Installation Manual

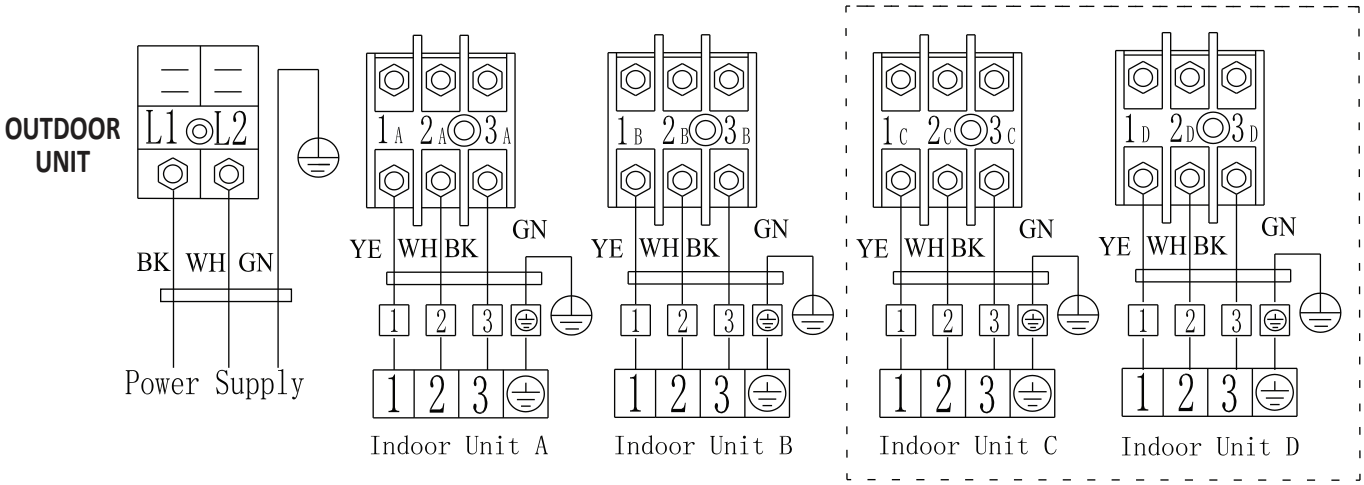
Free Match split air conditioner outdoor unit

TUM-18HA2/I2I22-21ES
TUM-27HA2/I2I21-21ES
TUM-36HA2/I2I21-21ES

Signal Cable Wiring Diagram(s) for Multi-Circuit Condenser Units

Note Prior to Installation:

The connection cables must be plugged to the corresponding terminals as shown below. Terminal A on the outdoor unit must be connected with Terminal A on the indoor unit, B to B, and so on.



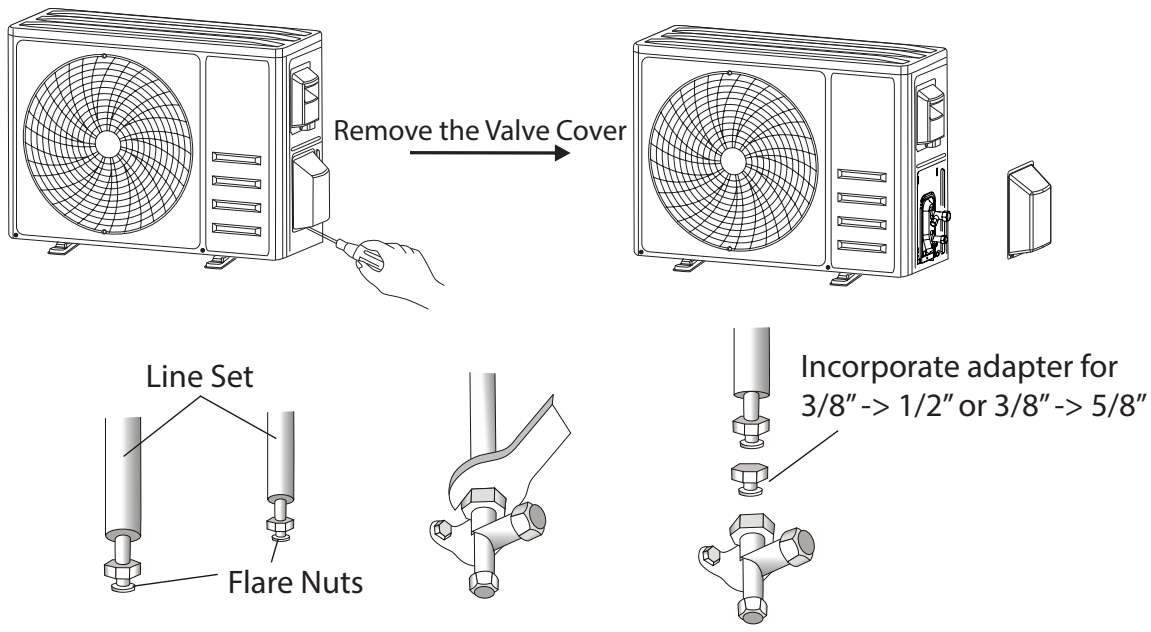
⚠ CAUTION

CROSS-WIRING IS A VERY EASY MISTAKE TO MAKE. ALWAYS DOUBLE CHECK THAT THE LINE GOING FROM A GIVEN TERMINAL BLOCK IS CORRESPONDING TO THE CORRECT ONE INDOOR.

Connecting Refrigerant Piping for Multi-Circuit Condenser Units

Note Prior to Installation:

The process for connecting the copper refrigerant lines for indoor and outdoor are given in the full installation manual. Repeat the process for connection and leak-checking according to the amount of zones to be installed. All pipe sets use a 1/4" diameter size for the liquid (smaller) side, but the gas (bigger) line may require the usage of adapters to convert the 3/8" size to 1/2" or 5/8". Use the included adapters according to the zone combination to be installed, and refer to the installation manual for proper torquing values.



Regarding the Scope of this Technical Document

Note Prior to Installation:

This manual is intended to supplement the default User and Installation Manual that is found packaged together with the indoor air handler, when used for installation of a Multi-Zone system. The process to install a multi-split system is nearly identical to single-split, with the addition of some repeated steps, and using the additional details found herein.

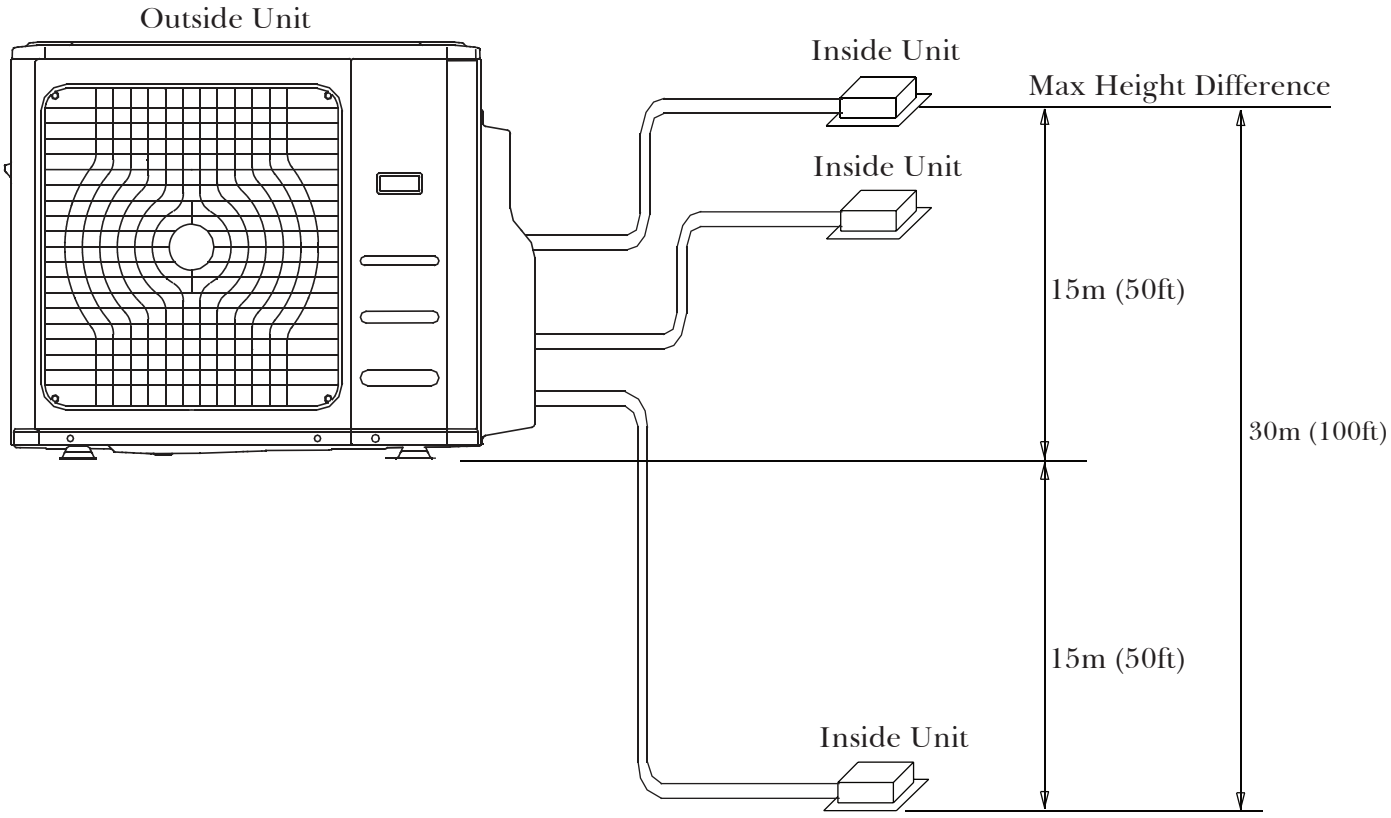
Allowable Zone Combinations for Multi-Circuit Condenser Units

Outdoor Unit Model Number	TUM-18HA2/I2I22-21ES	TUM-27HA2/I2I21-21ES	TUM-36HA2/I2I21-21ES
Number of Available Zones	**Two (2)**	**Three (3)**	**Four (4)**
Two Zones Utilized (Allowable Combinations in BTU)	9000 + 9000 9000 + 12000 12000 + 12000	9000 + 9000 9000 + 12000 9000 + 18000 12000 + 12000 12000 + 18000 18000 + 18000	9000 + 9000 9000 + 12000 9000 + 18000 9000 + 24000 12000 + 12000 12000 + 18000 12000 + 24000 18000 + 18000 18000 + 24000 24000 + 24000
Three Zones Utilized (Allowable Combinations in BTU)		9000 + 9000 + 9000 9000 + 9000 + 12000 9000 + 9000 + 18000 9000 + 12000 + 12000 9000 + 12000 + 18000 12000 + 12000 + 12000	9000 + 9000 + 9000 9000 + 9000 + 12000 9000 + 9000 + 18000 9000 + 9000 + 24000 9000 + 12000 + 12000 9000 + 12000 + 18000 9000 + 12000 + 24000 9000 + 18000 + 18000 9000 + 12000 + 12000 12000 + 12000 + 18000 12000 + 12000 + 24000 12000 + 18000 + 18000
Four Zones Utilized (Allowable Combinations in BTU)			9000 + 9000 + 9000 + 9000 9000 + 9000 + 9000 + 12000 9000 + 9000 + 9000 + 18000 9000 + 9000 + 9000 + 24000 9000 + 9000 + 12000 + 12000 9000 + 9000 + 12000 + 18000 9000 + 12000 + 12000 + 12000 12000 + 12000 + 12000 + 12000

- Different models of all available matching indoor units can be combined together in any order to create a multi zone split system, up to a quantity of the number of available circuits.
- Not all available circuits need to be utilized with an attached indoor unit. 66% or higher of the total capacity utilization is recommended.
- Every indoor unit attached to a multi zone system will operate at a random, self-regulated capacity, based on the actual demand it measures from the zone it is serving (Between 30% to 100% of its rated capacity) or turn OFF as needed.
- Outdoor units will also self-regulate their total output capacity, based on the total demand it reads from all of the simultaneously running indoor units at any given moment, up to its maximum rating capacity.
- With multi-split systems, the total demand from the outdoor unit, will seldomly exceed 75% of the total available capacity of the combined indoor unit group due to load fluctuations of each indoor unit. Therefore, total attached indoor unit capacity can be selected up to 133% of the supporting outdoor unit's rated capacity.
- Although very seldom, if the total demand from the combined group of indoor units exceeds the rated capacity of the outdoor unit, the capacity of each indoor unit will be attenuated accordingly.
- For high demand applications, max loading limits may need to be reduced up to 20% to avoid underperformance risks during some extreme conditions.
- The BTU order of attached indoor units has no effect on performance.

Allowable Connected Piping Length and Elevation Differences

Note Prior to Installation:
When installing multiple indoor units to work with a single outdoor unit, ensure that the length of the refrigerant pipe and the drop height between the indoor and outdoor units meet the requirements illustrated in the following diagram:



Unit: m/ft.

Unit Type	2 Zone	3 Zone	4 Zone
Max. length for all rooms	30/100	50/165	60/200
Max. length for one indoor unit	20/65	25/80	25/80
Max. height difference between indoor/outdoor unit	15/50	15/50	15/50
Max. height difference between indoor units	30/100	30/100	30/100

Rebalancing Refrigerant Levels Based on Combined Piping Length

For installations with connected lengths beyond standard, charge additional R410a based on the below:

Unit Type	Pre-Charged For:	Amount of Refrigerant to Add:	
2-Zone	15/50 (Total Attached)	20g x (L1+L2-15M)	0.16oz x (L1+L2-50ft)
3-Zone	23/75 (Total Attached)	20g x (L1+L2+L3-23M)	0.16oz x (L1+L2+L3-75ft)
4-Zone*	30/100 (Total Attached)	20g x (L1+L2+L3+L4-30M)	0.16oz x (L1+L2+L3+L4-100ft)

Unit: m/ft. ***For any 24K BTU air handlers attached, let L for that length equal 2L.***