

Application Note—AN0905B

Using the NetSensor on preprogrammed controllers

The factory-programmed sequences in the KMD-7000 series controllers use an STE series temperature sensor to measure space temperature. This application note lists the procedures to modify the programs to use a NetSensor.

The programming in the KMD-7000 series controllers assigns the sensor for space temperature to input 1 (IN1) and the space temperature set point to input 2 (IN2). If you are using the NetSensor to supply these values, the first two inputs on the controller can be used for other sensors. However, the controller will still attempt to look at these points for temperature and set point values. It will be necessary to redefine these points for the program to work properly.

The KMD-7000 stores a connected NetSensor's information as variables. You assign these variables when programming the KMD-7000 controller. The following changes should be made to allow the factory program to use the NetSensor information instead of the first two inputs of the controller:

1. Under Control Menu, choose "NetSensor" and configure the NetSensor as follows:

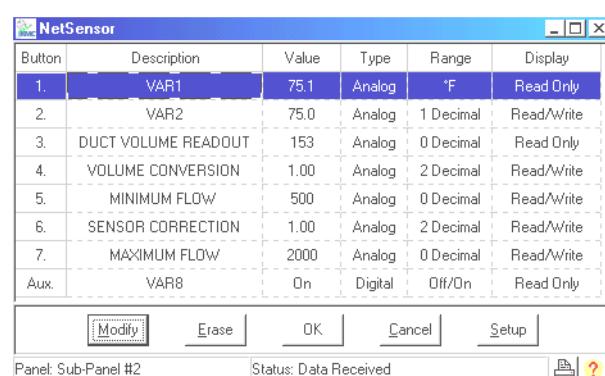
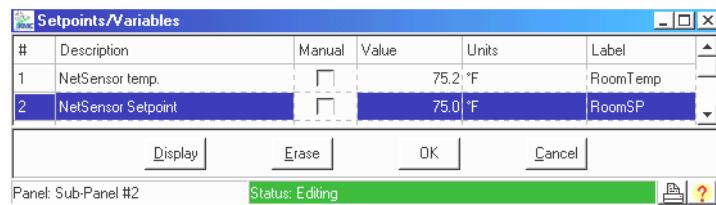
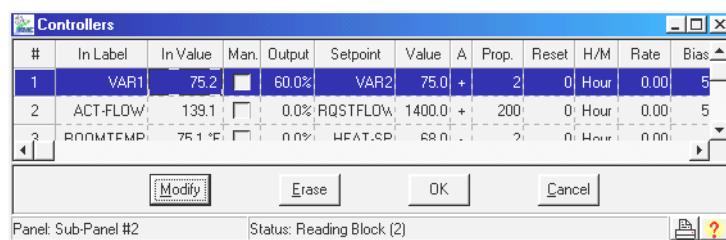


Illustration 7 NetSensor dialog

2. Configure the Variables in the KMD-7000 assigning the proper units:

**Illustration 8 Variables dialog**

3. For any PID Controllers that use space **temperature** as an input, the "In Label" should be replaced with the Label or mnemonic of the variable assigned to the space **temperature** from the NetSensor.

**Illustration 9 PID controllers dialog**

4. To use the NetSensor to supply space **set point** information it is necessary to add code to override the factory programs. The following lines are examples of code that can be used to determine the heating and cooling set points from the NetSensor **set point** value. In this example, "BASE-SP" is the label given to the variable that was assigned to the NetSensor **set point** value.

Example:

```
10 IF OCCUPIED THEN HEAT$SPT = BASE-SP - DEADBAND / 2
20 IF OCCUPIED THEN COOL$SPT = BASE-SP + DEADBAND / 2
```

The occupied mode must also be defined in either Program 5 or in a Weekly Schedule. In the unoccupied mode, the controller is set up to use the setback and set-up temperatures stored as variables (COOL\$SPT and HEAT\$SPT). If the NetSensor space set point is to be active at all times, the "IF OCCUPIED THEN" can be removed from each program line.

On VAV box controllers there is no occupied variable defined. Typically you will use an occupancy variable in the air handling unit controller where the schedule is held to determine when each box should use setback or setup temperature setpoints. Variables 13 and 14 can be used for this purpose in all KMD-7000 series VAV box controllers. Add the following lines to program 5 to allow unoccupied temperature setpoints.

Example:

```
30 IF NOT OCCUPIED THEN HEAT$SPT = VAR13
40 IF NOT OCCUPIED THEN COOL$SPT = VAR14
```

Limiting Changeable Values

To create a restricted range on buttons the user is allowed to change, add the limits to Control Basic Program 5. The following example limits a setpoint to within 68 and 76. The setpoint is variable 2 as in the above information.

Example:

```
100 IF VAR2 < 68 THEN VAR2 = 68  
110 IF VAR2 > 76 THEN VAR2 = 76
```

These lines can be added anywhere in program 5 as long as they are executed at every scan (do not locate them where they may be skipped over such as after a GOTO statement)



Note

Changes made to KMD-7000 controllers using the NetSensor are held only in RAM memory. A power outage will cause any changes to be lost and default to the values stored in flash (non-volatile) memory. It is advisable to store default values in the controller so that reasonable control can be maintained when power is restored.

The NetSensor data will be saved automatically to flash every 24-hours. In addition, you can write the data more frequently if required by the application. A control basic function can be called to perform this task by using a line such as:

Example:

```
70 IF Interval( 0:10:00 ) Then GOTO 80 else GOTO 100  
80 IF ABS( ROOMSP - S ) > .5 THEN GOTO 90 ELSE GOTO 100  
WRITE-TO-FLASH : S = ROOMSP
```

These lines will look for a change in the setpoint of greater than .5 degrees at which point the change will be written to flash. To avoid wearing out the flash and taking up processor time the write to flash should be used in moderation. Line 70 assures the write to flash will take place no more than once every 10 minutes. This is to accommodate the time period while the user is adjusting the setpoint so multiple writes do not occur.

