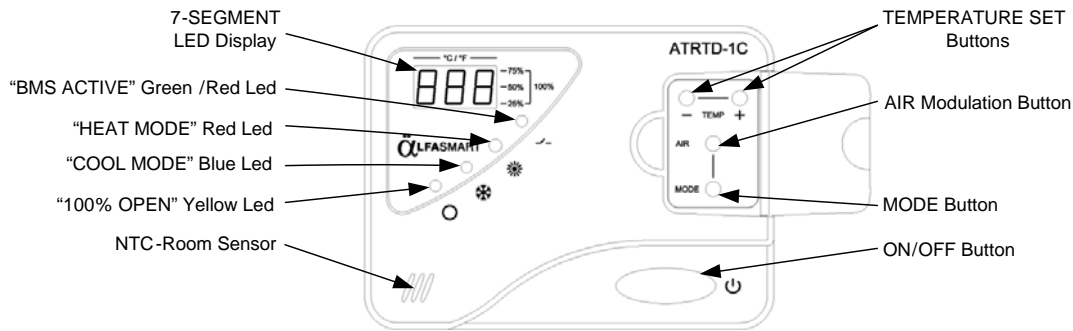


THERMOSTAT CONTROL ATRTD-1C



Room Thermostat Control with built-in temperature sensor, continuously measuring ambient zone/room temperature to deliver optimal air quantity entering a room by controlling Alfasmart air damper motor with 5 positions. This thermostat is designed to offer operating modes Heat, Cool, and Ventilation automatically and/or manually connected to the damper motor by a 6 wire telephone cable (quick-connect).

FEATURES:

- Automatic control of room temperature by modulating the optimal air quantity entering the room with 5 damper positions; 0% (closed), 25%, 50%, 75%, and 100% (opened)
- Optional manual setting (overrides auto modulation) of air quantity entering the room by selecting desired position of damper to open/close to 1°F(.5°C) precision of desired room temperature.
- BMS – Building Management System – Available only when used with Power supply, Splitter ATS-3-24 – Two N.O. Dry contact relays to control heat and cool of the HVAC unit, fan coil etc.
- Displays operating modes by colored LED lights.
- Able to adapt to any HVAC system.
- Programming or command change confirmation by small "beep".
- Friendly & easy installation with plug and play wiring.
- "Self Test Mode" assures technician of proper installation and operation of controls.

IMPORTANT:

- ✓ Make sure that all system components are disconnected from power source 24VAC, before any connections performed.
- ✓ Electric cables lengths provided have length and size limits. Do not extend length of electric or electronic cables, without consulting distributor.
- ✓ The user must fit the Room Thermostat to operate the damper to correspond with mode, Cool or Heat according to HVAC unit. Ventilation mode is available at all HVAC unit operation modes.

OPERATING PUSH-BUTTON CHARACTERISTICS:

- Pushing "ON/OFF" button will turn on or shut off the system. When the system is shut off, the word "OFF" will be displayed. **NOTE:** Once a command or setting has been given, the Room Thermostat Control will operate as per last setting when turned off. Upon system "OFF", the damper is fully closed. Upon power return, the thermostat control resets to status before SHUT-OFF.
- Push-button **ON/OFF** continuously for 3 seconds followed by a long "beep" will start SELF-TEST procedure: At beginning of SELF-TEST the damper will fully open 100%. All LED lights turn ON. Display of two digits "St" and at right 3 horizontal lines indicating damper position fully opened. SELF-TEST will proceed while closing the damper in 4 remaining positions; 75%, 50%, and 25%, closed every 10 seconds. At end of each position one LED light will shut-off up to damper fully closed (0%), followed by a long "beep" upon end of SELF-TEST. The damper will return to the last position of the room thermostat setting before SELF-TEST began. The room thermostat has no effect on the system during SELF-TEST.

- Push "**TEMP**" buttons "-" or "+" only when room thermostat is on. Every push while LED display is flashing will show desired temperature setting. After 6 seconds LED display will return to display room temperature.
- To change temp display between °C. & °F by simultaneously pushing the 2 temp buttons "-" and "+" for 4 seconds.
- Pushing "**MODE**" button selects operating mode, **HEAT** or **COOL** and the appropriate LED light turns on. To select **VENTILATION** mode continuously push **mode** button until "**F**" for fan will appear on LED display identifying you are in ventilation mode. As you push the **air** button "**d**" (for damper) will appear on LED display and push repeatedly to the desired damper position for ventilation: Lower line – 25%, middle line – 50%, upper line – 75%, all the three lines together – 100%. After 6 seconds of not pushing air button "**F**" will re-appear and fix the damper in the desired position. During **VENTILATION** mode Room temp and Set point temp are unavailable. Upon selecting of **HEAT** or **COOL** mode, Pushing "**AIR**" button, **d** will appear on the left digit of the LED display. When "**A**" appears on the right digit, the thermostat automatically selects the damper position as per table below.

Automatic Mode of Operation with

Thermostat ATRTD-1C & R/C Thermostat ATDC-1

Heat Mode Diff. in deg. Between Real / desired temp T(ROOM)-T(SP)	Cool Mode Diff. in deg. Between Real / desired temp T(ROOM)-T(SP)	Damper Position Angle In percentage open
+1°F/.5 °C	-1°F/.5 °C	(close) 0%
0 °F/0°C	0 °F/0°C	25 %
-1°F/.5 °C	+1°F/.5 °C	50 %
-2°F/1.0 °C	+2°F/1.0 °C	75 %
-3°F/1.5 °C	+3°F/1.5 °C	(open)100 %

T (Room) - real temp. T (SP) - desired temp.

- The optional **Manual** operation is to have the damper in two positions only: fully closed (0%) or open upon **Heat** or **Cool** demand to a pre selected position: 25%, 50%, 75%, or 100%. Determined by the user by repeatedly pushing the "**air**" button while having "**d**" appear in the LED display and selecting the horizontal lines shown in accordance to damper frame position. At this status the damper operates subject to temperature difference of 1°F (.5°C) precision of desired room temperature.
- **BMS Programming Procedure.**
Allows activation/deactivation of the two N.O. Dry contact relays to control heat and cool of the HVAC unit, fan coil etc. Three seconds simultaneous push on "**AIR**" and "**MODE**" buttons activate the programming status of BMS relay outlets. LED display digits will display "**Pr0**" preset by Alfasmart. By pushing buttons "+" and "-" of the temp you can select the BMS signal of your choice as described below:

Encoding of BMS outlet positions:

- "**Pr0**" – BMS outlets fully inactive.
- "**Pr1**" – N.O. dry relay contacts inactivate (open) when damper is at 0% (damper closed).
- "**Pr2**" – N.O. dry relay contacts inactivate (open) when damper is at 25% and 0%.

NOTE: When cooling is activated, heating relay is inactive and vice versa.

Upon selecting the desired BMS signal, confirm by simultaneously pushing on "**AIR**" and "**MODE**" buttons for 3 seconds. No exiting procedure required, after 10 seconds the display will return to routine status and the latest BMS programming will prevail.

- **Bicolor LED indicator**

<u>BMS CODE</u>	<u>Bicolor LED Status</u>
"Pr0"	– LED light "OFF"
"Pr1" or "Pr2"	– Demand for Cool or heat – GREEN
"Pr1" or "Pr2"	– No demand for Cool or heat – RED

Detailed status of BMS Cool/Heat relay outlets

BMS OUTLET OPERATION at 0% (Program "Pr1")

System Status: cool or heat	N.O Contacts of BMS Relays (System activated when contact closed)		ATRDT-1C Status	
	Contact Status	BMS LED	Angle	Supply
Stop	Open	OFF	N/A	Off
Stop	Open	RED	0%	On
Work	Close	GREEN	25%	On
Work	Close	GREEN	50%	On
Work	Close	GREEN	75%	On
Work	Close	GREEN	100%	On

BMS OUTLET OPERATION at 25% and 0% (Program "Pr2")

System Status: cool or heat	N.O Contacts of BMS Relays (System activated when contact closed)		ATRDT-1C Status	
	Contact Status	BMS LED	Angle	Supply
Stop	Open	OFF	N/A	Off
Stop	Open	RED	0%	On
Stop	Open	RED	25%	On
Work	Close	GREEN	50%	On
Work	Close	GREEN	75%	On
Work	Close	GREEN	100%	On

**NOTE: Power failure or Thermostat control "OFF", BMS outlet fully inactive.
At ventilation mode, BMS outlet fully inactive.**

FAULT (error) DISPLAY.

ER2 - Short circuit at temperature sensor.

ER3 - Disconnect at temperature sensor.

SPECIFICATIONS

- Operating voltage: 12VDC from Gladiola Power Supply Units: ATPB-D1-24 or Splitter ATS-3-24.
- Operation modes: Cool, Heat, Ventilation.
- Temp sensor: NTC Thermistor 10K@ 77°F (25°C).
- Operational temp range: 50°F to 86°F (10°C to 30°C).
- Measured temp range: 32°F to 140°F (0°C to 60°C).
- Measurement resolution: 1°F (0.5°C).
- Temp Differential: 1°F (0.5°C).
- Temp Measurement accuracy: ± 1°F (0.5°C).
- Damper operation modes: Automatic or Manual.
- Full Data "Memory" upon power failure.
- 7-Segment Green LED Display.
- Operation Relative Humidity: 10% to 90% (Non-condensing).
- Storage Environment: -22°F to 185°F (-30°C to 85°C), with 5% to 95% RH (Non-condensing).
- Dimensions: 4.2"x3.1"x0.94", (107x80x24 mm).
- ATRDT- 1C enclosure ABS, UV-resistant.