

## Application Guide



STE-6010/6011

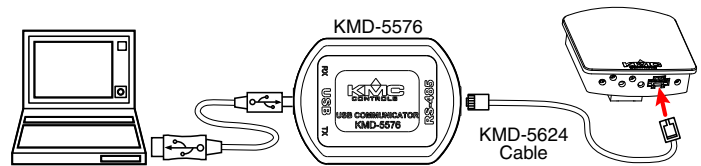


STE-6013/6015

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### PC Port Network Connection



At the bottom of the modular STE-6010/6015 (but not STE-6011/6013) case is an EIA-485 (formerly RS-485) data port. This port provides a temporary connection to the digital network for network setup or troubleshooting. To use the port to connect to a computer, a means of converting the EIA-485 signal to a USB signal is required. The connection depends on the software used. (See also the instructions included with those devices and software.)

- For KMDigital networks or (BACnet networks with) BACstage, use a **KMD-5576** USB Communicator (shown in the illustration above).
- For BACnet networks with KMC Connect or TotalControl, use a **BAC-5051E** BACnet router with an **HPO-5551** cable kit (see documentation for those products).

**NOTE:** The data port is supported with MS/TP models but not “E” Ethernet models of KMC Conquest BACnet controllers.

To access the network through the sensor’s port:

1. Connect the keyed, flat end of the interface cable to the port on the sensor.
2. Connect the other end of the cable to the interface device that converts the EIA-485 signal into the USB signal.
3. Connect the suitable cable from the interface device to the computer’s USB port. Follow the interface device’s instructions.

### Models and Features

Model Number	Interface Features		Cable Connections		
	Override Button	LED Status Indicator	Screw Clamp Terminals	RJ-45 Connector	EIA-485 Data Port
STE-6010				X	X
STE-6011			X		
STE-6013	X	X	X		
STE-6015	X	X		X	X

**NOTE:** This document is primarily about using these sensors with LEGACY software and controllers (before KMC Conquest). For use with KMC CONQUEST controllers, see the **KMC Conquest Controllers Application Guide** and related documents! For more product information, see the data sheet and installation guide for the **STE-6010/6011/6013/6019/6015**.

# Controller Configuration

## Overview

Ensure that the corresponding 10,000 ohm pull-up resistors on the controller are selected (switched On). Consult the controller's setup instructions for information on switching on the pull-up resistors.

See the relevant software section for controller configuration instructions.

## BACstage Software

### Thermistor Input (All)

1. In the BACstage software main menu, select *Objects > Inputs*.
2. Click *Edit*.
3. Type in a name in the appropriate *Description* field (up to 32 characters) and/or *Name* field (up to 16 characters).

**NOTE:** No two labels or descriptions in a controller can be identical.

4. Select *Object Type: Analog* if it is not the default.
5. Select *Device Type: KMC10K Type II*.
6. Select *Units: °F or °C*.
7. Optionally, change the *Filter Weight* (under *More*) to the desired number of thermistor readings averaged before displaying the result. **If the (STE-6013/6015) override is being used, Filter Weight may need to be reduced down toward 1 to ensure reliable recognition of the button press, depending on the controller.**

**NOTE:** The button needs to be pressed and held for at least a half a second to be reliably recognized for override mode.

8. Click *End Edit*.
9. Click *Yes* for "Send Update Notification Now?"
10. In the BACstage software main menu, select *Device > Device Tables > KMC10K Type II Table*.
11. Click *Edit*.
12. Click *Defaults* (values will fill in).
13. Click *End Edit*.
14. Click *Yes* for "Send Update Notification Now?"
15. Click *OK*.

### Override (STE-6013/6015 Only)

1. In the BACstage software main menu, select *Objects > Binary Values*.
2. Click *Edit*.

3. Type in a name in the appropriate *Description* field and/or *Name* field.
4. Click in the *Units* column and select *Off/On* (or *No/Yes, Stop/Start, Disabled/Enabled, Inactive/Active* according to preference).
5. Click *End Edit*.
6. Click *Yes* for "Send Update Notification Now?"
7. Click *OK*.
8. In the BACstage software main menu, select *Objects > BASIC Programs*.
9. Click *Edit*.
10. Type in a name in the appropriate *Description* field and/or *Name* field.
11. Click *Autorun*.
12. Click *End Edit*.
13. Click *Yes* for "Send Update Notification Now?"
14. Click once in the # column.
15. Type in program lines (see the following example).

**NOTE:** This is only an example. Details need to fit the controller configuration.

```
10 REM ** AI3 IS STE-6013/6015
    TEMPERATURE SENSOR INPUT **
20 REM ** BV3 IS OCCUPIED/UNOCCUPIED
    (ON/OFF) MODE **
30 REM ** PUSH BUTTON ON SENSOR TO
    START OVERRIDE MODE (BV2) **
40 IF+ SENSORON( AI3 ) AND NOT BV3 THEN
    START BV2
50 REM ** CHANGE DEFAULT TIMEON TO
    DESIRED AMOUNT OF OVERRIDE TIME **
60 IF TIMEON( BV2 ) > 02:00:00 THEN
    STOP BV2
70 REM ** AO7 IS SUPPLY VOLTAGE FOR
    STE-6013/6015 LED **
80 IF BV2 THEN AO7 = 10 ELSE AO7 = 0
90 END
```

16. Click *Send*.
17. Click *OK*.
18. Click *Yes* for "Execute Program Now?"
19. Click *Close*.
20. Click *OK*.

## BAC-A1616BC BACnet Building Controller

Select the 10K ohm pull-up resistor jumper position for the corresponding input. (See the Installation section of the [BAC-A1616BC Building Controller Installation and Operation Guide](#) for the correct jumper position.)

Because the Building Controller has a 0–12 VDC total input range, different tables are required than in other (0–5 VDC) KMC controllers. **Download the sensor tables (CSV) file from the KMC Controls web site and import the needed tables as described in the Tables section of the BAC-A1616BC Building Controller Installation and Operation Guide. (You must log in to see the zipped tables file on the Building Controller product page downloads.)**

The screenshot shows the 'Analog Input 1' configuration screen. The 'Object Name' is 'Temp6011' and the 'Description' is 'STE-6011 Sensor in Office 1'. The 'Device Type' is set to 'KMC Type II Deg F'. The 'Event State' is 'normal'. The 'Status Flags' are 'In Alarm', 'Fault', 'Overridden', and 'Out of Service'. The 'Present Value' is 76.90 and the 'Units' are 'degrees-F'. The 'COV Increment' is 1.000000. The 'multiplier' is 1.800000, the 'offset' is 32.000000, and the 'Lookup Table' is 2.

1. In the desired Analog Input setup screen of the web page interface, select *KMC Type II Degree Fahrenheit* or *KMC Type II Degree Celsius*.
2. Select the Lookup Table for the Type II Thermistor.
3. For the Fahrenheit scale, the multiplier is 1.8 and the offset is 32. For Celsius, the multiplier is 1 and the offset is 0.
4. Click *Save*.

For an example of Override mode Control Basic, see the BACnet example in [Override \(STE-6013/6015 Only\) on page 2](#).

## WinControl Software

### Thermistor Input (All)

1. In the WinControl software main menu, select *Control > Inputs*.
2. Click *Edit*.
3. Type in a name in the appropriate *Description* field (up to 20 characters) and/or *Label* field (up to 8 characters).

**NOTE:** No two labels or descriptions in a controller can be identical.

4. Click *Units* (which opens the Configure Inputs screen).
5. Select *Type: Analog* if it is not the default.
6. Select *Deg F* (or *C*) *KMC10K Type II*.
7. Optionally, change *Format* from 0 to the desired number of temperature decimal places.
8. Optionally, change the *Average* to the desired number of thermistor readings averaged before displaying the result. **If the STE-6013/6015 override is being used, *Average* may need to be reduced down toward 1 to ensure reliable recognition of the button press, depending on the controller.**

**NOTE:** The button needs to be pressed and held for at least a half a second to be reliably recognized for override mode.

9. Click *OK*.
10. Click *End Edit*.
11. Click *OK*.

### Override (STE-6013/6015 only)

1. In the WinControl software main menu, select *Control > Setpoint/Variables*.
2. Click *Edit*.
3. Type in a name in the appropriate *Description* field and/or *Label* field.
4. Click *Units* (which opens the Configure Variables screen).
5. Select *Type: Digital*.
6. Select *Off/On* (or *No/Yes*, *Stop/Start*, *Dis/Enabled* according to preference).
7. Click *OK*.
8. Click *End Edit*.
9. Click *OK*.
10. In the WinControl software main menu, select *Control > Control Basic*.

11. Click *Edit*.
12. Type in a name in the *Description* field and/or *Name* field.
13. Place an x in the *On* column.
14. Click *End Edit*.
15. Click once in the # column.
16. Type in program lines (see the following example).

**NOTE:** This is only an example. Details need to fit the controller configuration.

```

10 REM ** STE-6013/6015 OVERRIDE **
20 REM ** VAR5 IS OCCUPIED/UNOCCUPIED
   (ON/OFF) MODE **
30 IF NOT VAR5 THEN GOSUB 50
40 END
50 REM ** IN3 IS ROOM TEMP VOLTAGE FROM
   SENSOR (FROM INPUT SCREEN) **
60 REM ** VAR4 IS OVERRIDE (FROM
   SETPOINTS/VARIABLES SCREEN)**
70 REM ** USE BUTTON ON SENSOR TO START
   OVERRIDE (VAR4) **
80 IF+ SENSOR-ON( IN3 ) THEN START VAR4
90 REM ** OUT7 IS SUPPLY VOLTAGE FOR
   STE-6013/6015 LED **
100 IF VAR4 THEN OUT7 = 10 ELSE OUT7 =
    0
110 REM ** CHANGE DEFAULT TIME-ON TO
   DESIRED AMOUNT OF OVERRIDE TIME **
120 IF TIME-ON( VAR4 ) > 02:00:00 THEN
   STOP VAR4
130 RETURN

```

**NOTE:** For an additional sample application of programming override timers, adapt the information in the Application Note AN0504F Programming Override Timers section of the [Digital Designer's Guide](#).

## KMC Connect and TotalControl Software

**NOTE:** See [Overview on page 2](#). Then see the Help information in KMC Connect or TotalControl.

**NOTE:** This document is primarily about using these sensors with LEGACY software and controllers (before KMC Conquest). For use with KMC CONQUEST controllers, see the [KMC Conquest Controllers Application Guide](#) and related documents! For more product information, see the data sheet and installation guide for the [STE-6010/6011/6013/6015](#).

## Mounting Considerations

Sensors must NOT be:

- Mounted on an exterior wall.
- Mounted on or near a large thermal mass (e.g., concrete block wall).
- Blocked from normal air circulation by obstructions.
- Exposed to heat sources (e.g., lights, computers, copiers, or coffee makers) or to sunlight (at **any** time of the day).
- Exposed to drafts from windows, diffusers, or returns.
- Exposed to air flow through the conduit (from leaks in plenum ducts)—put sealant inside the conduit to block air flow.

## Troubleshooting

- Be sure the 10,000 ohm pull-up resistors on the controller board are turned **ON**.
- Check wiring. To prevent excessive voltage drop, use a conductor size that is adequate for the wiring length!
- Check sensor configuration and tables in the controller.
- Check voltage from the controller.
- Check that the sensor is **NOT** mounted on an exterior wall, mounted on or near a large thermal mass, blocked from normal air circulation by obstructions, exposed to heat sources or to sunlight, exposed to drafts from windows or air vents, or exposed to air flow through the conduit from leaks in plenum ducts. (See the Mounting Considerations section above.)

## Specifications

<b>Connections</b>	Clamp (screw-type) terminals or modular RJ-45 jack (see <a href="#">Models and Features on page 1</a> )
<b>Material</b>	Flame-retardant plastic, light almond or white
<b>Weight</b>	Approx. 1.25 oz. (35 grams)
<b>Sensor</b>	
Type	Type II thermistor
Accuracy	$\pm 0.36^{\circ} \text{ F}$ ( $\pm 0.20^{\circ} \text{ C}$ )
Resistance	10,000 ohms @ $77^{\circ} \text{ F}$ ( $25^{\circ} \text{ C}$ )
NTC	$4.37\%/^{\circ} \text{ C}$ @ $25^{\circ} \text{ C}$
Dissipation Constant	2 mW/ $^{\circ} \text{ C}$
<b>STE-6013/6015 (Only)</b>	
Front Button	One momentary push button, shunts temperature sensor to signal override condition
LED Indicator	10 VDC (12 VDC max); 5 mA max. current draw at 12 VDC
<b>Approvals</b>	CE compliant
<b>Environmental Limits</b>	
Operating	34 to $125^{\circ} \text{ F}$ (1.1 to $51.6^{\circ} \text{ C}$ )
Shipping	$-40$ to $140^{\circ} \text{ F}$ ( $-40$ to $60^{\circ} \text{ C}$ )
Humidity	0 to 95% RH non-condensing

## Accessories

<b>HMO-6036</b>	Universal Backplate, Almond
<b>HMO-6036W</b>	Universal Backplate, White
<b>KMD-569x</b>	Cable: STE-6010/6015 modular to KMC legacy BAC-58x1 and BAC-7xxx BACnet controllers ( <b>KMD-5693</b> = 25 ft.; <b>KMD-5694</b> = 50 ft.; <b>KMD-5695</b> = 75 ft.)
<b>HPO-9005</b>	Adapter for <b>STE-6011</b> (but not <b>STE-6013</b> ) sensors to connect (with an Ethernet patch cable) the sensors' terminals to the BAC-59xx/9xxx controllers' sensor ports
<b>HSO-9001</b>	Cable: Ethernet, 50', STE-6010/6015 modular to KMC Conquest controllers
<b>HSO-9011</b>	Cable: Ethernet, 50', Plenum Rated, STE-6010/6015 modular to KMC Conquest controllers
<b>HSO-9012</b>	Cable: Ethernet, 75', Plenum Rated, STE-6010/6015 modular to KMC Conquest controllers
<b>BAC-5051E</b>	BACnet Router
<b>HPO-5551</b>	Conquest Router Tech Cable Kit
<b>KMD-5576</b>	USB Communicator
<b>SP-001</b>	Flat Blade and Hex End Screwdriver

## Important Notices

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**KMC Controls, Inc.**  
19476 Industrial Drive  
New Paris, IN 46553  
574.831.5250  
www.kmcccontrols.com  
info@kmcccontrols.com