Universal Intelligent Controller
for HVAC&R Applications

DX series

HVAC Controller : **DX100, DX120, DX140**
Screw Compressor : **DX200, DX220, DX240, DX270**
Recipro/Scroll Controller : **DX230**
Multi Rack Controller : **DX260**
Heat Pump Controller : **DX230H, DX540H**

DOTECH
SENSING & CONTROL

winter tech
PT. Gemilang Reksa Buana

DX Series Universal Inteligent Controller

Features of DX series

Simple Operation & Authorization Setup Function Per Each Access Code

Because of easy and intuitional menu constitution settable by users, DX series is convenient for operation setup and communicability, and it embeds authorization setup function per each access code, so that it can prevent the equipments from malfunction.
Also, it can provide users with very reasonable price in contradistinction with cost in spite of a combination of network ability and control function.

Big Size Graphic LCD (240x128, 5 inch)

DX series applies for big size graphic LCD which makes it possible to provide users with several languages (Korean, Chinese, English and Japanese). Also, it maximizes users' convenience by supporting both graphic and text interface. (Wide temperature range type : -20~70℃)

Error Message & Alarm Display (Operation Status Recording Devise Embedded)

DX series can display error information such as failure or malfunction of the equipments with a simple message, so users or engineers can check and manage the equipments. Also, it can save maximum 200 shut down histories and states when error occurred, so it provides users with easy analysis of problems. (Embedding black box function)

Reliable Preventative and Maintenance Function

DX series provides users with the information about a cycle of PM and consumable parts exchanging schedule which is very helpful not only to maintain good state of the equipment but also to save PM cost.

Solution against Noise from the External Environment

It is a mandatory requirement to have a solution against noise as an industrial controller.
DX series has insulated digital input and output signal which prevents the external signal from going into inside of main board. And, Watch Dog timer is operating in CPU per every 32msec which automatically recovers from CPU down occurred by noise.
Also, brownout function is embedded in CPU inside for a real-time detection of control power.

Various Analogue Output Function

DX series can basically use 3 of 4~20mA output. 3 of analogue output can be applied for the required controlling or transmitting output according to users' setting.

RS485 Communication Function

Applying for RS485 communication method based on MODBUS RTU/ASCII Protocol,
DX series helps users to construct convenient SCADA/HMI system which is possible for precise central concentrated monitoring with PLC, PC, and touch screen.

Compact & Slim Size

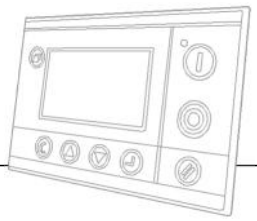
Because of unified type of main control part and display part, the size of compressor can be minimized by securing enough places.

Various Sensor Lineups

DX series can be used with various lineups of DOTECH's sensors for temperature, humidity, pressure and differential pressure, so it provides users with excellent compatibility and extended application.

IP65 Certification

DX series has passed IP65 front side test, so it is possible to be used in poor environment, such as dusty and humid place.



Composition of DX series

Product category for various applications

DX series is composed of various applications like HVAC, screw, scroll, multi, ground/water source heat pump and air compressor, user can use various functions of DX series if user buy it depending on their purpose.

DX series

Universal Inteligent Controller

HVAC	Screw	Recipro Scroll	Multi	Heat Pump
DX100/120/140 Series	DX200/220/240/270 Series	DX230 Series	DX260 Series	DX230H/DX540H Series

DX100 series based on microprocessor has realized the best control and stability with efficient control for HVAC units (AHU, constant temperature & humidity unit and dehumidifier) and perfect interface with safety devices. Its elegant graphic LCD display and LED helps users to check the current state of the units.

- Temperature & humidity control function, Max. 6 loop of independent step operating function
- Alternative operation by max. 4 compressors and 8 heaters
- Backup operating function
- Prevention from frequent starting failure occurred by low pressure hunting using low pressure switch in compressor
- Successive starting function, pump down function and prevention from restarting function
- Control function for cold water, hot water, steam valve, SCR, damper designed for HVAC (4~20mA PID control)
- Detection of error in temperature and humidity sensor, Alarm function, Output of equipment state (Cooling and Dehumidification, Heating and Humidification)

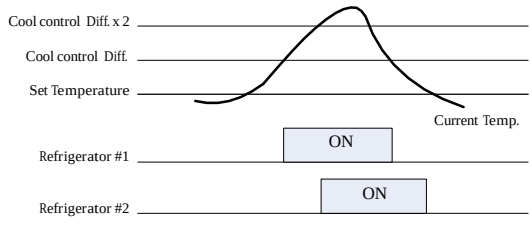
Models & Main Specification

- **DX100** : HVAC Controller (2Comp) - **DX120** : HVAC Controller (4Comp) - **DX140** : Exclusive controller for constant temp. and humidity unit

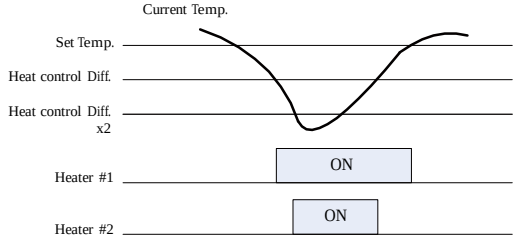
Models / Main Specification	DX100 DX120	DX140	Models / Main Specification	DX100 DX120	DX140
Digital Input Port	10	10	Trip / Alarm Recording Function	OK	-
Digital Output Port	12	12	Schedule Run/Stop Function	OK	-
Temperature Sensor Input	2	1	Cool / Dehumidify Analog Control	OK (PID control)	OK(P control)
Humidity Sensor Input	1	1	Cooling Analog Control	OK (PID control)	OK(P control)
Diff. Pressure Sensor Input	1	-	Heating Analog Control	OK (PID control)	OK(P control)
Refrigerator Compressor Control Step	2 4	2	Humidify Analog Control	OK (PID control)	OK(P control)
Heater Control Step	7	5	Diff. Pressure Analog Control	OK (PID control)	OK(P control)
Humidify Control Step	4	2	Temperature Retransmission Output	OK	-
Dehumidify Control Step	4	-	Humidify Retransmission Output	OK	-
Main Brower Fan on/off Control	1	1	Diff. Press. Retransmission Output	OK	-
Dehumidifier Control Function	OK	-	React Heater SCR on/off Control	OK	-
React Heater Temp. Sensor Input	OK	-	Heater SCR on/off Control	OK	-
React Heater Control Function	OK	-	Humidify Heater SCR on/off Control	OK	-
React Heater Control Step 4 -	4	-	Cooling State on/off Control	OK	-
React Fan on/off Control 1 -	1	-			

Set Temperature / Humidity / Diff. Press / React temperature

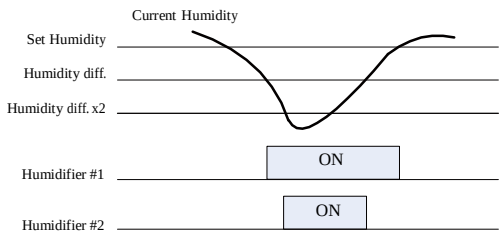
● COOL CONTROL DIFFERENCE
Input standard been driving/suspension control sensitivity of cooling control. (Figure, When 2 Cycle Compressor Control)



● HEAT CONTROL DIFFERENCE
Input standard been driving/suspension control sensitivity of Heating control.



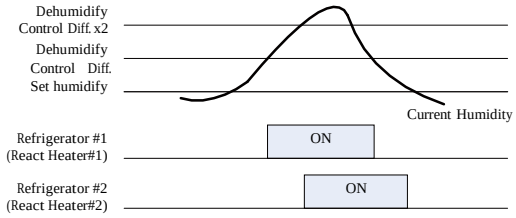
● HUMIDITY CONTROL DIFFERENCE
When drive humidification, input control sensitivity that get into standard of step driving of humidifier.



DX100 / DX120 / DX140

● DEHUMIDIFY CONTROL DIFFERENCE

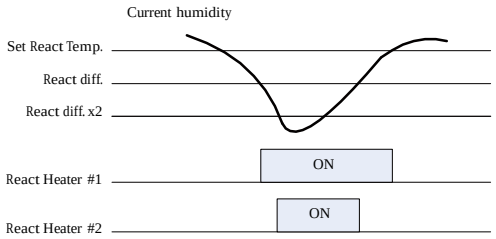
Input standard been driving/suspension control sensitivity of dehumidification control. (Figure, When 2 Step Control) In case is cooling dehumidification operation mode, decide driving step of freezing machine.



When control react heater in dry type of dehumidifier, if [CONTROL SET: REACT HETER CONTROL] is OFF, it controls react heater's step according to current humidity.

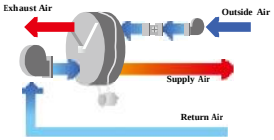
● REACT HEATER CONTROL DIFFERENCE

When drive react heater, input control sensitivity that get into standard of step driving of react heater.



When control react heater in dry dehumidifier, control step of react heater according to present react heater temperature if [CONTROL SET: REACT HEATER CONTROL] is ON. .(Figure, When 2 Step Control)

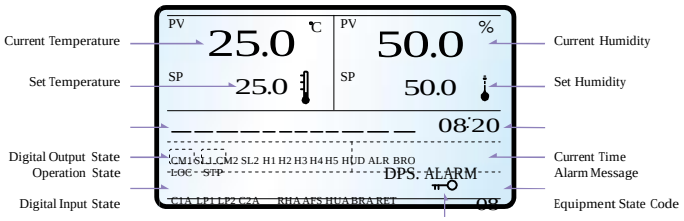
Applications

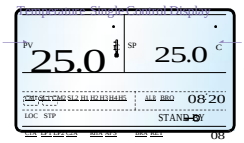


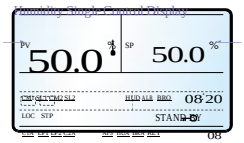
- Constant temperature & humidity unit
- AHU
- Dry type dehumidifier
- Various types HVAC system

Screen Composition

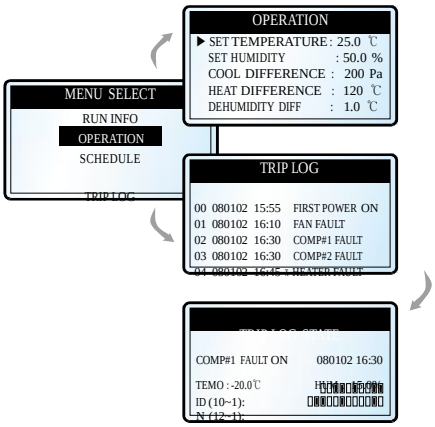
Temperature + Humidity Control Display



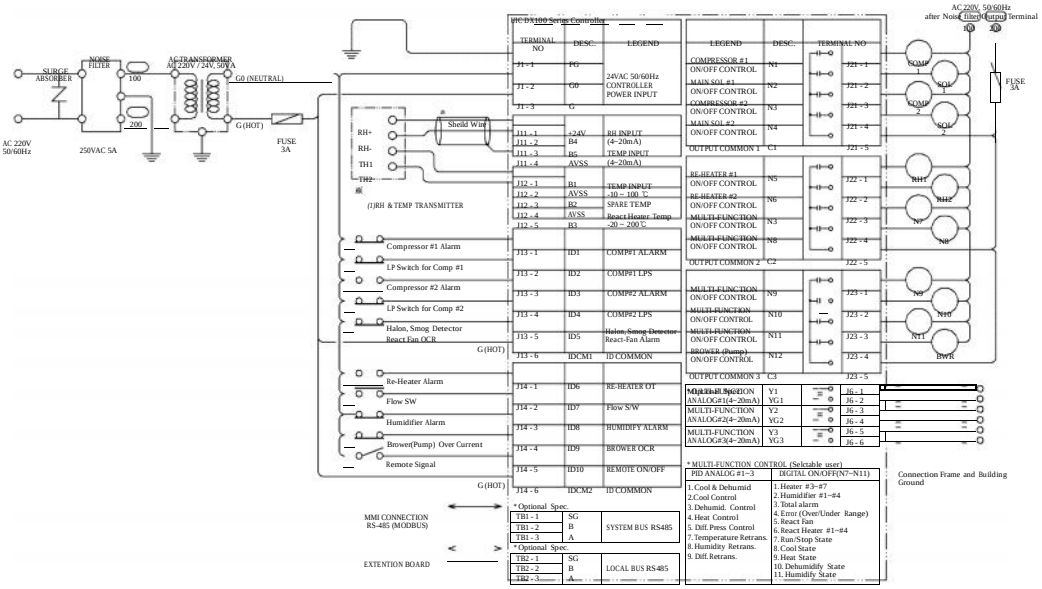




MENU Composition



Wiring Diagram (DX100)



DX200 series based on microprocessor has realized the best control and stability with deciding and controlling capacity adjustment timing for screw compressor and perfect interface with safety devices.

- Efficient step/stepless control, convenience for operation and inspection
- One-touch setup function (Choosing the maker -> Automatic setup according to their basic spec.) (Bitzer, Hitachi, Refcomp, Fusheng, Hanbell, Mitsubishi, Roltec, Kobe)
- Strong timer function (Step delay, Start delay, Auto-stop delay, Restart delay, Pump down delay)
- Temperature control, Pressure control (input temperature, output temperature, Intake pressure control, Discharge gas temperature control and observation)

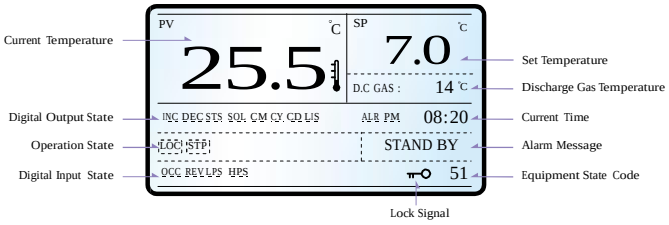
- **DX200** : 1 Cycle Screw Compressor Controller
- **DX220** : 1~2 Cycle Screw Compressor Controller
- **DX240** : 1~4 Cycle Screw Compressor Controller
- **DX270** : 1 Cycle Screw Compressor Controller (Step Control)
- **DX200H** : 1 Cycle Screw Heat Pump Compressor Controller
- **DX220H** : 1~2 Cycle Screw Heat Pump Compressor Controller

Applications

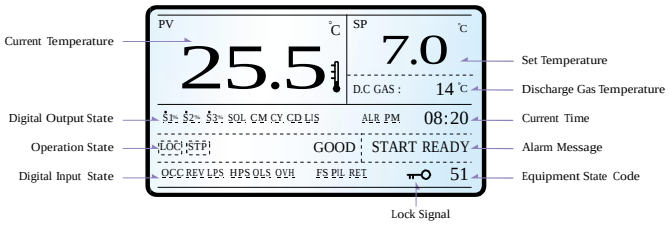
- Water cooled & air cooled screw compressor
- Chiller, CDU, Spot-Cooler
- HeatPump System

Screen Composition

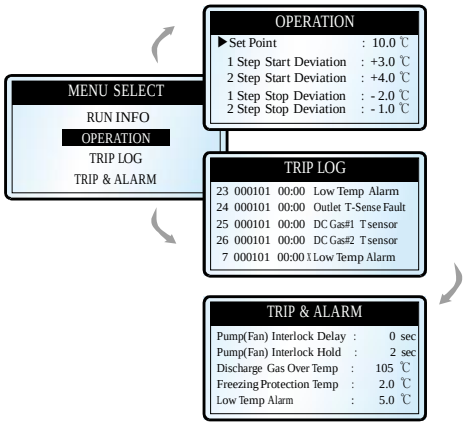
○ DX200 (Stepless)



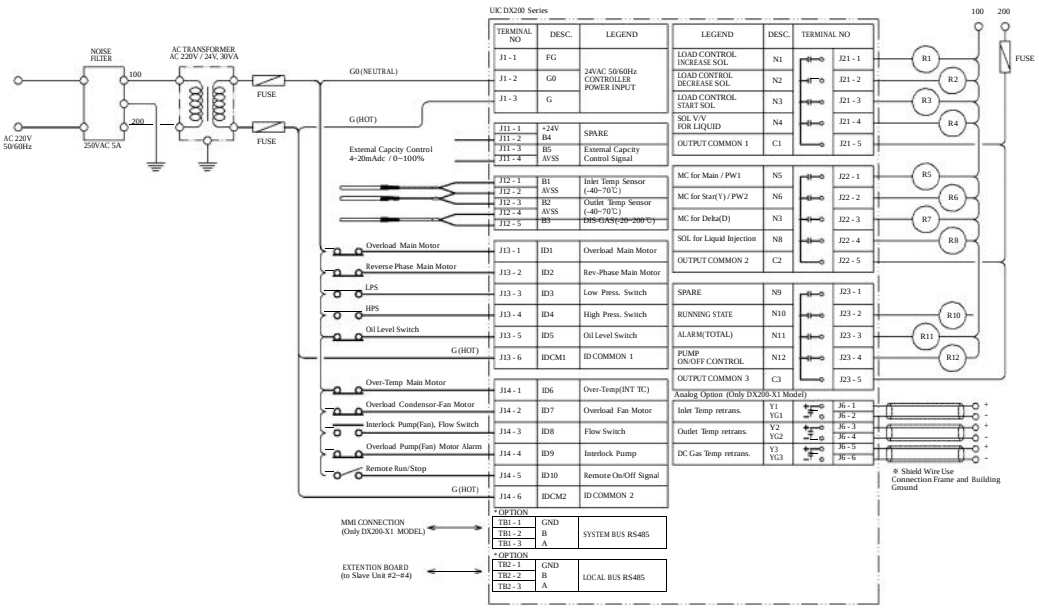
○ DX270 (Step)



MENU Composition



Wiring Diagram (DX200 : Stepless)



DX200 series based on microprocessor performs best operation (control) automatically according to set condition and unit's operation status which conducting efficient operation of 1~2 cycle compressor.

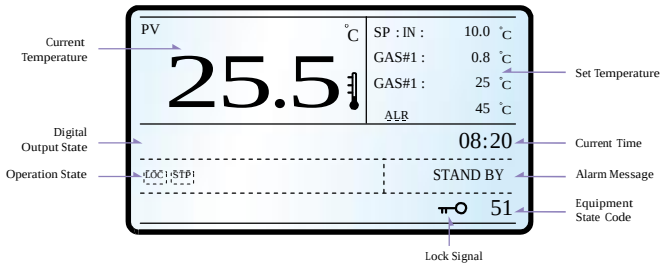
- Stepless Capacity Control Type / built in equal control function
- Adapted wide graphic LCD, displaying Korean / English / Chinese
- Easy to analyze the cause of troubles because of storing 160 histories of trip message
- Embeded day-timer to enable energy-saving operation
- Various analog output function
  (Outlet temperature / Discharge gas temperature transmission)
- Various applications (Chiller, CDU, Start control panel)
- User can use this model regardless of compressor's maker (can set up Capacity Control Type)
- User have only to input maker and setting of capacity Control valve is finished)

- **DX220(H)-00** : Basic model
- **DX220(H)-11** : Temperature transmission output function + RS485 communication (Modbus RTU)
  *H : Exclusive model for heat pump

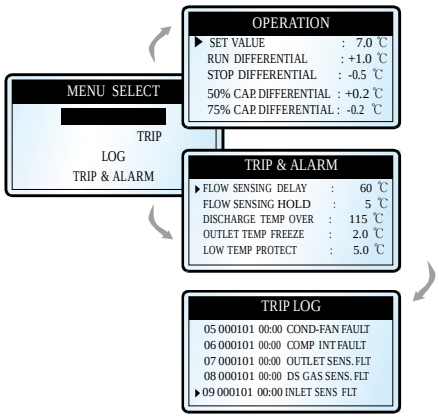
Applications

- Water cooled & air cooled screw compressor
- Chiller, CDU, Spot-Cooler
- HeatPump System

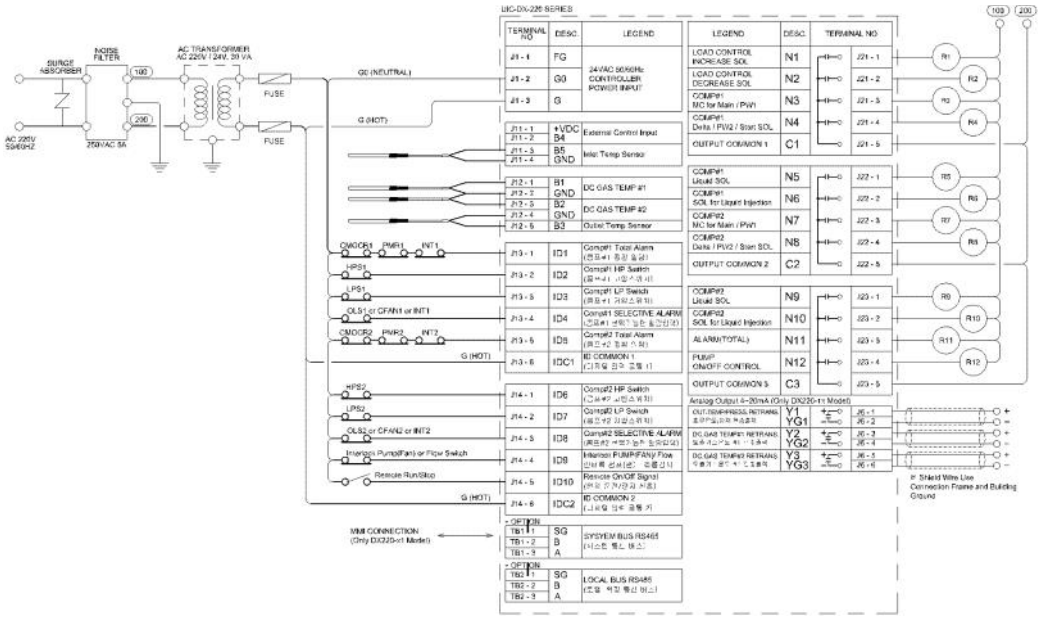
Screen Composition



MENU Composition



Wiring Diagram (DX220)



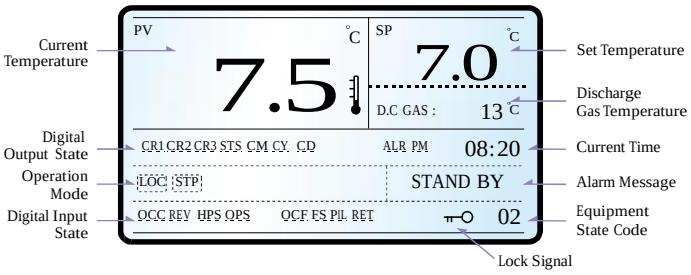
The control logic of DX230 designed for recipro & scroll compressors has realized the best control and stability with controlling capacity and run/stop of compressors and perfect interface with safety devices. Its elegant graphic LCD display and LED helps users to check the current state of the units. Also, it provides users with the information about PM & trip alarm history for quick and easy treatment.

- Efficient control of recipro / scroll compressors
- Variable applications (Chiller, CDU, Spot-cooller)
- Strong storing and/or monitoring function for trip alarm history/state (Max. 200 cases)
- Strong timer function (Start delay, Restart delay, Pump down delay)
- Temperature control, pressure control
  (Inlet temperature, Outlet temperature, Intake pressure control, Discharge gas temperature control and observation)

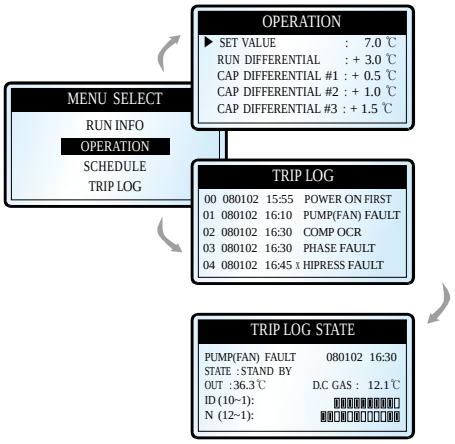
Applications

- Water cooled & air cooled compressor
- Chiller, CDU, Spot-Cooler
- HeatPump System

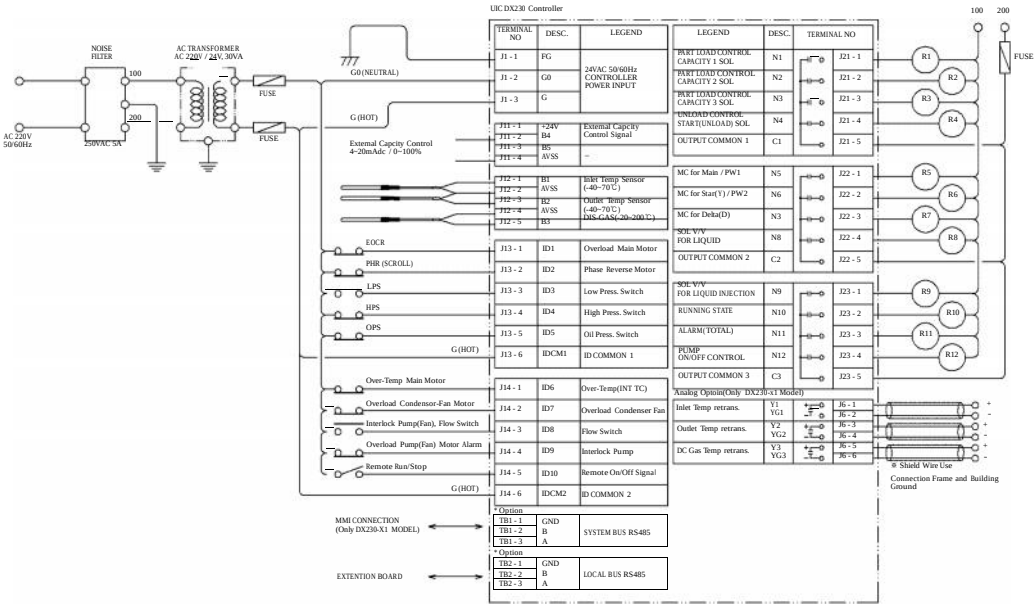
Screen Composition



MENU Composition



Wiring Diagram (DX230)



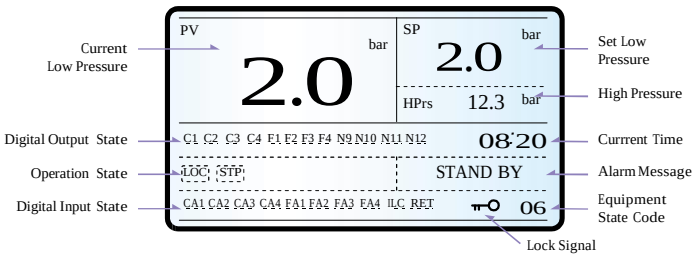
DX260 series has realized the best control and stability with ideal control of the number of equipment, such as equal & backup operation and perfect interface with safety devices. Its elegant graphic LCD display and LED helps users to check the current state of the units. Also, it provides users with the information about PM & trip alarm history for quick and easy treatment.

- Suitability for rack control of multi condensing unit
- Control for max. 8 compressors and 8 condensing fans
  (Basic : 4 compressors + 4 condensers)
- Efficient control for the number of equipment
  (Setting On/Off value per individuals and/or per between steps)
- Perfect equal control (Within 1 hour difference of the total accumulated operation time)
- Pressure/temperature control (Individual and/or interlocking control for intake pressure, discharge pressure)
- Strong storing and/or monitoring function for trip alarm history/state (Max. 200 cases)
- Optimal function for condensing fan speed control (4~20mA PID control)
- Transmission output function (Pressure / Temperature transmission)
- PC monitoring system using RS485 communication based on MODBUS protocol

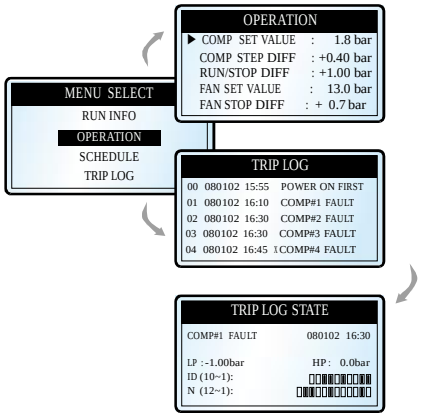
Applications

- Multi Condensing Unit
- Multi Compressor Control

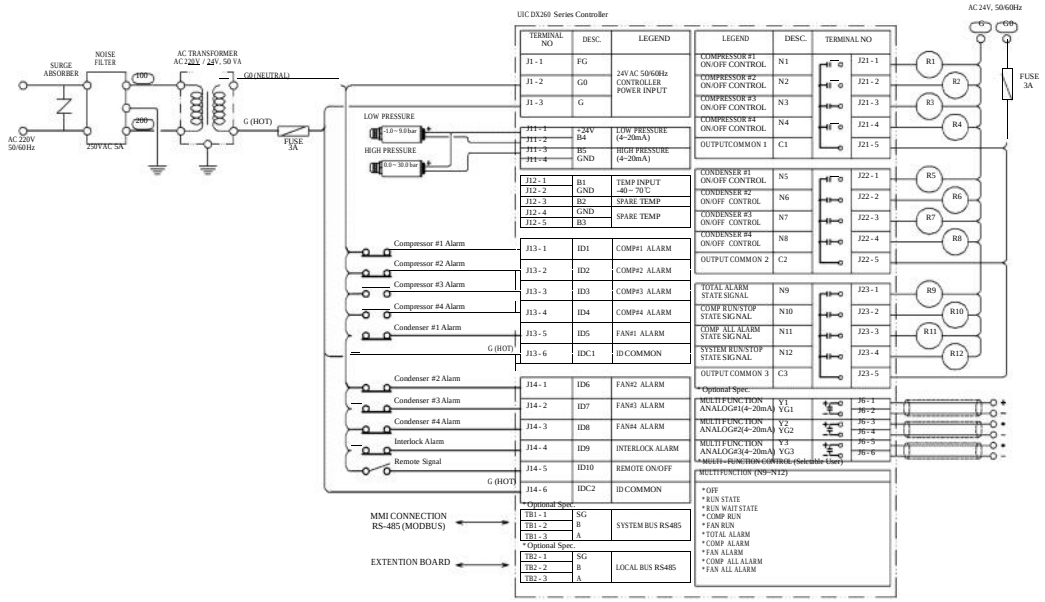
Screen Composition



MENU Composition



Wiring Diagram (DX260 : Comp4 + Fan4)



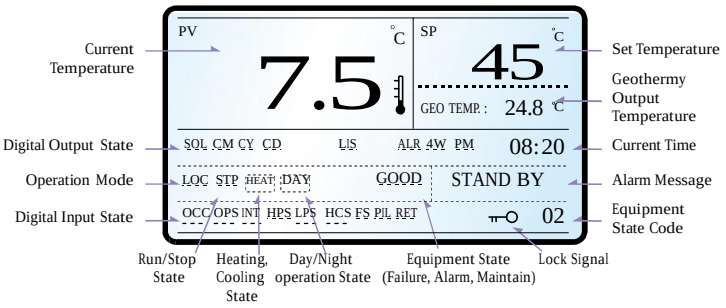
DX230H which is an optimal control algorism designed for heat pump system has realized the best control and stability with ideal control and perfect interface with safety devices. Its elegant graphic LCD display and LED helps users to check the current state of the units. Also, it provides users with the information about PM & trip alarm history for quick and easy treatment.

- Basic built-in control function for 1 cycle, 1~2 cycle
- Embedding the best control algorism for heat pump system
- Observation for input temperature of heat source & output temperature (Generating alarm & trip against high & low temperature)
- Observation for input control temperature & output temperature (Generating alarm & trip against high & low temperature)
- Observation & control for discharge gas temperature (Liquid injection function embedded)
- 4-way valve control and/or selected operation for cooling and heating
- Sequential and alternative operation in case of 2 cycle control
- Strong storing and/or monitoring function for trip alarm history/state (Max. 160 cases)
- Transmission output (Temperature transmission)
- PC monitoring system using RS485 communication based on MODBUS protocol

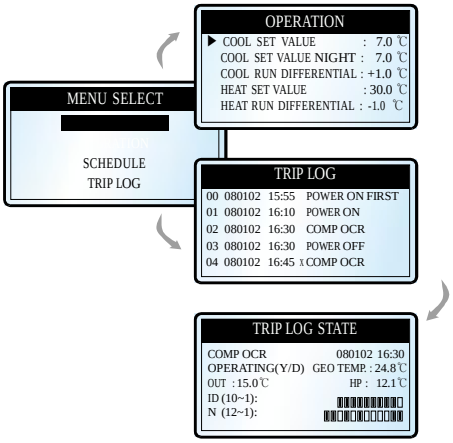
Applications

- Geothermy & Water-cooled Heat Pump
- Air-cooled Heat Pump
- Waste Heat Recovery Pump

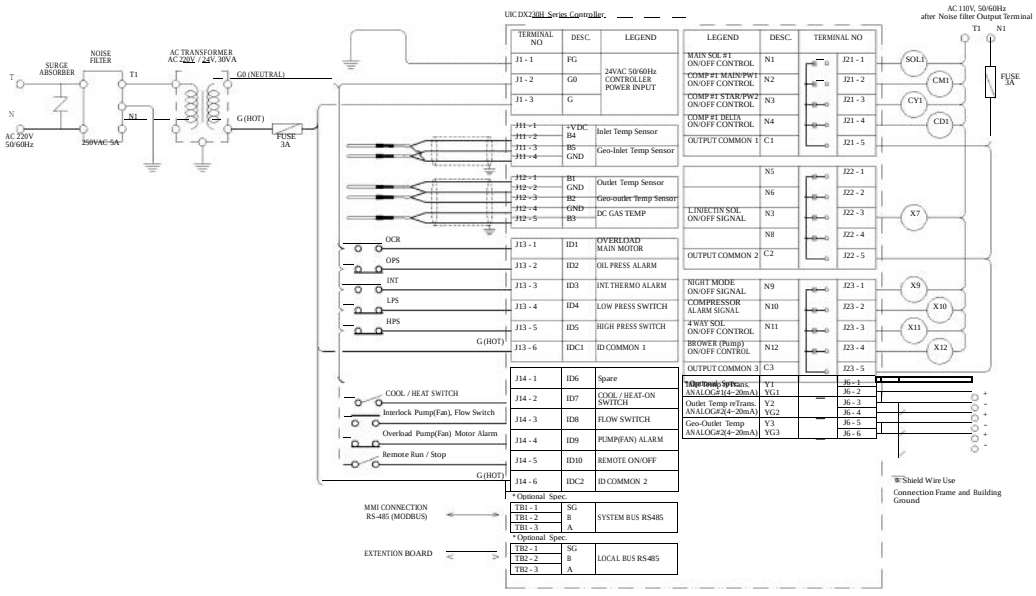
Screen Composition



MENU Composition



Wiring Diagram (DX230H)



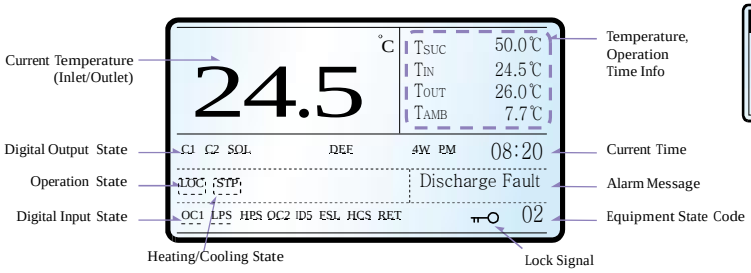
UIC DX540H is a ideal controller for air source heat pump. It is based on microprocessor and designed with algorithm optimised for air source heat pump. UIC DX540H operates efficiently and manages intensively refrigerant compressor of heat pump. It promotes energy-saving through judge and control timing of capacity regulation. UIC DX540H is a system to prevent occurrence of problem by alarming and inform of necessary maintenance.

- Adoption RISC MICOM with high reliability
- Large graphic LCD which can display in Korean, English and Chinese
- Easy to maintain and analyse troubles of equipment by storing 160 trip alarms log
- The best calculation function of defrosting timing by various combination of 8 sources
- Embedded day-timer to enable energy-saving operation
- Easy expansion due to various analog transmission output function
- Alarm function to inform of time to maintain and change expendables through automatic calculation
- Additional state output 4 relays for suction temperature, water temperature, evaporation temperature, etc.

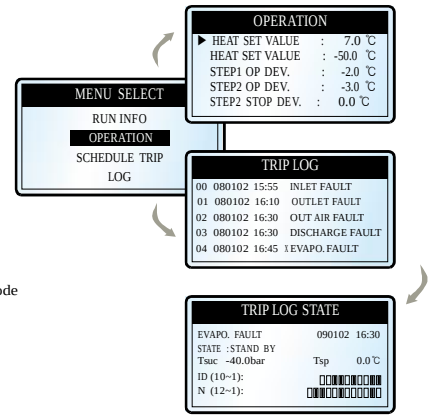
Applications

- Air source heat pump

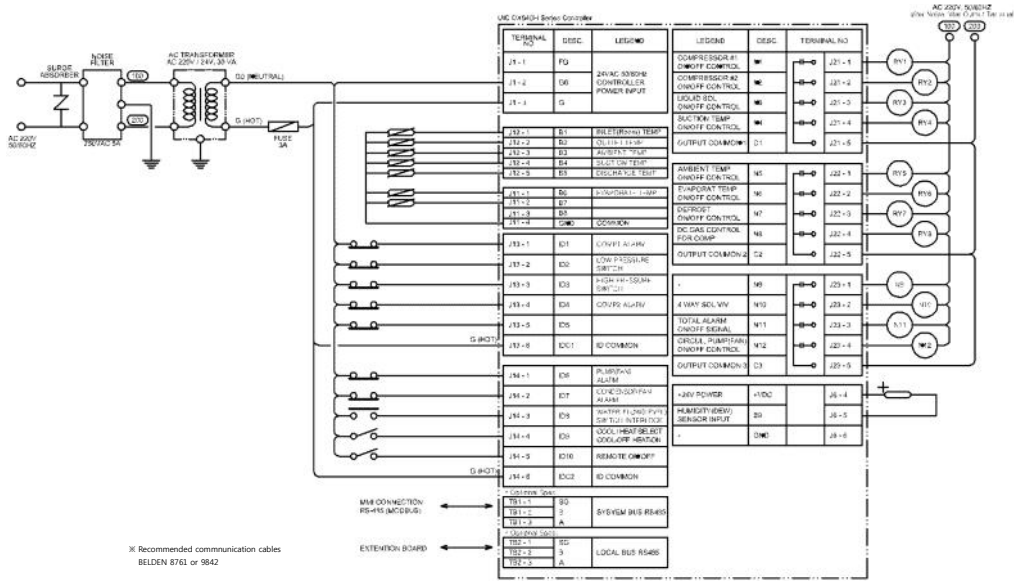
Screen Composition



MENU Composition



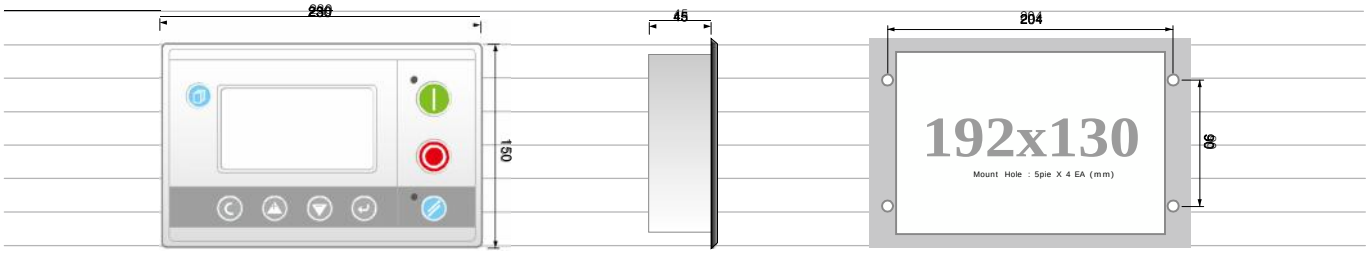
Wiring Diagram (DX540H)



Basic Specification

Power spec.	Input Power	AC24V 50/60Hz, DC24V	**Communication**	Type	RS485 (Half-Duplex Type) 1 channel (MODBUS RTU)
	Consumption	Max. 20VA		Speed	4800, 9600, 19200, 38400 BPS(default 9600) Parity None, Data 8bit, Stop 1bit
CPU/LCD	CPU	ATmega 128, 16MHz		Distance	Max. 1.2 km
	LCD	240 X 128 Pixel, LED Backlight		Cable	BELDEN 9842 or 8761
Digital Input	Type	Opto-Isolation	**Analogue Input**	Temp. Sensor	NTC x 3 (Max. 5)
	Number	10 (5X2 Common)		4~20mA	2 (Build-in power 24V for sensor)
	Signal Power	AC24V or DC24V		Difference Correction	Software
Digital Output	Type	Relay contact	**Analogue Output**	Channel No.	3 Channel
	Number	12 (4X3 Common)		Type	4~20mA
	Relay Contact Spec.	250V, 10A		Setup Type	Software
Installation Environment	Location	Indoor	**Installation Environment**	Storing Temp.	-30~80℃
	Operation Temp.	-10~60℃		Operating Humidity	5~95 in No condensation state

Dimensions



Humidity & Temperature Transmitter

HTX23
OEM Temp.& Humidity Sensor

HTX32C
Indoor Temp.& Humidity Transmitter

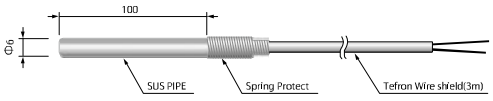
HTX62C/D
Industrial Temp., Humidity & Dew Point Temp. Transmitter

HTX72/73C Climate Control Temp., & Humidity Transmitter

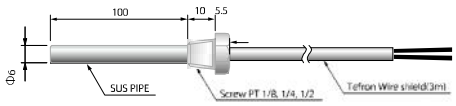
HTD500
Ultra-precise Indoor Type Temp.& Humidit Transmitter

Temperature Sensor

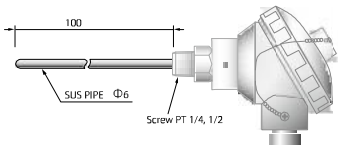
DPR-TH2-P6D-100L
Sensor type : NTC 10KΩ
Range : -40 ~ 150℃
Accuracy : ±1.5℃ at 25℃
Sheath : Φ 6 X 100mm, SUS
Protection : IP67
Cable : 2C X 0.5mm, sus-mesh shield tefron



DPR-TH1-S6D100L
Sensor type : NTC 5KΩ
Range : -50 ~ 105℃
Accuracy : ±0.3℃ at 25℃
Sheath : Φ 6 X 100mm, SUS
Protection : IP67
Cable : 2C X 0.5mm, sus-mesh shield tefron



DPR-TH1-H6D100L
Sensor type : NTC 5KΩ
Range : -50 ~ 105℃
Accuracy : ±0.3℃ at 25℃
Sheath : Φ 6 X 100mm, SUS
Protection : IP67
Cable : 2C X 0.5mm



Pressure Sensor

DP510
Measuring range : 0 ~ 16bar, 4~20mA
Accuracy : Within 1%FS
Size : Small type
Temperature Range : -40 ~ 125℃
Applications :
Automobiles & Heavy Equipments,
Oil & Air Pressure Systems, Compressors,
Industrial Engines, Pump Pressure Controls

506.933A/506.930A
DOTECH OEM Model : 506.933A – For High Pressure (0~30bar)
DOTECH OEM Model : 506.930A – For Low Pressure (-1~9bar)

- Measuring pressure in pipe (water, oil, gas)
- Applying for all the refrigerants including ammonia (for freezing)
- EMC conformity
- Accuracy : ±0.5% FS
- Using Temperature : -40 ~ 125℃
- Insulation Class : IP67
- Output : 0~5V, 8~33VDC, 3wire
0~10V, 11.4~33VDC
16~34VDC/24VAC
4~20mA, 8~33VDC, 2wire

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DOTECH SENSING & CONTROL