

Application Note 1025: No Simultaneous Heating and Cooling with MXZ

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Introduction

Multi-zone (MXZ) heat pump systems can connect two or more indoor units with one outdoor unit. Be advised that multi-zone systems with model numbers that begin with MXZ **do not** support simultaneous heating and cooling. All indoor units on these type models must all be in the same mode at the same time: either cooling or heating. The entire system will have a mode; individual indoor units set to the opposite mode will be in standby.

System Mode

The mode of all of the indoor units is determined by the mode of the outdoor unit. The mode of the outdoor unit is determined by the indoor unit that was operating first. Indoor units set to the mode opposite of the outdoor unit cannot operate, and the operation indicator lamp flashes to indicate standby.

Example 1

Consider an MXZ system with two indoor units, IDU-1 and IDU-2, both of which are initially set to cooling mode. IDU-1 is switched to heating mode. The outdoor unit will continue to operate in cooling mode until the IDU-2 operation is stopped. IDU-2 will still receive cooling to the space, but the IDU-1 will not receive heating to the space. Instead, the remote controller for IDU-1 will indicate standby mode, or indicator light on the unit will flash, depending on the model. When IDU-2 is switched to heating mode, the outdoor unit will switch to heat mode, and both indoor units will receive heating to the space.

Example 2

Consider an MXZ system with five indoor units, IDU-1, 2, 3, 4, and 5, which are initially in heating mode. IDU-1, 2, and 3 are switched to cooling mode. The outdoor unit will continue to stay in heating mode, and IDU-1, 2, and 3 will be in standby. The IDU-1, 2, and 3 will not receive cooling until IDU-4 and 5 are switched to cooling mode.

IDU-4 is then switched to cooling mode. The outdoor unit will continue to be in heating mode because that was the last mode in which all indoor units were in the same mode.

When IDU-5 is switched to cooling mode, the outdoor unit will finally switch to cool mode, and all five indoor units will receive cooling to the space.

Forcing System Changeover

A forced changeover can be achieved by changing all indoor units to the desired mode.

Auto-Mode

Indoor units connected to an MXZ system have three mode options: cool, heat, and auto. It is recommended that only heat mode and cool mode be used, and not auto mode. Auto mode is

designed for indoor units on one-to-one systems or a VRF simultaneous cooling and heating systems. Because all of the indoor units on multi-zone MXZ systems must be in the same mode, having auto mode enabled on the connected indoor units does not guarantee that the system will switch modes when an indoor unit switches modes. Therefore, auto mode does not work as users expect on a multi-zone system, and is not recommended.

Simultaneous Heating and Cooling

For applications that require simultaneous heating and cooling, Mitsubishi Electric Trane HVAC US offers two options:

1. For smaller applications, multiple one-to-one single-zone systems.
2. For larger applications, CITY MULTI R2-Series systems. R2-Series systems provide simultaneous heating and cooling for up to 50 indoor units connected to one outdoor unit.