CDL
Cool Designs Ltd

Air Conditioning Design & Distribution

Pocket Handbook Of Technical Data For the TOSHIBA Range of AC Products

HFC
R-410A

Cool Designs Ltd
Raising the Standards in Air Conditioning Distribution
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Additional "Pocket Quick Reference Guides" are available covering;

Pocket Handbook R32 AC Products.
VN-M (HE & HE1) Units, Air to Air Heat Exchangers.
RBC-AMT32 Standard Wired Remote Controller.
AMS41E Wired Remote Controller with 7-day timer.
RBC-AMS51/54/55E-ES Back Light Wired Remote Controller with 7-Day Timer.
RBC-ASC11E Compact Simple Controller.
RBC-MTSC1 Mini Touch Screen
R410A VRF Addressing / Commissioning.
R410A SMMSe Heat Pump Calculating the Refrigerant Charge.
R410A SHRMe Heat Recovery Systems.
R410A Single Fan Mini VRF.
FPD3 – Full AHU Control Interface.
FDP3 – Modbus AHU Control Interface.
RBC-RASNC – RAS Central Controller Interface.
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RBC-TBPTS Colour Smart Touch Screen Central Remote Controller.
RBC-TSI1 Universal Monitoring and Control Interface including Modbus.
RBC-IS-IR-WIFI-1 Intensishome WIFI Universal Controller.
RBC-TO-RC-Wifi-1 Intensishome WIFI Toshiba RAV/VRF.

You will also find Single Sheet Literature for all the current Toshiba Air Conditioning Units on our web site, along with Installation, Owners and Service manuals.

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Mechanical Specifications - RAS R410A Outdoor Units

Model	Pipe Sizes (")		Min/Max Pipe Sep (m)	Max Height Separation (+/-) (m)	Pre-Charge (m)	Add Charge (g/m)	Base Charge (kg)	Dimensions (mm)	Weight (kg)
	Liquid	Suction							
RAS Outdoor Units									
RAS-07BAV-E	1/4	3/8	2/15	12	15	N/A	0.48	530x660x240	21
RAS-10BAV-E							0.52		
RAS-13BAV-E							0.58		22
RAS-16BAV-E		1/2	2/20			20	0.90	550X780X290	34
RAS-107SAV-E6		3/8	2/15	8		N/A	0.63	530x660x240	27
RAS-137SAV-E6									30
RAS-10N3AVP-E		3/8	2/25	10		20	1.05	630x800x300	41
RAS-13N3AVP-E									
RAS-16N3AVP-E		1/2							
RAS-10G2AVP-E		3/8	2/25	10	10		1.05	630x800x300	41
RAS-13G2AVP-E									
RAS-16G2AVP-E		1/2							
RAS-10N3AV2-E1		3/8	2/20	10	15		0.8	550x780x290	33
RAS-13N3AV2-E1									
RAS-16N3AV2-E		1/2					1.4		39
RAS-2M14S3AV-E		3/8x2	2/30	10	30	N/A	1.32	630X800X300	44
RAS-2M18S3AV-E									
RAS-3M18S3AV-E		3/8x2+ ½x1	2/50	10	50		1.50		46
RAS-3M26S3AV-E		3/8x1+ ½x2	3/70	15	40	20	2.40	890x900x320	72
RAS-4M27S3AV-E		3/8X2+1/2x2							
RAS-5M34S3AV-E		3/8X3+1/2X2	3/80				2.99		78

Performance & Electrical Specifications - RAS R410A Single Splits

Model	Capacity (kW)		Energy Rating	Phase	Power To	Soft Start	Max Run Current (A)	Suggested Fuse Size (A) #	Interconnect Cable
	Cool	Heat	Cool/Heat						
RAS Split Systems									
RAS-07BAV-E	2.0	2.5	A+/A+	1Ph + N	Indoor/ Outdoor	Yes	3.17	10	3C + E
RAS-10BAV-E	2.5	3.2	A+/A+				4.19	10	
RAS-13BAV-E	3.1	3.6	A+/A+				5.60	10	
RAS-16BAV-E	4.4	5.4	A+/A+				7.05	16	
RAS-107SAV-E6	2.50	3.20	A/A		Outdoor		4.19	10	
RAS-137SAV-E6	3.15	3.60	A/A				5.37	10	
RAS-167SAV-E5	4.40	5.20	A+/A				7.58	16	
RAS-13N3AVP-E	3.52	4.22	A++/A+				4.78	10	
RAS-16N3AVP-E	4.53	5.53	A++/A+				7.12	16	
RAS-10G2AVP-E	2.50	3.20	A+++/A+++		Indoor/ Outdoor		3.52	10	
RAS-13G2AVP-E	3.50	4.00	A+++/A+++				3.57	10	
RAS-16G2AVP-E	4.50	5.50	A++/A++				5.96	16	
RAS-10N3AV2-E1	2.50	3.20	A++/A+		Outdoor		3.60	10	
RAS-13N3AV2-E1	3.50	4.20	A++/A				5.66	10	
RAS-18N3AV2-E	5.00	5.80	A+/A				8.79	16	

Suggested fuse sizes are for guidance only, the electrical installation must be completed in-line with current electrical regulations, BS 7671:2018+A1, 2020 – 18th Edition, IET.

Performance & Electrical Specifications - RAS R410A Multi Splits

Model	Min-Max Indoors	Capacity (kW)		Energy Rating Cool/Heat	Phase	Power To	Soft Start	Max Run Current (A)	Suggested Fuse Size (A) #	Inter-connect Cable
		Cool	Heat							
RAS Multi Systems										
RAS-2M14S3AV-E	2 – 2	1.60 - 4.90	1.30 - 5.20	A++/A+	1Ph + N	Outdoor	Yes	4.14	10	3C+E
RAS-2M18S3AV-E	2 - 3	1.70 - 6.20	1.30 - 7.50	A++/A++				6.43	16	
RAS-3M18S3AV-E	2 – 3	2.40 - 6.50	1.90 - 8.00	A++/A++				7.54	16	
RAS-3M26S3AV-E	2 – 3	4.10 - 9.00	2.00 - 11.2	A++/A+				10.53	16	
RAS-4M27S3AV-E	2 – 4	4.20 - 9.30	2.90 - 11.7	A++/A+				10.94	16	
RAS-5M34S3AV-E	2 – 5	3.70 - 11.0	2.70 - 14.0	A++/A+				14.26	20	

Suggested fuse sizes are for guidance only, the electrical installation must be completed in-line with current electrical regulations, BS 7671:2018+A1, 2020 – 18th Edition, IET.

Acoustic Data – RAS Indoor Units

RAS Indoor Units			
Model	**High dB(A)**	**Med dB(A)**	**Low dB(A)**
RAS-07BKV-E	**40**	**-**	**22**
RAS-10BKV-E	**41**	**-**	**23**
RAS-13BKV-E	**42**	**-**	**24**
RAS-16BKV-E	**43**	**-**	**26**
RAS-107SKV-E6	**40**	**35**	**27**
RAS-137SKV-E6	**41**	**34**	**28**
RAS-167SKV-E5	**45**	**40**	**30**
RAS-B10N3KVP-E	**43**	**35**	**27**
RAS-B13N3KVP-E	**44**	**35**	**27**
RAS-B16N3KVP-E	**45**	**38**	**27**
RAS-10G2KVP-E	**43**	**-**	**24 (20)**
RAS-13G2KVP-E	**44**	**-**	**25 (21)**
RAS-16G2KVP-E	**45**	**-**	**26 (23)**
RAS-B10UFV-E	**39**	**32**	**26**
RAS-B13UFV-E	**40**	**33**	**27**
RAS-B18UFV-E	**46**	**40**	**34**
RAS-B10N3KV2-E1	**39**	**33**	**28**
RAS-B13N3KV2-E1	**40**	**33**	**28**
RAS-B16N3KV2-E	**45**	**40**	**30**
RAS-M10SMUV-E	**37**	**-**	**30**
RAS-M13SMUV-E	**38**	**-**	**30**
RAS-M16SMUV-E	**40**	**-**	**31**
RAS-M10G3DV-E	**36**	**-**	**25**
RAS-M13G3DV-E	**38**	**-**	**25**
RAS-M16G3DV-E	**36**	**-**	**23**
Note: Sound measured in Pressure dB(A)			

RAS Multi-Split System Combination Examples

Outdoor Unit	Indoor Unit Size & Duty				
	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5
RAS-2M14S3AV-E 4.4 kW	10 (2.70kw)				
	13 (3.70kw)				
	10 (2.00kw)	10 (2.00kw)			
	13 (2.31kw)	10 (1.69kw)			
	13 (2.00kw)	13 (2.00kw)			
RAS-2M18S3AV-E 5.6 kW	10 (2.70kw)				
	13 (3.70kw)				
	16 (4.50kw)				
	10 (2.60kw)	10 (2.60kw)			
	13 (3.01kw)	10 (2.19kw)			
	13 (2.60kw)	13 (2.60kw)			
	16 (3.25kw)	10 (1.95kw)			
	16 (2.85kw)	13 (2.35kw)			
	16 (2.60kw)	16 (2.60kw)			
RAS-3M18S3AV-E 6.8 kW	10 (2.70kw)				
	13 (3.40kw)				
	16 (4.50kw)				
	10 (2.60kw)	10 (2.60kw)			
	13 (3.01kw)	10 (1.54kw)			
	13 (2.60kw)	13 (2.60kw)			
	16 (3.25kw)	10 (1.95kw)			
	16 (2.85kw)	13 (2.35kw)			
	16 (2.60kw)	16 (2.60kw)			
	10 (1.74kw)	10 (1.73kw)	10 (1.73kw)		
	13 (2.12kw)	10 (1.54kw)	10 (1.54kw)		
	13 (1.90kw)	13 (1.90kw)	10 (1.40kw)		
	16 (2.36kw)	10 (1.42kw)	10 (1.42kw)		
RAS-3M26S3AV-E 8.0 kW	10 (2.70kw)				
	13 (3.40kw)				
	16 (3.90kw)				
	18 (4.10kw)				
	10 (2.70kw)	10 (2.70kw)			
	13 (3.41kw)	10 (2.49kw)			
	13 (3.15kw)	13 (3.15kw)			
	16 (3.94kw)	10 (2.36kw)			
	16 (3.73kw)	13 (3.07kw)			
	16 (3.60kw)	16 (3.60kw)			
	18 (4.09kw)	10 (2.21kw)			
	18 (3.91kw)	13 (2.89kw)			
	18 (3.79kw)	16 (3.41kw)			
	18 (3.60kw)	18 (3.60kw)			
	10 (2.47kw)	10 (2.47kw)	10 (2.47kw)		
	13 (3.01kw)	10 (2.20kw)	10 (2.20kw)		
	13 (2.71kw)	13 (2.71kw)	10 (1.98kw)		
	13 (2.47kw)	13 (2.47kw)	13 (2.47kw)		
	16 (3.36kw)	10 (2.02kw)	10 (2.02kw)		
	16 (3.06kw)	13 (2.51kw)	10 (1.83kw)		
	16 (2.80kw)	13 (2.30kw)	13 (2.30kw)		
	16 (2.85kw)	16 (2.85kw)	10 (1.71kw)		
	16 (2.66kw)	16 (2.66kw)	13 (2.19kw)		
	16 (2.50kw)	16 (2.50kw)	16 (2.50kw)		
	18 (3.56kw)	10 (1.92kw)	10 (1.92kw)		
	18 (3.25kw)	13 (2.40kw)	10 (1.75kw)		
	18 (2.98kw)	13 (2.21kw)	13 (2.21kw)		
	18 (3.03kw)	16 (2.73kw)	10 (1.64kw)		
	18 (2.84kw)	16 (2.56kw)	13 (2.10kw)		
	18 (2.68kw)	16 (2.41kw)	16 (2.41kw)		

Above duty's(kW) is in the heating mode.

The above is an example only, for full combination tables covering up to 5 indoor units to 1 outdoor, please contact Cool Designs Technical Support.

RAS – Auto Restart Function

The indoor unit is equipped with an automatic restart facility that allows the unit to restart, at the last set operating conditions, after a power failure. The operation will resume without warning three minutes after power is restored.
This feature is not set up when these systems are shipped from the factory, therefore it will need to be activated by the installing company.

Generally, the process is the same for all RAS products since approx. 2001 and is as follows:

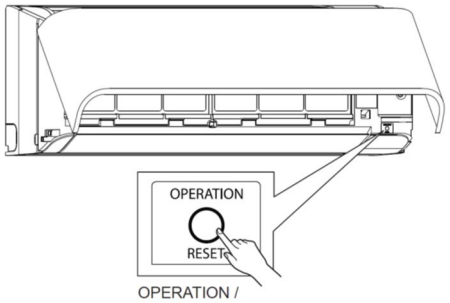
To initiate auto restart:

1. Turn the power on. Green On/Off light will flash.
2. Set the system to operate using the remote controller. Green On/Off light will be on constantly.
3. Press and hold down the temporary button for three seconds.
4. The indoor unit will bleep three times to acknowledge set up. In most cases the green light changes to orange.
5. The system will continue to operate during this set up.
6. After set up the system may be stopped using the remote controller.

To cancel auto restart:

1. The system is operating. Green On/Off light will be on constantly.
2. Stop the system operating using the remote controller. Green On/Off light will extinguish.
3. Press and hold down the temporary button for three seconds.
4. The indoor unit will bleep three times to acknowledge cancellation.
5. The system will have stopped operating.

This feature cannot be set if the timer is in operation.
The louver will not swing, if it was previously set, when the system auto restarts.



OPERATION / RESET Button

Fault Codes – RAS "N" Series

Do Not turn off the power supply before reading the fault codes, doing so will clear the diagnostic memory. Caution must be taken when removing the access covers as high voltages are present.

Fault codes are displayed through the LEDs flashing at 5 times per second. Note, the green LED will flash once per second when the system is initially powered.

More specific codes may be obtained, while in the fault mode through the wireless controller

1. Press CHK to enter service mode
2. Navigate through TIMER ▲▼ buttons until all LEDs flash, accompanied by the internal buzzer – compare the displayed code with the table below
3. Press CLR button to clear the existing fault code (controller displays 7F)
4. Press ON/OFF button to exit service mode.

Initial code/display	Code	Description
01 ● ○ ○	0C	TA sensor open or short circuit
	0d	TC sensor open or short circuit
	11	Indoor fan motor problem
	12	Indoor PCB problem
01 ● ● ○	04	Indoor to outdoor communication (includes compressor thermostat)
	05	Indoor to outdoor communication
02 ● ○ ●	14	Inverter low voltage or short circuit protection
	16	Compressor position circuit
	17	Compressor current detected during off-cycle
	18	TE or TS sensor open or short circuit
	19	Td sensor open or short circuit
	1A	Outdoor fan motor problem
	1b	TE sensor fault
	1C	Compressor drive circuit
03 ● ● ●	07	Indoor to outdoor communication (includes compressor thermostat)
	08	Indoor heat exchanger changes temperature – but in wrong direction
	1d	Compressor locked rotor current protection
	1E	Compressor - high discharge temperature
	1F	Compressor current remains too high – after current release

Mechanical Specifications - DI / SDI R410A Single Splits

Model	Pipe Sizes (")		Min/Max Pipe Sep. (m)	Max height separation (+/-) (m)	Pre-Charge (m)	Add charge (g/m)	Base charge (kg)	Dimensions (mm)	Weight (kg)
	Liquid	Suction							
Commercial Range									
RAV-SM304ATP-E	1/4	3/8	2/20	10	15	20	0.8	550X780X290	33
RAV-SM404ATP-E		1/2					1.4		39
RAV-SM564ATP-E			5/30	30	20		1.1		40
RAV-SM804ATP-E	3/8	5/8				40	1.7		44
RAV-SM1104ATP-E			5/50		30		2.8	890X900X320	68
RAV-SM1104AT8P-E							3.1		
RAV-SM1404ATP-E							2.8		
RAV-SM1404AT8P-E							3.1		
RAV-SM1603AT-E1								1340X900X320	99
RAV-SM2244AT8-E	1/2	1 1/8	7.5/70		30	80	5.9	1540X900X320	134
RAV-SM2246AT8-E			5/100					1550X1010X370	142
RAV-SM2804AT8-E			7.5/70					1540X900X320	134
RAV-SM2806AT8-E			5/100					1550X1010X370	142
RAV-SP404ATP-E	1/4	1/2	5/30		20	20	1.0	550X780X290	40
RAV-SP564ATP-E			5/50				1.4		44
RAV-SP804ATP-E	3/8	5/8			30	40	2.1	890X900X320	66
RAV-SP1104AT-E1			3/75				3.1	1340X900X320	93
RAV-SP1104AT8-E1									95
RAV-SP1404AT-E1									93
RAV-SP1404AT8-E1									95
RAV-SP1604AT8-E1									

Performance & Electrical Specifications – DI/ SDI R410A Single Splits

Model	Capacity kW		Ambient Range °C		Phase	Power To	Soft Start	Max Run Current (A)	Suggested Fuse Size (A) #	Interconnect Cable
	Cool	Heat	Cool	Heat						
Commercial Range										
RAV-SM304ATP-E	2.50	3.40	46 to -15	24 to -15	1Ph + N	Outdoor	Yes	3.86	10	3C+E
RAV-SM404ATP-E	3.60	4.00						5.14		
RAV-SM564ATP-E	5.00	5.30		15 to -15				8.95	16	
RAV-SM804ATP-E	6.70	7.70						11.43	16	
RAV-SM1104ATP-E	10.00	11.20						15.18	20	
RAV-SM1104AT8P-E	10.00	11.20						3.67	10	
RAV-SM1404ATP-E	12.00	12.80						21.30	32	
RAV-SM1404AT8P-E	12.00	12.80						5.37	10	
RAV-SM1603AT-E	14.00	16.00						23.90	32	
RAV-SM2244AT8-E	20.00	22.40	46 to -20	15 to -20	3Ph + N			11.51	16	
RAV-SM2246AT8-E	19.00	22.40	52 to -15	15 to -27				18.0	25	
RAV-SM2804AT8-E	23.00	27.00	46 to -20	15 to -20				15.44	20	
RAV-SM2806AT8-E	22.50	27.00	52 to -15	15 to -27				23.0	25	
RAV-SP404ATP-E	3.60	4.00	43 to -15	15 to -15	1Ph + N			4.98	10	
RAV-SP564ATP-E	5.30	5.60	43 to -15	15 to -20				6.55	16	
RAV-SP804ATP-E	7.10	8.00						9.02		
RAV-SP1104AT-E	10.00	11.20						10.43		
RAV-SP1404AT-E	12.50	14.00						15.76	25	
RAV-SP1104AT8-E	10.00	11.20	46 to -15	15 to -20	3Ph + N			3.72	10	
RAV-SP1404AT8-E	12.50	14.00						5.42	16	
RAV-SP1604AT8-E	14.00	16.00						6.66		

Suggested fuse sizes are for guidance only, the electrical installation must be completed in-line with current electrical regulations, BS 7671:2018+A1, 2020 – 18th Edition, IET.

Electrical Specifications - DI / SDI R410A Multi Splits

Model Outdoor	Twin Indoor	Triple Indoor	Quad Indoor	Phase	Power To	Suggested Fuse Size (A) #	Inter-Connecting Cable
Commercial Range							
RAV-SM564ATP-E	**RAV-SM30*T(P)-E**	N/A	N/A	1Ph-N	Outdoor	16	3C+E
RAV-SM80ATP-E	**RAV-SM40*T(P)-E**					16	
RAV-SM1104ATP-E1	**RAV-SM56*T(P)-E**	**RAV-SM30*T(P)-E**				20	
RAV-SM1104AT8P-E1	**RAV-SM56*T(P)-E**	**RAV-SM30*T(P)-E**		3Ph-N		10	
RAV-SM1404ATP-E1	**RAV-SM80*T(P)-E**	**RAV-SM40*T(P)-E**	**RAV-SM30*T(P)-E**	1Ph-N		32	
RAV-SM1404AT8P-E	**RAV-SM80*T(P)-E**	**RAV-SM40*T(P)-E**	**RAV-SM30*T(P)-E**	3Ph+N		10	
RAV-SM1603AT-E1	**RAV-SM80*T(P)-E**	**RAV-SM56*T(P)-E**	**RAV-SM40*T(P)-E**	1Ph-N		32	
RAV-SM2244AT8-E	**RAV-SM110*T(P)-E**	**RAV-SM80*T(P)-E**	**RAV-SM56*T(P)-E**	3Ph-N		16	
RAV-SM2246AT8-E						25	
RAV-SM2804AT8-E	**RAV-SM140*T(P)-E**	**RAV-SM80*T(P)-E**	**RAV-SM80*T(P)-E**	3Ph-N		20	
RAV-SM2806AT8-E						25	
RAV-SP564ATP-E	**RAV-SM30*T(P)-E**	N/A	N/A	1Ph+N		16	
RAV-SP804ATP-E	**RAV-SM40*T(P)-E**					16	
RAV-SP1104AT-E1	**RAV-SM56*T(P)-E**	**RAV-SM30*T(P)-E**				16	
RAV-SP1104AT8-E1	**RAV-SM56*T(P)-E**	**RAV-SM30*T(P)-E**		3Ph-N		10	
RAV-SP1404AT-E1	**RAV-SM80*T(P)-E**	**RAV-SM40*T(P)-E**	**RAV-SM30*T(P)-E**	1Ph-N		25	
RAV-SP1404AT8-E1	**RAV-SM80*T(P)-E**	**RAV-SM40*T(P)-E**	**RAV-SM30*T(P)-E**	3Ph-N		16	
RAV-SP1604AT8-E1	**RAV-SM80*T(P)-E**	**RAV-SM56*T(P)-E**	**RAV-SM40*T(P)-E**	3Ph-N		16	

Suggested fuse sizes are for guidance only, the electrical installation must be completed in-line with current electrical regulations, BS 7671:2018+A1, 2020 – 18th Edition, IET.

NOTES:

Acoustic Data – DI/SDI Indoor Units

Model Indoor	High dB(A)	Med dB(A)	Low dB(A)	Model Indoor	High dB(A)	Med dB(A)	Low dB(A)
Commercial Range							
RAV-SM307KRTP-E	56	52	44	RAV-SM406BTP-E	48	44	40
RAV-SM407KRTP-E	60	55	45	RAV-SM566BT-E1	48	44	40
RAV-SM566KRT-E	57	54	51	RAV-SM806BT-E1	49	45	41
RAV-SM806KRT-E	62	56	51	RAV-SM1106BT-E1	55	51	48
RAV-SM564UTP-E	47	44	43	RAV-SM1406BT-E	55	51	48
RAV-SM804UTP-E	50	46	43	RAV-SM1606BT-E	55	51	48
RAV-SM1104UTP-E	58	53	48	RAV-SM408CTP-E	52	50	43
RAV-SM1404UTP-E	59	53	49	RAV-SM568CTP-E	52	50	43
RAV-SM1604UTP-E	60	55	51	RAV-SM808CTP-E	56	51	44
RAV-SM304MUT-E	55	51	46	RAV-SM1108CTP-E	59	53	47
RAV-SM404MUT-E	55	51	46	RAV-SM1408CTP-E	61	56	50
RAV-SM564MUT-E	58	54	49	RAV-SM1608CTP-E	61	57	51
RAV-SM304SDT-E	45	43	41	RAV-SM2244DTP-E	79	75	71
RAV-SM404SDT-E	45	43	41	RAV-SM2804DTP-E	81	77	73
RAV-SM564SDT-E	48	46	43	MMF-AP0186H1-E*	64	60	55
RAV-SM406BTP-E (v)	48	44	40	MMF-AP0246H1-E*	67	63	57
RAV-SM566BTP-E (v)	48	44	40	MMF-AP0366H1-E*	69	64	59
RAV-SM806BTP-E (v)	49	45	41	MMF-AP0486H1-E*	72	67	62
RAV-SM1106BTP-E (v)	55	51	48	MMF-AP0566H1-E*	72	67	62
RAV-SM1406BTP-E (v)	55	51	48	MML-AP0094BH1-E*	51	49	47
RAV-SM1606BTP-E (v)	55	51	48	MML-AP0124BH1-E*	51	49	47
(v) = Vertical Mount. * Converted VRF Indoor Units Note: Measured in Power Db(A)				MML-AP0184BH1-E*	51	49	47
				MML-AP0244BH1-E*	57	52	48

Acoustic Data – DI/SDI Outdoor Units.

Model Outdoor	Cooling dB(A)	Heating dB(A)	Model Outdoor	Cooling dB(A)	Heating dB(A)
SM304ATP-E	61	62	SM1603AT-E1	68	70
SM404ATP-E	64	65	SM2244AT8-E	72	74
SM564ATP-E	63	65	SM2804AT8-E	74	75
SM804ATP-E	65	69	SM2246AT8-E	76	76
SM1104ATP(8)-E	70	71	SM2806AT8-E	78	80
SM1404ATP(8)-E	70	71			
SP404ATP-E	62	64	SP1104AT(8)-E1	66	67
SP564ATP-E	63	64	SP1404AT(8)-E1	68	69
SP804ATP-E	64	65	SP1604AT8-E	68	70
NOTE: Measured in Power Db(A)					

Mechanical & Electrical Data - Air-to-Air Heat Exchangers

Model (Standard)	Power Consumption Low/High (W)	(L/H) Air Volume (m^3/hr)	Static Pressure (Pa)	Specific Fan Power (W/l/s)			Dimensions	Weight	Duct (mm)	Suggested Fuse Size (A) 1Ph+N#	Suggested Fuse Size(A) +Heater#
				Extra	High	Low	H x W* x D	(kg)	Supply - Return		
VN-M150HE	42 - 78	110 - 150	47 - 102	0.93	0.80	0.78	900 x 900 x 290	36	100x2 - 100x2	3	10
VN-M250HE	52 - 138	155 - 250	28 - 98	0.99	0.79	0.69	900 x 900 x 290	36	150x2 - 150x2	3	10
VN-M350HE	82 - 182	210 - 350	65 - 125	0.94	0.75	0.76	900 x 900 x 290	38	150x2 - 150x2	6	10
VN-M500HE	128 - 238	390 - 500	62 - 150	0.86	0.70	0.66	1140 x 1140 x 350	53	200x2 - 200x2	6	16
VN-M650HE	178 - 290	520 - 650	61 - 107	0.81	0.72	0.66	1140 x 1140 x 350	53	200x2 - 200x2	6	16
VN-M800HE	286 - 383	700 - 800	76 - 158	0.86	0.80	0.77	1189 x 1189 x 400	70	250x2 - 250x2	6	16
VN-M1000HE1	190 - 390	700 - 1000	70 - 105	1.4	1.2	1.0	1189 x 1189 x 400	62	250x2 - 250x2	10	16
VN-M1500HE1	320 - 640	1200 - 1500	80 -- 140	1.5	1.4	1.0	1189 x 1189 x 810	126	250x4 - 730x2	10	16
VN-M2000HE1	380 - 780	1400 - 2000	70 - 105	1.4	1.2	1.0	1189 x 1189 x 810	126	250x4 - 730x2	10	20

Suggested fuse sizes are for guidance only, the electrical installation must be completed in-line with current electrical regulations, BS 7671:2018+A1, 2020 – 18th Edition, IET

* Width dimension excludes 200mm electrical box

Mechanical & Electrical Data - Air-to-Air Heat Exchangers + DX Coil

Model MMD (DX Coil)	Capacity (kW)		Power Consumption Low/High (W)			(L/H) Air Volume (m^3/hr)			Static Pressure (Pa)			Specific Fan Power (W/l/s)			Dimensions	Weight (kg)	Duct (mm)			Suggested Fuse Size (A) 1Ph+N#	Suggested Fuse Size (A) + Heater#
	Cool	Heat										Extra	High	Low	H x W* x D		Supply	-	Return		
VN502HEX1E	4.10	5.53	235	-	300	440	-	500	115	-	120	1.08	1.01	0.96	430 x 1140 x 1690	84	200X2	-	200X2	3	10
VN802HEX1E	6.56	8.61	335	-	505	640	-	800	105	-	120	1.14	1.05	0.94	430 x 1189 x 1739	100	250X2	-	250X2	3	10
VN1002HEX1E	8.25	10.90	485	-	550	820	-	950	105	-	135	1.04	1.03	1.06	430 x 1189 x 1739	101	250X2	-	250X2	6	10

Suggested fuse sizes are for guidance only, the electrical installation must be completed in-line with current electrical regulations, BS 7671:2018+A1, 2020 – 18th Edition, IET

* Width dimension excludes 200mm electrical box

Mechanical & Electrical Data - Air-to-Air Heat Exchangers + DX Coil & Humidifier

Model MMD (DX Coil & Humidifier)	Capacity (kW)		Humidifier (kg/hr)	Power Consumption (w)		Air Volume (m^3/hr)		Static Pressure (Pa)	Specific Fan Power (W/l/s)			Dimensions	Weight (kg)	Duct (mm)		Suggested Fuse Size (A) 1Ph+N#	Suggested Fuse Size (A) +Heater#
	Cool	Heat		Low	High	Low	High		Extra	High	Low	HxW*xD (mm)		Supply	Return		
VNK502HEXE	4.10	5.53	3.0	240	305	440	500	85 – 95	1.10	1.03	0.98	430x1140x1690	91	200 x 2	200 x 2	6	10
VNK802HEXE	6.56	8.61	5.0	350	530	640	800	85 – 105	1.19	1.09	0.98	430x1189x1739	111	250 x2	250 x 2	6	10
VNK1002HEXE	8.25	10.90	6.0	520	575	820	950	90 - 115	1.09	1.07	1.14	430x1189x1739	112	250 x 2	250 x 2	6	10

Suggested fuse sizes are for guidance only, the electrical installation must be completed in-line with current electrical regulations, BS 7671:2018+A1, 2020 – 18th Edition, IET.

* Width dimension excludes 200mm electrical box

Digital/Super Digital R410A Replacement Technology Refrigerant Pipe Sizing

Existing piping connection with different diameter gas and liquid line is possible using the criteria detailed below

Liquid Pipe Size in" or mm		1/4 - 6.4 (STD)				3/8 - 9.5 (1-size larger)			
Gas Pipe Size in" or mm		3/8 - 9.5 (STD)		1/2 - 12.7 (1-size larger)		3/8 - 9.5 (STD)		1/2 - 12.7 (1-size larger)	
Maximum Pipe Distance		Length (m)	Pre-charged (m)	Length (m)	Pre-charged (m)	Length (m)	Pre-charged (m)	Length (m)	Pre-charged (m)
RAV-DI Series 4	SM30*	20	15	20	15	13	7.5	13	7.5

Liquid Pipe Size in" or mm		1/4 - 6.4 (STD)						3/8 - 9.5 (1-size larger)			
Gas Pipe Size in" or mm		3/8 - 9.5 (1-size smaller)		1/2 - 12.7 (STD)		5/8 - 15.9 (1-size larger)		1/2 - 12.7 (STD)		5/8 - 15.9 (1-size larger)	
Maximum Pipe Distance		Length (m)	Pre-charged (m)	Length (m)	Pre-charged (m)	Length (m)	Pre-charged (m)	Length (m)	Pre-charged (m)	Length (m)	Pre-charged (m)
RAV-DI Series 4	SM40*	20	15	20	15	20	15	13	7.5	13	7.5
	SM56*			30	20	30	20	20	10	20	10
RAV-SDI Series 4	SP40*	30	20	30	20	30	20	20	10	20	10
	SP56*			50	20	50	20	20	10	20	10

Liquid Pipe Size in" or mm		1/4 - 6.4 (1-size smaller)				3/8 - 9.5 (STD)						1/2 - 12.7 (1-size larger)			
Gas Pipe Size in" or mm		1/2 - 12.7 (1-size smaller)		5/8- 15.9 (STD)		1/2 - 12.7 (1-size smaller)		5/8- 15.9 (STD)		3/4 - 19.1 (1-size larger)		5/8- 15.9 (STD)		3/4 - 19.1 (1-size larger)	
Maximum Pipe Distance		Length (m)	Pre-charged (m)	Length (m)	Pre-charged (m)	Length (m)	Pre-charged (m)	Length (m)	Pre-charged (m)	Length (m)	Pre-charged (m)	Length (m)	Pre-charged (m)	Length (m)	Pre-charged (m)
RAV-DI Series 4	SM80*	20	20	20	20	30	20	30	20	30	20				
	SM110*							50	30	50	30	25	15	25	15
	SM140*							50	30	50	30	25	15	25	15
RAV-DI Series 3	SM160*							50	30	50	30	25	15	25	15
	SP80*	30	20	30	20	50	30	50	30	50	30				
RAV-SDI Series 4	SP110*							75	30	75	30	25	15	25	15
	SP140*							75	30	75	30	25	15	25	15

Liquid Pipe Size in" or mm		1/2 - 12.7 (STD)				5/8 - 15.9 (1-size larger)			
Gas Pipe Size in" or mm		7/8 - 22.2 (1-size smaller)		1 1/8 - 28.6 (STD)		7/8 - 22.2 (1-size smaller)		1 1/8 - 28.6 (STD)	
Maximum Pipe Distance		Length (m)	Pre-charged (m)	Length (m)	Pre-charged (m)	Length (m)	Pre-charged (m)	Length (m)	Pre-charged (m)
RAV-DI Series 4	SM224*	70	30	70	30	50	20	50	20
	SM280*	70	30	70	30	50	20	50	20

Smaller Pipe Sizes (Performance capacity is reduced due to the effect of gas pipe size being smaller than standard connection)

Normal Pipe Sizes

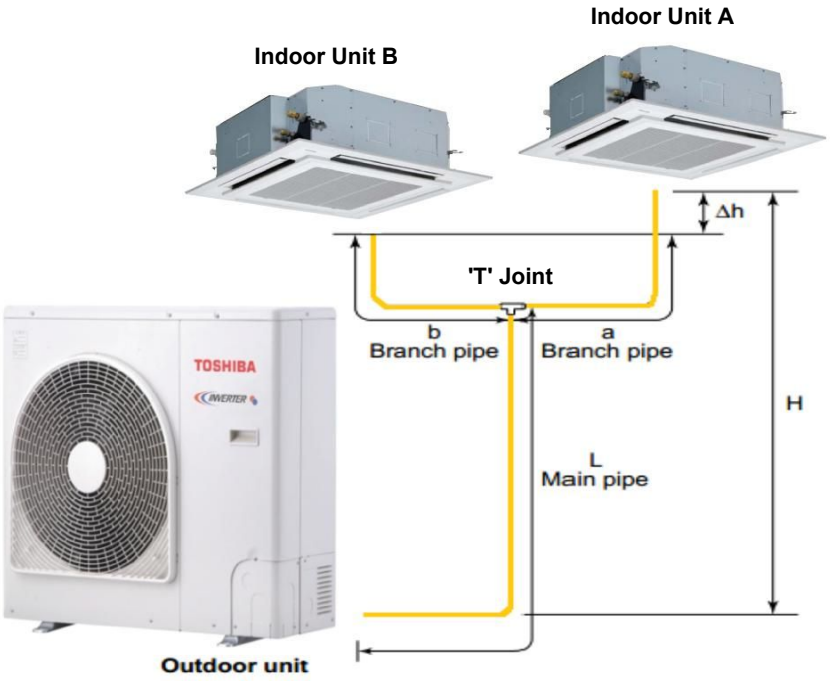
Larger Pipe Sizes

Not Compatible

Refrigerant Charge Rate Grams per Metre	
1/4	20
3/8	40
1/2	80
5/8	120

Common Refrigerants for Existing Plant
R12
R134A
R22
R404A
R407C
R417A

Digital / Super Digital Inverter Twin Splits



Pipe Specifications

Model (RAV-)	Allowable Piping Length (m)			Height Difference (m)		Number of Bent Portions Maximum or Less
	*Total Length (L+a or L+b) Maximum (m)	†Branch Piping a or b to Furthest Indoor Maximum (m)	‡Subtractive Piping Length a-b or b-a Maximum (m)	Outdoor to Indoor (H) Maximum (+/-) (m)	Indoor Unit Height Difference (Δh) Maximum (m)	
SM804ATP-E	30	10	5	30	0.5	10
SM1104ATP-E **SM1404ATP-E** **SM1603AT-E** **SP804ATP-E** **SP1104AT(8)-E1** **SP1404AT(8)-E1** **SP1604AT8-E1**	50	15	10	30	0.5	10
SM2244/6AT8-E **SM2804/6AT8-E**	70 (4 Series) 100 (6 Series)	20	10	30	0.5	10

- *Data to be ratified by manufacturer.*

*Total length of pipe between furthest indoor and outdoor unit.

†Maximum distance of Branch pipe from main pipe distributor to furthest indoor unit.

‡Maximum subtractive distance between pipe branches. Example: -

Example 1
Installed length main pipe L to distributor=38m
Installed length branch a=12m
Installed length branch b=10m

Example 2

Installed length main pipe L to distributor=40m
Installed length branch a=14m
Installed length branch b=2m

Example 3
Installed length main pipe L to distributor=50m
Installed length branch a=12m
Installed length branch b=10m

Example 4

Installed length main pipe L to distributor=60m
Installed length branch a=14m
Installed length branch b=2m

Example 1 ✓

Total pipe length L + a	38 + 12=	50m ✓
Subtractive pipe length a – b	12 - 10=	2m ✓

Example 2 ✗

Total pipe length L + a	40 + 14=	64m ×
Subtractive pipe length a – b	14 - 2=	12m ×

Example 3 ✓

Total pipe length L + a	50 + 12=	62m ✓
Subtractive pipe length a – b	12 - 10=	2m ✓

Example 4 ✗

Total pipe length L + a	60 + 14=	74m ✗
Subtractive pipe length a – b	14 - 2=	12m ✗

Additional Charge

Model (RAV-)	Main Pipes			Branch Pipes		
	Sizes (") Gas/Liquid	Pre-charge (m) Factor	Add Amount (kg/m) – [α]	Sizes (") Gas/Liquid	Pre-charge (m) Factor	Add Amount (kg/m) – [ß]
SM804ATP-E	5/8 - 3/8	18	0.040	1/2 - 1/4	2	0.020
SP804ATP-E						
SM1104ATP-E	5/8 - 3/8	18	0.040	1/2 - 1/4	2	0.020
SP1104AT(8)-E1						
SM1404ATP-E1	5/8 - 3/8	18	0.040	5/8 - 3/8	2	0.040
SP1404AT(8)-E1						
SM1603AT-E	5/8 - 3/8	28	0.040	5/8 - 3/8	4	0.040
SP1604AT8-E1						
SM2244/6AT8-E	1 1/8 - 1/2	28	0.080	5/8 - 3/8	4	0.040
SM2804/6AT8-E						

- *Data to be ratified by manufacturer.*

Gas calculation - [Main pipe] (L-**18**) x α + [Branch Pipe] (a+b - **4**) x ß = additional charge

Gas calculation - [Main pipe] (L-**28**) x α + [Branch Pipe] (a+b - **4**) x ß= additional charge

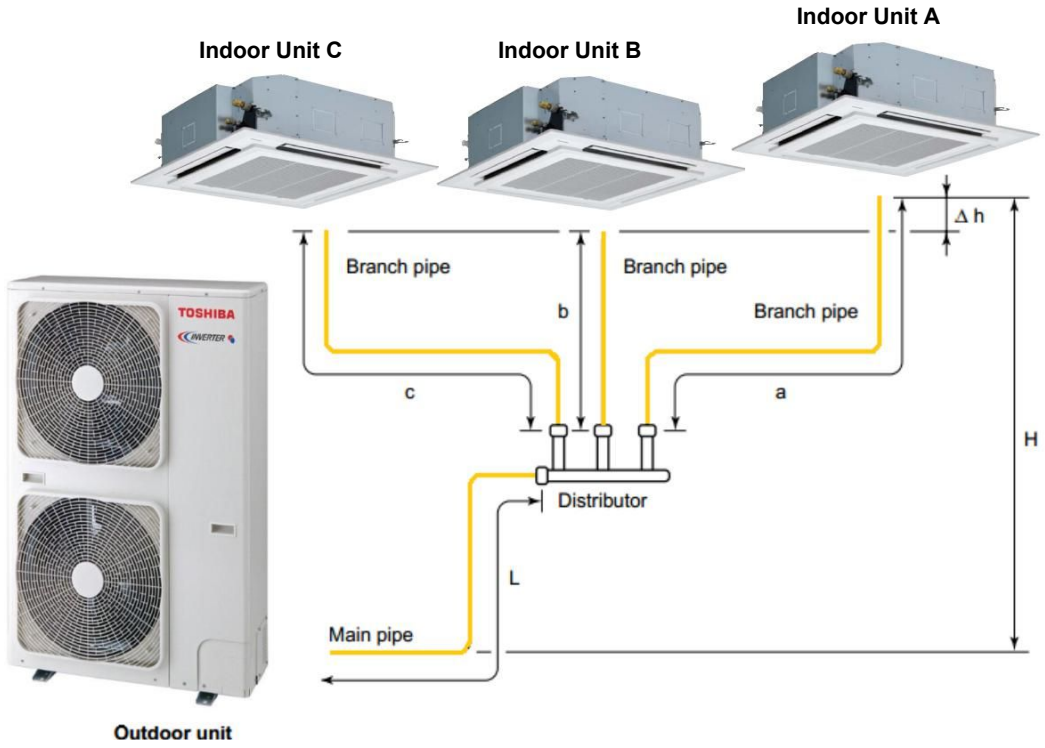
Example 1
Installed length main pipe L to distributor=38m
Installed length branch a=12m
Installed length branch b=10m

Example 1 using	SM1104ATP-E			
Total pipe length	L - **18** xα	38	- 18	=20 x 0.040= 0.80 +
Branch pipe length	a + b x ß	12	+ 10 - **4**	=18 x 0.020= 0.36
				Add Amount 1.16 kg

Example 1 using	SM2804AT8-E			
Total pipe length	L - **28** xα	38 - 28		=10 x 0.080= 0.80 +
Branch pipe length	a + b x ß	12 + 10 - **4**		=18 x 0.040= 0.72
				Add Amount 1.52 kg

NOTES:

Digital / Super Digital Inverter Triple Splits



Pipe Specifications

Model (RAV-)	Allowable Piping Lengths (m)			Height Difference (m)		Number of Bent portions Maximum or Less
	*Total Length La + Lb La + Lc Maximum (m)	†Branch Piping La, Lb or Lc to Furthest Indoor Maximum (m)	‡Subtractive Piping Length Lb - La Lb - Lc Maximum (m)	Outdoor to Indoor (H) Maximum (+/-) (m)	Indoor Unit Height Difference (Δh) Maximum (m)	
SM1603AT-E	50	15	10	30	0.5	10
SP1604AT8-E1						
SM2244/6AT8-E	70 (4 Series) 100 (6 Series)	20	10	30	0.5	10
SM2804/6AT8-E						

- *Data to be ratified by manufacturer.*

*Total length of pipe between furthest indoor and outdoor unit.

†Maximum distance of Branch pipe from main pipe distributor to furthest indoor unit.

‡Maximum subtractive distance between pipe branches. Example: -

Example 1
Installed length main pipe L to distributor=38m Installed length branch =12m
Installed length branch b=10m Installed length branch c=12m

Example 2
Installed length main pipe L to distributor=40m Installed length branch a=15m
Installed length branch b=4m Installed length branch c=12m

Example 3
Installed length main pipe L to distributor=40m Installed length branch a=12m
Installed length branch b=12m Installed length branch c=10m

Example 4
Installed length main pipe L to distributor=50m Installed length branch a=20m
Installed length branch b =3m
Installed length branch c = 5m

Example 1 ✓					
Total pipe length L + a	38	+ 12=	50m	✓
Subtractive pipe length a – b	12	- 10=	2m	✓
Subtractive pipe length c – b	12	- 10=	2m	✓
Example 2 ✗				
Total pipe length L + a	40	+ 15=	55m	×
Subtractive pipe length a – b	15	- 4=	11m	×
Subtractive pipe length c – b	12	- 4=	8m	✓

Example 3 ✓				
Total pipe length L + a	40	+ 12=	52m	✓
Subtractive pipe length a - b	12	- 12=	0m	✓
Subtractive pipe length c – b	12	- 10=	2m	✓
Example 4 ×				
Total pipe length L + a	50	+ 20=	70m	✓
Subtractive pipe length a – b	20	- 3=	15m	×
Subtractive pipe length c – b	5	- 3=	2m	✓

Additional Charge

Model (RAV-)	Main Pipes			Branch Pipes		
	Sizes (") Gas/Liquid	Pre-charge (m) Factor	Add Amount (kg/m) – [α]	Sizes (") Gas/Liquid	Pre-charge (m) Factor	Add Amount (g/m) – [ß]
SM1603AT-E	5/8 – 3/8	28	0.040	5/8 – 3/8	6	0.040
SP1604AT8-E1						
SM2244/6AT8-E	1 1/8 – 1/2	28	0.080	5/8 – 3/8	6	0.040
SM2804/6AT8-E						

- *Data to be ratified by manufacturer.*

Gas calculation - [Main pipe] (L-**28**) x α + [Branch Pipe] (a+b+c - **6**) x ß = additional charge
Gas calculation - [Main pipe] (L-**28**) x α + [Branch Pipe] (a+b+c - **6**) x ß= additional charge

Example 1
Installed length main pipe L to distributor=38m
Installed length branch a=12m
Installed length branch b=10m
Installed length branch c=12m

Example 1 above using SM1603AT-E

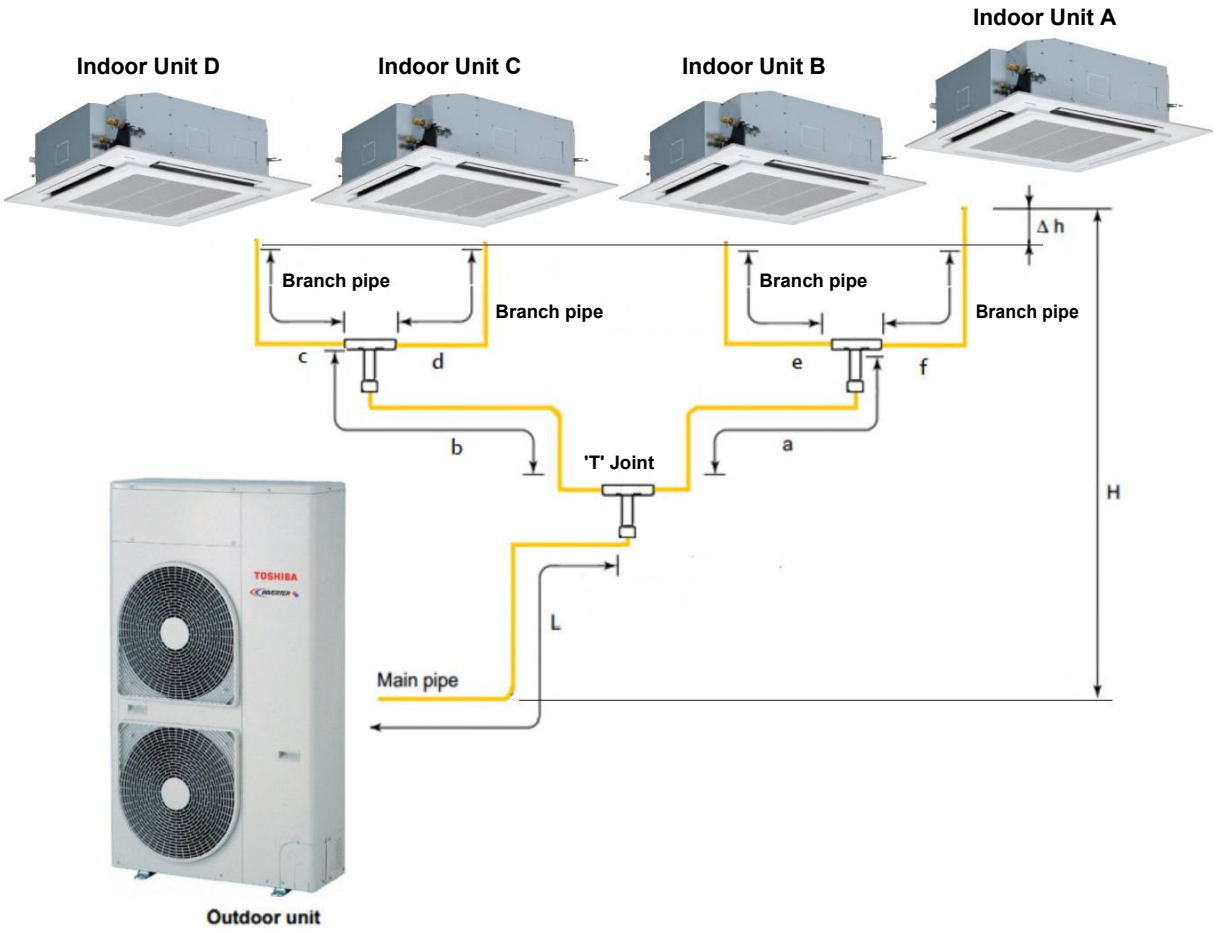
Total pipe length	L - **28** x α 38 - 28	=10 x 0.040=	0.40 +
Branch pipe length	a + b + c x ß 12+10+ 12- **6**	=28 x 0.040=	1.12
		Add Amount	1.52 kg

Example 1 above using SM2804AT8-E

Total pipe length	L - **28** x α 38 - 18	=20 x 0.080=	
Branch pipe length	a + b + c x ß 12+10+ 12- **6**	=28 x 0.040=	
		Add Amount	1.92 kg

NOTES:

Digital Inverter Quad Splits



Pipe Specifications

Model (RAV-)	Allowable Piping Lengths (m)			Height Difference (m)			Number of Bent portions Maximum or Less
	*Total Length (L+b+c) or (L+b+d) or (L+a+e) or (L+a+f) Maximum (m)	†Branch Piping c, d, e & f to Furthest Indoor Maximum (m)	¥Branch Piping b+c b+d a+e a+f Maximum (m)	‡Subtractive Branch Piping (c+b) - (d+b) (c+b) - (e+a) (c+b) - (f+a) (d+b) - (e+a) (d+b) - (f+a) (e+a) - (f+a) Maximum (m)	Outdoor to Indoor (H) Maximum (+/-) (m)	Indoor unit height difference (Δh) Maximum (m)	
SM2244/6AT8-E	70 (4 Series)	15	20	6	30	0.5	10
SM2804/6AT8-E	100 (6 Series)						

- *Data to be ratified by manufacturer.*

*Total length of pipe between furthest indoor and outdoor unit.

†Maximum distance of Branch pipe from main pipe distributor to furthest indoor unit.

¥ Maximum pipe distance between Branched pairs

‡Maximum subtractive distance between pipe branches. Example: -

Example 1
Installed length main pipe L to distributor=20m
Installed length branch b=10m
Installed length branch c=5m
Installed length branch d=5m
Installed length branch a=10m
Installed length branch e=5m
Installed length branch f=5m

Example 1 ✓		
Total pipe length L + b + c	20 + 10 +5=	35m✓
Branch length b + d	10 +5=	15m✓
Branch length a + e	10 +5=	15m✓
Branch length a + f	10 +5=	15m✓
Subtractive pipe length c+b - d+b	5+10 - 5+10=	0m✓
Subtractive pipe length c+b - e+a	5+10 - 5+10=	0m✓
Subtractive pipe length c+b - f+a	5+10 - 5+10=	0m✓
Subtractive pipe length d+b - e+a	5+10 - 5+10=	0m✓
Subtractive pipe length d+b - f+a	5+10 - 5+10=	0m✓
Subtractive pipe length e+a - f+a	5+10 - 5+10=	0m✓

Example 2
Installed length main pipe L to distributor=50m
Installed length branch b=15m
Installed length branch c=10m
Installed length branch d=6m
Installed length branch a=15m
Installed length branch e=5m
Installed length branch f=10m

Example 2 ✖					
Total pipe length L + b + c	50+	15+	10		= 75m✖
Branch length b + c	15+	10			= 25m✖
Branch length b + d	15+	6			= 21m✖
Branch length a + e	15+	5			= 20m✓
Branch length a + f	15+	10			= 25m✖
Subtractive pipe length c+b - d+b	10+	15-	6+	15	= 4m✓
Subtractive pipe length c+b - e+a	10+	15-	5+	15	= 5m✓
Subtractive pipe length c+b - f+a	10+	15-	10+	15	= 0m✓
Subtractive pipe length d+b - e+a	6+	15-	5+	15	= 1m✓
Subtractive pipe length d+b - f+a	6+	15-	10+	15	= 1m✓
Subtractive pipe length e+a - f+a	6+	15-	10+	15	= 1m✓

Additional Charge

Model (RAV-)	Main Pipes Pre-charge (m)			Branch pipes				
	Sizes (") Gas/Liquid	Factor	Add amount (kg/m) – [α]	Sizes (") Gas/Liquid	Pre-charge (m) Factor	Add amount (g/m) – [ß]	Sizes (") Gas/Liquid	Add amount (g/m) – [γ]
SM2244/6AT8-E	1 1/8 – 1/2	28	0.080	5/8 – 3/8	4	0.040	1/2 – 1/4	0.020
SM2804/6AT8-E	1 1/8 – 1/2	28	0.080	5/8 – 3/8	4	0.040	5/8 – 3/8	0.040

- *Data to be ratified by manufacturer.*

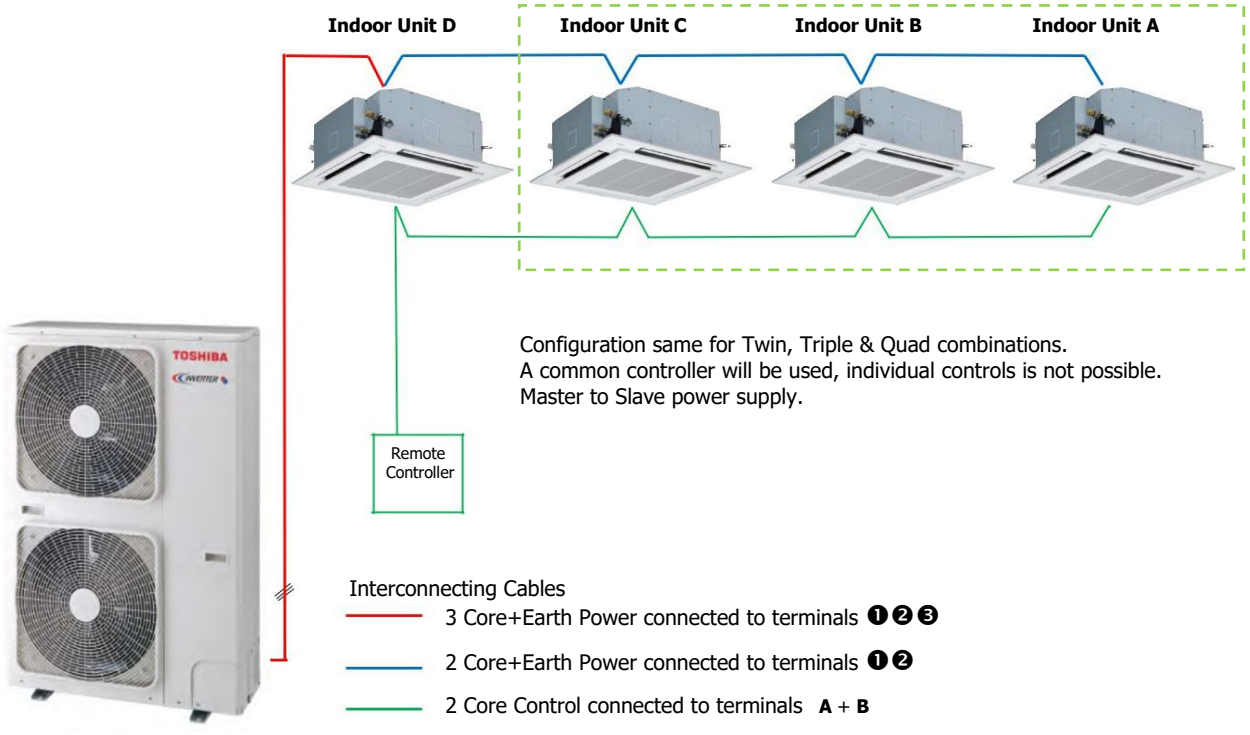
Gas calculation - [Main pipe] (L-**28**) x α + [Branch Pipe] (a + b - **4**) x ß + (c+d+e+f) x γ = additional charge

Gas calculation - [Main pipe] (L-**28**) x α + [Branch Pipe] (a + b - **4**) x ß + (c+d+e+f) x γ = additional charge

Example 1
Installed length main pipe L to distributor=20m
Installed length branch b=10m
Installed length branch c=5m
Installed length branch d=5m
Installed length branch a=10m
Installed length branch e=5m
Installed length branch f=5m

Example 1 using SM2804AT8-E				
Total pipe length	L - **28** x α	20 - 28	=-8 x 0.080=	-0.64 +
Branch pipe length	a + b **-** 4 x ß	10+10- **4**	=16 x 0.040=	0.64 +
Branch pipe length	c + d + e + f x γ	5+5+5+5	=20 x 0.040=	0.80
			Add Amount	0.80 kg

Digital / Super Digital Multi Split System Wiring Schematic



VRF System Make Up Chart

Mini Heat Pump – MCY

Model Reference	Duty HP	Cooling Capacity kW	Heating Capacity kW	Outdoor Unit Combination											Max. Indoor Units
				0401	0501	0601	0806	1006	1206	1406	1606	1806	2006	2206	
MHP0404HS-E	4	12.1	12.5	1											8
MHP0504HS-E	5	14.0	16.0		1										10
MHP0604HS-E	6	15.5	18.0			1									13
MHP0406HT-E	4	12.1	12.55	1											8
MHP0506HT-E	5	14.0	16.0		1										10
MHP0806HS8-E	8	22.4	25.0#				1								12
MHP1006HS8-E	10	28.0	31.0#					1							16
Note: - Mini VRF are ***NOT*** Modular # - Maximum Heating															

SMMSe Heat Pump – MMY

Model Reference	Duty HP	Cooling Capacity kW	Heating Capacity kW	Outdoor Unit Combination											Max. Indoor Units
				0401	0501	0601	0806	1006	1206	1406	1606	1806	2006	2206	
MAP0806HT8P-E	8	22.4	25.0				1								18
MAP1006HT8P-E	10	28.0	31.5					1							22
MAP1206HT8P-E	12	33.5	37.5						1						27
MAP1406HT8P-E	14	40.0	45.0							1					31
MAP1606HT8P-E	16	45.0	50.0								1			1	36
MAP1806HT8P-E	18	50.4	56.0									1			40
MAP2006HT8P-E	20	56.0	63.0										1		45
MAP2206HT8P-E	22	61.5	64.0											1	49
AP2416HT8P-E	24	67.0	75.0						2						54
AP2616HT8P-E	26	73.5	82.5						1	1					58
AP2816HT8P-E	28	78.5	87.5						1		1				63
AP3016HT8P-E	30	85.0	95.0							1	1				64
AP3216HT8P-E	32	90.0	100.0								2				
AP3416HT9P-E	34	95.4	106.0								1	1			
AP3616HT8P-E	36	101.0	113.0								1		1		
AP3816HT8P-E	38	106.5	114.0								1			1	
AP4016HT8P-E	40	112.0	126.0										2		
AP4216HT8P-E	42	117.5	127.0										1	1	
AP4416HT8P-E	44	123.0	128.0											2	
AP4616HT8P-E	46	130.0	145.0							1	2				
AP4816HT8P-E	48	135.0	150.0								3				
AP5016HT8P-E	50	140.4	156.0								2	1			
AP5216HT8P-E	52	146.0	163.0								2		1		
AP5416HT8P-E	54	151.5	164.0								2		1		
AP5616HT8P-E	56	157.0	176.0								1		2		
AP5816HT8P-E	58	162.5	177.0								1		1	1	
AP6016HT8P-E	60	168.0	178.0								1			2	

VRF System Make Up Chart

SMMSe High Efficiency Heat Pump – MMY

Model Reference	Duty HP	Cooling Capacity kW	Heating capacity kW	Outdoor Unit Combinations											Max. Indoor Units
				0401	0501	0601	0806	1006	1206	1406	1606	1806	2006	2206	
AP2026HT8P-E	20	56.0	63.0					2							45
AP2226HT8P-E	22	61.5	69.0					1	1						49
AP3626HT8P-E	36	100.5	112.5						3						64
AP3826HT8P-E	38	107.0	120.0						2	1					
AP4026HT8P-E	40	113.5	127.5						1	2					
AP4226HT8P-E	42	120.0	135.0							3					
AP4426HT8P-E	44	125.0	140.0							2	1				
AP5426HT8P-E	54	152.0	171.0							1			2		

SHRMe Heat Recovery – MMY

Model Reference	Duty HP	Cooling capacity Kw	Heating capacity Kw	Outdoor unit Combinations										Max. Indoor Units
				0401	0501	0601	0806	1006	1206	1406	1606	1806	2006	
MAP0806FT8P-UK	8	22.4	25.0				1							18
MAP1006FT8P-UK	10	28.0	31.5					1						22
MAP1206FT8P-UK	12	33.5	37.5						1					27
MAP1406FT8P-UK	14	40.0	45.0							1				31
MAP1606FT8P-UK	16	45.0	50.0								1			36
MAP1806FT8P-UK	18	50.4	56.5									1		40
MAP2006FT8P-UK	20	56.0	58.0										1	41
AP2216FT8P-UK	22	61.5	69.0					1	1					49
AP2416FT8P-UK	24	68.0	76.5					1		1				54
AP2616FT8P-UK	26	73.5	82.5						1	1				58
AP2816FT8P-UK	28	80.0	90.0							2				63
AP3016FT8P-UK	30	85.0	95.0							1	1			64*
AP3216FT8P-UK	32	90.4	101.5							1		1		
AP3416FT8P-UK	34	95.4	106.5								1	1		
AP3616FT8P-UK	36	100.8	113.0									2		
AP3816FT8P-UK	38	106.4	114.5									1	1	
AP4016FT8P-UK	40	112.0	116.0										2	
AP4216FT8P-UK	42	120.0	135.0							3				

- Total count drops to 54 when connected to a Central Remote Control / BMS Gateway

SHRMe High Efficiency Heat Recovery - MMY

Model Reference	Duty HP	Cooling capacity kW	Heating Capacity Kw	Outdoor unit Combinations										Max. Indoor Units.
				0401	0501	0601	0806	1006	1206	1406	1606	1806	2006	
AP1626FT8P-UK	16	44.8	50.0				2							36
AP1826FT8P-UK	18	50.4	56.5				1	1						40
AP2026FT8P-UK	20	56.0	63.0					2						41
AP2426FT8P-UK	24	67.2	75.0				3							54
AP2626FT8P-UK	26	72.8	81.5				2	1						58
AP2826FT8P-UK	28	78.4	88.0				1	2						63
AP3026FT8P-UK	30	85.0	95.0					3						64*
AP3626FT8P-UK	36	100.8	113.0						3					
AP4226FT8P-UK	42	120.0	135.0					1			2			

- Total count drops to 54 when connected to a Central Remote Control / BMS Gateway

Notes

Capacity Data – VRF Indoor Units

Indoor Unit Model	Capacity Code HP	Capacity Code kW
005	0.6	1.7
007	0.8	2.2
009	1	2.8
012	1.25	3.6
015	1.7	4.5
018	2	5.6
024	2.5	7.1
027	3	8.0
030	3.2	9.0
036	4	11.2
048	5	14.0
056	6	16.0
072	8	22.4
096	10	28.0

Electrical Data – VRF Outdoor Units

Model (Outdoor)	HP	Phase	Power To	Soft Start	MCA (A)	MOCP (A)	Inter-Connecting Cable
Mini Heat Pump							
MCY-MHP0404HS-E	4	1Ph+N	Indoor + Outdoor	Y	23.5	32	2C Screened
MCY-MHP0504HS-E	5				26.5	32	
MCY-MHP0604HS-E	6				28.0	32	
MCY-MHP0406HS-E	4				26.5	32	
MCY-MHP0506HS-E	5				28.0	32	
MCY-MHP0806HS8-E	8	3Ph+N			17.0	20	
MCY-MHP1006HS8-E	10				20.0	25	
Heat Pump (SMMSe)							
MMY-MAP0806HT8P-E	8	3Ph-N	Indoor + Outdoor	Y	20.5	25	2C Screened
MMY-MAP1006HT8P-E	10				21.5	25	
MMY-MAP1206HT8P-E	12				26.1	32	
MMY-MAP1406HT8P-E	14				31.0	40	
MMY-MAP1606HT8P-E	16				35.8	40	
MMY-MAP1806HT8P-E	18				40.6	50	
MMY-MAP2006HT8P-E	20				44.9	63	
MMY-MAP2206HT8P-E	22				49.3	63	
Heat Recovery (SHRMe)							
MMY-MAP0806FT8P-UK	8	3Ph-N	Indoor + Outdoor	Y	21.5	25	2C Screened
MMY-MAP1006FT8P-UK	10				26.1	32	
MMY-MAP1206FT8P-UK	12				31.0	40	
MMY-MAP1406FT8P-UK	14				35.8	50	
MMY-MAP1606FT8P-UK	16				40.6	50	
MMY-MAP1806FT8P-UK	18				44.9	50	
MMY-MAP2006FT8P-UK	20				49.3	63	

Note: The electrical installation needs to meet current electrical regulations BS7671:2018 the 18th Edition of the IET regulations.

VRF Additional Refrigerant Charge Amount

Additional Refrigerant Charge Amount per metre				
Liquid Pipe Size inch" - mm	Mini SMMS Mini SMMS*e* kg/m	SMMS SMMS*i* kg/m	SMMS*e* kg/m	SHRM SHRM*i* SHRM*e* kg/m
1/4 - 6.4	0.025	0.025	0.030	0.0325
3/8 - 9.5	0.055	0.055	0.066	0.0715
1/2 - 12.7	0.105*	0.105	0.126	0.1365
5/8 - 15.9		0.160	0.192	0.2080
3/4 - 19.1		0.250	0.300	0.3250
7/8 - 22.2		0.350	0.420	0.4550

* 8 & 10hp ONLY

Heat Pump VRF Additional Refrigerant Charge Calculations

Factory Charge			Trim Charge			
			Condenser Combinations			Correction Factor kg
HP	SMMS*e*	Base Charge kg	1	2	3	
4	MCY-MHP0404HS-E	6.4	4			0.0
5	MCY-MHP0504HS-E	6.4	5			0.4
6	MCY-MHP0604HS-E	6.4	6			0.8
4	MCY-MHP0406HT-E	3.3	4			-1.6
5	MCY-MHP0506HT-E	3.3	5			-1.6
8	MCY-MHP0806HS8-E	4.4	8			-1.0
10	MCY-MHP1006HS8-E	4.4	10			-1.0
8	MAP0806HT8P-E	11.5	8			-3.5
10	MAP1006HT8P-E	11.5	10			-3.5
12	MAP1206HT8P-E	11.5	12			-1.5
14	MAP1406HT8P-E	11.5	14			-1.0
16	MAP1606HT8P-E	11.5	16			-0.5
18	MAP1806HT8P-E	11.5	18			1.5
20	MAP2006HT8P-E	11.5	20			1.5
20	AP2026HT8P-E	23.0	10	10		7.0
22	MAP2206HT8P-E	11.5	22			1.5
22	AP2226HT8P-E	23.0	12	10		-7.0
24	AP2416HT8P-E	23.0	12	12		-3.0
26	AP2616HT8P-E	23.0	14	12		-2.5
28	AP2816HT8P-E	23.0	16	12		-2.0
30	AP3016HT8P-E	23.0	16	16		-1.5
32	AP3216HT8P-E	23.0	16	14		-1.0
34	AP3416HT8P-E	23.0	18	16		1.0
36	AP3616HT8P-E	23.0	20	16		1.0
36	AP3626HT8P-E	34.5	12	12	12	-12.5
38	AP3816HT8P-E	23.0	22	16		1.0
38	AP3826HT8P-E	34.5	14	12	12	-10.5
40	AP4016HT8P-E	23.0	20	20		3.0
40	AP4026HT8P-E	34.5	14	14	12	-8.5
42	AP4216HT8P-E	23.0	22	20		3.0
42	AP4226HT8P-E	34.5	14	14	14	-4.5
44	AP4416HT8P-E	23.0	22	22		3.0
44	AP4426HT8P-E	34.5	16	14	14	-4.5
46	AP4616HT8P-E	34.5	16	16	14	-6.5
48	AP4816HT8P-E	34.5	16	16	16	-6.5
50	AP5016HT8P-E	34.5	18	16	16	-0.5
52	AP5216HT8P-E	34.5	20	16	16	-0.5
54	AP5416HT8P-E	34.5	22	16	16	-0.5
54	AP5426HT8P-E	34.5	20	20	14	-4.5
56	AP5616HT8P-E	34.5	20	20	16	2.5
58	AP5816HT8P-E	34.5	22	20	16	2.5
60	AP6016HT8P-E	34.5	22	22	16	2.5
Key:	Mini VRF 4 Series	Mini VRF 6 Series	SMMSe	High Efficiency		Minus Figure

Fig 1

Heat Pump Mini VRF 4 Series and 6 Series

Calculation of Additional Refrigerant Charge for 4-Series Mini VRF 4-5-6hp								
Liquid Line Pipe Diameter Ø			**kg/m**		**Length (m)**		**Additional Amount of refrigerant**	
Inch		mm						
1/4	-	6.4	0.025	x		=		kg
3/8	-	9.5	0.055	x		=		kg
Additional Amount of Refrigerant						=		kg
1. Compensation by outdoor HP. (Correction Factor) (kg0=4hp, 0.4kg=5hp, 0.8kg=6hp)								
2. Liquid line diameter & length **X** pipe charge rate								
Note: if a negative result occurs the additional refrigerant amount is 0 kg								
***** No additional refrigerant charge or change to Factory charge is required *****								
Total System Charge = Base Charge + Additional Refrigerant Charge								

Fig 2

Calculation.

Correction factor (fig 1- 0kg-4hp, 0.4kg-5hp,0.8kg-6hp)= _ kg + Additional for liquid line (fig 2) = _ kg = Total additional charge = _ kg
Total system charge. Factory Charge (fig 1-6.4kg) + Total Additional charge = _kg

Example 4 series.

1 x MCY-MHP0604HS-E (6hp) with 12m of ¼" liquid line and 28m of 3/8" liquid line. **(No Compensation for Indoor Units.)**
Additional Charge: Correction factor = 0.8kg + (12x0.025 = 0.3kg) + (28 x 0.055 = 1.54kg) = 0.8+0.30+1.54 = 2.64kg
Total System Charge: Additional Charge = 2.64kg + Factory Charge = 6.4kg Total System Charge = 2.64+6.4 = 9.04kg

Calculation of Additional Refrigerant Charge for 6- Series Mini VRF 4-5-8-10hp						
Liquid Line Pipe Diameter Ø			**kg/m**	**Length (m)**		**Additional Amount Of refrigerant**
Inch		mm				
1/4	-	6.4	0.030	=		kg
3/8	-	9.5	0.066	=		kg
1/2	-	12.7	0.126	=		kg
Additional Amount of Refrigerant				=		kg
1. Compensation by outdoor HP. (Correction Factor)						
2. Indoor unit type & quantity **X** factor. (kg/HP)						
3. Liquid line diameter & length **X** pipe charge rate						

Indoor Unit Compensation												
	Rank	005	007	009	012	015	018	024	027	030	036	048
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	-	-	-	-	-
MMU-AP****WH		-	0.4	0.4	0.4	0.5	0.7	0.7	0.7	0.7	1.1	1.1
MMU-AP****YH/SH		-	0.4	0.4	0.4	0.5	0.5	0.6	-	-	-	-
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
MMC-AP****HP		-	-	-	-	0.6	0.6	0.8	0.8	-	1.2	1.2
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	-	-	-	-	-	-	-
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	0.5	-	-	-	-

(Unit : kg)

Note: if a negative result occurs the additional refrigerant amount is 0 kg ***** No additional refrigerant charge or change to Factory charge is required *****
Total System Charge = Base Charge + Additional Refrigerant Charge + HP Correction Factor + Indoor Units (kg/hp)

Fig 3 fig 4

Calculation.

Correction factor (fig 1, -1.6kg-4hp, -1.6kg-5hp, -1.0kg-8hp, -1.0kg-10hp)= _ kg + Indoor unit compensation (fig 4) = _kg + Additional for liquid line (fig 3) = _ kg = Total additional charge = _ kg
Total system charge. Factory Charge (fig 1 – 3.3kg 4-5hp, 4.4kg, 8-10hp) kg + Total Additional charge = _kg

Example 6 series.

1 x MCY-MHP0506HT-E (5hp) with 12m of ¼" liquid line and 28m of 3/8" liquid line.
Additional Charge: Correction factor = -1.6kg + (12x0.025 = 0.3kg) + (28 x 0.055 = 1.54kg) +(Indoor unit compensation, 1xMMUAP024HP (0.8kg)+MMU-AP0184HP (0.8kg)+1XMMU-AP0077MH (0.4kg)+MMD-AP074SPH (0.3kg) = 2.3kg)
-1.6+0.30+1.54+2.3 = 2.54kg
Total System Charge: Additional Charge = 2.54kg + Factory Charge = 3.3kg Total System Charge = 2.54+3.3 = 5.84kg

Calculation of Additional Refrigerant Charge for SMMSe Standard and High Efficiency																							
Liquid Line Pipe Diameter Ø			Refrigerant	Length (m)		Additional Amount of		Indoor Unit Compensation (kg/HP)															
								HP	Model	X	Kg/ HP	=	kg	HP	Model	X	Kg/ HP	=	kg				
Inch		mm						0.6	005*				0.24	1.7	050*				0.34				
1/4	-	6.4	0.030		=		kg	0.8	007*				0.32	2.5	080*	X	0.2	=	0.50				
3/8	-	9.5	0.066		=		kg	1	009*				0.40	3.2	100*				0.64				
1/2	-	12.7	0.126		=		kg	1.25	012*				0.50	Air to Air Heat Exchanger with DX Coil.									
5/8	-	15.9	0.192		=		kg	1.7	015*				0.68										
3/4	-	19.1	0.300		=		kg	2	018*				0.80										
7/8	-	22.2	0.420		=		kg	2.5	024*	X	0.4	=	1.00	5	048*		0.2		1.00				
Additional Amount of Refrigerant					=		kg	3	027*				1.20	8	056*	X	0.2	=	1.60				
								3.2	030*				1.28	10	096*		0.2		2.00				
1. Compensation by outdoor HP. (Correction Factor) 2. Indoor unit type & quantity **X** factor. (kg/HP) 3. Liquid line diameter & length **X** pipe charge rate								4	036*				1.60	Fresh Air Intake Units									
								5	048*				2.00										
								6	056*				2.40										
								8	072*				3.20										
								10	096*				4.00	Standard Indoor Units									
Note: if a negative result occurs the additional refrigerant amount is 0 kg																							
***** No additional refrigerant charge or change to Factory charge is required *****																							
Total System Charge = Base Charge + Additional Refrigerant Charge + HP Correction Factor + Indoor Units (kg/hp); **SMMSe ONLY**																							

Fig 5

Calculation.

Correction factor (fig 1)= _ kg + Indoor unit compensation (fig 5) = _kg + Additional for liquid line (fig 5) = _ kg = Total additional charge = _ kg
Total system charge. Factory Charge (fig 1) _kg + Total Additional charge = _kg

Example SMMSe.

1 x MCY-MAP1406HT8P-E (14hp) with 5 x MM#024* = (5 x 2.5 (hp) x 0.4= 5.0kg), 1 x MM#036* (4 (hp) x 0.4 = 1.6kg), 1 x MM#072* (8 (hp) x 0.4 = 3.2kg) with 10m of 1/4" liquid line, 20m of 3/8" liquid line, 15m of 1/2" liquid line, 40m of 5/8" liquid line.
Additional Charge: Correction factor = -1.0kg + (5.0+1.6+3.2 = 9.8kg) + (10 x 0.03 = 0.3kg + = 20 x 0.066 = 1.32kg + 15 x 0.126 = 1.89kg + 40 x 0.192 = 7.68kg) = 11.19kg)
-1.0+9.8+11.19 = 19.99kg
Total System Charge: Additional Charge = 19.99kg + Factory Charge = 11.5kg Total System Charge = 19.99+11.5 = 31.49kg

Notes

Heat Recovery VRF SHRMe

Minus Figure	SHRMe	High Efficiency	Trim Charge			
Factory Charge						Correction Factor kg
HP	SHRM*e*	Base Charge kg	Condenser Combinations 1	2	3	
8	MAP0806FT8P-UK	11.0	8			2.0
10	MAP1006FT8P-UK	11.0	10			3.0
12	MAP1206FT8P-UK	11.0	12			8.0
14	MAP1406FT8P-UK	11.0	14			10.0
16	MAP1606FT8P-UK	11.0	16			12.0
16	AP1626FT8P-UK	22.0	8	8		1.0
18	MAP1806FT8P-UK	11.0	18			14.0
18	AP1826FT8P-UK	22.0	10	8		3.0
20	MAP2006FT8P-UK	11.0	20			15.0
20	AP2026FT8P-UK	22.0	10	10		3.0
22	AP2216FT8P-UK	22.0	12	10		6.0
24	AP2416FT8P-UK	22.0	14	10		8.0
24	AP2426FT8P-UK	33.0	8	8	8	-3.0
26	AP2616FT8P-UK	22.0	14	12		12.0
26	AP2626FT8P-UK	33.0	10	8	8	1.0
28	AP2816FT8P-UK	22.0	14	14		12.0
28	AP2826FT8P-UK	33.0	10	10	8	1.0
30	AP3016FT8P-UK	22.0	16	14		14.0
30	AP3062FT8P-UK	33.0	10	10	10	3.0
32	AP3216FT8P-UK	22.0	18	14		15.0
34	AP3416FT8P-UK	22.0	18	16		16.0
36	AP3616FT8P-UK	22.0	18	18		18.0
36	AP3626FT8P-UK	33.0	12	12	12	7.0
38	AP3816FT8P-UK	22.0	20	18		22.0
40	AP4016FT8P-UK	22.0	20	20		24.0
42	AP4216FT8P-UK	33.0	14	14	14	14.0
42	AP4226FT8P-UK	33.0	16	16	10	14.0

Fig 6

Heat Recovery VRF
Additional Refrigerant Charge Calculation

ote:	Calculation of Additional Refrigerant Charge for SHRM*e*							
	Liquid line Pipe Diameter Ø Inch		mm	Refrigerant		Length (m)		Additional Amount of
If a negative result occurs the additional refrigerant amount is 0kg ***No additional refrigerant charge or change to Factory charge is required*** Total system charge = Base charge + Additional Refrigerant Charge + HP Correction Factor	1/4	-	6.4	0.0325	x		=	kg
	3/8	-	9.5	0.0715	x		=	kg
	1/2	-	12.7	0.1365	x		=	kg
	5/8	-	15.9	0.208	x		=	kg
	3/4	-	19.0	0.325	x		=	kg
	7/8	-	22.0	0.455	x		=	kg
				Additional Amount of Refrigerant			=	kg

Fig 7

Calculation.

Correction factor (fig 6)= _ kg + Additional for liquid line (fig 7) = _ kg = Total additional charge = _ kg
Total system charge. Factory Charge (fig 6) _kg + Total Additional charge = _kg

Example SHRMe.

1 x MCY-MAP1006FT8P-UK (10hp) with 10m of 1/4" liquid line, 20m of 3/8" liquid line, 15m of 1/2" liquid line, 40m of 5/8" liquid line.
Additional Charge: Correction factor = 3.0kg + (10 x 0.0325 = 0.325kg + = 20 x 0.0715 = 1.43kg + 15 x 0.136 = 2.05kg + 40 x 0.208 = 8.32kg) = 12.12kg)
3.0+12.12 = 15.12kg
Total System Charge: Additional Charge = 15.12kg + Factory Charge = 11.0kg Total System Charge = 15.12+11.0 = 26.12kg

VRF Replacement Technology

Designed with the refurbishment market in mind, the new generation of VRF systems allow the reuse of vertical refrigerant pipe work from old R22 and R407C systems. Allowing a cost-effective solution to upgrade from any brand of old equipment to the industry's most energy efficient VRF systems.

R22 & R407C Replacement Technology for SMMSi/e and SHRMi/e

Continuing our commitment to more environmentally friendly refrigerants our latest generation SMMSi and SHRMi VRF systems can be used to replace existing R22 and R407C air conditioning plant. R22 (HCFC) was commonly used in air conditioning production up to 2004, on 1st January 2015 R22 equipment will become none serviceable, resulting in systems having to be replaced with more environmentally friendly refrigerants that have a lower or zero Ozone Depleting Potential (ODP).

Available for Heat Pump and Heat Recovery systems Re-use existing refrigerant pipework

Cost effective upgrade.
Reduced installation time and expense.
ECA compliant dependent on design Minimal disruption.
Ideal for refurbishment projects where the main risers are no longer accessible.
Lower energy consumption with up to 60% increase in energy efficiency.
Chance to increase or decrease system capacity.
Smaller footprint compared to previous R22 models Can re-use existing power supply.
End of life recycling program for replaced plant.

Pipe	Suction Gas					Liquid Side					Discharge Gas				Max. Piping lengths to first Branch joint (m). Height difference Outdoor to Indoor.	
SHRMi/ SHRMe	7/8	1 1/8	1 3/8	1 5/8	1 7/8	1/2	5/8	3/4	7/8	1 1/8	3/4	7/8	1 1/8	1 3/8	Height <3M	Height >3 <50m
8HP	✓	✓				✓	✓				✓				100	85
10HP	✓	✓				✓	✓				✓					
12HP		✓	✓			✓	✓				✓					
14HP		✓	✓				✓	✓				✓				
16HP		✓	✓					✓	✓			✓				
18HP		✓	✓					✓	✓			✓				
20HP		✓	✓					✓	✓			✓				
22HP			✓	✓				✓	✓				✓			
24HP			✓	✓				✓	✓				✓			
26HP			✓	✓					✓	✓			✓			
28HP			✓	✓					✓	✓			✓			
30HP			✓	✓					✓	✓			✓			
32HP			✓	✓					✓	✓			✓			
34HP			✓	✓					✓	✓			✓			
36HP				✓	✓				✓	✓				✓		
38HP				✓	✓				✓	✓				✓		
40HP				✓	✓				✓	✓				✓		
42HP				✓	✓				✓	✓				✓		

Pipe	Suction Gas					Liquid Side					Max. Piping lengths to first Branch joint (m). Height difference Outdoor to Indoor.	
SMMSe	7/8	1 1/8	1 3/8	1 5/8	1 7/8	1/2	5/8	3/4	7/8	1 1/8	Standard Height <70M	High Efficiency Height<70m
8HP	✓	✓				✓	✓				100	100
10HP	✓	✓				✓	✓					
12HP		✓	✓			✓	✓					
14HP		✓	✓				✓	✓				
16HP		✓	✓					✓	✓			
18HP		✓	✓					✓	✓			
20HP		✓	✓					✓	✓			
22HP			✓	✓				✓	✓			
24HP			✓	✓				✓	✓			
26HP			✓	✓					✓	✓		
28HP			✓	✓					✓	✓		
30HP			✓	✓					✓	✓		
32HP			✓	✓					✓	✓		
34HP			✓	✓					✓	✓		
36HP				✓	✓				✓	✓		
38HP				✓	✓				✓	✓		
40HP				✓	✓				✓	✓		
42HP				✓	✓				✓	✓		
44HP				✓	✓				✓	✓		
46HP				✓	✓				✓	✓	50	50
48HP				✓	✓				✓	✓		

Maximum system diversity factor connectable indoor units to outdoor is 105%

The data tables detail the main pipe sizes to the first joint. The pipes can be vertical or horizontal providing they match the data. After the first joint for main pipes all other pipework must follow the same principals/criteria as for new installations as detailed in the installation and data books.

Acoustic Data - MMY Indoor Units

4 Way Compact Cassette	High dB(A)	Med dB(A)	Low dB(A)
MMU-AP0057MH-E	32	30	29
MMU-AP0077MH-E	37	33	29
MMU-AP0097MH-E	38	33	28
MMU-AP0127MH-E	38	34	30
MMU-AP0157MH-E	40	35	31
MMU-AP0187MH-E	47	39	34
4 Way Cassette	**High dB(A)**	**Med dB(A)**	**Low dB(A)**
MMU-AP0094HP1-E	30	29	27
MMU-AP0124HP1-E	30	29	27
MMU-AP0154HP1-E	31	29	27
MMU-AP0184HP1-E	32	29	27
MMU-AP0244HP1-E	35	31	28
MMU-AP0274HP1-E	35	31	28
MMU-AP0304HP1-E	38	33	30
MMU-AP0364HP1-E	43	38	32
MMU-AP0484HP1-E	46	38	33
MMU-AP0564HP1-E	46	40	33
2 Way Cassette	**High dB(A)**	**Med dB(A)**	**Low dB(A)**
MMU-AP0072WH1	34	32	30
MMU-AP0092WH1	34	32	30
MMU-AP0122WH1	34	32	30
MMU-AP0152WH1	35	33	30
MMU-AP0182WH1	35	33	30
MMU-AP0242WH1	38	35	33
MMU-AP0272WH1	38	35	33
MMU-AP0302WH1	40	37	34
MMU-AP0362WH1	42	39	36
MMU-AP0482WH1	43	40	37
MMU-AP0562WH1	46	42	39
1 Way Cassette	**High dB(A)**	**Med dB(A)**	**Low dB(A)**
MMU-AP0074YH1-E	42	39	34
MMU-AP0094YH1-E	42	39	34
MMU-AP0124YH1-E	42	39	34
MMU-AP0154SH1-E	37	35	32
MMU-AP0184SH1-E	38	36	34
MMU-AP0244SH1-E	45	41	37
Slim Ducted	**High dB(A)**	**Med dB(A)**	**Low dB(A)**
MMD-AP0054SPH1-E*	26	25	24
MMD-AP0074SPH1-E*	28	26	24
MMD-AP0094SPH1-E*	28	26	24
MMD-AP0124SPH1-E*	29	27	25
MMD-AP0154SPH1-E*	32	30	28
MMD-AP0184SPH1-E*	33	31	29
MMD-AP0244SPH1-E*	38	36	33
MMD-AP0274SPH1-E*	38	36	33
Standard Ducted	**High dB(A)**	**Med dB(A)**	**Low dB(A)**
MMD-AP0076BHP1-E	29	26	23
MMD-AP0096BHP1-E	30	26	23
MMD-AP0126BHP1-E	30	26	23
MMD-AP0156BHP1-E	33	29	25
MMD-AP0186BHP1-E	33	29	25
MMD-AP0246BHP1-E	36	31	27
MMD-AP0276BHP1-E	36	31	27
MMD-AP0306BHP1-E	36	31	27
MMD-AP0366BHP1-E	40	36	33
MMD-AP0486BHP1-E	40	36	33
MMD-AP0566BHP1-E	40	36	33
High Static Ducted	**High dB(A)**	**Med dB(A)**	**Low dB(A)**
MMD-AP0186HP1-E	37	32	30
MMD-AP0246HP1-E	38	34	31
MMD-AP0276HP1-E	38	34	31
MMD-AP0366HP1-E	41	37	34
MMD-AP0486HP1-E	42	40	35
MMD-AP0566HP1-E	45	42	37
MMD-AP0726HP1-E	44	40	36
MMD-AP0966HP1-E	46	42	38

Ceiling Suspended	High dB(A)	Med dB(A)	Low dB(A)
MMC-AP0157HP1-E	36	34	28
MMC-AP0187HP1-E	37	35	28
MMC-AP0247HP1-E	41	36	29
MMC-AP0277HP1-E	41	36	29
MMC-AP0367HP1-E	44	38	32
MMC-AP0487HP1-E	44	41	35
MMC-AP0567HP1-E	46	42	36
High Wall	**High dB(A)**	**Med dB(A)**	**Low dB(A)**
MMK-AP0073H1	35	31	28
MMK-AP0093H1	37	32	28
MMK-AP0123H1	37	32	28
MMK-AP0153H1	41	36	33
MMK-AP0183H1	41	36	33
MMK-AP0243H1	46	39	34
MMK-AP0054MHP1-E	33	31	29
MMK-AP0074MH1-E	35	32	29
MMK-AP0094MH1-E	36	33	29
MMK-AP0124MH1-E	37	33	29
Concealed Chassis	**High dB(A)**	**Med dB(A)**	**Low dB(A)**
MML-AP0074BH1-E	36	34	28
MML-AP0094BH1-E	36	34	32
MML-AP0124BH1-E	36	34	32
MML-AP0154BH1-E	36	34	32
MML-AP0184BH1-E	36	34	32
MML-AP0244BH1-E	42	37	33
Floor Mounted Console	**High dB(A)**	**Med dB(A)**	**Low dB(A)**
MML-AP0074H1-E	39	37	35
MML-AP0094H1-E	39	37	35
MML-AP0124H1-E	45	41	38
MML-AP0154H1-E	45	41	38
MML-AP0184H1-E	49	44	39
MML-AP0244H1-E	49	44	39
Bi-Flow Console	**High dB(A)**	**Med dB(A)**	**Low dB(A)**
MML-AP0074NH1-E	38	32	26
MML-AP0094NH1-E	38	32	26
MML-AP0124NH1-E	40	34	29
MML-AP0154NH1-E	43	37	31
MML-AP0184NH1-E	47	40	34
Floor Mounted Cabinet	**High dB(A)**	**Med dB(A)**	**Low dB(A)**
MMF-AP0156H1-E	46	42	37
MMF-AP0186H1-E	46	42	37
MMF-AP0246H1-E	49	45	39
MMF-AP0276H1-E	49	45	39
MMF-AP0366H1-E	51	46	41
MMF-AP0486H1-E	54	49	44
MMF-AP0566H1-E	54	49	44
Fresh Air Intake	**High dB(A)**	**Med dB(A)**	**Low dB(A)**
MMD-AP0481HFE	45	43	41
MMD-AP0721HFE	46	45	44
MMD-AP0961HFE	46	45	44
		Extra	
Air to Air Heat Exchanger	**High dB(A)**	**High dB(A)**	**Low dB(A)**
MMD-VN502HEX1E	37	36	34
MMD-VN802HEX1E	41	40	38
MMD-VN1002HEX1E	43	42	40
MMD-VNK502HEX1E	36	35	33
MMD-VNK802HEX1E	40	39	38
MMD-VNK1002HEX1E	42	41	39

Sound Pressure Levels measured in an anechoic chamber in accordance with JSI B8616

Note: * Measured at back air inlet

Common Sensor Characteristics

There are eight commonly used sensors in the **RAS** and **RAV** systems.

TA = Return Air Sensor; indoor unit

TC = Coil Sensor; indoor unit

TCJ = Coil Sensor; indoor unit

TL = Liquid Pipe Sensor (fan speed); outdoor unit

TE = Heat Exchange Sensor (defrost); outdoor unit

TD = Discharge Pipe Sensor; outdoor unit

TO = Ambient

TS = Suction

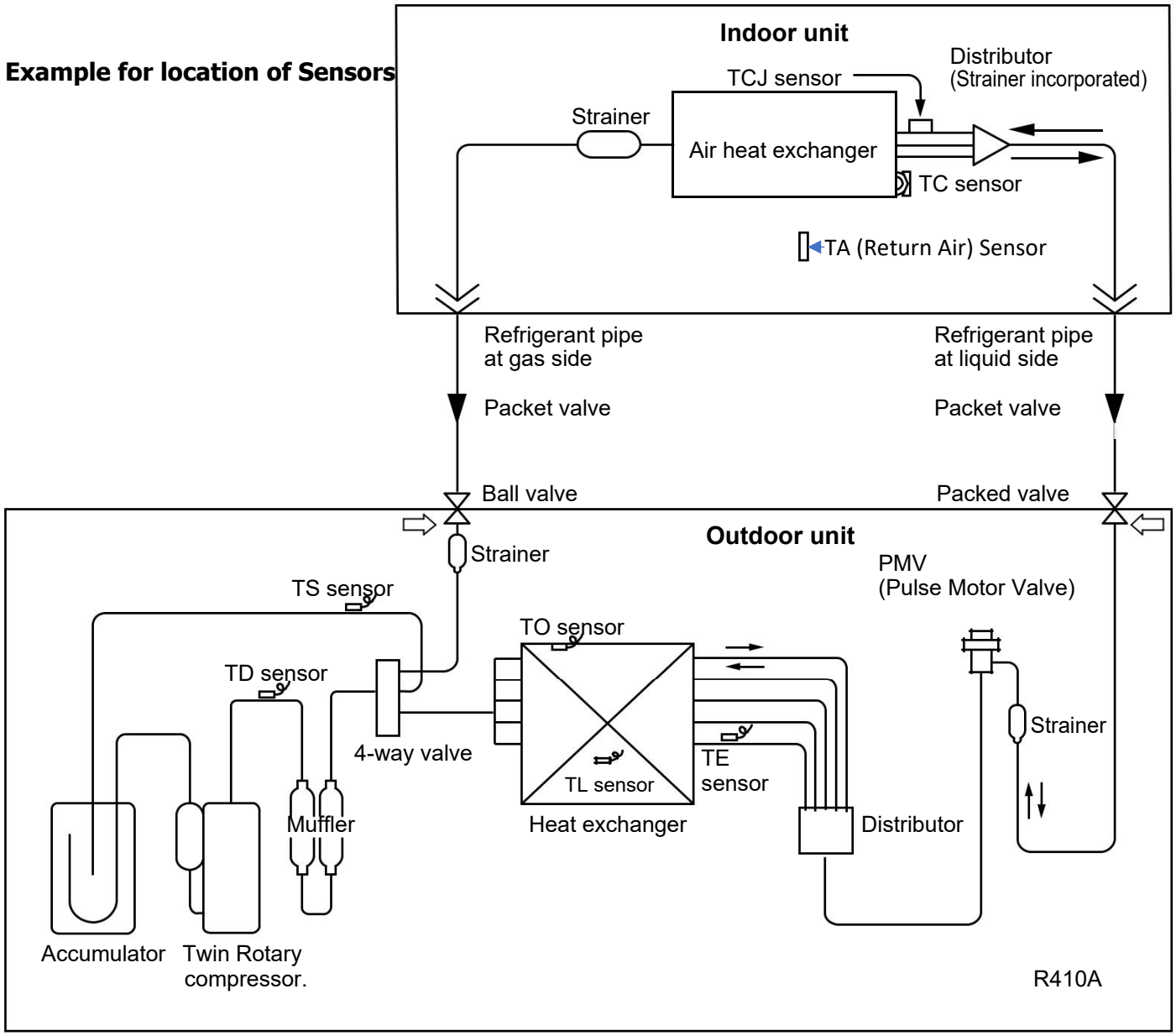
TK = Oil sensor (VRF)

The Ta,Tc,Tcj,Ts,To and TE sensors all share the same resistance versus temperature characteristic. They differ however in electrical connections and sensing head style; therefore, it is important to quote the full model type number when ordering any replacement sensors.

The Td, TL and TK sensor has a different resistance characteristic because its sensing range is that much higher than the others.

Sensor	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	100	ºC
Ta,Tc,Tcj,TE,To, Ts	60.3	45.3	33.8	26.4	20.35	16	12.59	10	8	6.5	5.2	4.3	3.5	2.9	2.4	-	KΩ
Td, Tk, TL	-	-	161	-	99	80.5	63	50	40	-	26.5	-	17.9	-	12.3	3.4	kΩ

Example for location of Sensors



Indoor Lamp Indication for Trouble Shooting - RAV 6/7KRT (High Wall Only)

● : Go off, ○ : Go on, ☼ : Flash (0.5 sec.)

Lamp indication	Check code	Cause of trouble occurrence
Ready ● Timer ● Operation ● — No indication at all	—	Power supply OFF or miswiring between receiving unit and indoor unit
Ready ● Timer ● Operation ☼ Flash	E01	Receiving error } Receiving unit } Miswiring or wire connection error between receiving unit and indoor unit
	E02	Sending error
	E03	Communication stop
	E08	Duplicated indoor unit No. } Setup error
	E09	Duplicated master units of remote controller
	E10	Communication error between CPUs on indoor unit P.C. board
	E18	Wire connection error between indoor units, Indoor power OFF (Communication stop between indoor master and follower or between main and sub indoor twin)
Ready ☼ Flash Timer ● Operation ●	E04	Miswiring between indoor unit and outdoor unit or connection erorr (Communication stop between indoor and outdoor units)
Ready ☼ Timer ☼ Operation ● Alternate flash	P01	Indoor AC fan error
	P10	Overflow was detected. Protective device of indoor unit worked.
	P12	Indoor DC fan error
Ready ☼ Timer ● Operation ☼ Alternate flash	P03	Outdoor unit discharge temp. error Outdoor high pressure system error Case thermostat worked Power supply error } Protective device of outdoor unit worked. +1
	P04	
	P05	Power supply error
	P07	Heat sink overheat error } Outdoor unit error
	P15	Gas leak detection error
	P19	4-way valve system error (Indoor or outdoor unit judged.)
	P20	Outdoor unit high pressure protection
	P22	Outdoor unit: Outdoor unit error
	P26	Outdoor unit: Inverter Idc operation } Protective device of outdoor unit worked. +1
	P29	Outdoor unit: Position detection error
	P31	Stopped because of error of other indoor unit in a group (Check codes of E03/L03/L07/L08))

Lamp indication	Check code	Cause of trouble occurrence
Ready ☼ Timer ☼ Operation ☼ Simultaneous flash	—	During test run
Ready ☼ Timer ☼ Operation ○ Alternate flash	—	Disagreement of cool/heat (Automatic cool/heat setting to automatic cool/heat prohibited model, or setting of heating to cooling-only model)

Lamp indication	Check code	Cause of trouble occurrence
Ready ● Timer ☼ Operation ☼ Alternate flash	F01	Heat exchanger sensor (TCJ) error } Indoor unit sensor error
	F02	Heat exchanger sensor (TC) error
	F10	Heat exchanger sensor (TA) error
Ready ○ Timer ☼ Operation ☼ Alternate flash	F04	Discharge temp. sensor (TD) error } Sensor error of outdoor unit +1
	F06	Temp. sensor (TL, TS, TE) error
	F07	Temp. sensor (TD) error
	F08	Temp. sensor (TO) error
	F12	Temp. sensor (TS) error
	F13	Heat sink sensor (TH) error
	F15	Temp. sensor miswiring (TE, TS)
Ready ● Timer ☼ Operation ☼ Simultaneous flash	F29	Indoor EEPROM error
Ready ○ Timer ☼ Operation ☼ Simultaneous flash	F31	Outdoor EEPROM error
Ready ● Timer ☼ Operation ● Flash	H01	Compressor break down } Outdoor compressor system error +1
	H02	Compressor lock
	H03	Current detection circuit error } Power supply, outdoor P.C. board error
	H04	Case thermostat worked. } Compressor overheat, outdoor wiring error
Ready ☼ Timer ● Operation ☼ Simultaneous flash	L03	Duplicated master indoor units } → AUTO address • If group construction and address are not normal when power supply turned on, automatically goes to address setup mode.
	L07	There is indoor unit of group connection in individual indoor unit.
	L08	Unsetting of group address
	L09	Missed setting (Unset indoor capacity)
Ready ☼ Timer ○ Operation ☼ Simultaneous flash	L10	Unset model type (Service board)
	L20	Duplicated indoor central addresses
	L29	Temp. sensor (TH) error EEPROM error Communication between outdoor MCU Heat sink overheat error Gas leak detection error 4-way valve error
	L30	Outside interlock error

The primary judgement to check whether a fault has occurred in the indoor or outdoor unit is carried out with the following method; method to judge the erroneous position by flashing indication on the display part of the indoor unit. The indoor unit monitors the operating status of the air conditioner and the blocked contents of self-diagnosis are displayed restricted to the above cases if a protective circuit works.

Indoor Lamp Indication for Trouble Shooting - RAV 6/7KRT (High Wall Only)

Check Code List (Indoor)

○ : Go on, ◎ : Flash, ● : Go off ALT (Alternate): Alternate flashing when there are two flashing LED SIM (Simultaneous): Simultaneous flashing when there are two flashing LED

(Indoor unit detected)

Check code indication	Sensor lamp indication				Representative defective position	Explanation of error contents	Air conditioner operation	
Wired remote controller	Block indication						Automatic reset	Operation continuation
	Ready	Timer	Operation	Flash				
E03	●	●	◎		Regular communication error between indoor and remote controller	No communication from remote controller and network adapter (Also no communication from central control system)	○	×
E04	◎	●	●		Indoor/Outdoor serial error	There is error on serial communication between indoor and outdoor units	○	×
E08	●	●	◎		Duplicated indoor addresses ✧	Same address as yours was detected.	○	×
E18	●	●	◎		Regular communication error between indoor master and follower units	Regular communication between indoor master and follower units is impossible, Communication between twin master (main) and follower (sub) units is impossible.	○	×
F01	●	◎	◎	ALT	Indoor unit, Heat exchanger (TCJ) error	Open/short was detected on heat exchanger (TCJ).	○	×
F02	●	◎	◎	ALT	Indoor unit, Heat exchanger (TC) error	Open/short was detected on heat exchanger (TC).	○	×
F10	●	◎	◎	ALT	Indoor unit, Room temp. sensor (TA) error	Open/short was detected on room temp. sensor (TA).	○	×
F29	●	◎	◎	SIM	Indoor unit, other indoor P.C. board error	EEPROM error (Other error may be detected. If no error, automatic address is repeated.	×	×
L03	◎	●	◎	SIM	Duplicated setting of indoor group master unit ✧	There are multiple master units in a group.	×	×
L07	◎	●	◎	SIM	There is group cable in individual indoor unit. ✧	When even one group connection indoor unit exists in individual indoor unit.	×	×
L08	◎	●	◎	SIM	Unset indoor group address ✧	Indoor group address is unset.	×	×
L09	◎	●	◎	SIM	Unset indoor capacity	Capacity of indoor unit is unset.	×	×
L20	◎	○	◎	SIM	Duplicated central control system address	Duplicated setting of central control system address	○	×
L30	◎	○	◎	SIM	Outside error input to indoor unit (Interlock)	Abnormal stop by outside error (CN80) input	×	×
P12	◎	◎	●	ALT	Indoor unit, DC fan error	Indoor DC fan error (Over-current/Lock, etc.) was detected.	×	×
P19	◎	●	◎	ALT	4-way valve system error	In heating operation, an error was detected by temp. down of indoor heat exchanger sensor.	○	×
P31	◎	●	◎	ALT	Other indoor unit error	Follower unit in group cannot operate by warning from [E03/L03/L07/L08] of master unit.	○	×

✧ When this warning was detected before group construction/address check finish at power supply was turned on, the mode shifts automatically to AUTO address setup mode.

(Remote controller detected)

Check code indication	Sensor lamp indication				Representative defective position	Explanation of error contents	Air conditioner operation	
Wired remote controller	Block indication						Automatic reset	Operation continuation
	Ready	Timer	Operation	Flash				
E01	●	●	◎		No master remote controller, Remote controller communication (Receive) error	Signal cannot be received from indoor unit. Master remote controller was not set. (including 2 remote controllers)	—	—
E02	●	●	◎		Remote controller communication (Send) error	Signal cannot be sent to indoor unit.	—	—
E09	●	●	◎		Duplicated master remote controller	In 2-remote controller control, both were set as master. (Indoor master unit stops warning and follower unit continues operation.)	×	△

(Central control devices detected)

Check code indication	Sensor lamp indication	Representative defective position	Explanation of error contents	Air conditioner operation	
TCC-LINK central	Block indication			Automatic reset	Operation continuation
	Ready Timer Operation Flash				
C05	Is not displayed. (Common use of remote controller, etc.)	Central control system communication (send) error	Signal sending operation of central control system is impossible. There are multiple same central devices. (AI-NET)	—	—
C06		Central control system communication (receive) error	Signal receiving operation of central control system is impossible.	—	—
C12	—	General-purpose device control interface batched warning	An error on device connected to general-purpose device control interface of exclusive to TCC-LINK/AI-NET	—	—
P30	By warning unit (Above-mentioned)	Group follower unit is defective.	Group follower unit is defective. (For remote controller, above-mentioned [***] details are displayed with unit No.	—	—

NOTE: Even for the same contents of error such as communication error, the display of check code may differ according to detection device.
When remote controller or central controller detects an error, it is not necessarily related to operation of the air conditioner. In this list, the check codes that outdoor unit detects are not described.

Indoor Lamp Indication for Trouble Shooting - RAV Series

● : Go off, ○ : Go on, ✳ : Flash (0.5 sec.)

Lamp indication	Check code	Cause of trouble occurrence
Operation ● Timer ● Ready ● No indication at all	—	Power supply OFF or miswiring between receiving unit and indoor unit
Operation ● Timer ✳ Ready ● Flash	E01	Receiving error / Sending error } Receiving unit } Miswiring or wire connection error between receiving unit and indoor unit
	E02	
	E03	Communication stop
	E08	Duplicated indoor unit No. / Duplicated master units of remote controller } Setup error
	E09	
	E10	Communication error between CPUs on indoor unit P.C. board
	E18	Wire connection error between indoor units, Indoor power OFF (Communication stop between indoor master and follower or between main and sub indoor twin)
Operation ● Timer ● Ready ✳ Flash	E04	Miswiring between indoor unit and outdoor unit or connection erorr (Communication stop between indoor and outdoor units)
Operation ● Timer ✳ Ready ✳ Alternate flash	P10	Overflow was detected. / Indoor DC fan error } Protective device of indoor unit worked.
	P12	
Operation ✳ Timer ● Ready ✳ Alternate flash	P03	Outdoor unit discharge temp. error / Outdoor high pressure system error } Protective device of outdoor unit worked. *1
	P04	
	P05	Negative phase detection error / Heat sink overheat error / Gas leak detection error } Outdoor unit error
	P07	
	P15	
	P19	4-way valve system error (Indoor or outdoor unit judged.)
	P20	Outdoor unit high pressure protection
	P22	Outdoor unit: Outdoor unit error / Outdoor unit: Inverter Idc operation / Outdoor unit: Position detection error } Protective device of outdoor unit worked. *1
	P26	
	P29	
	P31	Stopped because of error of other indoor unit in a group (Check codes of E03/L03/L07/L08)
Operation ☼ Timer ☼ Ready ☼ Simultaneous flash	—	During test run
Operation ○ Timer ☼ Ready ☼ Alternate flash	—	Disagreement of cool/heat (Automatic cool/heat setting to automatic cool/heat prohibited model, or setting of heating to cooling-only model)

Lamp indication	Check code	Cause of trouble occurrence
Operation ☼ Timer ☼ Ready ● Alternate flash	F01	Heat exchanger sensor (TCJ) error / Heat exchanger sensor (TC) error / Heat exchanger sensor (TA) error — Indoor unit sensor error
	F02	
	P10	
Operation ☼ Timer ☼ Ready ○ Alternate flash	F04	Discharge temp. sensor (TD) error / Temp. sensor (TE) error / Temp. sensor (TL) error / Temp. sensor (TO) error / Temp. sensor (TS) error / Temp. sensor (TH) error / Temp. Sensor miswiring (TE, TS) — Sensor error of outdoor unit *1
	F06	
	F07	
	F08	
	F12	
	F13	
	F15	
Operation ☼ Timer ☼ Ready ● Simultaneous flash	F29	Indoor EEPROM error
Operation ☼ Timer ☼ Ready ○ Simultaneous flash	F31	Outdoor EEPROM error
Operation ● Timer ☼ Ready ● Flash	H01	Compressor break down / Compressor lock / Current detection circuit error / Case thermostat worked. / Outdoor unit low pressure system error — Outdoor compressor system error *1
	H02	
	H03	
	H04	
	H06	
Operation ☼ Timer ● Ready ☼ Simultaneous flash	L03	Duplicated master indoor units / There is indoor unit of group connection in individual indoor unit. / Unsetting of group address / Missed setting (Unset indoor capacity) — → AUTO address * If group construction and address are not normal when power supply turned on, automatically goes to address setup mode.
	L07	
	L08	
	L09	
Operation ☼ Timer ○ Ready ☼ Simultaneous flash	L10	Unset model type (Service board) / Duplicated indoor central addresses / Outdoor unit and other error / Outside interlock error / Negative phase error — Others
	L20	
	L29	
	L30	
	L31	

The primary judgment to check whether a fault has occurred in the indoor unit or outdoor unit is carried out with the following method; method to judge the erroneous position by flashing indication on the display part of the indoor unit. The indoor unit monitors the operating status of the air conditioner and the blocked contents of self-diagnosis are displayed restricted to the above cases if a protective circuit works.

Indoor Lamp Indication for Trouble Shooting - RAV Series

Check Code List (Indoor)

○ : Go on, ◎ : Flash, ● : Go off ALT (Alternate): Alternate flashing when there are two flashing LED SIM (Simultaneous): Simultaneous flashing when there are two flashing LED

(Indoor unit detected)

Check code indication	Indoor Sensor lamp indication				Representative defective position	Explanation of error contents	Air conditioner operation	
TCC-LINK central & Wired remote controller	Block indication						Automatic reset	Operation continuation
	Operation	Timer	Ready	Flash				
E03	◎	●	●		Regular communication error between indoor and remote controller	No communication from remote controller and network adapter (Also no communication from central control system)	○	×
E04	●	●	◎		Indoor/Outdoor serial error	There is error on serial communication between indoor and outdoor units	○	×
E08	◎	●	●		Duplicated indoor addresses ✧	Same address as yours was detected.	○	×
E10	◎	●	●		Communication error between indoor MCU	MCU communication error between main motor and micro computer	○	×
E18	◎	●	●		Regular communication error between indoor master and follower units	Regular communication between indoor master and follower units is impossible, Communication between twin master (main) and follower (sub) units is impossible.	○	×
F01	◎	◎	●	ALT	Indoor unit, Heat exchanger (TCJ) error	Open/short was detected on heat exchanger (TCJ).	○	×
F02	◎	◎	●	ALT	Indoor unit, Heat exchanger (TC) error	Open/short was detected on heat exchanger (TC).	○	×
F10	◎	◎	●	ALT	Indoor unit, Room temp. sensor (TA) error	Open/short was detected on room temp. sensor (TA).	○	×
F29	◎	◎	●	SIM	Indoor unit, other indoor P.C. board error	EEPROM error (Other error may be detected. If no error, automatic address is repeated.	×	×
L03	◎	●	◎	SIM	Duplicated setting of indoor group master unit ✧	There are multiple master units in a group.	×	×
L07	◎	●	◎	SIM	There is group cable in individual indoor unit. ✧	When even one group connection indoor unit exists in individual indoor unit.	×	×
L08	◎	●	◎	SIM	Unset indoor group address ✧	Indoor group address is unset.	×	×
L09	◎	●	◎	SIM	Unset indoor capacity	Capacity of indoor unit is unset.	×	×
L20	◎	○	◎	SIM	Duplicated central control system address	Duplicated setting of central control system address	○	×
L30	◎	○	◎	SIM	Outside error input to indoor unit (Interlock)	Abnormal stop by outside error (CN80) input	×	×
P01	●	◎	◎	ALT	Indoor unit, AC fan error	An error of indoor AC fan was detected. (Fan motor thermal relay worked.)	×	×
P10	●	◎	◎	ALT	Indoor unit, overflow detection	Float switch worked.	×	×
P12	●	◎	◎	ALT	Indoor unit, DC fan error	Indoor DC fan error (Over-current/Lock, etc.) was detected.	×	×
P19	◎	●	◎	ALT	4-way valve system error	In heating operation, an error was detected by temp. down of indoor heat exchanger sensor.	○	×
P31	◎	●	◎	ALT	Other indoor unit error	Follower unit in group cannot operate by warning from [E03/L03/L07/L08] of master unit.	○	×

✧ When this warning was detected before group construction/address check finish at power supply was turned on, the mode shifts automatically to AUTO address setup mode.

(Remote controller detected)

Check code indication	Indoor Sensor lamp indication				Representative defective position	Explanation of error contents	Air conditioner operation	
Wired remote controller	Block indication						Automatic reset	Operation continuation
	Operation	Timer	Ready	Flash				
E01	◎	●	●		No master remote controller, Remote controller communication (Receive) error	Signal cannot be received from indoor unit. Master remote controller was not set. (including 2 remote controllers)	—	—
E02	◎	●	●		Remote controller communication (Send) error	Signal cannot be sent to indoor unit.	—	—
E09	◎	●	●		Duplicated master remote controller	In 2-remote controller control, both were set as master. (Indoor master unit stops warning and follower unit continues operation.)	×	△

(Central control devices detected)

Check code indication	Indoor Sensor lamp indication				Representative defective position	Explanation of error contents	Air conditioner operation	
TCC-LINK central	Block indication						Automatic reset	Operation continuation
	Operation	Timer	Ready	Flash				
C05	Is not displayed. (Common use of remote controller, etc.)				Central control system communication (send) error	Signal sending operation of central control system is impossible. There are multiple same central devices. (AI-NET)	—	—
C06					Central control system communication (receive) error	Signal receiving operation of central control system is impossible.	—	—
C12	—				General-purpose device control interface batched warning	An error on device connected to general-purpose device control interface of exclusive to TCC-LINK/AI-NET	—	—
P30	By warning unit (Above-mentioned)				Group follower unit is defective.	Group follower unit is defective. (For remote controller, above-mentioned [***] details are displayed with unit No.	—	—

NOTE: Even for the same contents of error such as communication error, the display of check code may differ according to detection device. When remote controller or central controller detects an error, it is not necessarily related to operation of the air conditioner. In this list, the check codes that outdoor unit detects are not described.

Indoor Lamp Indication for Trouble Shooting - RAV Series

Check Code List (Outdoor)

○ : Go on, ◎ : Flash, ● : Go off

ALT (Alternate): Alternate flashing when there are two flashing LED SIM (Simultaneous): Simultaneous flashing when there are two flashing LED

Remote controller indication	Indoor Sensor lamp part				Representative defective position	Detection	Explanation of error contents	Automatic reset	Operation continuation
	Block indication								
	Operation	Timer	Ready	Flash					
F04	◎	◎	○	ALT	Outdoor unit Discharge temp. sensor (TD) error	Outdoor	Open/Short of discharge temp. sensor was detected.	×	×
F06	◎	◎	○	ALT	Outdoor unit Temp. sensor (TE, TS, TL) error	Outdoor	Open/Short of heat exchanger temp. sensor was detected. Miswiring between TE sensor and TS sensor	×	×
F08	◎	◎	○	ALT	Outdoor unit Outside temp. sensor (TO) error	Outdoor	Open/Short of outside temp. sensor was detected.	○	○
F07	◎	◎	○	ALT	Outdoor unit Temp. sensor (TL) error	Outdoor	Open/Short of heat exchanger temp. sensor was detected.	×	×
F12	◎	◎	○	ALT	Outdoor unit Temp. sensor (TS) error	Outdoor	Open/Short of suction temp. sensor was detected.	×	×
F13	◎	◎	○	ALT	Outdoor unit Temp. sensor (TH) error	Outdoor	Open/Short of heat sink temp. sensor (Board installed) was detected.	×	×
F15	◎	◎	○	ALT	Outdoor unit Misconnection of temp. sensor (TE, TS)	Outdoor	Misconnection of outdoor heat exchanger temp. sensor and suction temp. sensor was detected.	×	×
F31	◎	◎	○	SIM	Outdoor unit EEPROM error	Outdoor	Outdoor P.C. board part (EEPROM) error was detected.	×	×
H01	●	◎	●		Outdoor unit Compressor break down	Outdoor	When reached min-Hz by current release control, short-circuited current (Idc) after DC excitation was detected.	×	×
H02	●	◎	●		Outdoor unit Compressor lock	Outdoor	Compressor lock was detected.	×	×
H03	●	◎	●		Outdoor unit Current detection circuit error	Outdoor	Current detection circuit error	×	×
H04	●	◎	●		Outdoor unit Case thermostat operation	Outdoor	Case thermostat operation was detected.	×	×
L10	◎	○	◎	SIM	Outdoor unit Setting error of service P.C. board type	Outdoor	When outdoor service P.C. board was used, model type select jumper setting was inappropriate.	×	×
L29	◎	○	◎	SIM	Outdoor unit Other outdoor unit error	Outdoor	1) Defective parts on outdoor P.C. board (MCU communication, EEPROM, TH sensor error) 2) When outdoor service P.C. board was used, model type selection was inappropriate. 3) Other error (Heat sink abnormal overheat, gas leak, 4-way valve inverse error) was detected.	×	×
P03	◎	●	◎	ALT	Outdoor unit Discharge temp. error	Outdoor	Error was detected by discharge temp. release control.	×	×
P04	◎	●	◎	ALT	Outdoor unit High pressure system error, Power supply voltage error	Outdoor	When case thermostat worked, error was detected by high release control from indoor/ outdoor heat exchanger temp. sensor. Power supply voltage error	×	×
P05	◎	●	◎	ALT	Power supply error	Outdoor	Power supply voltage error	×	×
P07	◎	●	◎	ALT	Outdoor unit Heat sink overheat	Outdoor	Abnormal overheat was detected by outdoor heat sink temp. sensor.	×	×
P15	◎	●	◎	ALT	Gas leak detection	Outdoor	Abnormal overheat of discharge temp. or suction temp. was detected.	×	×
P20	◎	●	◎	ALT	Outdoor unit High pressure system error	Outdoor	Error was detected by high release control from indoor/outdoor heat exchanger temp. sensor.	×	×
P22	◎	●	◎	ALT	Outdoor unit Outdoor fan error	Outdoor	Error (Over-current, lock, etc.) was detected on outdoor fan drive circuit.	×	×
P26	◎	●	◎	ALT	Outdoor unit Inverter Idc operation	Outdoor	Short-circuited protective operation of compressor drive circuit element (G-Tr /IGBT) worked.	×	×
P29	◎	●	◎	ALT	Outdoor unit Position detection error	Outdoor	Position detection error of compressor motor was detected.	×	×
E01	◎	●	●		No remote controller master unit Remote controller communication error	Remote controller	Signal was not received from indoor unit. Main remote controller was not set. (including 2 remote controllers)	—	—
E02	◎	●	●		Remote controller send error	Remote controller	Signal cannot be sent to indoor unit.	—	—
E03	◎	●	●		Regular communication error between indoor and remote controller	Indoor	No communication from remote controller and network adapter	○	×
E04	●	●	◎		Indoor/Outdoor serial error	Indoor	Serial communication error between indoor and outdoor	○	×
E08	◎	●	●		Duplicated indoor addresses ✧	Indoor	Same address as yours was detected.	○	
E09	◎	●	●		Duplicated main remote controllers	Remote controller	In 2-remote controller control, both were set as master. (Indoor master unit stops warning and follower unit continues operation.)	×	×
E10	◎	●	●		Communication error between CPU	Indoor	MCU communication error between main motor and micro computer	○	△
E18	◎	●	●		Regular communication error between master and follower indoor units	Indoor	Regular communication was impossible between master and follower indoor units. Communication between twin master (Main unit) and follower (sub unit) was impossible.	○	×
L03	◎	●	◎	SIM	Duplicated indoor master units ✧	Indoor	There are multiple master units in a group.	×	×
L07	◎	●	◎	SIM	There is group cable in individual indoor unit. ✧	Indoor	When even one group connection indoor unit exists in individual indoor unit	×	×
L08	◎	●	◎	SIM	Unset indoor group address ✧	Indoor	Indoor address group was unset.	×	×
L09	◎	●	◎	SIM	Unset indoor capacity	Indoor	Capacity of indoor unit was unset.	×	×
L30	◎	○	◎	SIM	Outside error input to indoor unit (Interlock)	Indoor	Abnormal stop by CN80 outside error input	×	×
P19	◎	●	◎	ALT	4-way valve inverse error	Indoor Outdoor	In heating operation, error was detected by temp. down of indoor heat exchanger or temp. up ofTE, TS.	○	×

✧ When this warning was detected before group construction/address check finish at power supply was turned on, the mode shifts automatically to AUTO address setup mode.

Indoor Lamp Indication for Trouble Shooting - RAV Series

○ : Go on, ◎ : Flash, ● : Go off

ALT (Alternate): Alternate flashing when there are two flashing LED SIM (Simultaneous): Simultaneous flashing when there are two flashing LED

Remote controller indication	Indoor Sensor lamp part				Representative defective position	Detection	Explanation of error contents	Automatic reset	Operation continuation
	Block indication								
	Operation	Timer	Ready	Flash					
F01	◎	◎	●	ALT	Indoor unit Heat exchanger sensor (TCJ) error	Indoor	Open/Short of heat exchanger (TCJ) was detected.	○	×
F02	◎	◎	●	ALT	Indoor unit Heat exchanger sensor (TC) error	Indoor	Open/Short of heat exchanger (TC) was detected.	○	×
F10	◎	◎	●	ALT	Indoor unit Room temp. sensor (TA) error	Indoor	Open/Short of room temp. (TA) was detected.	○	×
F29	◎	◎	●	SIM	Indoor unit Other indoor P.C. board error	Indoor	EEPROM error (Other error may be detected. If no error, automatic address is repeated.	×	×
P01	●	◎	◎	ALT	Indoor unit Indoor fan error	Indoor	Indoor AC fan error was detected. (Fan thermal relay worked.)	×	×
P10	●	◎	◎	ALT	Indoor unit Overflow detection	Indoor	Float switch worked.	×	×
P12	●	◎	◎	ALT	Indoor unit Indoor fan error	Indoor	Indoor fan error (Over-current / Lock, etc.) was detected.	×	×
P31	◎	●	◎	ALT	Other indoor unit error	Indoor	Other indoor under condition of warning in group. E03/L07/L03/L08 warning	○	×
—	By unit with warning No.			ALT	Error in indoor group	Network adapter	Sub remote controller error in a group (Details of remote controller are displayed with unit No. Only central control side is displayed.)	—	—
—	—				LAN system communication error	Network adapter/ Center	Communication error of central control system signal * Is not displayed on the remote controller	○	○
L20	◎	○	◎	SIM	LAN system communication error	Network adapter/ Center	Duplicated indoor address of central control system communication	○	×
—	—				There are multiple communication adapters.	Network adapter	There are multiple communication adapters on remote controller communication line.	○	○

Apps Store Fault Codes – All Commercial & VRF Systems

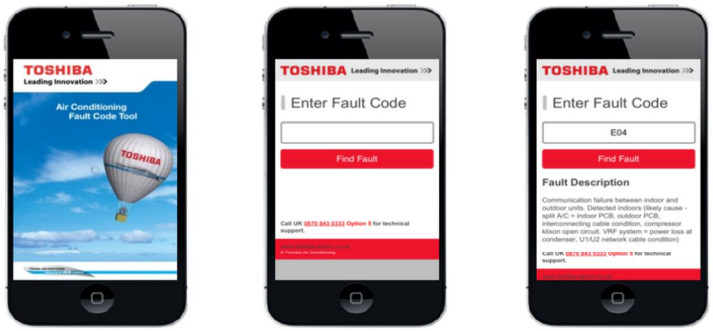
Download **Toshiba Fault Codes** from your Apps store.

Example: 1
Local controller displaying fault code **E04**
Enter **E04** and select **Find Fault**

VRF fault codes can be model specific and may require condenser model reference in Fault Code

Example: 2
Local controller displaying fault code **L29**
Condenser displaying sub-code **07**
Model of condenser MMY-MAP**1604**HT8-E
Enter **L29071604** and select **Find Fault**

Note; codes can be entered with or without character spaces, spaces ignored in text strings.



Fault code diagnosis apps now available
For
Apple iPhone & Android

Fault Codes – All Commercial & VRF Systems

Do Not turn off the power supply before reading the fault codes, doing so will clear the diagnostic memory.
Caution must be taken when removing the access covers, as high voltages are present.
Fault diagnosis is available at three locations within the Air Conditioning system. :-

1 Remote Controller - press the check button
2 Multi Controller - rotate the display switch to position 1
3 Central Controller - press the check button (if installed)
4 Outdoor Unit Switch position (variable dependent upon model): –
2 Pipe Super Multi 2, 3 & 8; 3 Pipe Super Multi 2 & 0;
3 Pipe SMI 2 & 0 2 Pipe Modular Multi MMY 1, 1, 1
3 Pipe Modular Multi MMY 1, 1, 1

Code	Fault Description
04	Split A/C equipment indoor to outdoor communication failure / VRF equipment could also be attributed to communication breakdown between condenser PCB's. Likely cause Indoor PCB / condenser PCB / Interconnecting cable damage / transformer used to power condenser PCB
08	Reverse change in temperature. Detected by indoor evaporator sensor (TC). Likely cause 4-way valve. 4 way reversing valve energised for heating operation only
09	Frost conditions detected / No temperature change. Detected indoors by evaporator sensor (TC). Likely cause poor airflow, lack of refrigerant, overheating compressor
11	Indoor fan trouble. Detected indoors. Likely cause fan motor, PCB
12	EEPROM Failure on PCB. Detected indoors (replace indoor PCB)
14	Inverter compressor PCB short circuit. Detected at outdoor. Likely cause blown fuses supplying inverter pack, faulty IPDU (inverter board) or component within inverter pack, electrical fault on inverter compressor
15	Multi-Control box error. Detected indoors (interrogate Multi-Control box for additional faults by setting display switch @ position 1)
17	Abnormal current detection on inverter compressor. Detected at outdoor. (replace IPDU PCB (inverter board))
18	Condenser coil sensor fault. Detected indoors. Likely cause TE/TE1 sensor condition or outdoor PCB fault sensor value 20°c=12.5k ohms
19	Liquid or compressor discharge sensor fault. Likely cause TL, TD sensor condition or PCB fault TL sensor value 20°c=12.5k ohms TD sensor value 20°c=63k ohms
20	Condenser PCB faulty (replace main PCB)
21	2 pipe VRF & Split A/C equipment High Pressure switch activation 425psi-29bar _ 3 pipe VRF equipment, interrogate condenser PCB for additional fault code. Detected at outdoor. Likely cause split A/C equipment faulty H.P. switch, restriction in refrigerant flow, fan motor failure, poor airflows / VRF equipment set condenser interface PCB switches as follows SW1 @ position 2 & SW2 @ position 0 (see sub codes Er21 or ErAd)
22	Excessive high pressure. Detected at outdoor. Likely cause abnormal characteristics of Pd transducer, refrigerant restriction/blockage
80	Multi-Control box Th(A) sensor fault. Likely cause TH(A) sensor or M/C box PCB sensor value 20°c=12.5k ohms
81	Multi-Control box Th(B) sensor fault. Likely cause TH(B) sensor or M/C box PCB sensor value 20°c=12.5k ohms
82	Multi-Control box Th(C) sensor fault. Likely cause TH(C) sensor or M/C box PCB sensor value 20°c=12.5k ohms
83	Multi-Control box Th(D) sensor fault. Likely cause TH(D) sensor or M/C box PCB sensor value 20°c=12.5k ohms
84	Multi-Control box Th(X) sensor fault. Likely cause TH(X) sensor or M/C box PCB sensor value 20°c=12.5k ohms

Code	Fault Description
87	Phase missing phase. Detected at outdoor. Likely cause abnormal power supply
88	Multi-Control box does not recognise condenser capacity. Likely cause interconnecting cable damage, outdoor PCB fault
89	Indoor capacity to high. Likely cause loss of combination within group of modularised condensers
93	Indoor coil sensor fault. Detected indoors. Likely cause TC1 sensor condition or indoor PCB fault sensor value 20°c=12.5k ohms
94	Indoor coil sensor fault. Detected indoors. Likely cause TC2 sensor condition or indoor PCB fault sensor value 20°c=12.5k ohms
95	Communication failure on P&Q network (indoor/outdoor communication). Detected indoors & outdoors. Likely cause network cable condition, PCB failure indoor or outdoor
96	Indoor unit count too high. Detected at outdoor. Likely cause indoor capacity vs. outdoor capacity Incorrect, too many indoor units connected
97	Central control communication error. Detected at central controller & indoors. Likely cause indoor power failure, central address error, cable damage
98	Duplicated zone address. Likely cause incorrectly assigned central control addresses
99	No communication from indoor to remote controller. Detected by hard-wired remote controller. Likely cause faulty indoor PCB, remote controller or cable damage
0b	Indoor float switch open circuit as result of high condensation levels within drip tray. Detected indoors. Likely cause faulty float switch, faulty lift pump, debris blocking drain
0c	Return air sensor fault. Detected indoors. Likely cause TA sensor condition or indoor PCB fault sensor value 20°c=12.5k ohms
0d	Coil sensor fault. Detected indoors. Likely cause TC sensor condition or indoor PCB fault sensor value 20°c=12.5k ohms
1C	Outdoor error. Detected indoors (interrogate condenser for additional faults)
1d	High Inverter dc current. Detected at outdoor. Likely cause imbalance in compressor voltage, excessive amps by inverter compressor
1E	High compressor discharge temperature. Detected at outdoor. Likely cause low refrigerant, poor refrigerant flow, poor airflows, TD sensor condition sensor value 20°c=63k ohms
1F	High Inverter ac current. Detected at outdoor. Likely cause imbalance in compressor voltage, excessive amps by inverter compressor
8d	Outdoor unit quantity fallen (loss of communication between condensers). Detected at outdoor. Likely cause power interruption, BUS communication cable condition
8E	Outdoor unit's quantity too high. Detected at outdoor. Likely cause too many condensers connected
8F	Outdoor unit address incorrect. Detected at outdoor. Likely cause multiple modularised condenser having SW 9 ON, Interface PCB failure
9A	No temperature change on evaporator. Detected by indoor evaporator sensor TC1. Likely cause miss-wiring, restriction in refrigerant flow, lack of refrigerant
9F	Insufficient temperature change on evaporator. Detected indoors. Likely cause miss-wiring, restriction in refrigerant flow, lack of refrigerant, TC1,TC2 & TA sensor condition sensor value 20°c=12.5k ohms
A0	Compressor discharge sensor fault. Detected at outdoor. Likely cause TD1/ThD1 sensor condition or Interface PCB sensor value 20°c=63k ohms
A1	Compressor discharge sensor fault. Detected at outdoor. Likely cause TD2/ThD2 sensor condition or Interface PCB sensor value 20°c=63k ohms
A2	Compressor suction sensor fault. Detected at outdoor. Likely cause TS1/ThS sensor condition or interface PCB sensor value 20°c=12.5k ohms
A6	High compressor discharge temperature. Detected at outdoor. by TD1. Likely cause low refrigerant, poor refrigerant flow and airflows & TD2 sensor condition sensor value 20°c=63k ohms
A7	High compressor suction temperature > 40°C. Detected at outdoor. Likely cause severe gas shortage, TS sensor condition, interface PCB sensor value 20°c=12.5k ohms

Code	Fault Description
AA	High side pressure sensor fault. Detected at outdoor. (Replace Pd pressure transducer)
Ab	Pressure transducer error. Detected at outdoor. Likely cause abnormal running pressures, abnormal PS / Pd characteristics, interface PCB
AE	High compressor discharge temperature @ low inverter speed. Detected at outdoor. Likely cause TD1 sensor condition, insufficient refrigerant sensor value 20°c=63k ohms
AF	Phase rotation incorrect. Detected at outdoor. Likely cause abnormal phase order, missing phase to outdoor unit
b4	Low pressure transducer error or misreading fault. Detected at outdoor. Likely cause incorrect characteristics of suction pressure transducer (PS, interface PCB faulty
b5	External input activation, refrigerant leak detection system (Call Toshiba's technical helpline for further details 0870 843 0333)
b6	External input activation, refrigerant leak detection system (Call Toshiba's technical helpline for further details 0870 843 0333)
b7	Indoor group follower error. Detected at central controller (interrogate local controller by pressing check for additional fault codes)
b9	Pressure sensor fault. Detected indoors. Likely cause evaporator pressure sensor unplugged, pressure sensor open circuit replace sensor
bb	High compressor discharge temperature. Detected at outdoor. by TD2. Likely cause low refrigerant, poor refrigerant flow and airflows & TD2 sensor condition sensor value 20°c=63k ohms
bE	Low pressure trip. Detected outdoor by PS transducer. Likely cause suction pressure transducer condition (PS), interface PCB fault restriction in refrigerant flow, lack of refrigerant
C05	Command sending error. Detected on Central Controller. Likely cause power loss at indoor unit group, network cable condition)
C06	Command receiving error. Detected on Central Controller. Likely cause power loss at indoor unit group, network cable condition)
d1	Master condenser setup alarm. Detected at outdoor. Likely cause multiple inverter outdoor units connected, faulty interface PCB)
d2	Fault within follower condenser. Detected at outdoor. (retrieve additional fault code from follower condensers)
d3	IPDU PCB overheat (inverter board). Detected at outdoor. Likely cause clogged heat-sink fins, poorly secured or faulty IPDU PCB)
d4	Oil sensor fault. Detected at outdoor. Likely cause TK1 sensor condition or outdoor PCB fault sensor value 20°c=63k ohms)
d5	Oil sensor fault. Detected at outdoor. Likely cause TK2 sensor condition or outdoor PCB fault sensor value 20°c=63k ohms)
d6	Oil sensor fault. Detected at outdoor. Likely cause TK3 sensor condition or outdoor PCB fault sensor value 20°c=63k ohms)
d7	Low oil detection. Detected at outdoor. Likely cause TK1, TK2 & TK3 sensor condition, interface PCB, lack of refrigerant sensor value 20°c=63k ohms)
d8	Oil temperature alarm. Detected at outdoor. Likely cause TK1 sensor location or condition, outdoor PCB fault sensor value 20°c=63k ohms
d9	Oil temperature alarm. Detected at outdoor. Likely cause TK2 sensor location or condition, outdoor PCB fault sensor value 20°c=63k ohms
dA	Abnormal overheat of heat-sink. Detected at outdoor. Likely cause clogged heat-sink fins, poorly secured or faulty IPDU board
db	No oil flow detected. Detected at outdoor. Likely cause TK1, TK2 & TK3 sensor location or condition, interface PCB, blockage within SV3C sensor value 20°c=63k ohms
dC	High temperature oil alarm. Detected at outdoor. Likely cause TK1 sensor condition, interface PCB fault, high ambient running conditions >43°c sensor value 20°c=63k ohms
dd	Temperature change when condensers in off cycle. Detected at outdoor. Likely cause PMV passing within condenser, discharge & suction pressure transducer error (PS & Pd characteristics), interface PCB fault
dE	Indoor unit automatic addressing failure. Detected at outdoor. Likely cause indoor PCB configuration error, indoor PCB faulty
dF	Outdoor unit automatic address failure. Detected at outdoor. Likely cause interface PCB fault

Code	Fault Description
E01	Communication error between indoor unit and remote controller. Detected by remote controller. Likely cause indoor PCB, remote controller, incorrect switch position on rear of remote controller, all switches normally down
E02	Sending error of local remote controller. Detected by remote controller. Likely cause replace remote controller
E03	Communication error between indoor unit and central remote controller. Detected indoors. Likely cause indoor network adapter, central remote controller
E04	Communication failure between indoor and outdoor units. Detected indoors. Likely cause split A/C=indoor PCB, outdoor PCB, interconnecting cable condition, compressor klixon open circuit. VRF system=power loss at condenser, U1/U2 network cable condition
E06	Decrease in quantity of indoor units. Detected indoors. Likely cause power loss at indoor unit, indoor PCB fault, A&B controller cable condition
E07	Communication failure between indoor and outdoor units. Detected at outdoor. Likely cause interconnecting cable condition, outdoor PCB switch position SW30 bit 1 & 2 must be placed in ON position for test
E08	Duplicated indoor address. Detected indoors. Likely cause incorrect setting of BUS addresses when under central control
E09	Duplicated master remote controllers. Detected indoors. Likely cause two local remote controllers connected on A&B network
E1	Activation of high-pressure switch on D.O.L (Fixed speed) compressor 1. Detected at outdoor. Likely cause fan motor trouble, poor airflows, restricted refrigerant flow
e1 80	Multi-Control box 1 Th(A) sensor fault. Likely cause TH(A) sensor or M/C box PCB sensor value 20°c=12.5k ohms
e1 81	Multi-Control box 1 Th(B) sensor fault. Likely cause TH(B) sensor or M/C box PCB sensor value 20°c=12.5k ohms
e1 82	Multi-Control box 1 Th(C) sensor fault. Likely cause TH(C) sensor or M/C box PCB sensor value 20°c=12.5k ohms
e1 83	Multi-Control box 1 Th(D) sensor fault. Likely cause TH(D) sensor or M/C box PCB sensor value 20°c=12.5k ohms
e1 84	Multi-Control box 1 Th(X) sensor fault. Likely cause TH(X) sensor or M/C box PCB sensor value 20°c=12.5k ohms
E10	Communication Error at indoor PCB. Detected indoors. Likely cause replace indoor PCB
E12	Automatic addressing error. Detected at outdoor. Likely cause incorrect self-addressing sequence, repeat self-addressing procedure. Retrieve fault sub-code from condenser interface PCB by placing rotary dials to position 1 / 1 / 1 for diagnosis.
E12 01	Automatic addressing error. Detected at outdoor. Indoor / Outdoor communication
E12 02	Automatic addressing error. Detected at outdoor. Outdoor / Outdoor communication
E15	Automatic self-addressing failure. Detected at outdoor. Likely cause SW30 bit 1 & 2 in OFF position, switch both ON before self-addressing commenced, interface PCB failure
E16	Indoor unit count or capacity to high. Detected at outdoor. Likely cause if condenser PCB displays sub code 00=indoor capacity vs. condenser to high. If sub code at condenser reads 01=indoor unit count/quantity to high. Retrieve fault sub-code from condenser interface PCB by placing rotary dials to position 1 / 1 / 1 for diagnosis.
E16 00	Indoor unit capacity to high. Detected at outdoor. Likely cause indoor unit capacity to high vs. condenser capacity
E16 01	Indoor unit count to high. Detected at outdoor. Likely cause indoor unit count to high vs. outdoor upper limit
E18	Communication failure between indoor units. Detected indoors. Likely cause indoor power loss, A&B controller cable condition. Twin, triple & Quad E18 can result from E04 fault code
E19	Outdoor header error. Detected at outdoor. Likely cause if condenser PCB displays sub code 00=power loss to indoor units or U1/U2 network cable condition. If sub code reads 01=incorrect wiring between modularised condensers. Retrieve fault sub-code from condenser interface PCB by placing rotary dials to position 1 / 1 / 1 for diagnosis.

Code	Fault Description
E19 00	Outdoor header error. Detected at outdoor. Likely cause power loss to indoor units, U1/U2 network cable condition, SW30 bit 1 & 2 must be ON to test
E19 01	Outdoor header error. Detected at outdoor. Likely cause incorrect wiring between modularised condensers
e2 80	Multi-Control box 2 Th(A) sensor fault. Likely cause TH(A) sensor or M/C box PCB sensor value 20°c=12.5k ohms
e2 81	Multi-Control box 2 Th(B) sensor fault. Likely cause TH(B) sensor or M/C box PCB sensor value 20°c=12.5k ohms
e2 82	Multi-Control box 2 Th(C) sensor fault. Likely cause TH(C) sensor or M/C box PCB sensor value 20°c=12.5k ohms
e2 83	Multi-Control box 2 Th(D) sensor fault. Likely cause TH(D) sensor or M/C box PCB sensor value 20°c=12.5k ohms
e2 84	Multi-Control box 2 Th(X) sensor fault. Likely cause TH(X) sensor or M/C box PCB sensor value 20°c=12.5k ohms
E20	One or more systems connected on network during self-addressing procedure. Detected at outdoor. Likely cause if condenser PCB displays sub code 01=multiple outdoor systems connected on U3/U4 network, miss-wiring or central control relay connecter in-place. If sub code reads 02=indoor units from other line connected, miss-wiring or central control relay connecter in-place. Retrieve fault sub-code from condenser interface PCB by placing rotary dials to position 1 / 1 / 1 for diagnosis.
E20 01	Multiple indoor system line numbers connected on network during self-addressing procedure. Detected at outdoor. Likely cause miss-wiring of indoor network cable, central control relay connecter together during self-address
E20 02	Multiple outdoor system numbers connected on network during self-address procedure. Detected at outdoor. Likely cause miss-wiring of outdoor units, central control relay/plug connected during self-address
E23	Communication error between outdoor units. Detect outdoors. Likely cause U5/U6 cable condition, interface PCB fault
E25	Duplicated follower outdoor unit address. Detected at outdoor. Likely cause error in manually assigning addresses, allow system to self-address
E26	Decrease in quantity of outdoor units connected. Detected at outdoor. Likely cause power loss at condensers, U5/U6 cable condition
E28	Outdoor follower fault. Detected at outdoor. Likely cause lead condenser OK, follower condenser has suffered fault, retrieve second fault code from follower condenser
E31	IPDU/PCB board communication error. Detected at outdoor. Likely cause loss in communication between condenser PCB's. Retrieve fault sub-code from condenser interface PCB by placing rotary dials to position 1 / 1 / 1 for diagnosis.
E31 01	Compressor 1 IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace Compressor 1 IPDU board
E31 02	Compressor 2 IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace Compressor 2 IPDU board
E31 03	Compressor 1 & 2 IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace Compressor 1 & 2 IPDU board
E31 04	Communication failure between PCB's within condenser. Detected at outdoor. Fault Code is outdoor model series specific e.g. MMY-MAP###1HT8-E, MMY-AP###2HT8-E or MMY-MAP###4HT8-E therefore example fault code for E3104 will be (MMY-MAP0801HT8-E (series 1), MMY-MAP0802HT8-E (series 2), MMY-MAP0804HT8-E (series 4) search E31041, E31042 or E31044
E31 04 1	Fan IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace fan IPDU board
E31 04 2	Fan IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace fan IPDU board
E31 04 4	Compressor 3 IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace Compressor 3 IPDU board

Code	Fault Description
E31 05	Communication failure between PCB within condenser. Fault Code is outdoor model series specific e.g. MMY-MAP###1HT8-E, MMY-AP###2HT8-E or MMY-MAP###4HT8-E therefore example fault code for E3105 will be (MMY-MAP0801HT8-E (series 1), MMY-MAP0802HT8-E (series 2), MMY-MAP0804HT8-E (series 4) search E31051, E31052 or E31054
E31 05 1	Compressor 1 IPDU & fan IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace Compressor 1 IPDU & fan IPDU board
E31 05 2	Compressor 1 IPDU & fan IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace Compressor 1 IPDU & fan IPDU board
E31 05 4	Compressor 1 & 3 IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace Compressor 1 & 3 IPDU board
E31 06	Communication failure between PCB within condenser. Detected at outdoor. Fault Code is outdoor model series specific e.g. MMY-MAP###1HT8-E, MMY-AP###2HT8-E or MMY-MAP###4HT8-E therefore example fault code for E3106 will be (MMY-MAP0801HT8-E (series 1), MMY-MAP0802HT8-E (series 2), MMY-MAP0804HT8-E (series 4) search E3101, E31062 or E31064
E31 06 1	Compressor 2 IPDU & fan IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace Compressor 2 IPDU & fan IPDU board
E31 06 2	Compressor 2 IPDU & fan IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace Compressor 2 IPDU & fan IPDU board
E31 06 4	Compressor 2 & 3 IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace Compressor 2 & 3 IPDU board
E31 07	Communication failure between PCB within condenser. Detected at outdoor. (4 Series Condenser Compressor 1, 2 & 3 IPDU board communication error). (1&2 Series condenser communication error between PCB within condenser) likely cause phase missing on power supply, replace interface PCB
E31 07 1	Communication error between PCB within condenser. Detected at outdoor. Likely cause check communication cable linking all PCB's, phase missing on power supply, replace interface PCB
E31 07 2	Communication error between PCB within condenser. Detected at outdoor. Likely cause check communication cable linking all PCB's, phase missing on power supply, replace interface PCB
E31 07 4	Compressor 1, 2 & 3 IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace Compressor 1, 2 & 3 IPDU board
E31 08	Fan IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace fan IPDU board
E31 09	Compressor 1 IPDU & fan IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace Compressor 1 IPDU & fan IPDU board
E31 0A	Compressor 2 IPDU & fan IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace Compressor 2 IPDU & fan IPDU board
E31 0B	Compressor 1 & 2 IPDU board & fan IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace Compressor 1 & 2 IPDU PCB & fan IPDU board
E31 0C	Compressor 3 IPDU board & fan IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace Compressor 3 IPDU board & fan IPDU board
E31 0d	Compressor 1 & 3 IPDU board & fan IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace Compressor 1 & 3 IPDU board & fan IPDU board

Code	Fault Description
E31 0E	Compressor 2 & 3 IPDU board & fan IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace Compressor 2 & 3 IPDU PCB & fan IPDU board
E31 0F	Communication error between PCB within condenser. Detected at outdoor. Likely cause check communication cable linking all PCB's, phase missing on power supply, replace interface PCB
E5	Activation of high-pressure switch or internal overheat (klixon on INVERTER compressor only. Detected at outdoor. Likely cause fan motor trouble, poor airflows, poor refrigerant flow, insufficient refrigerant
E6	Activation of compressor klixon or contactor overload on D.O.L (Fixed speed compressor 1. Detected at outdoor. Likely cause poor refrigerant flow, insufficient refrigerant, excessive amps by compressor
Eb	Resulting from b6 fault code generated at indoor unit. Detected at outdoor. (b6=External input activation, refrigerant leak detection system (Call Toshiba's technical helpline for further details 0870 843 0333)
Er 14	Inverter compressor low voltage. Detected at outdoor. Likely cause AC fuse disconnection, faulty component within compressor inverter circuit, electrical failure of compressor
Er 1d	High Inverter dc current. Detected at outdoor. Likely cause imbalance in compressor voltage, excessive amps by inverter compressor
Er 1F	High Inverter ac current. Detected at outdoor. Likely cause imbalance in compressor voltage, excessive amps by inverter compressor
Er 21	Inverter compressor trip. Detected at outdoor. Likely cause activation of high-pressure switch 425psi-29bar / internal overheat (klixon) on inverter compressor only
Er A0	Compressor discharge sensor fault. Detected at outdoor. Likely cause TD1/ThD1 sensor condition or Interface PCB sensor value 20°c=63k ohms
Er A1	Compressor discharge sensor fault. Detected at outdoor. Likely cause TD2/ThD2 sensor condition or Interface PCB sensor value 20°c=63k ohms
Er A2	Compressor suction sensor fault. Detected at outdoor. Likely cause TS1/ThS sensor condition or interface PCB sensor value 20°c=12.5k ohms
Er A4	Ambient air sensor fault. Detected at outdoor. Likely cause Th0 sensor condition or interface PCB sensor value 20°c=12.5k ohms
Er A5	Condenser coil sensor fault. Detected at outdoor. Likely cause ThE sensor condition or interface PCB fault sensor value 20°c=12.5k ohms
Er A6	High compressor discharge temperature. Detected at outdoor. by TD1,TD2,ThD1 & ThD2. Likely cause low refrigerant, poor refrigerant flow and airflows & TD sensor condition sensor value 20°c=63k ohms
Er A7	High compressor suction temperature > 40°C. Detected at outdoor. Likely cause severe gas shortage, TS sensor condition, interface PCB sensor value 20°c=12.5k ohms
Er AA	High side pressure sensor fault. Detected at outdoor. (Replace Pd pressure sensor)
Er Ad	Fixed speed compressor trip (D.O.L). Detected at outdoor. Likely cause activation of high-pressure switch 425psi-29bar / internal overheat (klixon) / phase rotation PCB / D.O.L contactor overload trip
Er AE	Low Pressure trip < 3 psig. Detected at outdoor. by L.P. switch. Likely cause refrigerant loss, restriction in refrigerant flow
Er AF	Phase rotation incorrect. Detected at outdoor. Likely cause abnormal phase order, missing phase to outdoor unit
F0	Activation of high-pressure switch on D.O.L (Fixed speed) compressor 2. Detected at outdoor. Likely cause fan motor trouble, poor airflows, restricted refrigerant flow
F01	TCj Coil sensor fault. Detected indoors. Likely cause TCj sensor condition or indoor PCB fault sensor value 20°c=12.5k ohms
F02	TC2 or TC Coil sensor fault. Detected indoors. Likely cause TC2 / TC sensor condition or indoor PCB fault sensor value 20°c=12.5k ohms
F03	TC1 Coil sensor fault. Detected indoors. Likely cause TC1 sensor condition or indoor PCB fault sensor value 20°c=12.5k ohms

Code	Fault Description
F04	Td1 sensor fault. Detected at outdoor. Likely cause compressor discharge sensor condition (Td1) or outdoor PCB fault sensor value 20°c=63k ohms
F05	Td2 sensor fault. Detected at outdoor. Likely cause compressor discharge sensor condition (Td2) or outdoor PCB fault sensor value 20°c=63k ohms
F06	TE or TS Sensor fault. Detected at outdoor. Likely cause Heat exchange sensor condition (TE / TE1 / TE2). Suction line sensor condition (TS) or outdoor PCB fault sensor value 20°c=12.5k ohms. Retrieve fault sub-code from condenser interface PCB by placing rotary dials to position 1 / 1 / 1 for diagnosis.
F06 01	TE1 Sensor fault. Detected at outdoor. Likely cause Heat exchange sensor condition (TE1) or outdoor PCB fault sensor value 20°c=12.5k ohms
F06 02	TE2 Sensor fault. Detected at outdoor. Likely cause Heat exchange sensor condition (TE2) or outdoor PCB fault sensor value 20°c=12.5k ohms
F07	TL Sensor fault. Detected at outdoor. Likely cause Liquid line sensor condition (TL) or outdoor PCB fault sensor value 20°c=12.5k ohms
F08	TO Sensor fault. Detected at outdoor. Likely cause Ambient air sensor condition (TO) or outdoor PCB fault sensor value 20°c=12.5k ohms
F1	Activation of compressor klixon or contactor overload on D.O.L (Fixed speed compressor 2). Detected at outdoor. Likely cause poor refrigerant flow, insufficient refrigerant, excessive amps by compressor
F10	TA Sensor fault. Detected indoors. Likely cause Return air sensor condition (TA) or indoor PCB fault sensor value 20°c=12.5k ohms
F12	TS Sensor fault. Detected at outdoor. Likely cause Suction line sensor condition (TS / TS1 / TS2) or outdoor PCB fault sensor value 20°c=12.5k ohms
F13	Compressor IPDU board overheat. Detected at outdoor. Likely cause poor contact to heat-sink, IPDU board fault. Fault sub-code required to determine which board has suffered overheat 01=IPDU1 overheated 02=IPDU2 overheated 03=IPDU3 overheated. Retrieve fault sub-code from condenser interface PCB by placing rotary dials to position 1 / 1 / 1 for diagnosis.
F13 01	Compressor 1 IPDU board overheat. Detected at outdoor. Likely cause poor contact to heat-sink, replace compressor IPDU board 1
F13 02	Compressor 2 IPDU board overheat. Detected at outdoor. Likely cause poor contact to heat-sink, replace compressor IPDU board 2
F13 03	Compressor 3 IPDU board overheat. Detected at outdoor. Likely cause poor contact to heat-sink, replace compressor IPDU board 3
F15	Outdoor temperature sensor error. Detected at outdoor. Likely cause VRF equipment=Heat exchange (TE) sensor condition/location or Liquid line (TL) sensor condition/location, outdoor PCB fault Split equipment=Suction sensor (TS) condition/location Heat exchange sensor (TE) condition/location, outdoor PCB fault sensor value 20°c=12.5k ohms
F16	Pressure sensors miss-reading. Detected at outdoor. Likely cause incorrect characteristics of compressor discharge (Pd) & compressor suction (PS) pressure sensor or total loss of refrigerant
F22	Td3 sensor fault. Detected at outdoor. Likely cause compressor discharge sensor condition (Td3) or outdoor PCB fault sensor value 20°c=63k ohms
F23	Compressor suction pressure sensor fault. Detected at outdoor. Likely cause Suction transducer (PS) fault, outdoor PCB fault
F24	Compressor discharge pressure sensor fault. Detected at outdoor. Likely cause discharge transducer (Pd) fault, outdoor PCB fault
F29	Indoor PCB fault. Detected indoors. Likely cause replace indoor PCB
F31	Outdoor EEPROM Error. Detected at outdoor. Likely cause VRF equipment=power interruption, replace interface PCB Split equipment=replace condenser CDB board
H01	Excessive amps drawn by compressor. Detected at outdoor. Likely cause imbalance in voltage supplied from IPDU board to compressor, compressor lock / seizure. Retrieve sub-code for VRF from condenser to determine which compressor suffered failure 01=compressor1, 02=compressor2 & 03=compressor3. Retrieve fault sub-code from condenser interface PCB by placing rotary dials to position 1 / 1 / 1 for diagnosis.
H01 01	Excessive amps drawn by compressor 1. Detected at outdoor. Likely cause imbalance in voltage supplied to compressor 1 from inverter IPDU board 1, compressor 1 lock / seizure

Code	Fault Description
H01 02	Excessive amps drawn by compressor 2. Detected at outdoor. Likely cause imbalance in voltage supplied to compressor 2 from inverter IPDU board 2, compressor 2 lock / seizure
H01 03	Excessive amps drawn by compressor 3. Detected at outdoor. Likely cause imbalance in voltage supplied to compressor 3 from IPDU board 3, compressor 3 lock / seizure
H02	High amps drawn by compressor on start-up. Detected at outdoor. Likely cause imbalance in voltage supplied to compressor from IPDU board, compressor locked / seized. For VRF fault sub-code required to determine which compressor suffered failure 01=compressor1 02=compressor2 03=compressor3. Retrieve fault sub-code from condenser interface PCB by placing rotary dials to position 1 / 1 / 1 for diagnosis.
H02 01	High amps drawn by compressor 1 on start-up. Detected at outdoor. Likely cause imbalance in voltage supplied to compressor 1 from IPDU board 1, compressor 1 locked / seized
H02 02	High amps drawn by compressor 2 on start-up. Detected at outdoor. Likely cause imbalance in voltage supplied to compressor 2 from IPDU board 2, compressor 2 locked / seized
H02 03	High amps drawn by compressor 3 on start-up. Detected at outdoor. Likely cause imbalance in voltage supplied to compressor 3 from IPDU board 3, compressor 3 locked / seized
H03	Current detected in compressor off cycle. Detected at outdoor. Likely cause replace compressor IPDU board. For VRF fault sub-code required to determine which compressor suffered failure 01=compressor1 02=compressor2 03=compressor3. Retrieve fault sub-code from condenser interface PCB by placing rotary dials to position 1 / 1 / 1 for diagnosis.
H03 01	Current detected in compressor off cycle. Detected at outdoor. Likely cause replace compressor IPDU board 1
H03 02	Current detected in compressor off cycle. Detected at outdoor. Likely cause replace compressor IPDU board 2
H03 03	Current detected in compressor off cycle. Detected at outdoor. Likely cause replace compressor IPDU board 3
H04	Compressor 1 over-heat. Detected at outdoor. Likely cause compressor klixon activation, loss of refrigerant, poor refrigerant flow reducing cooling effect to compressor
H05	Compressor discharge temperature does not increase while compressor 1 operates. Detected at outdoor. Likely cause compressor discharge sensor (Td1) condition / location, outdoor PCB fault sensor value 20°c=63k ohms
H06	Low pressure protection operation. Detected at outdoor. Likely cause characteristics of suction pressure transducer (PS), system pump-down, interface PCB fault)
H07	Abnormal oil level / temperature alarm. Detected outdoor. Likely cause oil balance service valve, refrigerant loss, oil sensor condition (TK1 / TK2 / TK3 / TK4 / TK5), interface board PCB fault sensor value 20°c=63k ohms)
H08	TK Oil sensor fault. Detected at outdoor. Likely cause oil sensor condition, outdoor PCB fault. Fault sub code required to determine which sensor (TK1 / TK2 / TK3 / TK4 / TK5 sensor value 20°c=63k ohms). Retrieve fault sub-code from condenser interface PCB by placing rotary dials to position 1 / 1 / 1 for diagnosis.
H08 01	TK1 Oil sensor fault. Detected at outdoor. Likely cause oil sensor condition (TK1), outdoor PCB fault sensor value 20°c=63k ohms
H08 02	TK2 Oil sensor fault. Detected at outdoor. Likely cause oil sensor condition (TK2), outdoor PCB fault sensor value 20°c=63k ohms
H08 03	TK3 Oil sensor fault. Detected at outdoor. Likely cause oil sensor condition (TK3), outdoor PCB fault sensor value 20°c=63k ohms
H08 04	TK4 Oil sensor fault. Detected at outdoor. Likely cause oil sensor condition (TK4), outdoor PCB fault sensor value 20°c=63k ohms
H08 05	TK5 Oil sensor fault. Detected at outdoor. Likely cause oil sensor condition (TK5), outdoor PCB fault sensor value 20°c=63k ohms
H14	Compressor 2 over-heat. Detected at outdoor. Likely cause compressor klixon activation, loss of refrigerant, poor refrigerant flow reducing cooling effect to compressor

Code	Fault Description
H15	Compressor discharge temperature does not increase while compressor 2 operates. Detected at outdoor. Likely cause compressor discharge sensor (Td2) condition / location, outdoor PCB fault sensor value 20°c=63k ohms
H16	TK oil sensors do not detect temperature change while compressors operate. Detected at outdoor. Likely cause oil line (TK1 / TK2 / TK3 / TK4 / TK5) sensor condition / location, outdoor PCB fault sensor value 20°c=63k ohms. Retrieve fault sub-code from condenser interface PCB by placing rotary dials to position 1 / 1 / 1 for diagnosis.
H16 01	TK1 oil sensor does not detect temperature change while compressor 1 operates. Detected at outdoor. Likely cause oil line (TK1) sensor condition / location, outdoor PCB fault sensor value 20°c=63k ohms
H16 02	TK2 oil sensor does not detect temperature change while compressor 2 operates. Detected at outdoor. Likely cause oil line (TK2) sensor condition / location, outdoor PCB fault sensor value 20°c=63k ohms
H16 03	TK3 oil sensor does not detect temperature change while compressor 3 operates. Detected at outdoor. Likely cause oil line (TK3) sensor condition / location, outdoor PCB fault sensor value 20°c=63kΩ
H16 04	TK4 oil sensor does not detect temperature change while compressors operate. Detected at outdoor. Likely cause oil line (TK4) sensor condition / location, outdoor PCB fault sensor value 20°c=63kΩ
H16 05	TK5 oil sensor does not detect temperature change while compressors operate. Detected at outdoor. Likely cause oil line (TK5) sensor condition / location, outdoor PCB fault sensor value 20°c=63kΩ
H25	Compressor discharge temperature does not increase while compressor 3 operates. Detected at outdoor. Likely cause compressor discharge sensor (Td3) condition / location, outdoor PCB fault sensor value 20°c=63k ohms
L03	Two or more lead units within group of indoor units. Detected indoors. Likely cause incorrect addressing, alteration in grouped set-up / wiring, requires re-addressing
L04	Duplicated outdoor line address. Detected at outdoor. Likely cause failure to correctly set line address before auto addressing
L05	Duplicated priority indoor unit displayed on priority indoor unit. Detected indoors. Likely cause two units configured as priority units, correct configuration within engineer's menu 04
L06	Duplicated priority indoor unit displayed on other than priority indoor unit. Detected indoors. Likely cause two units configured as priority units, correct configuration within engineering menu code 04
L07	Indoor unit group address incorrectly set. Detected indoors. Likely cause alteration of indoor group set-up, re-address required
L08	Indoor group / addresses unset. Detected at outdoor. Likely cause automatic addressing in-completed
L09	Indoor PCB capacity unset. Detected indoors. Likely cause failure to follow instruction accompanying new PCB
L10	Outdoor PCB capacity unset. Detected at outdoor. Likely cause failure to follow instructions accompanying new PCB
L17	Inconsistency of outdoor unit models. Detected at outdoor. Likely cause incorrect selection on outdoor model references
L18	Flow Selector unit error. Detected indoors. Likely cause indoor unit unable to heat on demand. Check power & communication to F/S Box from local indoor unit. Incorrectly configured indoor group sharing F/S box
L20	Duplicated central controller address. Detected indoors. Likely cause incorrectly set network address. Engineering code 03
L28	Quantity of outdoor units to high. Detected at outdoor. Likely cause to many outdoor units modularised together
L29	IPDU /PCB communication error. Detected at outdoor. Likely cause Split equipment=faulty or overheating inverter PCB. VRF equipment=loss in communication between condenser PCB's. Retrieve fault sub-code from condenser interface PCB by placing rotary dials to position 1 / 1 / 1 for diagnosis. Search fault code (without spaces) for diagnosis e.g. L2901

Code	Fault Description
L29 01	Compressor 1 IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace Compressor 1 IPDU board
L29 02	Compressor 2 IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace Compressor 2 IPDU board
L29 03	Compressor 1 & 2 IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace Compressor 1 & 2 IPDU board
L29 04	Communication failure between PCB within condenser. Detected at outdoor. Fault Code is outdoor model series specific e.g. MMY-MAP###1HT8-E, MMY-AP###2HT8-E or MMY-MAP###4HT8-E therefore example fault code for L2904 will be (MMY-MAP0801HT8-E (series 1), MMY-MAP0802HT8-E (series 2), MMY-MAP0804HT8-E (series 4) search L29041, L29042 or L29044
L29 04 1	Fan IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace fan IPDU board
L29 04 2	Fan IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace fan IPDU board
L29 04 4	Compressor 3 IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace Compressor 3 IPDU board
L29 05	Communication failure between PCB within condenser. Detected at outdoor. Fault Code is outdoor model series specific e.g. MMY-MAP###1HT8-E, MMY-AP###2HT8-E or MMY-MAP###4HT8-E therefore example fault code for L2905 will be (MMY-MAP0801HT8-E (series 1), MMY-MAP0802HT8-E (series 2), MMY-MAP0804HT8-E (series 4) search L29051, L29052 or L29054
L29 05 1	Compressor 1 IPDU & fan IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace Compressor 1 IPDU & fan IPDU board
L29 05 2	Compressor 1 IPDU & fan IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace Compressor 1 IPDU & fan IPDU board
L29 05 4	Compressor 1 & 3 IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace Compressor 1 & 3 IPDU board
L29 06	Communication failure between PCB within condenser. Detected at outdoor. Fault Code is outdoor model series specific e.g. MMY-MAP###1HT8-E, MMY-AP###2HT8-E or MMY-MAP###4HT8-E therefore example fault code for L2906 will be (MMY-MAP0801HT8-E (series 1), MMY-MAP0802HT8-E (series 2), MMY-MAP0804HT8-E (series 4) search L29061, L29062 or L29064
L29 06 1	Compressor 2 IPDU & fan IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace Compressor 2 IPDU & fan IPDU board
L29 06 2	Compressor 2 IPDU & fan IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace Compressor 2 IPDU & fan IPDU board
L29 06 4	Compressor 2 & 3 IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace Compressor 2 & 3 IPDU board
L29 07	Communication failure between PCB within condenser. Detected at outdoor. Fault Code is outdoor model series specific e.g. MMY-MAP###1HT8-E, MMY-AP###2HT8-E or MMY-MAP###4HT8-E therefore example fault code for L2907 will be (MMY-MAP0801HT8-E (series 1), MMY-MAP0802HT8-E (series 2), MMY-MAP0804HT8-E (series 4) search L29071, L29072 or L29074 for diagnosis
L29 07 1	Communication error between PCB within condenser. Detected at outdoor. Likely cause check communication cable linking all PCB's, phase missing on power supply, replace interface PCB

Code	Fault Description
L29 07 2	Communication error between PCB within condenser. Detected at outdoor. Likely cause check communication cable linking all PCB's, phase missing on power supply, replace interface PCB
L29 07 4	Compressor 1, 2 & 3 IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace Compressor 1, 2 & 3 IPDU board
L29 08	Fan IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace fan IPDU board
L29 09	Compressor 1 IPDU & fan IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace Compressor 1 IPDU & fan IPDU board
L29 0A	Compressor 2 IPDU & fan IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace Compressor 2 IPDU & fan IPDU board
L29 0B	Compressor 1 & 2 IPDU board & fan IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace Compressor 1 & 2 IPDU PCB & fan IPDU board
L29 0C	Compressor 3 IPDU board & fan IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace Compressor 3 IPDU board & fan IPDU board
L29 0d	Compressor 1 & 3 IPDU board & fan IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace Compressor 1 & 3 IPDU board & fan IPDU board
L29 0E	Compressor 2 & 3 IPDU board & fan IPDU board communication error. Detected at outdoor. Likely cause check communication cable linking all PCB's, replace Compressor 2 & 3 IPDU PCB & fan IPDU board
L29 0F	Communication error between PCB within condenser. Detected at outdoor. Likely cause check communication cable linking all PCB's, phase missing on power supply, replace interface PCB
L30	Auxiliary interlock in indoor unit. Detected indoors. Likely cause external interlock in CN80 socket on indoor unit
P01	Indoor fan motor error. Detected indoors. Likely cause indoor fan motor or wiring to motor
P03	High compressor discharge temperature. Detected at outdoor. by TD1 @ 115°c. Likely cause low refrigerant, poor refrigerant flow and airflows & TD1 sensor condition sensor value 20°c=63k ohms
P04	High pressure switch activation. Detected at outdoor. Likely cause poor airflows over indoor / out dependant on operation, restriction in refrigerant flow, non-condensable mixed with refrigerant. Fault sub code required to determine which H.P Switch activated 01=compressor 1 02=compressor 2 03=compressor 3. Retrieve fault sub-code from condenser interface PCB by placing rotary dials to position 1 / 1 / 1 for diagnosis.
P04 01	Compressor 1 high pressure switch activation. Detected at outdoor. Likely cause poor airflows over indoor / out dependant on operation, restriction in refrigerant flow, non-condensable mixed with refrigerant
P04 02	Compressor 2 high pressure switch activation. Detected at outdoor. Likely cause poor airflows over indoor / out dependant on operation, restriction in refrigerant flow, non-condensable mixed with refrigerant
P04 03	Compressor 3 high pressure switch activation. Detected at outdoor. Likely cause poor airflows over indoor / out dependant on operation, restriction in refrigerant flow, non-condensable mixed with refrigerant
P05	Phase-missing detection / phase order error, compressor inverter High Voltage. Retrieve fault sub-code from condenser interface PCB by placing rotary dials to position 1 / 1 / 1 for diagnosis. Search fault code (without spaces) for diagnosis e.g. P0501
P05 00	Phase-order incorrect or phase missing. Detected at outdoor. Likely cause issue with power supply to condenser, or phase order wrong, swap L2 & L3

Code	Fault Description
P05 01	Phase-missing detection (series 1 & 2) or High D.C. inverter voltage (series 4). Detected at outdoor. Fault Code is outdoor model series specific e.g. MMY-MAP###1HT8-E, MMY-AP###2HT8-E or MMY-MAP###4HT8-E therefore example fault code for P0501 will be (MMY-MAP0801HT8-E (series 1), MMY-MAP0802HT8-E (series 2), MMY-MAP0804HT8-E (series 4) search P05011, P05012 or P05014
P05 01 1	Phase-missing detection. Detected at outdoor. Likely cause error on power supply to condenser
P05 01 2	Phase-missing detection. Detected at outdoor. Likely cause error on power supply to condenser
P05 01 4	High D.C. inverter voltage. Detected at outdoor. Likely cause compressor 1 IPDU board overheat or failure
P05 02	Phase-order incorrect (series 1 & 2) or High D.C. inverter voltage (series 4). Detected at outdoor. Fault Code is outdoor model series specific e.g. MMY-MAP###1HT8-E, MMY-AP###2HT8-E or MMY-MAP###4HT8-E therefore example fault code for P0502 will be (MMY-MAP0801HT8-E (series 1), MMY-MAP0802HT8-E (series 2), MMY-MAP0804HT8-E (series 4) search P05011, P05012 or P05014
P05 02 1	Phase-order incorrect. Detected at outdoor. Likely cause issue with power supply to condenser, swap L2 & L3 to correct
P05 02 2	Phase-order incorrect. Detected at outdoor. Likely cause issue with power supply to condenser, swap L2 & L3 to correct
P05 02 4	High D.C. inverter voltage. Detected at outdoor. Likely cause compressor 2 IPDU board overheat or failure
P05 03	High D.C. inverter voltage. Detected at outdoor. Likely cause compressor 3 IPDU board overheat or failure
P07	Overheating compressor IPDU / inverter board. Detected at outdoor. Likely cause poorly secured inverter PCB to heat-sink, faulty IPDU. Fault sub code required to determine which IPDU overheated 01=IPDU1 02=IPDU2 03=IPDU3. Retrieve fault sub-code from condenser interface PCB by placing rotary dials to position 1 / 1 / 1 for diagnosis.
P07 01	Overheating compressor 1 IPDU / inverter board. Detected at outdoor. Likely cause poorly secured inverter PCB to heat-sink, faulty IPDU board 1
P07 02	Overheating compressor 2 IPDU / inverter board. Detected at outdoor. Likely cause poorly secured inverter PCB to heat-sink, faulty IPDU board 2
P07 03	Overheating compressor 3 IPDU / inverter board. Detected at outdoor. Likely cause poorly secured inverter PCB to heat-sink, faulty IPDU board 3
P10	Indoor float switch open circuit as result of high condensation levels within drip tray, detected indoors. Likely cause faulty float switch, faulty lift pump, debris blocking drain
P12	Indoor fan motor trouble. Detected indoors. Likely cause fan motor locked, incorrectly configured PCB, indoor PCB fault
P13	Outdoor liquid back detection in condenser while in OFF cycle. Detected at outdoor. Likely cause increase in pressure within dormant condenser, possible PMV valves passing
P15	High compressor suction or discharge temperature. Detected at outdoor. Likely cause sensor condition (TS1 or TD1, 2 or 3), interface PCB fault, loss of refrigerant TS1 sensor value 20°c=12.5k ohms TD1,2 & 3 sensor value 20°c=63k ohms. Retrieve fault sub-code from condenser interface PCB by placing rotary dials to position 1 / 1 / 1 for diagnosis.
P15 01	High compressor suction temperature. Detected at outdoor. Likely cause suction sensor condition (TS1), interface PCB fault, loss of refrigerant sensor value 20°c=12.5k ohms
P15 02	High compressor discharge temperature. Detected at outdoor. Likely cause discharge sensor condition (TD1, TD2 or TD3), interface PCB fault, loss of refrigerant sensor value 20°c=63k ohms
P17	High compressor discharge temperature. Detected at outdoor. by TD2 @ 115°c. Likely cause low refrigerant, poor refrigerant flow and airflows & TD2 sensor condition sensor value 20°c=63k ohms
P18	High compressor discharge temperature. Detected at outdoor. by TD3 @ 115°c. Likely cause low refrigerant, poor refrigerant flow and airflows & TD3 sensor condition sensor value 20°c=63k ohms
P19	Incorrect temperature / pressure reading at condenser. Detected at outdoor. Likely cause check characteristics of pressure transducers (PS & Pd) and temperature sensors (TS1, TE1 & TL), interface PCB fault sensor value 20°c=12.5k ohms

Code	Fault Description
P20	High pressure protection detected by discharge pressure transducer reading @ 36bar. Detected at outdoor. Likely cause characteristics of discharge pressure transducer (Pd), interface PCB, poor airflows across condensers
P22	Outdoor fan motor error. Detected at outdoor. Likely cause Split equipment, locked / faulty fan motor, faulty PCB VRF Equipment. Retrieve fault sub- from condenser interface PCB by placing rotary dials to position 1 / 1 / 1 for diagnosis. Search fault code (without spaces) for diagnosis. e.g. P2203
P22 03	Outdoor fan motor error. Detected at outdoor. Likely cause locked / faulty fan motor, faulty fan IPDU PCB. Fan motor has 3 ohms resistance on any 2 wires
P22 34	Outdoor fan motor error. Detected at outdoor. Likely cause locked / faulty fan motor, faulty fan IPDU PCB. Fan motor has 3 ohms resistance on any 2 wires
P22 37	Outdoor fan motor error. Detected at outdoor. Likely cause locked / faulty fan motor, faulty fan IPDU PCB. Fan motor has 3 ohms resistance on any 2 wires
P22 E1	Fan IPDU board error. Detected at outdoor. Likely cause error on DC supply voltage to fan IPDU PCB or problem with mains voltage onto condenser
P22 E2	Fan IPDU board error. Detected at outdoor. Likely cause error on DC supply voltage to fan IPDU PCB or problem with mains voltage onto condenser
P22 E3	Fan IPDU board error. Detected at outdoor. Likely cause error on DC supply voltage to fan IPDU PCB or problem with mains voltage onto condenser
P26	Compressor IPDU PCB Short circuit. Detected at outdoor. Likely cause electrical fault on compressor, faulty compressor inverter board. Before replacing PCB prove compressor is good. Retrieve fault sub-code from condenser interface PCB by placing rotary dials to position 1 / 1 / 1 for diagnosis.
P26 01	Compressor 1 IPDU PCB Short circuit. Detected at outdoor. Likely cause electrical fault on compressor 1, faulty compressor 1 inverter board. Before replacing PCB prove compressor is good
P26 02	Compressor 2 IPDU PCB Short circuit. Detected at outdoor. Likely cause electrical fault on compressor 2, faulty compressor 2 inverter board. Before replacing PCB prove compressor is good
P26 03	Compressor 3 IPDU PCB Short circuit. Detected at outdoor. Likely cause electrical fault on compressor 3, faulty compressor 3 inverter board. Before replacing PCB prove compressor is good
P29	Compressor position detection error. Detected at outdoor. Likely cause fault on compressor, faulty compressor inverter board. Before replacing inverter PCB prove compressor is good. Retrieve fault sub-code from condenser interface PCB by placing rotary dials to position 1 / 1 / 1 for diagnosis.
P29 01	Compressor 1 position detection error. Detected at outdoor. Likely cause fault on compressor 1, faulty compressor 1 inverter board. Before replacing inverter PCB prove compressor is good
P29 02	Compressor 2 position detection error. Detected at outdoor. Likely cause fault on compressor 2, faulty compressor 2 inverter board. Before replacing inverter PCB prove compressor is good
P29 03	Compressor 3 position detection error. Detected at outdoor. Likely cause fault on compressor 3, faulty compressor 3 inverter board. Before replacing inverter PCB prove compressor is good
P30	Indoor unit other than lead indoor suffering fault. Detected on central controller. Likely cause to diagnose retrieve fault code from local remote controller to indoor group
P31	Indoor unit other than lead indoor suffering fault. Detected indoors. Likely cause to diagnose retrieve fault code from local remote controller to indoor group

Error Detected by - TCC-Link Central Controller

Check Code				Wireless Remote				Check Code Name	Judging Device
Central Control Device	Outdoor 7 Segment Display		AI Central Controller	Sensor Block Display					
		Auxiliary Code		O	T	R	F		
C05	---	---	---	---				Sending error in TCC-Link central control device	TCC-LINK
C06	---	---	---	---				Receiving error in TCC-Link central control device	TCC-LINK
C12	---	---	---	---				Batch alarm of general-purpose equipment control interface	HA control interface I/F
P30	---	Differs according to error contents of unit with occurrence of alarm						Group control follower unit error	TCC-LINK
		---	(L20 is displayed)					Duplicated central control addresses	

Black Pear Error Code Cross Reference.					
Black Pear Error Code	Toshiba Error Code	Description	Black Pear Error Code	Toshiba Error Code	Description
1005	C05	Sending error in TCC-Link central control device	3001	F01	Indoor TCCJ sensor error
1006	C06	Receiving error in TCC-Link central control device	3002	F02	Indoor TC2 sensor error
1012	C12	Batch alarm of general-purpose equipment control interface	3003	F03	Indoor TC1 sensor error
			3004	F04	TD1 sensor error
2001	E01	Communication error between indoor and remote controller (Detected at remote controller side)	3005	F05	TD2 sensor error
			3006	F06	TE1 sensor error
2003	E03	Communication error between indoor and remote controller (Detected at indoor side)	3007	F07	TL sensor error
			3008	F08	TO sensor error
2004	E04	Communication circuit error between indoor / outdoor (Detected at indoor side)	3010	F10	TA sensor error
			3012	F12	TS1 sensor error
2006	E06	Decrease of number of indoor units.	3013	F13	TH sensor error
2007	E07	Communication circuit error between indoor / outdoor (Detected at outdoor side)	3015	F15	Outdoor temperature sensor misconnection (TE1-TL)
			3016	F16	Outdoor pressure sensor misconnection (Pd – Ps)
2008	E08	Duplicated indoor addresses	3023	F23	Ps sensor error
2009	E09	Duplicated master remote controllers	3024	F24	Pd sensor error
2010	E10	Communication error between indoor Printed Circuit Boards	3029	F29	Indoor other error
2012	E12	Automatic address start error	3031	F31	Outdoor EEPROM error
2015	E15	No indoor automatic address			
2016	E16	Over capacity / Number of connected indoor units	4001	H01	Compressor break down
2018	E18	Communication error between indoor header and follower units.	4002	H02	Magnetic switch error / Overcurrent relay operation / Compressor error (lock)
2019	E19	Outdoor header unit's quantity error			
2020	E20	Other line connected during automatic address	4003	H03	Current detection circuit error
2023	E23	Sending error in communication between outdoor units	4004	H04	Compressor 1 case thermal operation
2025	E25	Duplicated follower outdoor address	4006	H06	Low pressure protection operation
2026	E26	Decrease of number of connected outdoor units	4007	H07	Low oil level protection
2028	E28	Follower outdoor unit error	4008	H08	Oil level temperature sensor error
2031	E31	IPDU Communication error	4014	H14	Compressor 2 case thermal operation
			4016	H16	Oil level detection circuit error / Magnetic switch error / Overcurrent relay error

Black Pear Error Code Cross Reference.					
Black Pear Error Code	**Toshiba Error Code**	**Description**	**Black Pear Error Code**	**Toshiba Error Code**	**Description**
6003	L03	Duplicated indoor header units	7001	P01	Indoor fan motor error
6004	L04	Duplicated outdoor line address	7003	P03	Discharge temperature TD1 error
6005	L05	Duplicated indoor units with priority (Displayed in indoor unit with priority)	7004	P04	High-pressure switch detection error
			7005	P05	Phase-missing detection / Phase order error
6006	L06	Duplicated indoor units with priority (Displayed in unit other than indoor unity with priority)	7007	P07	Heat sink overheat error
			7010	P10	Indoor overflow error
6007	L07	Group line in individual indoor unit	7012	P12	Indoor fan motor error
6008	L08	Indoor group/Address unset	7013	P13	Outdoor liquid back detection error
6009	L09	Indoor capacity unset	7015	P15	Gas leak detection
6010	L10	Outdoor capacity unset	7017	P17	Discharge temperature TD2 error
6020	L20	Duplicated central control addresses	7019	P19	4-way valve inverse error
6028	L28	Maximum number of outdoor units exceeded	7020	P20	High pressure inverse error
6029	L29	Number of IPDU's error	7022	P22	Outdoor fan IPDU error
6030	L30	Auxiliary interlock in indoor unit	7026	P26	Giant Transistor short circuit protection error
6031	L31	IC error	7029	7031	Compressor position detection circuit error
			7030	P30	Follower indoor unit error (Group error)
Special Black Pear Error Codes			7031	P31	Follower indoor unit error (Group error)
6999		Unit does not exist on the system			
8000		No error detected			
255		No error detected.			

Notes

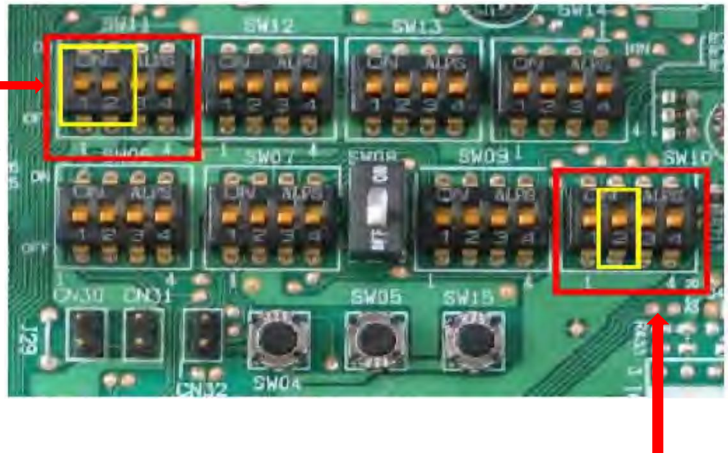
Step by Step Wiping/Re-addressing Of VRF Systems

- Dials must be in positions ' **1 – 1 – 1** 'with a 7-segment displaying ' **U1 - - -'**
- To start the wiping of addresses, move rotary dials to ' **2 – 1 – 2'** 7 segment display will read' **ad bus**'
- Press and hold **SW04** for 4 seconds, ' **ad cl'** will appear on the 7-segment display
- Once ' **ad cl'** appears on display release **SW04** and return rotary dials to ' **1 – 1 – 1'**
- Approximately 3 minutes later ' **U1 L08'** will appear, wiping of **BUS** address is now complete
- To start re-address of indoor units, press and hold **SW15** – display will scroll from **AUTO1** to **AUTO9**
- After approx. 10 minutes display will show ' **U1 - - -'**
- To check the quantity of indoors assigned place rotary dials at ' **1 – 4 – 3'**
- e.g. display of ' **10 C 0'** the number **10** in this display relates to the number of indoors addressed. Once complete return dials to ' **1 – 1 – 1'**

Priority Mode (SMMS(i/e) Only).

Factory setting - Heating priority, this can be modified to Cooling priority via DIP switch "SW11" bit's 1 & 2 In addition to above priority is factory set at "Any one indoor unit" this can be modified to Percentage, i.e. 60% of units requiring a mode, or Set to One SPECIFIC indoor unit.

Super Modular Multi (SMMSi) Switch Positions



SW11		Operation
Bit 1	Bit 2	
OFF	OFF	Heating priority (Factory setting)
ON	OFF	Cooling priority
OFF	ON	Percentage (60%)
ON	ON	Specific indoor unit

Outdoor Fan High Static Pressure Setup

This function is used when connecting a duct to the discharge outlet of an outdoor unit. To setup turn ON the DIP switch [SW10, Bit 2] provided on the interface P.C. board of the outdoor unit. This function must be enabled with every discharge duct connected outdoor unit for both of the header and follower units. It is necessary to increase the speed of the propeller fan units on the outdoor fan to allow the installation of a duct with a maximum external static pressure not greater than specified in the table below. If a discharge duct with a resistance greater than 15 Pa (1.5 mmAq) is to be used, enable this function. The maximum external static pressures of singular base units are shown below: -

SMMS(i/e) Model MMY-MAP	**0804/6**	**1004/6**	**1204/6**	**1404/6**	**160/6**	**1806**	**2006**	**2206**
Maximum external static pressure (Pa)	60	60	40/50[1]	40	40	50	40	40
(#) Outdoor unit air flow (m^3/h)	9900/9700[1]	10500/9700[1]	11600/12200[1]	12000/12200[1]	13000/12600[1]	17300[1]	17900[1]	18500[1]
SHRM(i/e) Model MMY-MAP	**0804/6**	**1004/6**	**1204/6**	**1404/6**	**1606**	**1806**	**2206**	
Maximum external static pressure (Pa)	50/60[1]	40/50[1]	40/50[1]	40	40	40	40	
(#) Outdoor unit air flow (m^3/h)	8700/11000[1]	9420/11000[1]	12000/12200[1]	12960/12500[1]	17900[1]	17900[1]	17900[1]	

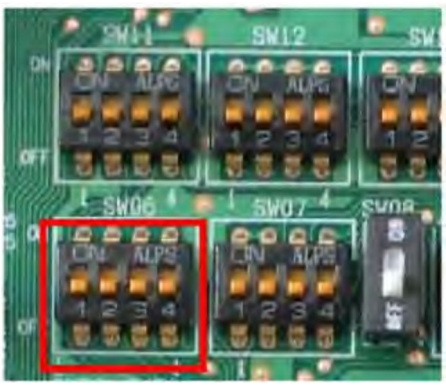
(#) Calculate duct resistance from outdoor unit airflow. When units are combined maximum external static pressure is the lower value of any single unit in the combination, for full details refer to the installation manual supplied with the equipment, or contact Cool Designs technical support

(1) 6 Series SMMSe/SHRMe

Compressor or Outdoor Fan Motor Backup Isolation Setting

In the event of a compressor or fan motor error it is possible to electronically remove the affected item circuit allowing the unaffected circuit(s) to operate normally. This is achieved via DIP switch "SW06". Turn OFF the power to the system and set up DIP switch "SW06" Bits 1 to 4 as per the chart. This solution is a "Temporary Fix" and it is recommended that the faulty item(s) are replaced within 7 days

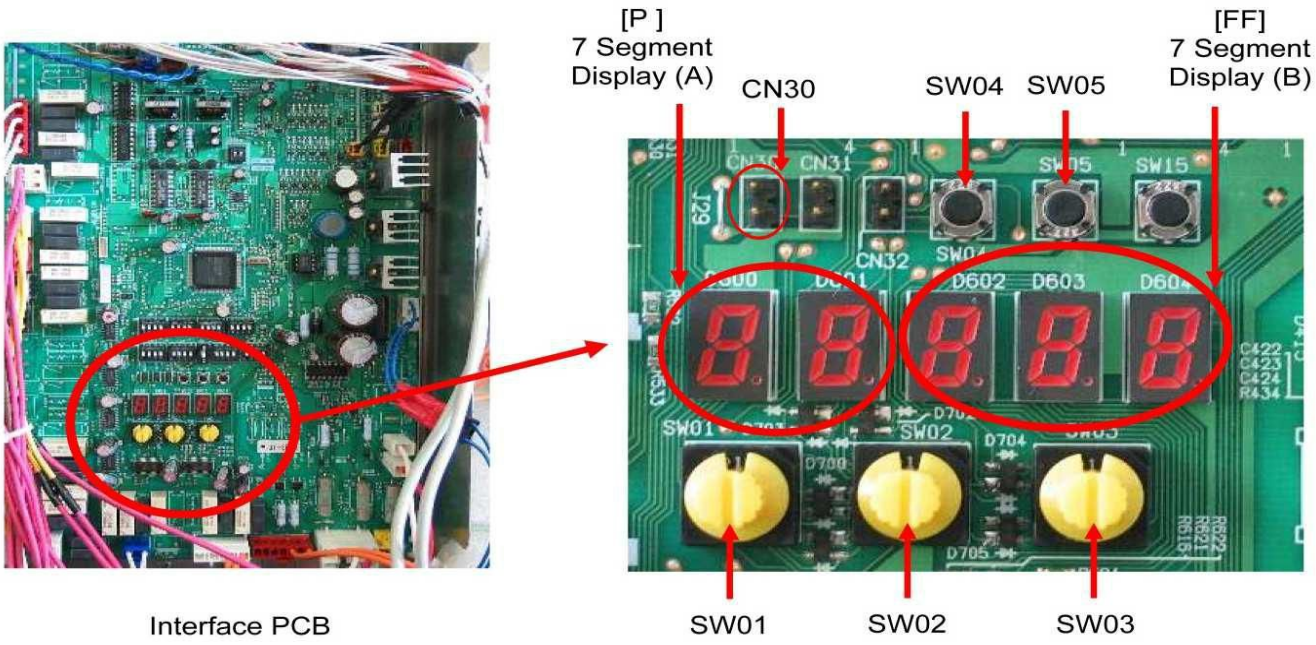
SW06	**DIP Switch Positions**			
	Bit1	Bit 2	Bit 3	Bit 4
Factory setting	OFF	OFF	OFF	OFF
No 1 Comp. Defective	ON	OFF	OFF	OFF
No 2 Comp. Defective	OFF	ON	OFF	OFF
No 3 Comp. Defective*	OFF	OFF	ON	OFF
* *SMMSi/SHRMi Not applicable to SMMSe/SHRMe				



Opening PMV's on Toshiba 3 Pipe VRF (R410a)

Step by step guide on how to open up all PMV's on indoor and outdoor units to enable successful refrigerant recovery, pressure test and evacuation

1. Before starting ensure that you have power applied to all indoor and all outdoor units
2. Ensure that on each condenser you have a normal display of U1--- and U2--- dependent on the quantity of outdoors while the yellow rotary dials are at positions 1-1-1
3. Place yellow rotary dials at position 2-3-1 left to right, on the lead condenser U1---, [P] will appear
4. Press push button SW04 just above the hexadecimal display for several seconds
   [P] [FF] is displayed on the hexadecimal display (meaning that all the PMV's on the indoors are in the open position)
5. You now have a **2-minute** window to turn the power off to the indoor units either at the isolator or distribution board to lock the valves in the open position
6. At condenser U1, bridge out the pins of CN30 on the main interface board for 10 seconds with the blade of a screwdriver and turn off power
7. Complete step 6 in any remaining condensers if modularised



Once your procedures of refrigerant recovery, pressure test or evacuation are complete there are no reverse procedures to follow, the valves will then close automatically once power is applied

VRF Rotary Dial Data Display - SMMS(e), SHRM(e) & Mini SMMS(e)

Model	SW01	SW02	SW03	Display Data
Common	1	1	1	Error data
Common	1	1	2	Pd pressure data (Pd---) (Mpa x 10 = Bar)
Common	1	2	2	Ps pressure data (Ps ---) (Mpa x 10 = Bar)
Common	1	2	3	System capacity (HP---)
Common	1	2	16	Latest error code of follower unit No.1 (U2)
Common	1	3	2	PL pressure conversion data (PL---) (Mpa x 10 = Bar)
Common	1	3	3	No. of outdoor units (qty)
Common	1	3	16	Latest error code of follower unit No.2 (U3)
Common	1	4	1	Outdoor unit HP capacity (HP---)
Common	1	4	2	TD1 sensor data (td1 ---) (ºC)
Common	1	4	3	No. of connected indoor units / No. of units with cooling thermo ON (--- C ---)
Common	1	5	2	TD2 sensor data (td2 ---) (ºC)
Common	1	5	3	No. of connected indoor units / No. of units with heating thermo ON (---H ---)
Common	2	3	1	Indoor PMV forced full open function
Common	2	4	1	Indoor remote controller discriminating function
Common	2	5	1	Cooling test operation function
Common	2	6	1	Heating test operation function
Common	2	14	2	Adding additional indoor units
Common	2	16	1	Error clear function
SHRM	1	8	2	TE sensor data (te ---) (ºC)
SHRM	1	11	2	TK1 sensor data (F1---) (ºC)
SHRM	1	12	2	TK2 sensor data (F2---) (ºC)
SHRM	1	13	2	TK3 sensor data (F3---) (ºC)
SHRM	1	14	2	TK4 sensor data (F4---) (ºC)
SHRM	1	9	2	TL sensor data (tL---) (ºC)
SHRM	1	10	2	TO sensor data (to---) (ºC)
SHRM	1	6	2	TS1 sensor data (tS1--) (ºC)
SHRM	1	7	2	TS2 sensor data (tS2--) (ºC)
SHRMi/e	3	8	1 to 2	Compressor 1 operating current (----) (A)
SHRMi/e	3	9	1 to 2	Compressor 2 operating current (----) (A)
SHRMi/e	3	10	1 to 2	Compressor 3 operating current (----) (A)
SHRMi/e	3	11	1 to 2	Fan operating current (----) (A)
SHRMi	1	6	2	TD3 sensor data (td3---) (ºC)
SHRMi/e	1	9	2	TE1 sensor data (tE1---) (ºC)
SHRMi/e	1	10	2	TE2 sensor data (tE2---) (ºC)
SHRMi/e	1	1	5	TK1 sensor data (F1---) (ºC)
SHRMi/e	1	2	5	TK2 sensor data (F2---) (ºC)
SHRMi	1	3	5	TK3 sensor data (F3---) (ºC)
SHRMi/e	1	4	5	TK4 sensor data (F4---) (ºC)
SHRMi/e	1	5	5	TK5 sensor data (F5---) (ºC)
SHRMi/e	1	11	2	TL sensor data (tL---) (ºC)
SHRMi/e	1	12	2	TO sensor data (to---) (ºC)
SHRMi/e	1	7	2	TS1 sensor data (tS1--) (ºC)
SHRMi/e	1	8	2	TS2 sensor data (tS2--) (ºC)
SMMS	1	4	16	Latest error code of follower unit No.3 (U4)
SMMS	1	7	2	TE sensor data (tE1---) (ºC)
SMMS	1	11	2	TK1 sensor data (F1---) (ºC)
SMMS	1	12	2	TK2 sensor data (F2---) (ºC)
SMMS	1	13	2	TK3 sensor data (F3---) (ºC)
SMMS	1	14	2	TK4 sensor data (F1---) (ºC)
SMMS	1	9	2	TL sensor data (tL---) (ºC)
SMMS	1	10	2	TO sensor data (to---) (ºC)
SMMS	1	6	2	TS sensor data (tS---) (ºC)
SMMSi/e	3	8	1 to 3	Compressor 1 operating current (----) (A)
SMMSi/e	3	9	1 to 3	Compressor 2 operating current (----) (A)
SMMSi/e	3	10	1 to 3	Compressor 3 operating current (----) (A)
SMMSi/e	3	11	1 to 3	Fan operating current (----) (A)
SMMSi/e	1	4	16	Latest error code of follower unit No.3 (U4)
SMMSi	1	6	2	TD3 sensor data (tD3---) (ºC)
SMMSi/e	1	8	2	TE1 sensor data (tE1---) (ºC)
SMMSi/e	1	9	2	TE2 sensor data (tE2---) (ºC)
SMMSi/e	1	12	2	TK1 sensor data (F1---) (ºC)
SMMSi/e	1	13	2	TK2 sensor data (F2---) (ºC)
SMMSi	1	14	2	TK3 sensor data (F3---) (ºC)
SMMSi/e	1	15	2	TK4 sensor data (F4---) (ºC)
SMMSi/e	1	16	2	TK5 sensor data (F5---) (ºC)
SMMSi/e	1	10	2	TL sensor data (tL---) (ºC)
SMMSi/e	1	11	2	TO sensor data(to---) (ºC)
SMMSi/e	1	7	2	TS sensor data (tS---) (ºC)
Mini SMMS/e	1	6	2	TE sensor data (tE---) (ºC)
Mini SMMS/e	1	7	2	TL sensor data (tL---) (ºC)
Mini SMMS/e	1	8	2	TO sensor data (to---) (ºC)
Mini SMMS/e	1	5	2	TS sensor data (tS---) (ºC)
CN30 - Force open all outdoor PMV's short CN30 out and kill power within 2 minutes to ensure valves stay in the fully open position.				

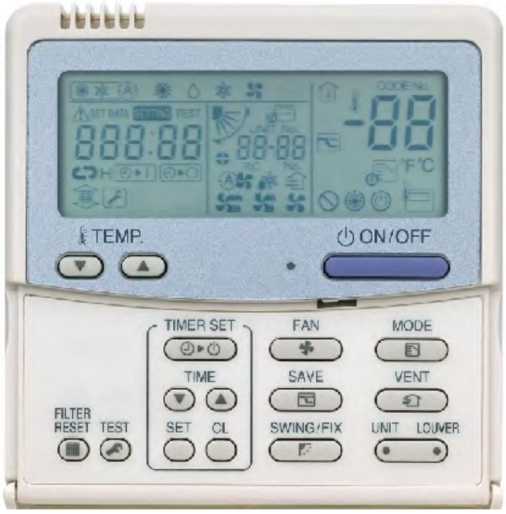
TCC-net Local Hard Wired Controller Guidelines

RAV & VRF

RBC-AS41E

RBC-ASC11E

RBC-MTSC1



RBC-AMT32-E

RBC-AMS41-E

RBC-AMS51E

RBC-AMS54/55E-ES

System Configuration Menu

Hard wired remote controllers which allow access to the configuration menu are:
RBC-ASC11-E, RBC-AMT32-E, RBC-AMS41-E, RBC-AMS51E, RBC-AMS54/55E-ES.

RBC-AS41E, Infra-Red Remotes and Central Controllers **Cannot** be utilised for setting configuration items.

A number of items are configurable by a wired controller – if an indoor unit without a wired controller requires configuration, a wired remote can be temporarily connected for the procedure to be undertaken. In order to access the menu.

Press TEST **+ SET + CL for 4 seconds (RBC-AMT32/AMS41)**

- The indoor units to be configured will be chosen by pressing the UNIT button.
- The indoor unit being configured runs its fan and swings its louvers (if possible).
- Use SET TEMPERATURE up/down buttons to scroll through the configurable items Use TIMER up/down buttons to choose the configuration value for Use
- SET to confirm configuration value Use CL to undo an incorrect setting provided that configurable item has not been changed)
- Use CHECK to return to normal operation.

EXAMPLES of COMMON CONFIGURABLE OPTIONS

ITEM	DESCRIPTION		VALUE	DEFAULT
01	Filter alarm time	Filter sign displayed after selected time has elapsed – or by external pressure switch (CN70)	0000: Inactive 0001: 150 H 0002: 250 H 0003: 500 H 0004: 1000 H 0005: External switch	0002
02	Dirty environment	Allows filter alarm time to be halved if used in a dirty environment	0000: Standard 0001: Dirty	0000
03	Network address	When under network control.	0099: Unset 0001 to 0064 available	0099
04	Priority Setting for Remote Controller	0 = Normal 1= Priority (This remote has priority of mode setting	0000 = Standard 0001 = Priority	0000
06	Stratification control	Increases effective return air temperature setting in heating mode (0 to 10K)	0000 to 0010	0002; +2°C Floor type 0000; 0°C
0C	Preheat	Preheat indication on display	0000 = available 0001 = unavailable	0000
0d	Auto mode	Enable or disable Auto mode	0000 = available 0001 = unavailable	0000 except SMMSe
0E	SHRMi only	Used when multiple indoor units are served via a single FS box	0000 = normal 0001= multiple units	0000
0F	Heat Mode	Enable or disable Heat Mode	0000 = available 0001 = unavailable	0000
10	Indoor unit model	Must be set when replacing indoor printed circuit board	0000: 1-way cassette (s models) 0001: 4-way cassette 0002: 2-way cassette 0003: 1-way cassette (y models) 0004: duct (standard) 0005: slim duct 0006: duct (high static) 0007: ceiling 0008: hi wall 0010: console 0011: concealed floor 0014: 4-way compact cassette (600 x 600) 0013: tall cabinet 0016: fresh air intake 0050: air to air heat exchanger	
11	Indoor unit capacity	0000 will generate a (L09) fault	MM / RAV / MM / RAV 0004 =005* - 0012 =027* 80* 0001 =007* - 0013 =030* 90* 0003 =009* 30* 0015 =036* 110* 0005 =012* - 0017 =048* 140* 0006 - 40* 0018 =056* 160* 0007 =015* - 0021 =072* 224* 0009 =018* 56* 0023 =096* 280* 0011 =024* - - - - Air to air heat exchanger Type 0001 = 150m³/h 0006 = 800m³/h 0002 = 250m³/h 0007 = 1000m³/h 0003 = 350m³/h 0008 = 1500m³/h 0004 = 500m³/h 0009 = 2000m³/h 0005 = 650m³/h	
12	System number	DI/SDI indoor and outdoor units are automatically addressed, this value may be set manually but it must be done via the wired controller – on an individual basis. Settings are 0001 to 0030	0001: outdoor unit 1 0002: outdoor unit 2	0099
13	Indoor unit number	Indoor units connected to a common outdoor unit (e.g. twinned indoor units) will have the same system number - settings are 0001 to 0064. Automatically allocated – but may be manually overridden.	0001: indoor unit 1 0002: indoor unit 2	0099
14	Group master/slave	Allows selection of master indoor unit within group. Automatically allocated but may be manually overridden.	0000: single indoor unit 0001: group master 0002: group slave	0099
15	Temperature Sensor	Compensation for missing temperature sensor (split systems ONLY) other settings produce F03 fault code	0022	0022
16	Indoor Fan	Indoor fan speed selection. Binary addition.	0015 = all speeds available 1 = auto; 2 = low; 4 = medium; 8 = high	0015 except high static 0008
17	Set point shift	Cooling temperature set point shift. (shifted by 1 to 10 k)	0000 = no shift, 0001 = 1 k shift, - 0010 = 10 k shift	0000
19	Louver functions	None, swing only, swing and auto (where applicable)	0000: disabled, 0001: swing only 0004: all options	
1b	Compressor on time	Compressor minimum on time (0 = 5 minutes 1 = 4 minutes)	0000: 0 – 5 min 0001: 1 - 4 min.	0000
1E	Dead band - auto	Changeover sensitivity in automatic mode. (1 to 10 k adjustable)	0000: 0 K, 0010: 10 K	0003

ITEM	DESCRIPTIPON		VALUE	DEFAULT
1F	Max. Setting	Cooling mode maximum temperature setting (18 – 29ºC)	0018 = 18ºC, 0020 = 20ºC 0029 = 29ºC	29 º C
20	Min. Setting	Cooling mode minimum temperature setting (18 – 29ºC)	0018 = 18ºC, 0020 = 20ºC 0029 = 29ºC	18 º C
21	Max. Setting	Heating mode maximum temperature setting (18 – 29ºC)	0018 = 18ºC, 0020 = 20ºC 0029 = 29ºC	29 º C
22	Min. Setting	Heating mode minimum temperature setting (18 – 29ºC)	0018 = 18ºC, 0020 = 20ºC 0029 = 29ºC	18 º C
23	Max. Setting	Dry mode maximum temperature setting (18 – 29ºC)	0018 = 18ºC, 0020 = 20ºC 0029 = 29ºC	29 º C
24	Min. Setting	Dry mode minimum temperature setting (18 – 29ºC)	0018 = 18ºC, 0020 = 20ºC 0029 = 29ºC	18 º C
25	Max. Setting	Auto mode maximum temperature setting (18 – 29ºC)	0018 = 18ºC, 0020 = 20ºC 0029 = 29ºC	29 º C
26	Min. Setting	Auto mode minimum temperature setting (18 – 29ºC)	0018 = 18ºC, 0020 = 20ºC 0029 = 29ºC	18 º C
28	Auto restart	Enable or disable	0000: disabled 0001: enabled	0000
29	Humidifier condition	Operating condition of humidifier	0000: Usual 0001: Condition ignored	0000
2A	CN70	Selection of optional error input (CN70)	0000: Filter input 0001: Alarm input, 0002: None	0002
2d	Modes available	Binary addition of modes available.	0015= all modes 1 = fan; 2 = cool; 4 = dry 8 = heat	0015
2E	External On / Off control	Making or breaking terminals 1 and 2 of CN61 (indoor PCB) External switching option, remove jumper 01 master indoor PCB allows continuous contact switch- link 01 in place; pulse switch required	0000 = group starts when made stops when open 0001 = enable when made, disable when open	0000
31	External fan control	Through remote controller and CN32 indoor PCB Used for setting ON/OFF control for VN-M units when paired with A/C systems	0000 = disable, 0001 = enabled	0000
32	Sensor location	Return air/room sensor OR in local controller	0000: return air sensor 0001: remote sensor	0000
33	Unit of temperature	Celsius or Fahrenheit	000 = Celsius, 0001 = Fahrenheit	0000
36	Remote controller	Temperature display	0000: temperature setting 0001: temperature room sensing	0000
40	Drain pump	Drain pump control	0000: None 0001: Pump ON 0002: None 0003: Pump OFF	0003
45	Anti-smudge	4-way cassette anti smudge effect via louver position	0000 = enabled, 0001 = disabled	0000
5d	1-Way Cassette Airflow Correction Ceiling height (m)	AP015, 018 / AP024 3.5 / 3.8 — 0000 4.0 / 4.0 — 0001 4.2 / 4.2 — 0003		0000
	2-Way Cassette Airflow correction Ceiling height (m)	AP007 to AP030 / AP36 to AP056 2.7 / 2.7 — 0000 3.2 / 3.0 — 0001 3.8 / 3.5 — 0003		0000
	4-Way Cassette Airflow correction Ceiling height (m)	- / RAV56* / *RAV80** / *RAV90*,110*,160** AP005 to AP012 / AP015 to AP018 / *AP024 to AP030* / *AP036 to AP056* 4-way 3-way 2-way 4-way 3-way 2-way 4-way 3-way 2-way 4-way 3-way 2-way 2.7 2.8 3.0 2.8 3.2 3.5 3.0 3.3 *3.6* *3.9* *4.2* *4.5* — 0000 - - - 3.2 3.5 3.8 3.3 3.5 3.8 4.2 4.4 4.6 — 0001 - - - 3.5 3.8 - 3.6 3.8 - 4.5 4.6 - — 0003		0000
	4-Way Compact Cassette Airflow correction Ceiling height (m)	- AP007 to AP012 2.7 — 0000 - — 0002 - — 0003	RAV40* AP015 2.9 3.2 3.5	RAV56* AP018 3.2 3.4 3.5	0000
	Slim Ducted Airflow correction External static pressure	- AP0054 10 Pa — 0000 20 Pa — 0001 35 Pa — 0003 50 Pa — 0006	RAV40*-56* AP0074 to AP0184 10 Pa 20 Pa 35 Pa 50 Pa	- AP0244 to AP0274 10 Pa 20 Pa 35 Pa 50 Pa	0000
	Standard Ducted Airflow correction External static pressure	RAV40*-56* / RAV80* / RAV110*-160* AP007 to AP018 / AP024 to AP030 / AP036 to AP058 30 Pa / 30 Pa / 30 Pa — 0001 40 Pa / 40 Pa / 40 Pa — 0000 50 Pa / 50 Pa / 50 Pa — 0003 65 Pa / 65 Pa / 65 Pa — 0002 80 Pa / 80 Pa / 80 Pa — 0004 100 Pa / 100 Pa / 100 Pa — 0005 120 Pa / 120 Pa / 120 Pa — 0006		RAV40* 0001 RAV-80* 0001 RAV110* 0003 RAV140* 0003 RAV160* 0003 AP007-018 0001 AP024-030 0000 AP036-058 0003
	VN-M (HE1)	Maximum Fan Speed Selection	0000: High 0001: Extra High	0000
60	Timer lock	Locks timer in wired local controller – maintaining last setting	0000: unlocked, 0001: locked	0000
62	Anti-smudge	4-way cassette – ant smudge via fan speed (Coanda effect)		0001
69	Louver	Louver restriction when cooling	0000 = restricted to horizontal positions 0001 = full range of movement	0000
6E	Setting for air direction kit (1)	Smart Cassette ONLY. Standard: GM56 0000, GM80 0000, GM110 0000, GM140 0000 3-way air flow: GM56 0000, GM80 0000, GM110 0080, GM140 0075 2-way air flow: GM56 0090, GM80 0090, GM110 0080, GM140 0070		0000
77	Dual set point	**RBC-AMS54/55E-ES ONLY**	0000 = Available 0001 = Unavailable	0000
88	Setting for air direction kit (2)	Smart Cassette ONLY. Standard: GM56 0000, GM80 0072, GM110 0075, GM140 0070 3-way air flow: GM56 0060, GM80 0060, GM110 0050, GM140 0048 2-way air flow: GM56 0050, GM80 0050, GM110 0040, GM140 0038		According to capacity type.
8b	Heating Correction	Heating output reduction split systems only	0000: None, 0001: Correction	0000
8C	Forced Defrost	Run group in HEAT mode after setting defrost is conducted automatically. Value is reset automatically back to 0000	0000 = disabled 0001 = enabled	0000
A0	Fan & Pump	Fan and pump operation during oil retrieval mode (VRF cassettes ONLY)	0000 = fan off, pump on 0003 = fan on, pump on	0003
b3	Soft Cooling	RBC-AMS54/55E-ES	0000 = Unavailable 0001 – Available	0001
b5	Occupancy Sensor	Where applicable	0000 = None 0001 = Occupancy sensor provided	0000
b6	Occupancy sensor	Enable / Invalid. Absence time judgement time.	0000 = Invalid, 0001 = 30min. 0002 = 60min. 0004 = 120min. 0005 = 150min.	0002
b7	Occupancy sensor	Operation at absent time.	0000 = Standby 0001 = Operation stop	0000
C2	Energy save	Outdoor unit energy demand 1% increments 50 to 100%	0050 ~ 0100	0075
CE	Replace indoor PCB	4-Way cassette unit capacity code	0000 = disable 0006: = RAV40* 0009: = RAV56* 0012: = RAV80* 0015: = RAV110* 0017: = RAV140* 0018: = RAV160*	0000

ITEM	DESCRIPTION		VALUE	DEFAULT
d0	Power Saving Mode	Whether the power saving mode can be set by the remote controller	0000 = Invalid 0001 = Valid	0001
d3	Self-clean operation	Self-clean dry operation	0000 = disable 0001 = enable	0001
E6	Wireless Channel	Compact Cassette. Channel selection	0000 = A channel, 0001 = B channel	0000
F0	Swing mode	Compact Cassette. Louver swing options	0001 = Standard, 0002 = Dual swing 0003 = Cycle swing	0001
F1	Louvre lock Flap 1	4-Way cassette 5 fixed positions	0000 Full swing 0001 Fixed position 1 (Horizontal Discharge)	0000
F2	Louvre lock Flap 2		0002 Fixed position 2	
F3	Louvre lock Flap 3		0003 Fixed position 3	
F4	Louvre lock Flap 4		0004 Fixed position 4 0005 Fixed position 5 (Downward Discharge)	
F6	Application control kit	Presence of Application Control Kit (TCB-PCUC1/2E-1)	0000 = None, 0001 = Exist	0000

Note: Some options are model specific.

Notes

Optional Control Accessories								
	ITEM	RAV	VRF	VN	ESTIA	RAS	DESCRIPTION	DETAILS
Wired Controllers	RBC-AMT32E	✓	✓				Standard Remote Controller	Full Control Including Service Function
	RBC-AMS41E	✓	✓				Remote Controller Built-in Timer	Full Control Including Service Function and Programmable 24/7 Day Timer
	RBC-AMS51E-ES*	✓	✓				LITE-Vision Plus Remote Controller	Includes Timer and Backlight Display, Power Save Functions, Multilingual.
	RBC-AMS54*/55E-ES	✓	✓				Remote Controller Built-in Timer	Programmable Timer, Backlight, Multilingual, Dual Set Point, Soft Cooling & Return Back Functions.
	RBC-AMS41E2*	✓	✓				Simplified Controller	Ideal for Hotel and Base use Applications, (No Service Function Available)
	RBC-ASC11E	✓	✓				Compact Local Controller	Ideal for Hotel and Base use Applications, (Service Function Available)
	RBC-MTSC1	✓	✓				Colour Smart Touch Local Remote	Ideal for Hotel and Base use Applications, (No Service Function Available)
	NRC-01HE			✓			VN-M Remote Controller	Remote controller for Air to Air Heat Exchangers.
	RBC-RWS20E					✓	Remote Controller for RAS	Wired Remote Controller for RAS Ducted Units
	TCB-EX21TLE	✓	✓				Scheduled Timer	Use with Central Controllers, BMS-CM1280TLE, BMS-SM1280ETLE, TCB-CC163TLE2,RBC-AMT32E, NRC-01HE
	HWS-AMS54E				✓		Standard Air to Water Remote	Estia Air to water Remote Controller
	TCB-TC41LE	✓	✓				Auto-configurable Remote Sensor	Automatic control of Room Temperature Sensing Comfort Condition of system.
Wireless Controllers	RBC-AX32(W/WS-E)	✓	✓				4-Way Cassette Corner Receiver	Replacement Corner Pocket with Built-in Receiver and Remote Controller
	RBC-AX32UM(W)-E	✓	✓				7-Series Compact Cassette Corner Receiver	Replacement Corner Pocket with Built-in Receiver and Remote Controller
	RBC-AX32UW(W)-E		✓				2-Way Cassette Receiver	Replacement Receiver and Remote Controller
	RBC-AX33CE	✓	✓				Under Ceiling Receiver	Replacement Receiver and Remote Controller
	TCB-AX32E2	✓	✓				Independent External Receiver	Receiver and Remote Controller for all Models
Central Controllers	TCB-CC163TLE2*	✓	✓	✓			16 Zone On-Off Controller	Enables the Switching On and Off by Volt Free Contact
	BMS-CM1280TLE*	✓	✓	✓			Compliant Manager	Enables Full Control of up to 128 Indoor Units.
	TCB-SC643TLE	✓	✓	✓			64 Zone Central Remote	Enables Full Control of up to 64 Indoor Units.
	BMS-SM1280ETLE	✓	✓	✓			128 Zone, Smart Manager with Data Analyser	Smart Manager with Remote Access via Web Browser and Data Analysis Features.
	BMS-CT1280E	✓	✓	✓			128 Zone, Colour Touch Screen with Data Analyser	Full Control of up to 128 Indoor Units with Remote Access via Web Browser and Data Analysis Features.
	BMS-CT512E	✓	✓	✓			512 Zone, Colour Touch Screen with Data Analyser	Full Control of up to 512 Indoor Units with Remote Access via Web Browser and Data Analysis Features.
	RBC-TBPTS	✓	✓	✓			64 Zone, Colour Touch Screen Central	Colour Touch Screen Central Remote Controller to control up to 64 Indoor Units
Indoor Interfaces	TCB-SIR41UM-E	✓	✓				7-Series Compact Cassette Occupancy Sensor	Occupancy Sensor (PIR)
	TCB-PCNT30TLE2	✓					Network Adaptor U3/U4 TCCJ Link	Allows connection of RAV units to the TCCJ Link Network
	TCB-PCNT20E	✓					Network Adaptor XY AI Network	Connects a RAV unit to the old AI Network.
	TCB-PX30MUE	✓					Terminal Box	Enclosure when used with all RAV Cassette Units.
	RBC-SMF1	✓	✓				Fan Interface	Interface to provide an output to enable an external fan from the indoor unit.
	RBC-SMIM2	✓	✓				Indicator Module Mode	Interface to Indicate the Mode of Operation, Output for Cool, Heat and Fan Only.
	RBC-SMIM3	✓	✓				Indicator Module ON/OFF and Fault	Interface to indicate Unit Operation and Stopping Fault.
	RBC-SMIM4	✓	✓				Indicator Module ON/OFF, Stopping Fault and Unit Enable	Interface to Indicate Unit Operation and Stopping Fault, also has connections to Enable the Unit.
	RBC-FDP3-PE	✓	✓				BMS Interface	Interface to Connect to a 0 to 10v or Resistance Based BMS, also has Modbus Functionality.
	RBC-TSI1	✓	✓				Monitoring and Control Interface	Interface to Connect to a 0 to 10v or Resistance Based BMS, also has Modbus Functionality.
	RBC-IT2-PE	✓					Timer Interface	Interface to Accept 230v Input from a Timer for R22/R407C Systems.
	RBC-IT3-PE					✓	Daiseikai / Avant Timer Interface	Connects to “HA” Socket on Indoor Unit.
	TCB-PCOS1E2	✓		✓[1]			Application Control PCB	Compatible models, RAV-SM/SP/GP + VN-M (HE1)
	TCB-PCM03E				✓		External Input PCB	Interface to Provide External ON/OFF for Estia System
	TCB-PCIN3E				✓		Output PCB	Interface to Provide an Output for Estia Fault/Run.
	TCB-IFGSM1E	✓					GSM Control Interface	Connects to CN61 at indoor PCB on RAV allowing remote ON/OFF, Operation Status and Alarm Monitoring.
	TCB-KBCN600PE	✓	✓				Operation Status	Operation Status of Indoor Units via Indoor PCB “CN61” socket.
	RBC-VNL1			✓			Unit Interface Lead	Volt Free Interface for VN-M##HE units to Control ON/OFF, Fan Speed and Damper Position.
	RBC-CN61	✓	✓				On/Off Interface	Remotely Switches Unit ON/OFF, via NO VOLT interface, Connects to indoor PCB “CN61” Socket.
	CDL-BMS01	✓	✓				On/Off Interface with Operation and Fault	Connects to the “CN61” socket on Indoor PCB, allowing for remote VOLT FREE On/OFF, System Operation and System Fault via 12volt Interface
Notes: * No longer available, [1] VN-M####HE1 only								

	Optional Control Accessories							
	ITEM	RAV	VRF	VN	ESTIA	RAS	DESCRIPTION	DETAILS
Outdoor Interfaces	TCB-PCDM4E		✓				Power Peak Control	Power Peak Cut Control
	TCB-PCIN4E		✓				Operation Output Display	Operation/Error Output Display, Compressor Operation Control.
	TCB-PCM04E		✓				Operation Control	Night Set Back Control, Snowfall Fan Control, External ON/OFF, Operation Mode Control.
	TCB-PC0S1E2*		✓				Outdoor Control	Peak Power Cut and Noise Reduction, Output for Compressor Operation. (*Not applicable to all units.)
Other Accessories	RBC-FSEX15		✓				3 Series Flow Selector Lead	15m Extension Lead Kit for 3 Series SHRM/i/e Flow Selector Box.
	RBC-SMT1	✓[2]	✓[2]				Timer Interface Lead	Provides ON/OFF Control from Wired Remote or Central Remote Controllers. (*excludes RBC-AS41E2)
	RBC-CK1	✓					VRF to RAV Conversion Kit	Kit to Convert VRF Floor/Chassis units to Connect with RAV Outdoor Units (R410A ONLY).
	RBC-CK2	✓					VRF to RAV Conversion Kit	Kit to Convert VRF Tall Floor Units to Connect with RAV Outdoor Units (R410A ONLY).
	TCB-KB0S2E	✓					Optional Connection Interface	RAVSP804/1604 Peak-Cut Control, Night Operation, Compressor Status.
BMS Interfaces	CDL-BMS02	✓	✓				Modbus Interface	Modbus Interface for control of up to 64 indoor units
	CDL-BMS03	✓	✓				BACnet Interface	BACnet interface for control of up to 64 indoor units
	CDL-BMS04	✓	✓				Trend Interface	Trend interface for control of up to 64 indoor units, requires IQ3/IQ4
	OASIS-064EM1	✓	✓				Control Solution	Control panel for 64 indoor unit's c/w data logging, web server & optimisation
	OASIS-128EM1	✓	✓				Control Solution	Control panel for 128 indoor unit's c/w data logging, web server & optimisation
	TCB-IFMB641TLE	✓	✓				Modbus Interface	Connect the system to a Modbus Building Management System control up to 64 indoor units
WIFI Interfaces	RB-N103S-G					✓	WIFI Connection	Toshiba RAS WIFI interface, suitable for: Daiseikai-10,13,16, Shorai -18,22,24, Seiya- 24
	RB-N105S-G					✓	WIFI Connection	Toshiba RAS WIFI interface, suitable for: Shorai-10,13,17, Seiya-05.07,10,16,18, Console-10,13,18
	BMS-IWF0320E	✓	✓				WIFI Connection	Toshiba RAV-VRF WIFI interface, maximum quantity of indoor units 32, IOS or Android App.
	RBC-IS-IF-Wifi-1	✓	✓			✓	WIFI Connection	Intensishome WIFI Universal Interface Infrared Remote RAS/RAV/VRF
	RBC-TO-RC-Wifi-1	✓	✓				WIFI Connection	Intensishome WIFI Interface for Wired Remotes RAV/VRF.
Refrigerant Leak Detection	TCB-LDS1	✓	✓				White Ref. Leak Detector	Leak detection concentration sensor with White Faceplate and remote 12 V transformer
	TCB-LDS2	✓	✓				Stainless Steel Ref. Leak Detector	Leak detection sensor with Stainless Steel Faceplate and remote 12 V transformer
	RBC-RCS1	✓	✓				White Ref. Leak Detector	Leak detection concentration sensor with White Faceplate
	RBC-RCS2	✓	✓				Stainless Steel Ref. Leak Detector	Leak detection concentration sensor with Stainless Steel Faceplate
	TCB-LD12V	✓	✓				Remote Power Supply	Leak detection transformer 12 V and cable kit (use with TCB-LDS1/TCB-LDS2)
	TCB-LD1	✓	✓				External Leak Detection and Pump Back panel	Leak Detection Panel VRF SHRMi/SMMSi
	TCB-LD2	✓	✓				External Leak Detection and Pump Back Panel	Leak Detection Panel VRF SHRMe/SMMSe
	RBC-RP1	✓	✓				Refrigerant Leak Detection Repeater Panel	Repeater Panel
Auxiliary Options	TCB-GFC1603UE	✓					Fresh air filter chamber	4- Smart Cassette only way
	TCB-GFC1602UE	✓	✓				Fresh air filter chamber	4-way standard cassette only
	TCB-SP1603UE	✓					Spacer for height adjustment	4- Smart Cassette only way
	TCB-SP1602UE	✓	✓				Spacer for height adjustment	4-way standard cassette only
	TCB-BC1603UE	✓					Air discharge direction kit	4- Smart Cassette only way
	TCB-BC1602UE	✓	✓				Air discharge direction kit	4-way standard cassette only
	TCB-FF101URE2	✓	✓				Auxiliary fresh air flange	4-way smart cassette, 4-way standard cassette, compact cassette, slim duct
	TCB-SF56C6BPE	✓	✓				Spigot shaped flange	Suitable for RAV-SM40#/56#BTP-E1-MMD-AP007#/018-HP1-E
	TCB-SF80C6BPE	✓	✓				Spigot shaped flange	Suitable for RAV-SM80#BTP-E1-MMD-AP024#/030#BHP1-E
	TCB-SF160C6BPE	✓	✓				Spigot shaped flange	Suitable for RAV-SM110#/160#BTP-E1-MMD-AP036#/056#BHP1-E
Note: [2] Check with Technical for Compatibility - For additional control options contact Cool Designs Technical Support.								

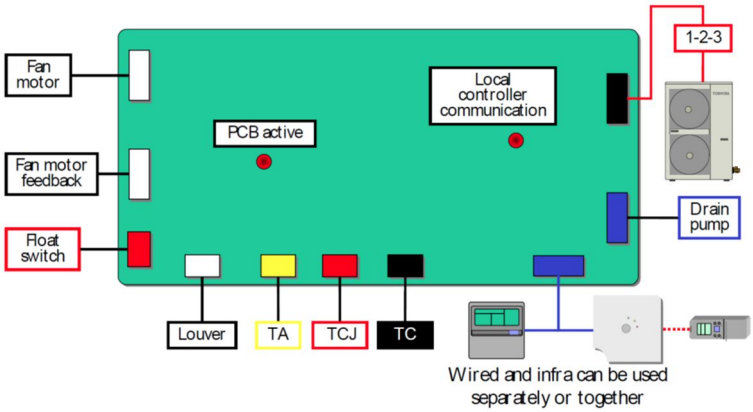
NOTES

Features

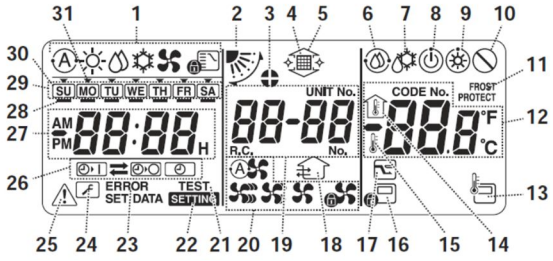
- ⇨ 2 wire, screened, non-polarised controller connection
- ⇨ Infrared control available for cassette, under ceiling, high wall, ducted models
- ⇨ Remote temperature sensing available, Unit, Wired controller, Separate room sensor
- ⇨ Automatic addressing of groups and twins
- ⇨ Optional control of external fan, (RBC-SMF1)
- ⇨ High ceiling compensation (code 5d)
- ⇨ Time for filter warning is configurable (code 01)
- ⇨ Each mode of operation (auto – heat – cool – dry) may have a different temperature set point
- ⇨ Auto restart is configurable (code 28)

Cassette PCB

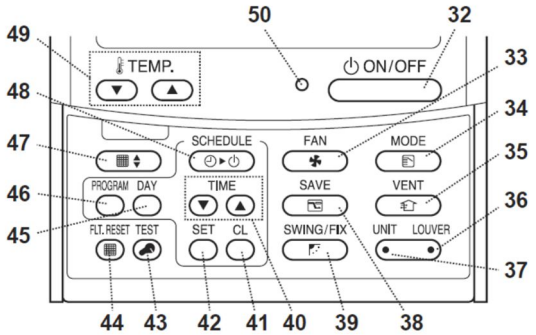
- ⇨ DC fan motor with feedback circuit
- ⇨ Red LEDs indicate communication with local controller and PCB activity when illuminated.
- ⇨ Wired or infrared control (or both)
- ⇨ Drain pump and float switch



Wired controller (RBC-AMT32/41)



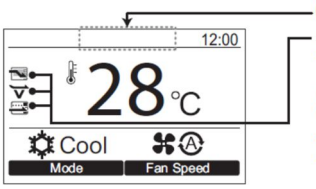
1. Mode of operation
2. Louver
3. Fixed louver
4. Filter
5. Not used
6. Self-clean function
7. Defrosting
8. Ready
9. Heating ready
10. Not used
11. Frost protection
12. Numeric display
13. Remote controller sensor
14. Not used
15. Set Temperature
16. Central control
17. Save Operation
18. Ventilation operation
19. Numeric display
20. Air speed
21. TEST
22. Setting
23. Error
24. Servicing
25. Inspect
26. Timer function
27. Numeric display
28. Operation reservation
29. Days of the week
30. Special holiday



32. On/OFF button
33. Fan button
34. Mode button
35. Vent button
36. Louver button
37. Unit button
38. Save button
39. Swing/Fix button
40. Time button
41. Clear button
42. Set button
43. Test button
44. Filter reset button
45. Day button
46. Program button
47. Grille button
48. Schedule button
49. Temperature buttons
50. ON/OFF Light

Wired controller (RBC-AMS55E-ES)

Standard Display

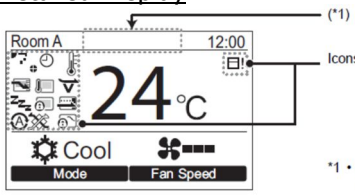


Energy saving icon
- Displayed when performing the power saving operation of the air conditioner.

Soft cooling icon
- Shows the air conditioner is performing the soft cooling operation.

Saving icon
- Displayed when performing operation by suppressing excessive heating or excessive cooling through automatic correction of the temperature set point.

Detailed Display



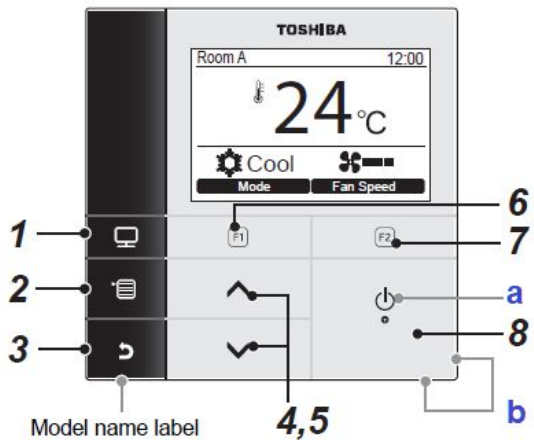
Icons appear on the screen when the detailed display mode is selected.

*1 • The "Preparing to heat" icon appears when the heating operation starts or when defrosting operation.
The indoor fan stops or the operation becomes the blowing operation when it is displayed.
• It may be displayed depending on the model when "Preparing to operate" is displayed.

Icon List

	Shows the Energy saving operation is activated. (page 28)		Shows a timer function is activated. (page 19, 21)
	Shows the remote sensor is activated. (*2)		Shows the Louver lock is activated. (page 18)
	Shows the Night operation is activated. (page 25)		Shows the setting of the louver. (page 13, 14)
	Shows the central control device prohibits the use of the remote controller (page 47)		Shows the filter needs to be cleaned. (page 26, 48)
	Shows the saving operation is activated. (page 33)		Shows soft cooling is activated. (page 41)
			Shows operation switching control is in progress.

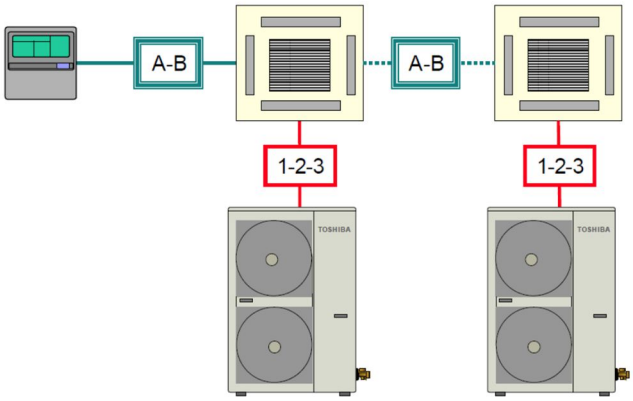
Buttons



1	Monitor button	7	F2 function button
2	Menu button	8	Power button (On/Off)
3	Cancel (Back) button	a	LED illuminated when unit is on
4-5	Temperature buttons	b	Temperature sensor
6	F1 function button		

Group control

- Indoor units may be supplied from any phase.
- Up to 8 indoor units per group.
  (When TCB-TC41LE remote temperature sensor/
  second remote controller is added to a "Group"
  the quantity of indoor units drops from 8 to 7.)
- Automatic addressing.
- Any indoor unit may be designated as the "Lead Unit".
- Pre-heat indication.
- Filter indication.



Automatic addressing

This takes place when power is applied and can last up to 5 minutes – the address will be selected automatically.

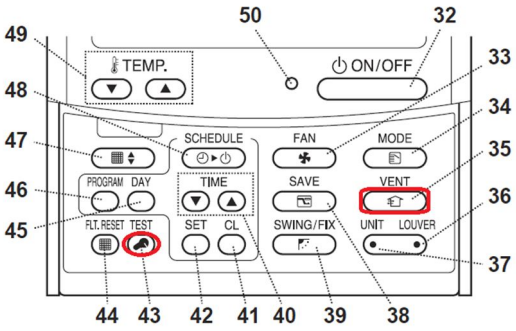
If a replacement indoor PCB is fitted, the missing address will be re-applied.

The powered controller screen shows the demarcation lines – and does not indicate that the system is either configuring itself – or is ready to use. If the remote temperature sensor is selected (configuration item 32), the associated symbol will appear when the system is ready for use. If a 9th indoor unit (which can be a protocol converter) is added to a group, the controller will continue to show the demarcation lines.

Adding a system to an existing group (or powering a group up at different times) will require manual configuration (the fault codes will provide guidance).

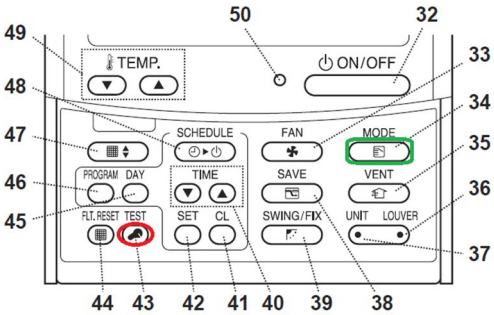
Identifying an indoor unit

- Stop operation
- Press **TEST** (43) and **VENT** (35) for 4 seconds
- ALL is displayed
- Indoor fans of the entire group are now energised
- Press UNIT (37) to scroll through group
- Indoor fan of selected indoor unit runs
- Press TEST (43) to exit.



Test operation

- System must be stopped
- Press **TEST (43)** for 4 seconds
- Controller displays TEST
- Press the ON/OFF (32) button to start operation
- Select **MODE** (34) of operation
- HEAT or COOL
- Press the ON/OFF (32) button to stop test
- System will automatically revert to normal operation after 1 hour
- Press the TEST (43) button to leave TEST function



Controller Configuration - Remote Controller RBC-AMT32E & RBC-AMS41E

Quick Reference Guide

To assist service engineers working on Toshiba air conditioning equipment, there is a large quantity of data available via the standard remote controller, either the RBC-AMT32E or the RBC-AMS41E, this data is **NOT** available via an Infrared remote or the RBC-AS21E2 simplified remote controllers.
Accessing the data is a simple process of pressing a sequence of buttons on the remote controller.

Fault Code Guide

Current fault codes are displayed automatically on the left of the remote controller, (Four figure display in Black) fault code history can be accessed by pressing "**TEST & SET**" together and holding for 4 seconds. Each controller will hold four fault codes per unit controlled, the first displayed fault code is the youngest and the fourth will be the oldest. To scroll through the fault's, use the "**TEMP▲▼**" buttons.

Refer to the Technical Handbook for fault code diagnosis and descriptions

System Data

System data can be obtained by pressing "**TEST & CL** " together and holding for 4 seconds. Codes are displayed on the right of the remote display.
To scroll through the codes use the "**TEMP▲▼**" buttons. Data is displayed on the left of the remote controller. Data is available for "0, 1, 2, 3 & 4 Series" Digital/Super Digital inverter and VRF equipment (Mini SMMS, SHRM, SHRMi, SMMS & SMMSi).

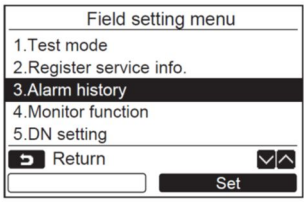
Controller Configuration - Remote Controller RBC-AMS51/54/55E-ES

Quick Reference Guide

To access this section on the RBC-AMS51/54/55E-ES

Fault Code Guide

Current fault codes are displayed automatically on the top of the remote controller, (four figure display in Black) fault code history can be accessed by entering the "field Setting Menu"
Press and hold the " **[MENU]** " button and the " **[∨ ∨]** "button at the same time for more than 4 seconds to display the "**Field setting menu**" scroll down to "Alarm History". The history holds 10 fault codes per unit controlled.



System Data

System data can be obtained by entering the "Field Setting Menu" and scroll down to "Monitor Function"
When in monitor mode scroll through the data using the up/down buttons.

System Data

System data can be obtained by pressing "**TEST & CL**" together and holding for 4 seconds. Codes are displayed on the right of the remote display.

To scroll through the codes, use the "**TEMP▲▼**" buttons. Data is displayed on the left of the remote controller. Data is available for "0, 1, 2, 3 & 4 Series" Digital/Super Digital inverter and VRF equipment (Mini SMMS/e, SHRM, SHRMi, SHRMe, SMMS, SMMSi & SMMSe).

Data Retrieval Guide - Remote Controllers RBC-AMT32E, RBC-AMS41E & RBC-AMS51/54E-ES

Digital/Super Digital "0-1-2-3" Series Data

Code	Indoor Data	Code	Outdoor Data
00	Room Temp (Control Temp) (°C)	60	TE Sub-Cooled Liquid Temp (°C)
01	Room Temp (Remote Controller) (°C)	61	TO Ambient Temp (°C)
02	TA Return Air Temp (°C)	62	TD Discharge Temp (°C)
03	TCJ Coil Liquid Temp (°C)	63	TS Suction Temp (°C)
04	TC Coil Vapour Temp (°C)	65	THS Inverter Heat Sink Temp (°C)

Digital/Super Digital "4" Series

Code	Indoor Data	Code	Outdoor Data
00	Room Temp (Control Temp) (°C)	60	TE Sub-Cooled Liquid Temp (°C)
01	Room Temp (Remote Controller) (°C)	61	TO Ambient Temp (°C)
02	TA Return Air Temp (°C)	62	TD Discharge Temp (°C)
03	TCJ Coil Liquid Temp (°C)	63	TS Suction Temp (°C)
04	TC Coil Vapour Temp (°C)	65	THS Inverter Heat Sink Temp (°C)
07	Fan Speed (rpm)	6A	Operation Current (x1 1/0) (A)
F2	Fan Run Time (x 100h)	70	Compressor Frequency (rps)
F3	Filter Duration Timer (x 1h)	72	Fan Speed (Lower) (rpm)
F8	Discharge Temp (Indoor If fitted) (°C)	73	Fan Speed (Upper) (rpm)
		F1	Compressor Run Time (x 100h)

VRF Indoor Data

Code	Indoor Data	Code	Indoor Data
00	Room Temp (Control Temp) (°C)	F3	Filter sign time (x 1)
01	Room Temp (Remote Controller) (°C)	F9	Suction temperature of air to air heat exchanger (TOA) (x 1)
02	TA Return Air Temp (°C)	FA	TOA Outside air temperature (°C)
03	TCJ Coil Liquid Temp (°C)	EO	Refrigerant leak detection (0000)=Normal (0001)=Possible refrigerant leak
04	TC2 Coil PMV Pipe Temp (°C)	0A	Number of Connected Indoor Units (No.)
05	TC1 Coil Vapour Temp (°C)	0b	Indoor Capacity (x 10 = HP)
06	Indoor Discharge Temp (If Used) (°C)	0C	Number of Outdoor Units (No.)
08	PMV Position (pulse 0/10)	0d	Outdoor Capacity (x 10 = HP)

VRF Outdoor Data for Mini SMMS / SMMs & SHRM Equipment

Code	Outdoor Data	Code	Outdoor Data
*0	Td1 Compressor 1 Discharge Temp (°C)	*7	TO Outside Ambient Temp (°C)
*1	Td2 Compressor 2 Discharge Temp (°C)	*9	Compressor 1 Current (A)
*2	Pd High Pressure Sensor (MPa)	*A	Compressor 2 Current (A)
*3	Ps Low Pressure Sensor (MPa)	*b	PMV1 + 2 Opening (0-100)
*4	TS Suction Temp (°C)	*d	Compressor 1, 2 ON/OFF
*5	TE Outdoor Heat Exchanger Temp (°C)	*E	Outdoor Fan Mode (0-31)
*6	TL Liquid Temp (°C)	*F	Outdoor Unit Size (HP)
Note * Would be replaced with 1 = U1,2 = U2, 3 = U3, or 4 = U4 to obtain data from respective outdoor unit.			

VRF Outdoor data for SMMSi equipment

Code	Outdoor Data	Code	Outdoor Data
*0	Pd – High Pressure Sensor (MPa)	#0	Compressor 1 Revolutions (rps)
*1	Ps – Low Pressure Sensor (MPa)	#1	Compressor 2 Revolutions (rps)
*2	Td1 – Compressor 1 Discharge Temp (°C)	#2	Compressor 3 Revolutions (rps)
*3	Td2 – Compressor 2 Discharge Temp (°C)	#3	Outdoor Fan Mode
*4	Td3 – Compressor 3 Discharge Temp (°C)	#4	Compressor IPDU 1 Heat Sink Temp (°C)
*5	TS – Suction Temp (°C)	#5	Compressor IPDU 2 Heat Sink Temp (°C)
*6	TE1 – Outdoor Coil Temp (°C)	#6	Compressor IPDU 3 Heat Sink Temp (°C)
*7	TE2 – Outdoor Coil Temp (°C)	#7	Outdoor Fan IPDU Heat Sink Temp (°C)
*8	TL – Liquid Temp (°C)	#8	Heating / Cooling Recovery Controlled
*9	TO – Outdoor Ambient Temp (°C)	#9	Pressure release
*A	PMV 1 + 2 Opening	#A	Discharge Temp. Release
*B	PMV 4 Opening	#B	Follower Unit Release
*C	Compressor 1 Current (A)	#F	Outdoor Unit Size (HP)
*D	Compressor 2 Current (A)	**Note; *** Is replaced with 1 = U1, 2 = U2, 3 = U3 or 4 = U4 to obtain data from respective outdoor unit. **#** Is replaced with either 5 = U1, 6 = U2, 7 = U3 or 8 = U4 to obtain data from respective outdoor unit.	
*E	Compressor 3 Current (A)		
*F	Outdoor Fan Current (A)		

VRF Outdoor data for SMMSe/SHRMe equipment

Code	Outdoor Data	Code	Outdoor Data
*0	Pd – High Pressure Sensor (x100) (MPa)	#0	PMV 1 Opening
*1	Ps – Low Pressure Sensor (x100) (MPa)	#1	PMV 3 Opening
*2	Td1 – Compressor 1 Discharge Temp (°C)	#2	PMV 4 Opening
*3	Td2 – Compressor 2 Discharge Temp (°C)	#3	1 Fan model: Comp. 1 Current (x10) (A) 2 Fan model; Comp. 1 and Fan current (x10) (A)
*5	TE1 – Outdoor Coil Temp (°C)		
*6	TE2 – Outdoor Coil Temp (°C)	#4	1 Fan model: Comp. 1 Current (x10) (A) 2 Fan model; Comp. 1 and Fan current (x10) (A)
*9	TO – Outdoor Ambient Temp (°C)		
*A	TS1 – Suction Temp (°C)	#6	Compressor 1 revolutions
*B	TS2 – Suction Temp (°C)	#7	Compressor 2 revolutions
*D	TL – Liquid Temp (°C)	#9	Outdoor fan mode
		#A	Compressor IPDU 1 Heat Sink Temp (°C)
90	Heating/cooling recovery controlled	#B	Compressor IPDU 2 Heat Sink Temp (°C)
91	Pressure release	#D	Outdoor Fan IPDU 1 Heat Sink Temp (°C)
92	Discharge temperature release	#E	Outdoor Fan IPDU 1 Heat Sink Temp (°C)
93	Follower unit release	#F	Outdoor unit horsepower (HP)
Note * Would be replaced with 1 = U1,2 = U2 or 3 = U3 to obtain data from respective outdoor unit. # Would be replaced with 5 = U1, 6 = U2 or 7 = U3 to obtain data from respective outdoor unit.			

NOTES

VN-M HE/HE1 Air to Air Heat Exchangers

Controller

Energy Save operation (RBC-AMS51E-ES/RBC-AMS54E-ES/RBC-AMT32E/RBC-AMS41E)

The method to control power consumption by limiting the peak of the compressor's electric current.
= To control peak current by limiting **% of the current release

		FCU only function	Combination function with CDU		
			SDI series 4		
		Linked with A2A HEX by TCC link*1	Energy save operation (Limit the peak of electric current)	Night Operation by only New Controller *2	Frost Protection (8°C set temp. in heating mode)
4-way Cassette type	RAV-SM**4UT-E	x	O	O	O*3
	RAV-SM**4UTP-E	x	O	O	O*3
4-way Compact Cassette type	RAV-SM**4MUT-E	O	O	O	O*3
Ducted type	RAV-SM**6BT-E	O	O	O	O*3
Slim duct type	RAV-SM**4SDT-E	x	O	O	O*3
Ceiling type	RAV-SM**4CT-E	O	O	O	O*3
	RAV-SM**7CTP-E	O	O	O	O*3
High Wall type	RAV-SM**7KRT-E	x	O	O	O*3

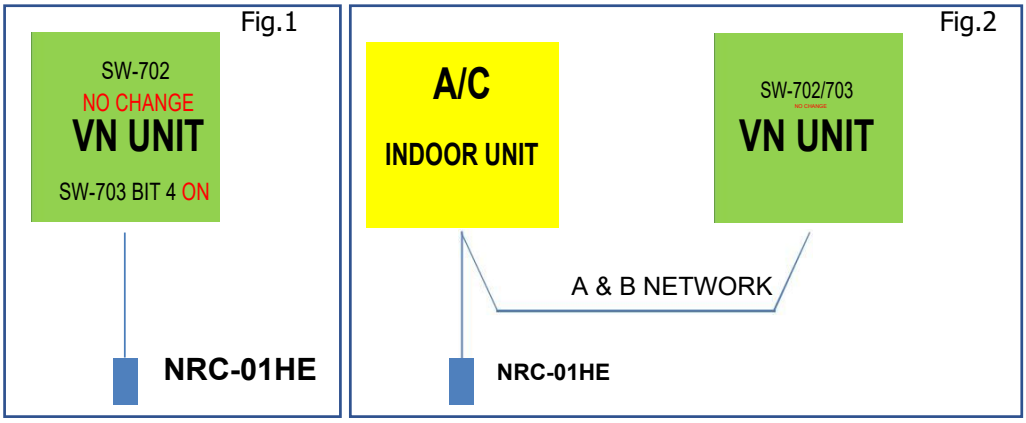
1* A2A HEX: VN-M**HE
2* New Controller: RBC-AMS51E-ES, RBC-AMS51E-EN
3* Initial setting OFF. To change set up 8°C, please set according to Installation Manual of indoor units

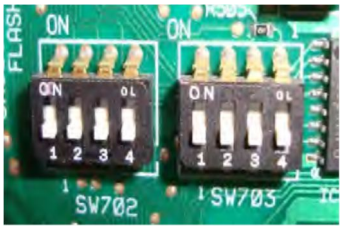
	RBC-AMS51E-ES/RBC-AMS54E-ES	RBC-AMT32E/RBC-AMS41E
O	0%, 50%, Option 50-100% per 1%	Option 50-100% per 1%
X	NA	NA

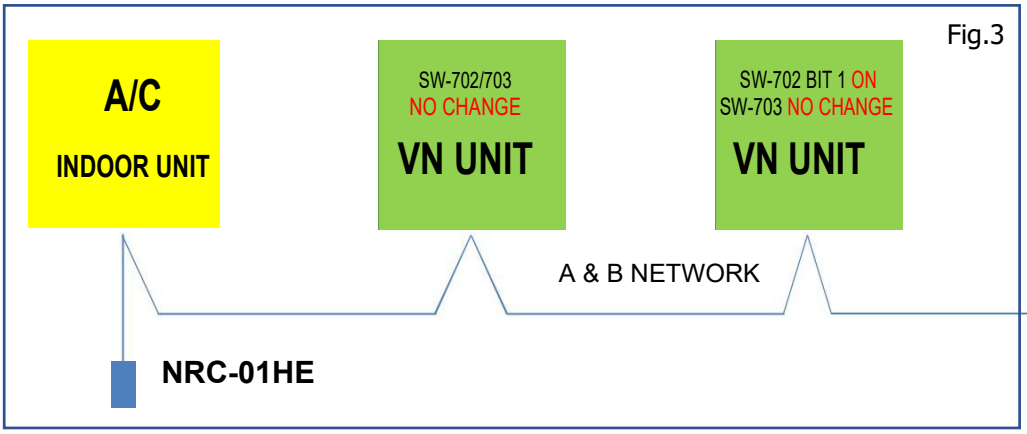
Codes (DN Codes) for changing settings
Codes in the table below are necessary for local advanced control.

Code	Description	Value	Default
01	Lighting-up hours of the filter sign	0000: None, 0001: 150H 0002: 2500H, 0003:5000H 0004: 10000H	0002
03	Central control address	0001 to 0064 0099: Unfixed	0099
13	Indoor unit address	0001 to 0064	0001
28	Auto restart after power failure	0000: Invalid, 0001: Valid	0000
31	Single operation of the fan. (On-Off operation for the Air to Air heat exchanger ONLY)	0000: Invalid, 0001: Valid	0000
48	Imbalanced fan speed ventilation. 0000: Normal, 0001: SA (High > EA (Low) Active, 0002: SA (Low) < EA (High) Active. * High maybe Extra High	0000: 0001: 0002:	0000
49	24 Hour ventilation	0001: Invalid, 0002: Valid	0001
4b	Delayed operation. (Delaying the Air to Air heat exchanger operation to reduce the air conditioning load when starting running the AC.)	0000; Invalid, 0001 to 0006: (Setting value x 10 minutes delay.)	0000
4C	Night-time heat purge. (Setting for the time before the night-time heat purge operation starts) (0000: Night-time heat purge OFF)	0000: Invalid, 0001-0048 Start after, (Setting value x 1 hour. 1 to 48 hours)	0000
4d	Setting of the exhausting fan operation below -15°C (OA) (The supply fan stops when the temperature (OA) is below -15°C)	0000: Exhaust fan run 0001: Exhaust fan stop	0000
4E	Setting of the linked operation with external devices. (Specifies whether the ON/OFF operation of the Air to Air Heat Exchanger is linked with the external device operation.)	0000: ON/OFF Linked 0001: ON Linked 0002: OFF Linked	0000
5d	Maximum Fan Speed Selection	0000: High, 0001: Extra High	0000
EA	Changing the ventilation mode. (Compatible with systems without a remote controller.)	0001: Bypass mode 0002: Heat exchanger mode 0003: Automatic mode	0003
Eb	Changing the ventilation fan speed. (High maybe Extra High. Compatible with systems without a remote controller.)	0002: High, 0003: Low, 0004: Imbalanced	0002
Ed	Changing the operation output. 0000: On during normal operation, 0001: On during normal operation, 24 hour ventilation, or nigh time heat purge operation, 0002: On during 24 hour ventilation or nigh time heat purge operation, 0003: On when SA fan is running, 0004: On when EA fan is running.	0000: 0001: 0002: 0003: 0004:	0000
EE	Changing the abnormal signal / Bypass mode signal output. 0000: On when an abnormal signal is detected, 0001: On when the bypass mode signal is detected.	0000: On abnormal 0001: On bypass	0000
F6	Application control kit	0000: Invalid, 0001: Valid	0000

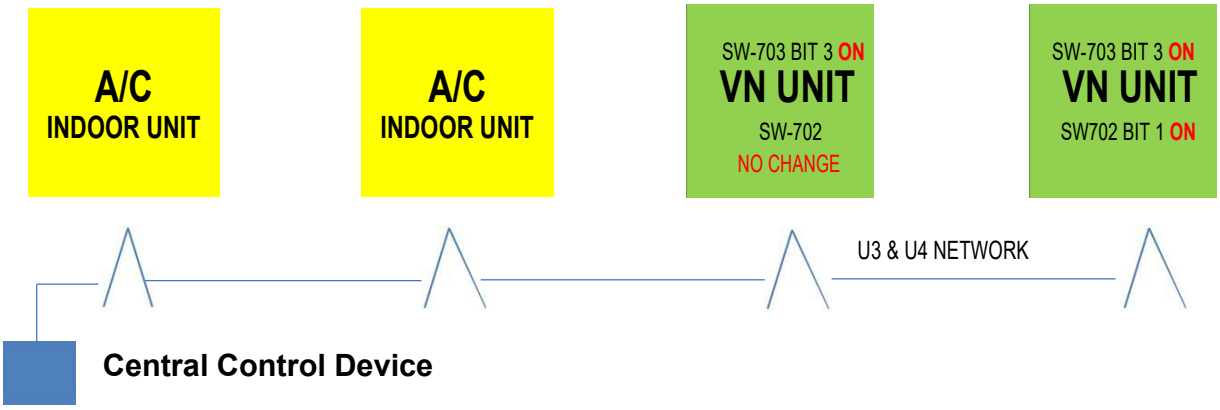
VN-M HE Air to Air Heat Exchanger Configurations







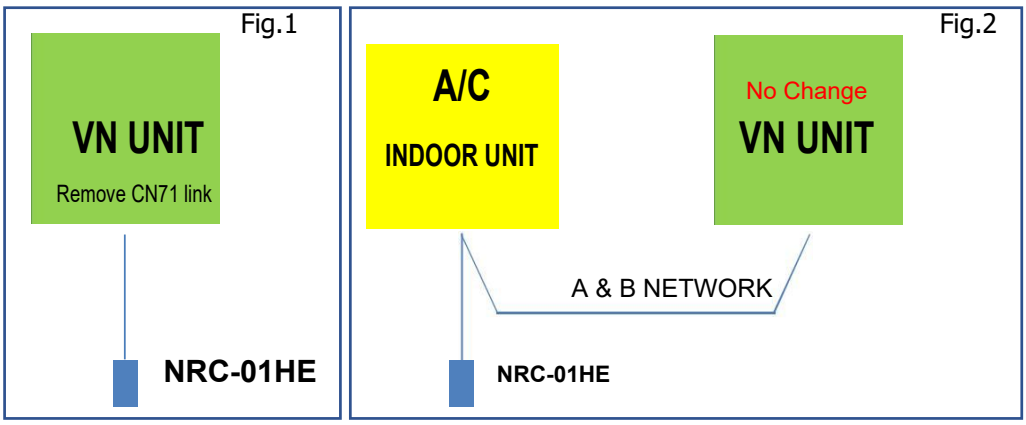
SW702	Number
ALL OFF	1
Bit 1 ON	2
Bit 2 ON	3
Bit 1 & 2 ON	4
Bit 3 ON	5

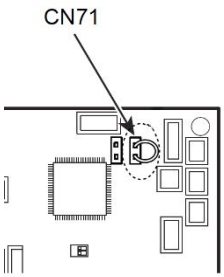


CONTROLLER MODEL		ON/OFF CONTROL	TIME CLOCK CONTROL	FULL CONTROL
RBC-AMT31-E		NO	NO	NO
RBC-AMT32-E		NO	NO	NO
RBC-AMS41-E		NO	YES	NO
RBC-AMS51/54/55E-ES*		**YES***	**YES***	NO
NRC-01HE	Fig. 1	**YES**	NO	**YES**
	Fig. 2 & Fig. 3	**YES**	NO	NO

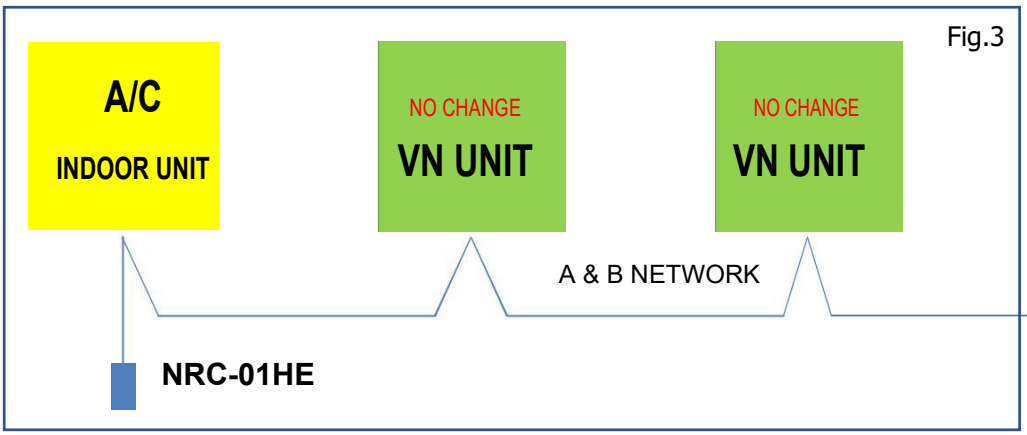
*RBC-AMS51/54/55E-ES offers control when paired with a compatible A/C Indoor Unit

VN-M HE1 Air to Air Heat Exchanger Configurations

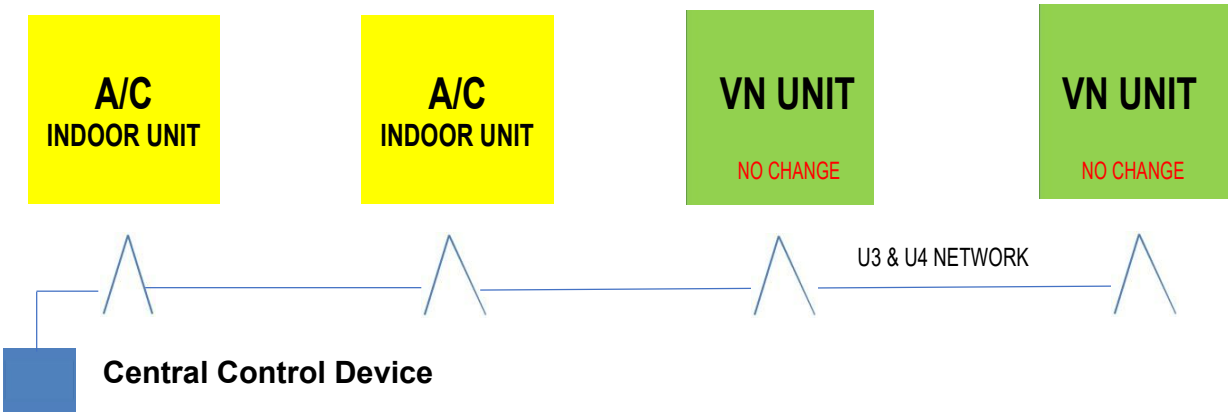




On the "Header Unit" the "CN71" link needs removing. The "CN71" link remains in position on follower units.



Configuration is generally automatic, with "CN71" link removed on the header, apply power to the units within the "Group", addressing will be carried out automatically.



VN-M####HE1 - If manual addressing is required.

Using the RBC-NRC01HE remote controller, with power on.

Press and HOLD, for 4 seconds; **"TEST, SET and CL".**

The controller will display "**10**" on the right-hand display.
Using the **Temp up/down** buttons, scroll **10** to **13**.
Change the left-hand display using the "**Time**" Up/down buttons
Selecting a unique number between 1 (Header) – 64 (Follower),
Groups can comprise of up to 8 units.

Press "**SET**" then Press "**TEST**"

When you press the "**Unit**" button the middle window will Display, the system number, always fixed at 31, and the indoor unit number between 1 to 64, pressing the "**Unit**" button again will display the next unit in the group, 31 – 2 etc.

NOTES

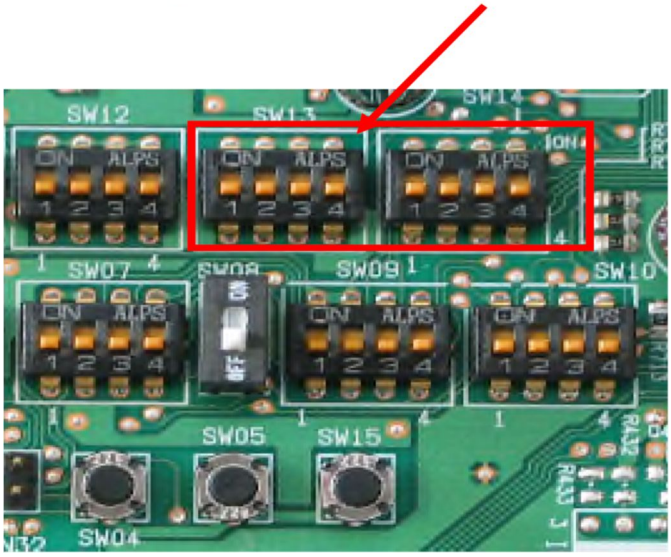
Network Addressing VRF Systems

When setting up a central remote controller, which includes more than one VRF outdoor system, each VRF outdoor system needs to have a system address set, factory setting is 1.
On SMMSe and SHRMe a "system" can comprise of up to 3 outdoor units, "Lead" outdoor displays "U1" "follower" outdoor units display "U2 – U3"

Additional systems may be addressed up to a system number of 28.

This is achieved via "Dip switches" SW13 & 14 at the "Lead" – "U1" Outdoor Unit

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
O = ON X = OFF								



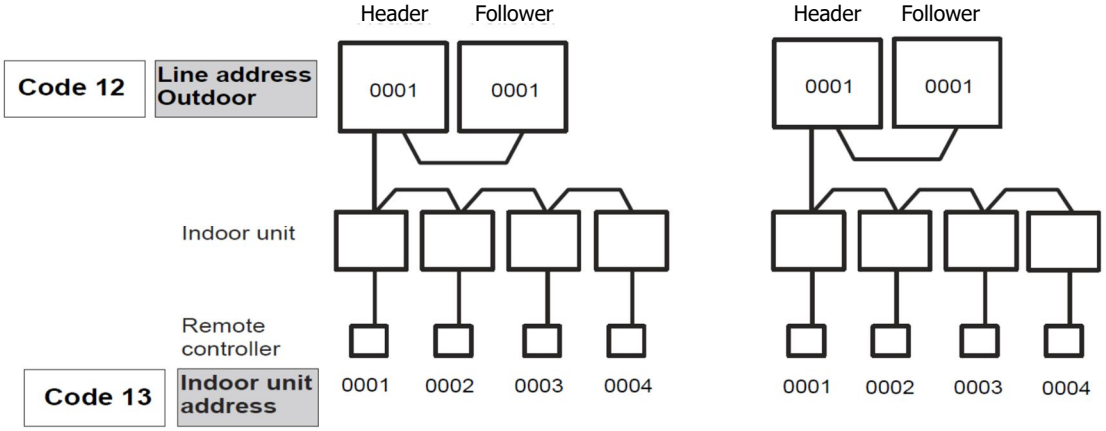
Network Addressing DI/SDI and VRF Systems

Definition of address

Indoor unit address

"Indoor unit address" This enables the outdoor unit to recognize each individual indoor unit.

A unique address is allocated to every indoor unit within a refrigeration system.



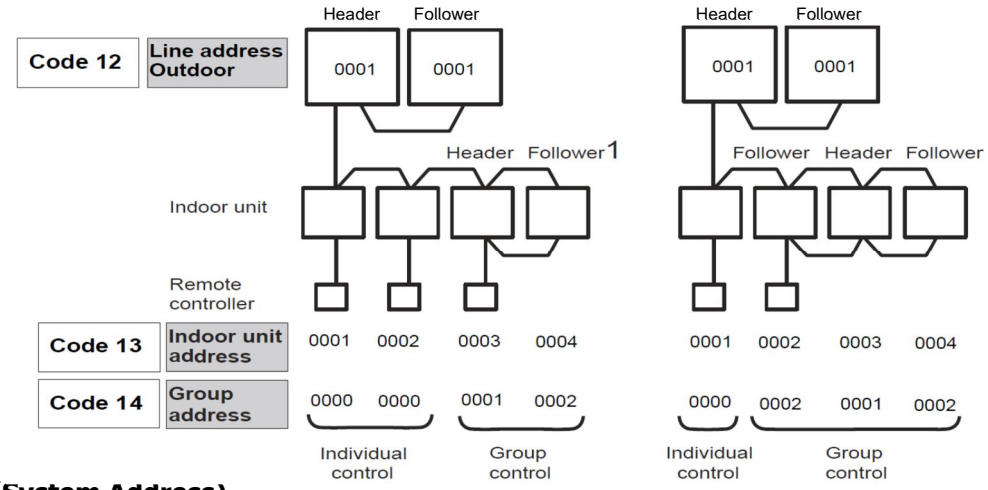
Group address (VRF) in case of DI/SDI, please refer to Address setup procedure (when using DI/SDI only or using DI/SDI and VRF) page 75

"Group address" This is the address that recognizes the group control and determines the header indoor unit and follower indoor unit.

Group address and the header indoor unit is decided automatically when the automatic address setting is performed.

(Which indoor unit becomes the header unit is indefinite when automatic address setting is performed.)

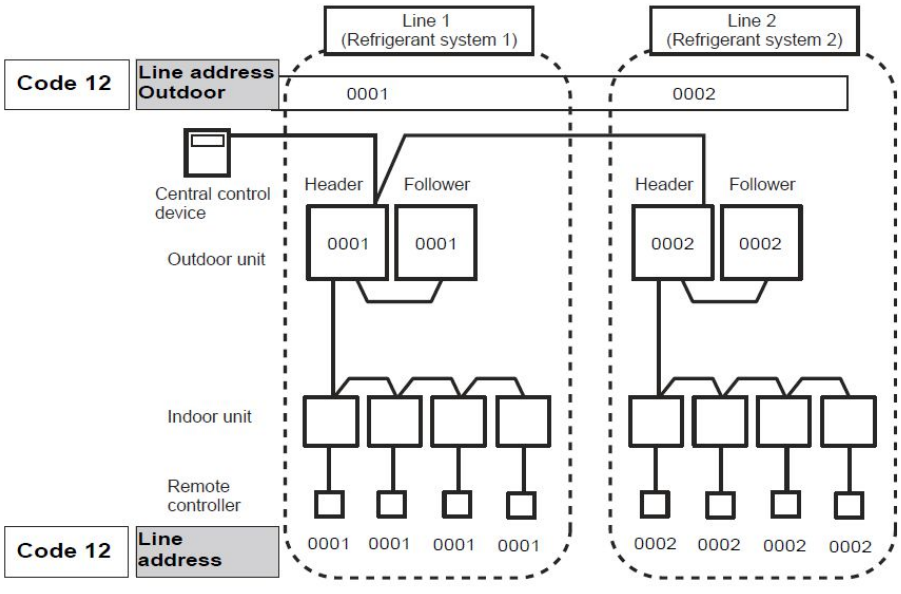
Indoor unit of individual control : Group address = 0
Header indoor unit of group control : Group address = 1
Follower indoor unit of group control: Group address = 2



Line Address (System Address)

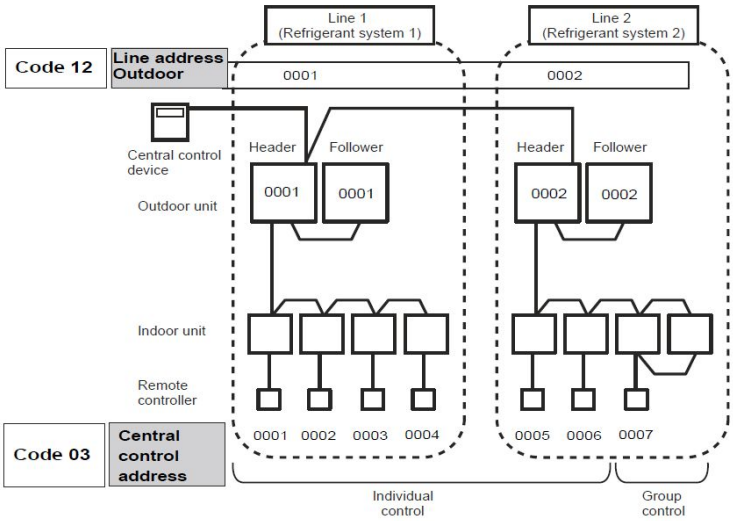
"Line address" is the address in which the line (refrigerant system) indoor units are connected.

This line address is set by a switch setting on the interface P.C. board on the header outdoor unit Factory setting: Line address is '1'.



Central control address

"Central control address" is used to make the central control devices recognize each indoor unit.
Address can be set from the central control devices either automatically or manually, or from wired remote controller devices manually.
In the case of group control in the VRF systems, one central control address is allocated to each indoor unit in a group control.

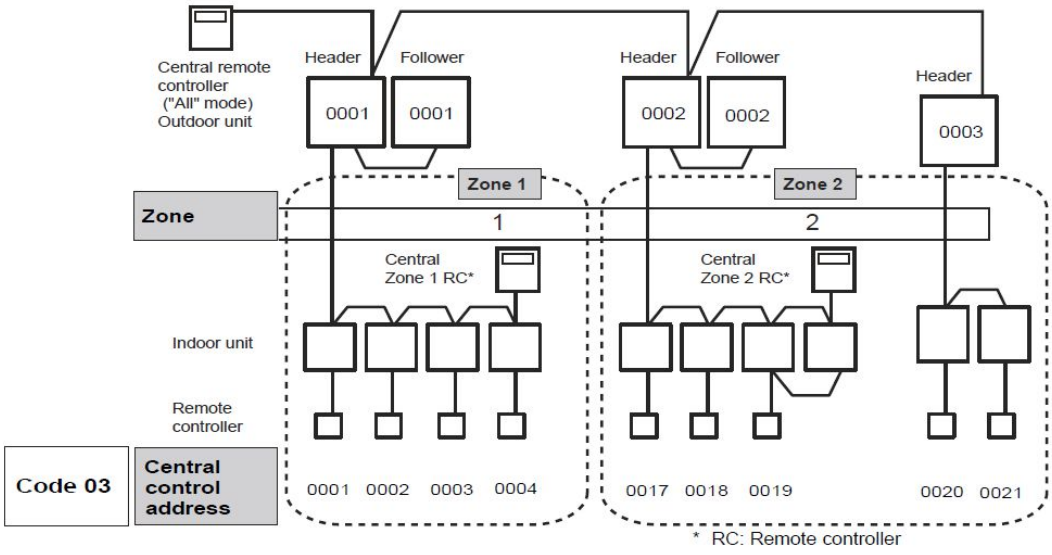


Zone address (Zone No.)

"Zone address" is to be set when the central remote controller is used for each zone.
Zone address is set by a switch setting on the central remote controller.
Central remote controller can divide all indoor units into a max. 4 zones.
The zone to which the indoor unit belongs is decided by its central control address.

<Central control address/zone/group correspondence table>

Central control Address	Zone	Group	Central control Address	Zone	Group	Central control Address	Zone	Group	Central control Address	Zone	Group
1	1	1	17	2	1	33	3	1	49	4	1
2		2	18		2	34		2	50		2
3		3	19		3	35		3	51		3
4		4	20		4	36		4	52		4
5		5	21		5	37		5	53		5
6		6	22		6	38		6	54		6
7		7	23		7	39		7	55		7
8		8	24		8	40		8	56		8
9		9	25		9	41		9	57		9
10		10	26		10	42		10	58		10
11		11	27		11	43		11	59		11
12		12	28		12	44		12	60		12
13		13	29		13	45		13	61		13
14		14	30		14	46		14	62		14
15		15	31		15	47		15	63		15
16		16	32		16	48		16	64		16
									99	Not set up	



When using BMS-CM1280TLE or BMS-CM1280FTL, you can allocate a zone to each of the 64 central control addresses.

Network Addressing DI/SDI and VRF Systems

Terminology

Terms for explaining DI/SDI used in section are redefined to:

Indoor Unit No. N-n =outdoor unit line address N (Max30) –indoor unit address n (max64)
Group address 0=single (not group control)
1=Master unit in group control
2=sub unit in group control

Master unit:

The representative of multiple indoor units in group operation sends/receives signal to/from the remote controllers and sub indoor units. It has no relation with an indoor unit which communicates serially with the outdoor units. Also, this unit communicates with the central controller. The operation mode and setup temperature range are reflected on the remote controller LCD. (Except air direction adjustment of louver)

Sub unit:

Indoor units other than master unit in group operation. Basically, sub units do not send/receive signals to/from the remote controller.

Header unit (Representative unit) (Master twin):

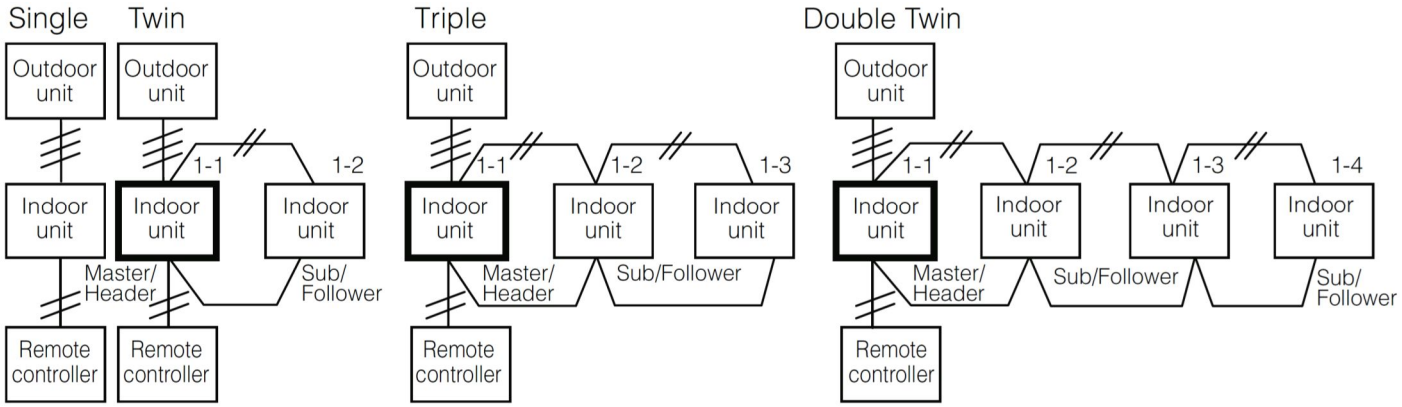
This unit communicates with the indoor unit (follower) which serial-communicates with the outdoor units and sends/receives signal (command from compressor) to/from the outdoor units as the representative of the cycle control in the outdoor units of the identical line address within the minimum unit which configures one of the refrigerating cycles of twin.

Follower unit (Subordinate unit) (Sub twin):

Indoor units excluding the header unit in Twin. This unit communicates with Header indoor unit in the identical line address and performs control synchronized with Header unit. This unit does not perform the signal send /receive operation with the outdoor units. No judgement for serial signal error.

Basic configuration

The basic DI/SDI connection configuration of each type of model is shown below.

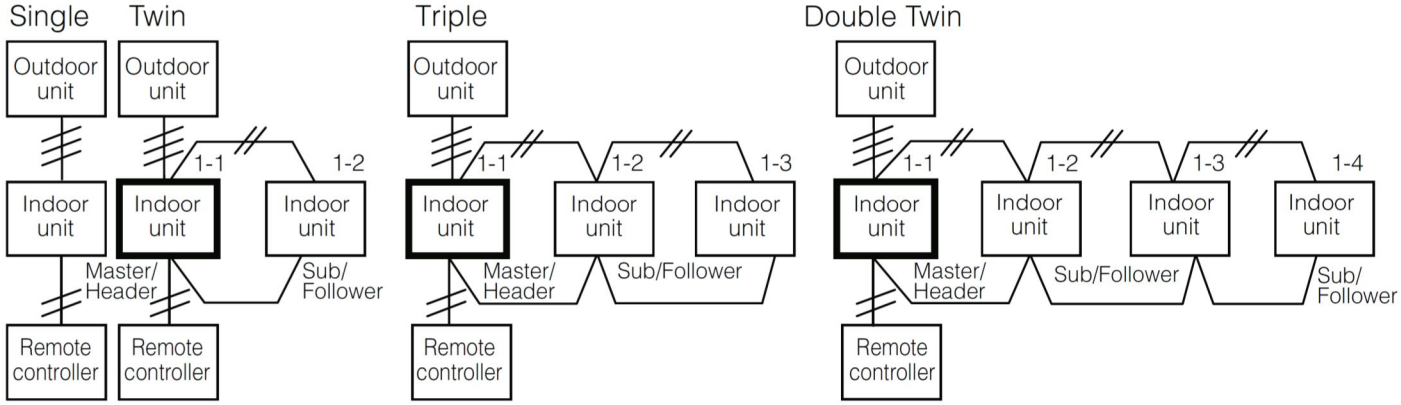


Address re-setup for group control

After turning on the power and finishing automatic address setting, check the Indoor Unit No using the wired remote controller. If the line address is not unified in the devices in a refrigerant line, unify the line address using the wired remote controller. If group control is used, assign the group address “1” to any one of the indoor units and “2” to the rest of the units. Confirm that each indoor unit in a group has a unique Indoor Unit No (E08 error is not indicated on the wired remote controller).

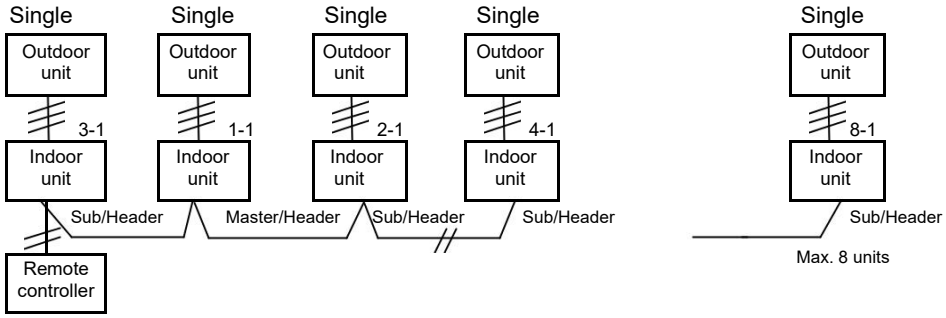
Standard configuration (One outdoor unit)

In this case, address setting can be made by using auto addressing.



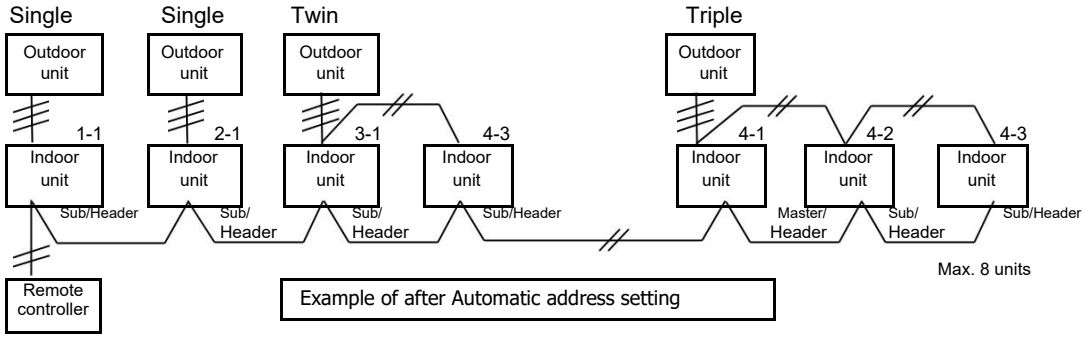
Group configuration (single only)

In this case, address setting can be made by using auto addressing.

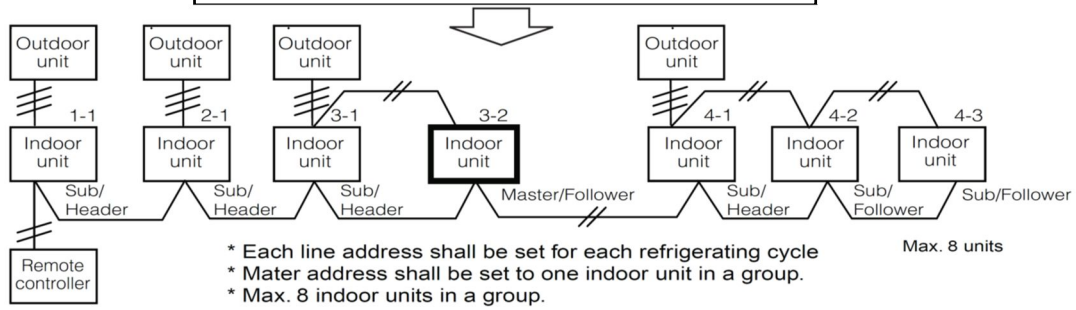


Multiple Group configuration (combination of single/twin/triple)

In this case, manual re-addressing is required.



Change the setting manually for correct operation



* Each line address shall be set for each refrigerating cycle
* Mater address shall be set to one indoor unit in a group.
* Max. 8 indoor units in a group.

Connection and Address re-setup example for central control

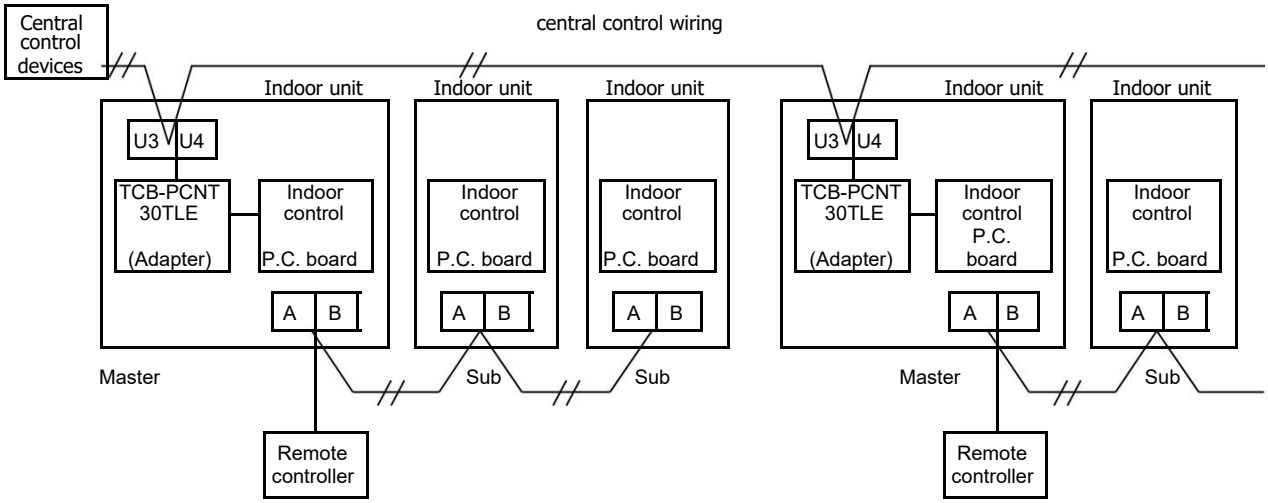
"1:1Model" Connection Interface TCB-PCNT30TLE2

When controlling the super-digital inverter and the digital inverter, the adaptor named "1:1 model" connection interface (TCB-PCNT30TLE2) is necessary.

SDI series 4 4-way discharge cassette type, etc. need metal case TCB-PX30MUE additionally for fixing. Some of Hi-wall Type does not need "1:1Model" Connection Interface. Please refer to installation manual of each model.

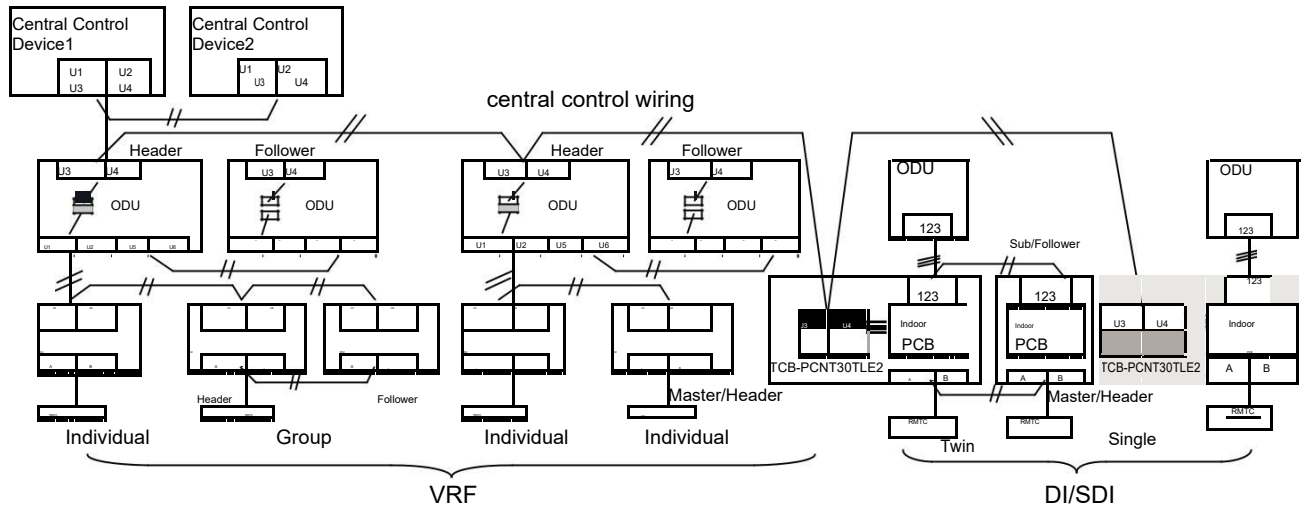
Cabling connection of control wiring

Attach an adaptor per 1 group in the group control operation (including individual control).
Connect the adaptor to the Master indoor unit in the group control.

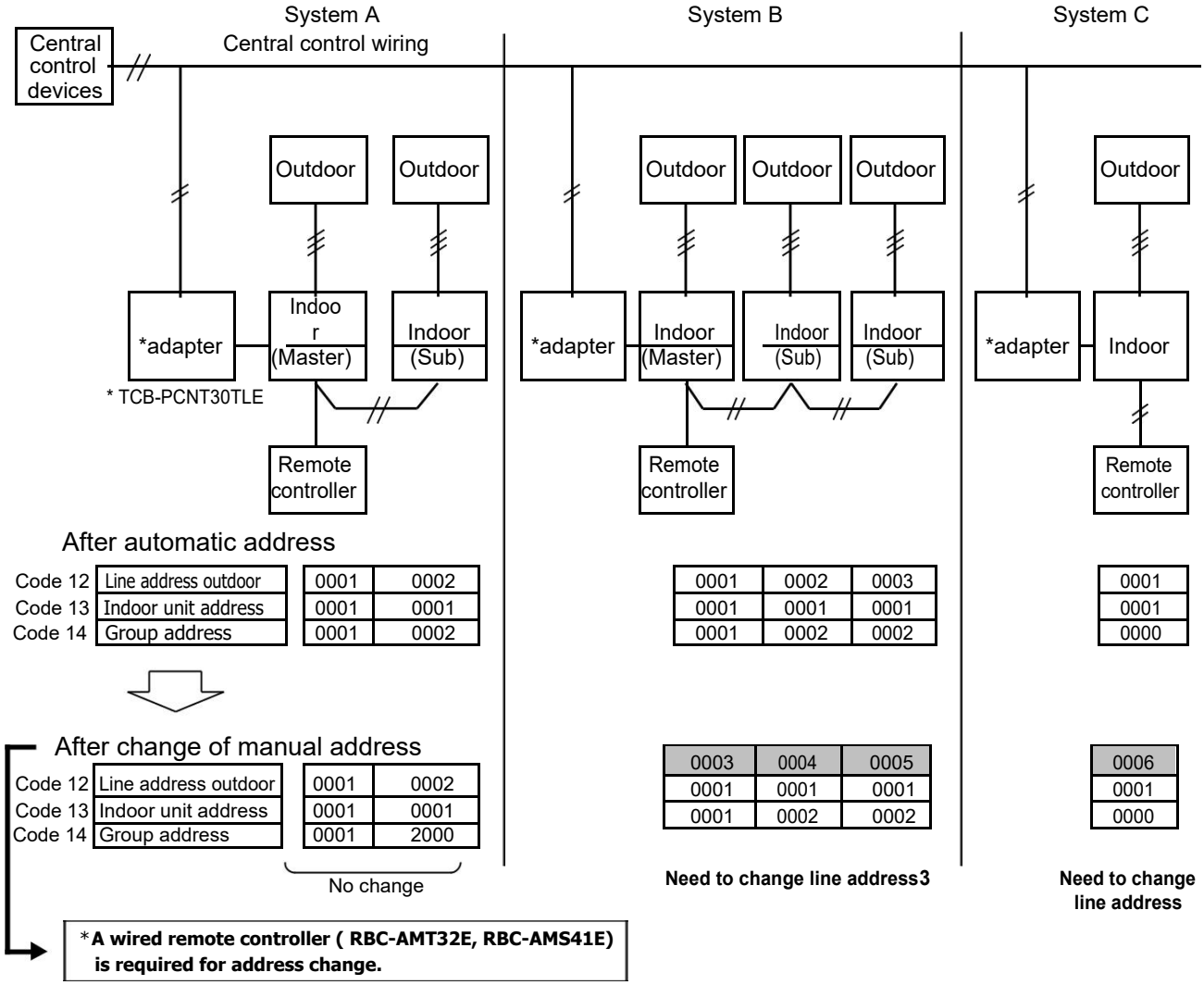


Network Addressing DI/SDI and VRF Systems

A central control connection example of a system where both VRF and DI/SDI are used is shown below. The VRF and DI/SDI subsystems are connected through the central control wiring and to the central control devices.



After automatic address setup, it is necessary to change the line address from the wired remote controller for each system. **Reason:**
After automatic address setup, all of the line addresses will become "1" except in a group control and then a duplicated address error "E08" will be outputted.

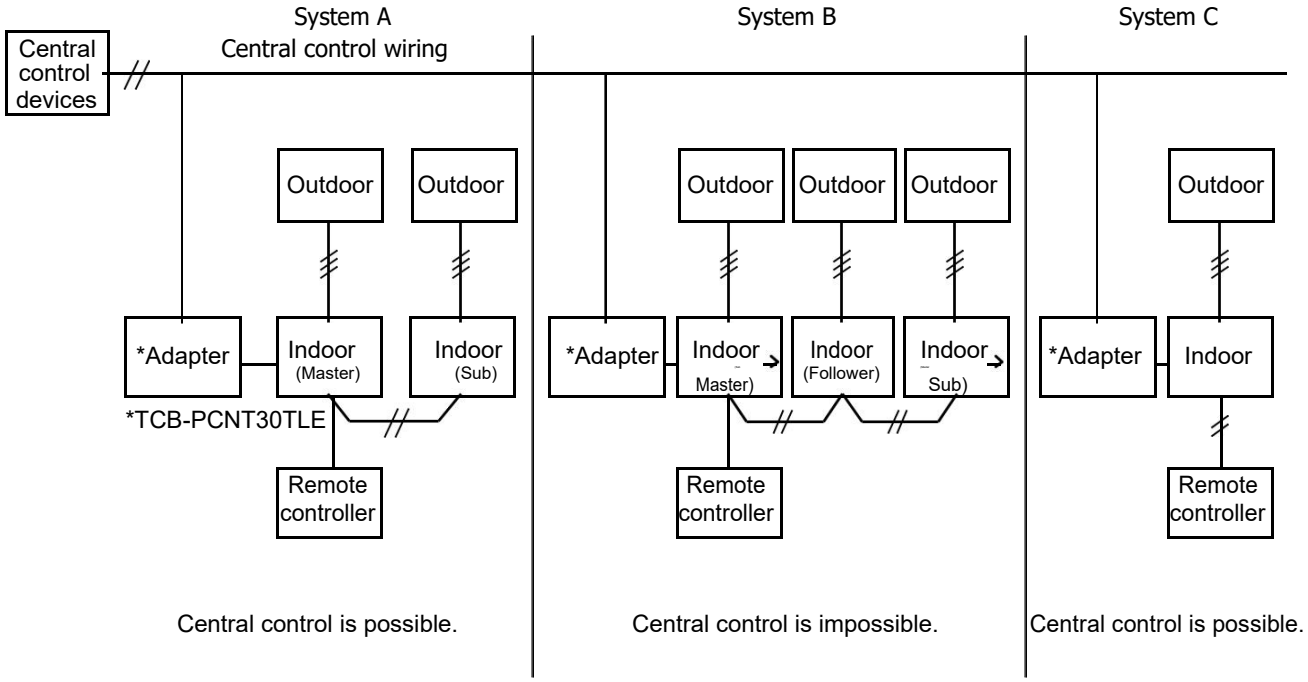


- Set up a line address for each refrigerant system.
- Set up a line address so that it is not duplicated with other systems.
  (If the central control is conducted with VRF systems, set up a line address so that it is not also duplicated with line address of the VRF systems.)
- When performing a central control of over 30 systems, the address setup method needs to be changed. (including a VRF system)

Network Addressing DI/SDI and VRF Systems

When the central control is performed for indoor units using twin control in a group operation, it may be required to change the group address. (Adapter is attached to the Master indoor unit.)

Reason: The central control device communicates with each individual indoor unit, the Master indoor unit of the group control and the Master indoor unit of the twin control. However, as the address is automatically set up, which unit will become the Master unit is indefinite. Therefore, if the unit attached with adapter does not become the Master indoor unit, the central control function will become unavailable.



Code 12 Line address outdoor ➪	0001	0002		0003	0004	0005		0006
Code 13 Indoor unit address ➪	0001	0001		0001	0001	0001		0001
Code 14 Group address ➪	0001	0002		0002 ➪ 0002	0002	0002 ➪ 0002		0000

*A wired remote controller (RBC-AMT21E, RBC-AMT32(31)E, RBC-AMS41E) is required for address change.

Address setup procedure (when using DI/SDI only, or using DI/SDI and VRF)

When an outdoor unit and an indoor unit are connected, or when an outdoor unit is connected to each indoor unit respectively in the group operation even if multiple refrigerant lines are provided, the automatic address setup completes with power -ON of the outdoor unit after group construction check (refer to the note below). The operation of the remote controller is not accepted while automatic address works. (Approx.4 to 5 minutes)

CAUTIONS

1. Set up address after the wiring has been completed.
2. "1:1Model" Connection Interface TCB-PCNT30TLE2 is necessary for DI/SDI for central control. Some Hi-wall Type do not need "1:1Model" Connection Interface. Please refer to the installation manual of each model. Connect the central control devices to U3/U4 wires of the central control system.
3. When "1:1Model" Connection Interface is used for the group control or twin, triple or quad system, the interface must be connected to the Master unit of the indoor unit. (Connection to Sub unit is unavailable). One "1:1Model" Connection Interface per one group.
4. In group operation, be sure to turn on power supplies to all indoor units in group control within 3 minutes. When power supply of the Master unit is not turned on, there is a possibility that the Master unit exchanges with Sub unit. (If Master unit is exchanged, the central control is unavailable.)

Note)
If group construction is abnormal, the automatic address sequence starts automatically. Norman condition is below.

1. There is no duplicated indoor unit address.
2. There is no invalid indoor unit address.
3. Individual unit and master/sub units are not intermingled.
4. Only a unit for Individual.
5. A master indoor unit and 1 or more sub indoor units for group.

Integration with AI Network Control

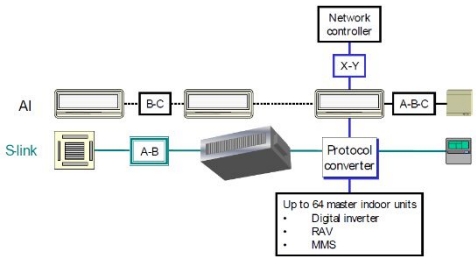
TCC-net models use a different language to AI – however a TCC-net group can be linked to an AI network, by the use of a protocol converter. This device is not standard and should be fitted on site – a group requires only one protocol converter to communicate with a network.

An LED flashes to indicate communication with the network.

The Protocol converter provides terminals X-Y for the network connection – it also has the 7-way DIP switch used to give a network address – the method is identical to that used for AI indoor units.

The network address may also be set by a wired controller from the configuration menu.

The protocol converter is counted as an indoor unit – only 7 indoor units may therefore be group controlled in this way.



Second Controller

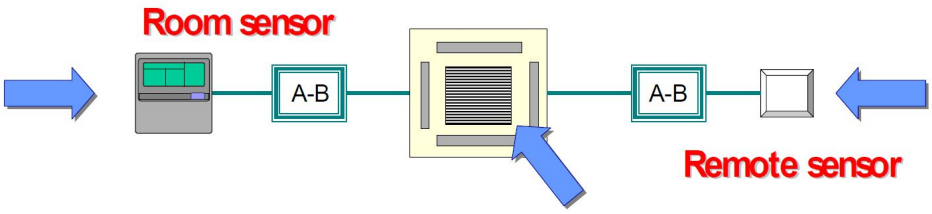
- ⇨ Options available
  2 x wired controllers
  1 wired + 1 infra-red controller
- ⇨ Full group control from either
- ⇨ Connection may be anywhere within group
- ⇨ Changes updated

The sub-controller must be set – this can be done from either controller. The choice of sub-controller makes little difference unless it is required to act as the temperature sensor

Temperature Sensing

Both infrared and wired controllers are able to supply a temperature value to the indoor unit. This may be more representative than the standard, return air sensor but is not available from sub controllers of either type. To set the room sensor:

- ⇨ Infrared controller – press MAIN SENSOR
- ⇨ Wired controller – selected from configuration menu



Should the infrared controller lose contact with the indoor unit, return air temperature control will automatically resume. A further option for remote sensing is available – the remote sensor. This is connected to terminals A-B whether or not a wired controller is used. The indoor unit must, in this case, be set to use the standard, return air sensor – this sensor automatically takes over in this case. This value will be used to provide control to all indoor units within the group.

NOTES

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(Type fault code in lower case no spaces)

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