

Automatic Floor Pressurization Sensor for Uniflair CW — Installation

Overview

The Automatic Floor Pressurization Sensor (AFPS) detects a decrease in below-floor air pressure caused by lifted floor tiles or airflow demand created by rack based cooling systems. By modulating fan speed, an AFPS kit for your Uniflair Chilled Water (CW) Unit compensates for these changes in air pressure.

The AFPS kit is supported by the following Uniflair CW models:

- TDCV0700
- TDCV1000
- TDCV1200
- TDCV1700
- TDCV2500
- TDCV3400
- TDCV4000
- TDCV4300

Safety Notices

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Turn off all power supplying this equipment before working on the equipment.

Failure to follow these instructions can result in death or serious injury.

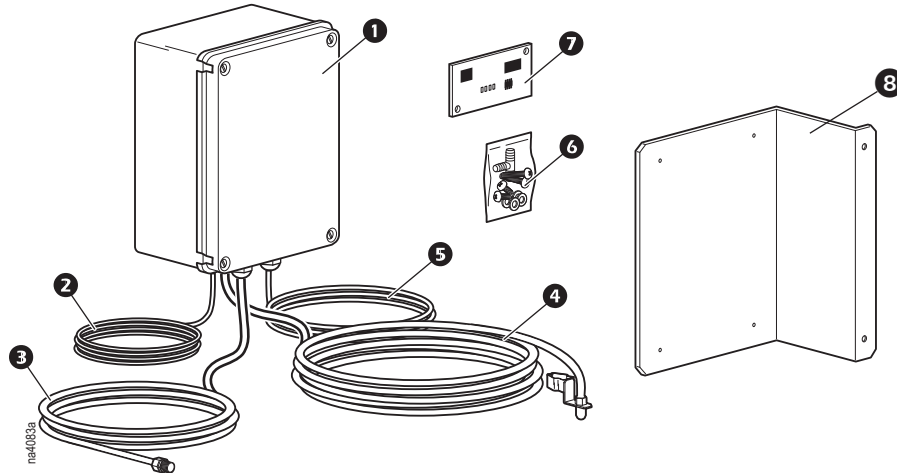
⚠ WARNING

HAZARD FROM MOVING PARTS

Keep hands, clothing, and jewelry away from moving parts. Check the equipment for foreign objects before closing the doors and starting the equipment.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Inventory



Item	Description
1	AFPS controller
2	Power supply harness
3	Above-floor pressure sensor tubing
4	Below-floor pressure sensor tubing
5	Communication wiring
6	Installation hardware
7	tLAN card
8	Mounting bracket

Installation

Cooling Unit Shutdown

1. From the controller display, put the unit in stand-by and wait for the fans to stop.
2. Turn the disconnect switch to the OFF position.

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

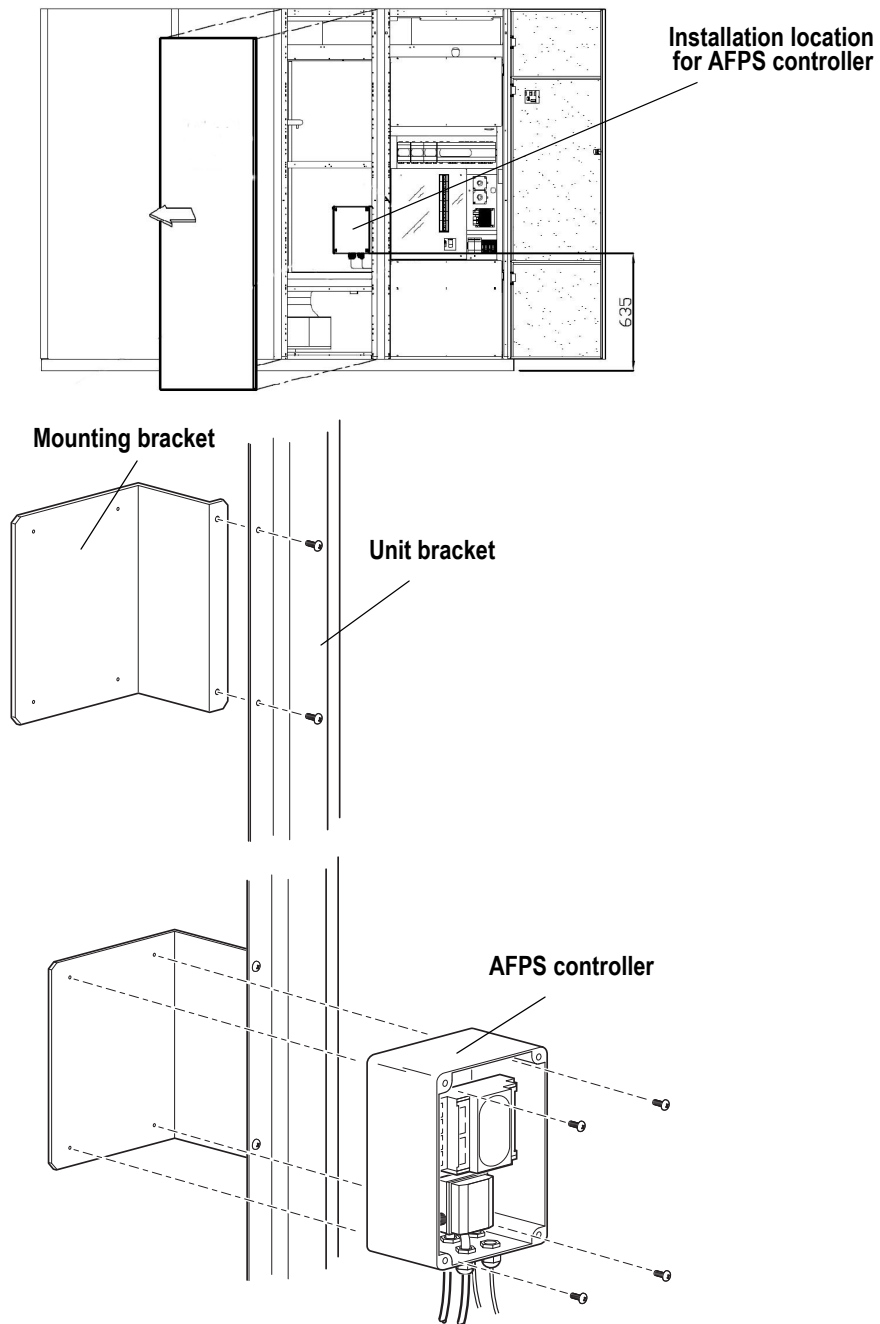
Turn off all power supplying this equipment before working on the equipment. All electrical work must be performed by licensed electricians. Practice lockout/tagout procedures. Do not wear jewelry when working with electrical equipment.

Failure to follow these instructions will result in death or serious injury.

Attaching the controller box



Note: The mounting location of the AFPS controller varies per Uniflair CW unit model.



1. Determine the mounting location on the unit bracket. Align the mounting bracket with the unit bracket, and fasten with a screwdriver.
2. Using a standard screwdriver, remove the front cover and rear tabs from the AFPS controller.
3. Using a Phillips screwdriver, attach the AFPS controller to the mounting bracket using the four screws provided.

Installing the sensors

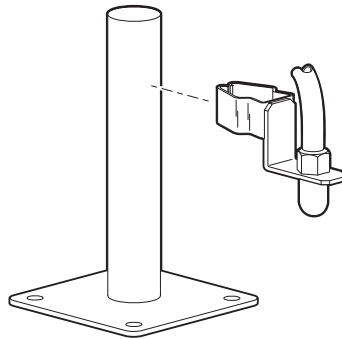
To install the below-floor sensor:

1. Locate the mounting point for the sensor head, and route the tubing through the bottom of the unit and underneath the floor tiles to this location.



Note: Avoid placing the positive pressure sensor head under the raised floor where the airflow velocity is high: for example, directly beneath the unit. The recommended position for the pressure sensor head is 3–4 m (10–13 ft) away from the unit.

2. Fasten the mounting clamp to a raised floor post.
3. Ensure that excess tubing is carefully secured. Avoid sharp bends or kinks in the tubing.

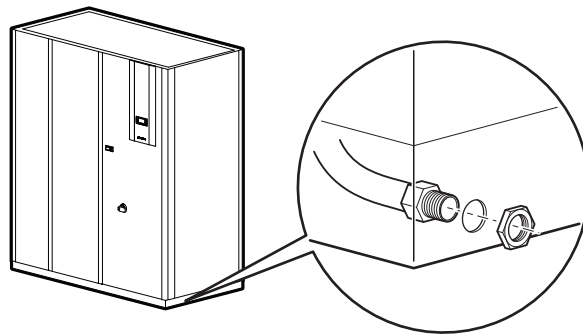


Sensor head clamps on raised floor post

The above-floor pressure sensor can be installed in the port located at the bottom right corner of the Uniflair unit.

To install the above-floor pressure sensor to the Uniflair port:

1. Using a standard screwdriver, pry off the cover on the sensor port.
2. Route the tubing through the cooling unit, neatly coiling any excess tubing.
3. From inside the unit, attach the sensor head to the port, then fasten the fitting into the port from outside the unit.





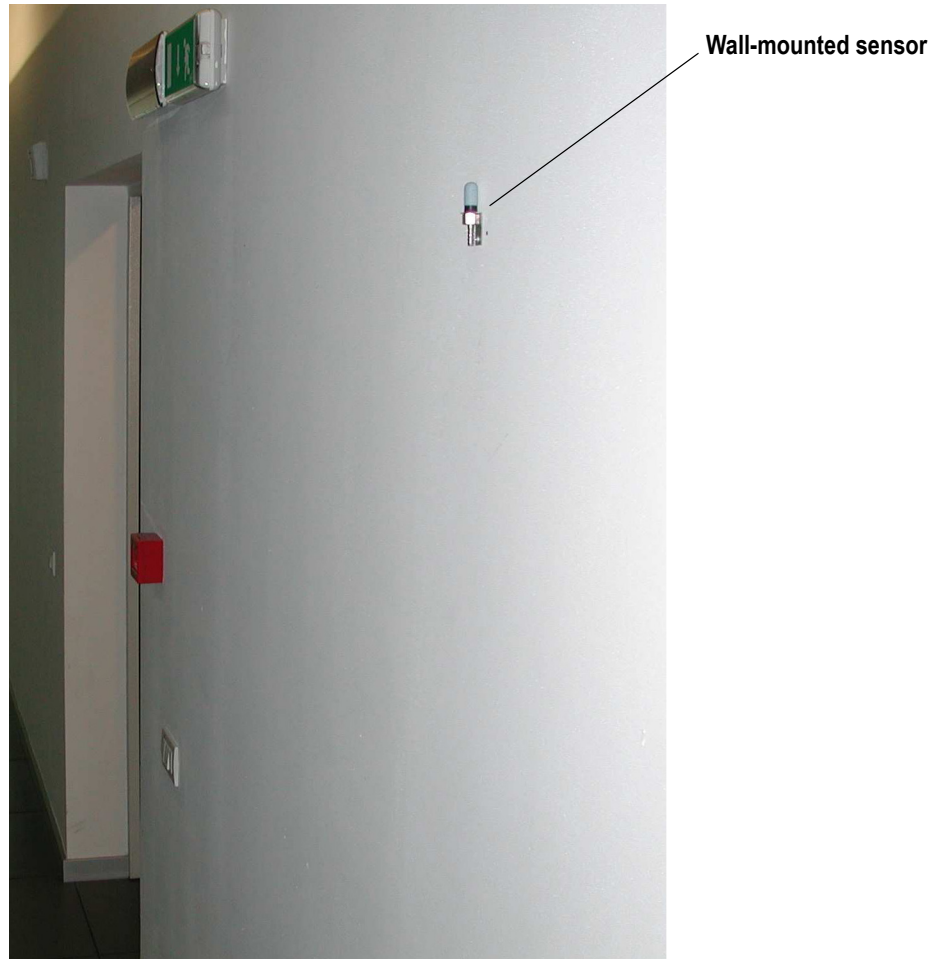
Note: If the unit is not in the air-conditioned room, the tubing can be installed using the wall mounting bracket provided with the kit.

To mount the above-floor pressure sensor head to a wall:

1. After determining an appropriate location for the sensor, drill a hole through the wall and mount the sensor bracket.

⚠ WARNING
HAZARD TO EQUIPMENT OR PERSONNEL
Verify that the area behind the wall is free of electrical wires or piping before drilling holes into the wall.
Failure to follow these instructions can result in death, serious injury, or equipment damage.

2. Route the tubing behind the wall and through the hole, then attach to the sensor.

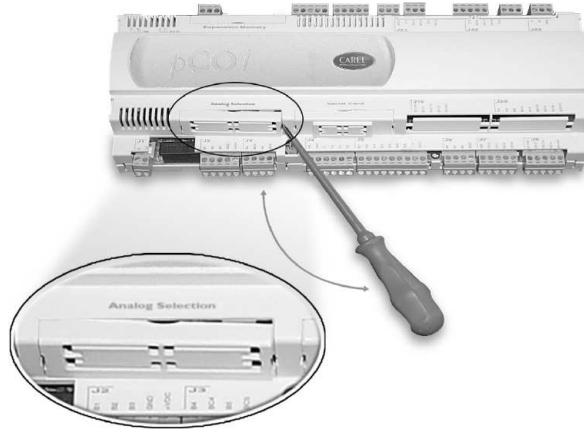


Note: Ensure that the wall-mounted sensor is installed away from direct airflow.

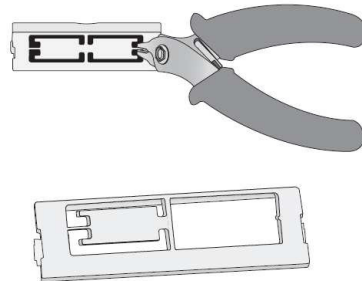
tLAN connection

CAUTION
HAZARD TO EQUIPMENT
Circuit boards contained within this unit are sensitive to static electricity. Use one or more electrostatic-discharge device while handling the boards.
Failure to follow these instructions can result in equipment damage.

1. Using a screwdriver, remove the Analog Selection cover on the controller inside the unit.



2. Cut or pry out the pre-cut plastic section (right-side) from the cover to access the tLAN card slot.



3. Aligning the connector pins, insert the tLAN card into the slot and push into place, making sure the card is pushed all the way up against the two plastic supports on the UPC1 case.

CAUTION
HAZARD TO EQUIPMENT
Be sure all pins on the circuit board are properly seated and not bent or touching other pins.
Failure to follow these instructions can result in equipment damage.

4. Put the cover back on the controller and snap into place.

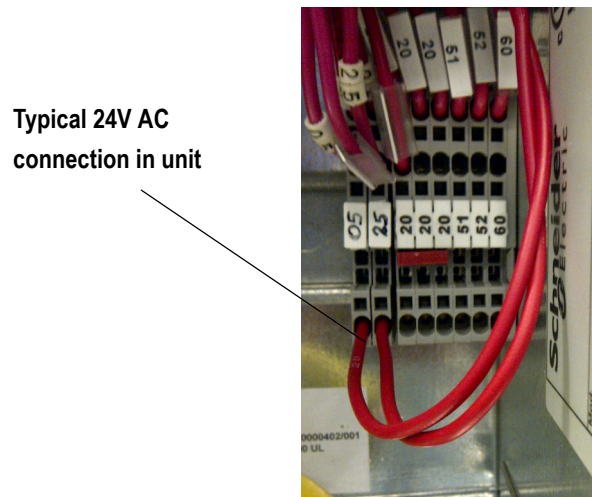


Supply power connections

1. Route the tLAN cables and supply power harness to the electrical panel.
2. Connect J3 from the AFPS to the green connector on the tLAN card.
3. Fasten the grounding wire from the harness to the back plate of the unit using the grounding screw (supplied).



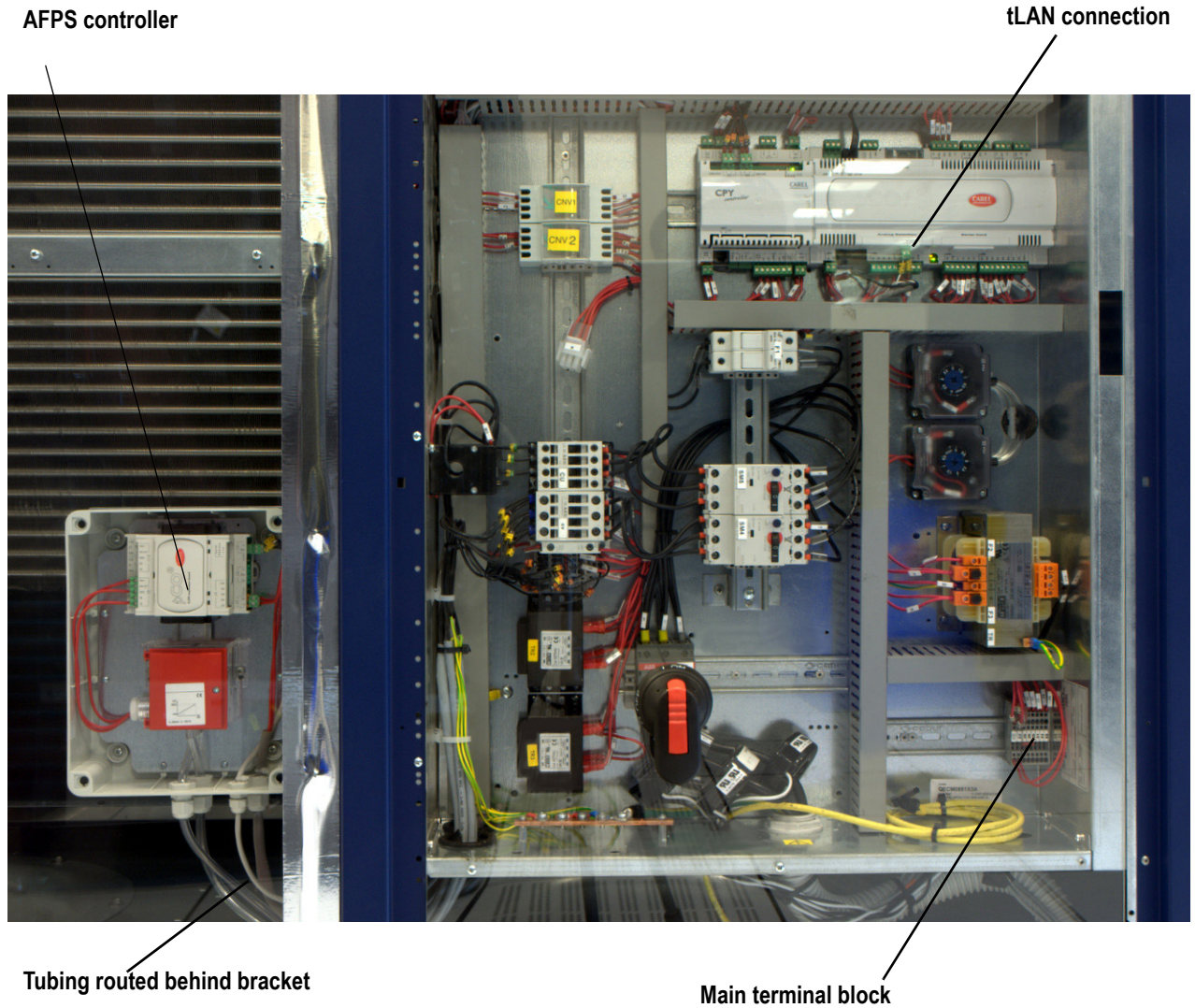
4. Attach the electrical wires to the 24V AC power terminals provided in the terminal block of the Uniflair CW unit.



The following figure shows an example of an installed AFPS controller.



Note: The location of components in the electrical panel vary per Uniflair model.



Configuration Settings

To configure the operating parameters of the unit:

1. Through the controller display, put the unit in stand-by mode and wait for the fans to stop.
2. From the main screen press the Prg key, select Service Menu and press Enter to confirm.
3. Type in the Service Password (see the envelope attached to the manual) and press Enter to confirm.
4. Select Hardware Settings and press Enter to confirm.
5. Scroll through the screens by pressing the Down key until the screen for setting the parameters appears.

Evaporating fan

Fan supply: fan power supply (Monophase/Triphase)
Modulation with air pressure enabled: fan modulation activated by the air pressure transducer
Air pressure transducer:
Y = transducer and AFPS kit is installed in the unit
N = units in LAN network, when transducer is not installed but fan modulation is activated

```
EVAPORATING FAN
Fan Supply: 3ph

Modulation with Air
Pressure Enabled: Y
Air press.transducer Y/N
```

Transducer

Range Begin: the starting value of the transducer
Range End: end value of the transducer
Read Value: the reading taken by the sensor
Delta: maximum variation without activating the filter
Time: duration of the filter
Value: reading taken by the sensor

```
AIR PRESS: TRANSDUCER
Range Begin.      Pa 000.0
Range End.        Pa 100.0
Read Value        Pa 020.0

INPUT FILTER
Delta             Pa   4.0
Time              s    01
Value             Pa  020.0
```

Evaporating fan speed

Minimum speed: minimum evaporating fan speed during modulation
Maximum speed: maximum evaporating fan speed during modulation.

```
EVAPORATING FAN REGULAT.
Minimum Speed: % 40
Maximum Speed: % 100
```

Evaporating fan regulation

Setpoint: the reference pressure value that needs to be maintained by the modulation of the fans

Dead Band: dead band regulation

Regul. Band: proportional regulation band

Integral Time: integral time

Derivat. Time: derivative time

Air pressure: the reading taken by the sensor

Evaporating Fan: evaporating fan regulation percentage

EVAPORATING FAN REGUL.		
Setpoint	Pa	020.0
Dead Band	Pa	000.0
Regul. Band	Pa	160.0
Integral Time	s	040
Derivat. Time	s	000
Air Pressure	Pa	020.0
Evaporating Fan	%	000

Alarm parameters

Alarm Level: low air pressure alarm activation level

Alarm Delay: low air pressure alarm activation delay time.

EVAPORATING FAN REGUL.		
Alarm Level	Pa	015.0
Alarm Delay	s	060

Configuration Settings with Units in a LAN

To configure fan speed modulation for several units connected through in a LAN, complete the following steps:

1. From the main screen press the Prg key, select Settings Menu and press Enter to confirm.
2. Insert the Password Settings (see the envelope attached to the manual) and press Enter to confirm.
3. Select LAN Settings and press Enter to confirm.
4. Scroll through the screens by pressing the Down key until the Parameters Setting screen appears.
5. After setting the parameters, press the Escape key several times until the main screen appears.
6. To save the data that has been entered, turn off the unit for several seconds, and then turn it back on again.
7. Repeat steps 1–6 for each unit.



Note: Fan speed modulation settings can be determined through sensor reading of the unit, or by calculating the average reading of all units in the LAN.

Air pressure control

Air Pressure Control:

Local Values: Fan speed modulation is controlled by the pressure reading taken by the sensor on each unit.

```
LAN SETTINGS
Temp./Hum.      Control
Mode:           Local Values
Air Pressure Control
Mode:           Local Values
```

Mean Values: Fan speed modulation is controlled by the average pressure reading taken by the sensors on the units connected in a local network.

```
LAN SETTINGS
Temp./Hum. Control
Mode:           Local Values
Air Pressure Control
Mode:           Mean Values
```

Customer support and warranty information is available at the APC Web site, www.apc.com.

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