KMC CONTROLS

Installation and Operation Guide
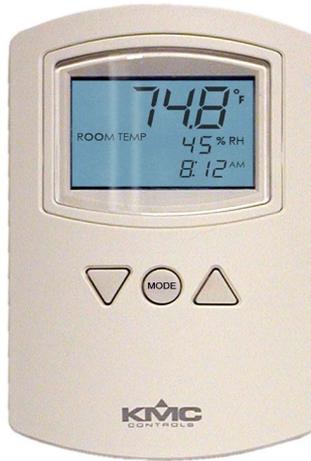
KMD-1183/1185 NetSensors

Contents

Specifications

Models	KMD-1183 KMD-1185 (enhanced alarm functions, see *Alarm* on page 14)
Display	LCD, Four-character, Seven-segment, 0.375 in. high Blue backlight turns on momentarily after a button is pressed
Compatibility	KMD-5800 series controllers KMD-7000 series controllers BAC-5800 series BACnet controllers BAC-7000 series BACnet controllers
Controller Connection	
Connector type	Six-wire RJ-12 modular jack
Cable type and length	Up to 75 feet (22.9 meters) maximum; conductors no smaller than 24 AWG
Power	5 volts DC supplied by connected controller
Weight	2.8 ounces (80 grams)
Material	Light almond ABS UL Flame Class 94HB
Mounting	Surface mount directly to any flat surface or to a 2 x 4 inch or 4 x 4 inch handy-box. Mounting on a 4 x 4 inch box requires an HMO-1161 mounting backplate.

Accessories

Mounting backplate   HMO-1161
Gasket   HPO-1161
Replacement Allen screws HPO-0044 (package of 10)
Network plenum cables with connectors

25 feet (7.6 meters)	KMD-5690
50 feet (15.2 meters)	KMD-5691
75 feet (22.9 meters)	KMD-5692

PC data port interfaces   See *PC data port* on page 7

Temperature sensor

Type	CMOS
Accuracy	±0.9° F (±0.5° C) offset from 40° to 104° F (4.4° to 40.0° C), offset is adjusted in the controller
Resolution	±0.1° F (±0.1° C)
Operating range	36° to 120° F (2.2° to 48.8° C)
Response time	5–30 seconds

Humidity sensor

Type	CMOS
Range	0–100% relative humidity
Accuracy at 25° C	±2% from 10–90% relative humidity
Response time	Less than or equal to 4 seconds

Environmental limits

Operating Temperature	34° to 125° F (1.1° to 51.6° C)
Shipping	–40° to 140° F (–40° to 60° C)
Humidity	0–95% relative humidity non-condensing

Dimensions
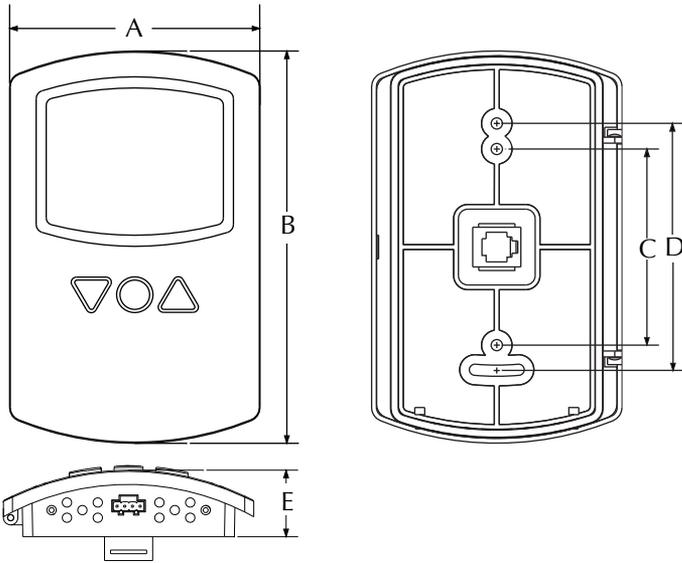
| A	B	C	D	E
3.25 in.	5.16 in.	2.58 in.	3.25 in.	0.87 in.
83 mm	116 mm	66 mm	83 mm	22 mm

Network cable and rough-in preparation

Connecting a NetSensor to a controller requires a six-wire cable with RJ-12 connectors on each end. KMC plenum-rated preassembled cables are recommended. Cables made to length must meet the following requirements:

◆ Cable length must be no longer than 75 feet (22.9 meters).
◆ Cable conductors must be no smaller than #24 AWG.
◆ Cable insulation must meet local building codes.
◆ Connectors must be appropriate for the cable in use and are installed following the connector manufacturers instructions.
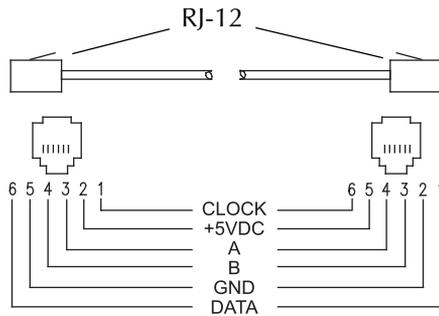

Cable details

Complete rough-in wiring at each sensor location prior to sensor installation. This includes the following:

◆ Routing the network cable from the NetSensor to a controller. See *Mounting details* on page 6.
◆ If required, install the appropriate backplate. See *Accessories* on page 3 for model numbers.

⚠ **Caution**

To prevent mounting screw heads from touching the circuit board in the NetSensor, use only the mounting screws supplied by KMC Controls. Using screws other than the type supplied will damage the NetSensor.

Network
cable

Mounting
base

Turn clockwise to
remove from base.
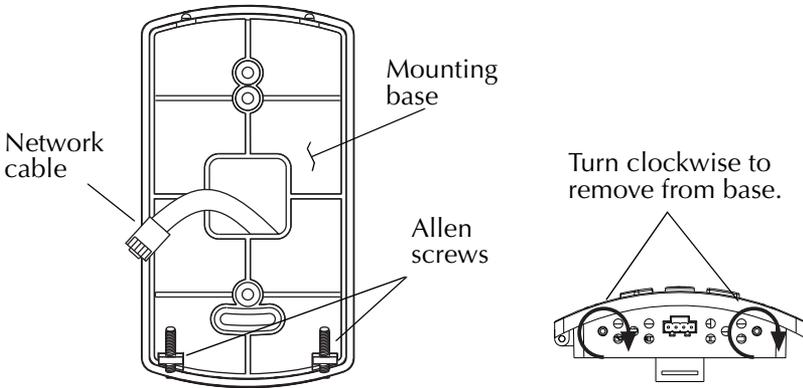
Allen
screws

Mounting details

Installation

1. Turn the Allen screws in the base of the NetSensor clockwise until they clear the cover. Swing the sensor away from the mounting base to remove it
2. Route the RJ-12 cable through the mounting base.
3. Fasten the mounting base directly to a 2 x 4 inch outlet box or a backplate with the Allen screws toward the floor.
4. Insert the RJ-12 cable coming from the base into the NetSensor.
5. Place the top of the NetSensor over the top of the mounting base and swing it down over the Allen screw brackets. Be careful not to pinch any wiring.
6. Back the Allen screws out of the brackets until they engage the NetSensor cover and hold it in place.

PC data port

The NetSensor is equipped with a PC data port located at the bottom of the NetSensor housing. This port provides a temporary EIA-485 (formerly RS-485) connection to the digital network for network setup or troubleshooting.
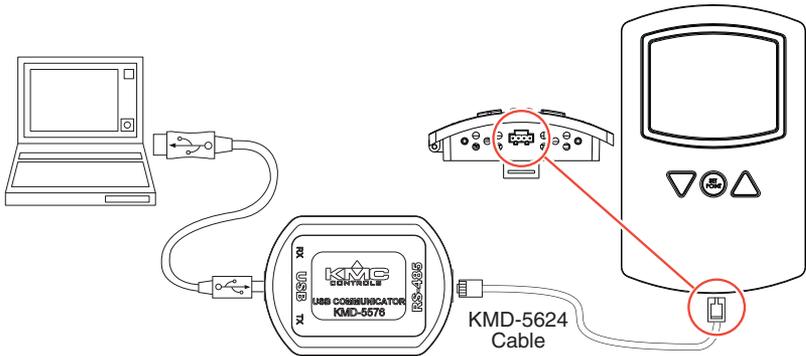
NetSensor PC port location and (USB) connection

To use the port to connect to a computer, a means of converting the EIA-485 signal to a USB or EIA-232 (formerly RS-232) signal will be needed. The exact connection depends on the computer and the operator workstation software (see also the instructions included with those devices and software):

◆ For **USB** (to WinControl or BACstage), use a KMD-5576 USB Communicator (see the illustration above).

◆ For **EIA-232 to BACstage**, use a third-party interface.

◆ For **EIA-232 to WinControl**, use a KMD-5559 CommTalk and KMD-5624 cable (or equivalent interface).

To use the PC data port:

1. Connect the keyed, flat end of the KMD-5624 NetSensor interface cable (included with the KMD-5576 but not the KMD-5559) to the port on the NetSensor.

2. Connect the RJ-12 end of the cable to the interface device that converts the EIA-485 signal from the NetSensor into a USB or EIA-232 signal.

3. Connect the suitable cable from the interface device to the computer's serial or USB port. Install any required software and configure the port as necessary.

Operation

The following sections describe the controls and indicators found on the NetSensor.

Display The display contains four 0.38-inch, seven-segment LCD digits that are visible across a normal size office. The display provides time, temperature, and humidity readouts.

Controls These NetSensors include nine push buttons. Buttons 5 through (virtual) 8 are user programmable and can be reassigned. (Button "8" comes from simultaneously pressing Buttons 5 and 7.) The actual operation of the programmable buttons depends upon the programming in the controller to which the NetSensor is connected. See *Programming* on page 9. The display reverts back to the default room temperature display about ten seconds after the last button press.

The up and down arrow buttons adjust programmed values (where applicable) as follows:

1. Press the button for the desired function.
2. Adjust the value up or down.

Maintainence

Remove dust as necessary from holes in top and bottom. Clean the display with soft, damp cloth and mild soap.

Programming

Program the NetSensor by associating each button with a variable or value object in the controller to which the NetSensor is connected.

◆ See _NetSensor button numbers_ for the button numbers.
◆ Table 3-1 lists typical settings for programming a NetSensor with WinControl. Use the _NetSensor_ dialog found under the _Control Menu_ to configure each button.
◆ Table 3-2 lists typical settings for programming a NetSensor with BACstage. Use the _NetSensor_ dialog in the _Device Menu_ to configure each button.
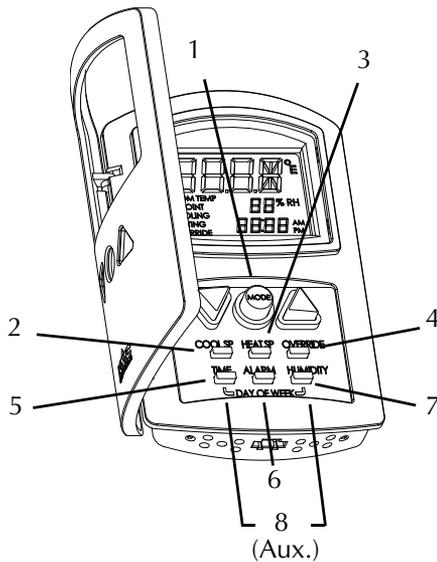
NetSensor button numbers

Of the NetSensor's six rectangular buttons Buttons 5, 6, 7, and (virtual/auxiliary) 8 are labeled with standard functions, but they are also user programmable and can be reassigned if desired. (Button "8" comes from simultaneously pressing Buttons 5 and 7.)

Note

If Button 7 (Humidity) is reassigned, humidity will continue being shown on the NetSensor's display. However, humidity readings will no longer be read by the controller.

Note

The day-of-week and system-time functions are not enabled in all models of the controllers with which the NetSensor may operate. Before programming a controller for one of these features, verify the feature is available in the firmware history for the controller.

For additional instructions on programming a NetSensor with either WinControl or BACstage, see the Help system with either program.

Table 3-1 WinControl Settings

Button	Function	NetSensor configuration			Variable	
		Type	Range	Display	Units	Type
1	Temperature (Mode button)	Analog	°F or °C	Read Only	Deg.F Deg.C	Analog
2	Cooling Setpoint	Analog	0 Decimal	Read/Write	Deg.F Deg.C	Analog
3	Heating Setpoint	Analog	0 Decimal	Read/Write	Deg.F Deg.C	Analog
4	Override	Digital	Off/On	Read/Write	Off/On	Digital
5	System time	Analog	RTC Time	Read/Write	Time	Analog
6	Alarm	Digital	Off/On	Read	Off/On	Digital
7	Humidity	Analog	0 Decimal	Read/Write	% RH	Analog
8*	Day of Week **OR**	Analog	DOW	Read/Write	Unused	Analog
8*	Auxiliary	Digital	Off/On	Read/Write	Off/On	Digital

Note

*Virtual Button "8" comes from simultaneously pressing Buttons 5 and 7.

Table 3-2 BACstage settings

Button	Function	NetSensor			Value object	
		Assignment	Display Format	Permission	Object type	Units
1	Temperature (Mode button)	AV	°F or °C	Read Only	AV	°F or °C
2	Cooling Setpoint	AV	0	Read/Write	AV	°F or °C
3	Heating Setpoint	AV	0	Read/Write	AV	°F or °C
4	Override	BV	Off/On	Read/Write	BV	Off/On
5	Time	AV	Time	Read Only	AV	Hours
5	System time		Hours	Read/Write		
6	Alarm	BV	Off/On	Read Only	BV	Off/On
7	Humidity	AV	0	Read/Write	AV	% RH
8*	Day of Week **OR**		Day of Week	Read/Write		
8*	Auxiliary	BV	Off/On	Read/Write	AV	Off/On

☞ **Note**

*Virtual Button "8/Auxiliary" comes from simultaneously pressing Buttons 5 and 7.

Temperature/Mode Button 1—the space temperature sensor inside of the NetSensor—is assigned to an analog variable in WinControl or an analog value object in BACstage. Pressing the Mode button, cycles the display through the various modes, and the display reverts back to the default room temperature display about ten seconds after the last button press.

- ◆ Operators can view (but not change the value of) the room temperature by default, by pressing the Mode button through all the mode functions, or waiting about ten seconds after entering any mode function.
- ◆ The ROOM TEMP icon displays when the display is showing the room temperature.
- ◆ The setting in *Range* (WinControl) or *Display Format* (BACstage) sets the NetSensor display to either Fahrenheit or Celsius.

Cooling setpoint Button 2 is assigned to an analog variable in WinControl or an analog value object in BACstage.

- ◆ The precision of the display is set by *Range* in WinControl and *Display Format* in BACstage. The typical value is 0.
- ◆ Operators can view and change the setpoint by first touching Button 2 (or by pressing the Mode button until the SETPOINT COOLING mode is displayed) and then pressing an up or down arrow button.
- ◆ Write a Control Basic to control equipment based on the conditions of the setpoint such as the following:

```
10 IF VAR1 > VAR2 THEN START OUT6
```

Heating setpoint Button 3 is assigned to an analog variable in WinControl or an analog value object in BACstage.

- ◆ The precision of the display is set by *Range* in WinControl and *Display Format* in BACstage. The typical value is 0.
- ◆ Operators can view and change the setpoint by first touching Button 3 (or by pressing the Mode button until the SETPOINT HEATING mode is displayed) and then pressing an up or down arrow button.
- ◆ Write a Control Basic to control equipment based on the conditions of the setpoint such as the following:

```
20 IF VAR1 < VAR3 THEN START OUT7
```

Override Press Button 4 or press the Mode button until OVERRIDE appears on the display. The temperature display will change to ON or OFF depending on the override condition. To toggle the override condition on or off, press the up or down arrow button. This is dependent on appropriate programming in the controller. The controller may also be programmed for the override to last a specified amount of time.

Displaying time Typically Button 5 is configured to display time and assigned to an analog variable in WinControl or an analog value object in BACstage. Add a Control Basic line such as the following:

```
30 VAR5 = TIME
```

Setting system time System time sets the real-time clock.

◆ Use this function only with a stand-alone Tier 2 KMD controller or the time master in BACnet MS/TP network.
◆ Operators can view and change the system time by first touching the Button 5 and then pressing an up or down arrow button.
◆ In WinControl (only), add a Control Basic line such as the following:

```
40 VAR5 = TIME
```

Alarm Pushing Button 6 allows the user to check the status of the defined "alarm" or (KMD-1185 only) temporarily suppress a flashing alarm indication.

When an alarm state occurs, the connected controller signals the condition by putting a binary value of 1 in slot 6 of the NetSensor table. The alarm indication continues until the controller signals a return to normal state by putting a binary value of 0 in slot 6 of the NetSensor table. (See Tables 3-1 and 3-2.)

Add a Control Basic line such as follows:

```
50 VAR6 = IN1
         [or whatever point indicates an alarm]
```

The ALARM button and feature distinguishes the KMD-1183 from the KMD-1185. See the table below.

Table 3-3 Alarm functions

State	KMD-1183	KMD-1185
Alarm	Displays room temperature. When Button 6 is pressed, "**ON**" is momentarily displayed.	Displays flashing "**ALM**" (alternates with room temperature display). Pressing Button 6 suppresses "ALM" indication for 10 minutes, and if Button 6 is pressed again during the 10 minute suppression period, "ALM" shows momentarily. When "ALM" is flashing, if any button other than 6 is pressed, the display momentarily returns to the normal display corresponding to that button.
No Alarm (Normal)	Displays room temperature. When Button 6 is pressed, "**OFF**" is momentarily displayed.	

Humidity Pushing Button 7 makes the top primary display temporarily show the relative humidity instead of room temperature. The smaller relative humidity display shows the humidity continuously.

Day of Week This function allows you to set the day of the week. Press Buttons 5 and 7 together to access.
- ◆ In WinControl (only), check *Allow DOW (Day Of Week) Range* at the bottom of the NetSensor dialog.
- ◆ Set *Type* to *Analog.*
- ◆ Set *Range* to *DOW.*
- ◆ Under *Description* enter the name, description, or mnemonic of the variable that will store the day of week value.

Note

In the Variables dialog box and in Control BASIC, the day of week value is represented by **0 through 6 being Sunday through Saturday**. In the NetSensor dialog box and on the NetSensor display, the day of week value is represented by **1 through 7 being Sunday through Saturday**.

Verifying a functioning NetSensor To check if a functioning NetSensor is present, use the Control Basic function *NETSENSOR-STATUS*.

```
10 IF NOT NETSENSOR-STATUS THEN STOP OUT1
```

Verifying firmware version Simultaneously push Button 2 (COOL SP) and Button 4 (OVERRIDE) to display the version of the firmware in the NetSensor.

Important notices

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