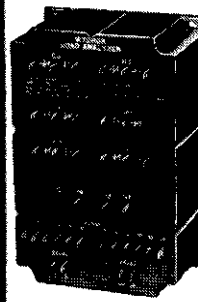


Honeywell

THIS SOLID-STATE SYSTEM IS A COMPONENT FOR COMPONENT FIELD REPLACEMENT FOR THE RANCO EA3 LODAPT SYSTEM. THE BASIC SYSTEM CONTROLS UP TO 12 ZONE DAMPERS, 3 HEATING STAGES, 3 COOLING STAGES, AN INTEGRATED ECONOMIZER, AND MODULATING VALVES FOR HOT WATER AND CHILLED WATER. OPTIONAL UNITS PROVIDE CONTROL OF UP TO 12 ADDITIONAL ZONES, 5 STAGES OF ELECTRIC HEAT, VARIABLE AIR VOLUME (VAV) SYSTEM FAN, AND A FOURTH STAGE OF COOLING.

- W7080A Load Analyzer (Ranco EA3)** provides SPDT relay switching of three stages of heating and three stages of cooling, and provides modulating output to economizer and valve motors in response to highest heating and cooling demand from zone thermostats. Analyzer is source of 24 Vdc power for zone thermostats and sensors.
- Modulated DC voltage signal from zone thermostat, modified by zone discharge sensor, provides direct control of associated zone damper.
- i Pilot duty SPDT relays control heating and cooling stages.
- Economizer uses M745K or M745L motor to provide true first stage of cooling, using outdoor air whenever possible.
- i System switches all stages off when power is interrupted; switches all stages on when power is restored. Compressor turn on time delays must be incorporated for each compressor.
- Power supplies in W7080A Load Analyzer and W7084A Zone Adder are short-circuit protected. Short circuits of 24 Vdc from load analyzer or zone adder will not damage their power supplies.
- Night setback and cooling shut-down for individual or all zones by adding a time clock.

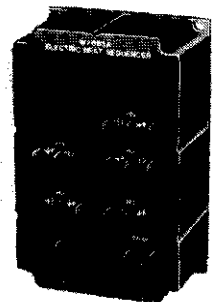
MULTIZONE CONTROL SYSTEM



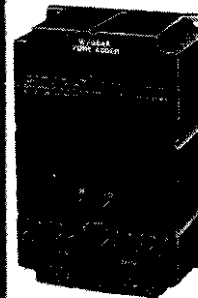
W7080A



W7082A



W7083A



W7084A



S7080A



195325B

**W7080A, W7082A,
W7083A, W7084A,
S7080A, 195325B**

epc

Energy Products Center

SPECIFICATIONS

SYSTEM COMPONENTS:

All components of the W7080 Multizone Control System are briefly described in this section. For detailed information on C7046B and C7100B sensors, T7080A,B Thermostats and W7081A Limit Controller, refer to the associated specification sheets (form number in parenthesis): C7046B (60-2350), C7100B (60-2539), T7080A,B (60-2527), W7081A (60-2512).

C7046B Temperature Sensor — (Ranco TR1-1001) is non-averaging type with 6 in. [152 mm] probe for use in ducts where space does not permit a longer C7100B.

C7100B Averaging Temperature Sensor — (Ranco TR1-1002,1003) installed in hot deck, cold deck and mixed air duct to provide limit signals for limit controller operation. Also installed in discharge air duct of each zone to provide anticipation for the T7080 Thermostat. Sensor probe length is 13 in. [330 mm].

H205A Enthalpy Controller — (Ranco (15) senses heat content (temperature and humidity) of outdoor air. Allows use of outdoor air for free cooling.

S7666A Simulator — (Ranco TEI) portable unit provides check of system by substituting adjustable DC voltage for zone thermostat and sensor signals.

T7080A,B Solid State, Dual Setpoint Thermostat — (Ranco TR3, TR4) modulates zone dampers and supplies load demand signal to load analyzer. Single voltage ramp design has variable, 3 to 30°F [1.7 to 16.7%] dead band. For complete T7020A,B information, refer to form number 60-2527, T7080A has a built-in sensor; T7080B requires remote sensor.

W7080A Load Analyzer — (Ranco EA3) provides SPOT relay switching of three stages of heating and three stages of cooling and modulating output to economizer and valve motors in response to highest heating and cooling demand from zone thermostats. Analyzer is source of 24 Vdc power for zone thermostats sensors, and W7081A Limit Controller.

W7081A Limit Controller — (Ranco EA5-G3002) provides economizer control in addition to hot and cold deck selectable limit. Saves energy by maintaining selected temperature limit of hot and cold decks when zone demands are reduced. For complete W7081A information, refer to form number W-2512.

W7082A Integrator Analyzer — (Ranco EA5-C6001-35) optional unit controls system blower in VAV systems in response to zone demand. During decreased demand, the W7082A reduces fan output, thus saving energy. (Requires additional blower equipment. not available from Honeywell.)

W7083A Electric Heat ~~Seq~~ — (Replaces Ranco EA5-C0501) optional unit switches up to five ON/OFF stages of electric heat, provides stage turn on delay on power restoration.

W7084A Zom Adder — (Ranco EA5-C9001,-C9002) optional unit permits the addition of up to 12 zonesto system.

196325s Fourth Stage Cooling Board — (Ranco EA5-C9100 optional unit permits addition of a fourth stage of coding to system.

ELECTRICAL RATINGS:

Voltage and Frequency — 24 Vac, 50/60 Hz.
 Maximum Power Consumption — W7080A 10 VA;
 W7081A, 0.29 VA; W7082A, 1.5 VA; W7083A,
 1.4 VA; W7084A, 3 VA.

Contact Ratings (SPDT pilot duty relays) — See Table I.

SYSTEM INPUT SIGNALS: See Table 2.

SYSTEM OUTPUT SIGNALS: See Table 3.

STAGE DIFFERENTIALS AND THERMOSTAT DEAD BAND: See Figure 1.

Table 1
 Relay Contact Ratings for W7080A, W7083A, 1953258

Contact	Voltage Vac	Inrush VA	Running VA
Normally open	24	240	60
	120/240	750	1 75
Normal dosed	24	75	30
	120/240	240	40

NOTE

VA ratings not valid when maximum load is connected to both normally open and normally closed contacts.

Table 2
 System Input Signals

TO	Signal (Vdc)	From
W7080A	2-22	T7080A,B
W7081A	2-12 (LO) 12-22 (HI)	W7080A, W7084A
W7083A	2-12	W7080A, W7081A
195325B	12-24	W7080A, W7081A
M745K,L	14-17	W7081A
M744D, M745G.P	4-7	W7081A

Table 3
System Output Signals

From	Signal (Vdc)	TO
T7080A	2.22	W7080A, W7082A, W7084A, M734
	10.5-13.5	M734
W7080A, W7084A (LO)	2-12	W7081A, W7083A 195325B
W7080A W7084A (HI)	12-22	W7081A, W7083A, 195325B
W7081A	14-17 4-7	M745K.L M744D, M745G,P
W7082A	0 to -10	Inverter (VAV fan motor control)

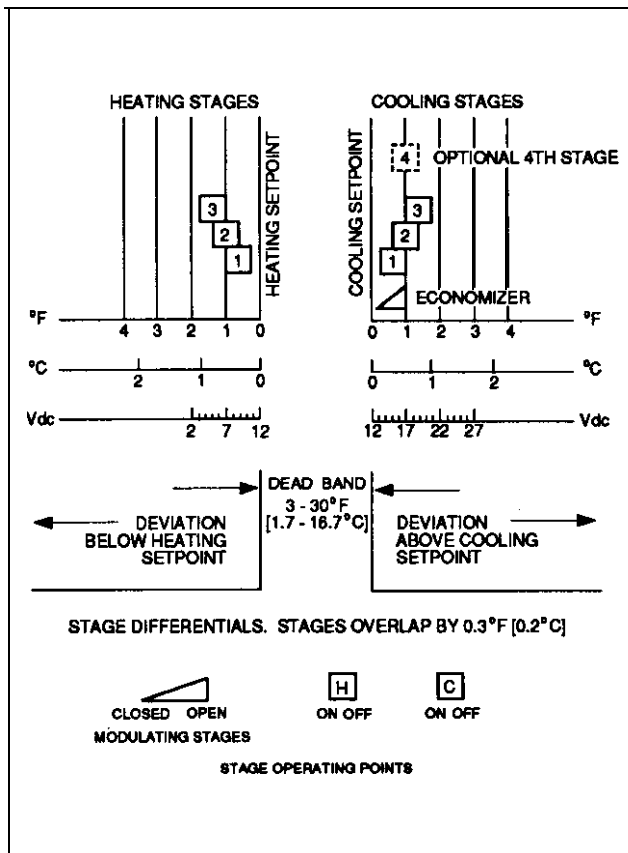


Figure 1 — W7080A Stage Operating Points, Differentials and Throttling Ranges

COLD DECK LOW LIMIT:

Limits cold deck temperature to selectable setpoints of 45°F, 50°F or 55°F [7.2°C, 10°C or 12.8°C].

HOT DECK HIGH LIMIT:

Limits hot deck temperature to selectable setpoints of 90°F, 110°F or 130°F [32.2°C, 43.3°C or 54.4°C].

ECONOMIZER MIXED AIR LIMIT:

Economizer motor modulates outdoor air damper to minimum position when mixed air temperature is below setpoint of W7081A Limit Controller. This setpoint is selectable to 50°F, 55°F or 60°F [10°C, 12.8°C or 15.6°C], with a 10°F [5.6°C] fixed throttling range.

INTEGRATOR MINIMUM OUTPUT:

Selectable from 0 to -8 Vdc (0 to 60 percent fan motor speed).

ZONE DISCHARGE SENSOR AUTHORITY:

20:1, which means a 20°F [11.1°C] rise at the zone discharge sensor produces a voltage change equal to a 1°F [0.5°C] rise at the space thermostat.

AMBIENT TEMPERATURE RISE:

Operating- -40 to 150°F [-40 to 65°C]
Shipping- -30 to 150°F [-34 to 65°C]

MOUNTING:

The W7080A, W7081A, W7082A, W7083A, W7084A units each attach with four screws through mounting holes in the base (saws not provided). The 195325B Fourth Stage coding Board can be mounted on a flat surface. See individual specification sheets for mounting details.

UNDERWRITERS LABORATORIES INC. COMPONENT RECOGNIZED:

Fib number SA481, Guide number SDFY2D (applies to W7080A, W7083A and 19253258 units only).

ADDITIONAL SYSTEM COMPONENTS:

C7100B (13 In.) Averaging Temperature Sensor — One sensor in hot deck, one sensor in cold deck and one sensor in mixed air to supply the three sensor input signals required by the W7081A Limit Controller. Also, one sensor is installed in each zone discharge duct to supply anticipation to the T7080A Zone Thermostat.

NOTE

Economizer mixed air sensor (C7100B or C7046B) may be mounted in cold deck if it is desired to close the economizer when mechanical cooling is operating. May be used as remote return air sensor when used with T7080B Zone Thermostat.

Where space is insufficient for the 13 in. [304.8 mm] probe of the C7100B, the C7046B single point temperature sensor, with 6 in. [152.4 mm] probe, may be installed.

1353258 Fourth Stage Cooling Board — Controls operation of two stage compressor in the system. Mounts separately from other components.

H205A Enthalpy Controller — Controls economizer operation in response to enthalpy (total heat content) of outdoor air. Signals economizer to close outdoor air damper (or modulate to minimum position) when enthalpy is above H205 setpoint and to open damper on a call for cooling when enthalpy is below setpoint.

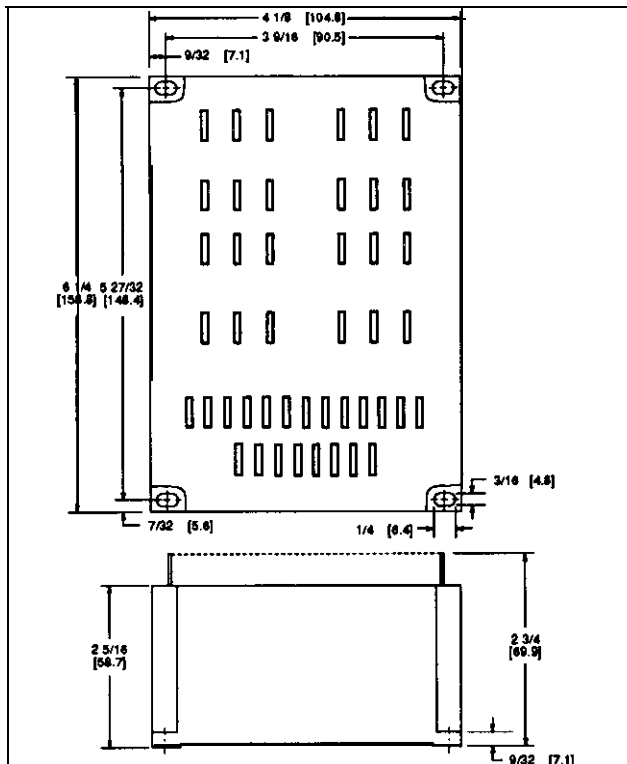


Figure 2 — Mounting Dimensions for W7080A, W7081A, W7082A, W7083A, W7084A Units in Inch [mm in brackets]

Nonspring Return Motors — M734J, M744D have a solid state balance relay, operate on 24 Vac, 50/60 Hr.

- M734J produces 35 lb.-in. [4 N.m] torque over 160 degree stroke. Modulates zone discharge damper in response to 10.5 to 13.5 Vdc signal from zone thermostat.
- M744D produces 150 lb.-in. [17 N.m] torque with 90 and 160 degree nonadjustable stroke. Modulates hot water or chilled water valves in response to 4-7 Vdc signal from W7081A Limit Controller. Requires separate power supply.

Spring Return Motors — M746G,K,L,P motors have solid-state balance relay, require separate 24 Vac, 50/60 Hz power supplies.

- M745K or M745L motor operates economizer damper in response to modulating signal of 14-17 Vdc signal from W7081A.
- M745G,P modulates hot water or chilled water valves in response to 4-7 Vdc signal from W7081A. Requires 4074EAC Resistor Kit (order separately).

Time Delay Relays — To improve stability of the system and minimize energy use, five minute turn on time delays should be added to all heating and cooling loads. These relays should be wired between cooling and heating stage switching outputs (W7080A Load Analyzer W7083A Electric Heat Sequencer and 1953258 Fourth Stage Cooling Board) and the heating and cooling equipment.

SYSTEM ACCESSORIES:

Transformers: AT20-20 VA; AT7240 VA; AT88-75 VA

IMPORTANT

The transformer used to power the W7080A Load

Analyzer can also be used to power stage relays in the W7083A Electric Heat Sequencer (if used). The M744 and M745 motors each require a separate transformer to ensure electrical isolation. **NEVER GROUND THE SECONDARY OF ANY TRANSFORMER USED TO POWER ANY SYSTEM COMPONENT.**

Q209A Minimum Position Potentiometer — Mounts directly on M734, M744, M745 motors; controls minimum open position of damper.

Q605 Damper Linkage — Connects motor to damper. includes motor crank arm.

Q618 Valve Linkage — Connects Modutrol motor to modulating hot or chilled water valves.

S963A Remote Minimum Position Potentiometer — Provides remote manual control of minimum open position of economizer motor.

Modulating Water Valves — Use appropriate valve with Super Modutrol motor and Q618 Linkage to provide proportional control of hot or chilled water flow.

Compressor Ambient Lockout Thermostat — Use with direct expansion cooling system to prevent compressor operation when outdoor air temperature falls below economizer setpoint.

- T675A Temperature Controller.
- L6018C Temperature Controller.

Economizer Changeover Controller — Holds economizer at minimum position whenever outdoor air temperature or enthalpy is above controller setpoint.

- H205A1038 or H205A1046 Enthalpy Controller.
- T675A Temperature Controller.
- L6018C Temperature Controller.

Night Setback — Provides heating setback of 6 to 22°F [3.3 to 12.2°C]. Requires connection of a 1% resistor and S6005 Time Clock contact connected between Terminals 3, 7 or 6; and 5 of T7080A or T7080B Thermostat.

- 802139BAAC Resistor (10.0 KΩ) provides 6°F [3.3°C] setback.
- 802139EJHB Resistor (4.87 KΩ) provides 10°F [5.6°C] setback.
- 802139CGHB Resistor (2.67 KΩ) provides 14°F [7.8°C] setback.
- 802139BEDB Resistor (1.43 KΩ) provides 18°F [10°C] setback.
- 802139GJBA Resistor (681 Ω) provides 22°F [12.2°C] setback.

Morning Warm-up Thermostat — Holds outdoor air damper fully closed following night setback and until return air temperature exceeds selected setpoint.

- T675A Temperature Controller.
- L6018C Temperature Controller.

S43 Sail Switch — Activates circuits when minimum airflow is maintained in duct. Deactivates circuit below minimum airflow.

1914448 Metal Cover — Designed to protect the W7080A, W7081A, W7082A, W7083A and W7084A components when mounted on open surface. Overall dimensions of units with metal cover in place: 6 5/8 in. long, 4 5/16 in. wide, 4 19/16 in. high [168.3 x 108.5 x 122.2 mm].