

APPLICATION NOTES



Application Note 2018: Low Ambient Kit Application Guide

INTRODUCTION

The Mitsubishi Electric CITY MULTI © low ambient kit is designed to be used with the PUHY and PURY T/Y(S)KMU series outdoor units. The kit allows the PURY and PUHY outdoor units to provide 100% cooling capacity down to -10°F outdoor temperature.

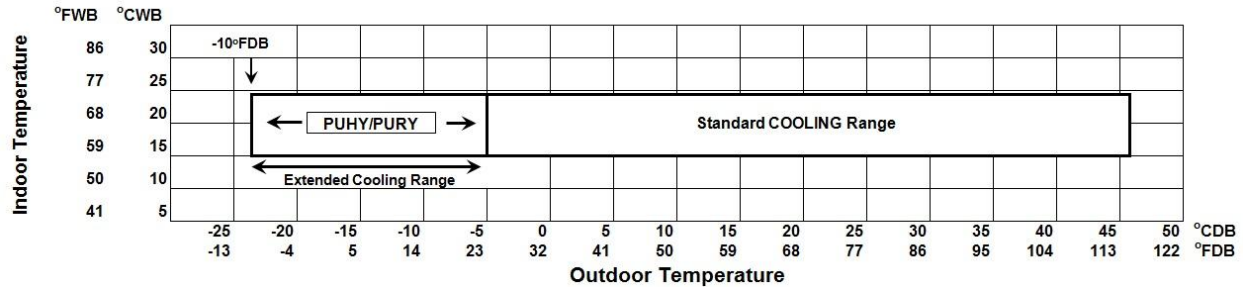


Figure 1. Extended Cooling Range with Low Ambient Kit

The low ambient kit is only active when the outdoor unit is in cooling mode. On R2 (PURY) systems when the outdoor unit is in heating mode, the kit is inactive. Indoor units requiring cooling when the kit is inactive will only cool properly above 23 °F outdoor ambient.

The complete kit consists of the following components (Table 1) used in combination. The components and numbers are determined by the outdoor unit model. All components as specified must be used to achieve the low temperature rating shown.

Table 1. Low Ambient Kit components and descriptions

Part Number	Description
LAHK-1	Low Ambient Hood Assembly (master) with damper control box For single fan modules (P72 and P96) Also combined with LAHK-2 for larger (P120 and P144 modules)
LAHK-2	Low Ambient Hood Assembly (slave) Combined with the LAHK-1 for double fan (P120 and P144) modules
SWDK-1	Side Wind Deflector, includes 2 pieces (fits all modules)
RWDK-1	Rear Wind Deflector (1 required for "S" module, 2 required for the "XL" module)
RWDK-2	Rear Wind Deflector (1 fits L module)

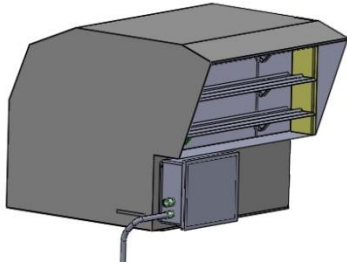


Figure 2. LAHK-1

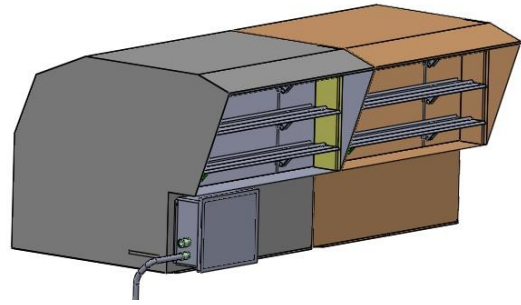


Figure 3. LAHK-1 with LAHK-2 Connected

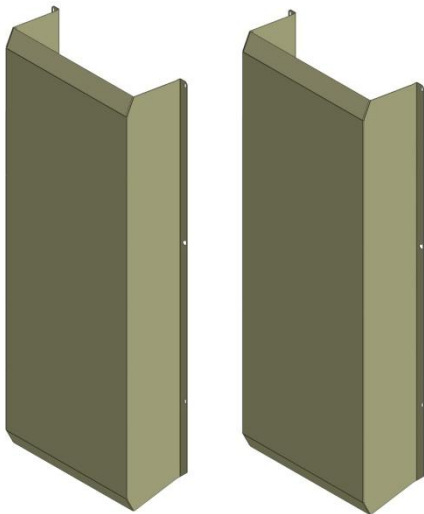


Figure 4. SWDK-1 (2 pieces)

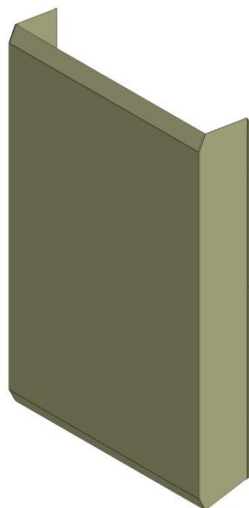


Figure 5. RWDK-1

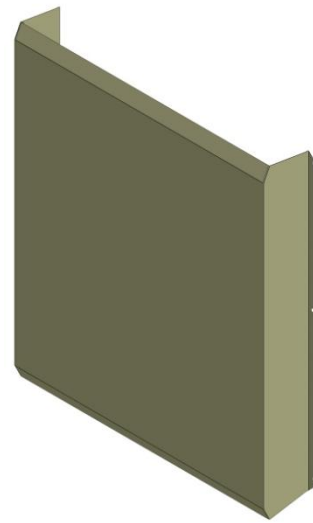


Figure 6. RWDK-2

COMPONENTS REQUIRED PER OUTDOOR UNIT

Component selections for models using multiple modules are based on the modules being placed 1 3/16" apart. If modules are placed further than 15" apart, additional SWDK-1 wind deflectors may be required. Also, if multiple models are placed next to each other (1-3/16" apart), fewer SWDK-1 wind deflectors may be needed.

PURY-P-T/Y(S)KMU Series

Unit model	Module Size			Component Quantity				
	S	L	XL	LAHK-1	LAHK-2	SWDK-1	RWDK-1	RWDK-2
PURY-P72(T,Y)KMU-A	1			1		1		1
PURY-P96(T,Y)KMU-A		1		1		1		1
PURY-P120(T,Y)KMU-A			1	1		1	2	
PURY-P144(T,Y)KMU-A			1	1	1	1	2	
PURY-P144YSKMU-A		2		2		1		2
PURY-P168(T,Y)SKMU-A		2		2		1		2
PURY-P192(T,Y)SKMU-A		2		2		1		2
PURY-P216(T,Y)SKMU-A		1	1	2	1	1	2	1
PURY-P240(T,Y)SKMU-A			2	2	2	1	4	
PURY-P264(T,Y)SKMU-A			2	2	2	1	4	
PURY-P288(T,Y)SKMU-A			2	2	2	1	4	

PUHY-P-T/Y(S)KMU Series

Unit model	Module Size			Component Quantity				
	S	L	XL	LAHK-1	LAHK-2	SWDK-1	RWDK-1	RWDK-2
PUHY-P72(T,Y)KMU-A	1			1		1	1	
PUHY-P96(T,Y)KMU-A		1		1		1		1
PUHY-P120(T,Y)KMU-A			1	1	1	1	2	
PUHY-P144(T,Y)KMU-A			1	1	1	1	2	
PUHY-P144YSKMU-A		2		2		1	2	
PUHY-P168(T,Y)SKMU-A	1	1		2		1	1	1
PUHY-P192(T,Y)SKMU-A	1		1	2	1	1	3	
PUHY-P216(T,Y)SKMU-A		1	1	2	1	1	2	1
PUHY-P240(T,Y)SKMU-A			2	2	2	1	4	
PUHY-P264(T,Y)SKMU-A		2	1	3	1	1	4	
PUHY-P288(T,Y)SKMU-A	1	1	1	3	1	1	3	1
PUHY-P312(T,Y)SKMU-A	1		2	3	2	1	5	
PUHY-P336(T,Y)SKMU-A		1	2	3	2	1	4	1
PUHY-P360(T,Y)SKMU-A			3	3	3	1	6	1

Figure 7. Required Components per Outdoor Unit

UNIT PLACEMENT AND CLEARANCES

Outdoor units should be located in an area protected from prevailing winds. (Shown below) In high wind locations it may be advisable to locate the units within a walled area.

Hood discharge should be directed away from or perpendicular to the prevailing winds. **Never toward.** When using the low ambient components, add an additional 7" to the standard mounting clearances.

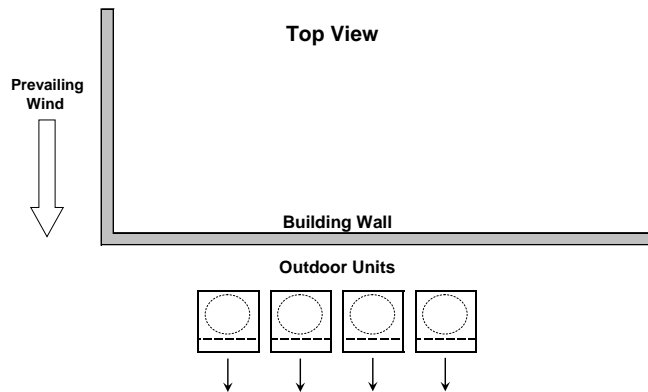


Figure 8. Outdoor Unit Placement and Prevailing Wind

If the units are surrounded by an enclosure, the discharge of the hood must direct the air out and over the enclosure walls to prevent air recirculation.

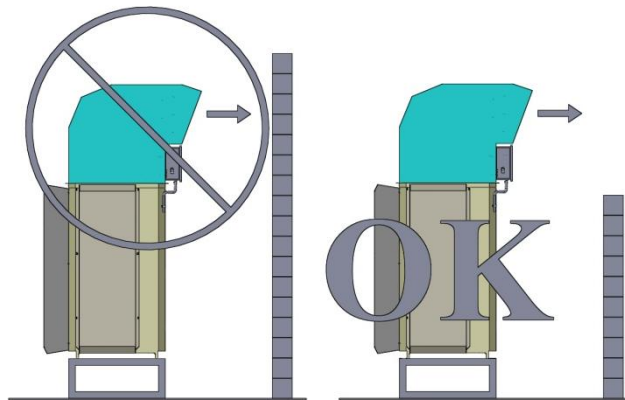


Figure 9. Hood Discharge must direct air over an enclosure

If the unit is located in an area with continuous high winds, the unit may require additional bracing.

When modules are combined they should be placed the minimum 1-3/16" apart. By doing so only one set of side wind deflectors (SWDK-1) are required per group of modules.

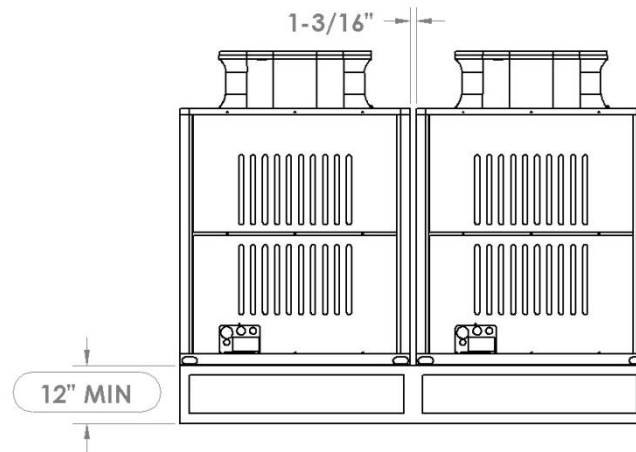


Figure 10. Mounting Height for Twinned Modules

The equipment supports must elevate the unit at least 12" above the maximum expected snow depth or 12" above the ground, whichever is higher. The equipment supports must be an open construction to minimize snow drifting and/or ice formation during defrost.

The equipment support must be firmly attached to the ground or structure. The outdoor unit must be properly attached to this equipment support with 3/8" stainless steel or equal strength to at least a grade 5 bolt.

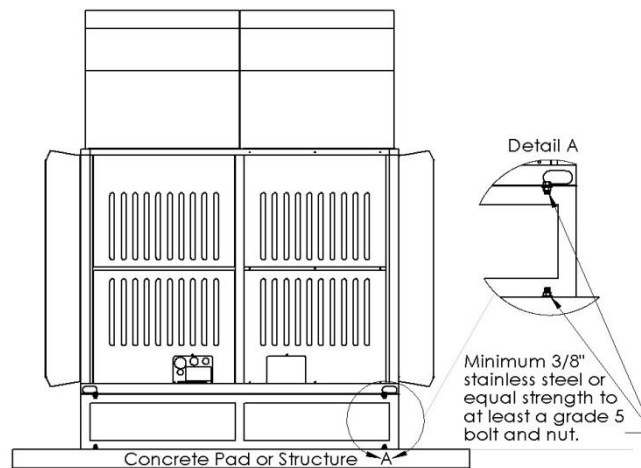


Figure 11. Equipment Support Attachment

ADDITIONAL ROOFTOP MOUNTING GUIDELINES

The preferred mounting location for the outdoor units with a low ambient kit is on the ground. However, if this is not possible, follow all additional installation guidelines when rooftop mounting. Note that the low ambient hood(s) increase the overall height of the units and therefore make them more susceptible to wind stresses.

Outdoor units should be located in an area protected from prevailing winds. Hood discharge should be directed away from or perpendicular to the prevailing winds. **Never toward prevailing winds.** When using the low ambient components, add an additional 7" to the standard mounting clearances.

For all roof top installations, safety straps must be attached between the hood(s) and the equipment support structure. Straps should be a minimum 3/16" vinyl coated cable.

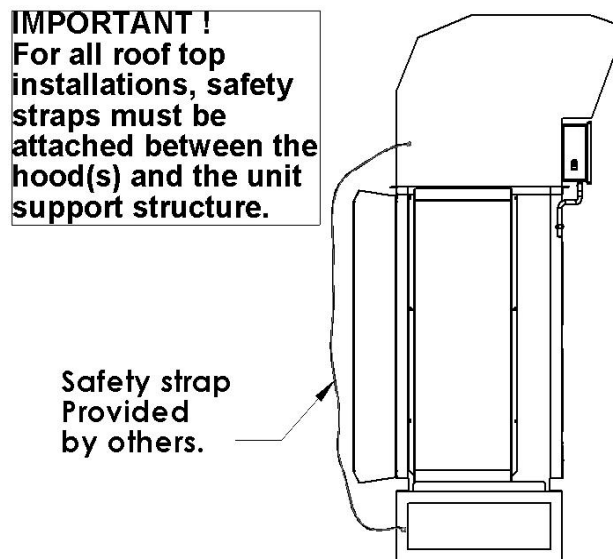


Figure 12. Safety strap for rooftop mounting

Straps must be attached to the hood where they will not interfere with the movement of the dampers. Attachment to both the hood and mounting structure is to be with a bolt through connection using a bolt 1/4" or larger in diameter.

The outdoor unit and equipment support should be firmly attached to the structure. If the equipment support is the type that does not attach to the structure, refer to the equipment support manufacturer's guidelines for proper size and construction.

Depending on location, exposure and other factors influencing the wind, additional support may be required such as shown below.

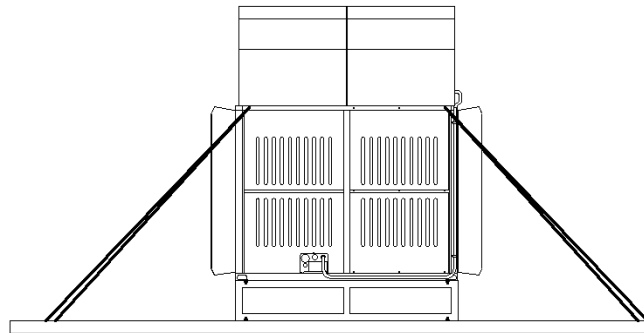


Figure 13. Additional support for high-wind conditions

For additional information, see the following Application Notes:

- Application Note 2011 - Proper System Design for Low Ambient Cooling
- Application Note 2013 - CITY MULTI in Server Rooms