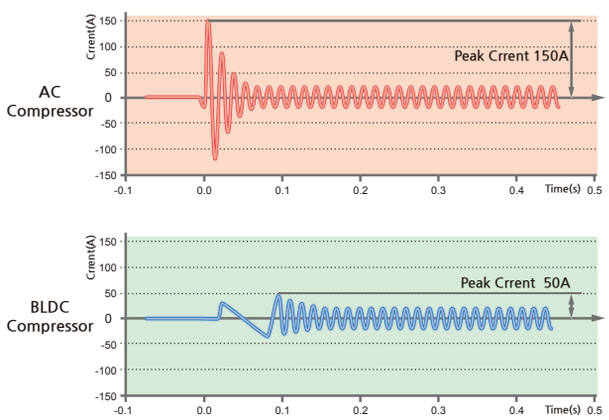
[ENERGY SAVING]



Based on the European seasonal energy efficiency ratio ESEER graph, the time required for a 100% rated load during the year is only about 3%, and the 50% partial load operation time is the most at 41%

Fixed speed compressor waste unnecessary energy because they can not control the load. Effective energy saving is possible by using DC inverter compressors that can cope with these partial load.

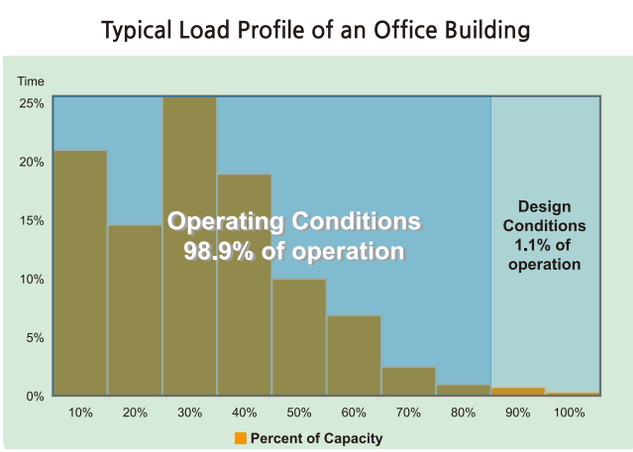
[DECREASE INITIAL PEAK CURRENT]



Fixed speed compressor consumes much inrush current during initial startup due to the characteristics of the motor. This cause a current peak load and a long-term increase in power costs.

The DC inverter compressor does not generate much inrush current at initial start-up. it has the effect of reducing by about 70% from the current at the time of initial start of compressor of same capacity. As a result, it has advantage of lower power costs.

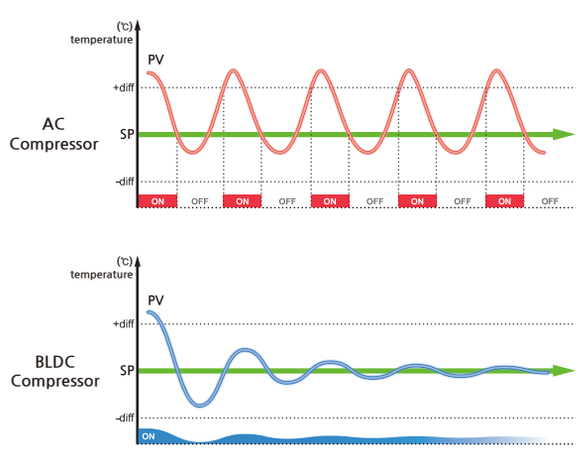
[CAPACITY DOWN SIZING]



Looking at the graph of the load operating conditions, the time required for 80% or more load operation is only 1.1% of the total. At present, it is inevitable to design the system considering the design of the system using the fixed speed type compressor

The DC inverter compressor can operate at speeds higher than the rated speed as required. because of these characteristics, the same effect can be achieved with a smaller capacity than a fixed speed compressor system.

[PRECISION CONTROL]



The fixed speed compressor is only in the ON and operation phase and must be continuously ON and OFF to maintain the set temperature. This process cannot help but maintain the error range of some deviation based on the set temperature.

DC inverter compressors are capable of more flexible operation to reach and maintain the set temperature. therefore, precise control is possible closer to the set temperature.

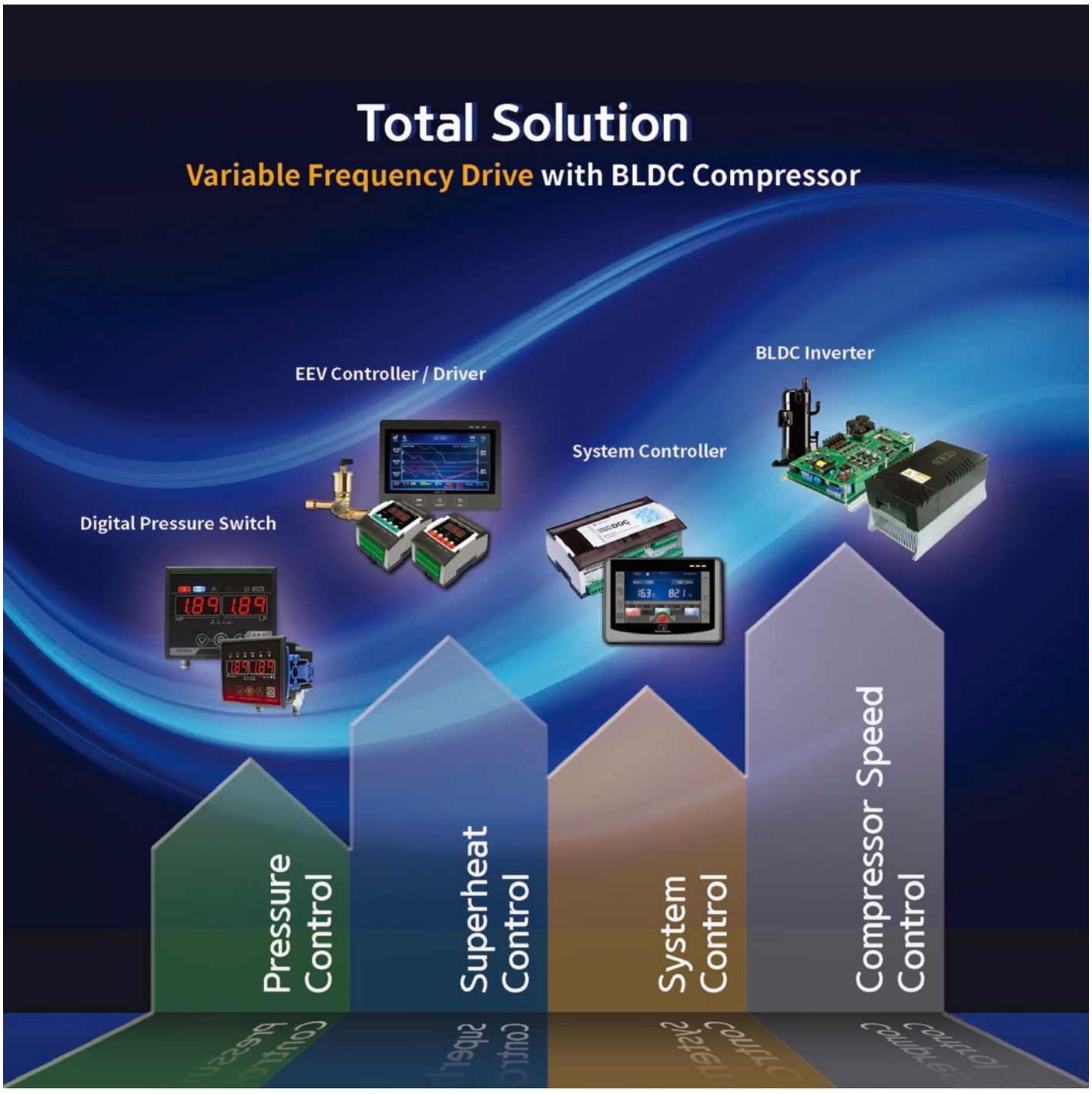
Why DC inverter compressor systems should be approached as an integrated solution?

〉 Optimized load operation [Increase energy efficiency]

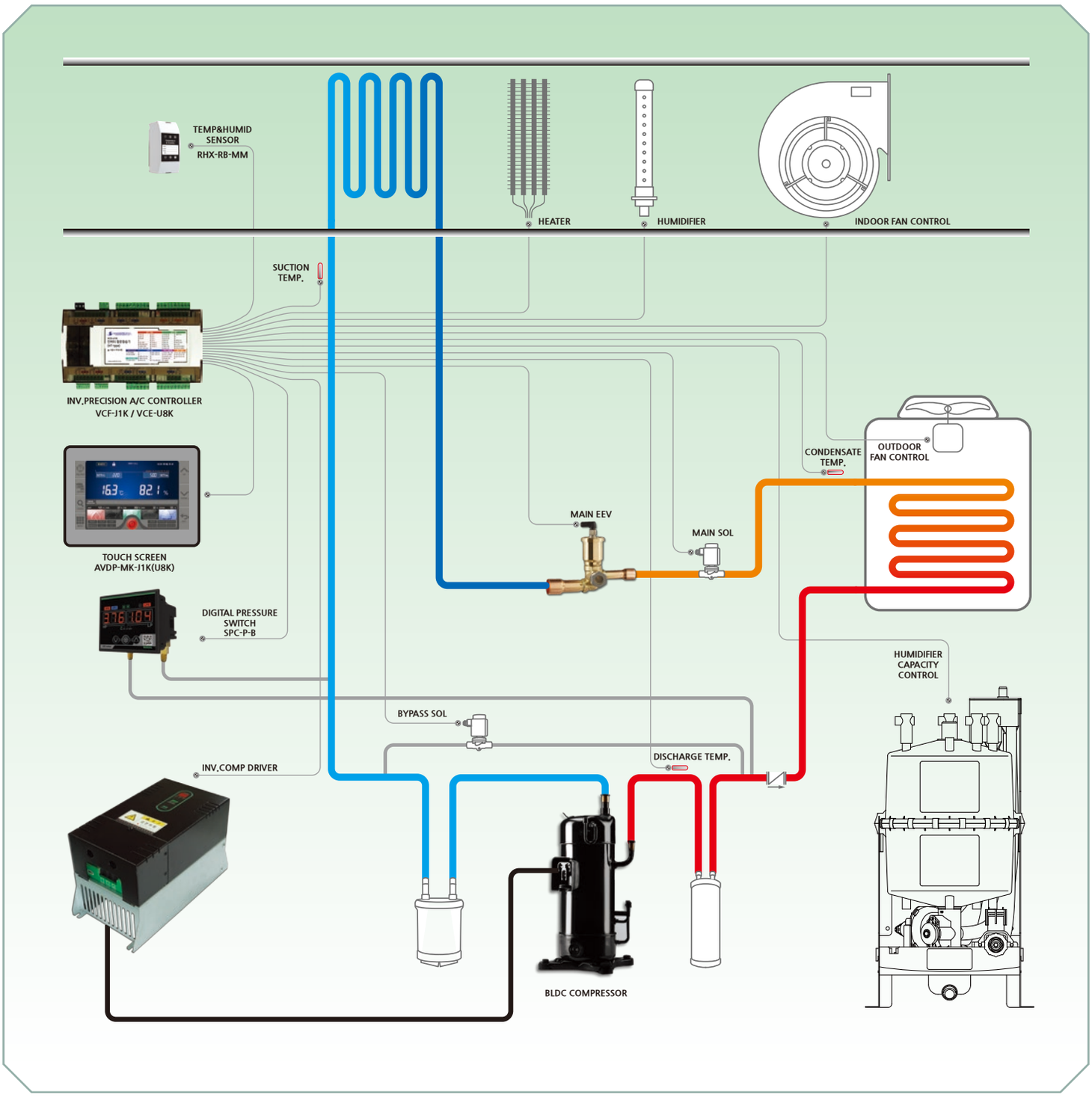
In order to increase energy efficiency, it is necessary to maintain the optimum capacity so as not to exceed the load required. For this purpose, the capacity is adjusted by increasing / decreasing the rotating speed of the compressor. The condensation pressure, EEV opening rate, and evaporation pressure must be moved accordingly. if this balance is not met, the system will become unbalanced and problems will arise

〉 Envelope control [Increase safety / Lifetime]

Unlike fixed speed type compressors, variable frequency compressors have compressor operating conditions within the limits of pressure and temperature defined by the compressor manufacturer. if the compressor operates beyong the operating conditions, it may affect the service life or burn out. the SEUNGIL TOTAL SOLUTION includes corresponding controls to ensure that the envelope defined by the compressor manufacturer does not deviate.



AHU / Packaged AC (Compressor indoor type)



AHU / Packaged AC (Compressor indoor type)

〉Application table according to system configuration

Compressor Indoor 1 Cycle Configuration – Heater 3 Stages

〉Controller/Display

Controller
VCF–J1K

4.3"Color touch
AVDP–MK–J1K

〉Sensor

Room type temperature/ humidity sensor
RHX–RB–MM

Suction temperature
STX–PA–T5–2M

Discharge temperature
STW–PA–TK–2M

〉Pressure switch

Pressure switch
SPC–P–B

〉Inverter

Inverter+Reactor

〉Expansion valve

Electronic Expansion valve

Compressor Indoor 1 Cycle Configuration–Heater 4 Stages

〉Controller/Display

Controller
VCE–U8K

4.3"Color touch
AVDP–MK–U8K

〉Sensor

Room type temperature/ humidity sensor
RHX–RB–MM

Suction temperature
STX–PA–T5–2M

Discharge temperature
STW–PA–TK–2M

〉Pressure switch

Pressure switch
SPC–P–B

〉Inverter

Inverter+Reactor

〉Expansion valve

Electronic Expansion valve

Compressor Indoor 2 Cycle Configuration – Heater 4 Stages

〉Controller/Display

Controller
VCF–U8K

4.3"Color touch
AVDP–MK–U8K

〉Sensor

Room type temperature/ humidity sensor
RHX–RB–MM

CYCLE X2

Suction temperature
STX–PA–T5–2M

Discharge temperature
STW–PA–TK–2M

〉Pressure switch

Pressure switch
SPC–P–B

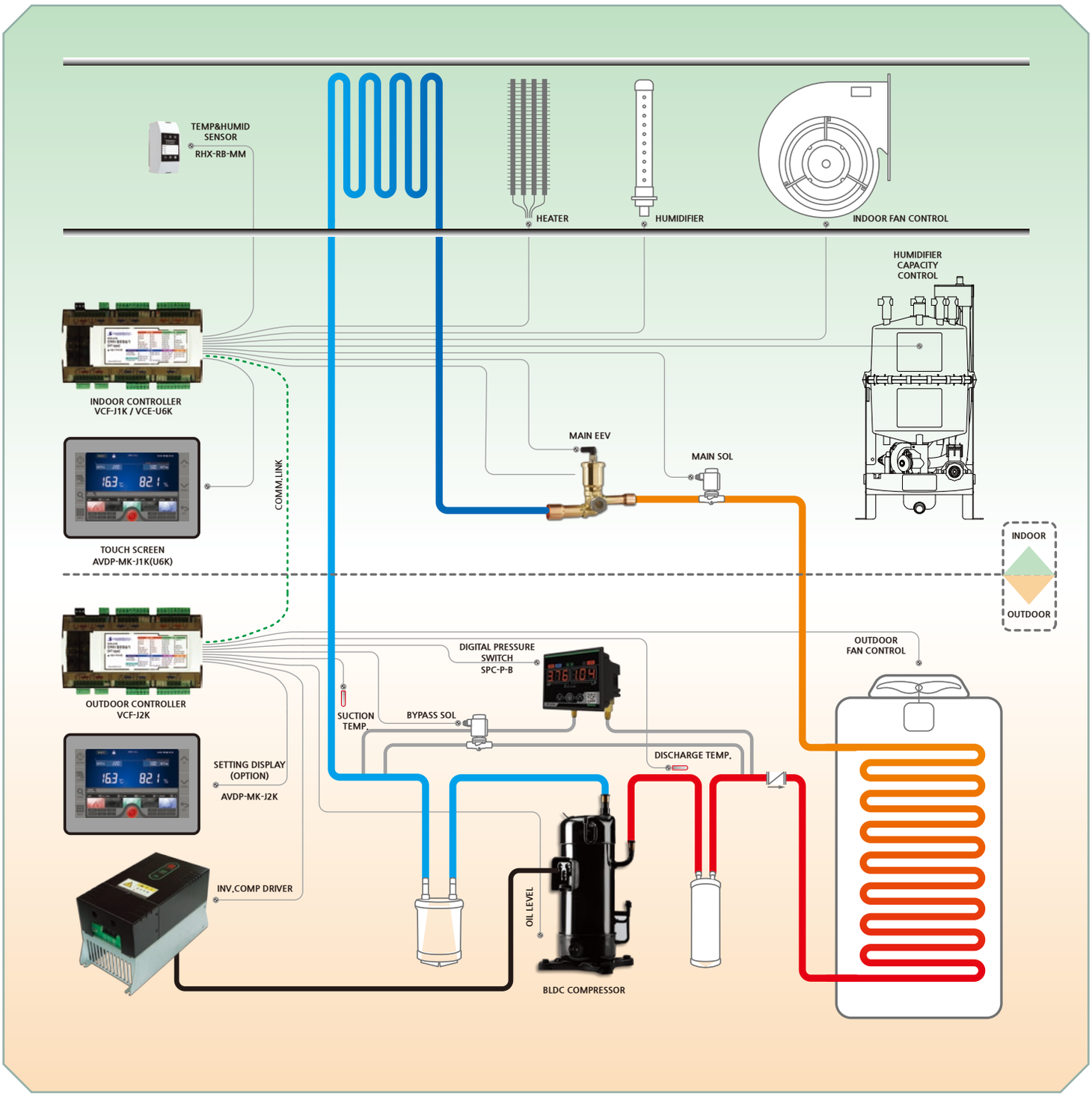
〉Inverter

Inverter+Reactor

〉Expansion valve

Electronic Expansion valve

AHU / Packaged AC (Compressor outdoor type)



AHU / Packaged AC (Compressor outdoor type)

Compressor Outdoor 1 Cycle Configuration

Indoor unit

〉Controller/Display

Controller
VCF-J1K

4.3"Color touch
AVDP-MK-J1K

〉Sensor

Room type temperature/ humidity sensor
RHX-RB-MM

〉Expansion valve

Electronic Expansion valve

Outdoor unit

Controller
VCF-J2K

Pressure switch
SPC-P-B

Suction temperature
STX-PA-T5-2M

Discharge temperature
STW-PA-TK-2M

〉Inverter

Inverter+Reactor

Compressor Outdoor 2 Cycle Configuration

Indoor unit

〉Controller/Display

Controller
VCE-U6K

4.3"Color touch
AVDP-MK-U6K

〉sensor

Room type temperature/ humidity sensor
RHX-RB-MM

〉Expansion valve

Electronic Expansion valve

Outdoor unit

CYCLE X2

Controller
VCF-J2K

Pressure switch
SPC-P-B

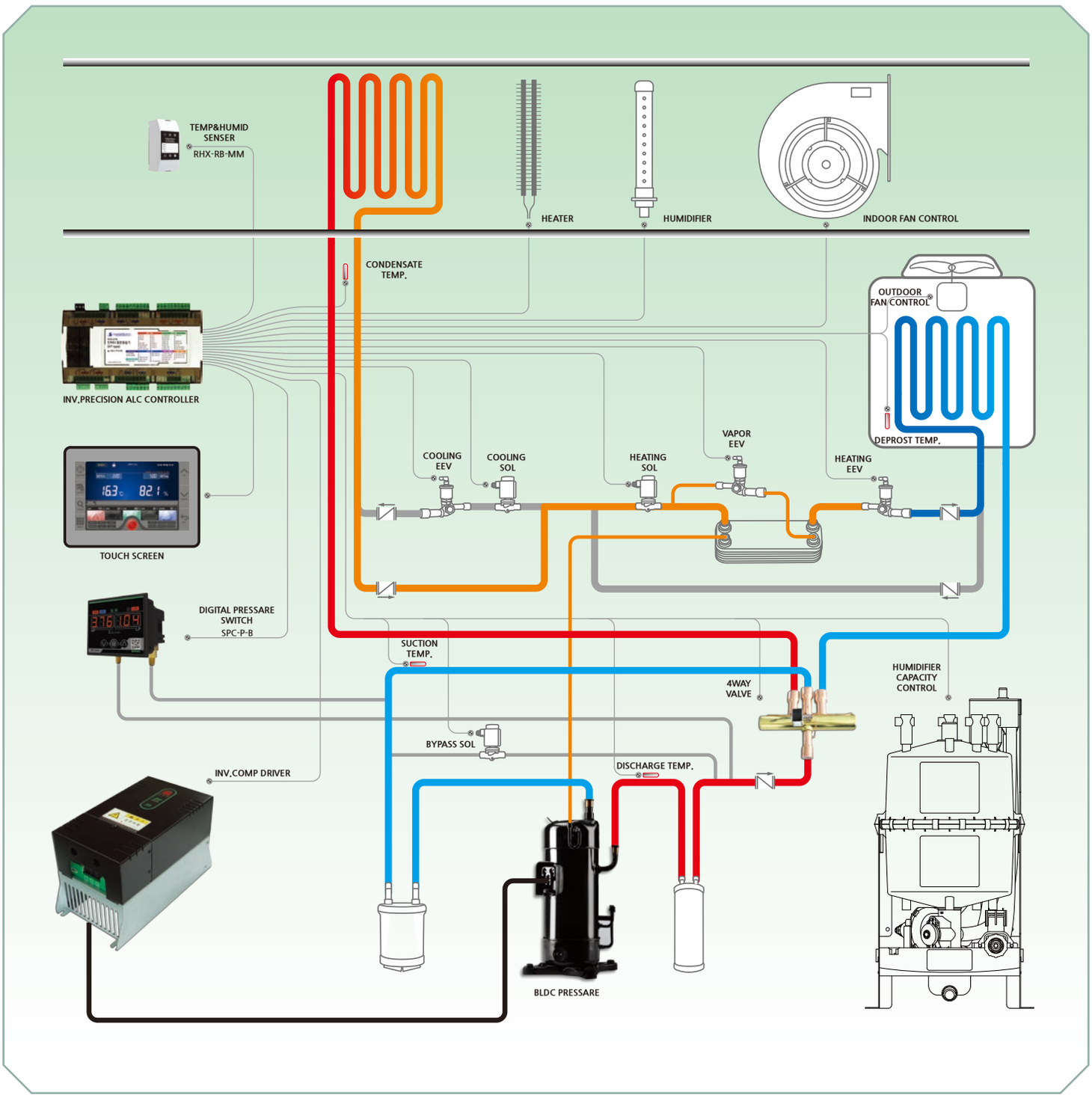
Suction temperature
STX-PA-T5-2M

Discharge temperature
STW-PA-TK-2M

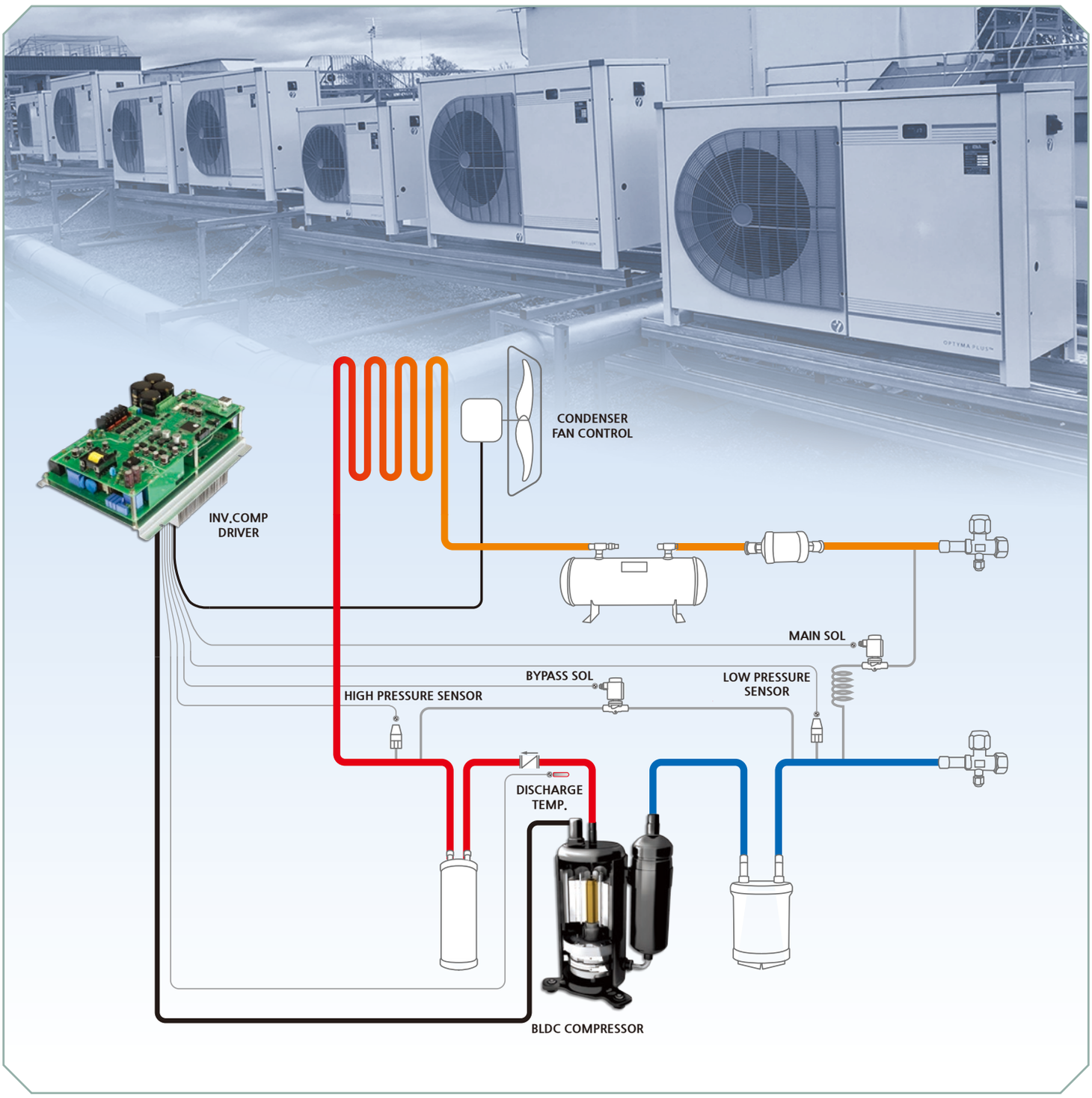
〉Inverter

Inverter+Reactor

Heatpump AHU / Packaged AC



Condensing Unit



AC INVERTER CONDENSING FAN DRIVE

[INA31-FW]

〉SPECIFICATION

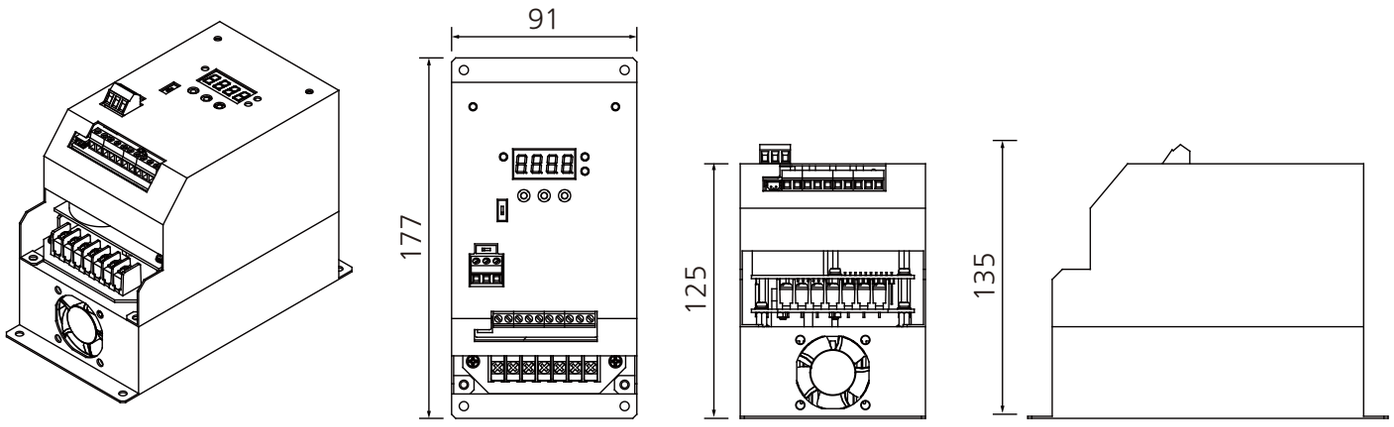
Motor	HP	1/2
	KW	0.75/1.5
Output characteristics	Rated capacity(KVA)	1.9/3.9
	rated current(A)	2.5/6
	Max frequency	100Hz±0.2%
	Max voltage(V)	380V 3P±10%
Input	Rated voltage(V)	3P 380VAC (±10%)
Power	Rated frequency	50~60Hz
Control	Control method	V/F Control
	V/F Pattern	linear
	Torque booster	Manual torque boost
Operation	Run/Stop input	Run/stop SW analog input (Dry contact)
	Frequency control input	Current input (4~20mA), thermistor, communication, pressure sensor (4~20mA), condensing temperature
	Alarm output	N.O contact, N.C contact, relay terminal AC250V 1A or less
	Drive function	BAND control, PID control, condensing temperature overheating, high pressure
Protect Funtion	trip	Operation error, over voltage, under voltage, over current, over temperature, sensor error
Environment	Working Temperature	-10~50℃
	Working Humidity	Under 90% RH, Non condensation
	Storage Temperature	-20~60℃

〉Features

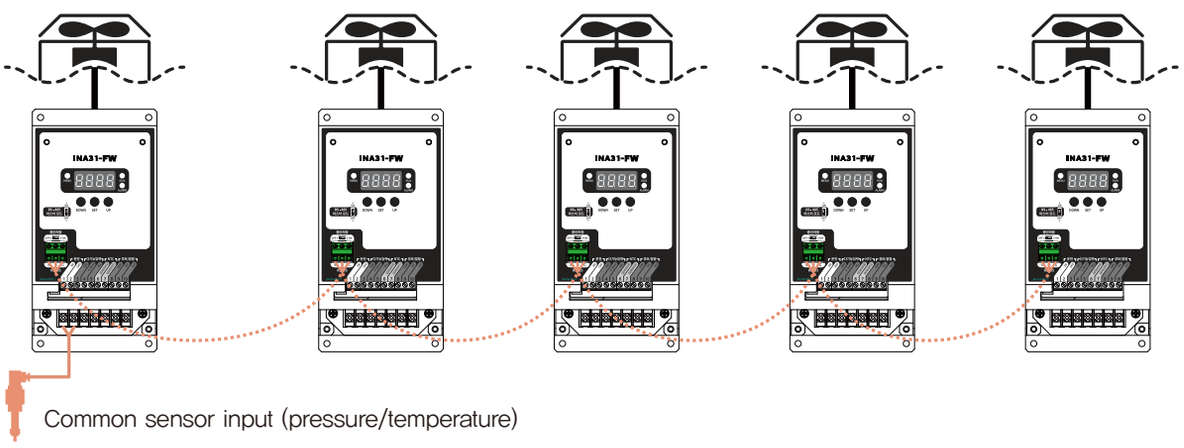
- Inverter specialized for condensing fan control
- Condensation pressure/temperature control by direct sensor input
- Grouping operation function using communication (communication option)
- Various control modes (drive control/BAND control/outdoor air floating control/PID control)
- Accurate PID control technology to increase cooling effect and maximize efficiency
- Optimal drive according to outdoor temperature without worrying about four seasons (inverter type V/F control)

AC INTERTER CONDENDING FAN DRIVE

〉 Outline drawing

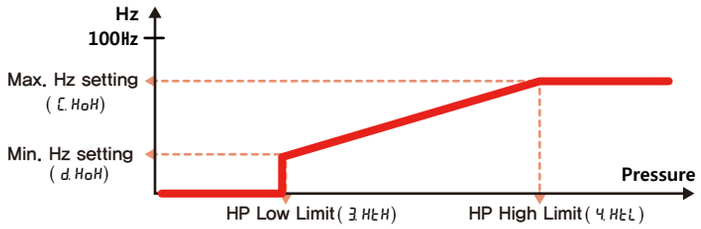


〉 Fan grouping operation (Monitoring communication is not possible during grouping operation)

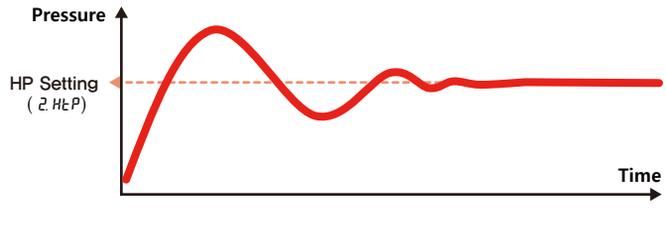


〉 Function

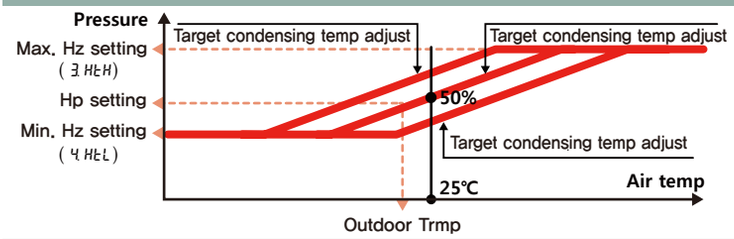
BAND Control



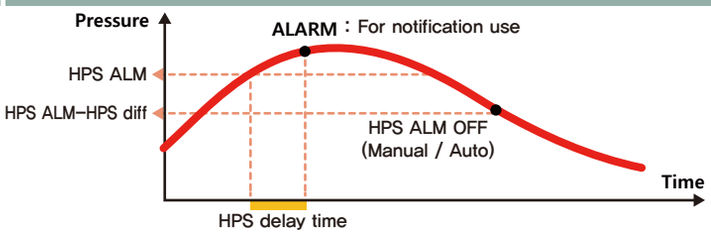
PID Control



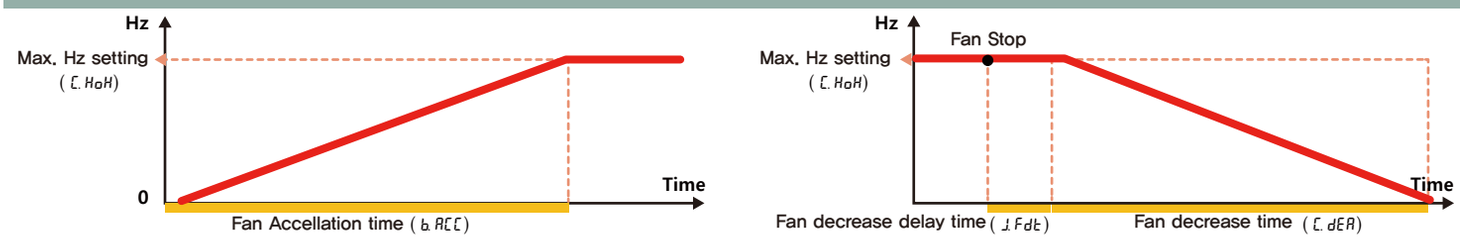
outdoor air floating control



HPS alarm, condensing temperature alarm



Fan acceleration and deceleration time

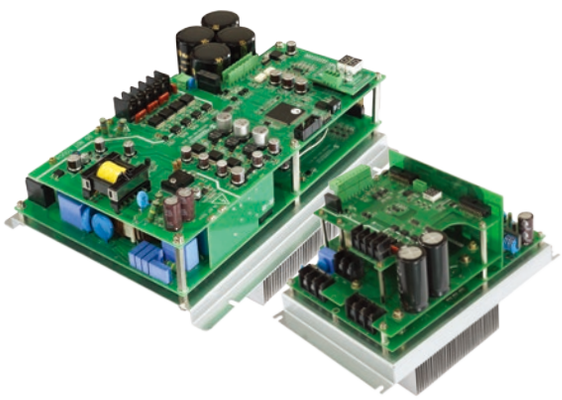


DC INVERTER COMPRESSOR DRIVE

〉OVERVIEW

INB Series is a family of inverters used to control DC and AC compressors. It is a product that can change the RPM (speed) using 4–20mA signal, so that it can reach energy saving goals and customer requirements. In particular, it is specialized in DC compressors, and it can be used by saving the cost required for product setting during mass production and testing with the basic setting specialized for self–protection and refrigeration and air conditioning.

※ DC compressors are variable displacement compressors driven by PMSM motors. Also known as DC or BLDC motor.
※ AC compressors are of constant speed type and variable capacity type, and are driven by an induction motor. Also known as AC, constant speed motor or constant speed machine.



[Inverter series – Module type]

[Inverter series – Package type]

〉CLASSIFICATION

I	N	B	3	B	–	S	C	0	Q

SERIES

COMPRESSOR
Code assigned according to compressor type

APPEARANCE
- B: Modular standard product
- C: Packaged standard product
- D: Package insert type 480Vac
- F : Package 1P 220Vac
- G : Package 480Vac
- H : Package 3P 220Vac
- J : Insulation reinforcement products

H/W
Own hardware classification specification code

CAPACITY
Capacity specification code
※ Refers to the rated cooling capacity of the compressor based on the R410A air conditioner EER about 3[W/W] speaks of ability

- 3: 3RT(4kW)class
- 5: 5RT(7.5kW)class
- 7: 7RT(11kW)class
- A: 10RT(15kW)class
- B: 12RT(18kW)class

POWER SUPPLY
- 3: 3P 380/440/480Vac
- 2:220Vac 60Hz

〉Applicable to various DC compressor brands

DC INVERTER COMPRESSOR DRIVE PACKAGE TYPE

〉 MODELS

	INB33-SC	INB35-SC	INB37-SC	INB3A-SC	INB3B-SC
Appearance					
Power supply	3Phase 3Wire 380/440/480* VAC				
Rated capacity	4 kW	7.5 kW	11 kW	15 kW	18 kW
Applicable compressor Rated capacity (RT)**	3 RT	5 RT	7 RT	10 RT	12 RT
Applicable compressor Rated capacity (W)**	10.5 [kW]	17.7 [kW]	24.6 [kW]	35.1 [kW]	41.8 [kW]
Input/Output Specifications	4-20mA input, start signal input, RS-485 modbus communication input, discharge temperature sensor input, alarm signal output, Display-only power output, compressor output				
Remarks	Built-in line filter				Double short circuit protection
Reactor	KAT0506	KAT0502	KAT0507		

* In the case of input power 3 phase 440/480V, the model name is different. (INBxx-SD)
** Compressor rated capacity is based on R410A air conditioning. If the refrigerant is different or the intended use is different, please inquire separately.

〉 FEATURES

- Performs RPM (speed) variable according to 4-20mA signal from controller
- When an alarm occurs, the DO output notifies that the current alarm has occurred
- Inverter self-protection function protects compressor and system
- Built-in noise filter protects peripheral devices, etc
- No time required for setting with customer specifications
- Displays information such as RPM information, operation information, and operation of special functions on the display
- RS-485 Modbus communication enables monitoring and operation of various conditions such as voltage and current
- Systemic efficiency increase by finding and operating the minimum current point that generates the maximum torque
- In addition to the products shown above, there are several special specifications, and it is possible to respond to customer needs

DC INVERTER COMPRESSOR DRIVE MODULE TYPE

〉MODELS

	INB33-SB	INB35-SB	INB23-SB
Appearance			
Power supply	3Phase 4Wire 380/440/480 VAC		1Phase 220VAC
Rated capacity	4 kW	7.5 kW	4 kW
Applicable compressor Rated capacity (RT)**	3 RT	5 RT	3 RT
Applicable compressor Rated capacity (W)**	10.5 [kW]	17.7 [kW]	10.5 [kW]
Input/Output Specifications	4-20mA input, start signal input, RS-485 modbus communication input, discharge temperature sensor input, alarm signal output, 0~20mA pressure sensor input x2, liquid injection (sol) output, equalizing pressure (sol) output, Display-only power output, 220V single-phase fan output, motor output		
Remarks	Built-in line filter		PFC built-in
Reactor	KAT0506	KAT0502	KAT0508

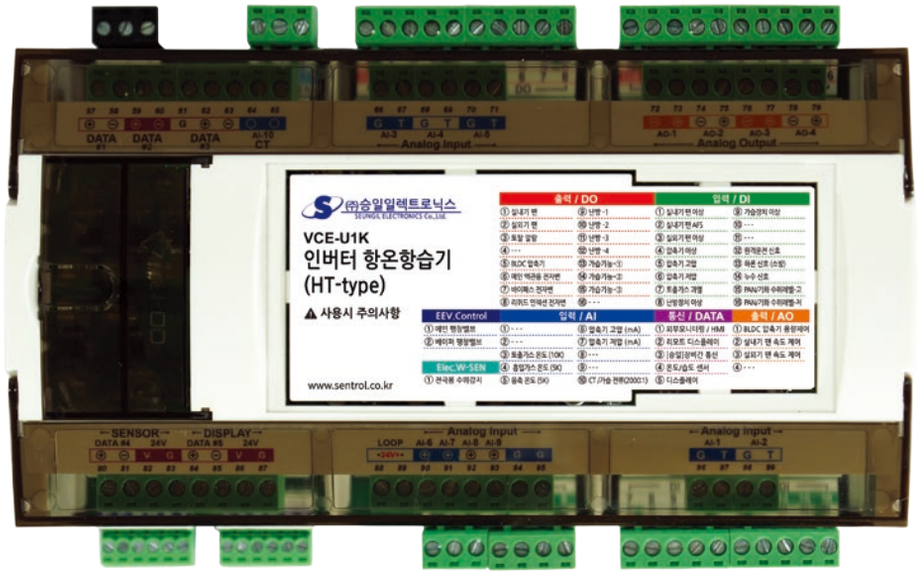
** Compressor rated capacity is based on R410A air conditioning. If the refrigerant is different or the intended use is different, please inquire separately.

〉FEATURES

- As a controller inverter integrated product, it is installed inside the outdoor unit, so there is no need for a peripheral control controller.
- There is no need to use a separate fan controller by controlling the outdoor unit single-phase fan with phase control and zero point detection function
- Controls and protects high and low pressure through the pressure sensor input, reducing the cost of the controller
- The discharge temperature protection function protects the compressor from system abnormalities.
- The volume of the product is reduced by performing forced cooling with an outdoor fan.
- PFC function enhances power factor compensation and stability of user system
- Various applications are possible with changeable settings and various parameters
- Able to cope with environmental changes with self-protection function
- Most of the basic functions of the package type are included.

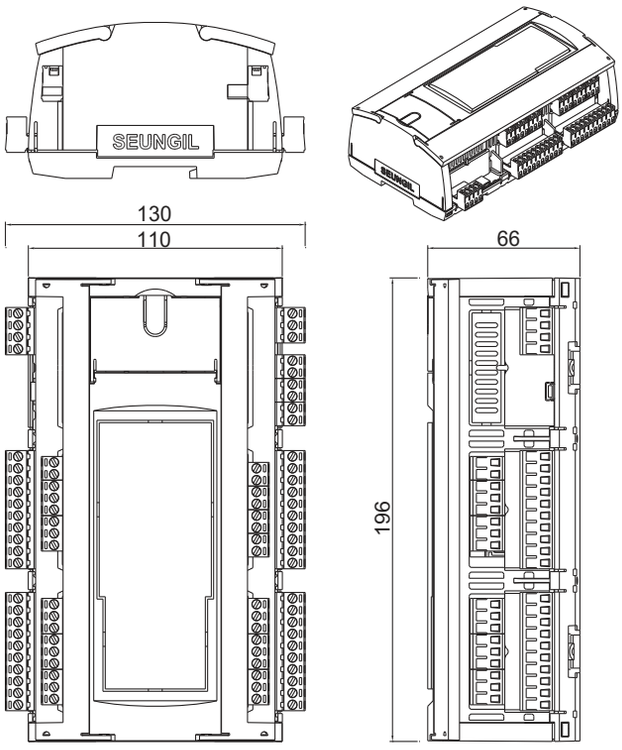
INVERTER AHU/ PACKAGED Air conditioner VCE-Series

SPECIFICATION Controller



[VCE-Series]

DRAWINGS



SPEC

POWER	INPUT	24VDC (Min: 2A)
DIGITAL INPUT	PORT	16 points (24V DC Source)
DIGITAL OUTPUT	PORT	16 points (Relay dry contact)
	METHOD	Relay contact
	RATE	250V 3A
ANALOG INPUT	TEMP. SENTOR	5ch (Thermistor)
	WATER LEVEL SENSOR	1ch Water level
	CT SENSOR	1ch (CT)
	4-20mA	4ch
ANALOG OUTPUT	PORT	4ch (4~20mA)
	LOAD RESIST	500Ω
COMM.	COMM. PORT	5ch (Display, Sensor, Remote, Monitoring, M/S)
	ADDRESS	1-254
	SPEED	9600,19200, 38400, 115200bps
	PARITY BIT	None
	STOP BIT	1bit
	DISTANCE	1.2km (can be shortened)
	PROTOCOL	MODBUS RTU, SEUNGIL protocol
SENSOR	T/H SENSOR	1ch
ENV	OPERATING T/H	-20~70℃, 5~95% (non-condensate)
	STAORAGE TEMP.	-30~80℃

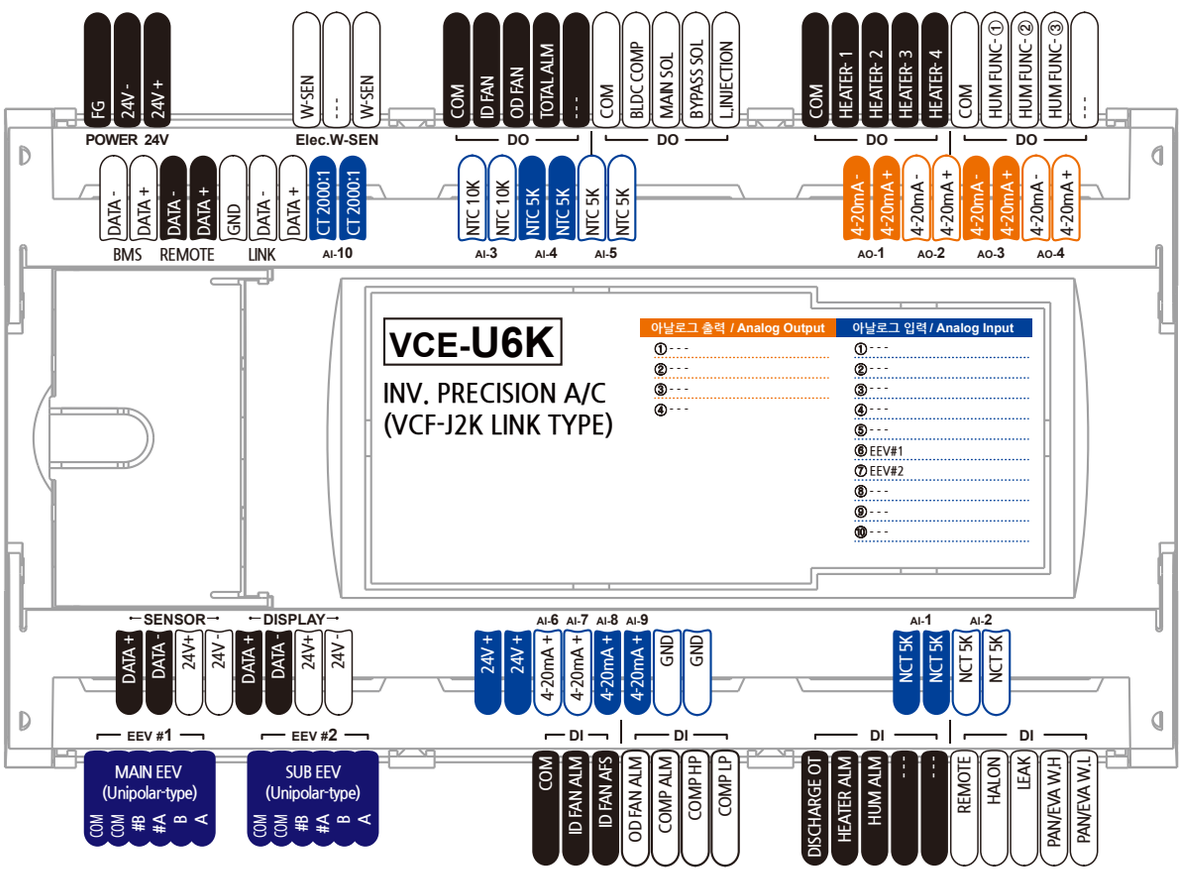
INVERTER AHU/ PACKAGED Air conditioner VCE-Series

〉Overview [VCF-J2K link type]

In accordance with the configuration where the compressor is installed outdoors, it is linked with the outdoor condensing unit controller (VCF-J2K) to control the indoor unit's electronic expansion valve 2ch, heater 4 stages, humidifier (electrode or step), and indoor unit fan capacity.

I/O LIST

Cutout Dimension (mm) 147.5×100.5



SCREEN (MODEL: AVDP-MK-U6K)

SPEC

POWER	24VDC (Min: 2A)	
I/O	DI	16 points (24VDC)
	DO	16 points (250VAC 3A)
	AI	5ch (Thermistor) Temperature 4ch (4~20mA) Electric current 1ch (CT) Operating current 1ch Water level
	AO	4ch (4-20mA)
	COMM.	3ch RS-485 1ch Display 1ch Remote Display

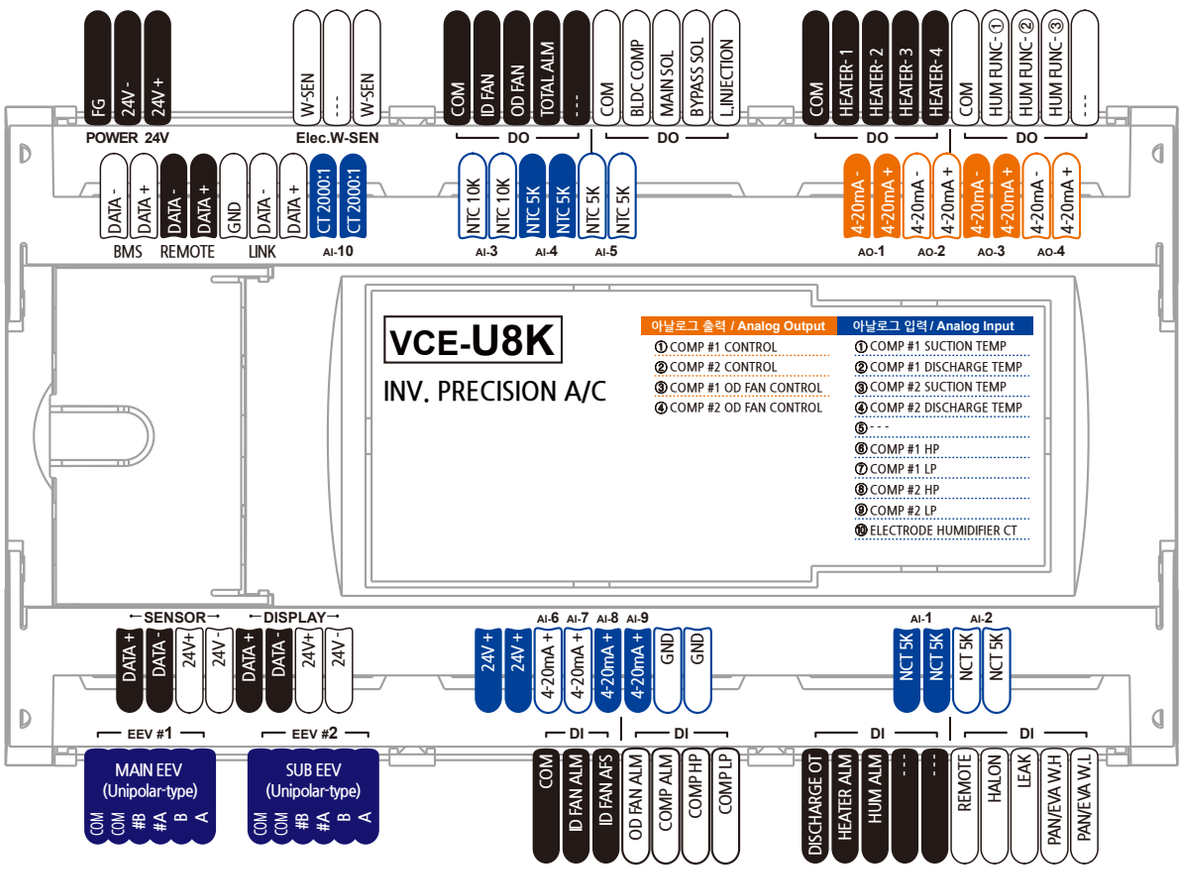
INVERTER AHU/ PACKAGED Air conditioner VCE-Series

〉 Overview [VCE-U8K]

It is a product that can be configured with compressor 2cycle PI control, expansion valve 2ch, indoor fan, outdoor fan PID control, humidifier (electrode or step), and heater 4 levels according to the configuration in which the compressor is installed indoors.

I/O LIST

Cutout Dimension (mm)	147.5×100.5



SCREEN (MODEL: AVDP-MK-U8K)

SPEC

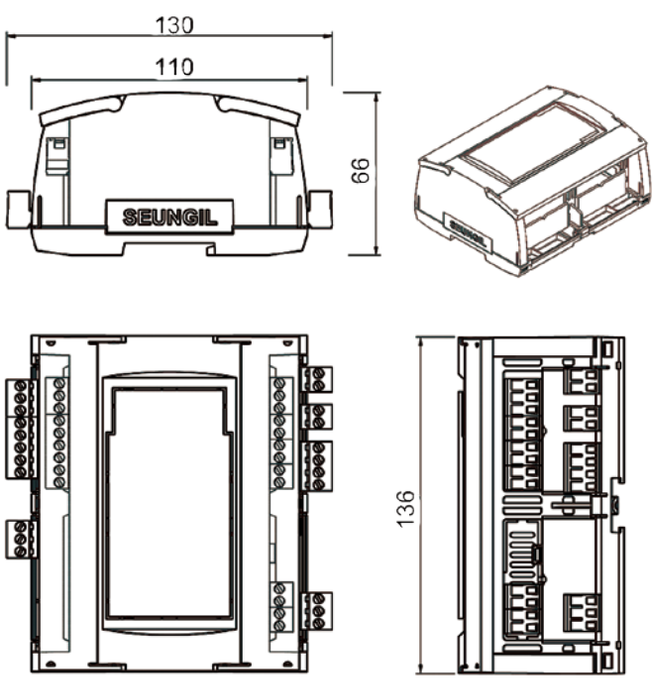
POWER	24VDC (Min: 2A)	
I/O	DI	16 points (24V DC Source)
	DO	16 points (250VAC 3A)
	AI	5ch (Thermistor) Temperature 4ch (4~20mA) Electric current 1ch (CT) Operating current 1ch Water level
	AO	4ch (4-20mA)
	COMM.	3ch RS-485 1ch Display 1ch T/H sensor

INVERTER AHU/ PACKAGED Air conditioner VCF-Series

SPECIFICATION Controller

[VCF-Series]

DRAWINGS



SPEC

POWER	INPUT	24VDC (min:2A)
DIGITAL INPUT	PORT	10 points (24VDC source)
DIGITAL OUTPUT	PORT	12 points
	METHOD	Relay contact
	RATE	250V 3A
ANALOG INPUT	TEMP SENSOR	2ch (Thermistor)
	WATER LEVEL SENSOR	1ch Water level
	CT SENSOR	1ch (CT)
	4-20mA	2ch
ANALOG OUTPUT	PORT	3ch (4-20mA or 0-10VDC)
	LOAD(RESIST)	500Ω at 4-20mA
COMM.	PORT	5ch
	ADDRESS	1 ~ 254
	BAUDRATE	9600, 19200, 38400bps
	PARITY BIT	None
	STOP BIT	1bit
	DISTANCE	1.2km (Can be shortened)
	PROTOCOL	MODBUS RTU (2ch), SEUNGIL (2ch)
ENV	OPERATION	-10~50℃ (non-condensate)
	STORAGE	-20~60℃

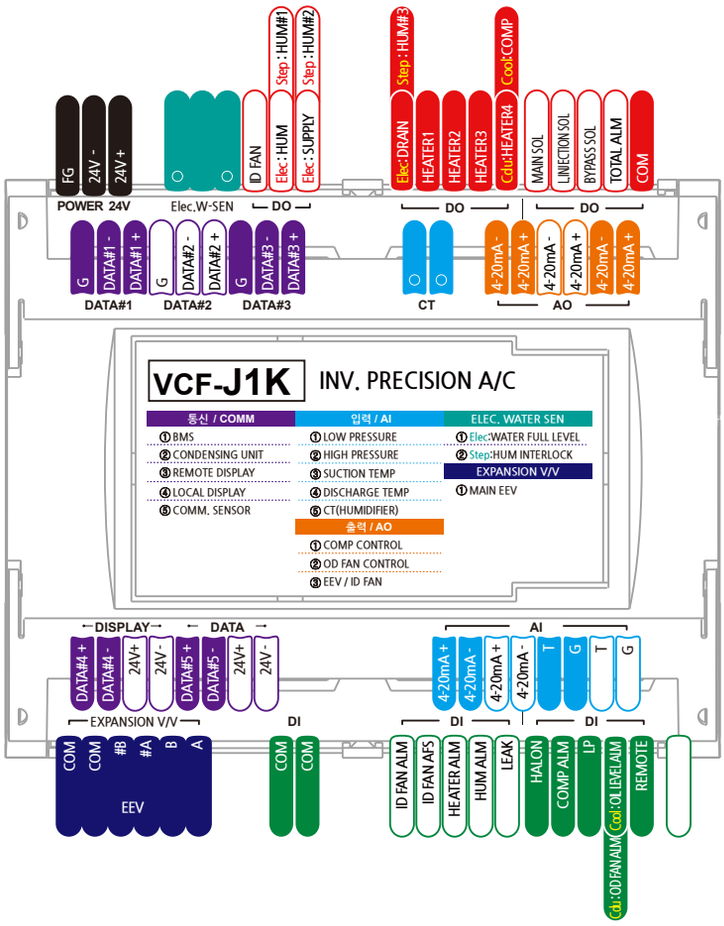
INTERTER AHU/ PACKAGED Air conditioner VCF-Series

〉 Overview [VCF-J1K]

In accordance with the configuration where the compressor is installed outdoors, it is linked with the outdoor condensing unit controller (VCF-J2K) to control the indoor unit's electronic expansion valve 1ch, heater 3 stages, humidifier (electrode or step), and indoor unit fan capacity. When the compressor is installed indoors, it is possible to control 1 cycle of inverter cooling, heating heater 3, and electrode humidifier with a single controller.

I/O LIST

Cutout Dimension (mm)	147.5×100.5



SCREEN (MODEL: AVDP-MK-J1K)

SPEC

POWER	24VDC (Min: 2A)	
I/O	DI	10 points (24VDC)
	DO	12 points (250VAC 3A)
	AI	2ch (Thermistor) Temp 2ch (4~20mA) Electric current 1ch (CT) Operating current 1ch Water level
	AO	3ch (4-20mA)
	COMM.	3ch RS-485 1ch Display 1ch T/H sensor

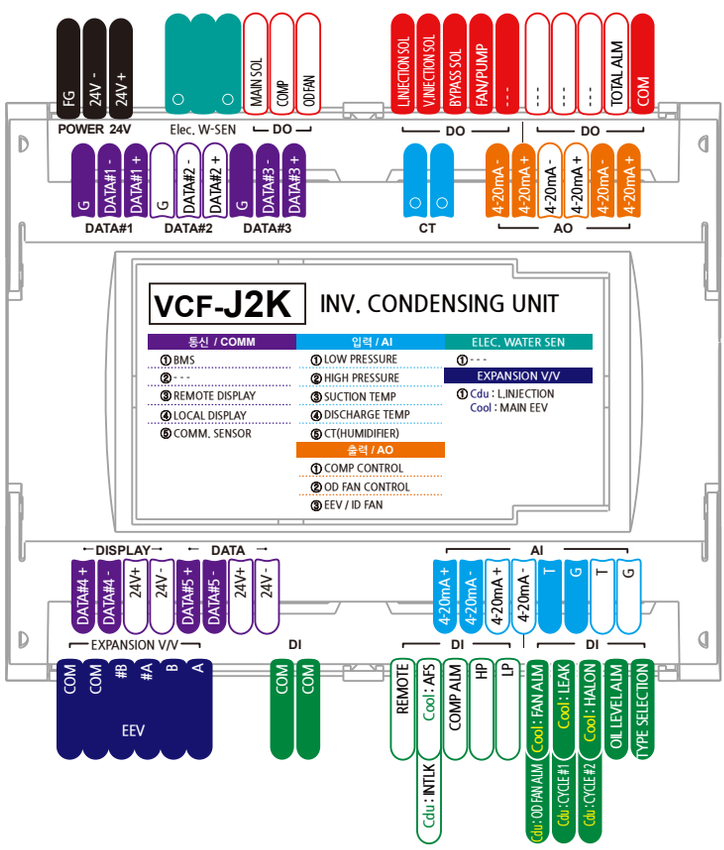
INVERTER CONDENSING UNIT VCF-Series

〉Overview [VCF-J2K]

It is a product that allows proportional control of inverter compressor and outdoor fan in conjunction with the indoor unit controller (VCF-J1K) according to the configuration in which the compressor is installed outdoors.

I/O LIST

Cutout Dimension (mm)	147.5×100.5



SCREEN (MODEL: AVDP-MK-J2K)

SPEC

POWER	24VDC (Min: 2A)	
I/O	DI	10 points (24VDC)
	DO	12 points (250VAC 3A)
	AI	2ch (Thermistor)T emp 2ch (4~20mA) Electric current 1ch (CT) Operating current 1ch Water level
	AO	3ch (4-20mA)
	COMM.	3ch RS-485 1ch Display 1ch T/H sensor

AHU / PACKAGED Air conditioner STHAV-Series

〉 OVERVIEW

As a configurable controller using a high-performance microprocessor, it can control cooling, heating, humidification, and dehumidification, and it provides analog outputs (voltage, current) according to the site conditions, so it is possible to easily control inverters, heating and cooling valves and external The monitoring communication protocol is provided as a general-purpose protocol (MODBUS RTU) so that users can easily link to HMI or web server. In addition, it is equipped with various protection functions to extend the life of the compressor and protect it, so you can control it more safely. Depending on the option, when an alarm occurs, the situation at the time of occurrence is memorized, so that the user can perform maintenance quickly and easily.

〉 SPECIFICATION

S	T	H	A	V	–			–		
SERIES						TYPE			CODE	

〉 FEATURES

- Heating 5 Step (including SSR), cooling (dehumidification) 3 Step, humidification (Pan type 2Step, Vaporization type, electrode type) built-in as standard
- Analog output (current temperature / current humidity / cooling / heating / humidification / dehumidification / cooling dehumidification, etc.) can be individually set
- External monitoring (MODBUS RTU protocol) communication 2ch
- Addition of minimum fan operation time (60 seconds) when operation is stopped during heating
- Main unit /remote display (acceptance protocol) communication 2ch
- Alarm generation and FAN ON/OFF possible according to AFS alarm setting
- Free Voltage (100~240V) can be used by applying SMPS
- Alarm can be generated and humidifier ON/OFF according to leak setting
- Compressor restart minimum protection time function
- Remote monitoring function via TCP/IP (option)
- Low pressure alarm function by compressor low pressure time and number of times during operation
- Outside air cooling (damper control) function (option)

〉 HARDWARE

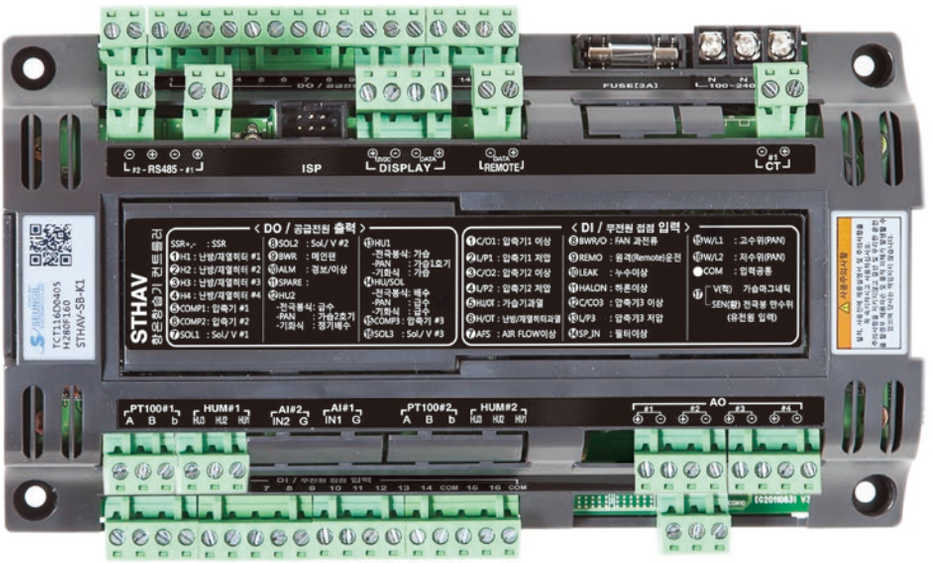
STHAV-MB-[CODE]	Cooling(Dehum) 3step, Heating SSR + Humidifier(Resistive, Evaporative, Electrode) Monitoring Comm. (MODBUS RTU) 2ch, Display Comm. (SEUNGIL protocol) 1ch
STHAV-MA-[CODE]	MB specification + Analog output 4ch
STHAV-ST-[CODE]	MB specification + Schedule
STHAV-SB-[CODE]	MB specification + Schedule + Analog output 4ch

〉 PROGRAM

CODE	PROGRAM	NOTE
STHAV – [ ] – K1	Packaged air conditioner / Standard	Cooling (dehumidification) 3 steps, heating 5 steps, humidification (electric heating, vaporization, electrode type)
STHAV – [ ] – K3	Humidification 3 Step	HU1 humidification stage 1, HU2 humidification stage 3 stages, HU/SOL humidification stage 3 stages
STHAV – [ ] – K4	Sewon century standard	High humidity alarm (50~99%), low humidity alarm (1~49%), high temperature alarm (19.0~60.0℃), Low temperature alarm (0.0~18.0℃)
STHAV – [ ] – K6	Cooling 4 step AO (Damper manual control)	SPARE output: COMP 4 (no SOL V/V output), SPARE input: COMP 4 OCR Manual control of analog output (#1~#4) to 0~100%, dehumidification limit function
STHAV – [ ] – K9	Compressor 2 cycle	Cooling (dehumidification) 2 steps, heating 5 steps, humidification (electric heating, vaporization, electrode type)

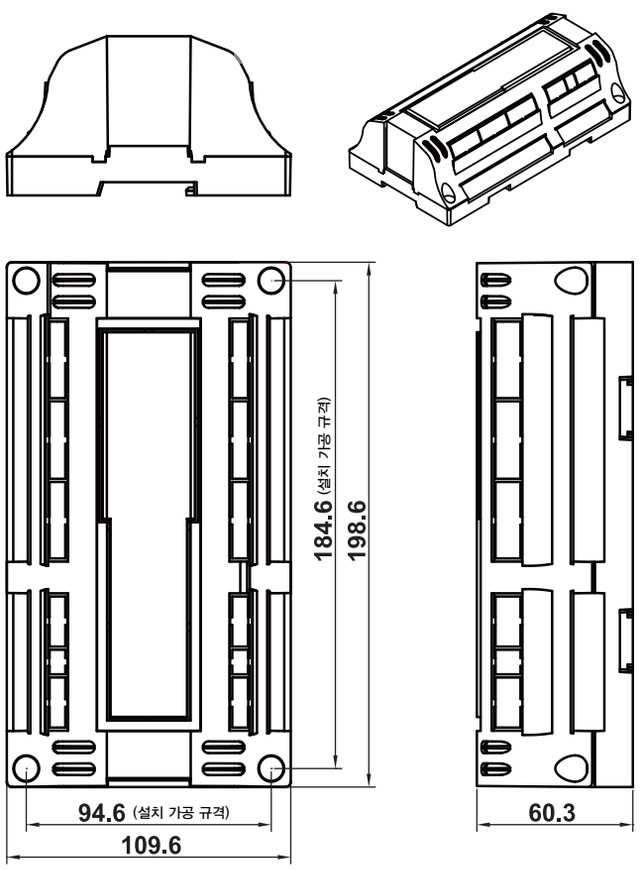
AHU PACKAGED Air conditioner STHAV-Series

SPECIFICATION Controller



[STHAV-SB]

DRAWINGS



SPEC

POWER	INPUT	100–240VAC 50/60Hz
MICOM	MCU	ATmega2560
DIGITAL INPUT	INPUT	16 points (24VDC) 1 point (Water level)
DIGITAL OUTPUT	OUTPUT	16 points / 1point (SSR)
	METHOD	Relay contact / PWM
	RATE	250V 3A / 24VDC
ANALOG INPUT	TEMP. SENSOR	1ch (PT100Ω)
	WATER LEVEL	1ch (0–3VDC)
	CT SENSOR	1ch
ANALOG OUTPUT	PORT	4ch (4–20mA or 0–10VDC)
	LOAD(Resist)	500Ω at 4–20mA
COMM.	PORT	4ch
	ADDRESS	1 ~ 99
	BAUDRATE	9600, 19200bps
	PARITY BIT	None
	STOP BIT	1bit
	DISTANCE	1.2km
	PROTOCOL	MODBUS RTU (2ch), SEUNGIL (2ch)
RTC	SCHEDULE	Daily, weekly, Yearly
ENV	OPERATING T/H	–20~70℃, 5~95% (non–condensate)
	STORAGE TEMP	–30~80℃

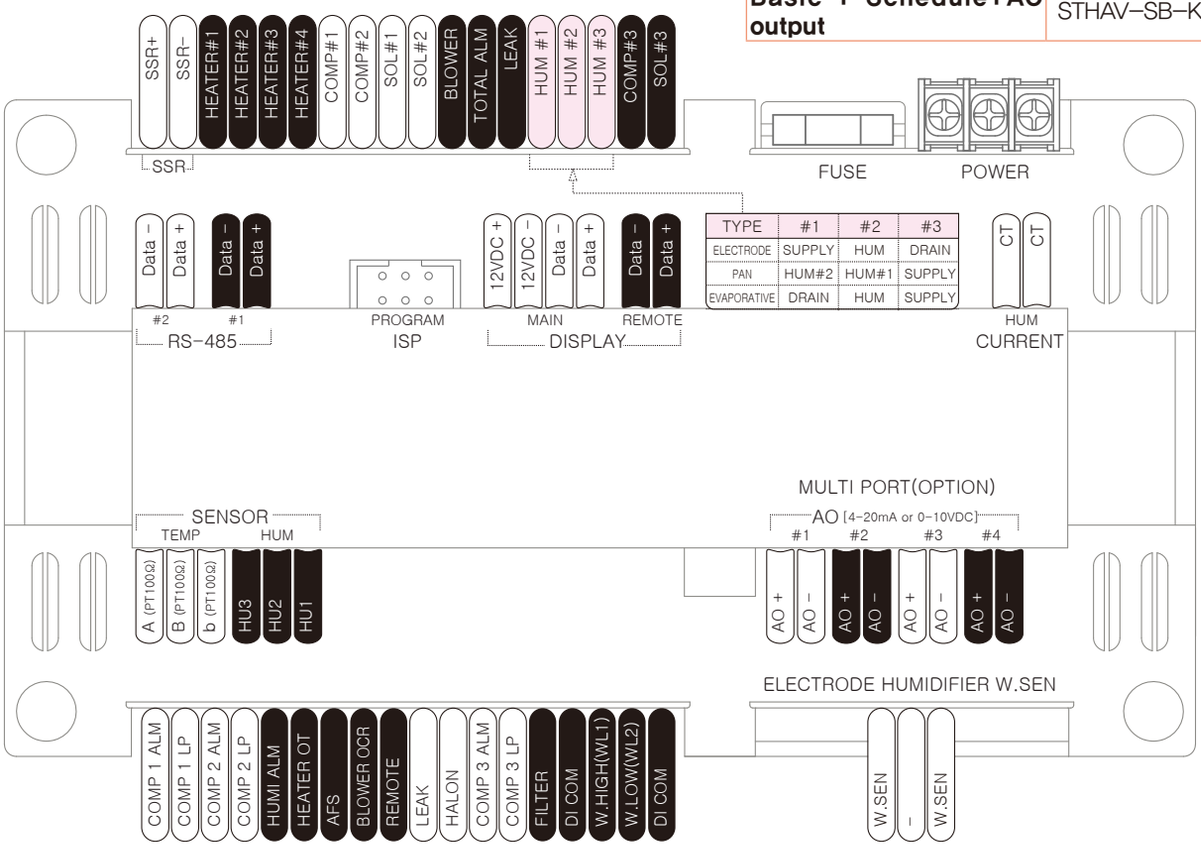
AHU / PACKAGED Air conditioner STHAV-Series

〉 Overview [STANDARD K1]

The logic is configured to be applicable to various manufacturers' products, and there are 4ch RS-485 communication ports, so main body/remote display and 2ch external monitoring using MODBUS RTU protocol are provided as standard.

Controller I/O & selection guide

Basic	STHAV-MB-K1
Basic type + AO output	STHAV-MA-K1
Basic + schedule	STHAV-ST-K1
Basic + Schedule+AO output	STHAV-SB-K1



COMPONENT SELECTION

〉 DISPLAY

3"Mono horizontal

AVDP-NH-K1

3.2"Color horizontal

AVDP-SK-K1

3"Mono vertical

AVDP-NV-K1

3.2"Color vertical

AVDP-VK-K1

7"Color touch

AVDP-V7-K1

〉 SENSOR

Room type

YS-878B

Duct type

SHX-DL-V3-PT-AP

〉 Humidifier current detection (CT)

1000:1 (Basic offer)

KCT-TC13L

2000:1
(45g/More option)

KCT-TC14L

AHU / PACKAGED Air conditioner ST31-Series

〉OVERVIEW

As a configurable controller using a high-performance microprocessor, it can control cooling, heating, humidification, and dehumidification, and it provides analog output (voltage, current) according to the site conditions, so it is possible to easily control inverters, heating and cooling valves and external The monitoring communication protocol is provided as a general-purpose protocol (MODBUS RTU) so that users can easily link to HMI or web server. In addition, it is equipped with various protection functions to extend the life of the compressor and protect it, so you can control it safely. When an alarm occurs, it is designed to remember the situation at the time of occurrence, so that the user can perform maintenance quickly and easily.

〉CLASSIFICATION (Set composition)

S	T	3	1			-		
SERIES				TYPE			CODE	

〉FEATURES

COLOR DISPLAY	You can choose between 7-inch and 4.3-inch color displays to suit your preferences.
1:N MULTI OPERATION	By connecting up to 5 controllers, it is possible to save energy by sensing the temperature and humidity of each controller for optimal operation.
ENERGY SAVING	Chamber type, general type, and energy saving type control can be selected and used according to the user's preference.
MULTI DIGITAL INPUT PORTS	You can use it freely by selecting the necessary alarm and interlock signals according to the system.
SCHEDULE OPERATION	It is equipped with daily, weekly, and yearly schedule operation, so you can conveniently use it at the desired temperature and humidity at the desired time.
ROTATION FUNCTION	Compressor rotation function is installed so that the compressor can be used equally.
EASY MAINTENANCE	It is easy to maintain as it can memorize the status screen where you can check the overall input/output status and operation history, and 30 trip details (including surrounding information).

〉HARDWARE

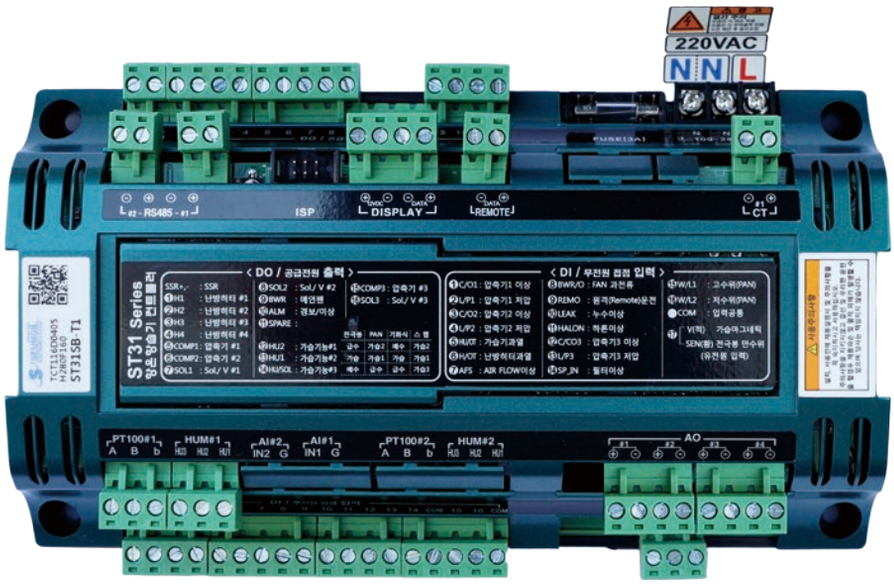
ST31ST-[CODE]	Cooling(dehumidification) 3 steps, heating 5 steps, humidification(fan type, vaporization type, electrode type, 3 steps) External monitoring communication(MODBUS) 1port, remote/body display communication(Seungil) 1port each, interlocking operation communication 1port + schedule
ST31SB-[CODE]	ST specification + analog output 4ch

〉SPECIFICATION (PROGRAM) CONFIGURATION

SPEC	CONTENTS	NOTE
ST31 - T1	ACU / standard	Cooling (dehumidification) 3 steps, heating 5 steps, humidification (electric heating, vaporization, electrode type)
ST31 - T9	Compressor 2 cycle	Air conditioning (dehumidification) 2 steps, individual compressor alarm (high pressure, low pressure, over current, outdoor fan over current) 5 stages of heating, humidification (electric heat type, vaporization type, electrode type)
ST31 - N4	ACU + T/H COMM. sensor	T1 specification + outdoor unit error added (DI) + HTCB communication function added. (Up to 5 units can be connected), AO (set temperature record output) added.
ST31 - N6	ACU + T/H COMM. sensor + cooling 4step	4 steps of cooling (dehumidification), 5 steps of heating, humidification (electric heating, vaporization, electrode type), HTCB communication function added. (Up to 5 units can be connected)

AHU / PACKAGED Air conditioner ST31-Series

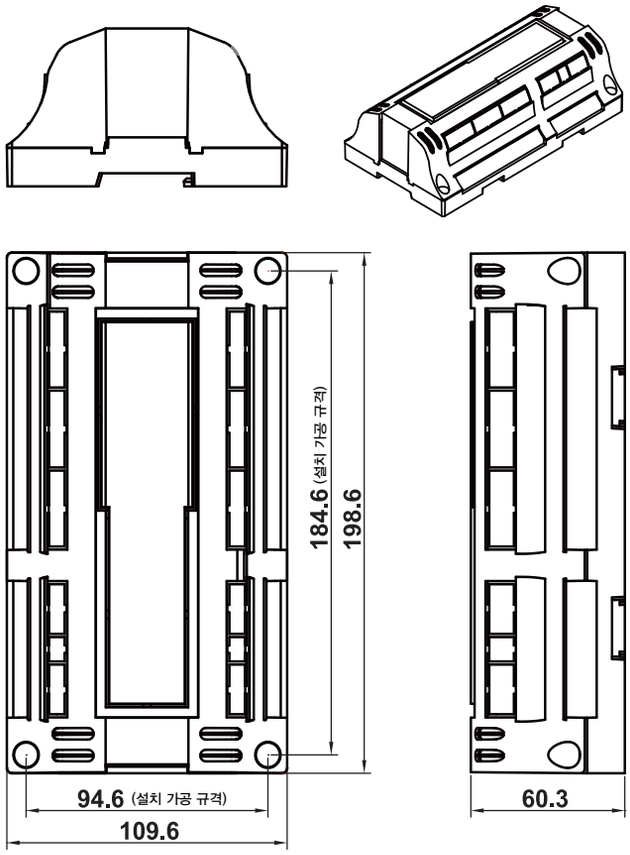
SPECIFICATION Controller



[ST31SB]

ST31 BASIC + ANALOG OUTPUT 4ch

DRAWINGS



SPEC

POWER	INPUT	100-240VAC 50/60Hz
MICOM	MCU	ATmega2560
DIGITAL INPUT	INPUT	16 points(24VDC) 1point (water level)
DIGITAL OUTPUT	OUTPUT	16 points / 1point(SSR)
	METHOD	Relay contact / PWM
	RATE	250V 3A / 24VDC
ANALOG INPUT	TEMP. SENSOR	1ch (PT100Ω)
	WATER LEVEL	1ch (0-3VDC)
	CT SENSOR	1ch
ANALOG OUTPUT	PORT	4ch (4-20mA or 0-10VDC)
	LOAD(Resist)	500Ω at 4-20mA
COMM.	PORT	4ch
	ADDRESS	1 ~ 99
	BAUDRATE	9600, 19200, 38400bps
	PARITY BIT	None
	STOP BIT	1bit
	DISTANCE	1.2km (Can be shortened)
	PROTOCOL	MODBUS RTU (1ch), SEUNGIL (2ch), Link operation (1ch)
RTC	SCHEDULE	Daily, weekly, yearly
ENV	OPERATING T/H	-20~60℃, 5~95% (non-condensate)
	STORAGE TEMP	-30~80℃

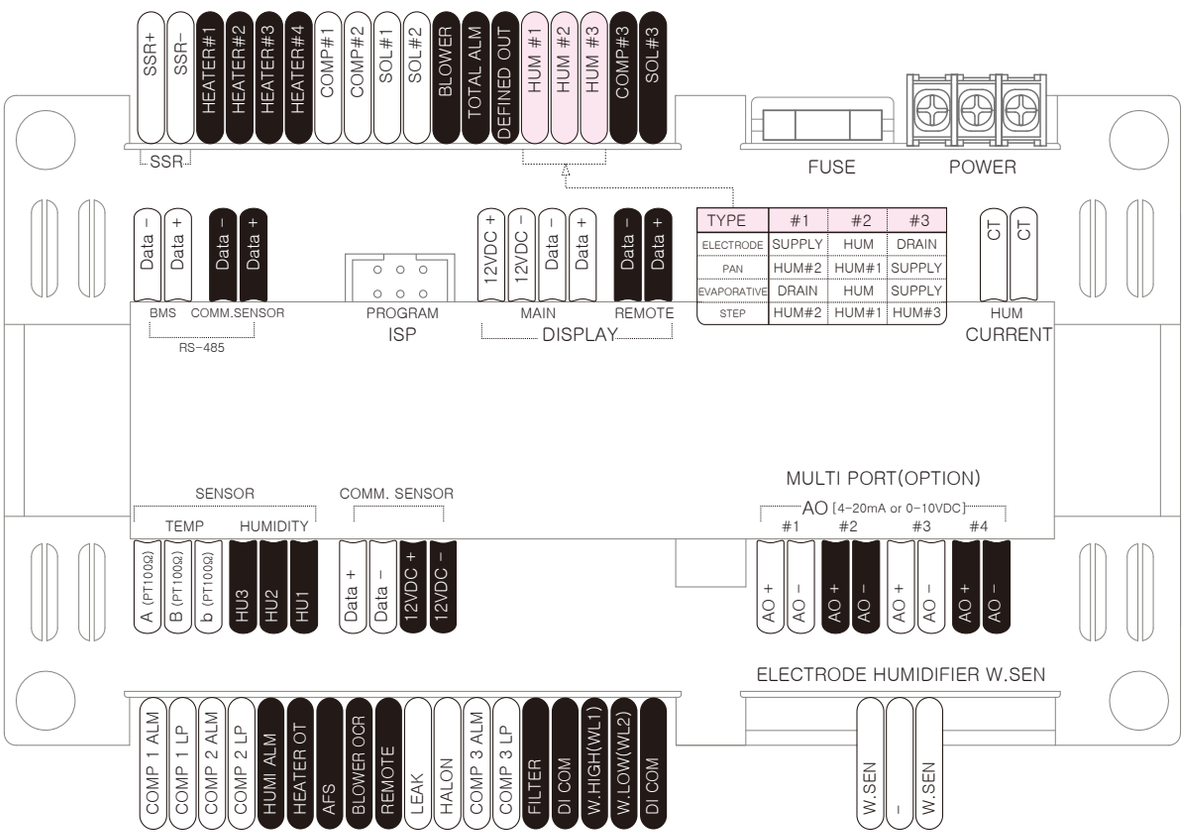
AHU / PACKAGED Air conditioner ST31-Series

〉Overview [Compressor 3Cycle, Temperature Humidity Communication Sensor N4]

It is a compressor 3Cycle compatible model and can be used by connecting up to 5 temperature/humidity communication sensors.

Controller I/O and Selection Guide

Basic	ST13ST-N4
Basic+AO Output	ST13SB-N4



CONPONENTS SELECTION

〉DISPLAY

4.3"Color touch
AVDP-MK-N4

7"Color touch
AVDP-LK-N4

〉SENSOR

Room type
YS-878B

Duct type
SHX-DL-V3-PT-AP

Room type (COMM.)
RHX-RB-MM

Duct (COMM.)
RHX-DL-MM-AP

〉Humidifier current detection (CT)

1000:1 (Basic offer)
KCT-TC13L

2000:1
(45g/More option)
KCT-TC14L

SCREW CHILLER / CONDENSING UNIT UC7-Series

〉 OVERVIEW

UC7-series is a high-performance controller using a 7-inch color display and 32-bit MCU. A 7-inch display is applied for the convenience of users and installers, and it helps in maintenance by checking the condition of the equipment and reporting problems.

[BLACK BOX SCREEN]

〉 CLASSIFICATION

U	C	7	-			-			K
		SERIES		TYPE			CODE		CODE

〉 FEATURES

- Control specialized for various compressors
- Schedule function (up to 20), day-of-week repeat function
- Communication (MODBUS) check function notifies abnormal situations when communication is connected.
- With the internal system check function, you can easily check the operation status for one week.
- Up to 50 alarm history can be saved
- Simultaneous storage of peripheral input/output status when an alarm occurs.
- Conversational message display helps in resolving problems in case of problems.
- Black box function

〉 PROGRAM

UC7-CL-10K	Screw Stepless Chiller
UC7-CS-11K	Screw Step Chiller
UC7-RC-12K	Screw Step Condensing Unit
UC7-RC-13K	Screw Stepless Condensing Unit

SCREW CHILLER / CONDENSING UNIT UC7-Series

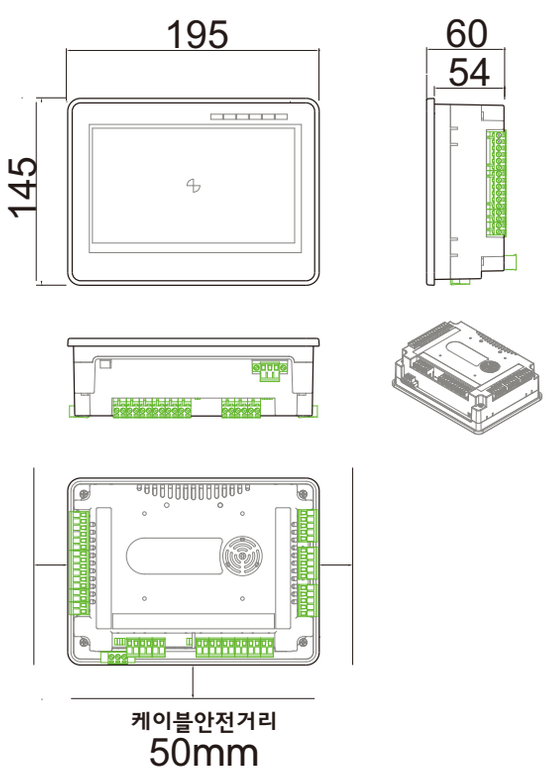
SPECIFICATION Controller

[UC7]

Cutout Dimension (mm)	187×137

COLOR 7inch

DRAWINGS



SPEC

POWER	INPUT	24VAC (Min: 1A)
MICOM	MCU	32bit RISC, 32bit EISC
DISPLAY	LCD	7inch, 800x3 (RGB)x480, TFT
	TOUCH PANEL	4 wire resistive
DIGITAL INPUT	INPUT	10 points
	SIGNAL POWER	DC24V (self-powered 2 points)
DIGITAL OUTPUT	OUTPUT	12 points
	METHOD	Relay contact
	RATE	250V 3A / 24VDC
ANALOG INPUT	TEMP. SENSOR	4ch (Thermistor)
	INPUT SENSOR	2ch (4-20mA)
ANALOG OUTPUT	PORT	3ch (4-20mA)
	LOAD(Resist)	500Ω
COMM.	PORT	1ch Device-to-device comm. 1ch Monitoring
	COMM. ADDRESS	1 ~ 254
	SPEED	9600, 19200, 384000, 115200bps
	PARITY BIT	None
	STOP BIT	1bit
	DISTANCE	1.2km (Can be shortened)
	PROTOCOL	MODBUS RTU (1ch), SEUNGIL (1ch)
ENV	OPERATING T/H	-10~50℃, 5~95% (Non-condensate)
	STORAGE TEMP.	-20~60℃

CHILLER UC3-Series

〉 OVERVIEW

It detects the control temperature (NTC 10K) and efficiently controls the compressor and heater. Depending on the option, high pressure, low pressure, discharge temperature control, reservation operation, and condenser fan control are possible.

[BASIC] [ADVANCED]

〉 CLASSIFICATION

U	C	3	–		–	G	

SERIES

CODE
- G1: SINGLE UNIT CHILLER 1Cycle
- G2: SINGLE UNIT CHILLER 2Cycle
- G3: SINGLE UNIT CHILLER COLD STORAGE

TYPE
- B: BASIC STANDARD PRODUCT
- F: ADVANCED STANDARD PRODUCT

〉 FEATURES

- Intuitive color display
- Compressor 1-stage/2-stage, heating 2-stage control
- Individual input for water flow, remote operation, low water level, reverse phase detection
- Liquid injection output possible
- Up to 50 alarm history can be saved

〉 COMPONENTS

[CONTROL SENSOR]
STW-PA-TK-2M

[POWER TRANS (24VAC 20VA)]
TR220-24 / 20

[CONTROL WELL TYPE SENSOR]
STW-PN-TK-2M

CHILLER UC3-Series

SPECIFICATION Controller

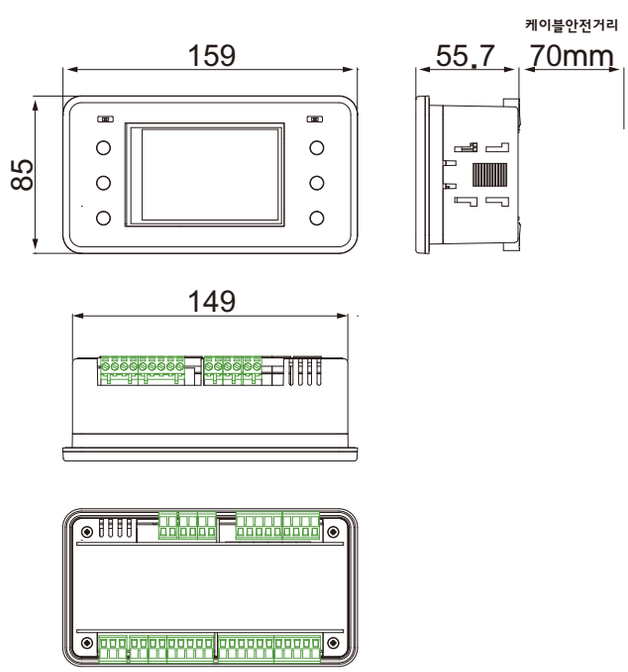
[UC3-F]

Basic type + communication + analog output 2ch

Cutout Dimension (mm)	150×76

COLOR	3.5 inch

DRAWINGS



SPEC

POWER	INPUT	24VDC 20VA / 24VDC(Min: 1A)
MICOM	MCU	32bit RISC, Arm9
DISPLAY	LCD	3.5inch, 480x320
DIGITAL INPUT	INPUT	10 points
	SIGNAL POWER	DC24V (self-powered 1 points)
DIGITAL OUTPUT	OUTPUT	8 points
	METHOD	Relay contact
	RATE	250V 3A / 24VDC
ANALOG INPUT	TEMP. SENSOR	2ch (Thermistor)
	PRESSURE SENSOR	2ch (4-20mA)
ANALOG OUTPUT	PORT	2ch (4-20mA)
	LOAD(Resist)	500Ω
COMM.	PORT	1ch Monitoring
	COMM. ADDRESS	1 ~ 99
	SPEED	9600, 19200, 38400bps
	PARITY BIT	None
	STOP BIT	1bit
	DISTANCE	1.2km (can be shortened)
	PROTOCOL	MODBUS RTU
ENV	OPERATING T/H	-10~50℃, 5~95% (non-condensate)
	STORAGE T	-20~60℃

DEHUMIDIFIER SDHAV-Series

〉 OVERVIEW

Rust prevention of pharmaceutical and chemical industry manufacturing lines, power plants, ships, and precision electronic parts, and prevention of dew condensation in food and cold storage (HACCP response support), It can be applied to dehumidifier products used for rust prevention of aerospace defense equipment, anti-condensation prevention, air conditioning in clean rooms, environmental test rooms, museums, etc., low-humidity drying of plastic molding, and quality maintenance in lithium battery manufacturing.

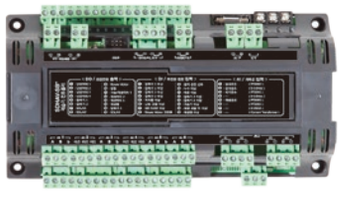
〉 CLASSIFICATION

S	D	H	A	V	-	S	B	-		
				SERIES			TYPE		CODE	

〉 FEATURES

- 3 compressors can be selected as after/pre-cooler.
- Dehumidification method can be selected from dry, wet, and combined methods.
- External monitoring (MODBUS RTU protocol) communication 2ch
- Main unit/remote display (acceptance protocol) communication 2ch
- Free Voltage (100~240V) can be used by applying SMPS
- Compressor restart minimum protection time function
- Low pressure alarm function by compressor low pressure time and number of times during operation
- Analog output (current temperature / current humidity / cooling / heating / humidification / dehumidification / cooling dehumidification / regeneration, etc.) can be individually set
- Addition of minimum fan operation time (60 seconds) when operation is stopped during heating
- Alarm generation and FAN ON/OFF possible according to AFS alarm setting
- Alarm can be generated and humidifier ON/OFF according to leak setting
- Remote monitoring function via TCP/IP (option)
- Outside air cooling (damper control) function (option)

〉 SPECIFICATION

CONTROLLER	DISPLAY	T/H SENSOR
 SDHAV-SB	 3"MONO HORIZONTAL AVDP-NH	 YS-878B
	 4.3"COLOR TOUCH AVDP-MK  7"COLOR TOUCH AVDP-V7	 SHX-DL-V3-PT

DEHUMIDIFIER SDHAV-Series

SPECIFICATION

〉Controller

[SDHAV-SB]

〉Display

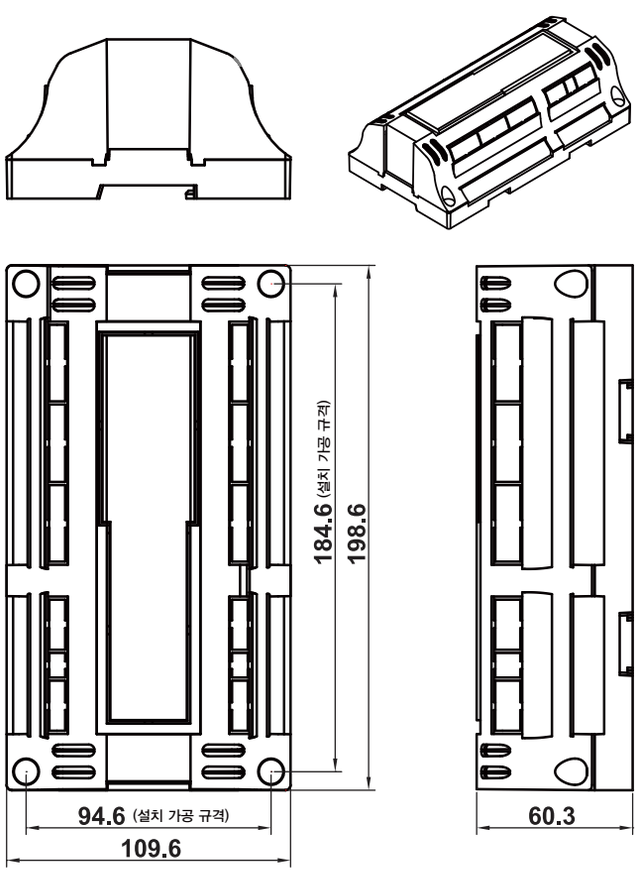
3"MONO HORIZONTAL
AVDP-NH

3"MONO VERTICAL
AVDP-NV

4.3"COLOR TOUCH
AVDP-MK

7"COLOR TOUCH
AVDP-V7

DRAWINGS



SPEC

POWER	INPUT	100-240VAC 50/60Hz
MICOM	MCU	ATmega2560
DIGITAL INPUT	INPUT	16 points (24VDC). 1point (220VAC)
DIGITAL OUTPUT	OUTPUT	16 points / 1point (SSR)
	METHOD	Relay contact / PWM
	RATE	250V 3A / 24VDC
ANALOG INPUT	TEMP. SENSOR	4ch (PT100Ω) 2ch (0-3VDC)
	HUMID SENSOR	1ch (PRESSURE or TEMP)
	CT SENSOR	1ch
ANALOG OUTPUT	PORT	4ch (4-20mA or 0-10VDC)
	LOAD(Resist)	500Ω at 4-20mA
COMM.	PORT	4ch
	COMM. ADDRESS	1 ~ 99
	SPEED	9600, 19200bps
	PARITY BIT	None
	STOP BIT	1bit
	DISTANCE	1.2km
	PROTOCOL	MODBUS RTU (2ch), SEUNGIL (2ch)
RTC	SCHEDULE	Daily, weekly, yearly
ENV	OPERATING T/H	-20~70℃, 5~95% (non-condensate)
	STORAGE TEMP.	-30~80℃

EEV CONTROLLER XV-Series

〉 OVERVIEW

The XV controller is equipped with 12-bit precision temperature / pressure sensing capability, and can control the superheat value optimally to prevent liquid compression of the compressor and achieve optimal refrigeration efficiency. it has a quick setting function that makes it easy to set complicated valve settings with one touch and use it immediately, making it easier for users to install and use

[XV1-UNIPOLAR]

[XV2-BIPOLAR]

〉 CLASSIFICATION

X	V		-		-		

	SPARE CODE
OPTION	A: BASIC M: BASIC+(MODBUS RTU) Comm. B: PCB TYPE
TYPE	1: UNIPOLAR 2: BIPOLAR 5: DRIVE 6: DRIVE

〉 FEATURES

- Superheat control, hot gas bypass, drive function
- PID prescision control algorithm
- Color display tool optimized for commissioning and initial setting (optional)
- Various alarm check functions for refrigeration cycle protection
- Applicable to various refrigerant
- Applicable to various EEV (bipolar, unipolar)

EEV CONTROLLER XV-Series

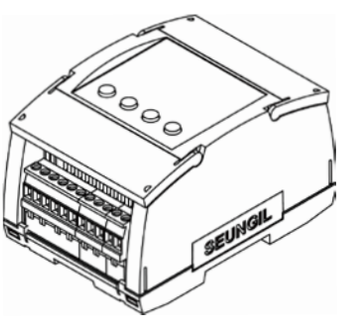
〉OVERVIEW

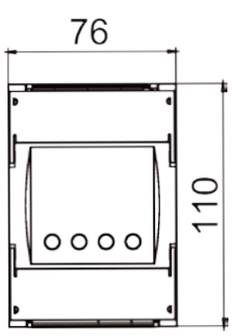
POWER INPUT	Main power : 24VAC/DC dual Sub power : 12 VDC (OPTION, standby power)
INPUT	DI : RUN/STOP, Defrost input AI : Temperature sensor (Thermistor), Pressure sensor/Remote signal (4~20mA)
OUTPUT	DO : Alarm output (Relay C contact, 250VA 3A)
MOTOR	EEV Control output (Unipolar/Bipolar)
COMM.	RS-485 1Ch, (MODBUS RTU) (OPTION)
OPERATION	-10℃ ~ 50℃ (0~95%, non-condensate)
STORAGE	-20℃ ~ 60℃ (0~95%, non-condensate)
REFRIGERANT	R22, R134A, R404A, R407C, R410A, R507, R452A, R452B, R502 (to be updated)

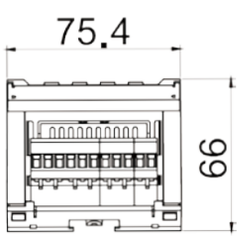
〉APPLICABLE EEV(to be added continuously)

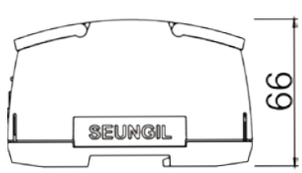
TYPE	XV (UNIPOLAR)	XV (BIPOLAR)	
MANUFACTURER	Sanhua	Danfoss	Sporlan
MODEL	DPF(O) DPF(S03) VPF	ETS 12.5-25	SER-B,-C,-D CDS-2,4,7 CDS-9,16,17 SDR-1X

〉DRAWINGS

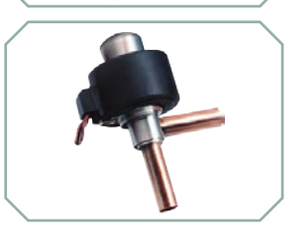








〉EEV



MODEL	CALIBER	R410 (KW)	R410 USRT	R22 (KW)	R22 USRT
DPF(TS1)2.2C-01	2.2	11.43	5.28	8.1	2.18
DPF(TS1)2.4C-17	2.4	18.57	8.8	13	3.49
DPF(TS1)3.0C-03	3.0	26.43	10.56	18.7	5.03
DPF(TS1)3.2C-01	3.2	42.5	17.6	36.3	9.76
DPF(TS2)4.0C-02	4.0	59	21.2	50.4	13.55
DPF(S03)4.5C-01	4.5	79.3	28.1	67.8	18.23
DPF(S03)5.5C-01	5.5	91.5	35.5	78.2	21.02
DPF(S03)6.5C-02	6.5	111.8	47.6	96	25.81
VPF50	-	343	52.8	287	77.15
VPF100	-	485	70.3	406	109.14
VPF150	-	872	105.5	730	196.24
VPF250	-	1354	351.7	1133	304.57

※ Refrigerant R22 standard

EEV CONTROLLER XV-Series

〉 ACCESSORY

SETTING DISPLAY	
MODEL	AVDP-LK-XV

7Inch DISPLAY
SAVE / LOAD for setting value of XV Series
Provides detail information with Graph (Open rate, Superheat, temperature & pressure of evaporator, saturated vapor temperature)

TEMPERATURE SENSOR		
MODEL		STX-PA-T5-2M
SPEC	SENSOR TYPE	NTC5KΩ
	RANGE	-40~120℃
	ACCURACY	±1%
	CABLE	2m

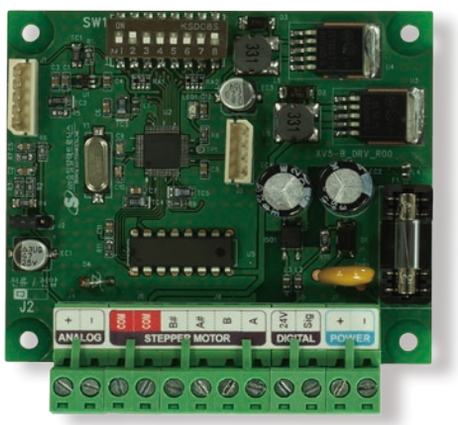
PRESSURE TRANSMITTER			
MODEL		EKS202	T2000
SPEC	INPUT RANGE	-1 ~15bar	-1 ~50bar
	USAGE TEMP.	-40~100℃	-20~80℃
	PRESSURE CONNECTION	7/16" -20UNF Female	7/16" -20UNF Female
	POWER SUPPLY	8~32VDC	10~30VDC
	SIGNAL OUTPUT	4-20mA	4-20mA
	ELECTRICITY CONNECTION	MPM plug	WIRE connection
	ACCURACY	0.25% FS	1% FS

POWER TRANS		
MODEL		TR220-24/10
SPEC	POWER INPUT	220VAC
	POWER OUTPUT	24VAC
	CAPACITY	10 VA

EEV CONTROLLER XV-Series

〉XV5-B OVERVIEW

XV5-B supports valves with rated voltage of 12VDC and can control various valves such as sanhua, danfoss, and sporlan with simple settings. You can respond faster by using a 32-bit microcomputer, and you can precisely control the sensing of the analog input (4-20mA, 0-10V) up to 4096 steps using a 12-bit ADC.

XV5-B	FEARTURES	
	POWER SUPPLY	24V AC/DC(±10%) 50~60Hz After using shielding transformer, start at least 20VA
	ANALOG INPUT	4-20mA Load resistance: 327Ω 0-10V Load resistance: 30KΩ Maximum cable length: 6 meter (AWG20/22)

〉XV6-B OVERVIEW

XV6-B can be used up to rated voltage of 12~24VDC, so various valves can be used. The sensing of analog input (4~20mA, 0~10V) can be precisely controlled up to 4096 steps using 12bit ADC. It also supports micro stepping control for faster and smoother valve control. XV6 is a driver suitable for controlling bipolar EEV, which is an electronic expansion valve.

XV6-B	FEATURES	
	POWER SUPPLY	24V AC/DC(±10%) 50~60Hz Separately attach a 1A fuse outside the power line. When using a transformer, start at least 20VA after using a shield transformer
	ANALOG INPUT	4-20mA Load resistance: 327Ω 0-10V Load resistance: 30KΩ Maximum cable length: 6meter (AWG20/22)

DIGITAL PRESSURE SWITCH SPC-Series

〉 OVERVIEW

It is a product that adds various convenient functions by digitizing the existing mechanical pressure gauge switches and gauges applied to various refrigeration and air conditioning equipment. It supports band control by pressure (high pressure, low pressure) and PID control function so that it can be controlled by the variable capacity compressor and the inverter driver of the outdoor fan. (PID control type) It is a new concept structure that can be installed with the pressure pipe connected from the front of the equipment.

Cutout Dimension (mm)

89.4 x 73.4

〉 CLASSIFICATION

S	P	C	–			–			–			▶ Code for non-standard

SERIES
- A: 1ch Pressure transmitter
- B: 1ch Pressure S/W controller
- C: 2ch Pressure S/W controller
- D: 2ch Differential pressure S/W controller
- E: 3ch Pressure S/W controller

CURRENT OPTION (H / W)
- H: HP 4-20mA AO 1ch
- L: LP 4-20mA AO 1ch
- P: HP/LP 4-20mA AO 2ch
- T: Triac 2points

COMM. (H / W)
- M: RS485 Comm. 1ch

FUNCTIONS (S / W)
- A: 2ch pressure s/w (Basic)
- B: Basic + AO (Transmission)
- C: Basic + AO (Transmission) + Comm.
- D: Basic + PID Analog Output
- E: Basic + PID Analog Output
- F: Fan 2 Step output
- N: Low pressure manual return, low pressure function output

SPARE CODE

〉 FEATURES

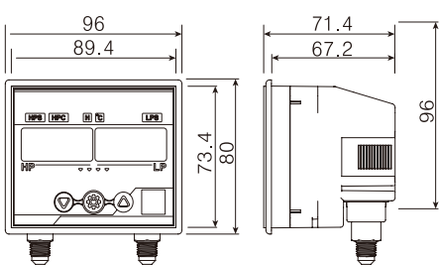
- Easy installation & Durable case structure
- Auto conversioning function of saturation temperature by refrigerant pressure table
- HP/LP protection, FAN control output integrated digital pressure switch
- RS-485 (MODBUS RTU) Communication (Option)
- Various pressure unit is applicable (MPa, psi, kgf/㎠, bar)
- Analog output 4~20mA (Option)
- Delay time setting, Auto/Manual restoration
- PID control function for precise of outdoor fan, Cooling watervalve, compressor (Option)

DIGITAL PRESSURE SWITCH SPC-Series

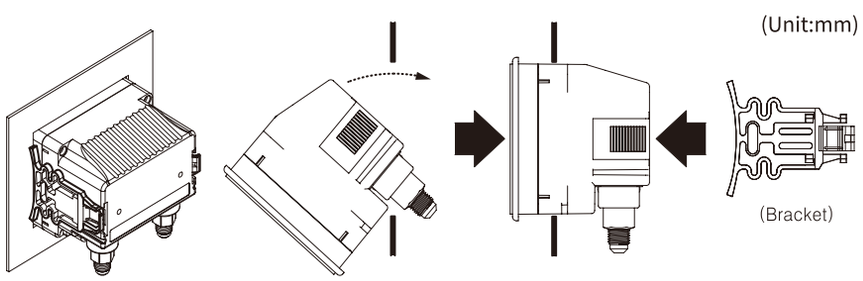
〉OVERVIEW

MODEL [SERIES]		PRESSURE SWITCH CONTROLLER [SPC]
POWER SUPPLY [RANGE]		100-240VAC 50/60Hz [±10%]
CONSUMPTION		200mA
DISPLAY		3 Digit FND x 2ea, LED x 10ea
INPUT	RANGE	Pressure 2ch (refrigerant),-1.0 ~ 5.0[Mpa], Accuracy: 0.5%
	CONNECTION	7/16 UNF Male
	REFRIGERANT	(22, 134, 404, 407, 410, 507)
CONTROL OUTPUT		Relay 250VAC 1A (1 3 x2ea 1 x1ea)
OPTION	ANALOG OUTPUT	4-20mA x 2ch, Load resistance (lower than 500Ω)
	COMM.	RS485 x 1ch, (MODBUS RTU)
FAN MULTI CONTROL		TRIAC contactless output, 2 points
CONTROL METHOD		ON/OFF Control(Standard) / BAND, P,PI,PD,PID Control(Option)
CIRCUMSTANCE		-10 ~ 50℃, 20 ~ 90%RH, (No-condensation)
STORAGE		-20 ~ 70℃, 5 ~ 95%RH, (No-condensation)
PROTECTION		IP33(Standard), IP55(Option)

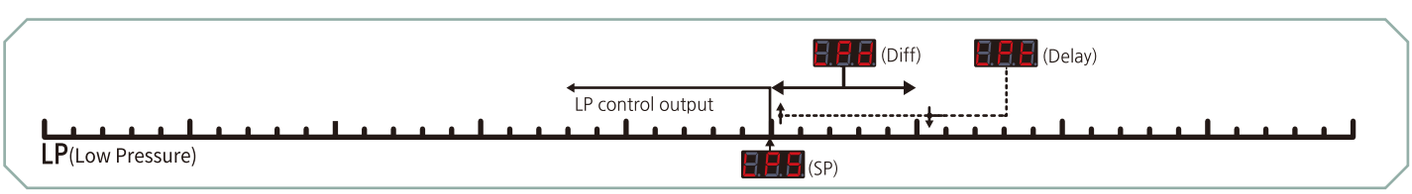
DRAWINGS

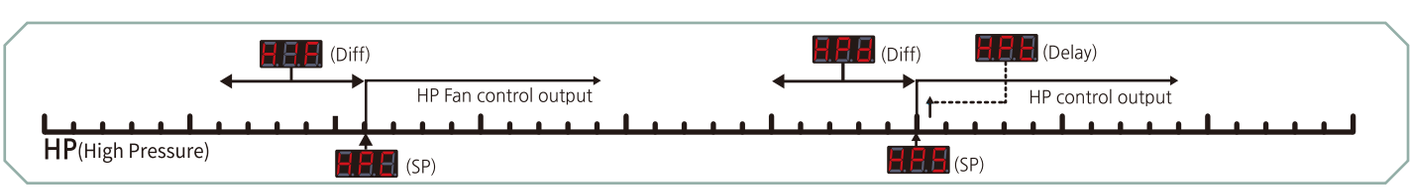


INSTALLATION



〉INPUT OUTPUT & CONTROL OUTPUT





TEMPERATURE/HUMIDITY SENSOR (MODBUS RTU)

〉 OVERVIEW

It is a low-power temperature and humidity transmitter that detects temperature and humidity and transmits data through RS-485 communication (MODBUS RTU).

[DUCT type]

[DS type]

[ROOM B type]

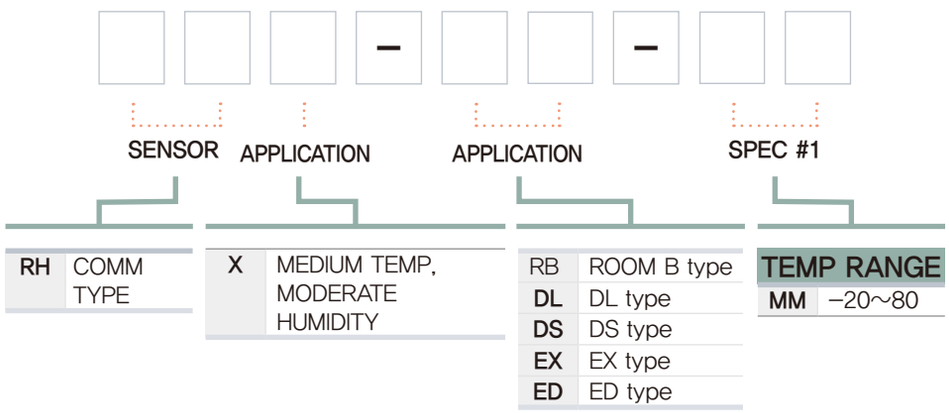
〉 TEMPERATURE SENSOR SPEC

	CONDITION	DIFF.	UNIT VALUE
ACCURATE RANGE	Typical (0℃ to 90℃)	± 0.2	℃
REPEAT RANGE	–	0.04	℃
RESULT	Typical	0.01	℃
DESIGNATED RANGE	–	–40 to 125	℃
MAX RANGE	Max	〈 0.03	℃/year

〉 HUMIDITY SENSOR SPEC

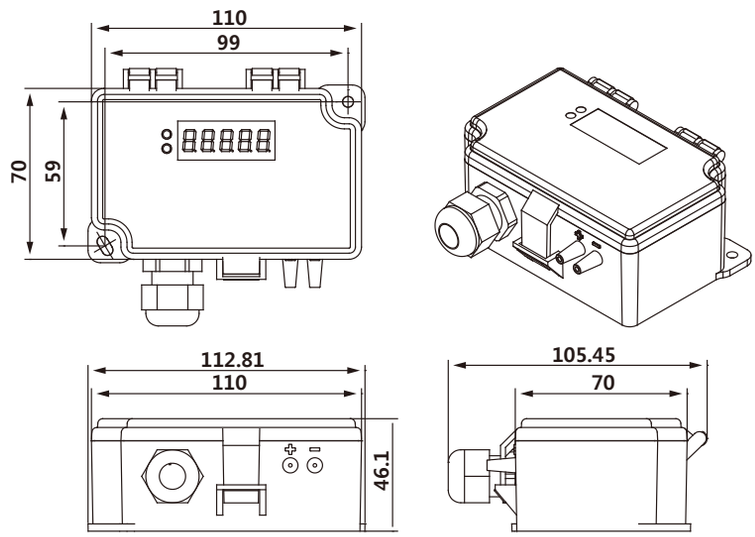
	CONDITION	DIFF.	UNIT VALUE
ACCURATE RANGE	Typical	± 2	%RH
REPEAT RANGE	–	0.15	%RH
STATUS HISTORY	at 25℃	± 0.08	%RH
RESULT	Typical	0.01	%RH
DESIGNATED RANGE	extended	0 to 100	%RH
MAX RANGE	Typical	〈 0.25	%RH/year

〉 CLASSIFICATION



* All communication sensor cables include standard 3M cables. Upon additional request, it will be shipped with a 15M cable. (option)

DIFFERENTIAL PRESSURE TRANSMITTER DPS-Series



〉SPEC

	DPS-A	DPS-D	DPS-M
POWER SPEC (VAC)	220VAC[±20%] Lower than 100mA (waiting)	12 ~ 24(VAC/VDC)[±20%] / 80mA(waiting)	
PRESSURE RANGE (Pa)	-1500 ~ 1500 Pa		
DISPLAY	5digit 7 Segment Display		
INPUT SWITCH	Tact Switch 3ea (DOWN, SET, UP)		
Built-in differential pressure sensor	SDP33 Digital differential pressure sensor		
OUTPUT PORT	D/O Relay output 2 Port Differantial Pressure Settng output 2 port (NO)(220VAC/5A)		-
MONITORING COMM .PORT (Slave)	-	-	Monitoring:RS-485 Comm. 1port (insulation/ D+, D-, GND) Comm.:MODBUS RS-485 RTU (Address1~254) Comm speed:9,600 bps, 19,200 bps, 38,400 bps
OPERATION HUMIDITY	Relative humidity less than 90%, Non condensation		
OPERATION HUMIDITY(℃)	-10 ~ 50(℃)		
STORAGE TEMP(℃)	-20 ~ 60(℃)		

〉FEATURES

Applied to general atmospheric pneumatic and non-corrosive gas pressure measurement.

The measuring range is -1500 Pa to 1500 Pa, and there is almost no measurement error or deformation due to the dynamic pressure method of both nozzles (non-valve method).

There is almost no measurement error (〈 1% of reading per 10℃) due to temperature change due to the built-in temperature sensor inside the sensor.

It features stable average measurement value and accuracy and long-term stability by fast measurement speed (〈0.03 Pa/year), and there is no zero point drift.

The display differential pressure indication is in Pa (Pascal).

CLEAN ROOM SENSOR MTW-Series

INTEGRATED TEMP. AND HUMIDITY SENSOR
[MTW-100]

DETACHABLE TEMP. AND HUMIDITY SENSOR
[MTW-110]

DIFFERENTIAL PRESSURE ONLY
[MTW-200]

〉 FEATURES

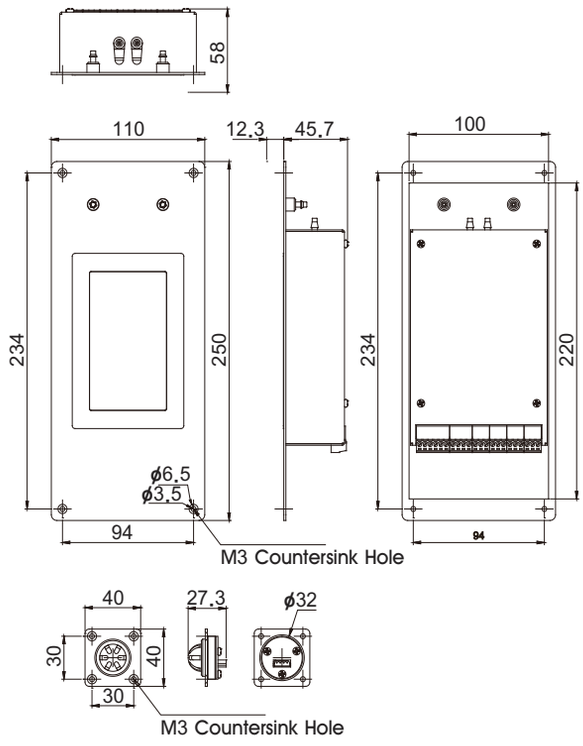
- 4.3 inch color touch screen
- Differential pressure, temperature, humidity, dew point current transmission output function
- Differential pressure, temperature, humidity RS485 Modbus communication support
- Supports digital alarm output in case of deviation from internal set value
- Can be installed on the wall panel between rooms

Cutout Dimension (mm)	100 × 220 (mm)

Recommended Communication Cable Specifications

NO.	STANDARD	MANUFACTURING COMPANY
1	UL 2919 AME-SB RS-485 1P 22AWC	Kwangil electric wire
2	3105A industrial RS-485 1P 22AWC	BELDEN
3	LIREV-AMESB RS-485 1P x 22AWC	LS Cns

DRAWINGS



SPEC

	UNIT	MIN	MAX
RANGE PER INPUT UNIT	Pa	-500.0	500.0
	KPa	-0.50	0.50
	hPa	-5.00	5.00
	mmAq	-50.98	50.98
	mber	-5.00	5.00
	inchH20	-2.00	2.00
	mmHg	-3.75	3.75
RANGE PER TEMPERATURE UNIT	**UNIT**	**MIN**	**MAX**
	℃	-10.00	60.00
	℉	14.00	140.00
RANGE BY HUMIDITY UNIT	**UNIT**	**MIN**	**MAX**
	%	0.00	100.00

Smart Hybrid DDC

〉OVERVIEW

Smart Hybrid DDC is a new concept programmable controller that combines the advantages of MICOM and PLC. Because it can implement general-purpose program logic, it can be used at a competitive price where control specifications in various fields are required, and has the advantage of convenient program implementation and maintenance.

〉FEATURES

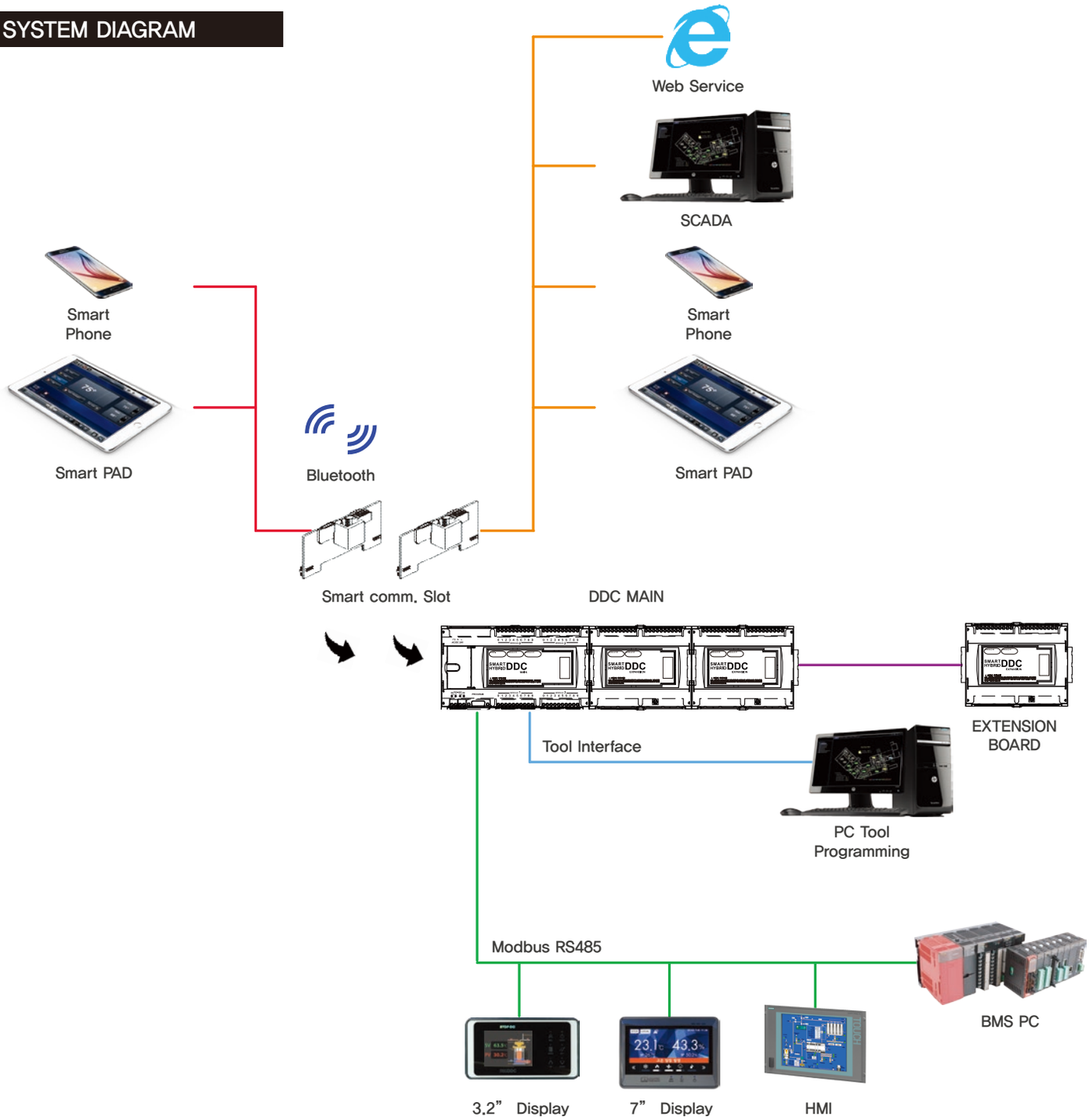
Flexible I/O	Various inputs and outputs are available, such as voltage, current, RTD, and Thermister.
Programmable	Using the Ladder Diagram language, which is widely used in general, the program can be changed easily and maintenance is easy. (Courtesy of Logic Studio)
Connectivity	(MODBUS RTU) protocol can be applied to the existing control system, and Ethernet, CDMA, and Bluetooth can be used by adding an optional communication card.
Expandable	It can be expanded in units of modules, and since it is extended through a communication line, panel arrangement is free, so long-distance installation is possible.
Precision Control	Built-in PID function enables more precise control. (8 channels, AutoTuning available)
Compact Size	It is economical as it is composed of a compact size by providing input/output specifications specialized for unit equipment control.

〉BODY CONFIGURATION

CLASSIFICATION	MODEL	DI	DO	SSR	AI	AO	485COMM.	NOTE
MAIN	SHDDC-M1	16	16	1	9	4	4	TEMP. PT100 7ch
	SHDDC-M2	16	16	1	9	4	4	TEMP. PT100 2ch, NTC 5ch
EXPANSION	SHDDC-E1	8	8		2	1	1	TEMP. PT100 2ch
	SHDDC-E2	2	2		2	4	1	TEMP. PT100 2ch

Smart Hybrid DDC

SYSTEM DIAGRAM



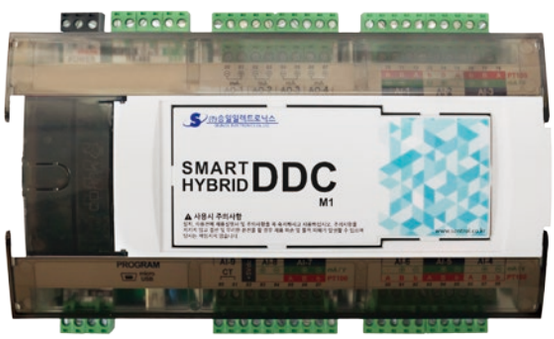
〉 APPLICATIONS

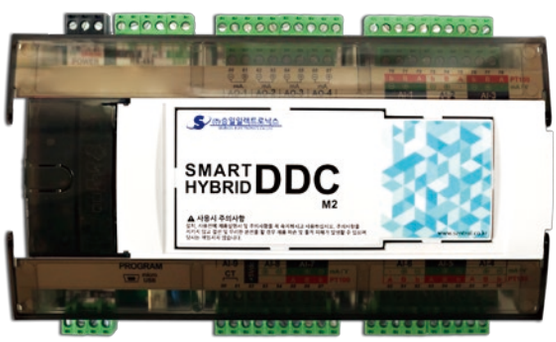
APPLICATIONS	DETAIL APPLICATIONS	
REFRIGERATION AND AIR CONDITIONING	Heat pump system using river water and domestic sewage heat source Thermo-hygrostat equipment Refrigeration equipment (screw chiller, reciprocating chiller, absorption chiller, etc.)	HVAC system, Cold energy storage system, Cogeneration heat source system, etc.
PUMP	Efficient (higher efficiency) management system for water supply and drainage facilities Automatic control facilities for fountains and artificial waterfalls	
WATER TREATMENT	Water purification plant automatic control facility, ozone generation water purification facility chlorine sterilization facility (water purification facility), automatic washing filtering system	Sewage treatment system
ETC	Building automation, light automation	Stage equipment system

Smart Hybrid DDC

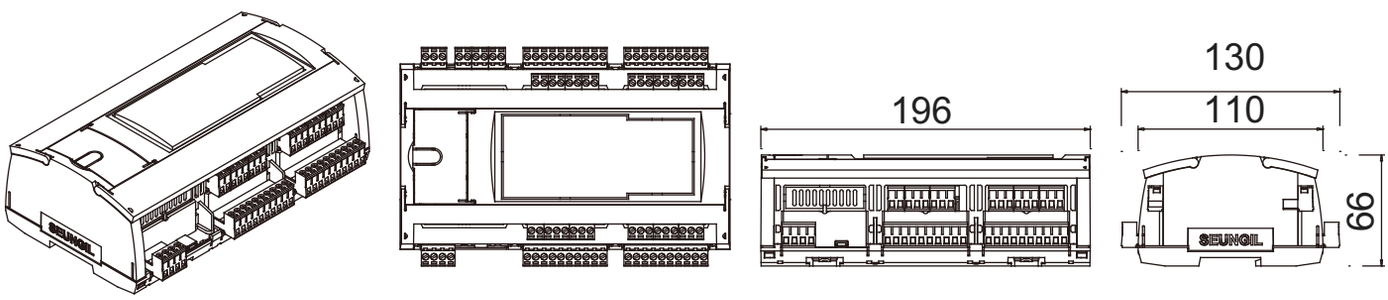
SPECIFICATION

〉Main Controller

SHDDC-M1		
	POWER	24V AC/DC (DC MAX 1.0A)
	MCU	32bit RISC
	RTC	Built-in
	COMM.	4ch RS-485 (Master/Slave) Micro USB (PC)
	CONTROL	FND 4 digit Tact s/w 4 EA
	DI	16 points (24V DC source)
	DO	16 points (Relay dry contact)
	SSR	1 point (24V DC)
	AI	7ch (PT100/0-10V/0-20mA) 1ch (0-10V/0-20mA) 1ch (CT)
	AO	4ch (0-10V/0-20mA)

SHDDC-M2		
	POWER	24V AC/DC (DC MAX 1.0A)
	MCU	32bit RISC Processor
	RTC	Built-in
	COMM.	4ch RS-485 (Master/Slave) Micro USB (PC)
	CONTROL	FND 4 digit Tact s/w 4 EA
	DI	16 points (24V DC source)
	DO	16 points (Relay dry contact)
	SSR	1 point (24V DC)
	AI	5ch (Thermistor/0-10V/0-20mA) 2ch (PT100/0-10V/0-20mA) 1ch (0-10V/0-20mA) 1ch (CT)
	AO	4ch (0-10V/0-20mA)

DRAWINGS



Smart Hybrid DDC

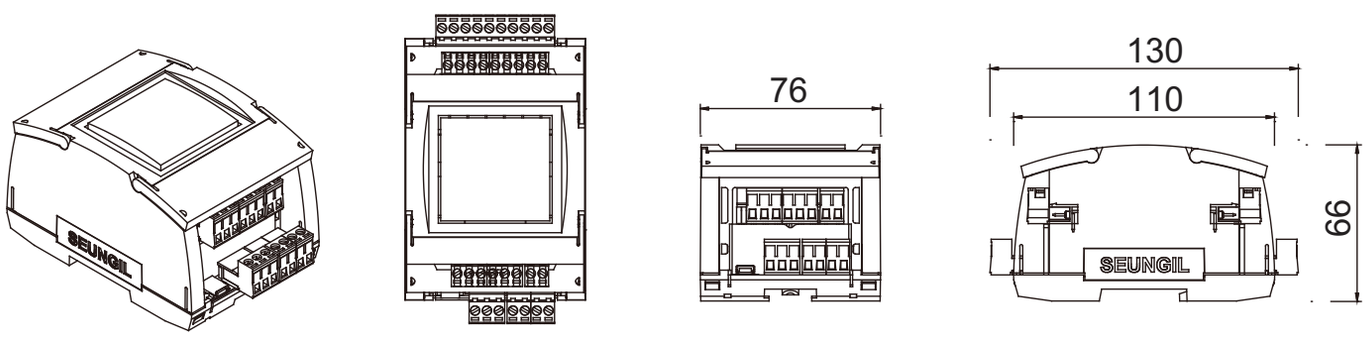
SPECIFICATION

〉 Expansion unit

SHDDC-E1		
	POWER	24V AC/DC (DC MAX 400mA)
	MCU	32bit RISC
	COMM.	1ch RS-485 (for main link)
	DI	8 points (24V DC Source)
	DO	8 points (Relay Dry Contact)
	SSR	1 point (24V DC)
	AI	2ch (PT100/0-10V/0-20mA)
	AO	1ch (0-10V/0-20mA)

SHDDC-E2		
	POWER	24V AC/DC (DC MAX 1.1A)
	MCU	32bit RISC
	COMM.	1ch RS-485 (for main link)
	DI	2 points (24V DC Source)
	DO	2 points (Relay Dry Contact)
	SSR	1 point (24V DC)
	AI	2ch (PT100/0-10V/0-20mA)
	AO	4ch (0-10V/0-20mA)

DRAWINGS



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