

APPLICATION NOTES



Application Note 1021:

M&P Series High Altitude Applications

When air conditioners and heat pumps are installed in areas above sea level, capacity is reduced due to decreased air density. Equipment size must be increased to meet the load requirements. The following correction factors apply to CITY MULTI and Mr. Slim air conditioners and heat pumps for both heating and cooling operation. The indoor and outdoor units need to be sized based on the capacity reduction due to the decreased air density.

Examples:

Air-Source System

An air-source system installed at 5,000 feet above sea level would operate at 83% its normal capacity when compared to its performance at sea level. Therefore, the indoor unit(s) and outdoor unit(s) need to have at least 17% higher capacity to provide the same cooling and heating performance as the units would at sea level conditions.

Water-Source System

With a water-source system installed at 5,000 feet above sea level, the indoor units would operate at 83% their normal capacity when compared to their performance at sea level. Therefore, the indoor unit(s) would need to have at least 17% higher capacity to provide the same cooling and heating performance as the units would at sea level conditions. The water-source units can be sized based on their standard capacity at sea level. However, depending on the indoor units selected, the size of the outdoor unit may have to be increased to meet the maximum connected capacity requirement. The maximum connected capacity for PQHY Series is 130%; the maximum connected capacity for PQRV Series is 150%. Table 1 lists the capacity correction factors.

Table 1. Capacity Correction Factors

Altitude Feet Above Sea Level	Air-Source Systems		Water Source Systems	
	Indoor Unit	Outdoor Unit	Indoor Unit	Water-Source Unit
0	1.00	1.00	1.00	1.00
1000	0.96	0.96	0.96	1.00
2000	0.93	0.93	0.93	1.00
3000	0.90	0.90	0.90	1.00
4000	0.86	0.86	0.86	1.00
5000	0.83	0.83	0.83	1.00
6000	0.80	0.80	0.80	1.00
7000	0.77	0.77	0.77	1.00
8000	0.74	0.74	0.74	1.00
9000	0.71	0.71	0.71	1.00
10000	0.69	0.69	0.69	1.00

Adjusting equipment size for high-altitude applications is not supported by Design Tool software, so correction factors must be performed manually. No other adjustments are necessary in the system design and application.