OVERVIEW

Smart Z-Wave Thermostat

Z-Wave 800 LR platform. Different AC and DC back units.

Crystal Glass and Classic Metal faceplates use the same 86 x 86 mm platform.
They pair with AC or DC thermostat back units for the Z-Wave thermostat family.

CLASSIC METAL

Fixed icon layout

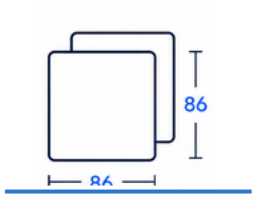
CRYSTAL GLASS

Interchangeable icon layout

Integrated
temperature sensor

External NTC 10K
or IR probe

Z-Wave 800 LR
long-range mesh control



Shared 86 x 86 mm
faceplate

CRYSTAL FACEPLATE OPTIONS

Interchangeable icons and included accessories.

The Crystal faceplate uses four fixed touch positions with replaceable icon inserts and matching diffusers.

4 ICON INSERTS

Four black icon inserts are supplied for the Crystal thermostat faceplate.

4 DIFFUSERS

Four white diffusers are supplied. Install one behind each active icon position.

Important notes

- Crystal icons are interchangeable; the four touch positions remain fixed.
- Fit one icon insert and one diffuser at each active position.
- The G / I hardware is model-specific: standard models support an external NTC 10K sensor; models ending in -IR support the external IR probe.
- Connect only the accessory supported by the purchased model. Example IR model: APX-TCA-IR.

Z-WAVE COMMISSIONING

Join, remove, reset and update.

Follow the controller workflow and keep the thermostat powered throughout network operations and OTA updates.

ADD TO Z-WAVE NETWORK

1. Connect the thermostat to the correct AC or DC supply.
2. Ensure the display and status LEDs are steady.
3. Place the Z-Wave controller in inclusion mode.
4. Touch and hold Button 4 for approximately 4 seconds until the blue LEDs blink.
5. Wait for the controller to confirm successful inclusion.

REMOVE FROM Z-WAVE NETWORK

1. Ensure the thermostat is powered.
2. Place the Z-Wave controller in exclusion mode.
3. Touch and hold Button 4 for approximately 12 seconds until the red LEDs blink, then release.
4. Wait for the controller to confirm removal.

FACTORY RESET

1. Touch and hold Button 4 for approximately 12 seconds until the red LEDs blink, then release.
2. Hold Button 4 again for approximately 12 seconds.
3. The thermostat restarts and clears its Z-Wave network data.
4. Use factory reset only when the primary controller is unavailable.

OTA FIRMWARE UPDATE

1. Start the OTA update from a compatible Z-Wave controller.
2. Keep mains or low-voltage power stable throughout the transfer and installation.
3. Do not remove the faceplate or cycle power during the update.
4. After completion, verify temperature, outputs, parameters and status reports.

COMMISSIONING BUTTON FOR THERMOSTAT

4-BUTTON THERMOSTAT

BUTTON 4

Use Button 4 for Join, Remove and both stages of Factory Reset.

After commissioning or OTA update, verify local control, fan/valve outputs, parameters and reports before handover.

FUNCTIONS AND SPECIFICATIONS

Shared intelligence. Different electrical I/O.

Z-WAVE PLATFORM

Z-Wave 800 LR thermostat platform. Configuration version 4. All ZG23 parameters are one byte.

BACK-UNIT SPECIFICATIONS

AC VERSIONS

Models	APX-TZA and APX-TZA010
Supply	110-240 VAC, 50/60 Hz
Fan outputs	Q1 LOW, Q2 MED, Q3 HIGH
Valve / control	TZA: Q4 switched valve; TZA010: 0-10 VDC, 20 mA max
Accessory	G = reference; I = 10K NTC or compatible IR input

LOW-VOLTAGE VERSION

Model	APX-TZD
Supply	12-24 VAC/DC, approximately 100 mA
Relay contacts	Four low-voltage relays; COM is the shared side
Applications	Fan-coil speeds, valve, lights or curtain loads
Accessory	G = reference; I = 10K NTC or compatible IR input

COMMON INPUT G/I is model-specific. Never connect mains to the sensor/IR input.

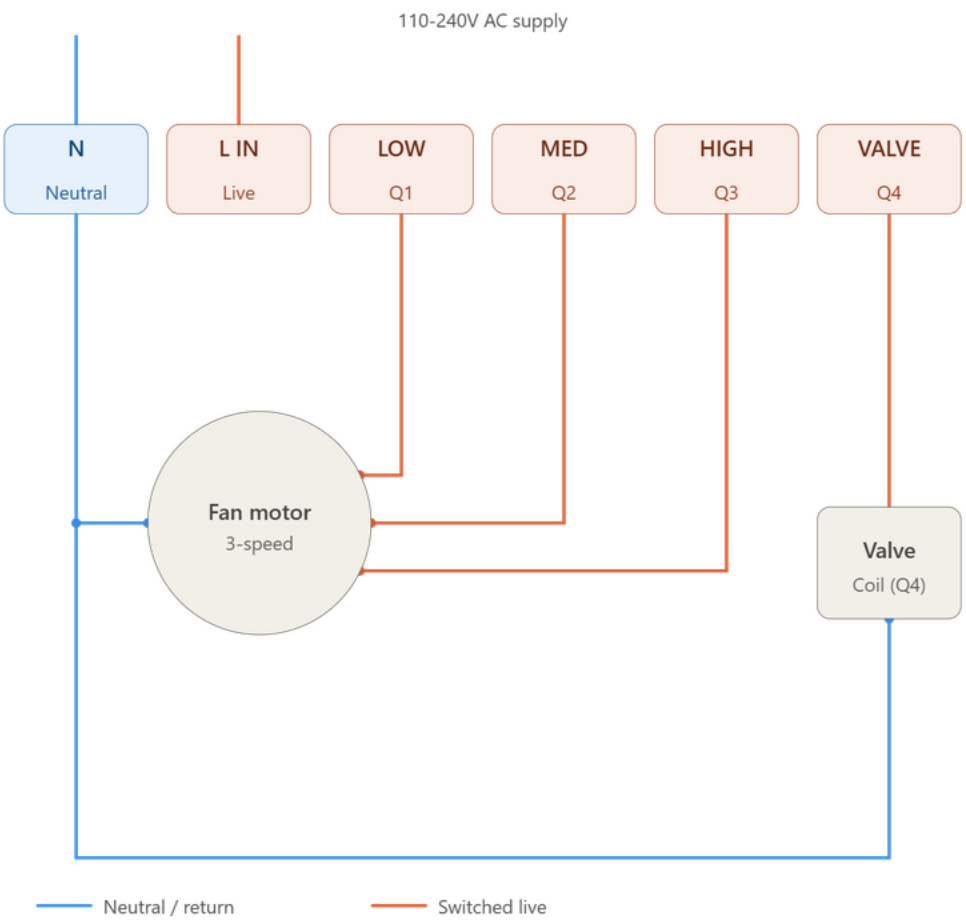
MODEL RULE

- Use APX-TZA for AC fan-coil and switched 2-wire valve control.
- Use APX-TZD for 12-24 VAC/DC relay contacts with a shared COM.
- Use APX-TZA010 when the valve/actuator requires continuous 0-10 VDC control.

WIRING SCHEMATIC

APX-TZA AC

110-240 VAC fan-coil, two-wire valve actuator and G/I input



G / I - EXTERNAL SENSOR OR IR PROBE

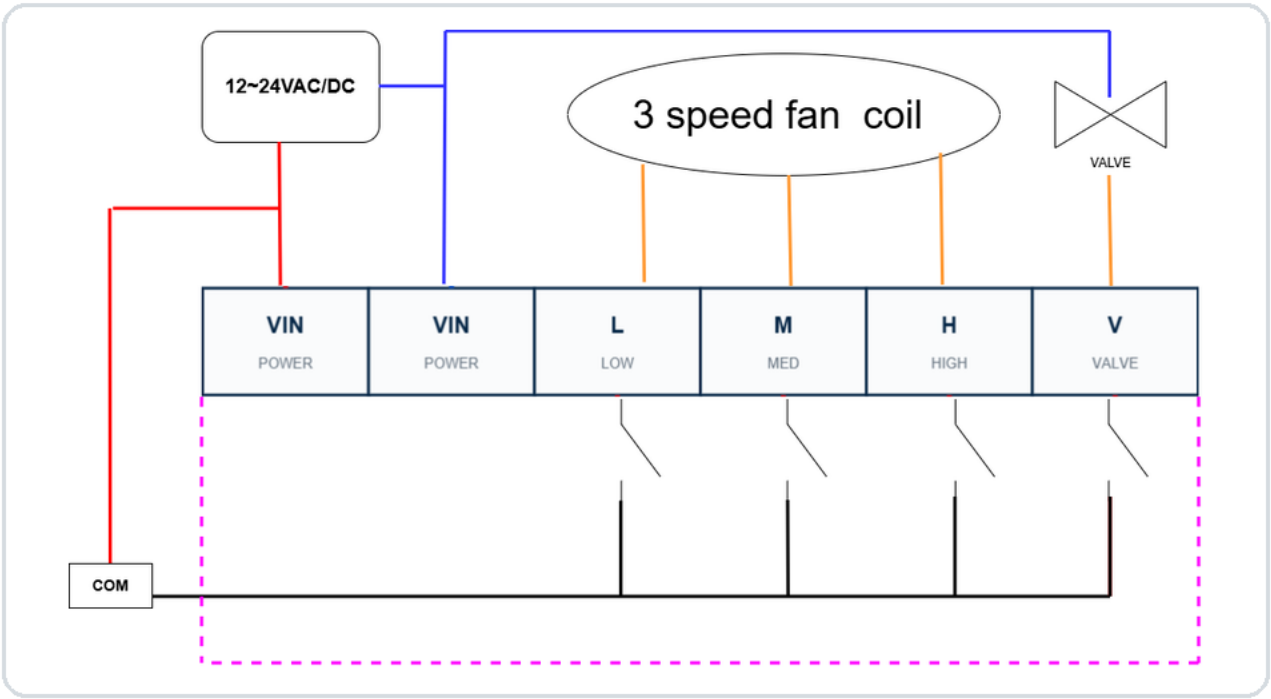
TECHNICAL NOTES

- N = neutral; L IN = live input; LOW / MED / HIGH = Q1 / Q2 / Q3 fan speeds.
- Q4 / VALVE is the switched live output to a 2-wire valve actuator; the other coil terminal returns to N.
- G/I = model-specific 10K NTC temperature sensor or compatible IR probe. Keep sensor wiring separate.

WIRING SCHEMATIC

APX-TZD low-voltage relay contacts.

12-24 VAC/DC supply. COM is the shared relay side; L/M/H/V are normally-open load outputs.



TECHNICAL NOTES

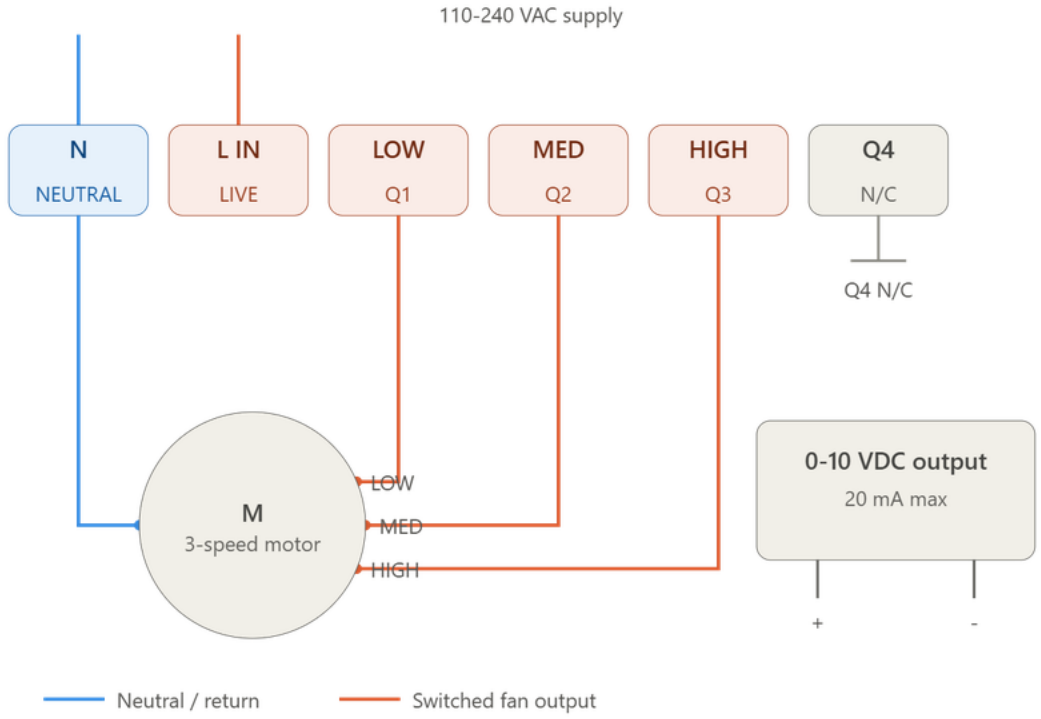
- Supply: 12-24 VAC/DC; use a correctly rated external load supply.
- A/COM feeds the common side of all four relay contacts.
- L, M and H connect to LOW, MED and HIGH fan-coil speed taps.
- V connects in series with the valve/actuator load through the NO contact.
- B/C is the common return. Do not connect mains voltage to the TZD relays.
- G/I is the model-specific 10K NTC sensor or compatible IR input.

G / I G = reference/ground. I = external 10K NTC sensor or compatible IR probe.

WIRING SCHEMATIC

APX-TZA010 AC

110-240 VAC fan-coil with separate 0-10 VDC output and G/I input



G / I - EXTERNAL SENSOR OR IR PROBE

TECHNICAL NOTES

- N = neutral; L IN = live input; LOW / MED / HIGH = Q1 / Q2 / Q3 fan speeds.
- Q4 is N/C on this model. The separate output is 0-10 VDC, maximum 20 mA, for a BMS/controller.
- G/I = model-specific 10K NTC temperature sensor or compatible IR probe. Keep sensor wiring separate.

CONFIGURATION PARAMETERS

Power state, LED colours and user feedback.

Parameters 0-11 for the verified ZG23 thermostat build. Colour values and defaults are listed below.

ZG23 BUILD PROFILE

CONFIGURATION VERSION 4

All parameters are unsigned one-byte integers.

No.	Parameter	Default	Range	Description
0	**Thermostat state after power restore**	**2**	0-2	After power restore: 0 = Off, 1 = On, 2 = restore the last state.
1	**Button 1 LED colour when off**	**6**	0-7	LED colour for Button 1 while its state is OFF.
2	**Button 2 LED colour when off**	**6**	0-7	LED colour for Button 2 while its state is OFF.
3	**Button 3 LED colour when off**	**6**	0-7	LED colour for Button 3 while its state is OFF.
4	**Button 4 LED colour when off**	**6**	0-7	LED colour for Button 4 while its state is OFF.
5	**Button 5 LED colour when off**	**6**	0-7	LED colour for Button 5 while its state is OFF.
6	**Button 1 LED colour when on**	**5**	0-7	LED colour for Button 1 while its state is ON.
7	**Button 2 LED colour when on**	**5**	0-7	LED colour for Button 2 while its state is ON.
8	**Button 3 LED colour when on**	**5**	0-7	LED colour for Button 3 while its state is ON.
9	**Button 4 LED colour when on**	**5**	0-7	LED colour for Button 4 while its state is ON.
10	**Button 5 LED colour when on**	**5**	0-7	LED colour for Button 5 while its state is ON.
11	**Standby brightness**	**33**	0-99	Backlight level in standby. Keep it below Working brightness (P12).

LED COLOUR VALUES

- **0 Off**
- **1 Red**
- **2 Green**
- **3 Yellow**
- **4 Blue**
- **5 Purple**
- **6 Cyan**
- **7 White**

CONFIGURATION PARAMETERS

Brightness, lock, HVAC logic and reporting.

Parameters 12-23 for the verified ZG23 thermostat build. Changes must remain within the published ranges.

ZG23 BUILD PROFILE

CONFIGURATION VERSION 4

All parameters are unsigned one-byte integers.

No.	Parameter	Default	Range	Description
12	**Working brightness**	**100**	1-100	Backlight level while active. Keep it above Standby brightness (P11).
13	**Buzzer sound level**	**5**	0-10	Touch feedback level: 0 = off, 10 = maximum.
14	**Lock all touch buttons**	**0**	0-1	0 = Unlocked, 1 = Locked. Locks normal touch interaction.
15	**Temperature compensation**	**0**	-7 to +7	Calibration offset in 0.5 C steps: -7 = -3.5 C, 0 = no correction, +7 = +3.5 C.
16	**Standby temperature display**	**1**	0-1	0 = Hide the temperature in standby, 1 = Show it.
17	**Lock display buttons**	**0**	0-1	0 = Disabled, 1 = Locked. Locks display-related touch buttons.
18	**Valve mode**	**3**	0-3	0 = Disabled, 1 = Heat only, 2 = Cool only, 3 = Heat and cool.
19	**Auto fan low mode**	**0**	0-1	0 = Off, 1 = keep the fan at low speed after demand.
20	**Valve state when fan stays low**	**0**	0-1	0 = Close valve, 1 = keep the valve open.
21	**Delta-T threshold**	**20**	5/10/15/20/25/30	Demand threshold: 0.5 to 3.0 C in 0.5 C steps. Default 20 = 2.0 C.
22	**Report status**	**1**	0-1	0 = Do not send normal reports, 1 = Send normal reports.
23	**Temperature sensor source**	**0**	0-1	0 = internal sensor on PA0, 1 = external sensor on PD3.

ENGINEERING NOTES

- P11 and P12 are interdependent: standby brightness must remain lower than working brightness.
- P18-P21 work as one HVAC behavior group; validate valve mode, fan fallback and Delta-T together.
- P23 changes the active sensor path; install the selected external sensor before selecting value 1.