



Pocket Quick Reference Guide

On the new
TOSHIBA 2 pipe
Single Vertical fan
Mini VRF system.

Cool Designs Ltd

Raising the Standards in Air Conditioning Distribution

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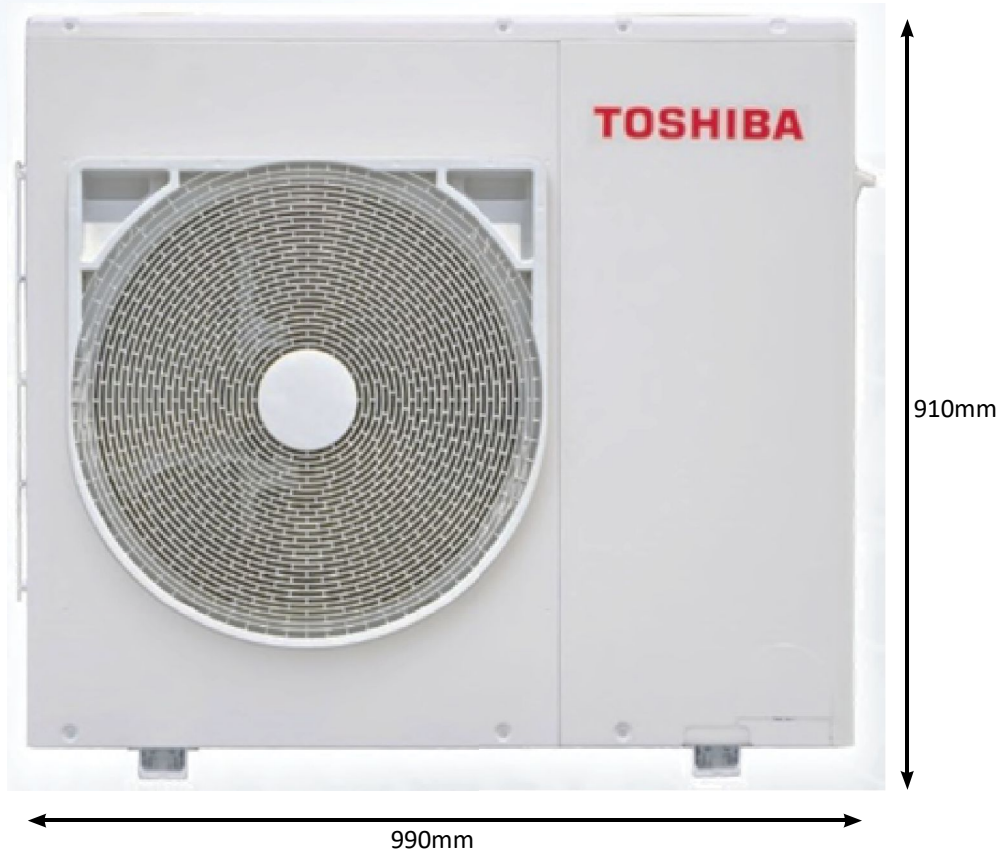
January 2018, **TOSHIBA** have introduced a new 2 pipe Single Vertical Fan Mini VRF system.

There are two models available;

4HP (12.1kW Cool and 14kW Heat) - MCY-MHP0406HT-E.

5HP (12.5kW Cool and 16kW Heat) - MCY-MHP0506HT-E.

390mm Depth
100kg Weight



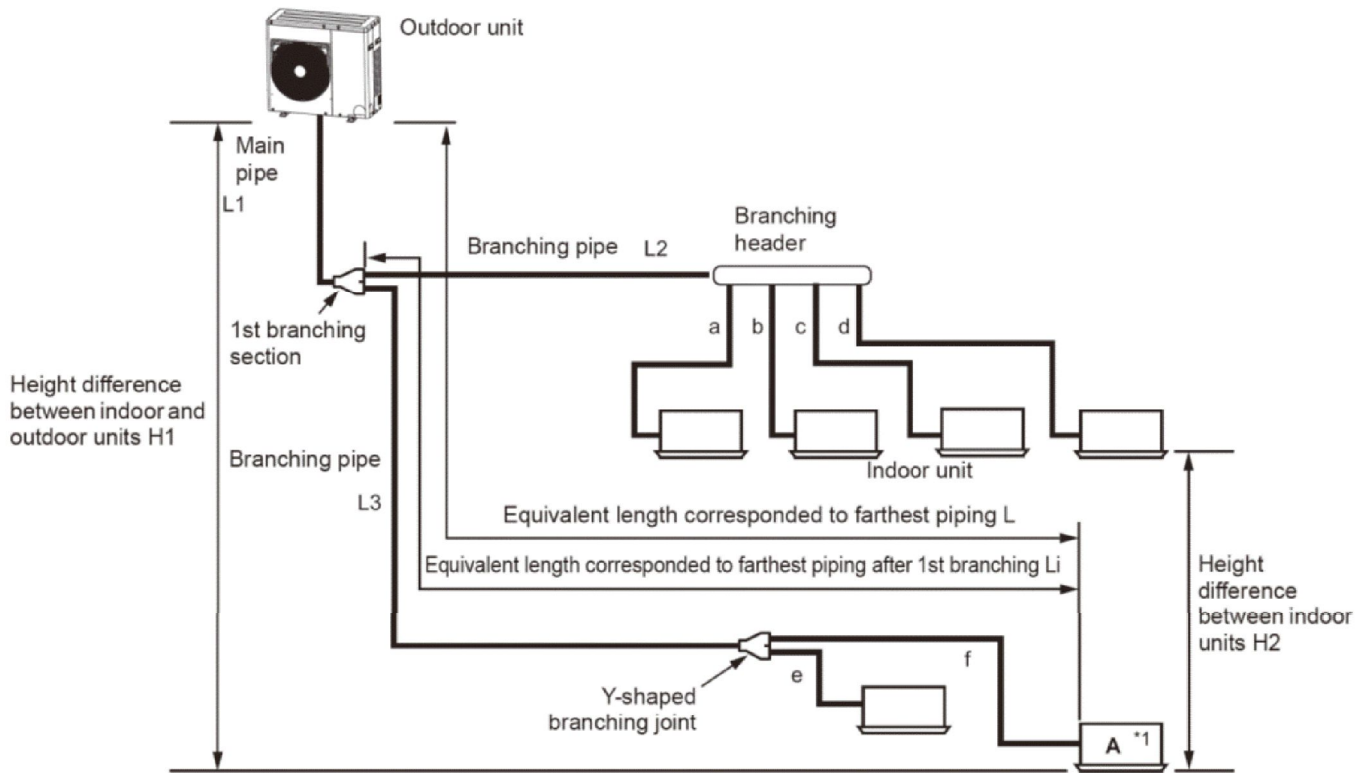
The new unit will allow for a greater number of indoor units connecting, 8 on the 4hp and 10 on the 5hp, 0.6HP indoor units are also available on the new units.

Being a single vertical fan unit it is smaller and lighter than previous versions, with a reduction in refrigerant charge, thus reducing the impact on global warming.





The new unit allows for a refrigerant pipe run of up to 90 metres,
With a height difference between indoor and outdoor units of 15 metres and between
indoor units of 10 metres.



		Allowable value	Pipes
Piping Length	Total extension of pipe (liquid pipe, real length)	90 m	$L1 + L2 + L3 + a + b + c + d + e + f$
	Furthest piping length L (*1)	Real length	50 m
		Equivalent length	60 m
	Max. equivalent length of main pipe	30 m	L1
	Max. real length of furthest piping from 1st branching Li (*1)	20 m	$L3 + f$
	Max. real length of indoor unit connecting pipe	10 m	a, b, c, d, e, f
Height Difference	Height between indoor and outdoor units H1	Upper outdoor unit	15 m
		Lower outdoor unit	15 m
	Height between indoor units H2	10 m	

Main pipe sizes (L1), Liquid 3/8", Vapour 5/8", branch pipes are dependent on the specific configuration.





The method used to calculate the additional refrigerant charge has changed from the previous twin fan units, the new method is as follows;

$$\text{Additional refrigerant charge} = \text{Real length of liquid pipe (in metres)} \times \text{Additional refrigerant amount per 1 m of liquid pipe (Table 1)} \times \text{Corrective amount of refrigerant depending on the size and quantity of indoor units (Table 2)} + \text{Compensation by outdoor HP (Table 3)}$$

Liquid pipe dia (inch)	1/4"	3/8"
Additional refrigerant amount / 1 m liquid pipe (kg / m)	0.025	0.055

Table 1

Indoor units model name	Capacity rank	Capacity code (Equivalent to HP)										
		005*1	007	009	012	015	018	024	027	030	036	048
4-way cassette	MMU-AP***HP*	-	-	0.4	0.4	0.8	0.8	0.8	0.8	0.8	1.2	1.2
	MMU-AP***MH*	0.4	0.4	0.4	0.4	0.6	0.6	-	-	-	-	-
2-way cassette	MMU-AP***WH*	-	0.4	0.4	0.4	0.5	0.7	0.7	0.7	0.7	1.1	1.1
1-way cassette	MMU-AP***YH/SH*	-	0.4	0.4	0.4	0.5	0.5	0.6	-	-	-	-
Duct	MMD-AP***BHP*	-	0.5	0.5	0.5	0.5	0.5	0.7	0.7	0.7	1.1	1.1
	MMD-AP***SPH*	0.3	0.3	0.3	0.3	0.5	0.5	0.8	0.8	-	-	-
	MMD-AP***HP*	-	-	-	-	-	0.7	0.7	0.7	-	1.1	1.1
Under-ceiling	MMC-AP***HP*	-	-	-	-	0.6	0.6	0.8	0.8	-	1.2	1.2
High wall	MMK-AP***H*	-	0.5	0.5	0.5	0.7	0.7	0.7	-	-	-	-
	MMK-AP***HP*	0.3	0.3	0.3	0.3	-	-	-	-	-	-	-
Floor standing	MMF-AP***H*	-	-	-	-	0.7	0.7	1.0	1.0	-	1.3	1.3
	MML-AP***H*	-	0.5	0.5	0.5	0.5	0.8	0.8	-	-	-	-
	MML-AP***BH*	-	0.3	0.3	0.3	0.5	0.5	0.7	-	-	-	-
	MML-AP***NH*	-	0.5	0.5	0.5	0.5	0.5	-	-	-	-	-

*Capacity code of 005 type unit is the same as 007 type

(Unit: kg)

Table 2

Outdoor unit	MCY-MHP0406HT-E	MCY-MHP0506HT-E
Compensation by outdoor HP (kg)	-1.6	-1.6

Table 3

Example:

1 x MCY-MHP0406HT-E (4HP), with 35 metres of 3/8" liquid line and 15 metres of 1/4" liquid line, with 4 x MMK-AP0243H1 indoor units.

$$(35 \times 0.055) = 1.87\text{kg} + (15 \times 0.025) = 0.375\text{kg} + (4 \times 0.7) = 2.8\text{kg} - (1 \times -1.6\text{kg}) 1.6\text{kg} = \mathbf{3.445\text{kg}}$$

Both the 4HP and the 5HP units have a factory refrigerant charge of 3.3kg.





Power and controls are the same as with current twin fan units.

Single phase power to the outdoor unit, suggested fuse 32 amp with local isolation adjacent to each unit.

Interconnecting communication cable 1.5mm two core screened cable, up to 1000 m, over 1001 m to 2000 m 2.5mm, connected to U1 and U2 forming a radial (Daisy chain) circuit between outdoor and indoor units.

Screens joined together but **NOT** grounded at each indoor unit, grounding at one end **ONLY**.

Indoor local remote controller, 0.5mm to 2.0mm two core cable, connected to terminals A & B at each indoor unit.

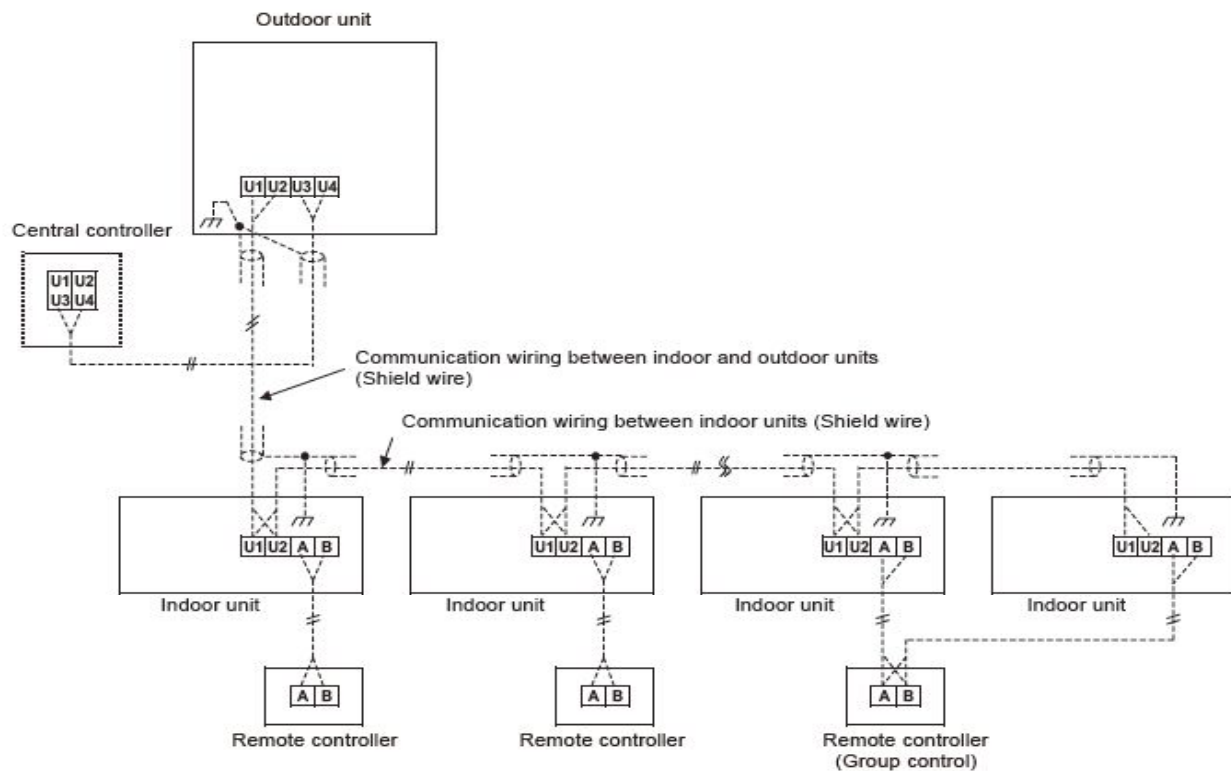


fig 1





By default each system is factory configured as system reference number 1, SW13 and SW14 all dip switches in the down position, when more than one system is being controlled via a central controller or BMS interface, each system requires a unique system number.

It is recommended that BEFORE the auto address sequence is instigated, each outdoor unit has a separate system number, between 1 to 28, (table 4), set via dip switches SW13 and SW14, (fig 2).

Interface P.C. board on the outdoor unit

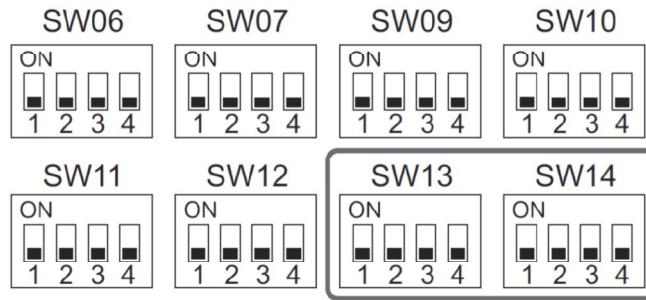


fig 2

Switch settings for a line (system) address on the interface P.C. board on the outdoor unit
(O: switch ON, x: switch OFF)

Line (system) address	SW13				SW14			
	1	2	3	4	1	2	3	4
1	-	-	-	x	x	x	x	x
2	-	-	-	x	o	x	x	x
3	-	-	-	x	x	o	x	x
4	-	-	-	x	o	o	x	x
5	-	-	-	x	x	x	o	x
6	-	-	-	x	o	x	o	x
7	-	-	-	x	x	o	o	x
8	-	-	-	x	o	o	o	x
9	-	-	-	x	x	x	x	o
10	-	-	-	x	o	x	x	o
11	-	-	-	x	x	o	x	o
12	-	-	-	x	o	o	x	o
13	-	-	-	x	x	x	o	o
14	-	-	-	x	o	x	o	o
15	-	-	-	x	x	o	o	o
16	-	-	-	x	o	o	o	o
17	-	-	-	o	x	x	x	x
18	-	-	-	o	o	x	x	x
19	-	-	-	o	x	o	x	x
20	-	-	-	o	o	o	x	x
21	-	-	-	o	x	x	o	x
22	-	-	-	o	o	x	o	x
23	-	-	-	o	x	o	o	x
24	-	-	-	o	o	o	o	x
25	-	-	-	o	x	x	x	o
26	-	-	-	o	o	x	x	o
27	-	-	-	o	x	o	x	o
28	-	-	-	o	o	o	x	o

-: not used for system address setting (Do not change their positions.)

Table 4





Two pipe, heat pump Mini VRF systems allow for either heating or cooling mode, simultaneous operation i.e. heat and cool modes together, is not available.

The equipment is set to priority heat mode, any one indoor unit requesting heating will place the outdoor unit into the heating mode, any indoor units operating but not requiring heating are automatically placed into the Fan only mode, until the indoor unit requiring heating is satisfied, at this time the outdoor unit will automatically change mode to meet the demand of the indoor unit requiring cooling, the indoor unit which had required heating mode will now automatically be placed into Fan only mode.

The priority operation can be changed from priority Heating to priority Cooling, priority majority mode (60% of indoor units installed require the same mode of operation either heating or cooling.), or by a specific indoor unit. (Table 5).

Changes are made via SW11 dip switches 1 & 2.

SW11		Operation
Bit 1	Bit 2	
OFF	OFF	Priority heating (factory default)
ON	OFF	Priority cooling
OFF	ON	Priority operation based on No. of units in operation (priority given to the operation mode with the largest share of units in operation)
ON	ON	Priority indoor unit (priority given to the operation mode of the specific indoor unit set up for priority operation)

Table 5

Full details and the following manuals, Owners, Installation and Service are available via our web site www.cdlweb.info.





Contact details;

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