

Overview

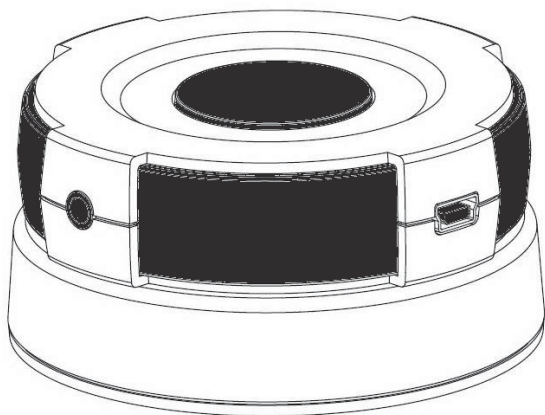
The ZXT-120 is a Z-Wave to IR Extender for split type of air conditioner (Figure 1). It works with any Z-Wave compliant gateway or portable controller which supports the below Command Classes:

- Configuration Command Class
- Multilevel Sensor Command Class
- Sensor Configuration Command Class
- Thermostat Command Class
 - Thermostat Mode Command Class
 - Thermostat Fan Mode Command Class
 - Thermostat Set-point Command Class

ZXT-120 is a battery powered device with battery life up to 18 months. It is convenient for end user to place at anywhere around the air conditioner, because there are 5 LED IR blasters built-in towards 5 directions.

Alternative power source is USB adaptor.

Figure 1



ZXT-120 is with built-in code library for most popular A/C brands in the market. End user can select a particular code number in the code list (refer to A/C code list) along with the ZXT-120 through Z-wave standard Configuration Command Class by gateway or controller. Gateway or controller does not need to know any knowledge regarding the IR control code, it only send Thermostat Commands such as “temperature set”, “Fan mode” to ZXT-120, ZXT-120 receives the Thermostat commands and convert it to the pre-selected IR control code format, for example: “temperature 18 C^o, cool, fan high” and send to the air conditioner.

However, the pre-built-in code library cannot 100% satisfy various user from various region due to some unknown brands existing in the market. So the Configuration Learning feature is created as a backup solution when user cannot find any correct code from the built-in code library.

Configuration Learning Implementation

Below is the introduction about how to conduct the learning through Configuration parameters:

Air conditioner codes is different from A/V codes, A/V code is simple, A/C code is combinations with temperature, mode, fan status, and others, please see below comparison:

Audio/Video code	Air Conditioner Code
Channel up	Cool, 23 C, fan auto, fan swing, etc.

So learning A/C codes is actually learning the various of combinations.

ZXT-120 is with external IC for the storage of 20 sets of learnt codes (1-20).

Learnt codes will be stored in the ZXT-120. Gateway will use Configuration (34) to trigger each learnt set of codes (1-20)

Below is the parameter table regarding learning function:

Parameter Number	Definitions	Value	Parameter size
25 (0x19)	Indicate a location for IR code learning and start learning	1 – 20	1 byte dec
26 (0x1A)	Learning status register Note: 1) The status value 1, 3, 4 will be reset to 0 when the ZXT-120 receive a get command to this parameter	0x00: Idle - this IR channel is idle 0x01: OK - the latest learning process completed correctly 0x02: Learning - the ZXT-120 is busy processing previous learning request. 0x03: Full – all locations are fully occupied. 0x04: Failed - the latest learning request failed.	1 byte dec
34 (0x22)	Indicate a location for transmitting a learnt IR code	1 – 20	1 byte dec

Scene Learning:

Basically, end user is able to operate it referring to the above parameter table using the Configuration function on the gateway, below is an example for leaning a combination (scene) of: “cool, temperature 21 C, fan high, swing”:

- 1, Use the original A/C remote to set the A/C status to one step ahead or one step behind your desired status, for example: your desired condition is: “cool, temperature 21C, fan high, swing”, it is better to set the temperature to cool, **20 C (or 22 C)**. Fan high, swing", doing so is to prepare for pressing one button to proceed the learning action when the ZXT-120 is set to leaning condition"
- 2, Make sure ZXT-120 is included to gateway, go to Configuration Set, put parameter: 25(parameter number for learning), 1 Byte Dec (parameter size), 3 (parameter value) (it is the location for the learnt codes in ZXT-120).
- 3, save the above parameters, gateway will send the set parameters to the ZXT-120,
- 4, ZXT-120 LED light will flash once after the configurations are received.
- 5, Point the A/C original remote to ZXT-120 and press temperature **up** if your previous set is “cool, **20 C**, fan high, swing”, press temperature **down** if your previous set is “ cool, **22 C**, Fan high, swing”
- 6, ZXT-120 LED will flash once if it is successful, flash 6 times if failed. (if failed, please repeat the above steps).

Remark: when setting the desired status, besides using temperature, it is also ok to use mode, fan, just to make sure that one more press it will turn to your desired condition.

ON/OFF KEY Learning

To learn ON code: user should make sure the A/C is at off condition, then press the ON/OFF key once for learning ON code;

Remark: it will be the last status before you turn off the A/C, user can set it to the desired value every time when they turn on the A/C, for example: “cool, 23 C, fan auto, swing”. Every time when user turn on the A/C using the learnt code, it will be the same value as user has learnt.

To learn OFF code, user has to turn on the A/C, then press once ON/OFF key for learning the OFF code.

User may need to record each set of codes status, such as:

1	ON (cool, 22 C, fan auto, swing, etc.)
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2	OFF
3	Cool, 21 C, fan auto, fan swing, etc.
4	Cool, 24 C, fan auto, fan swing, etc.
5	Cool, 20 C, fan on, fan swing off, etc
6	Heat, 28 C, fan on, fan swing, etc.

Operation:

The learnt codes cannot be sent through Thermostat CC due to the complexity from the air conditioner side cannot be matched with the separate commands from Thermostat CC. user can send the learnt codes by configuration, for example:

- 1, go to configuration page.
- 2, input parameter “34 (parameter number), 1 byte dec (parameter size), 1 (according to above table, it is ON).
- 3, save the data on gateway, gateway will send the parameters to ZXT-120, ZXT-120 will send the saved corresponding data to A/C

Remark: Please make sure the A/C is on before sending other scene to the A/C.

Gateway’s role to make it more user-friendly

To make it more user friendly, it is necessary from the gateway side to create a UI for end user to trigger the learning, record the learnt code status, and send the learnt command more user friendly so that they do not need to look up the parameters values, and write down the learnt information.

Others

Below are other parameters for ZXT-120 besides leaning:

27 (0x1B)	IR code number for built-in code library	Refer “Code list” for details	2 bytes dec
28 (0x1C)	External IR Emitter power level	0x00: normal power mode 0xFF: high power mode (default)	1 byte dec
32 (0x20)	Surround IR control - to avoid the IR interference by disabling the surrounding IR emitter if 2 air-conditioners in a room are in use - extend the battery life by disabling the Surround IR Emitters	0x00: disable Surround IR Emitters 0xFF: enable Surround IR Emitters (default)	1 byte dec