



# Control Box (Heating / Cooling Signal Converter)

MODEL: **CB2**

## DESCRIPTION:

**CB2 (Control Box)** converts thermostat heating and cooling demand signals into controls for water valves and air valves.

There are two Plug & Play ports, labeled "THERMOSTAT" (input) and "AIR VALVE" (output). The "THERMOSTAT" port consists of two 0-10V signals from the thermostat representing heating demand and cooling demand. The "AIR VALVE" port will control MIT air valves attached to the trough. An internal terminal block provides water valve control connection points.

The CB2 draws 24VAC power from an MIT air valve chain through the "AIR VALVE" output port.

One (1) PAP-1J Plug & Play Cable is included.



Example Zones: Page 2

Standard Sequence of Operation: Page 3

## SPECIFICATIONS:

**Application:** Underfloor Control Box | Raised Access Floors 6" (152mm) +  
**Dimensions:** 8" x 8" x 4" (203mm x 203mm x 102mm)  
**LxWxH (Nominal)**

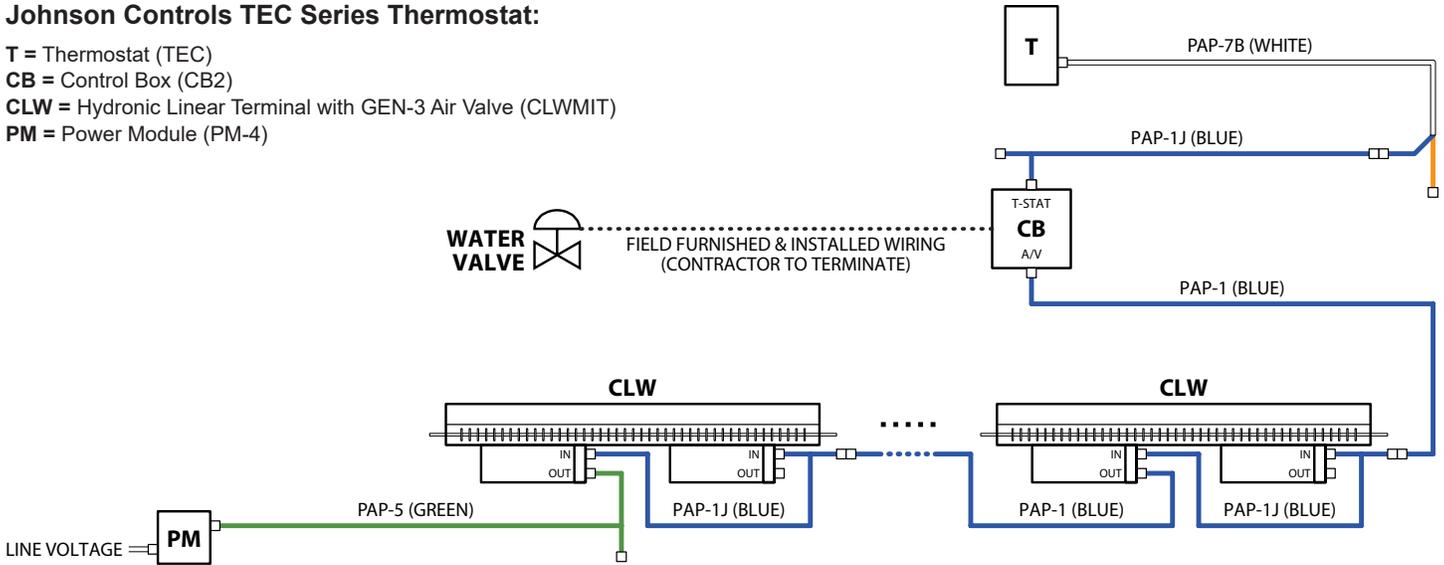
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**EXAMPLE ZONES:**

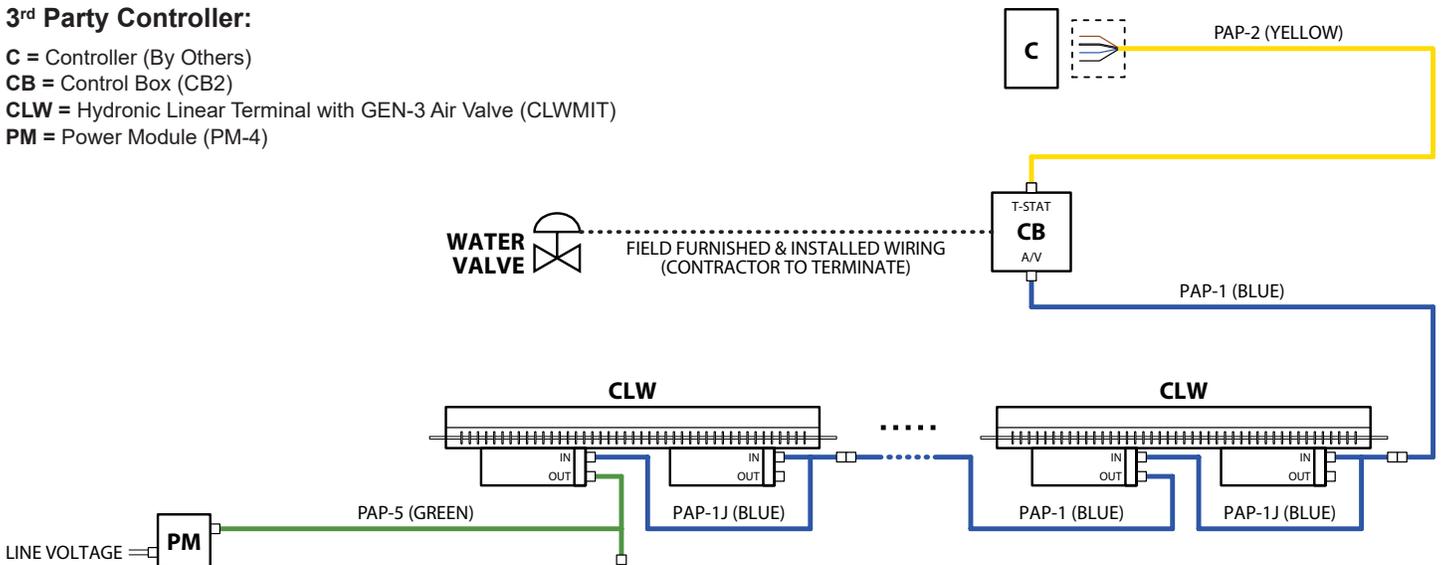
**Johnson Controls TEC Series Thermostat:**

- T = Thermostat (TEC)
- CB = Control Box (CB2)
- CLW = Hydronic Linear Terminal with GEN-3 Air Valve (CLWMIT)
- PM = Power Module (PM-4)



**3<sup>rd</sup> Party Controller:**

- C = Controller (By Others)
- CB = Control Box (CB2)
- CLW = Hydronic Linear Terminal with GEN-3 Air Valve (CLWMIT)
- PM = Power Module (PM-4)





# Control Box (Heating / Cooling Signal Converter)

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**STANDARD SEQUENCE OF OPERATION:**

HEATING DEMAND	AIR VALVES (DAMPERS)	PROPORTIONAL WATER VALVE (10-0V / NORMALLY OPEN / REVERSE ACTING)	2-POSITION WATER VALVE (ON-OFF / NORMALLY OPEN)	2-POSITION WATER VALVE (ON-OFF / NORMALLY CLOSED)	POWER LED	HEAT LED	COOL LED	FAN LED
0% – 17%	CLOSED <sup>1</sup>	CLOSED (10V)	CLOSED (24VAC)	CLOSED (0VAC)	ON	OFF	OFF	OFF
10% – 28%	CLOSED <sup>1</sup>	OPEN 20% (8V)	OPEN (0VAC)	OPEN (24VAC)	ON	1	OFF	OFF
21% – 41%	CLOSED <sup>1</sup>	OPEN 40% (6V)	OPEN (0VAC)	OPEN (24VAC)	ON	2	OFF	OFF
34% – 54%	CLOSED <sup>1</sup>	OPEN 60% (4V)	OPEN (0VAC)	OPEN (24VAC)	ON	3	OFF	OFF
47% – 67%	CLOSED <sup>1</sup>	OPEN 80% (2V)	OPEN (0VAC)	OPEN (24VAC)	ON	4	OFF	OFF
60% – 80%	CLOSED <sup>1</sup>	OPEN 100% (0V)	OPEN (0VAC)	OPEN (24VAC)	ON	ON	OFF	OFF
73% – 100%	OPEN <sup>2</sup>	OPEN 100% (0V)	OPEN (0VAC)	OPEN (24VAC)	ON	ON	OFF	ON
<b>COOLING DEMAND</b>								
0%	CLOSED <sup>1</sup>	CLOSED (10V)	CLOSED (24VAC)	CLOSED (0VAC)	ON	OFF	OFF	OFF
0% – 100%	0 – 100% OPEN	CLOSED (10V)	CLOSED (24VAC)	CLOSED (0VAC)	ON	OFF	ON	OFF
100%	OPEN	CLOSED (10V)	CLOSED (24VAC)	CLOSED (0VAC)	ON	OFF	ON	ON

**NOTES:**

- Air valve Min% modulation (1) set by Adj2 Pot (R4 on right)
  - Range: 0% (CCW) to 50% (CW)
  - Factory set to 0% (full CCW)
- Air valve Heat% modulation (2) set by Adj1 Pot (R8 on left)
  - Range: Min% (CCW) to 100% (CW)
  - Factory set to 100% (full CW)
- There is a 7% deadband in the heating demand input, which gives the appearance of overlap in the ranges.
- Cool LED turns on when cooling demand exceeds 17%
- Fan LED turns on when air valve modulation exceeds 35%
- Heat LED blinks during lower heat demand until WV is fully open