DOTECH
SENSING & CONTROL
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# FX Series

## DIGITAL TEMPERATURE CONTROLLER

### FX3S

<table>
<thead>
<tr>
<th>Function</th>
<th>Models</th>
<th>Power Supply</th>
<th>Input/output</th>
<th>Sensor Spec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heating/cooling output, precise temperature control, sensor correction, sensor detection, data backup, min. on/off maintaining time setup, auto-output operation cycle settable in case of sensor error</td>
<td>FX3S-00: Basic model (with DPR-TH1-ET temperature sensor)</td>
<td>AC100~240V, 50/60Hz, Max. 4VA, screw bolt terminals</td>
<td>Relay output : 1point (1.6A), Temp. sensor input : 1 point (NTC)</td>
<td>DPR-TH1: NTC 5k, ±0.3°C at 25°C(-55<del>105°C) DPR-TH2: NTC 10k, ±0.3°C at 25°C(-55</del>150°C)</td>
</tr>
</tbody>
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### FX3D

<table>
<thead>
<tr>
<th>Function</th>
<th>Models</th>
<th>Power Supply</th>
<th>Input/output</th>
<th>Sensor Spec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heating/cooling output, independent timer output, high/low alarm output, defrost output, precise temperature control, sensor correction, sensor error detection, data backup, min. on/off maintaining time setup, RS485 communication (MODBUS), auto-output operation cycle settable in case of error, transmission output</td>
<td>FX3D: Basic model (with DPR-TH1-ET temperature sensor) FX3D-A1R4: Add on 4~20mA transmission output, RS485 communication (MODBUS)</td>
<td>AC100~240V, 50/60Hz, Max. 4VA, screw bolt terminals</td>
<td>Relay output : 1point (1.6A), Temp. sensor input : 1 point (NTC)</td>
<td>DPR-TH1: NTC 5k, ±0.3°C at 25°C(-55<del>105°C) DPR-TH2: NTC 10k, ±0.3°C at 25°C(-50</del>150°C)</td>
</tr>
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### FX3FS

<table>
<thead>
<tr>
<th>Function</th>
<th>Models</th>
<th>Power Supply</th>
<th>Input/output</th>
<th>Sensor Spec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heating/cooling output, precise temperature control, sensor correction, sensor error detection, data back up, min. on/off maintaining time setup, defrost output, virtual input function, function to prevent incorrect operation caused by sensor error</td>
<td>FX3FS-00: Basic model (with 2pcs of DPR-TH1-ET temperature sensor)</td>
<td>AC100~240V, 50/60Hz, Max. 4VA, screw bolt terminals</td>
<td>Relay output : 1point (1.6A), Temp. sensor input : 1 point (NTC)</td>
<td>DPR-TH1: NTC 5k, ±0.3°C at 25°C(-55<del>105°C) DPR-TH2: NTC 10k, ±0.3°C at 25°C(-50</del>150°C)</td>
</tr>
</tbody>
</table>

### FX3T

<table>
<thead>
<tr>
<th>Function</th>
<th>Models</th>
<th>Power Supply</th>
<th>Input/output</th>
<th>Sensor Spec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heating/cooling output, high/low alarm output, precise temperature control, sensor correction, sensor error detection, data backup, min. on/off maintaining time setup, transmission output</td>
<td>FX3T: Basic model (with 2pcs of DPR-TH1-ET temperature sensor)</td>
<td>AC100~240V, 50/60Hz, Max. 4VA, screw bolt terminals</td>
<td>Relay output : 1point (10A), Temp. sensor input : 1 point (thermo-couple)</td>
<td>Thermo-couple K type : Measuring range: 0~1000°C</td>
</tr>
</tbody>
</table>

### FX3D-R2

- Add on RS232 communication

### FX3D-R4

- Add on Rs485 communication (MODBUS)

### FX3D-A4

- Add on 4~20mA transmission output

### FX3D-A1R4

- Add on 4~20mA transmission output, RS485 communication (MODBUS)
**FX Series**

### DIGITAL TEMPERATURE CONTROLLER

#### FX3QR / FX3SR

**Main-Function**
- Heating/cooling output, precise temperature control, data backup, min. on/off maintaining time setup, relay output manually controllable, transmission output, sensor correction, sensor error detection, RS485 communication (MODBUS)

**Power Supply**
- AC100~240V, 50/60Hz, Max. 4VA, screw bolt terminals

**Input/output**
- FX3QR: Relay output: 4 point, Temp. sensor input: 1 point (Pt100)
- FX3SR: Relay output: 1 point (16A), Temp. sensor input: 1 point (Pt100)

**Sensor Spec**
- Pt100 3(2) Wire, Measuring range: -200~800°C, ±0.3°C

#### Models
- FX3QR / FX3SR-00: Basic model
- FX3QR / FX3SR-R4: Add on RS485 communication (MODBUS)
- FX3QR / FX3SR-A1: Add on 4~20mA transmission output
- FX3QR / FX3SR-A1: Add on RS232 communication

![Temperature Controller Diagram]

### DIGITAL HUMIDITY CONTROLLER

#### FX3H

**Main-Function**
- Humidification/dehumidification input, high/low alarm output, min. on/off maintaining time setup, selection on/off output when sensor error occurs, sensor correction, sensor error detection, selection of displaying decimal point

**Power Supply**
- AC100~240V, 50/60Hz, Max. 4VA

**Input/output**
- Relay output: 1 point (out1: 250Vac/16A), Humidity 1~4V, input: 1 point

**Sensor Spec**
- HTX20-FTS-502 (Voltage output type humidity sensor), HTX3515

**Models**
- FX3H - 00: Basic model
- FX3H - R4: Add on RS485 communication (MODBUS)
- FX3H - A1: Add on 4~20mA transmission output
- FX3H - R2: Add on RS232 communication

#### Models
- FX3H - 00
- FX3H - R4
- FX3H - A1
- FX3H - R2

![Humidity Controller Diagram]
# DOTECH REFRIGERATION CONTROLLER

## FX Series

### FX32J: Showcase & Coldroom Controller

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Main Function</th>
<th>Power Supply</th>
<th>Input/output</th>
<th>Sensor Spec</th>
<th>Models</th>
</tr>
</thead>
<tbody>
<tr>
<td>FX32J–</td>
<td>Defrosting (auto/manual), fan control, efficient delay room temp, sensor input: 1EA, defrost recovery sensor: 1EA, high (low) temp. alarm output, room temp. transmission output (4~20mA), RS485 communication (MODBUS)</td>
<td>Defrosting (auto/manual), defrosting stop delay evaporation fan control, air inlet/outlet sensor: 2EA, defrost recovery sensor: 1EA, virtual temp. sensor computing, door open alarm, emergency call, interlock, defrost activation, night operation, high (low) temp. alarm output, RS455 communication (MODBUS)</td>
<td>AC100–240V, 50/60Hz, Max. 4VA, screw bolt terminals</td>
<td>Relay output: 4 point, Temp. sensor input: 2 point</td>
<td>DIP-TH1: NTC 5k, ±0.3°C at 25°C (-50~105°C)</td>
<td>Models: FX32J– R4, FX32J– R2, FX32J– R1, FX32J– 00</td>
</tr>
</tbody>
</table>

### FX32R: Showcase & Coldroom Controller

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Main Function</th>
<th>Power Supply</th>
<th>Input/output</th>
<th>Sensor Spec</th>
<th>Models</th>
</tr>
</thead>
<tbody>
<tr>
<td>FX32R–</td>
<td>Defrosting (auto/manual), fan control, efficient delay room temp, sensor input: 1EA, defrost recovery sensor: 1EA, high (low) temp. alarm output, room temp. transmission output (4~20mA), RS485 communication (MODBUS)</td>
<td>Defrosting (auto/manual), defrosting stop delay evaporation fan control, air inlet/outlet sensor: 2EA, defrost recovery sensor: 1EA, virtual temp. sensor computing, door open alarm, emergency call, interlock, defrost activation, night operation, high (low) temp. alarm output, RS455 communication (MODBUS)</td>
<td>AC100–240V, 50/60Hz, Max. 4VA, connector (Molex)</td>
<td>Relay output: 4 point, Digital input: 7 point, Temp. sensor input: 3 point</td>
<td>models: FX32R– R4, FX32R– 00</td>
<td>Models: FX32R– R4, FX32R– 00</td>
</tr>
</tbody>
</table>

### FX Series

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Main Function</th>
<th>Power Supply</th>
<th>Input/output</th>
<th>Sensor Spec</th>
<th>Models</th>
</tr>
</thead>
<tbody>
<tr>
<td>FX32K–</td>
<td>Efficient defrosting in geothermal heat pump systems</td>
<td>Total control and detection (protection) for freezers, function of start, restart, pump down, alarm delay timer, discharge gas detection (high &amp; low temp.), individual alarm message (OC, HI, LP, OP, INT, etc.), liquid injection (discharge gas detection), communication (RS485, MODBUS)</td>
<td>AC100–240V, 50/60Hz, Max. 4VA, screw bolt terminals</td>
<td>Relay output: 4 point, Temp. sensor input: 2 point</td>
<td>DIP-TH1: NTC 5k, ±0.3°C at 25°C (-50~105°C)</td>
<td>Models: FX32K– R4, FX32K– 00</td>
</tr>
<tr>
<td>FX32C–</td>
<td>Compactor</td>
<td>Total control and detection (protection) for freezers, function of start, restart, pump down, alarm delay timer, discharge gas detection (high &amp; low temp.), individual alarm message (OC, HI, LP, OP, INT, etc.), liquid injection (discharge gas detection), communication (RS485, MODBUS)</td>
<td>AC100–240V, 50/60Hz, Max. 8VA, connector (Molex)</td>
<td>Relay output: 4 point, Digital input: 7 point, Temp. sensor input: 3 point</td>
<td>models: FX32C– R4, FX32C– 00</td>
<td>Models: FX32C– R4, FX32C– 00</td>
</tr>
</tbody>
</table>

### FX Series

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Main Function</th>
<th>Power Supply</th>
<th>Input/output</th>
<th>Sensor Spec</th>
<th>Models</th>
</tr>
</thead>
<tbody>
<tr>
<td>FX32K–</td>
<td>Efficient defrosting in geothermal heat pump systems</td>
<td>Total control and detection (protection) for freezers, function of start, restart, pump down, alarm delay timer, discharge gas detection (high &amp; low temp.), individual alarm message (OC, HI, LP, OP, INT, etc.), liquid injection (discharge gas detection), communication (RS485, MODBUS)</td>
<td>AC100–240V, 50/60Hz, Max. 4VA, screw bolt terminals</td>
<td>Relay output: 4 point, Temp. sensor input: 2 point</td>
<td>DIP-TH1: NTC 5k, ±0.3°C at 25°C (-50~105°C)</td>
<td>Models: FX32K– R4, FX32K– 00</td>
</tr>
<tr>
<td>FX32C–</td>
<td>Compactor</td>
<td>Total control and detection (protection) for freezers, function of start, restart, pump down, alarm delay timer, discharge gas detection (high &amp; low temp.), individual alarm message (OC, HI, LP, OP, INT, etc.), liquid injection (discharge gas detection), communication (RS485, MODBUS)</td>
<td>AC100–240V, 50/60Hz, Max. 8VA, connector (Molex)</td>
<td>Relay output: 4 point, Digital input: 7 point, Temp. sensor input: 3 point</td>
<td>models: FX32C– R4, FX32C– 00</td>
<td>Models: FX32C– R4, FX32C– 00</td>
</tr>
</tbody>
</table>
# FX Series

## REFRIGERATION CONTROLLER

### FX32PR
- **Digital Low/High Pressure Controller**
- **4~20mA**
- **Input/Output**: one sensor input of 4~20 mA (embedded sensor loop power), four relays (three relays for step control, one relay for alarm output)
- **Models**:
  - FX32PR-B0: Basic model
  - FX32PR-B4: Add on RS485 communication (MODBUS)
  - FX32PR-B1: Add on 4~20mA transmission output

### FX32EV
- **Electronic Expansion Valve control system**
- **Power Supply**: AC100~240V, 50/60Hz, Max. 4VA, screw bolt terminals
- **Input/output**:
  - SSR output 1-point (expansion valve on/off), relay output 1-point (alarm point), temperature sensor 1-point, 4~20mA pressure sensor input 1-point (embedded sensor loop power)
- **Models**:
  - FX32EV-B0: Basic model
  - FX32EV-B4: Add on RS485 communication (MODBUS)
  - FX32EV-B1: Add on 4~20mA type Electronic Expansion Valve or pressure transmission output function
  - FX32EV-B2: Add on FXiview connection

### FX32S series
- **Showcase & Coldroom Controller**
- **Main-Function**: Defrosting (auto/manual), defrosting alarm delay, two air inlet and outlet sensors, one sensor for defrost recovery, high/low alarm output, RS485 communication (MODBUS), indicator (FXiview) connection
- **Power Supply**: AC100~240V, 50/60Hz, Max. 8VA, connector (Molex)
- **Input/output**:
  - relay output max 4-point, temperature sensor input max 3 point
- **Sensor Spec**:
  - Defrost Temp.: DPR-TH1: NTC 5k, ±0.3°C at 25°C (-50~105°C)
  - Sensor Spec: DPR-PR1: NTC 5k, ±0.3°C at 25°C (-50~105°C)
  - SSR output 1-point (expansion valve on/off), relay output 1-point (alarm point), temperature sensor 1-point, 4~20mA pressure sensor input 1-point (embedded sensor loop power)
- **Models**:
  - FX32S: Compressor 16A
  - FX32SD: Defrost - 8A
  - FX32SA: Evaporator fans 8A
  - FX32SF: Aux output 8A
  - FX32SB: Room Temp. 8A
  - FX32SR: Defrost Temp. 8A
  - RX485: Digital Input (Probe3) 8A
  - RTC:
# FX Series

## MULTI-FUNCTION DIGITAL CONTROLLER

### FX32P
- **Pressure Switch Controller**
- 4–20mA
- RS485
- Basic

### FX32F
- **Fan Coil Unit Controller**
- NTC
- Heating
- Cooling
- RS485

#### FX32P
- **Main Function**
  - Output controllable based on measured pressure value (increase and decrease), alternative operation available between freezing exclusive model and booster pump unit control exclusive model, RS485 communication (MODBUS)

#### Power Supply
- AC100–240V, 50/60Hz, Max. 4VA, screw bolt terminals

#### Input/output
- Relay output: 4 point, Input sensor: 1 point (including power supply)

#### Sensor Spec
- 4–20mA (2 wire or 3 wire)

#### Models
- FX32P– 00: Basic model
- FX32P– R4: Add on RS485 communication (MODBUS)
- FX32P– A1: Add on 4–20mA transmission output

### FX32F
- **Main Function**
  - 3 stage fan speed controllable, 4 kind (stop/high/middle/low) airflow controllable, unification of temp. control function, data backup, self diagnostic, RS485 communication (MODBUS)

#### Power Supply
- AC100–240V, 50/60Hz, Max. 4VA, connector

#### Input/output
- Relay output: 3 point (airflow control), Temp. sensor input: 2 point (room & water)

#### Sensor Spec
- DPR-TH1: NTC 5k, ±0.3°C at 25°C (-50°C–105°C)

#### Models
- FX32F– 00: Basic model
- FX32F– R4: Add on RS485 communication (MODBUS)

### FX32A
- **As Compressor Controller**
- NTC
- 4–20mA
- RS485
- Basic

### FX32A-351
- **As Compressor Controller**
- NTC
- 4–20mA
- RS485
- Basic

#### FX32A
- **Main Function**
  - Embedded run/stop switch, motor on/off, load run, auto-stop, manual stop, operation delay, load delay, embedded timer, pressure/temperature high level, temperature low level (standby for starting), interlock input signal (emergency switch, OCR reverse phase), Usable thermometer and manometer, RS485 communication (MODBUS)

#### Power Supply
- AC100–240V, 50/60Hz, Max. 4VA, screw bolt terminals

#### Input/output
- Relay output: 2 point (motor, SOL)
- Digital input: 2 point (interlock, remote control)
- Temp. sensor input: 1 point (discharge air temperature)
- Pressure sensor input: 1 point (discharge air pressure)

#### Sensor Spec
- DPR-TH2: NTC 10k, ±0.3°C at 25°C (-50°C–150°C)

#### Models
- FX32A– 00: Basic model
- FX32A– R4: Add on RS485 communication (MODBUS)
- FX32A– A1: Add on 4–20mA transmission output
- FX32A– R2: Add on RS232 communication

#### FX32A-351
- **Main Function**
  - Embedded run/stop switch, motor on/off, load run, auto-stop, manual stop, operation delay, load delay, embedded timer, pressure/temperature high level, temperature low level (standby for starting), interlock input signal (emergency switch, OCR reverse phase), Usable thermometer and manometer, RS485 communication (MODBUS)

#### Power Supply
- AC100–240V, 50/60Hz, Max. 4VA, screw bolt terminals

#### Input/output
- Relay output: 2 point (motor, SOL)
- Digital input: 2 point (interlock, remote control)
- Temp. sensor input: 1 point (discharge air temperature)
- Pressure sensor input: 1 point (discharge air pressure)

#### Sensor Spec
- Pressure Sensor: 0~16 bar (4~20mA)

#### Models
- FX32A-351– 00: Basic model
- FX32A-351– R4: Add on RS485 communication (MODBUS)
- FX32A-351– A1: Add on 4–20mA transmission output
- FX32A-351– R2: Add on RS232 communication

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DX Series

DX100 / DX120 / DX140

DX100 series based on microprocessor has realized the best control and stability with efficient control for HVAC units (AHU, constant temperature & humidity unit and control (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 operating 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)

Main Specification

<table>
<thead>
<tr>
<th>Models</th>
<th>DX120</th>
<th>DX140</th>
</tr>
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<tbody>
<tr>
<td>Digital Input Port</td>
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<td>10</td>
</tr>
<tr>
<td>Digital Output Port</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Temperature Sensor Input</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Humidity Sensor Input</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Diff. Pressure Sensor Input</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Refrigerator Compressor Control Step</td>
<td>2</td>
<td>4</td>
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<tr>
<td>Heater Control Step</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>Humidify Control Step</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Dehumidify Control Step</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>Main Blower Fan on/off Control</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Dehumidifier Control Function</td>
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<tr>
<td>React Heater Temp. Sensor Input</td>
<td>OK</td>
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<tr>
<td>React Heater Control Function</td>
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<tr>
<td>React Heater Control Step 4</td>
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<tr>
<td>React Fan on/off Control 1</td>
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<td></td>
</tr>
<tr>
<td>Trip / Alarm Recording Function</td>
<td>OK</td>
<td>-</td>
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<tr>
<td>Schedule Run/Stop Function</td>
<td>OK</td>
<td>-</td>
</tr>
<tr>
<td>Cool / Dehumidification Analog Control</td>
<td>OK</td>
<td>(PID control)</td>
</tr>
<tr>
<td>Cooling Analog Control</td>
<td>OK</td>
<td>(PID control)</td>
</tr>
<tr>
<td>Heating Analog Control</td>
<td>OK</td>
<td>(PID control)</td>
</tr>
<tr>
<td>Humidify Analog Control</td>
<td>OK</td>
<td>(PID control)</td>
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<tr>
<td>Diff. Pressure Analog Control</td>
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<td>(PID control)</td>
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<tr>
<td>Temperature Retransmission Output</td>
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<td>-</td>
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<tr>
<td>Humidity Retransmission Output</td>
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<tr>
<td>React Heater SCR on/off Control</td>
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</tr>
<tr>
<td>Heater SCR on/off Control</td>
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<tr>
<td>Humidifier SCR on/off Control</td>
<td>OK</td>
<td>-</td>
</tr>
<tr>
<td>Cooling State on/off Control</td>
<td>OK</td>
<td>-</td>
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</tbody>
</table>

Temperature + Humidity Control Display

Temperature Single Control Display

Humidity Single Control Display

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V-86
**DX Series**

**DX200 / DX240 / DX270**

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).

**Wiring Diagram (DX200 : Stepless)**

- 26 000101 00:00
- 25 000101 00:00
- 24 000101 00:00

**Set Point**
- 10.0 °C
- 1 Step Start Deviation: ±2.0 °C
- 2 Step Start Deviation: ±3.0 °C
- 1 Step Stop Deviation: ±2.0 °C
- 2 Step Stop Deviation: ±3.0 °C

**TRIP & ALARM**
- Pumping/Interlock Delay: 0 sec
- Pumping/Interlock Hold: 2 sec
- Discharge Gas Over Temp: ±5.0 °C
- Freezing Protection Temp: ±2.0 °C
- Low Temp Alarm: ±5.0 °C

**Set Temperature**
- 20.0 °C
- 25.5 °C
- 29.0 °C

**Current Temperature**
- 20.0 °C
- 25.5 °C
- 29.0 °C

**DIGITAL OUTPUT STATE**
- External Capacity Control & Current Limiting (%)
- Over Temp. Alarm
- Low Temp. Alarm
- Low Pressure Alarm
- Stop Counter

**DIGITAL INPUT STATE**
- Stop Counter
- Over Temp. Alarm
- Low Temp. Alarm
- Low Pressure Alarm

**MATERIALS**
- CORDEX
- SEKONIC
- KIMO
- SHIMADEN
- KAISE
- HEAT-EDGE®
- CWC
- SENSETE°CH®
- FRIED ELECTRIC
- HUBA

**TELEPHON**
- 532-0088

**PRODUCTS**
- 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).
DX220 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
- Adopted wide graphic LCD displaying Korean / English / Chinese
- Easy to analyze the cause of troubles because of storing 160 histories of trip message
- Embedded 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

Screen Composition

Wiring Diagram (DX220)
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 individual 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

Wiring Diagram (DX230)
DX230H which is an optimal control algorithm 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 algorithm 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

- Current Temperature
- Digital Output State
- Operation Mode
- Digital Input State
- Run/Stop State
- Heating/Cooling State
- Day/Night Operation State
- Equipment State
- Alarm Message
- Lock Signal

Wiring Diagram (DX230)
DX540H

DX Series

Air-Source Heat Pump Controller

UIC DX540H is an 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
  Additional state output 4 relays for suction temperature, water temperature, evaporation temperature, etc.

Applications
- Air source heat pump

Screen Composition

Wiring Diagram (DX540H)

※ Recommended communication cables
BELDEN 8761 or 9842
HTX20 Series

HUMITRON® HTX20 series is an OEM type product line, are modules for sensing temperature and humidity with reasonable price, high precision and high quality. They are ideal for various application because of excellent stability. Their design reminds shuttle spacecraft. They are intended to minimize spatial constraints through compact-size design when installed on HVAC or control equipment. HUMITRON® HTX20 series are plug connection type. They can detect relative humidity, temperature and dew point by measuring.

**Features**
- Integration of temperature and humidity measurement function
- Easy to be applied to the system
- Compatibility plug-In design
- Easy to install, Compact design, Slim size
- 3m cable for free

**Applications**
- Thermo-hygrostat, Humidifier / Dehumidifier
- Automation equipment / Equipment appliance / Medical appliances
- Air supply and exhaust equipment
- Equipment to collect temperature and humidity data

**Technical data & Model**
- Range : 0~100%RH / -10~60°C
- Accuracy : ±3.0%RH / ±0.5°C
- Output : 4~20mA (2 wire)
- Power input : 9~32Vdc / 12~24Vac

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HTX20-FTS-502</td>
<td>Humidity(1~3.6V), NTC5Kohm Passive</td>
</tr>
<tr>
<td>HTX20-FTS-103</td>
<td>Humidity(1~3.6V), NTC10Kohm Passive</td>
</tr>
<tr>
<td>HTX20-FTS-1K</td>
<td>Humidity(1~3.6V), NTC1Kohm Passive</td>
</tr>
<tr>
<td>HTX20-FTS-PT100</td>
<td>Humidity(1~3.6V), Pt1000ohm Passive</td>
</tr>
<tr>
<td>HTX20-FTS-PT100</td>
<td>Humidity(1~3.6V), Pt100ohm Passive</td>
</tr>
</tbody>
</table>

*Direct Connection with a Thermal Element* means all of PT100, PT1000, NTC1000, NTC5K and NTC10K are available.

HTX23 Series

HUMITRON® HTX23 series is a module for detection of temperature and humidity which is especially for OEM and satisfactory in aspects of price and quality. It provides users with 4~20mA standard interface and it is designed with compact and slim shape, so users don’t need to consider any spatial restriction or exposure when it is installed inside or outside of various types of climate control units or control facilities. Also, it can help users to reduce unnecessary cost and to minimize works efficiency through to reduce unnecessary cost and to maximize works efficiency through combination of 4~20mA standard humidity output and various temperature outputs (including passive) according to users’ needs.

**Features**
- Unified function for measuring temperature & humidity.
- Easy installation
- Compact & slim size – 63(L) x 63(W) x 16(H) (mm)
- Free 2m standard cable

**Applications**
- Constant temperature & humidity control
- Temperature & humidity data collection
- Humidifier & dehumidifier
- Ventilation facility

**Technical data & Model**
- Range : 10~90%RH / -10~60°C
- Accuracy : ±3.0%RH / ±0.5°C
- Output : 4~20mA (2 wire)
- Power input : 12Vdc (6~30Vdc)

<table>
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<th>Model</th>
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</tr>
</thead>
<tbody>
<tr>
<td>HTX23 – FHC</td>
<td>Humidity (4~20mA)</td>
</tr>
<tr>
<td>HTX23 – FBC</td>
<td>Temperature (4~20mA)</td>
</tr>
<tr>
<td>HTX23 – FPC – PT100</td>
<td>Humidity (4~20mA), Direct connection with a thermal element (Passive)</td>
</tr>
<tr>
<td>HTX20 – FBS – PT100</td>
<td>Temperature (4~20mA), Direct connection with a thermal element (Passive)</td>
</tr>
<tr>
<td>HTX20 – FTS – 1K</td>
<td>Humidity (1~4V), Temperature (Direct connection with NTC1K (Passive)</td>
</tr>
</tbody>
</table>

*Sensing Technology Corporation ● 457-B Boni Avenue New Zaniga Mandaluyong City ● www.heatsenze.com ● sales@heatsenze.com ● Tel No. 532-0088 ● Fax No. 531-7387*
HTX Series

HTX500 Series

HUMTRON® HTD500 series is an ultra-precise temperature & humidity transmitter for environmental measuring which integrates micro-processor with a digital sensor based on MEMS technology. It makes precise control and efficient observation possible by transmitting measured temperature and humidity information to analogue output, control and observation system through RS485 communication function in real-time. Also, it supplies excellent attention even at wide place by applying for a bag sized FND.

Features
- Digital sensor applied for MEMS technology
- Embedded RS485 communication port based on MODBUS RTU/ASCII
- Excellent long-term stability and self-digital correction
- Quick counteraction speed (within 4 sec.)
- Slim size – 310(L) x 280(H) x 45(D) (mm)

Applications
- Clean-room / Measuring centre / Inspection room
- Food company / Pharmaceutical company & O&D centre, Process control
- Computer room / Storage monitoring system
- Storage for foods, medicines, cereals, woods and electronic devices

Technical data & Model

Range: 5~95%RH / -10~60°C
Accuracy: HTD520 ±1.8%RH / ±0.3°C, HTD520 ±3.0%RH / ±0.5°C
Output: 4~20mA, RS485 communication (MODBUS RTU/ASCII)
Power input: 24VDC (free adaptor supplied)

HTD530 - 00: Display only
HTX530 - 11: Humidity (4~20mA), Temperature (4~20mA), RS485 communication
HTD520 - 00: Display only
HTX520 - 11: Humidity (4~20mA), Temperature (4~20mA), RS485 communication

HTX3515

HTX3515 is a dedicated humidity and play transducer designed for OEM applications where a reliable and accurate measurement is needed. Direct interface with a micro-controller is made possible with the module's humidity linear voltage. HTX3515 is designed for high volume and demanding applications.

Applications
- Reliability not affected by repeated condensations
- Demonstrated reliability and long term stability
- Tolerance 1 to 3.6 Volt DC output for 0 to 100% RH at 5VDC supply
- Humidity calibrated within ±3%RH @ 55%RH
- Operation Temperature: -40°C to 110°C
- 5mm Pitch Side Connector(ST)
- Size: 27 x 12 x 7 mm
- Product free from Lead, Cd, and Hg. Compliant with RoHS

Cable
- 1: Black - humidity sensor power 0V
- 2: Red - humidity power +5V
- 4: White - Signal output for humidity measurement