



SERVICE AND APPLICATION NOTES

Low Demand in Cooling Mode

Issue: There is new information regarding operation of Lennox VRF units when the cooling demand is very low.

Previous information indicated that the even the smallest of cooling demands would engage the external unit and provide full cooling to this one area. For example, based on previous information, a 7,000 BTU/h indoor unit calling for cooling would engage the connected triple-module 30-ton condenser to provide cooling to this unit

Solution: Following extensive testing and subsequent discussions with the product design team, the previous information has been deemed incorrect. The minimum indoor unit demand to guarantee cooling performance is 20% of the capacity of the largest module on that system. The percentage is based on the nominal capacity of the indoor unit, not the demand it is calling for.

	Outdoor Unit	Minimum Demand
Example 1	VRA120H4M Capacity: 120,000 BTU/h	One VWMA024 calling for any amount of cooling
Example 2	VRA289H4M Modules: 10 Ton, 8 Ton, 6 Ton	One VWMA024 calling for any amount of cooling
Example 3	VRA289H4M Modules: 10 Ton, 8 Ton, 6 Ton	Two V22A012 calling for any amount of cooling

If the sum of the indoor unit nominal capacities calling for cooling is less than 20% of the largest module the condensing unit will start, but the cooling performance of the indoor unit will be reduced to a level which may not meet the customer's expectations in all cases. The reduction in performance is dependent on several factors are in place to ensure that the compressor's reliability is not compromised.

Moving forward, VRF designs should take this information into consideration. In addition, customers should be educated on the expectations of system performance particularly under low demand.