January, 2015

INSTALLATION INSTRUCTIONS

Carel pAD digital wall stat

Modine School Systems

Carel pAD Digital Wall Stat/Humidity Sensor

IMPORTANT

1. Disconnect power supply before installing the accessory to prevent the unit from operating during installation.
2. The use of this manual is specifically intended for a qualified installation and service agency. All installation and service of these kits must be performed by a qualified installation and service agency.
3. These instructions must also be used in conjunction with the Installation and Service Manual originally shipped with the appliance, in addition to any other accompanying component supplier literature.

Application

The Carel pAD (Ambient Display) wall thermostat/humidity sensor is used in conjunction with the Carel pCO series controller mounted on Modine School Systems.

Functions of the pAD include:

- Change temperature set points
- Change humidity set points (Optional)
- Clock display
- Alarm indication
- Time clock override
- Display of icons (refer to page 3)

Specifications

Power Supply Input:	24 Vac (powered from unit)
Power Consumption:	1 Watt Maximum
Operating Conditions:	• 32°F to 122°F • 10 to 85% Relative Humidity (non-condensing)
Index of Protection:	IP30 (NEMA Type 1)

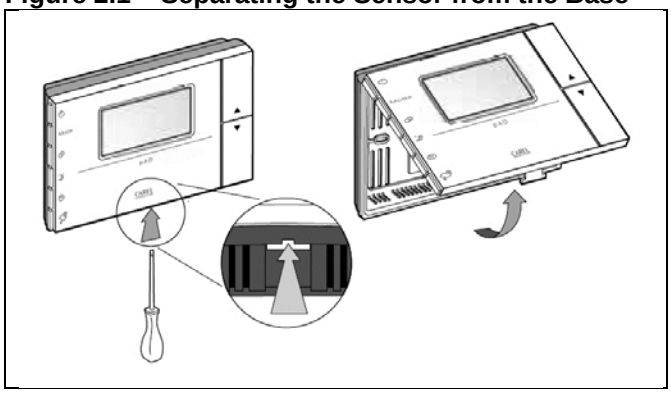
THIS MANUAL IS THE PROPERTY OF THE OWNER.
PLEASE BE SURE TO LEAVE IT WITH THE OWNER WHEN YOU LEAVE THE JOB.

INSTALLATION – Carel pAD Digital Wall Stat

Installation

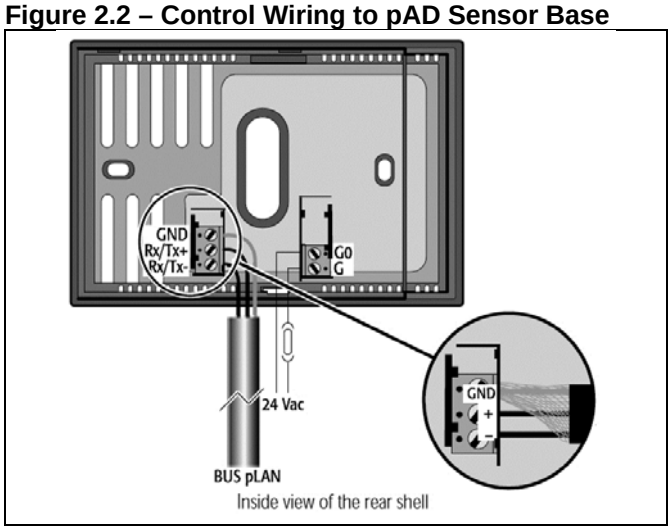
1. Separate the sensor from its base by pushing the white tab at the bottom of the sensor and pull the white body from the gray base by hinging it up from the bottom. Refer to Figure 2.1.

Figure 2.1 – Separating the Sensor from the Base



2. Locate and mount the sensor in the conditioned space, considering the following:
   - Mount in a location representative of the space temperature. Do not locate on an outside wall or near supply grills, windows, or other devices that could cause incorrect temperature readings.
   - Mounting height will depend on personal preferences and applicable codes.
   - If required, the sensor can be mounted in a well-ventilated thermostat cover.
   - The sensor base will mount on a standard 2" x 4" electrical box mounted sideways.
3. Connect the control wiring to the base terminals, running the wiring through the hole in the center of the base. The recommended control cable is 18-22 AWG 4-Core Twisted Pairs. Refer to Figure 2.2.

Figure 2.2 – Control Wiring to pAD Sensor Base



4. Connect the control wiring to the terminals on Modine School System, or on the pCO series controller mounted on the Modine School System, using Table 2.1 to cross-reference the correct connections.

Table 2.1 – Terminal to Terminal Wiring Connection

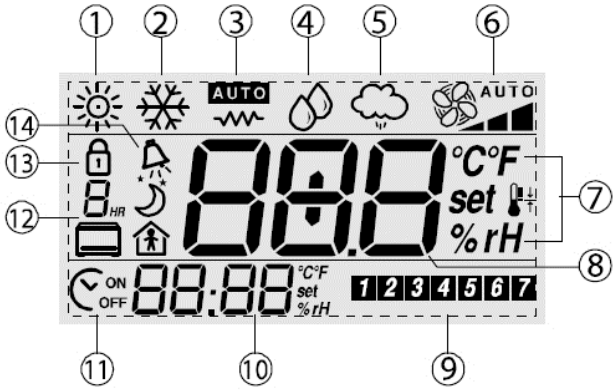
Terminal on pAD	Terminal on Main Unit or pCO Series Controller
G (24 Vac)	503 (on unit)
G0 (ground)	500 (on unit)
Rx/Tx+ (positive pLAN)	702 (on unit)
Rx/Tx- (negative pLAN)	701 (on unit)
GND (ground pLAN)	703 (on unit)

5. Holding the sensor on the outer edge of the enclosure, reinstall the sensor on the base by hooking the top of the sensor into the base and hinge down, making sure the pins line up. DO NOT force the sensor into place or touch the components on the back of the sensor.
6. For the pAD Sensor to function correctly, the pAD setting must be enabled in the pCO series microprocessor controller. This can be found under "Manufacturing Settings" using the keypad (See AIR 2-525 manual).

Display Features

Figure 2.3 shows the operation icons on the display of the pAD and what they indicate. Note that not all are used with Modine School System applications.

Figure 2.3 – pAD Display Features



1 – Cooling Mode
2 – Heating Mode
3 – Auto ①
4 – Dehumidification Mode②
5 – Humidification Mode ①
6 – Fan Speed
7 – Units of Measure
8 – Temp/Humidity Setpoint②
9 – Day of the Week
10 – Time/Temp/Humidity Setpoint②
11 – ON/OFF Time ①
12 – Occupied Override Time
13 – pAD Locked
14 – Active Alarm Indication

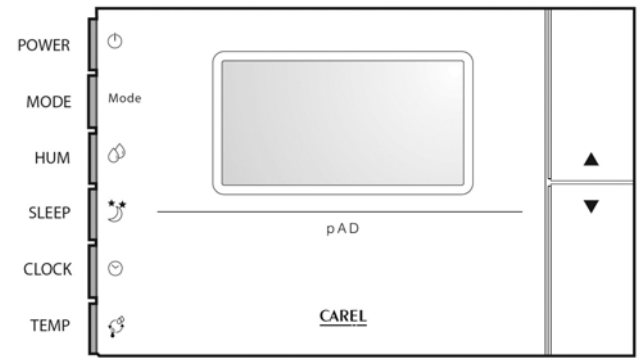
① Not used with Modine School Systems.
② Humidity control only available when ordered with humidity sensor.(optional)

INSTALLATION – Carel pAD Digital Wall Stat

Button Features

The pAD has several buttons to control certain functions. Refer to Figure 3.1 for the buttons and button functions (note that not all are used with Modine School System applications):

Figure 3.1 – pAD Button Features



POWER	Used to Turn Unit On and Off (if enabled in the pCO series controller)
MODE	Used to Reset an Alarm Condition (no other function)
HUM	Display & Change the Humidity Setpoint (only with pADs with humidity control)
SLEEP	Unoccupied Override
CLOCK	Not Used (Time Set By pCO series controller)
TEMP	Display Alternative Information
UP	Change Cooling, Heating, or Humidity Setpoints
DOWN	

Operation

With the display and button features, basic unit control and/or monitoring can be performed. Under normal operation the display will show:

- Current Time (Supplied from the pCO series controller)
- Current Day (Supplied from the pCO series controller)
- Current Room Temperature, Humidity (optional), Cooling Setpoint or Heating Setpoint.
- Current Room Humidity Level (optional)
- Current Mode (Occupied or Unoccupied)
- Compressor / Fan Speed

Using the buttons on the pAD, adjustments can be made to these currently displayed conditions. Note that only occupied setpoints can be changed. The setpoint adjustment range can be limited in the pCO series controller using a service keypad (see AIR 2-526 quickstart guide or AIR 2-525 microcontroller manual).

Adjusting the Temperature and/or Humidity Setpoints:

To change the temperature setpoint, use the **"Up"** or **"Down"** arrows to change the value. This changes the Cooling Setpoint. The default Heating and Cooling Setpoint band is 4°F, this can be adjusted via the handheld/controller and the pAD will reflect the change. For example, if the Cooling Setpoint is 74°F, the Heating Setpoint will automatically be set to 70°F with a Heating/Cooling band set at 4°F.

To change the humidity setpoint (optional), press the **"Hum"** button and the Humidity setpoint will be displayed. Use the **"Up"** or **"Down"** arrows to change the setpoint.

Unoccupied Mode Override to Occupied Mode:

In unoccupied mode you can press the **"Sleep"** button to activate Occupied Override. Each press of the button increases the override time by an hour. To cancel, wait a few seconds then press the **"Sleep"** button once and the override will be canceled.

Clearing Alarms:

The pAD will display Remote Alarm from the pCO series controller, if an alarm occurs the **"Bell"** symbol will flash and the main display will alternate between the temperature & **"Alr"**. To clear an alarm, press the **"Mode"** button. Note that active alarms cannot be cleared and Service Personnel must be called to determine the source of the alarm and correct.

Programming the Sensor:

The sensor ships from Modine fully programmed. If changes are required follow the instructions below.

Note: This should only be done by a qualified service technician.

Press **"UP"** and **"DOWN"** together until **"PAR"** is displayed in the main screen. While still holding the **"UP"** arrow, release the **"Down"** arrow, then press the **"TEMP"** button.

To cycle through the values, use the **"UP"** and **"DOWN"** arrows. To make a change, press the **"TEMP"** button, the display will flash, and then make the change using the **"UP"** and **"DOWN"** buttons. When done, press the **"TEMP"** button.

To finalize the operation, press & hold **"TEMP"** until the normal display is returned, then press resume. If this is not done the changes will not be made.

Table 3.1 – Default pAD Program Parameters

Code	Default	Description
Ad01	**4**	pLAN Address (do not change)
Ad02	**1**	Not Used (Rev 1.3 pAD only)
Br01	**0**	pLAN Baud Rate (do not change)
Br02	**0**	Not Used (Rev 1.3 pAD only)
En01	**0**	Enable Buzzer 1=on 0=off
Pco1	**0.0**	Temperature Calibration -9.9 to +9.9
Fr01		pAD Firmware Revision Number
Prot	**1**	Not Used (Rev 1.3 pAD only)

Modine Manufacturing Company has a continuous product improvement program,
and therefore reserves the right to change design and specifications without notice.

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