

THERMA-FUSER™ SYSTEMS

DIGITAL WALL ADJUSTER

OPTIONS & ACCESSORIES



Therma-Fuser™ Systems

INSTALLATION & OPERATIONS MANUAL

Models: **ADJ-D Digital Wall Adjuster**
Compatible with all Type -HC,-CW
and -C Therma-Fuser™ Diffusers

ORDERING

The Therma-Fuser diffuser with remote adjust option and the Digital Wall Adjuster must be ordered separately.

- Order one (1) ADJ-D Digital Wall Adjuster for each space requiring easy temperature control adjustment.
- Order one (1) Master diffuser and up to four (4) Secondary diffusers per adjuster.
- Order a remote adjust master option for each Master diffuser (remote adjust master comes complete with 35 ft/10.5 m plenum rated cable with 10 pin quick connector).
 - DA2M for Model TF-HC, TK-HC and TL 4-Slot-diffusers
 - DA1M for ST and all other model diffusers
- Order a remote adjust option for each Secondary diffuser.
 - DA2 for Model TF-HC, TK-HC and TL 4-Slot-diffusers
 - DA1 for ST and all other model diffusers
- Order a face plate only if mounting in a standard 2 in. x 4 in. electrical box (the Digital Wall Adjuster comes complete for mounting directly on to the wall).
 - Adapter Plate** for mounting in 2 in. x 4 in. electrical box

ORDERING – UPGRADING

For each old analog Acutherm wall adjuster to be replaced and reuse the diffuser and wiring already in the wall.

- Order one (1) Digital Wall Adjuster for each old adjuster to be replaced.
 - ADJUSTER-D** for all other model diffusers
- Order one (1) adapter cable for each Digital Wall Adjuster.
 - Adapter 6-Pin** for wall cable with RJ11 connector
 - or -
 - Adapter 4-Wire** for wall cable with 4 wires
- Order a face plate for mounting in the standard 2 in. x 4 in. electrical box.
 - Adapter Plate** for mounting in 2 in. x 4 in. electrical box.

When the old wiring is reused the BMS Communication option will not be available (see Installation 4a).

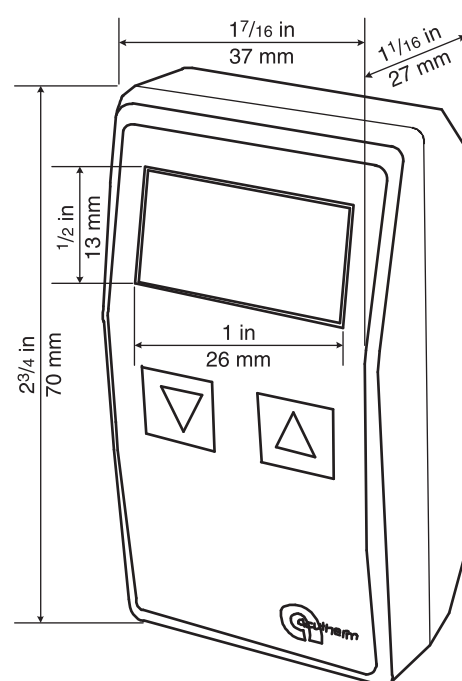
DAMAGED FREIGHT CLAIM PROCEDURES

When the Digital Wall Adjuster units are received, inspect for damage which may have occurred during shipment. If damage is evident, it should be noted on the carrier's freight bill. A written request for inspection by the carrier's agent should be made at once.

STORAGE

Do not store for prolonged times at temperatures exceeding 130°F/ 56°C. Acceptable humidity level is 5 – 95% relative humidity non-condensing.

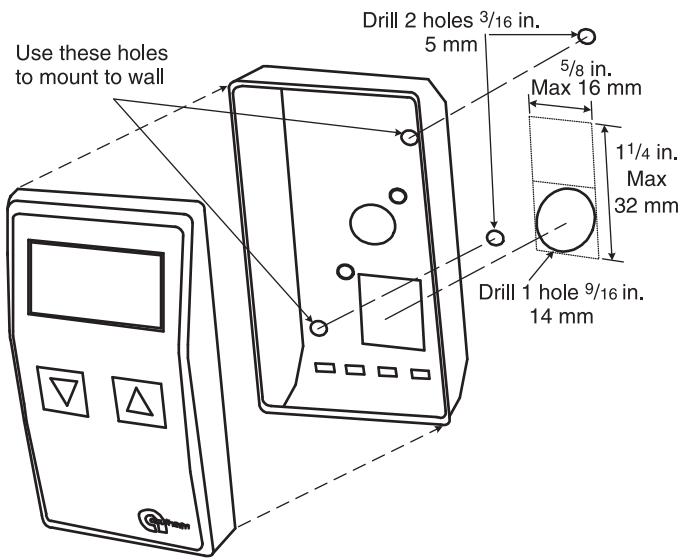
Figure 1. DIGITAL WALL ADJUSTER



INSTALLATION

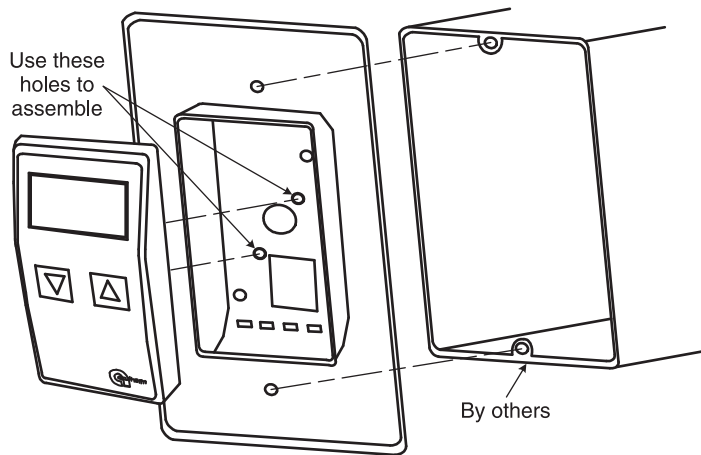
- Mount the Digital Wall Adjuster.
The Digital Wall Adjuster is suitable for mounting directly onto the wall or onto a standard 2 in. x 4 in. electrical box. For either installation, the master diffuser is factory wired with a 35 ft/10.5 m plenum rated cable with 10-pin connector. Locate this wire from the master diffuser down inside the wall to where the Digital Wall Adjuster will be installed.

Fig. 2 - Direct To Wall Installation



- 1a. To mount directly to the wall (see Fig. 2), use the back of the digital wall adjuster as a template to locate the holes. Drill a 9/16 in./14 mm hole for the wiring to pass through (if this is not enough space, the hole may be enlarged vertically upwards but should not be enlarged vertically downward or horizontally to either side). For drywall installation drill two 3/16 in./5 mm holes, insert the plastic wall anchors (included) and attach the base of the digital wall adjuster using the screws provided.

Fig. 3 - Electrical Box Installation

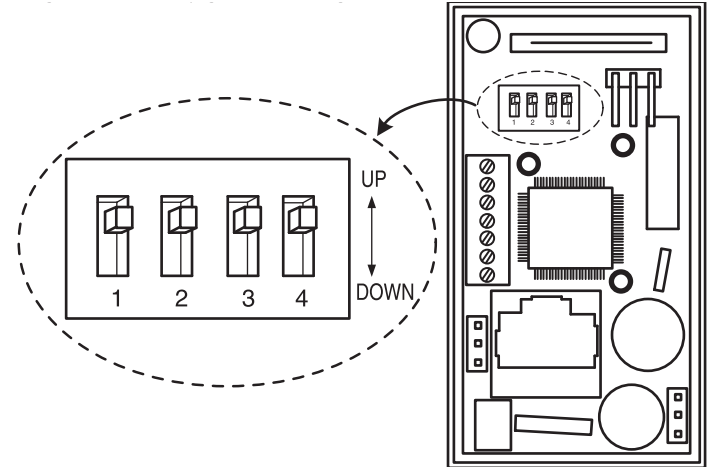


- 1b. To mount in a 2 in. x 4 in. electrical box (see Fig. 3) first remove the base of the adjuster. Locate the base of the adjuster in the hole in the face plate and use the screws provided to attach the cover of the adjuster. Attach the face plate to the electrical box (by others) with the screws provided.
2. Configure Digital Wall Adjuster Settings. There are four (4) dip switches (see Fig. 4) on the board of the adjuster that should be checked and adjusted if required. Switch 1 sets the diffuser model and should **only be switched down for Model ST diffusers**. Switch 2 changes the units of measurement for the set point display from °F to °C.

Communication with a Building Management System (BMS) is activated with switch 3 and switch 4 enables the numerical display of the set point.

After making dip switch adjustments it is necessary to cycle the power to the adjuster off and then on again for the changes to take effect.

Fig. 4 - Configure Settings

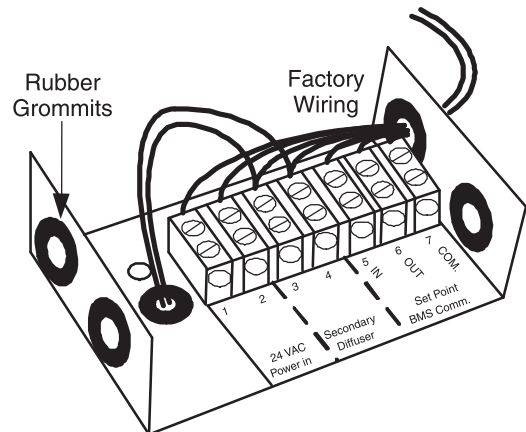


Switch	Purpose	Up	Down
1	Model Select	TF, TK, TL	ST
2	Temp. Display	°F	°C
3	BMS Commun.	Off	On
4	Set Point Display	Off	On

Keep dip switch 3 in the up (off) position to prevent accidental adjustment unless the adjuster has been wired (See Fig. 6) to a BMS.

3. Wire Master Diffuser. 24VAC ±2VAC power is required for the Digital Wall Adjuster to operate. Connect 24VAC to terminals 1 and 2 in the terminal box on the side of the Master diffuser (see Fig. 5 and Fig. 6).

Fig. 5 - Terminal Box



- 4a. Optional BMS Interface. The option of interfacing through a protocol independent 0-2VDC analog signal is built in to the Digital Wall Adjuster. To activate this option, dip switch 3 must be switched down (see Fig. 4) and terminals 5, 6 and 7 connected to the BMS system (see Fig. 5 and 6). A 0-2VDC input signal to terminal 5 will adjust the set point and a 0-2VDC output signal from terminal 6 indicates the set point (see Table 1).

When the BMS interface is active, adjustment with the buttons on the face of the unit is still possible. The last adjustment of the set point, whether by BMS or occupant, will set the control temperature.

Table 1 – Set Point Temperature

Volts DC±0.10	Set Point Temperature
0.00	68°F / 20°C
0.25	69°F / 20°C
0.50	70°F / 21°C
0.75	71°F / 21°C
1.00	72°F / 22°C
1.25	73°F / 22°C
1.50	74°F / 23°C
1.75	75°F / 23°C
2.00	76°F / 24°C

CAUTION: The Digital Wall Adjuster is a floating device and should not be connected to a controller with input/output that are earth grounded.

- 4b. Optional Secondary Diffuser(s).
Up to 4 Secondary diffusers may be connected to the Master diffuser (see Fig. 6). The Digital Wall Adjuster will control the set point to all the diffusers wired up to terminals 3 and 4 (see Fig. 5). The set point for the Secondary diffusers will be the same as that set for the Master diffuser.

TROUBLESHOOTING

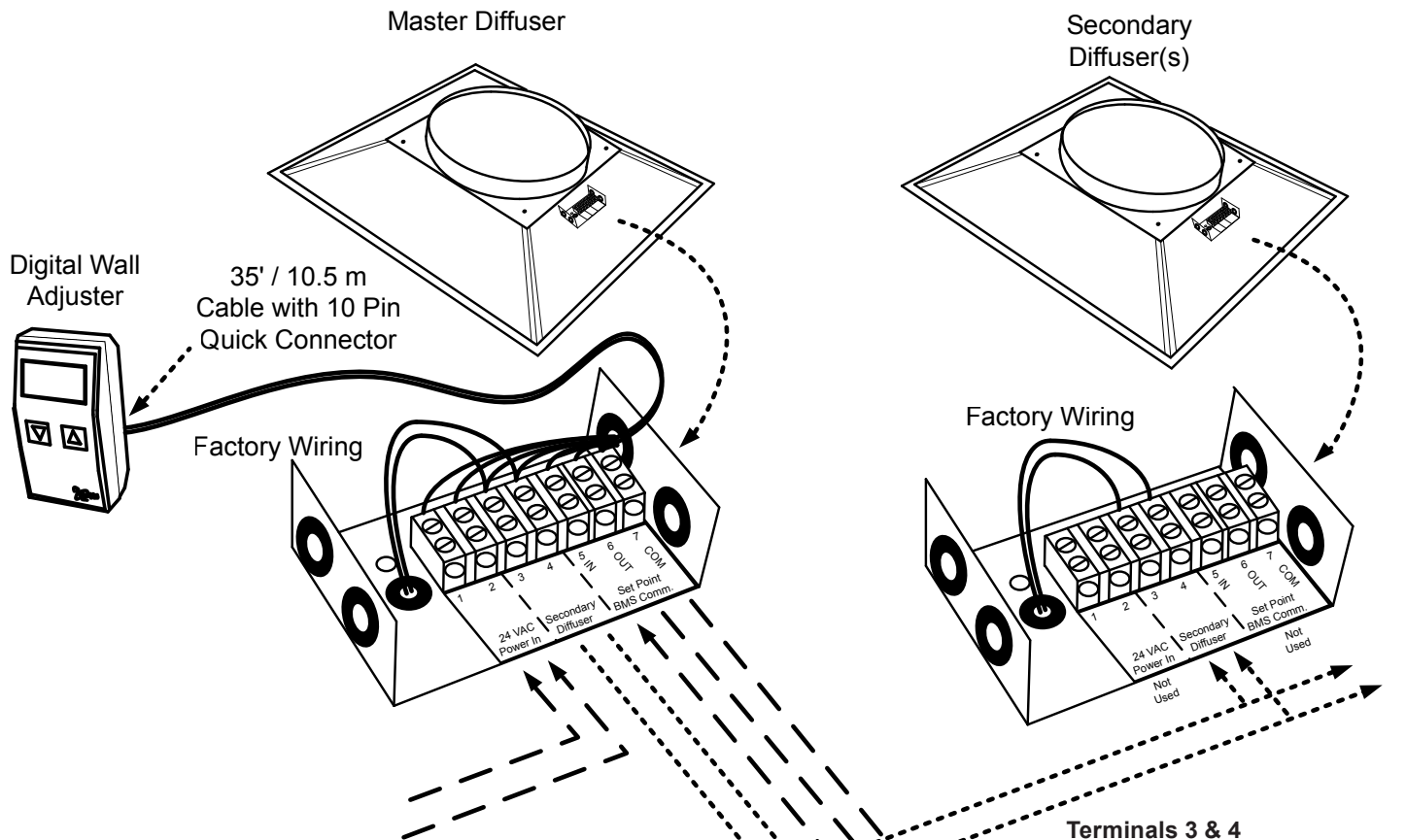
1. Check that the diffuser set points are adjusted to 76°F/24.5°C for both heating and cooling.
2. Inspect the wiring at the terminal box on the Master diffuser:
 - A. Check for bad connections at terminals.
 - B. Check for loose push connections in wiring between terminal block and heater.
3. Inspect contact between heaters and thermostat(s) located in the Therma-Fuser diffuser. If contact is loose tighten the shrink tubing by heating it.

4. Check the incoming power at the terminal box on the Master diffuser. Power across terminals 1 and 2 (see Fig. 5) should be 24VAC ±2VAC. If the power is out of tolerance:
 - A. Check for proper sizing of transformer and correct primary voltage.
 - B. Check for excessive voltage drop between transformer and Master diffuser.
5. Adjust the set point up to the warmest setting (76°F/24°C) and measure the DC voltage across terminals 3 and 4. Voltage should be less than 1VDC.
6. Adjust the set point down to the coolest setting (68°F/20°C) and measure the DC voltage across terminals 3 and 4. Voltage should be 11-14 VDC (15-18 VDC for Model ST diffusers).
7. Remove wires from terminals 3 and 4 (see Fig 5) in the terminal box on the Master diffuser. Separate the wires connected to the heater(s) (they exit down through the housing of the diffuser) from the wires coming from the wall adjuster. Measure resistance across the wires connected to the heaters. Resistance should be:
 - A. 500 Ω ± 50 Ω for Model TF-HC, TK-HC and 4-slot linear diffusers.
 - B. 1000 Ω ± 100 Ω for all other diffusers.

Two Year Warranty

Acutherm warrants that its Digital Wall Adjuster, exclusive of any options and accessories (whether factory or field installed) shall be free from defective material or workmanship for a period of two (2) years from the date of shipment and agrees to repair or replace, at its option, any parts that fail during said two (2) year period due to any such defects which would not have occurred had reasonable care and proper usage and all parts and controls remain unaltered. Acutherm makes NO WARRANTY OF MERCHANTABILITY OF PRODUCTS OR OF THEIR FITNESS FOR ANY PURPOSE OR ANY OTHER EXPRESS OR IMPLIED WARRANTY WHICH EXTENDS BEYOND THE LIMITED WARRANTY ABOVE. ACUTHERM'S LIABILITY FOR ANY AND ALL LOSSES AND DAMAGES RESULTING FROM DEFECTS SHALL IN NO EVENT EXCEED THE COST OF REPAIR OR REPLACEMENT OF PARTS FOUND DEFECTIVE UPON EXAMINATION BY ACUTHERM. IN NO EVENT SHALL ACUTHERM BE LIABLE FOR INCIDENTAL, INDIRECT OR CONSEQUENTIAL DAMAGES OR DAMAGES FOR INJURY TO PERSONS OR PROPERTY. Acutherm shall not be responsible for freight to or from its plant in connection with the inspection, repair or replacement of parts under the terms of this limited warranty nor for cost of removal or installation.

Fig. 6 – Wiring Diagram



Terminals 1 & 2

24 VAC ± 2 VAC
Wiring and transformer by others.

Power requirements vary with the number of diffusers and number of adjusters:
1.0 VA per adjuster.
1.0 VA per TF-HC, TK-HC and 4-slot linear diffusers.
0.5 VA per TF, TK, TB & TL diffuser types -C & -CW.
0.65 VA per ST diffuser.

Examples:

- 1 adjuster + 1 TB-C (Master) = 1.5 VA
- 1 adjuster + 1 TF-HC (Master) = 2.0 VA
- 1 adjuster + 3 ST (Master and 2 Secondary) = 2.95 VA

Typically, transformer supplied with packaged units are sized for that unit. A separate transformer dedicated to the adjuster is recommended.

Terminals 3 & 4

Optional Secondary Diffuser(s).
Wiring by others.

Up to 4 Secondary diffusers may be wired (Daisy Chain, Home Run or Star) to each Master diffuser.

Wiring 20 AWG min.
35 ft / 10.5m max each diffuser.

Terminals 5, 6 & 7

Optional BMS Set Point Adjustment. Wiring by others.

- 0 - 2.0 VDC ± 0.10 VDC input signal for set point adjustment.
- 0 - 2.0 VDC ± 0.10 VDC output signal for reading the set point.

CAUTION: The Digital Wall Adjuster is a floating device and should not be connected to a controller with input/output that are earth grounded. Use isolation transformer (Terminals 1 & 2) if controller is earth grounded.