Single-Duct Terminal Unit (VCCF, VCWF, and VCEF)

Unit Heat	Control	Description	Page #
Cooling Only (VCCF)	EI05	Cooling Only	C 42
	EI28	Cooling Only With Remote Hot Water Reheat and Electric Reheat - Automatic Dual Minimum	C 43
	EI29	Cooling Only With Remote Hot Water Reheat and Electric Reheat - Constant Volume	C 43
Hot Water (VCWF)	EI05	Cooling With Hot Water Reheat	C 42
	EI28	Cooling With Hot Water Reheat - Automatic Dual Minimum	C 43
	EI29	Cooling With Hot Water Reheat - Constant Volume	C 43
Electric (VCEF)	EI05	Cooling With Electric Reheat	C 42
	EI28	Cooling With Electric Reheat - Automatic Dual Minimum	C 43
	EI29	Cooling With Electric Reheat - Constant Volume	C 43

Fan-Powered Terminal Units (VPCF, VPWF, VPEF, VSCF, VSWF, and VSEF)
Low-Height Fan-Powered Terminal Units (LPCF, LPWF, LPEF, LSCF, LSWF, and LSEF)

Unit Heat	Control	Description	Page #
Cooling Only Hot Water Electric (VPxF, LPxF)	EI05	Cooling With Hot Water Reheat and Electric Reheat	C 44
Cooling Only Hot Water Electric (VSxF, LSxF)	EI71	Cooling With Hot Water Reheat and Electric Reheat - Duct Pressure Switch	C 45

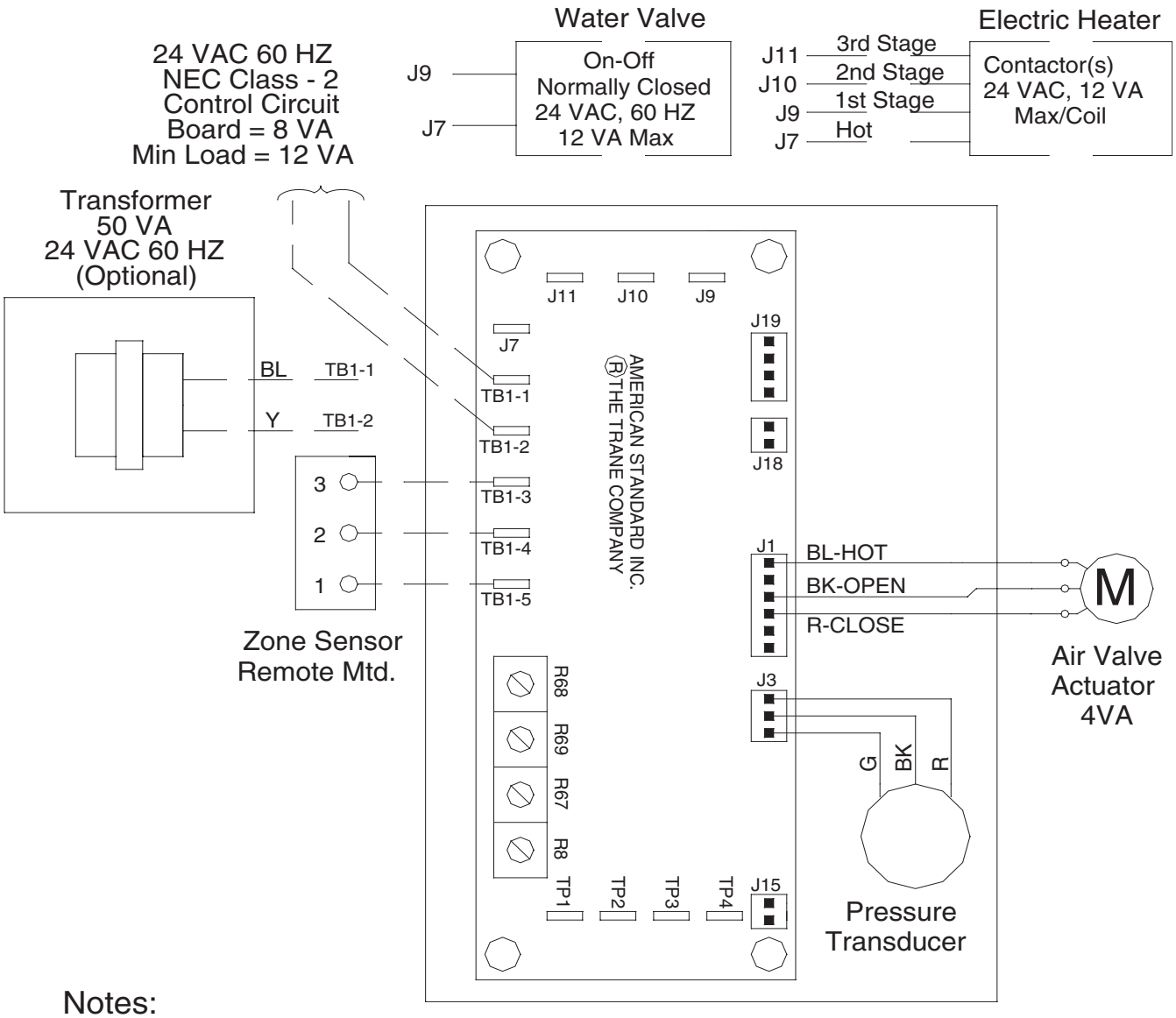
VCCF, VCWF, and VCEF – Single-Duct Terminal Units

(Normal Operation: Cooling With Reheat Capability)

EI05 – Cooling Only

EI05 – Cooling with Hot Water Reheat and Electric Rreheat

An analog signal from the zone sensor is used to compare the difference in the zone temperature and the zone setpoint. On a rise in zone temperature above the setpoint, the controller outputs a 24-VAC signal, compensated for changing duct pressures, to open the air valve and to increase primary cooling airflow. Upon a decrease in zone temperature, the opposite action occurs. Minimum and maximum primary airflow settings are maintained by the controller and are adjustable through potentiometers on the controller board. Upon a continued decrease in zone temperature, below setpoint, the reheat is enabled. For VCCF units with remote hot water reheat and VCWF units, the hot water valve is opened. For VCCF with remote electric reheat and VCEF units, the electric heat stages are energized.



Notes:

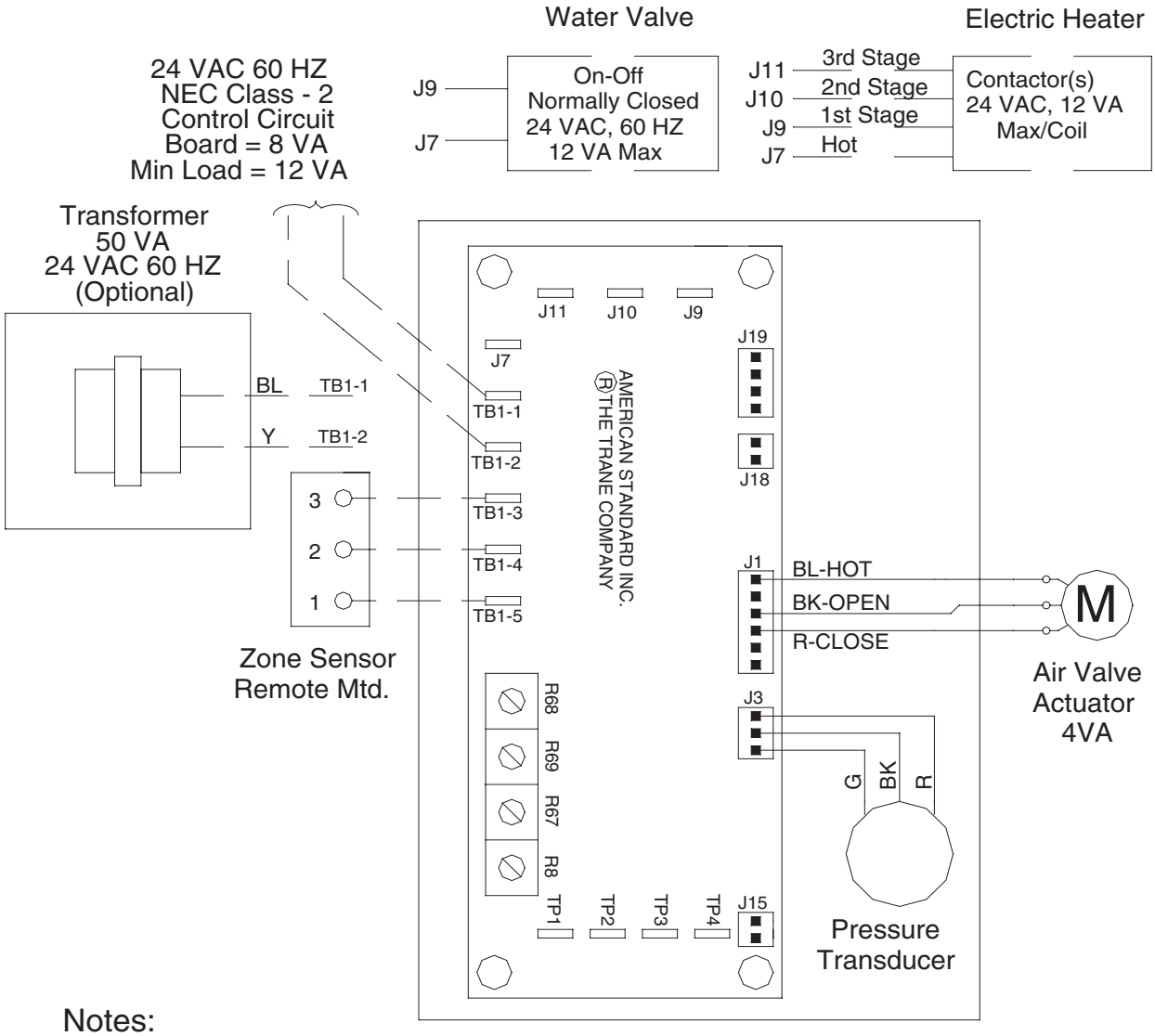
1. ———— FACTORY INSTALLED.
   — — — — OPTIONAL OR INSTALLED BY OTHERS.
2. No slaving of multiple units to a single zone sensor is allowed.
3. Field connections are TB1-3, TB1-4, TB1-5, J7, J9, J10, and J11.

VCCF, VCWF, and VCEF – Single-Duct Terminal Units

(Normal Operation: Cooling With Reheat Capability and Auto Dual Minimum or Constant Volume)

EI28 - Cooling With Hot Water Reheat and Electric Reheat - Auto Dual Minimum
EI29 - Cooling With Hot Water Reheat and Electric Reheat - Constant Volume

An analog signal from the zone sensor is used to compare the difference in the zone temperature and the zone setpoint. On a rise in zone temperature above the setpoint, the controller outputs a 24-VAC signal, compensated for changing duct pressures, to open the air valve and to increase primary cooling airflow. Upon a decrease in zone temperature, the opposite action occurs. Minimum and maximum primary airflow settings are maintained by the controller and are adjustable through potentiometers on the controller board. Upon a continued decrease in zone temperature, below setpoint, the reheat is enabled. For VCCF units with remote hot water reheat and VCWF units, the hot water valve is opened. For VCCF with remote electric reheat and VCEF units, the electric heat stages are energized. If the pins on jumper J18 onthe board are connected, then the controller will control the air valve actuator to its heating minimum primary airflow when reheat is enabled (EI28). For EI29, The unit shall operate to constant volume flow regardless of changes in space temperature. The pins on jumper J15 on the board must be connected for constant volume mode to be active.



Notes:

1. ———— FACTORY INSTALLED.
   — — — — OPTIONAL OR INSTALLED BY OTHERS.
2. No slaving of multiple units to a single zone sensor is allowed.
3. Field connections are TB1-3, TB1-4, TB1-5, J7, J9, J10, and J11.

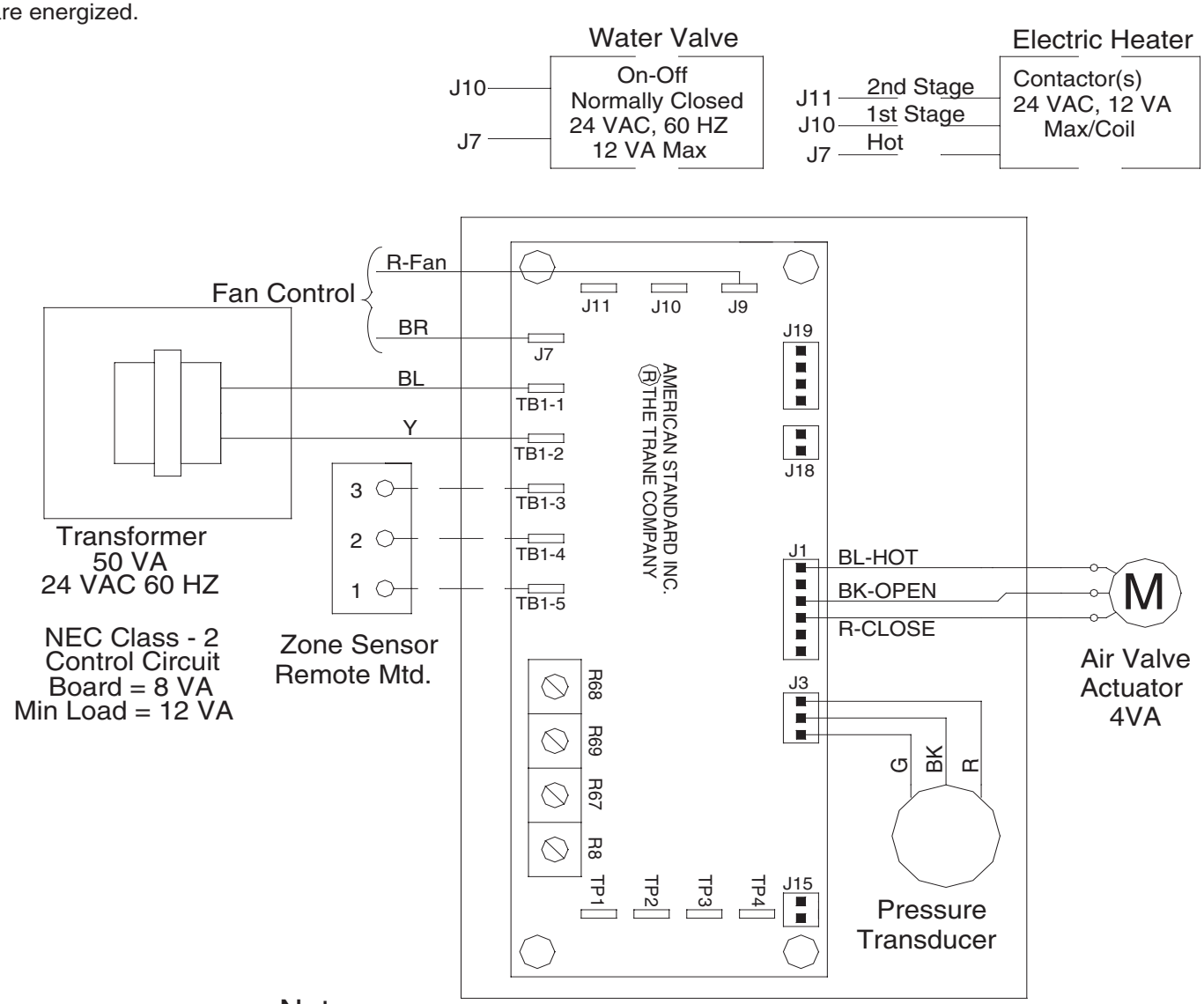
For Use With Parallel Fan-Powered Terminals

(Normal Operation: Cooling With Reheat Capability)

EI05 – Cooling Only

EI05 – Cooling Only with Hot Water Reheat and Electric Reheat

An analog signal from the zone sensor is used to compare the difference in the zone temperature and the zone setpoint. On a rise in zone temperature above the setpoint, the controller outputs a 24-VAC signal, compensated for changing duct pressures, to open the air valve and to increase primary cooling airflow. Upon a decrease in zone temperature, the opposite action occurs. Minimum and maximum primary airflow settings are maintained by the controller and are adjustable through potentiometers on the controller board. Upon a continued decrease in zone temperature, below setpoint, the fan is energized. If the zone temperature continues to decrease then reheat is enabled. For VPCF and LPCF units with remote hot water reheat and VPWF and LPWF units, the hot water valve is opened. For VPCF and LPCF units with remote electric reheat and VPEF and LPEF units, the electric heat stages are energized.



Notes:

1. ———— FACTORY INSTALLED.
   — — — — OPTIONAL OR INSTALLED BY OTHERS.
2. No slaving of multiple units to a single zone sensor is allowed.
3. Field connections are TB1-3, TB1-4, TB1-5, J7, J10, and J11.

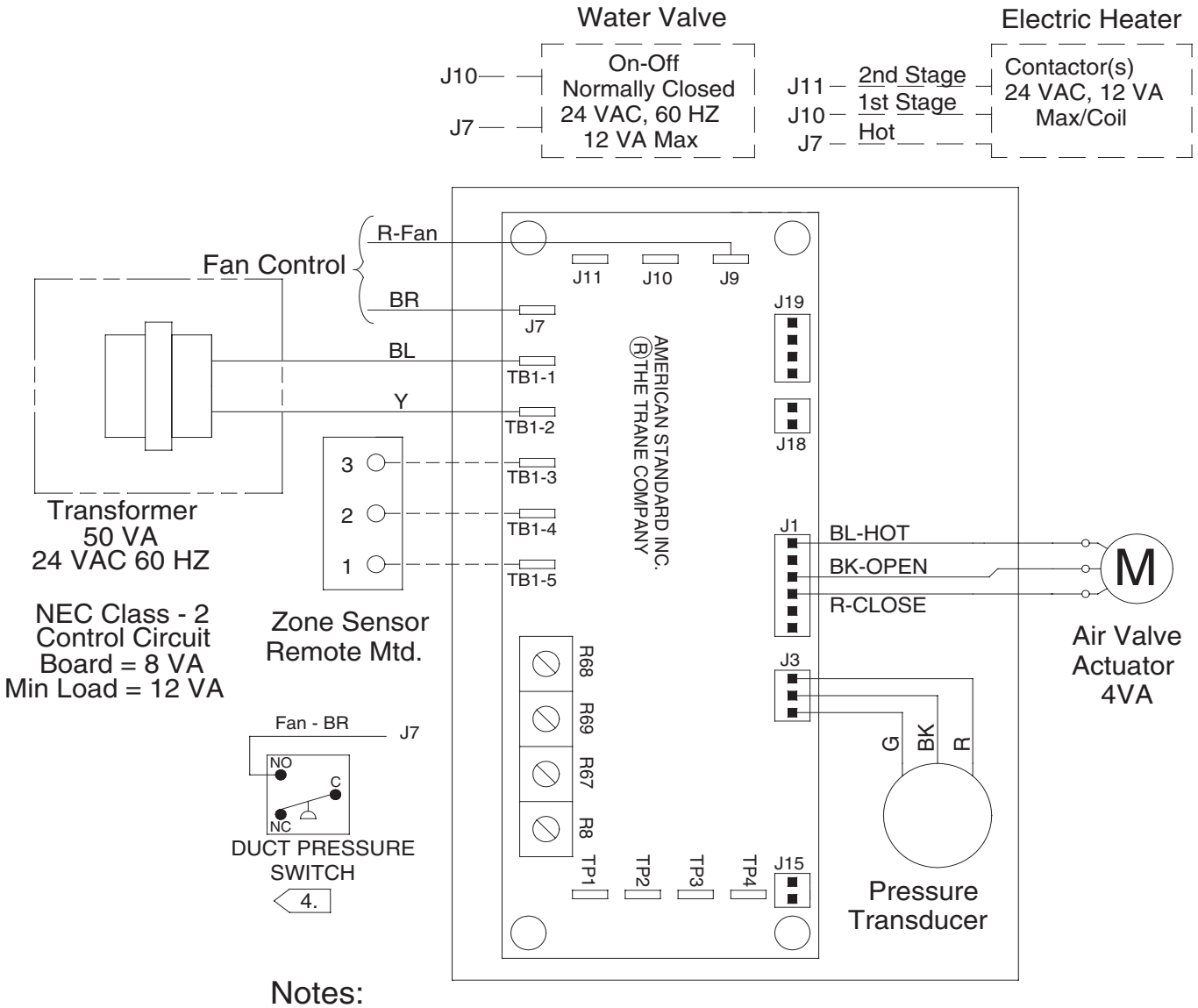
For Use With Series Fan-Powered Terminals

(Normal Operation: Cooling With Reheat Capability)

EI71 – Cooling Only - Duct Pressure Switch

EI71 – Cooling with Hot water Reheat and Electric Reheat - Duct Pressure Switch

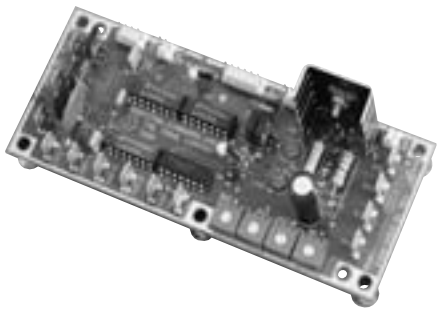
Unit operation is initiated by the duct pressure switch signal to the controller. When signal to start by the duct pressure switch, the unit fan is started and ran continuously. An analog signal from the zone sensor is used to compare the difference in the zone temperature and the zone setpoint. On a rise in zone temperature above setpoint, the controller outputs a 24-VAC signal, compensated for changing duct pressures, to open the air valve and to increase primary cooling airflow. Upon a decrease in zone temperature, the opposite action occurs. Minimum and maximum primary airflow settings are maintained by the controller and are adjustable through potentiometers on the controller board. Upon a continued decrease in zone temperature, below setpoint, the reheat is enabled. For VSCF and LSCF units with remote hot water reheat and VSWF and LSWF units, the hot water valve is opened. For VSCF and LSCF units with remote electric reheat and VSEF and LSEF units, the electric stages are energized.



Notes:

1. ———— FACTORY INSTALLED.
   ---------- OPTIONAL OR INSTALLED BY OTHERS.
2. No slaving of multiple units to a single zone sensor is allowed.
3. Field connections are TB1-3, TB1-4, TB1-5, J7, J10, and J11.
4. Rating: 15 amps 125/250/277 VAC resistive, 1/4 HP 125 VAC, 1/2 HP 250 VAC.

Analog Electronic Controller



The Trane analog electronic controller offers basic VAV unit operation when used in conjunction with a Trane analog zone sensor. The control was designed specifically for use with the VariTrane air valve. Staged electric reheat or on/off hot water reheat control are provided when required. The control board operates using 24-VAC power. The controls operate in a pressure independent fashion.

SPECIFICATIONS

Supply Voltage:
24VAC, 50/60 Hz

Maximum VA Load:
No Heat or Fan:
8 VA (Board, Transducer, Zone Sensor and Actuator)

Note: If using field-installed heat, 24-VAC transformer should be sized for additional load

Output Ratings:

Air Valve Output:	24 VAC at 12 VA
1st Stage Reheat:	24 VAC at 12 VA
2nd Stage Reheat:	24 VAC at 12 VA
3rd Stage3 Reheat:	24 VAC at 12 VA

Operating Environment:
32 to 140°F (0 to 60°C)
5% to 95%RH, Non-Condensing

Storage Environment:
-40 to 180°F (-40 to 82°C)
5% to 95%RH, Non-Condensing)

Physical Dimensions:

Width:	2.26" (57.4 mm)
Length:	5.50" (139.7 mm)
Height:	2" (50.8 mm)

Connections:
¼" (6.35 mm) Stab Connections

Heat/Fan Staging:

(J9) Fan/1st Stage:	1.5° Below Setpoint
(J10) 2nd Stage:	2.5° Below Setpoint
(J11) 3rd Stage:	3.5° Below Setpoint

Trane Actuator – 90-Second Drive Time

The actuator is a 3-wire, floating point control device. It is a direct-coupled over shaft (minimum shaft length of 2.1\-"), enabling it to be mounted directly to the damper shaft without the need for connecting linkage. The actuator has an external manual gear release to allow manual positioning of the damper when the actuator is not powered. The actuator is Underwriters Laboratories Standard 873 and Canadian Standards Association Class 3221 02 certified as meeting correct safety requirements and recognized industry standards.

SPECIFICATIONS

Actuator design:
3-wire, 18-gage, 24-VAC, floating-point control. Non-spring return.

Actuator housing:
Housing type-NEMA 1, IP30

Rotation range:
Adjustable from 30 to 90°, clockwise or counterclockwise

Electrical rating:
Power Supply – 24 VAC (20 to 30 VAC) at 50/60 Hz

Power Consumption – 3.4 VA maximum, Class 2

Electrical connection:
6-pin female connector for UCM

Manual override:
External clutch release lever

Shaft requirement:
½" (12.7 mm) round

2.1" (53.5 mm) length

Humidity:
90% RH max., Non-Condensing

Temperature rating:
Ambient operating – 32 to 125°F (0 to 52°C)

Shipping and storage – -20 to 150°F (-29 to 66°C)

Torque:
Running: 35 in.-lb (4 N-m)

Breakaway: 35 in.-lb (4 N-m) minimum

Stall: 40 in.-lb (4.5 N-m) minimum

Analog Electronic Sensor

The analog electronic thermostat is used in conjunction with the Trane analog electronic controller to sense the space temperature and to allow for user adjustment of the zone setpoint. Models with internal and external zone setpoint adjustments are available.

SPECIFICATIONS

Thermistor Resistance Rating:
3000 Ohms at 77°F (25°C)

Setpoint Resistance Rating:
Setpoint potentiometer is calibrated to produce 3070 Ohms at a setting of 70°F (21.11°C)

Electrical Connections:
Terminal Block - Pressure Connections

Physical Dimensions:

Width:	2.75" (69.85 mm)
Length:	4.5" (114.3 mm)
Height:	1.0" (25.4 mm)

Static Pressure Controller

The Trane static pressure controller will sense duct static pressure and modulate a relief device in an effort to limit maximum duct static pressure. An analog signal from the air probe is used to compare the difference in the duct static pressure and the duct static pressure setpoint. The relief device can be a VariTrane terminal or any blade damper device with the specifications stated below. See VAV-EB-64 for installation and calibration.

SPECIFICATIONS
Supply Voltage:
24 VAC, 60 HZ

Maximum VA Load:
No more than 12 VA

Recommended Wire Size:
14 – 22 AWG Stranded

Housing Material:
ABS

Components:
Control box
Pressure sensor
Interconnecting wire
Static pressure tap

Fits standard 2" deep x 4" x 2 1/8" utility box.

PHYSICAL DIMENSIONS: