SUBMITTAL DATA

For: Approval

Order #: **Date:** 03/04/2013

Project: ST. JOSEPH'S CATHOLIC ACADEMY

Project #: 030613JP-SJCA

Location: BOALSBURG, PA

Engineer: PBCI ENGINEERING

Purchaser: PBCI-ALLEN MECH

Submitter: AIRCON ENGINERING INC

Received Date 4-30-13

Review is for general compliance with Contract Documents. No responsibility is assumed for correctness of dimensions, quantities or details.

NO EXCEPTIONS TAKEN XX

MAKE CORRECTIONS NOTED

AMEND & RESUBMIT

REJECTED – SEE REMARKS

PBCI – Engineering
Reviewed Date 5-1-13

By: F. PENO

Date
03/04/2013
Project Name
ST. JOSEPH'S CATHOLIC ACADEMY
Project Number
030613JP-SJCA
Client / Purchaser
PBCI-ALLEN MECH

Submittal Summary Page

Qty	Tag #	Model #	Description
1		ZF060T10P2AAA2	5 Ton, York Sunline Single Packaged R-410A Air Conditioner, 13.0 SEER / 10.8 EER, Single Stage Cooling, 100 MBH Output Stainless Steel, Two Stage Gas Heat, 1.5 HP Standard Static Belt Drive Blower, 1" Throwaway Filters, Single Enthalpy Economizer and Hood (No Barometric Relief Damper), 208/230-3-60, Microchannel Condenser Coil, Galvanized Steel Drain Pan
1		1RC0434	Roof Curb - 14" High Full Perimeter Knockdown Curb for Quick Assembly. Hinged Corner Design.
1		T775B 2032	Discharge Air Thermostat
1		T675A 1516	Outdoor Thermostat
1		LOT	Grilles, Registers, Diffusers

Equipment start-up and commissioning by a factory trained technician is recommended.
Contact your supplying distributor or sales representative for additional information & guidance.

YORK®

Small Sunline

Single Package R-410A Air Conditioner

Project Name: **ST. JOSEPH'S CATHOLIC ACADEMY** | Unit Model #: **ZF060T10P2AAA2**

Quantity: **1** | System: **ZF060T10P2AAA2**

Cooling Performance		
Total capacity	62.1	MBH
Sensible capacity	41.8	MBH
Refrigerant type	R-410A	
Seasonal Efficiency (at ARI)	13.00	SEER
Efficiency (at ARI)	10.80	EER
Ambient DB temp.	95.0	°F
Entering DB temp.	83.0	°F
Entering WB temp.	70.0	°F
Leaving DB temp.	63.5	°F
Leaving WB temp.	60.9	°F
Power input (w/o blower)	4.63	kW
Sound power	82	dB(A)

Gas Heating Performance		
Entering DB temp.	60	°F
Heating output capacity (Max)	100	MBH
Supply air	1990	
Heating input capacity (Max)	125	MBH
Leaving DB temp.	106.5	°F
Air temp. rise	46.5	°F
SSE	80.5	%
Stages	2	

Supply Air Blower Performance		
Supply air	1990	CFM
Ext. static pressure	0.6	IWG
Unit static resistance	0.15	IWG
Blower speed	1148	RPM
Max BHP of Motor (including service factor)	1.73	HP
Duct location	Bottom	
Motor rating	1.50	HP
Actual required BHP	1.19	HP
Power input	1.11	kW
Elevation	0	ft.
Drive type	BELT	

Outside/Mixed Air		
Outside Air Cfm	1030	CFM

Electrical Data		
Power supply	208-3-60	
Unit min circuit ampacity	25.10	Amps
Unit max over-current protection	35	Amps

Dimensions & Weight						
Hgt	33 in.	Len	83 in.	Wth	45	in.
Weight with factory installed options					699	lbs.

Clearances						
Right	24 in.	Front	32 in.	Back	36	in.
Top	72 in.	Bottom	0 in.	Left	36	in.

Note: Please refer to the tech guide for listed maximum static pressures

5 Ton

- York Units are Manufactured at an ISO 9001 Registered Facility and Each Rooftop is Completely Computer-Run Tested Prior to Shipment.

Unit Features

- Unit Cabinet Constructed of Powder Painted Steel, Certified At 1000 Hours Salt Spray Test (ASTM B-117 Standards)
- Through-the-Curb and Through-The-Base Utility Connections
- Either Supply and/or Return can be Field Converted from Vertical to Horizontal Configuration without Cutting Panels.
- Full Perimeter Base Rails with Built in Rigging Capabilities
- Galvanized Steel Drain Pan
- Reciprocating Compressor
- Single Stage Cooling
- Solid Core Liquid Line Filter Driers
- Microchannel Condenser Coil
- 100 MBH Output Stainless Steel, Two Stage Gas Nominal Heat
- 1.5 HP Standard Static Belt Drive Blower
- Unit Ships with 1" Throwaway Filters with a Standard Filter Rack That Will Accept up to 2" Filters
- Single Point Power Connection
- Single Enthalpy Economizer and Hood (No Barometric Relief Damper)
- Short Circuit Current: 5kA RMS Symmetrical

Standard Unit Controller: Simplicity® Control Board

- An Integrated Low-Ambient Control, Anti-Short Cycle Protection, Lead-Lag, Fan On and Fan off Delays, Low Voltage Protection, On-Board Diagnostic and Fault Code Display.
- Safety Monitoring - Monitors the High and Low-Pressure Switches, the Freezestats, the Gas Valve, if Applicable, and the Temperature Limit Switch on Gas and Electric Heat Units. The Unit Control Board will Alarm on Ignition Failures, Safety Lockouts and Repeated Limit Switch Trips.

Warranty

- One (1) Year Limited Warranty on the Complete Unit
- Five (5) Year Warranty - Compressors and Electric Heater Elements
- Fifteen (15) Year Warranty - Stainless Steel Tubular Heat Exchangers

Small Sunline

Single Package R-410A Air Conditioner

Project Name: **ST. JOSEPH'S CATHOLIC ACADEMY**

Unit Model #: **ZF060T10P2AAA2**

Quantity: **1**

System: **ZF060T10P2AAA2**

ZF060 Consolidated Drawing

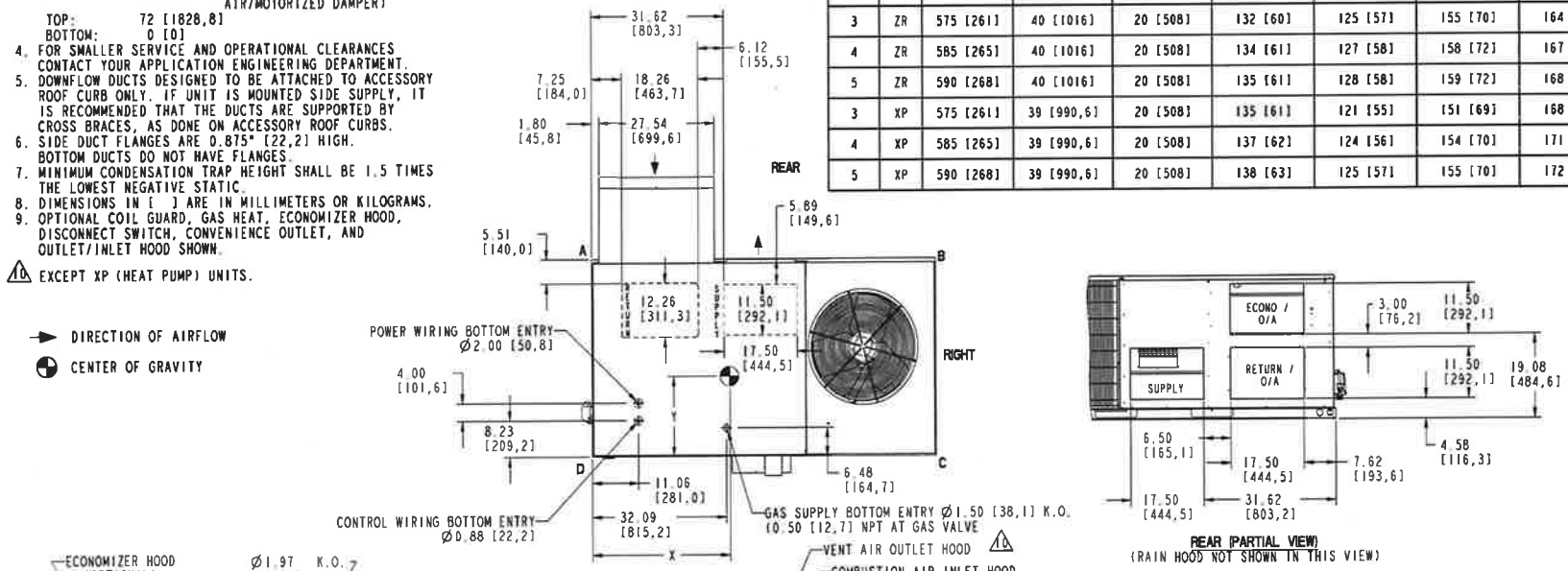
NOTES:
1. FOR OUTDOOR USE ONLY.
2. WEIGHTS SHOWN ARE FOR COOLING ONLY UNITS.
3. MIN. CLEARANCES TO BE:
   RIGHT SIDE: 24 [609,6]
   LEFT SIDE: 24 [609,6] (LESS ECONOMIZER)
   36 [914,4] (WITH ECONOMIZER)
   FRONT: 24 [609,6] (COOLING/ELECTRIC HEAT)
   32 [812,8] (GAS HEAT)
   REAR: 12 [304,8] (LESS ECONOMIZER)
   36 [914,4] (WITH ECONOMIZER OR FIXED AIR/MOTORIZED DAMPER)
   TOP: 72 [1828,8]
   BOTTOM: 0 [0]
4. FOR SMALLER SERVICE AND OPERATIONAL CLEARANCES CONTACT YOUR APPLICATION ENGINEERING DEPARTMENT.
5. DOWNFLOW DUCTS DESIGNED TO BE ATTACHED TO ACCESSORY ROOF CURB ONLY. IF UNIT IS MOUNTED SIDE SUPPLY, IT IS RECOMMENDED THAT THE DUCTS ARE SUPPORTED BY CROSS BRACES, AS DONE ON ACCESSORY ROOF CURBS.
6. SIDE DUCT FLANGES ARE 0.875" [22,2] HIGH. BOTTOM DUCTS DO NOT HAVE FLANGES.
7. MINIMUM CONDENSATION TRAP HEIGHT SHALL BE 1.5 TIMES THE LOWEST NEGATIVE STATIC.
8. DIMENSIONS IN [ ] ARE IN MILLIMETERS OR KILOGRAMS.
9. OPTIONAL COIL GUARD, GAS HEAT, ECONOMIZER HOOD, DISCONNECT SWITCH, CONVENIENCE OUTLET, AND OUTLET/INLET HOOD SHOWN.

⚠10 EXCEPT XP (HEAT PUMP) UNITS.

→ DIRECTION OF AIRFLOW

⊕ CENTER OF GRAVITY

TONNAGE	UNIT	OPERATING WEIGHT (LBS) (BASE UNIT)	CENTER OF GRAVITY LOCATION (BASE UNIT)		4 POINT CORNER LOADS (LBS) (BASE UNIT)			
			X	Y	A	B	C	D
3	ZF	468 [212]	33 [838,2]	18.25 [463,6]	114 [52]	76 [35]	111 [50]	167 [76]
4	ZF	541 [245]	31.50 [800,1]	18.50 [469,9]	138 [63]	85 [39]	122 [55]	196 [89]
5	ZF	569 [258]	37 [939,8]	15 [381]	105 [48]	86 [39]	170 [77]	208 [94]
6	ZF	640 [290]	37 [939,8]	15 [381]	118 [54]	96 [44]	192 [87]	234 [106]
3	ZR	575 [261]	40 [1016]	20 [508]	132 [60]	125 [57]	155 [70]	164 [74]
4	ZR	585 [265]	40 [1016]	20 [508]	134 [61]	127 [58]	158 [72]	167 [76]
5	ZR	590 [268]	40 [1016]	20 [508]	135 [61]	128 [58]	159 [72]	168 [76]
3	XP	575 [261]	39 [990,6]	20 [508]	135 [61]	121 [55]	151 [69]	168 [76]
4	XP	585 [265]	39 [990,6]	20 [508]	137 [62]	124 [56]	154 [70]	171 [78]
5	XP	590 [268]	39 [990,6]	20 [508]	138 [63]	125 [57]	155 [70]	172 [78]

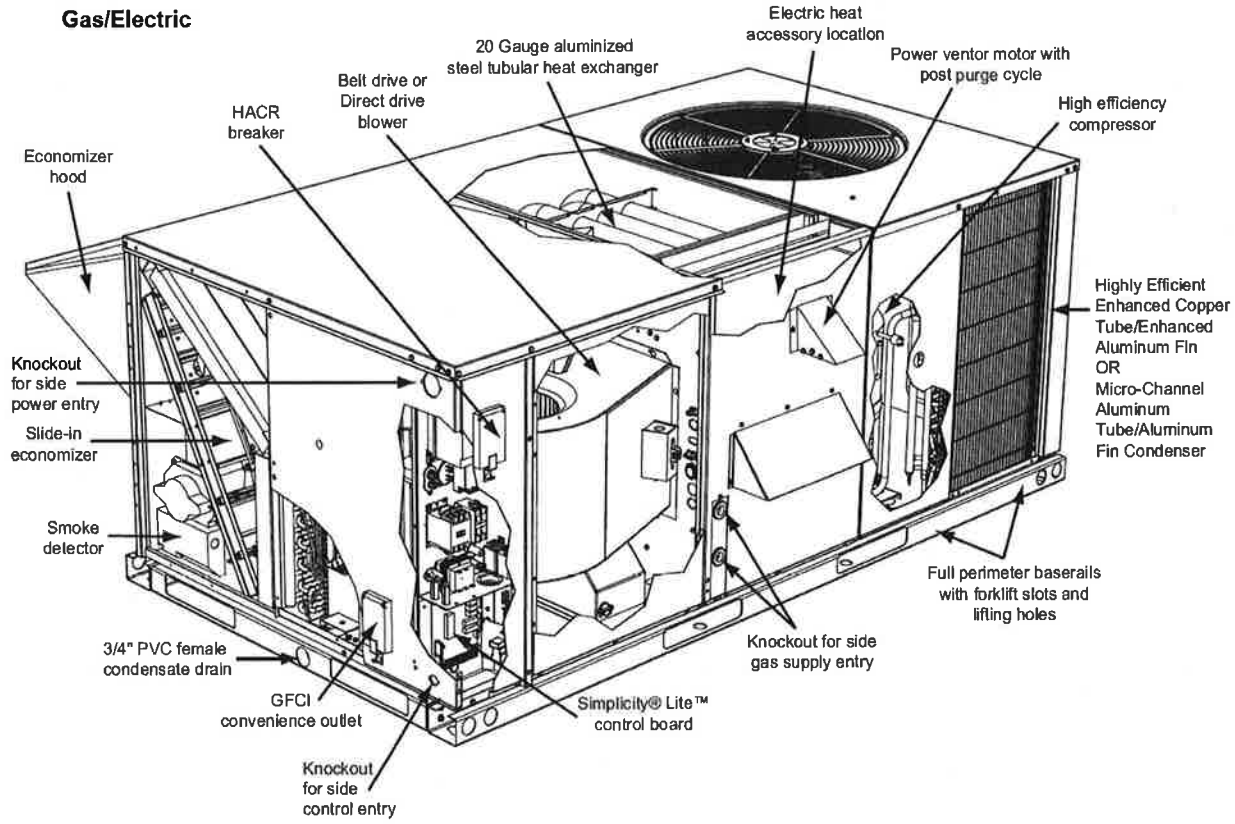


Project Name: **ST. JOSEPH'S CATHOLIC ACADEMY** Unit Model #: **ZF060T10P2AAA2**

Quantity: **1** System: **ZF060T10P2AAA2**

Gas_Electric Typical Component Location

Gas/Electric



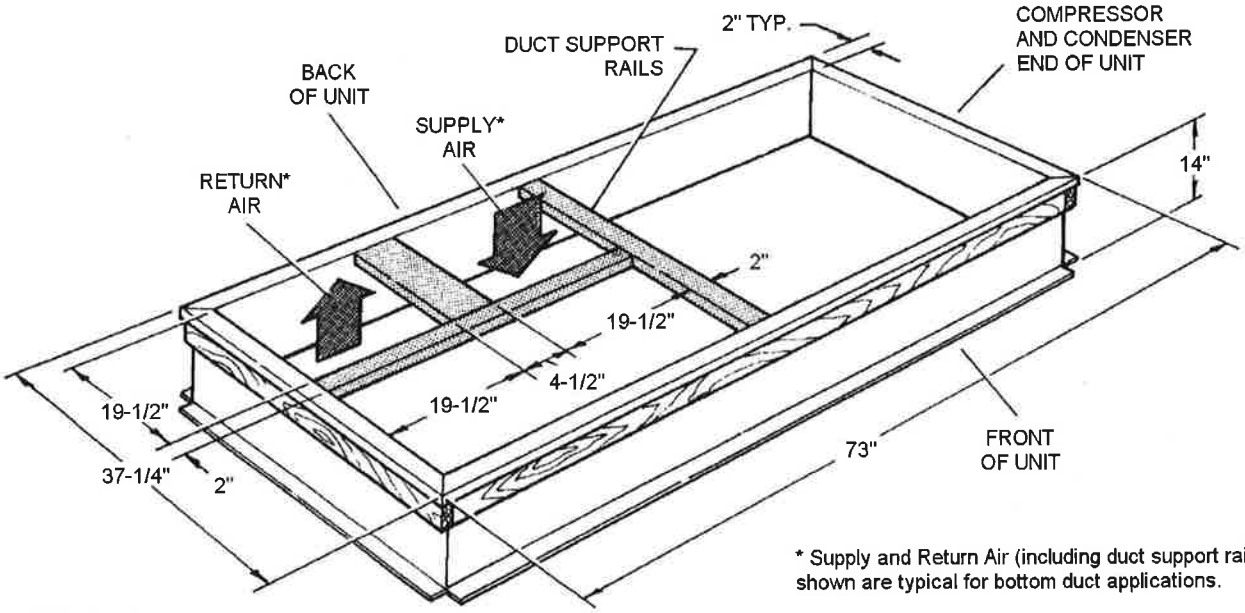
Small Sunline

Single Package R-410A Air Conditioner

Project Name: **ST. JOSEPH'S CATHOLIC ACADEMY** Unit Model #: **ZF060T10P2AAA2**

Quantity: **1** System: **ZF060T10P2AAA2**

1RC0434 Roof Curb Dimensions



* Supply and Return Air (including duct support rails) shown are typical for bottom duct applications.

For location of horizontal duct applications (on back of unit), refer to Unit Dimensions details.

DUCT SIZES:
Supply Air = 19" x 19"
Return Air = 19" x 19"

Honeywell

T775 Series 2000 Electronic Stand-Alone Controllers

SPECIFICATION DATA

DESCRIPTION

The T775 electronic stand-alone controllers are the next generation of commercial and agricultural controls capable of remote sensing of temperature and providing switched and/or proportional outputs to various types of loads.

IMPORTANT

The T775 is an operating control, not a limit or safety control. If used in applications requiring safety or limit controls, a separate safety or limit control device is required.

FEATURES

- **Easy-To-Use Graphical Interface** Operating the new T775 is easy and the intuitive programming will save you time on every job. Each model includes a keypad lockout.
- **NEMA 4X Enclosure Option** Certain models are offered with NEMA 4X enclosures to protect them from water and corrosion for installations like washdown areas, animal confinement areas, swimming pools and other similar locations.
- **Internal Time Clock Scheduler** The Setback and Disable Output options, controlled by the built-in scheduler or digital input, will help save energy during unoccupied times and give you more control of the equipment without needing to purchase an additional time clock. Run times can be displayed for the first 4 relay outputs.
- **Up To Two Independent Modulating Outputs** Each output can be individually configured for 0-10 Vdc, 2-10 Vdc, 4-20 mA or Series 90.
- **Modulating High Or Low Limit Control** To protect your equipment from freezing or overheating, models offering this feature give you the ability to adjust your control temperature at Sensor A to protect equipment at Sensor B. The control adjusts its modulating output to prevent exceeding the user-entered High or Low limit for Sensor B.
- **Optional Configurable Integral And Derivative Times** Standard on every device, this feature delivers pinpoint (PI or PID) control on modulating outputs set up by default to behave just like the previous T775 Series 1000, but now you can adjust reaction times and behavior, giving you more control. Anti-integral wind-up is standard.
- **Reset Models With Simplified Setup** Reset programming is easy. Simply enter the high and low control temperatures and the corresponding high and low outdoor temperatures. As your outside temperature gets colder, the setpoint temperature automatically adjusts to save energy.
- **Configurable Minimum Off Time** If needed, setting a minimum off time can protect equipment and reduce the need for a separate time delay device.
- **Sensor Calibration** Calibrate input sensors up to +/-10° F (+/-6° C) for temperature and up to +/-10% of range for other sensors (e.g. pressure, humidity) to compensate for resistance drops in longer sensor wire runs.
- **Special Models** Five T775 models are available for special applications:
  - **Universal Models (T775U2006 and T775U2016)** to control pressure, humidity, or any medium with an analog input
  - **Special Boiler Model (T775P)** for boiler control
  - **Special Staged Sequencing Model (T775L)** for sequence staging of relays with one or two setpoints
  - **Special Expansion Model (T775S)** for staging up to 12 relays with two setpoints

CE c UL us
E4436

63-1318-03

SPECIFICATIONS

Power: 24, 120, or 240 Vac; 50/60 Hz
A separate earth ground is required for any power source.

Power Consumption:
- 8 VA maximum at 60 Hz
- 10 VA maximum at 50 Hz

Operating & Storage Temperature Ambient Rating:
- -40°F to 125°F (-40°C to 52°C) @ 50 Hz
- -40°F to 140°F (-40°C to 60°C) @ 60 Hz

Relative Humidity: 5% to 95% non-condensing

Dimensions: refer to Fig. 1 on page 4.
All T775 controllers are field-mountable in any orientation to either a panel or wall.

Digital Input (DI): 18 Vdc and 3.5 mA (for choosing external contact)

Digital Output (DO) Alarm (T775P only):
- Alternating Current (AC):
  - — 30 Vac RMS; 1.5 A steady 3 A inrush P.F. 0.45 NC
  - — 20 Vac RMS; 100 mA minimum load on NO and NC contacts
- Direct Current (DC): 1 mA at 100 mV DC minimum load

NOTE: In applications requiring a gold contact signal relay, an external signal relay or additional load resistor may be needed for the digital output.

Relay Contact Output Ratings (N.O. and N.C.):
- 1/2 hp; 9.8 AFL, 58.8 ALR @ 120 Vac
- 1/2 hp; 4.9 AFL, 29.4 ALR @ 240 Vac
- 125 VA pilot duty @ 120/240 Vac
- 10A @ 24 Vac (resistive)

Modulating Outputs:
- 0-10 Vdc; drive a minimum of 2,000 Ohms
- 2-10 Vdc; drive a minimum of 2,000 Ohms
- 4-20 mA; drive a maximum of 600 Ohms
- Electronic Series 90; requires 340 Ohm resistor (included) across terminals R and W
- Floating

Sensed Temperature Limits (displayed):
- Minimum -60°F (-51°C)
- Maximum 270°F (132°C)

High Setpoint Limit: An irreversible high limit setpoint can be configured to meet local code requirements.

Sensed Temperature Accuracy:
- T775: 1°F/C @ ambient room temperature of 77°F (25°C)
- 50021579-001 and T775-SENS-WR: ±0.42°F from -22°F to 248°F (+/-.24°C from -30°C to 120°C)

Setpoint Range: -40°F to 248°F (-40°C to 120°C)

Time Clock: Two settable time periods per day are standard on all models.

Volatile Memory: The date and time settings are retained for 24 hours after a power outage. After a power loss of more than 24 hours, the date and time settings may need to be reentered. All other settings are stored permanently.

Approvals: UL 60730-1 for US and Canada, CuL, CE, C-tick

COMPATIBLE COMPONENTS

Temperature Sensors[a]

The controller accepts 1,097 Ohms PTC at 77°F (25°C):
- 50021579-001 – Standard sensor (included with all models except NEMA 4X models)
- T775-SENS-STRAP – Strap on sensor with wiring box
- T775-SENS-WR – Water resistant with 5 foot leads (included with NEMA 4X models)
- T775-SENS-WT – Watertight with 6 foot lead
- T775-SENS-OAT – Outdoor air temperature sensor
- C7031D2003 – 5 inch immersion sensor with wiring box (use immersion well; P/N 50001774-001)
- C7031J2009 – 12 foot duct averaging sensor with wiring box
- C7046D1008 – 8 inch duct probe with mounting flange
- C7100D1001 – 12 inch fast response, duct averaging sensor with flange
- C7130B1009 – Room mount sensor

Humidity Sensors (T775U only)

The controller accepts 0-10 Vdc or 4-20 mA input with a range of 0-100%

H7625, H7635, and H7655 models (available in 2, 3, and 5% RH accuracy) can be used.

Differential Pressure Sensors (T775U only)

P7640A and PWT pressure transducer models with selectable pressure ranges can be used.

The controller accepts pressure sensors with a signal output of 0-10 Vdc or 4-20 mA for any output range within the following ranges (the minimum and maximum for the sensor output range can be adjusted within the following limits):
- -500 to 500 PSI
- -30.0 to 30.0 inches w.c.
- -3,000 to 3,000 Pa
- -3,000 to 3,000 kPa

Universal Sensors (T775U only)

The controller accepts 0-5 Vdc, 0-10 Vdc or 4-20 mA input for temperature, pressure, humidity, etc. They may be programmed in units of °F, °C, %, Pa, kPa, PSI, Inches W.C., PPM, or None (no units). CO_2 sensors (C7232 and C7632) are also compatible.

Actuators

For more information on compatible actuators or other Honeywell products, such as dampers and valves, go to www.customer.honeywell.com. From the home page select **Product Selection Tool** under **Products**.
- Spring return models: ML6425, ML7425, MS4105, MS4110, MS4120, MS7505, MS7510, MS7520, MS8105, MS8110, MS8120
- Non-spring return models: ML6161, ML6174, ML7161, ML7174, MN6105, MN6110, MN7505, MN7510

Accessories

- 107324A – Bulb Holder, duct insertion
- 107408 – Heat Conductive Compound, 4 ounce
- 50001774-001 – Immersion Well, stainless steel 304, 1/2 in. threading

[a] See form 62-0265 – *Temperature Sensors for the T775 Series 2000 Stand-alone Controller*

Table 1. T775 Controller Configurations.

Controller Model [a]	Description	Replaces	Output Reset	SPDT Relay Outputs	Analog (Mod) Outputs[b]	DO[c]	Floating Outputs[d]	Sensor Inputs	Nbr of Sensors Included	Staged Loop Control	Addable T775S	Enclo-sure
T775 A/B/M/R Controller Configurations												
T775A2009	Standard	T775A1001	No	1	None	N/A	None	1	1	N/A	N/A	NEMA 1
T775B2016	Standard	N/A	No	2	None	N/A	1	2	1	N/A	N/A	NEMA 4X
T775B2024	Standard	T775C1009 T775D1008	No	4	None	N/A	2	2	1	N/A	N/A	NEMA 4X
T775B2032	Standard	T775A1019 T775B1000	No	2	None	N/A	1	2	1	N/A	N/A	NEMA 1
T775B2040	Standard	T775A1027 T775A1035 T775B1018 T775B1026 T775B1042	No	4	None	N/A	2	2	1	N/A	N/A	NEMA 1
T775M2006	Modulating	N/A	No	None	2	N/A	None	2	1	N/A	N/A	NEMA 1
T775M2014	Modulating	T775G1005 T775G1013 T775G1021 T775G1039	No	4	2	N/A	None	2[e]	1	N/A	N/A	NEMA 4X
T775M2022	Modulating	N/A	No	2	2	N/A	None	2[e]	1	N/A	N/A	NEMA 4X
T775M2030	Modulating	T775E1114 T775F1022 T775F1055 T775F1089	No	4	2	N/A	None	2[e]	1	N/A	N/A	NEMA 1
T775M2048	Modulating	T775E1015 T775E1023 T775E1056 T775E1064 T775E1098	No	2	2	N/A	None	2[e]	1	N/A	N/A	NEMA 1
T775R2001	Reset Option	N/A	Yes	4	None	N/A	2	2	2	N/A	N/A	NEMA 1
T775R2019	Reset Option	N/A	Yes	4	2	N/A	None	2	2	N/A	N/A	NEMA 1
T775R2027	Reset Option	T775J1043 T775J1050 T775J1068	Yes	2	2	N/A	None	2	2	N/A	N/A	NEMA 1
T775R2035	Reset Option	T775J1001 T775J1076	Yes	2	None	N/A	1	2	2	N/A	N/A	NEMA 1
T775R2043	Reset Option	T775J1019 T775J1027 T775J1035	Yes	None	2	N/A	None	2[e]	2	N/A	N/A	NEMA 1
T775 L/P/U/S Special Application Controller Configurations												
T775L2007[f]	Stage Sequencer with Reset	N/A	Yes	4[g]	None	N/A	None	2	1	Yes	Yes	NEMA 1
T775P2003	Boiler Model with Reset[h]	N/A	Yes	4	None	1	None	3	3	Yes	Yes	NEMA 1
T775U2006	Universal Humidity, Pressure, Temperature, etc.	H775A1006 H775A1022 H775A1048 H775A1063 H775B1005 H775C1004 H775D1003 H775E1002	Yes	2	2	N/A	None	2[i]	None	N/A	N/A	NEMA 1
T775U2016		N/A	Yes	2	2	N/A	None	2[i]	None	N/A	N/A	NEMA 1
T775S2008	4-Relay Expan-sion Module[k]	N/A	N/A	4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	NEMA 1

a All models include a digital input for use with the disable or setback option.

b The modulating (analog) outputs are 4-20 mA, 0-10 Vdc, 2-10 Vdc, or Series 90 selectable.

c Digital Output alarm (low voltage) available only on the T775P model. The Digital Output alarm can be configured based on minimum, maximum, or differential temperature.

d Each floating output eliminates two SPDT relays.

e For the models noted above, Sensor B can support a high/low modulating limit for temperature control at Sensor A.

f The T775L model can be used to stage multiple relays from two independent heat or cool setpoints. The number of stages for each setpoint can be freely chosen, limited by the number of relays available (up to 12 using two T775S expansion modules). For example, programming could be (3 heat - 4 cool), (5 heat - 1 cool), etc. In addition to the two staged loops, an additional two relays can be available for independent on-off control.

g For the T775L model, the maximum number of non-sequenced relays is two (2) with each having its own setpoint and its own throttling range. These relays are available if they are not being used by the staged relay loops.

h The T775P model provides an optional Pump Output using the last SPDT relay output (4^{th}, 8^{th}, or 12^{th} depending on configuration). Stages can be configured for either standard, first-on first-off, or equal run time.

i For the T775U2006 sensor inputs, Sensor A can be 0-5 Vdc, 0-10 Vdc, 4-20 mA, or a standard temperature input. Sensor B is a standard temperature sensor input only. Sensor B is used only for reset on the T775U2006.

j The T775U2016 can control Sensor A (universal) and Sensor B (temperature) independently, like other standard T775 controllers.

k Up to two T775S expansion modules can be used with the T775L and T775P models to provide a total of 8 or 12 stages.

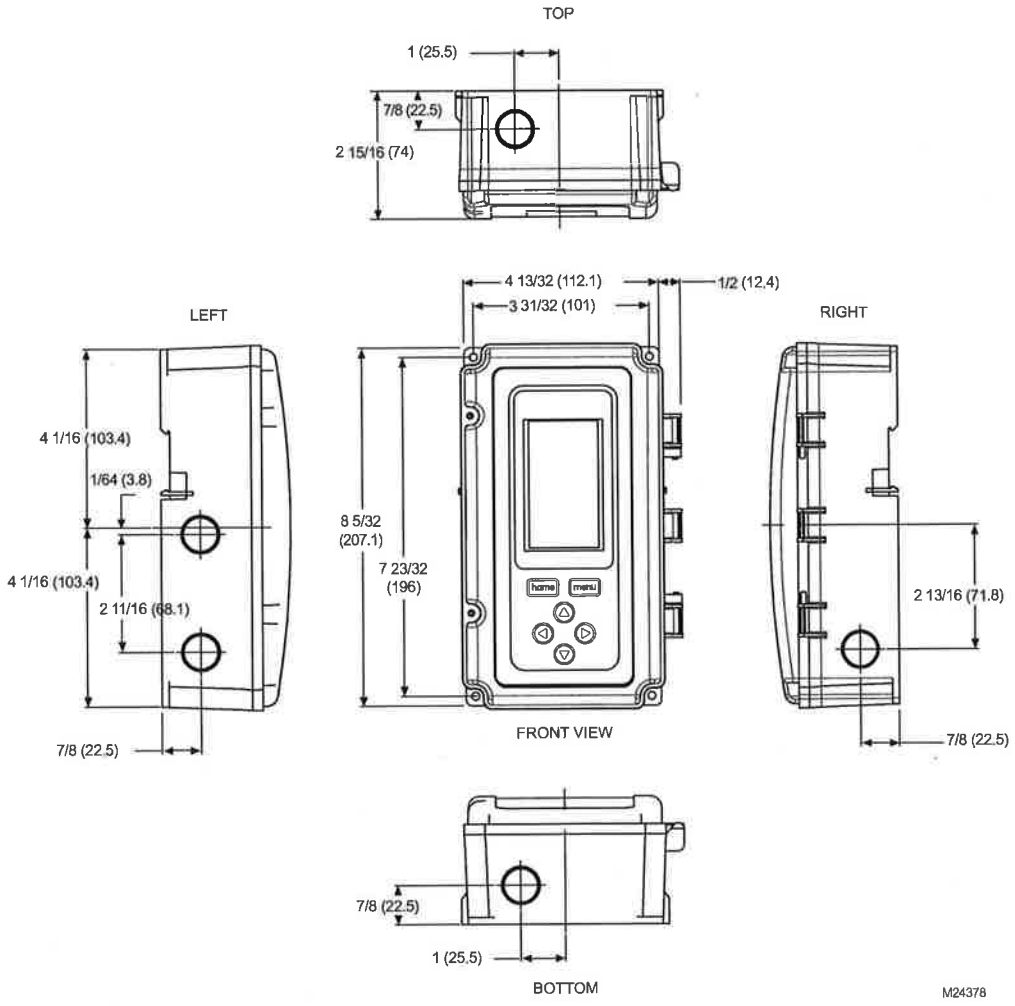


Fig. 1. T775 Dimensions in inches (mm).

Automation and Control Solutions

Honeywell International Inc.
1985 Douglas Drive North
Golden Valley, MN 55422
customer.honeywell.com

Honeywell Limited-Honeywell Limitée
35 Dynamic Drive
Toronto, Ontario M1V 4Z9

Honeywell

63-1318—03 M.S. Rev. 02-09

Honeywell

TEMPERATURE CONTROLLERS

THE T675 AND T678 TEMPERATURE CONTROLLERS REGULATE THE TEMPERATURE OF AIR OR LIQUIDS IN DUCTS, PIPES, TANKS, AND BOILERS. TYPICAL USES INCLUDE CONTROL OF DAMPERS AND VALVES IN HEATING, COOLING, OR HEATING-COOLING SYSTEMS.

☐ T675A has 1 single-pole, double-throw (spdt) switch that breaks R-B and makes R-W at the set point on a temperature rise.

☐ T675B Manual Reset Low Limit has 1 single-pole, single-throw (spst) switch that breaks at the set point on a temperature fall, and requires manual resetting.

☐ T678A has 2 single-pole, double-throw (spdt) switches that operate in sequence. The right switch breaks R-B and makes R-W at the set point on a temperature rise. The left switch breaks R-B and makes R-W if the temperature continues to rise through the interstage differential.

☐ T675A models available with an adjustable differential.

☐ T675A and T678A have set point adjustment knob on front of case.

☐ Capillary tubing allows remote mounting of sensing element; models available with various lengths.

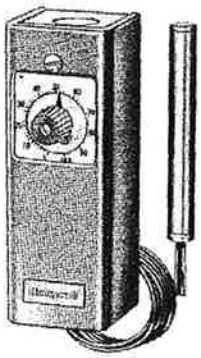
☐ T675A and T678A models available with a fast-response sensing element.

☐ Controller can be mounted in any position.

☐ Mounting accessories available for all applications.

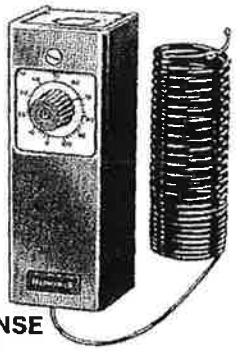
☐ Ambient temperature compensated.

☐ Insert supplied with TRADELINE models replaces set point knob to discourage tampering.



T675A, T678A

T675B



T675A, T678A WITH FAST-RESPONSE SENSING ELEMENT

T675A,B; T678A

S.E.
REV. 1-89●

Form Number 60-2200—8

SPECIFICATIONS

TRADELINE MODELS

TRADELINE models are selected and packaged to provide ease of stocking, ease of handling, and maximum replacement value. TRADELINE model specifications are the same as those of standard models except as noted below.

TRADELINE MODELS AVAILABLE:

T675A and T678A Temperature Controllers—see Table I for TRADELINE models available.

CAPILLARY: 5 ft [1.5 m] long, copper (except 1 T675A model with a 20 ft [6.1 m] capillary).

TRADELINE FEATURES:

- All TRADELINE models include tamper-resisting insert and 107324A Capillary Holder. (Models with fast-response sensing element include 131524A Capillary Holder.)
- TRADELINE models of T675A, T678A supplied with impact-resistant Norel covers.
- TRADELINE pack with cross reference and special instruction sheet.

TABLE I—TRADELINE MODELS AVAILABLE

MODEL	DIFFERENTIAL	OPERATING TEMPERATURE RANGE (SCALE RANGE)		MAXIMUM SAFE BULB TEMPERATURE	
		F	C	F	C
T675A (1 spdt switch)	Adjustable 3 F to 10 F [1.7 C to 5.6 C]	0 to 100[a,b]	−18 to + 38	125	52
		160 to 260	71 to 127	280	138
	Adjustable 3.6 F to 12 F [2.0 C to 6.7 C]	55 to 175[a]	13 to 79	200	93
	Fixed at 1 F [0.6 C]	0 to 100	−18 to + 38	125	52
T678A (2 spdt switches)	Each switch: Fixed at 3 F [1.7 C] Interstage: Adj. 3 F to 10 F [1.7 C to 5.6 C]	0 to 100[a]	−18 to + 38	125	52
	Each switch: Fixed at 3.6 F [2.0 C] Interstage: Adj. 3.6 F to 12 F [2.0 C to 6.7 C]	55 to 175[a]	13 to 79	200	93

[a]TRADELINE model also available with a fast-response sensing element, including a 131524A Capillary Holder.

[b]TRADELINE model also available with a 20 ft [6.1 m] copper capillary.

continued on page 3

ORDERING INFORMATION

WHEN PURCHASING REPLACEMENT AND MODERNIZATION PRODUCTS FROM YOUR TRADELINE WHOLESALER OR YOUR DISTRIBUTOR, REFER TO THE TRADELINE CATALOG OR PRICE SHEETS FOR COMPLETE ORDERING NUMBER, OR SPECIFY—

1. **Order number; specify TRADELINE model, if desired.**
2. **Operating temperature range (scale range).**
3. **Standard sensing bulb or fast-response sensing element (if available).**
4. **Capillary length and material.**
5. **Fixed or adjustable differential on a T675A.**
6. **Differential range on adjustable T675A and T678A models.**
7. **Replacement parts, if desired.**
8. **Accessories, if desired.**

IF YOU HAVE ADDITIONAL QUESTIONS, NEED FURTHER INFORMATION, OR WOULD LIKE TO COMMENT ON OUR PRODUCTS OR SERVICES, PLEASE WRITE OR PHONE:

1. **YOUR LOCAL HONEYWELL BUILDING CONTROLS SALES OFFICE (CHECK WHITE PAGES OF YOUR PHONE DIRECTORY).**
2. **BUILDING CONTROLS DIVISION CUSTOMER SERVICE HONEYWELL INC., 1885 DOUGLAS DRIVE NORTH MINNEAPOLIS, MINNESOTA 55422 (612)542-7500 (IN CANADA—HONEYWELL LIMITED/HONEYWELL LIMITEE, 740 ELLESMERE ROAD, SCARBOROUGH, ONTARIO M1P 2V9) INTERNATIONAL SALES AND SERVICE OFFICES IN ALL PRINCIPAL CITIES OF THE WORLD.**

STANDARD MODELS

MODELS (also refer to Table II):

T675A Temperature Controller—spdt switching to make or break a circuit on a temperature change; fast-response models operate approximately 4 times faster than standard models.

T675B Low Limit Temperature Controller—spst switching to break a circuit on a temperature fall; must be manually reset.

T678A Temperature Controller—2 spdt switches operate 2 independent circuits in sequence; fast-response models operate approximately 4 times faster than standard models.

TABLE II—STANDARD MODELS AVAILABLE.

MODEL	SNAP-ACTING SWITCHES	DIFFERENTIAL[a]	OPERATING TEMPERATURE RANGE (SCALE RANGE)[c]		MAXIMUM SAFE BULB TEMPERATURE	
			F	C	F	C
T675A	1 spdt	Adjustable 3 F to 10 F [1.7 to 5.6 C]	0 to 100	−18 to + 38	125	52
			160 to 260	71 to 127	280	138
		Adjustable 3.6 F to 12 F [2.0 to 6.7 C]	55 to 175	13 to 79	200	93
		Fixed at 1 F [0.6 C]	0 to 100	−18 to + 38	125	52
			55 to 175[d]	13 to 79	200	93
			160 to 260	71 to 127	280	138
T675B	1 spst	Manual reset[b]	30 to 50[e]	− 1 to + 10	125	52
T678A	2 spdt	Each switch: Fixed at 3 F [1.7 C] Interstage: Adjustable 3 F to 10 F [1.7 C to 5.6 C]	0 to 100	−18 to + 38	125	52
			160 to 260	71 to 127	280	138
		Each switch: Fixed at 3.6 F [2.0 C] Interstage: Adjustable 3.6 F to 12 F [2.0 C to 6.7 C]	0 to 100[f]	−18 to + 38	125	52
			55 to 175	13 to 79	200	93

[a] All differentials are subtractive except for the T675B (which has manual reset) and the interstage differential on T678A models.

[b] Temperature should rise 10 F [5.6 C] above the set point before resetting.

[c] Celsius scaleplates available. See Accessories.

[d] Model available with a fast-response sensing element, including a 131524A Capillary Holder.

[e] Factory-set and locked at 37 F [3 C].

[f] Sensing element is a 12 ft [3.7 m] averaging element on the end of a 10 ft [3.0 m] copper capillary.

ELECTRICAL RATINGS:

T675A models with adjustable differential and T678A:

	120 Vac	240 Vac	277 Vac
Full Load	8.0	5.1	4.2
Locked Rotor	48.0	30.6	25.2
Pilot Duty	125 VA	125 VA	125 VA

T675A models with fixed differential—125 VA at 120/208/240/277 Vac.

T675B—125 VA pilot duty up to 277 Vac.

T678A—maximum connected load = 2000 VA.

OPERATING TEMPERATURE RANGE (SCALE RANGE): See Table II.

DIFFERENTIAL: See Table II.

ADJUSTMENTS:

Set Point (Operating Temperature):

T675A and T678A—adjustment knob on dial on front of controller.

T675B—screwdriver slot in center of dial (cover must be removed).

Differential (cover must be removed):
T675A models with adjustable differential—adjustment dial on snap-acting switch.
T678A interstage differential—star wheel on left side of chassis.

MAXIMUM SAFE BULB TEMPERATURE: See Table II.

TEMPERATURE SENSING ELEMENT: Standard element is a liquid-filled, remote bulb. Some models are available with a fast-response, liquid-filled, coiled capillary element which reduces response time to approximately 1/4 that of the standard bulb.

SENSING BULB SIZE:
Length—4-3/16 in. [106.4 mm].
Diameter—1/2 in. [12.7 mm].

MAXIMUM SENSING BULB PRESSURE: 50 psi [344.7 kPa] for direct immersion.

CAPILLARY LENGTH AND MATERIAL:
T675A and T678A standard models—5 ft [1.5 m] copper, or 20 ft [6.1 m] copper, monel, or stainless steel.
T675A and T678A fast-response models—5 ft [1.5 m] copper capillary with a coiled sensing element on the end; sensing element is coiled 1/8 in. [3.2 mm] tubing, 1-1/2 in. [38.1 mm] diameter x 5 in. [127 mm] long. The coil may be stretched to approximately 10 in. [254 mm].
T675B—10 ft [3.0 m] copper.

CAPILLARY HOLDER: 107324A included with TRADELINE models (except fast-response models). 131524A included with all fast-response models.

WIRING KNOCKOUTS: Two, 7/8 in. [22.2 mm] diameter knockouts for 1/2 in. conduit (1 in the top and 1 in the bottom).

CONTROLLER MOUNTING: Any position; 3 screws through slotted holes in back of case (Fig. 1).

SENSING BULB MOUNTING:
In air ducts—capillary holder (Figs. 2 and 3).
In boilers or storage tanks—immersion well (Fig. 4) or capillary compression fitting (Fig. 5).

DIMENSIONS: See Fig. 1.

APPROVALS:
UNDERWRITERS LABORATORIES INC. LISTED:
T675A and T678A—File No. E4436, Vol. 4; Guide No. XAPX.
T675B—File No. SA481, Vol. 3; Guide No. SDFY.
CANADIAN STANDARDS ASSOCIATION CERTIFIED (120 V, 240 V, and some 208 V models only): T675A and T678A—File No. LR1620, Guide No. 400-E-0.

REPLACEMENT PART:
1. 131524A Capillary Holder, for mounting a fast-response sensing element in an air duct.

ACCESSORIES:
1. 107324A Capillary Holder—for mounting a sensing bulb in an air duct; 8-3/8 in. [212.7 mm] long.
2. 311266D Duct Bulb Holder.
3. Immersion Well Assembly—to protect sensing bulb from mechanical or chemical damage when mounting in a boiler or storage tank; copper, 4-3/4 in. [120.7 mm] insertion length; includes 112721 Tube Clip for clamping capillary tube to immersion well—
—112622AA, 1/2-14 NPT external threads on sput.
—112630A, 3/4-14 NPT external threads on spud.
4. Capillary Compression Fitting—to provide seal-off when mounting sensing bulb directly in a boiler or storage tank; brass, 5/8 in. [15.9 mm] thread length—
—104484A, 1/2-14 NPT external threads on spud.
—104484B, 3/4-14 NPT external threads on spud.
5. 105900 T-strap—for clamping sensing bulb to a pipe or similar mount.
6. 7640HY Bag Assembly—with standoff bracket for mounting the controller to an insulated duct.
7. Q615A Splash-proof Enclosure.
8. 34886A Sun Shield.
9. 801534 Calibration Wrench.
10. 194899 Tamper-resisting Insert Button to conceal set point.
11. Celsius scaleplates for T675.
—194486D: 75 to 125 °C replaces 160 to 260 °F scaleplate.
—194486F: 15 to 75 °C replaces 55 to 175 °F scaleplate.
—194486H: minus 30 to 50 °C replaces 0 to 100 °F scaleplate.

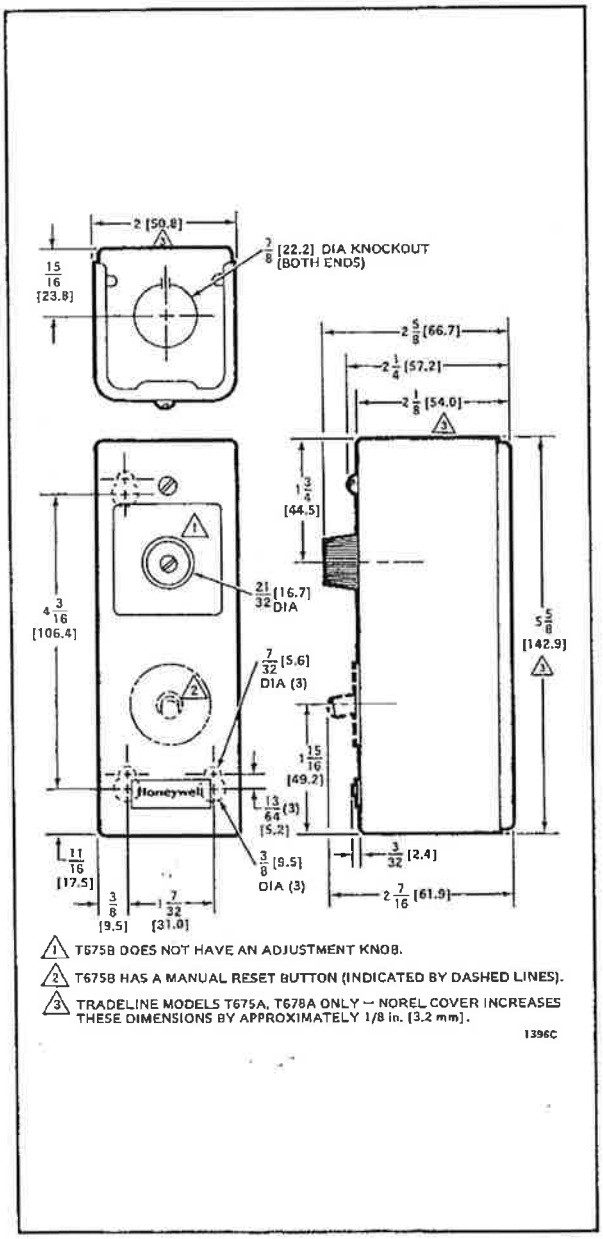


FIG. 1—DIMENSIONS OF THE T675 AND T678 TEMPERATURE CONTROLLER, IN in. [mm IN BRACKETS].