Honeywell

# R7428B1005

## *CONSTANT RH & TEMP CONTROLLER WITH MODBUS*

**SPECIFICATION DATA**


## Application

R7428B1005 Controller uses direct digital control technology to provide accurate and efficient operation for both Relative Humidity and Temperature controls of heating, ventilation, and air conditioning (HVAC) systems. Parameters are preset for plug and play operation and provide different control strategies for optimum system performance.

The controller performs proportional plus integral and deviation (PID) control and covers all space, supply air, water flow, heater and humidifier applications within the specified ranges of 0℃ to 100℃ for temperature and 10% to 99% for relative humidity. Standard NTC 20K ohm temperature sensors can be used.

The modern design with its easy to operate user interface and large LCD allows complete flexibility of control system design, accurate parameter setting, and display of actual temperature and relative humidity value, setpoints and outputs.

All the parameters in the controller can be read/write by the facility management system like Honeywell SymmetrE via Modbus RTU protocol (9600bps, 1 stop bit, none parity).

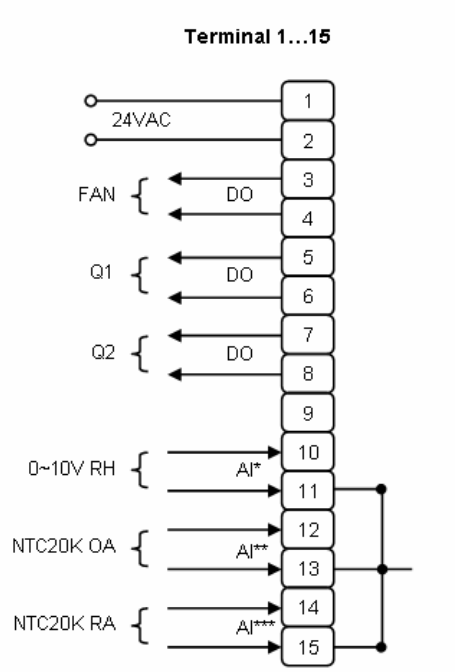
## Features

- Cost effective solution for constant temperature and relative humidity control.
- Large LCD screen with back-light provides user-friendly MMI.
- Standard DIN rail or control panel mounting compatible.
- High resolution provides accurate control: 0.1℃ for Temp & 0.1% for RH.
- Temp & RH value setting provides direct digital control.
- Preserve setting value while power failure.
- PID (Proportional Integral Deviation) control.
- Pre-configured application, no programming needed.
- Provide dual display for both Temp & RH.
- Selectable direct/reverse acting analog output.
- Sensor failure indication.
- For air-handing Unit control or universal control
- Dew point value will be calculated by temp. and RH%
- Modbus® communication device
  - Modbus® RTU protocol (9600bps, 1 stop bit, none parity)

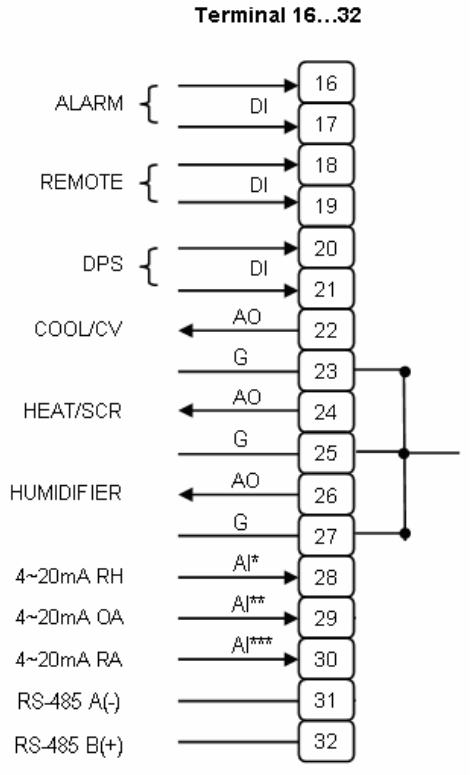
## Specifications

| | |
|---|---|
| Dimension: | See Fig. 1 |
| Mounting: | Standard DIN rail or control panel mounting compatible |
| Wiring: | Maxima Wiring Run from Controller to All devices: |
| | 20 AWG |
| Control ranges: | SP1: 0~100℃ |
| | SP2: -999℃~1000℃ |
| | SP3: -99-1000 |
| Working ranges: | 0 ~ 50℃ |
| | 5% ~ 95% (non-condensing) |
| Memory: | EEPROM |
| Power supply: | 24 Vac, 50/60Hz |
| Input: | DI x 3: |
| | DPS, Remote, Alarm |
| | AI x 3: (selectable) |
| | 4~20mA or 0~10V (Humidity) |
| | 4~20mA or NTC20K (Outside Air) |
| | 4~20mA or NTC20K (Return Air) |
| Output: | DO x 3:<br>Fan, Q1, Q2<br>AO x 3:<br>Cooling Valve, heating valve, Humidifier |

## Terminal Overview




AI*: 4~20mA or 0~10V (Humidity)
AI**: 4~20mA or NTC20K (Outside Air)
AI***: 4~20mA or NTC20K (Return Air)

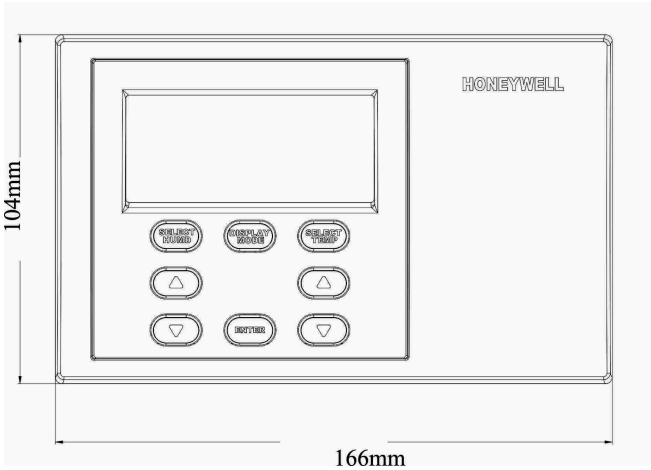


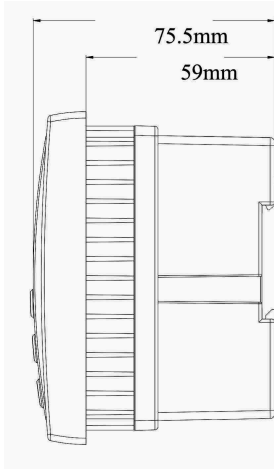

## Installation

### When Installing this Product…

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Check the ratings given in the instructions and on the product to make sure the product is suitable for your application.
3. Installer must be a trained, experienced service technician.
4. After installation is complete, check out product operation as provided in these instructions.

## Dimensions




# Operating Overview

## Display and Operation Element

The user interface is shown in Fig. 2 & 3

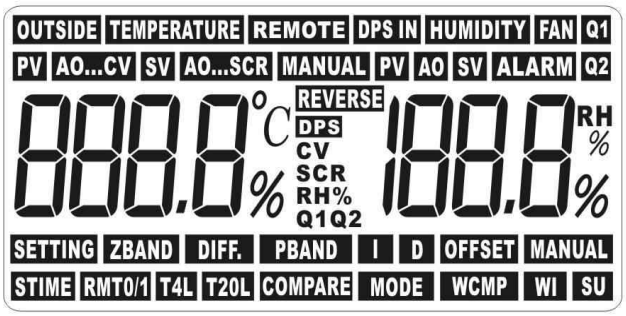



**Fig. 2 LCD Screen**

### LCD Screen Description

| **a. Temperature Setting Area** | |
|---|---|
| TEMPERATURE | Temperature Setting |
| AO...CV | Cooling Valve Output |
| AO...SCR | SCR Heating Valve Output |
| PV | Present Value |
| SV | Setting Value |
| MANUAL | Manual Mode |
| OUTSIDE | Outside Air Temperature |

| **b. Humidity Setting Area** | |
|---|---|
| HUMIDITY | Humidity Setting |
| PV | Present Value |
| AO | Humidifier Output Value |
| SV | Setting Value |

| **c. Status Indication Area** | |
|---|---|
| REMOTE | DI for Remote Control |
| DPS IN | Fan Status |
| FAN | Fan Start |
| ALARM | Alarm Status |
| Q1 | Binary Sequence Indicator |
| Q2 | Binary Sequence Indicator |
| MANUAL | Manual Mode |

| **d. Setting Status Area** | |
|---|---|
| ZBAND | Zero Energy Band |
| DIFF. | Q1 & Q2 Control Interval |
| PBAND | Proportional Parameter Setting |
| I | Integral Parameter Setting |
| D | Deviation Parameter Setting |
| OFFSET | Temp/RH Offset Setting |
| REVERSE | Output Mode Setting with CV, SCR, RH%, Q1Q2 |
| DPS | DPS Interlock with CV, SCR, RH%, Q1Q2 |
| MODE | Power Failure Mode Setting |
| COMPARE | Hi-Low Selector |
| MANUAL | Manual Mode Setting |
| WCMP | Compensation Changeover Point |
| WI | Winter Compensation |
| SU | Summer Compensation |
| CV | Cooling Valve Interlock (link with REVERSE or DPS) |
| SCR | SCR Heating Valve Interlock (link with REVERSE or DPS) |
| RH% | Humidifier Interlock (link with REVERSE or DPS) |
| Q1Q2 | Q1Q2 Output Interlock (link with REVERSE or DPS) |
| STIME | Sampling Time Setting |
| RMT0/1 | Remote Disable/Enable |
| T4L | 4mA=(-20~+20℃)<br>The minimum temperature of sensor<br>(All sensors used in this controller must be in same temperature range) |
| T20L | 20mA=(+50~+120℃)<br>The maximum temperature of sensor<br>(All sensors used in this controller must be in same temperature range) |

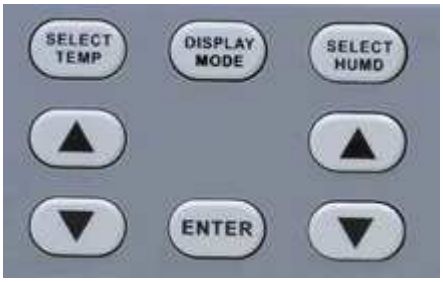



**Fig. 3 Setting Buttons**

## Button Description

1. Temperature Setting
   a. SELECT TEMP: for Temperature setting and other configure selections.
   b. ▲ ▼: Up-down selection.
   c. Temperature configure sequence:
   ZBAND → PBAND → I → D → OFFSET → MANUAL → REVERSE → STIME→ RMT0/1→ T4L→ T20L → COMPARE → MODE → WCMP → W1 → SU → DPS→Q1Q2→SCR PBAND
2. Humidity Setting
   a. SELECT HUMD: for Humidity setting and other configure selections.
   b. ▲ ▼: Up-down selection.
   c. Humidity configure sequence:
   ZBAND → PBAND → I → D → OFFSET →STIME →T4L→T20L→HUMIDITY MODE
3. ENTER: Setting configuration
4. DISPLAY MODE: to switch the display of each item.
   a. Common Mode:
      i. TEMP display area: show the temperature of return air, “TEMPERATURE” & “PV” on.
      ii. HUMD display area: show the present value of humidity, “HUMIDITY” & “PV” on.
   b. Setting Mode:
      i. TEMP display area: show the setting value of temperature, “TEMPERATURE” & “SV” on.
      ii. HUMD display area: show the setting value of humidity, “HUMIDITY” & “SV” on.
   c. Outside Air Mode:
      i. TEMP display area: show the temperature of outside air, “OUTSIDE”, “TEMPERATURE” & “PV” on.
      ii. HUMD display area: show the present value of humidity, “HUMIDITY” & “PV” on.
   d. Output Mode 1:
      i. TEMP display area: show the output value percentage of cooling valve, “AO…CV” on.
      ii. HUMD display area: show the output value percentage of humidifier, “HUMIDITY” & “AO” on.
   e. Output Mode 2:
      i. TEMP display area: show the output value percentage of SCR heating valve, “AO…SCR” on
      ii. HUMD display area: show the output value percentage of humidifier, “HUMIDITY” & “AO” on.
   f. The display will change while pushing the button.