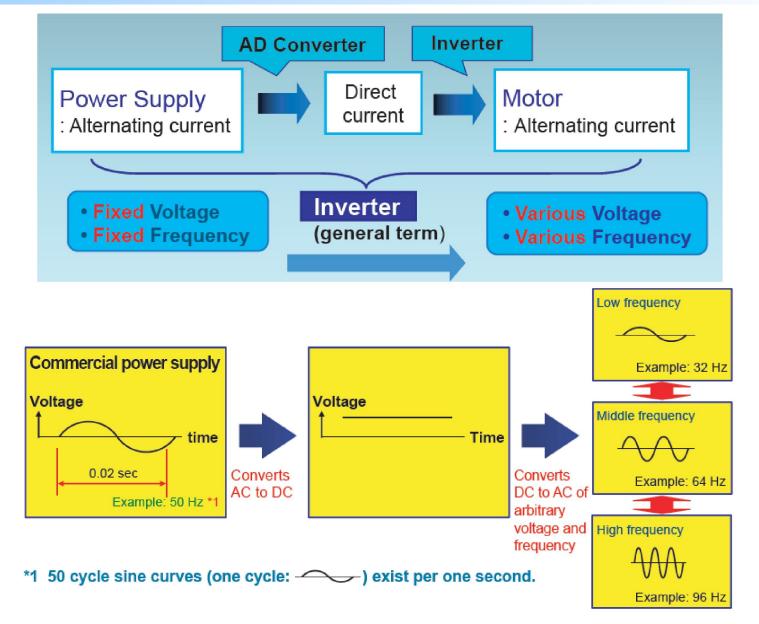




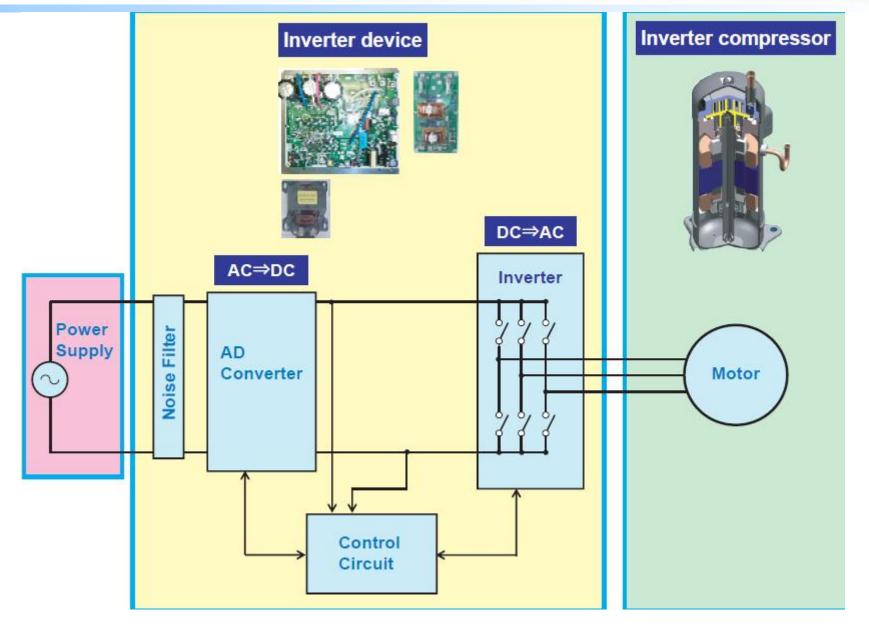
What is "Inverter"?



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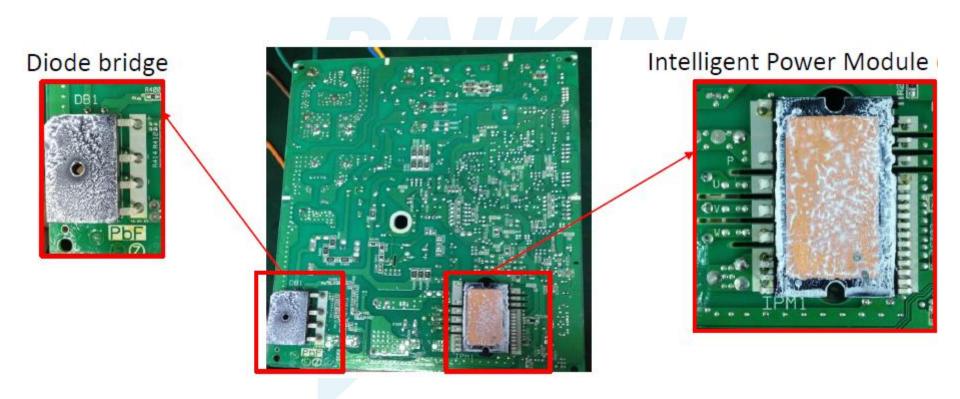


Inverter Air-Conditioner

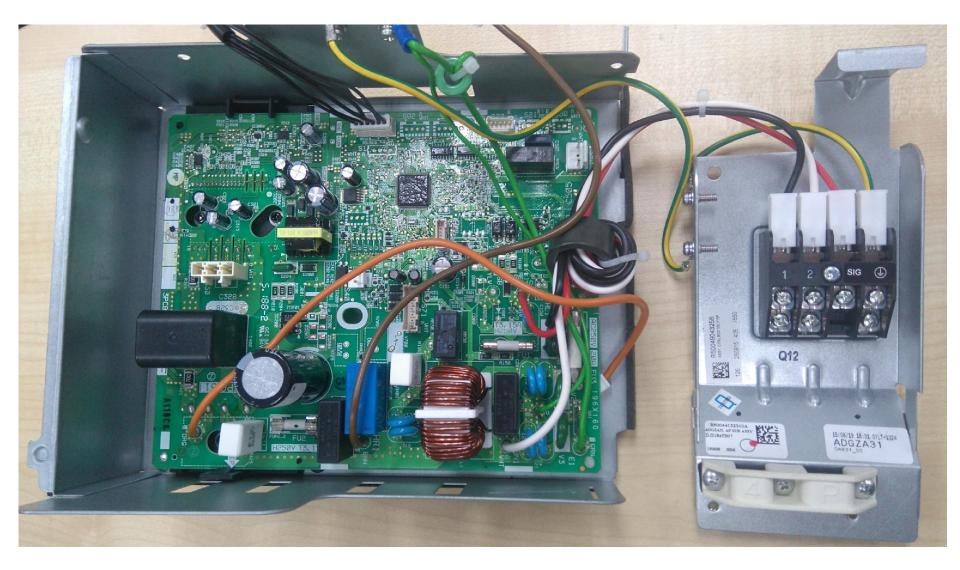




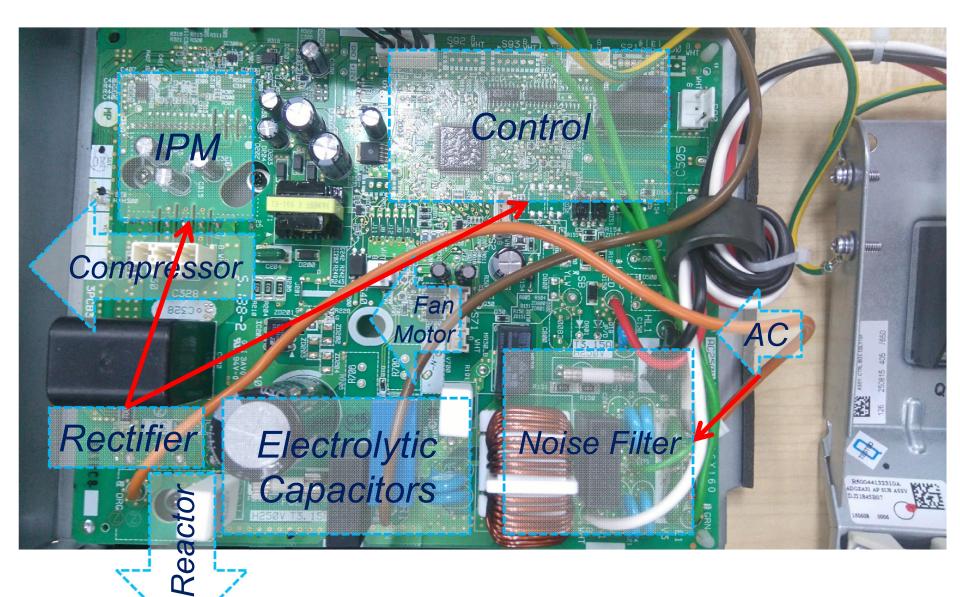
Inverter Air-Conditioner



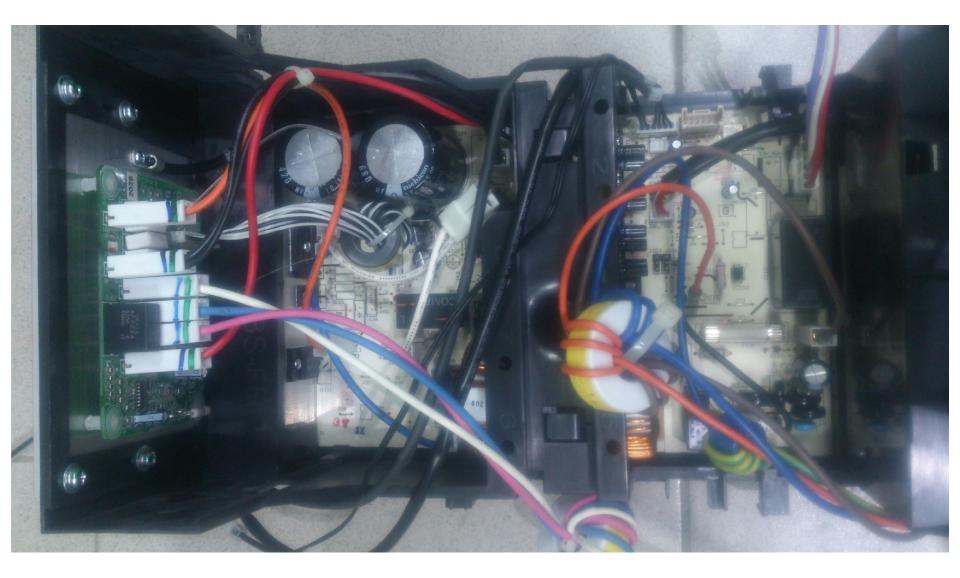
Inverter Outdoor PCB (RK10F/RK15F-D9)



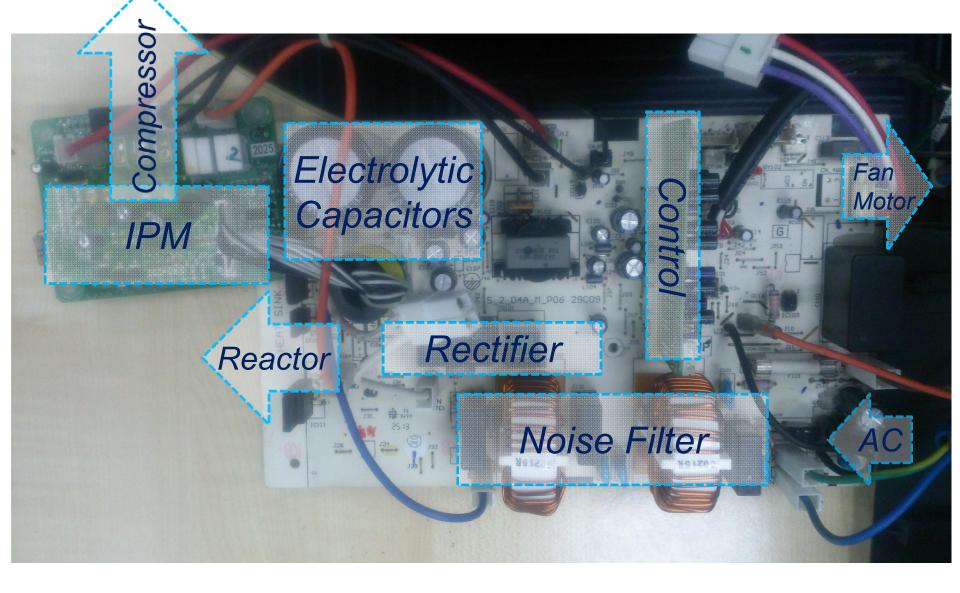
Inverter Outdoor PCB (RK10F/RK15F-D9)



Inverter Outdoor PCB (RK20C/RK25C)



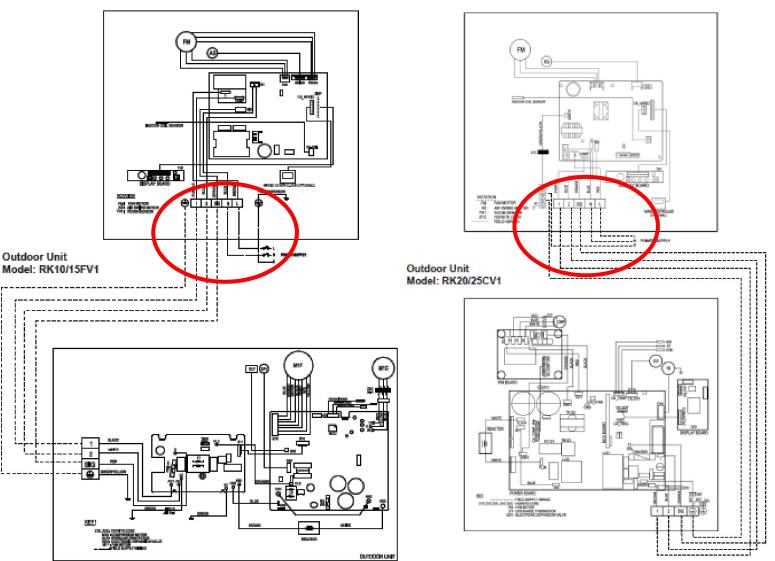
Inverter Outdoor PCB (RK20C/RK25C)





Wiring Diagram

Indoor Unit Model: FTK10/15PV1L, FTK10/15PV1M



Indoor Unit

Model: FTK20/25PV1L, FTK20/25PV1M

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Wiring Size

Model	Indoor		10/15	20/25
	Outdoor		10/15	20/25
Voltage range [≈]	:4:		220-240V/~	/50Hz + 🕀
Power supply c Number of con	able size≭ luctors	mm ²	1.5 3	2.5 3
Interconnection Number of con		mm ²	1.5 4	2.5 4
Recommended	fuse /circuit breaker rating	A	15	20

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* If the length of the cable is more than 2m, use cable with bigger size.



1. $AC \rightarrow DC \rightarrow AC =$

Understanding Fundamentals of Inverter

- 2. Assessment of Part Conditions = Interpreting Error Codes & Testing with Instruments
- 3. Application of Solutions = Adjustments, Part Repairs, Modular Set Replacements



- Hold down ON TIMER CANCEL or OFF TIMER CANCEL for 5 seconds until """ indication flashes on the handset temperature display section
- Then, press the same button repeatedly. A series of error code will appear until ID buzzer produces a long beep. The corresponding error code is indicated on the handset temperature display section.
- 3. ID unit buzzer will produce a long beep if the handset error code matched with unit error.
- A short and two consecutive beeps is not the unit error. It indicates either alphabet or numeric matches the actual error code.
- The code display will cancel itself if the button is not pressed for 1 minute.

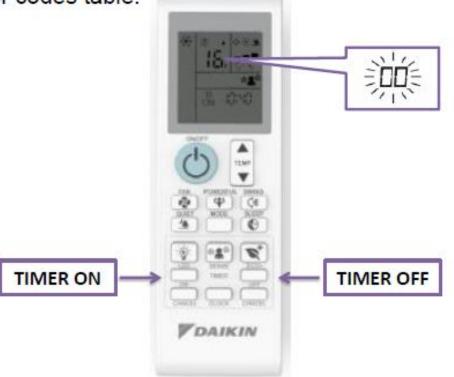


Error code diagnosis by wireless handset BRC52B65.

1. Hold down TIMER CANCEL button for 5 seconds until "00" indication appears on the temperature display section.

2. Press TIMER CANCEL repeatedly until indoor buzzer produces a long beep. This indicates the error code.

3. Refer to error codes table.





Error Codes and Description of fault



	Code Indication	Description of Problem
System	00	Normal
	UO	Insufficient gas
	U2	Power factor module abnormality
	UY	Signal transmission error (between indoor and outdoor units)
	US	Signal transmission error (between indoor unit and remote controller)



Error Codes and Description of fault



Indoor Unit	81	Faulty indoor unit PCB
9	R3	Faulty drainage
	<i>R</i> 5	Operation halt due to the freeze protection function or high pressure control
	86	Fan motor or related abnormality
2	[4 or [5	Heat exchanger temperature thermistor abnormality
	[9	Room temperature thermistor abnormality
	68	Discharge air temperature thermistor abnormality



Error Codes and Description of fault



Outdoor Unit	ES	OL activation (IT activation) or High discharge pipe temperature
	E6	Compressor startup error
	F3	Operation halt due to discharge pipe control function
	H8	CT or related abnormality
	H9	Outside air thermistor or related abnormality
	JЗ	Discharge pipe temperature thermistor or related abnormality
	J6	Heat exchanger temperature thermistor or related abnormality
	JS	Gas pipe temperature thermistor or related abnormality
	LY	Radiation fin temperature rise
	P3	Heat radiation fin thermistor or related abnormality
	PЧ	Heat radiation fin thermistor or related abnormality
	E0	Protectors Function



	MIKI		2	/	Simp	le Se	elf-Di	agno	sis b	y Mal	func	tion (Code	/			VICE DIVISION (SM-TS2)
DIVE	Detail code	8	1	2	3	4	S	8	7	8	3	8	1	8	F	H	4
· Unit	8	External protection device activated	Maltunction of Indicer unit PCB		Maltunction of drain laval system	Mailunction of treazing protection	High pressure control in heating, freeze- up protection control in cooling	Malfunction of fan motor	Maltunction of swing flap motor	Maltunction of power supply or AC input overcument	Malfunction of electronic expansion valve	Heater overheat	Stop due to low water loval	Low water level no water supply	Maltunction of a humidifier system	Malfunction of dust collector of air cleaner	Maßundtion of capacity setting (Indoor unit PCB)
Indoor	E	Malfunction of sensor system (unified)	Failure of transmission (batween indoor unit PCB and sub PCB)		Malfunction of drain lovial samsor	Malturction of Squid pipe themistor for heat exchanger	Malfunction of gas pipe thermistor for heat exchanger	Malfunction of fan motor sensor or fan control driver	Front panel driving motor fault	Malfunction of AC input current sensor system	Maltunction of suction air thermistor	Maturction of discharge air thermisfor	Maltunction of humidity sensor system	Mailunction of switch box thermistor	Malfunction of high pressure switch		Malfunction of thermostat sensor in remote controller
	ε	Protection devices activated (unified)	Detect of outdoor unit PCB	Mathunction of oold room thermistor	Actuation of high pressure switch (HPS)	Actuation of low pressure switch (LPB)	Invartar compressor motor or overheat	STD compressor motor ovalcument/lock	Maltunction of outdoor unit fan motor systam	Overcurrent of Invertar compressor	Mattunction of electronic expansion valve coll	Malfunction of four way valve or dool/heat switching	Maltunction of entering water temperature	Malfunction of drain water level	Maltunction of thermal storage unit	Mattunction of cooling water pump	Actuation of option protection device
	£				Malfunction of discharge pipe temperature	Malfunction of suction pipe thermistor		Abnormal high pressure or rotrigorant overcharged				Abnormal high pressure actuation of HPS	Abnormal low pressure	Abnormal oil pressure	Abnormal oil level or shortage of oil	Abnormal high temperature of refrigerant of	Abnormal exhaust temperature of engine
r Unit	Н	Maltunction of sensor system of compressor	Maltunction of room temperature sensor or humidition unit damper	Malfunction of power supply sensor	Malfunction of high pressure switch (HPS)	Malfunction of low pressure switch (LPS)	Malfunction of compressor motor overload thermistor	Malfunction of position detection sensor	Malfunction of outdoor fan motor signal	Malfunction of compressor input (CT) system	Malfunction of outdoor air thermistor	Mailunction of discharge air thermistor	Malfunction of (hot) water temperature thermistor	Malfunction of drain water loval sensor	Alarm in thermal storage unit or storage controllar	High room tomperature alarm	Malfunction of thermal storage tank water level
Outdoo	J	Miswining of thermistor	Malfunction of pressure sensor	Maltunction of oument sensor of compressor	Malfunction of discharge pipe thermistor	Manunction or low prassure equivalent saturated temperature sensor system	Malfunction of suction pipe thermistor	Malfunction of heat exchanger thermistor	Maltunction of thermistor (Refrigerant circuit)	Malfunction of thermistor (Refrigerant dircuit)	Maltunction of thermistor (Fletrigerant circuit)	Malfunction of high pressure sensor	Malfunction of low pressure sensor	Malfunction of of pressure sensor or sub- tank thermistor	Malfunction of oil lavel sensor or heating heat exchanger thermistor	Maßunction of oil temperature thermistor	Malfunction of angina room tamp, sensor or exhaust tamp.
	1	Maltunction of Invertor system	Maltunction of Invertian PCB		Electrical box temperature rise	Malfunction of Inverter radiating fin temperature rise	Invariar Instantaneous overcurrent (DC output)	Invarior Instantaneous overcument (AC output)	Total input overoument	Malfunction of overcument Inverter compressor	Matunction of Invertor compressor startup error (Stall prevention)	Maturction of power transistor	Malfunction of transmission batween control and inverter PCB	Malfunction of ignifier system	Engine startup error	Mathunction of generator converter	Engline stop
	P	Shortage of rotrigorant amount (thermal storage unit)	Power voltaga Imbalance or Inverter PCB	Automatic retrigorant charge operation stop	Malfunction of thermistor in switch box	Matturction of radiating fin tompet/flura sensor	Malfunction of DC current sensor	Mailunction of AC or DC output current sensor	Malfunction of total input oument sensor	Heat actranger treating protection during automatic natigerant chatging	Automatic retrigerant charge operation completed	Refrigurant cylinder during automatic refrigerant charging	Rotrigorant cylinder during automatic rotrigorant charging	Automatic retrigorant charge operation nearly obmpieted	Maltunction of starter actuation	Refrigerant cylinder during automatic refrigerant charging	Improper combination botween Inverter and fan driver
mei	U	Shortage of refrigerant	Raverse phase, open phase	Malfunction of power supply or instantaneous power failure	Check operation not executed or transmission ettor	Maturction of transmission between Indoor and outdoor unit.	Malfunction of transmission between indoor unit and remote controller	Malfunction of transmission between indoor units	Malfunction of transmission behaven outdoor units or outdoor storage unit	Malfunction of transmission botwoon remote controllers	Malfunction of Itansmission (other system)	improper combination of indeor and outdoor units	Maifunction of setting of centralized controller address	Malfunction of transmission between indoor unit and contralized contralized	Wring and piping mismatch	Mattunction of system	Malfunction of transmission (accussory device)
Sys	M		Mailunction of centralized remote controller PCB					\square		Maitunction of transmission between optional controllers for centralized control		Improper combination of optional controllars for controllars for	Address duplication, improper setting				
	8	External protection device activated (HRV)	Maltunction of PCB	Ozone density abnormal	Contaminated serisor error	Malfunction of thermistor for indoor air (HRV)	Mailunction of thermistor for outdoor air (HRV)	Supply air passage closed	Extraust air passage closed	Malfunction of dust collection unit (HEV)		Malfunction of damper system (HEV)	Replace the humidity element	Replace the debdorising catalyst	Simplified remote controller malfunction (HFIV)	Door switch open (HRV)	Replace the high atticiant filter
ers	7	System No. 2 Compressor overficet	System No.2 Compressor overourtent	System No. 2 Fan motor overcurrent	System No. 2 Actuation of high pressure switch (HPS)	System No. 2 Actuation of low pressure switch (LPS)	System No. 2 Mailfunction of low pressure sensor	System No. 2 Malfunction of high pressure sensor	System No. 1 Malfunction of fan inter look	System No. 2 Maturation of fan inter look		System No. 2 Mailunction of compressor current sensor	Malfunction of pump Inter lock				
đ	8	Malfunction of entering water temperature thermistor	Malfunction of leaving water temperature thermistor or drain pipe heater	System No. 1 Malfunction of retrigorant therifilistor	System No. 2 Mailunction of refrigerant thermistor	System No. 1 Maifunction of heat exchanger thermistor	System No. 2 Mailfunction of heat exchanger thermistor	System No. 1 Malfunction of discharge pipe thermistor		System No. 2 Malfunction of discharge pipe temperature	Malfunction of brazed-plate heat exthanger treezing	Malfunction of dehumidification or leaving water temperature thermistor		System No. 1 Malfunction of sustion pipe thermisfor 1 for heating	System No. 1 Maitunction of suction pipe thermistor 2 tor heating	Abnormal hot water high temperature	
	9	Abnormal chilled water quantity or abnormal AXP	System No. 2 Malfunction of electronic expansion valve	System No. 2 Malfunction of suction pipe thermistor		Malfunction of transmission (between heat focialm ventilation unit and fan unit)	System No. 1 Malfunction of Inverter system	System No. 2 Malfunction of Inverter system	Malfunction of thermal storage unit	Mathunction of thermal storage brine pump	Maltunction of thermal storage brine tank			System No. 2 Matunction of suction pipe thermistor 1 for heating	System No. 2 Maltunction of suction pipe thermistor 2 for heating		

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Simple Self-Diagnosis by Malfunction Code

				Objects					
Ma	ifunction code	Malfunction Contents	Supposed causes	RA	SkyAir	VRV	Package	HRV	Chiller
	80	External protection device adtivated	External protection device connected to the terminal strip T1-T2 of indoor unit is activated		0	0	0		
	81	Malfunction of Indoor unit PCB	Maltunction due to noise Detect of indoor unit PCB	0	0	0	0		2
	83	Malfunction of drain level control system	Drain piping ologging, improper drain piping work Detect of drain pump Detect of float switch	0	0	0			,
	84	Mailunction of treazing protection	Shortage of water volume Low water temperature setting Detect of 26WL Detect of water temperature thermistor						0
	85	High pressure control in heating, treeze-up protection control in cooling	Clogged air filter of indoor unit and short-circuit Defect of indoor unit heat exchanger thermistor	0		1			
	85	Fan motor locked, overload, overcurrent	Detect of connector contact Detect of tan motor Detect of indoor unit PCB	0	0	0	0		
	87	Malfunction of swing flap motor	Failure of swing flap motor Detect of Indoor unit PCB Jammed swing mechanism/blade		0	0			8
	88	Matunction of power supply	Overcurrent of AC input Datect of power supply votage		0	0			
	89	Malfunction of electronic expansion valve drive	Detect of electronic expansion valve coll Detect of indoor unit PCB Detect of connector contact			0	0	2	2
	88	Heater overheat	26WH is activated						0
5	85	Malfunction of a humidifier system	Water leakage of humidifier (option) Failure of swing float switch Improper drain piping indine	1	0	0			
8	88	Malfunction of dust collector of air cleaner	Datact of dust collecting element Stathad Insulator part Detect of high veltage power supply unit Detect of Indoor unit PCB	0	0	0		-	
Ë	83	Malfunction of capacity setting (Indoor unit PCB)	Capacity setting adaptor is not installed when replacing PCB Detect of indoor unit PCB	1	0	0	0		5
	61	Failure of transmission (between indeer unit PCB and tan PCB)	Delect of transmission of fan motor control driver		0	0			
	54	Malfunction of liquid pipe thermistor for heat exchanger	Detect of connector contact Detect of liquid pipe thermistor for heat exchanger	0	0	0	0		0
	٤S	Mailunction of gas pipe thermistor for heat exchanger	Detect of connector contact Detect of gas pipe thermistor for heat exchanger	0		0	0		1
	68	Maifunction of tan motor control driver	Datact of fan motor sansor system Datact of fan motor control driver		0	0			
	57	Front panel driving motor fault.	Detect of tront panel driving motor Detect of limit switch	0		1			
	63	Malfunction of suction air thermistor	Detect of connector contact Detect of thermistor for suction air	0	0	0	0		
	68	Malfunction of discharge air Thermistor	Datact of connector contact Datact of thermistor for discharge air			0	0		5
	55	Maifunction of humidity sensor system	Detect of connector contact Detect of humidity sensor	0	0				
	EJ	Maifunction of thermostat sensor in remote controller	Detect of remote controller thermistor Mathunction due to noise Detect of remote controller PCB		0	0	0		
-	80	Protection devices actuated (unfiled)	Protection device connected to outdoor PCB actuated Detect of protection device connector contact		0	0			0
5	81	Defect of outdoor unit PCB	Maltunction due to noise Detect of outdoor unit PCB	0	0	0	0		0
800	83	Actuation of high pressure switch (HPS)	Dirty outdoor unit heat exchanger and suction filter Detect of HPS Clogged refrigerant piping Detect of connector contact	0	0	0	0		
5	83	System No.1 Actuation of high pressure switch (HPS)	Dirty outdoor unit heat exchanger Clogged retrigerant piping Detect of connector contact Detect of HPS						0

			Objects							
Aalfunction code	Malfunction Contents	Supposed causes	RA	SkyAir	VRV	Package	HRV	Chiller		
٤٩	Actuation of low pressure switch (LPS)	Clogged reingerant piping Shortage of gas Defect of connecting connector Defect of outdoor unit PCB		0	0	0		0		
٤٥	Overheet of Inverter compressor motor	Shortage of retrigerant amount Defect of connector contact Leakage of four way valve	0					Ó		
٤٥	Inverter compressor motor lock	Inverter compressor lock Incorrect wiring		0	0	0				
88	STD compressor motor overcurrent/lock	Closed stop valve STD compressor lock	0	0	0	0				
88	System No.1 Compressor overcurrent	Detect of EXP, valve Shortage of teltigerant amount Detect of compressor						0		
87	Mathunction of outdoor unit tan motor	Faulty contact of fan motor connector Defect of fan motor Defect of fan motor driver	0	0	0	0		0		
83	Overcurrent of inverter compressor	Defect of compressor Defect of outdoor unit PCB Defect of inverter main dirait capacitor Defect of power transistor	0							
83	Mailunction of electronic expansion valve coll	Detect of electronic expansion velve Detect of connector contact Detect of outdoor unit PCB		0	0	0		0		
88	Malfunction of four way valve	Detect of four way valve Shortage of gas Detect of outdoor unit PCB Detect of thermistor	0			2				
23	Mailunction of ontaring water temperature	Maturction of cooling water temperature Delect of thermistor Delect of outdoor unit PCB			0					
88	Malfunction of thermal storage unit	Detect of electronic expansion valve of thermal storage unit Detect of thermal storage PCB			0					
F3	Malfunction of discharge pipe temperature	Shortage of gas Cloggod rafrigerant piping Detect of connector contact Detect to decharge pipe themister	0	0	0	0		0		
F8	Abnormal high pressure in cooling	Defect of outdoor unit fair motion Defect of electronic aparision valve Defect of heat acchanger thermistor Defect of outdoor unit PCB	0							
FS	Refrigerant overcharged	Refrigerant overcharged Decorrection of subloor at Inertistor Decorrection of lead exchanger themator Decorrection of lead is point to the subloor at the	-	- 1	0	0	<u> </u>	828		
80	Malfunction of sensor system of compressor	Harness is disconnected, or detective connection Detect of PCB	0							
81	Mailunction of humidifier unit damper	Detect of limit switch Detect of damper	0		F					
83	Mailunction of high pressure switch (HPS)	Defect of high pressure switch Broken wire Defect of connector context Defect of outdoor unit PCB	0	0	0	0				
88	Maltunction of low pressure switch (LPS)	Defect of low pressure switch Broken wire Defect of connector contact Defect of outdoor unit PCB		0	0		-			
XS	Malfunction of compressor motor overload thermistor	Detect of connector contact Detect of compressor motor overload thermistor	0							
NS	Malfunction of position detection sensor	Faulty contact of compress or cable Detect of compressor Detect of outdoor unit PCB	0					-		
87	Mailunction of outdoor fan motor signal	Faulty contact of fan wiring Delect of fan motor Delect of fan motor driver		0	0	0		223		
XS	Malfunction of compressor input (CT) system	Detect of power transistor Detect of reactor Faulty wiring of inverter system Detect of outdoor unit PCB	0							
88	Mailundion of outdoor air thermistor	Delect of connector contact Delect of thermistor for outdoor air	0	0	0	0		0		
80	Mailunction of (hot) water temperature thermistor	Detect of memission or contact Detect of outdoor unit PCB Detect of thermistor for water temperature		0	0					
85	Alarm in thermal storage unit with log	Thermal storage group detective wiring Detect of setting Excess of thermal storage tank numbers		0	0					
83	Malfunction of thermal storage tank- water level	Low water level Detect of switch satting Water level detecting sensor tailors Detect of connector contact.	3	õ	0	8; - 1	6	8.3		



Simple Self-Diagnosis by Malfunction Code

							Obj	ect	в		Γ
Ma	lfunction code	Malfunction Contents	Supposed	d causes	RA	SkyAir	VRV	Pack age	HRV	Chiller	,
	41	Malfunction of pressure sensor	Detect of pressure sensor con Detect of pressure sensor	Detect of outdoor unit PCB		0	0				
	32	Mailunction of ourrant sensor of compressor	Detect of outpart sensor Detect of outdoor unit PCB	Delect of compressor		0	0	0	1	0	
İ	43	Malfunction of discharge pipe thermistor	Detect of connector contact Detect of outdoor unit PCB	Delect of discharge pipe thermistor	0	0	0	0		0	
ł	JY	Maturction of low pressure equivalent saturated temperature sensor system	Defect of connector contact Defect of outdoor unit PCB (Mr	Delect of thermistor atl-split, Super-multi)	0						
ł	JS	Malfunction of suction pipe themistor	Delect of connector contact Delect of outdoor unit PCS	Delect of suction pipe thermistor	0	0	0	0		0	
ł	JS	Malfunction of heat exchanger themistor	Detect of connector contact Detect of outdoor unit PCS	Detect of heat anothinger thermistor	0	0	0	0		0	
ł	n	Malfunction of liquid pipe thermistor (Retrigerant circuit and others)	Detect of connector contact Detect of outdoor unit PCS	Detect of liquid pipe thermistor		0	0	0		0	1
ł	J8	Malfunction of liquid pipe thermistor (Refrigerant circuit and others)	Defect of connector contact Defect of outdoor unit PCS	Detect of liquid pipe thermistor		0			-		
ł	50	Maturction of gas pipe themistor (Refrigerant circuit and others)	Delect of connector contect Delect of outdoor unit PCB	Detect of gas pipe thermistor	0	0	0	0	9		
ł	JR	Malfunction of high pressure sensor	Detect of connector contact Detect of outdoor unit PCS	Detect of high pressure sensor		0	0	0		0	
ł	JC	Malfunction of low pressure sensor	Detect of connector contact Detect of outdoor unit PCB	Detect of low pressure sensor		0	0	0	Ì.	0	
	JE	Malfunction of sub-lank thermistor	Detect of connector contact Detect of outdoor unit PCS	Detect of sub-tank thermistor			0				
5	J۶	Mailunction of heating thermistor for heat exchanger	Detect of connector contact Detect of outdoor unit PCB	Detect of head suchanger thermistor		128	0		8		
8	JN	Matunction of oil temperature thermistor	Detect of connector contact Detect of outdoor unit PCB	Detect of oil temperature thermistor			0				
3	10	Malfunction of invariar system	Shortage of power supply capacity Detect of invertion PCB	Detect of power transistor			0		-		
ł	11	Mattunction of Inverter PCB	Delect of compressor wiring Blown tuse	Detect of outdoor unit tan motor Detect of inverter PCS		0	0		Q		
ł	13	Electrical box temperature rise	Fin temperature rise due to short-distuit Defect of power transistor	Defect of outdoor unit fan Defect of outdoor unit PCB	0						
t	14	Malfunction of inverter radiating fin temperature rise	Fin temperature rise due to she Detect of fin thermistor	ort-dicut	0	0	0	0			
ł	LS	Inverter instantaneous overcument (DC)	Closed stop valve Detect of compressor		0	0	0	0			
ł	1.8	Inverter instantaneous overcument (AC)	Overcharge of rehigerant amount Detect of compressor	Shortage of power supply capacity Detect of inverter unit		1.00	0		6		
ł	18	Overcurrent of Invertier compressor	Abnormal high pressure rise due to de Defect of compressor	gged soligerant droat and others		0	0	0			
ł	19	Mattunction of Invertiar compressor startup	Faulty of pressure equalization Detect of compressor wiring	Delact of compressor		0	0	0	Į.		é
Ì	1.8	Malfunction of power transistor	Delect of power transistor Detect of inverter PCB	Detect of compressor			0				
ł	10	Mailunction of transmission between outdoor unit PCB and micro-computer	Detect of grounding connection Detect of outdoor unit PCS	Mathunction due to noise	0	3.8	-		6		
ł	LC	Mailunction of transmission between control and inverter PCB	Detect of connector contact Detect of inverter PCB	Malfunction due to noise Detect of outdoor unit control PCB		0	0	0			
	PO	Shortage of refrigerant amount (thermal storage unit)	Shortage of ratrigerant Clogged ratrigerant piping				0			Π	

				Objects						
Ma	lfunction code	Contents Supposed causes Supposed		RA	SkyAir	VRV	Package	HRV	Chiller	
	PI				0	0	0		0	
	92			- 20		0	0		8 - 1	
	P3		Electrical box temperature rise (ambient temperature rise) Delect of fin thermistor Defect of outdoor unit PCB	0	0					
	94	Malfunction of radiating fin temperature sensor		0	0	0	0			
	<i>P</i> 8		(Close the refrigerent cylinder. Start again from step 1.)			0	0			
	<i>P</i> 3	Malfunction of tan motor (humidifier unit)	Defact of tan motor Broken relay harmass Defact of connector contact	0						
Ĭ	<i>P</i> 9	Automatic refrigerant charge operation completed	-			0	0			
idoor Unit	<i>P</i> 8	Broken whe of heater (humidifier unit)	Detect of thestor unit Detect of thermistor Detect of outdoor unit PCB	0						
3	<i>P</i> 8	Empty retrigerant cylinder during automatic retrigerant charging	Refrigerant cylinder of master unit is empty			0	0		2	
Ŭ	PE	Empty refrigerant cylinder during automatic refrigerant charging	Refrigerant cylinder of slave unit 2 is empty			0	0			
	PE	Automatic ratigeaters charge operation nearly completed	-			0	0			
	<i>P</i> H	Mailunction of temperature (humidifier unit)	Delect of heater unit Delect of connector contact Delect of thermistor Delect of outdoor unit PCB	0						
	PM	Empty retrigerant cylinder during automatic retrigerant charging	Refrigerant cylinder of sizve unit 1 is empty	- 0		0	0		0	
	PJ	Malfunction of capacity satting (Outdoor unit PCB)	Capacity setting adaptor is not installed interoper capacity setting adaptor Defact of outdoor unit PCB		0					
1	PJ	Improper combination between inverter and fan driver	Mistake of Inverter PC8 Mistake of Inverter fan PC8 Mistake of control PC8			0	0			
	w	Shortage of refrigerant	Shortage of natrigerant Clogged natrigerant piping Closed stop valve	0	0	0	0		0	
	81	Reverse phase, open phase	Reverse phase, open phase of power wiring Wrong wiring Detect of outdoor unit PCB	0	0	0	0		0	
1	112	Detect of power supply voltage or Instantaneous power tailure	Defect of power supply votage Instantaneous power failure Defect of writing contact	0	0	0	0			
	<i>U3</i>	Check operation not executed	Check operation not executed			0	0			
	<i>U3</i>	Malfunction of transmission	Mattunction due to noise Wrong wiring Detect of outdoor unit PCS.						0	
System	UN	Malfunction of transmission between indoor and outdoor unit	Defact or indoor-outdoor transmission wiring Mattunction due to noise Defact of indoor unit PCB and outdoor unit PCB	0	0	0	0		0	
6	US	Mailunction of transmission between indoor unit and remote controller	Detect of remote controller wring Detect of indoor unit PCB Mathemation due to noise Detect of rande controller mathab setting	0	0	0	0	0	0	
	US	Mailunction of transmission between indoor units	Faulty wiring Matunction due to noise Defact of Indeor unit PC8			0				
	บา	Mallunction of Interstrikelon between main body micro-computer - INV micro-computer	Hamass disconnection/brokan wire between PCB Delect of outdoor unit PCB	0			83			
	บา	Mattunction of transmission between outdoor units	Delact of wining between outdoor units Delact of outdoor unit switch satting Defact of wining between outdoor - thermal storage units			0	0		0	
	U8	Mailunction of transmission between remote controllers	Detect of remote controller main/sub setting Detect of remote controller wring Detect of remote controller PCB		0	0	0	0		

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Simple Self-Diagnosis by Malfunction Code

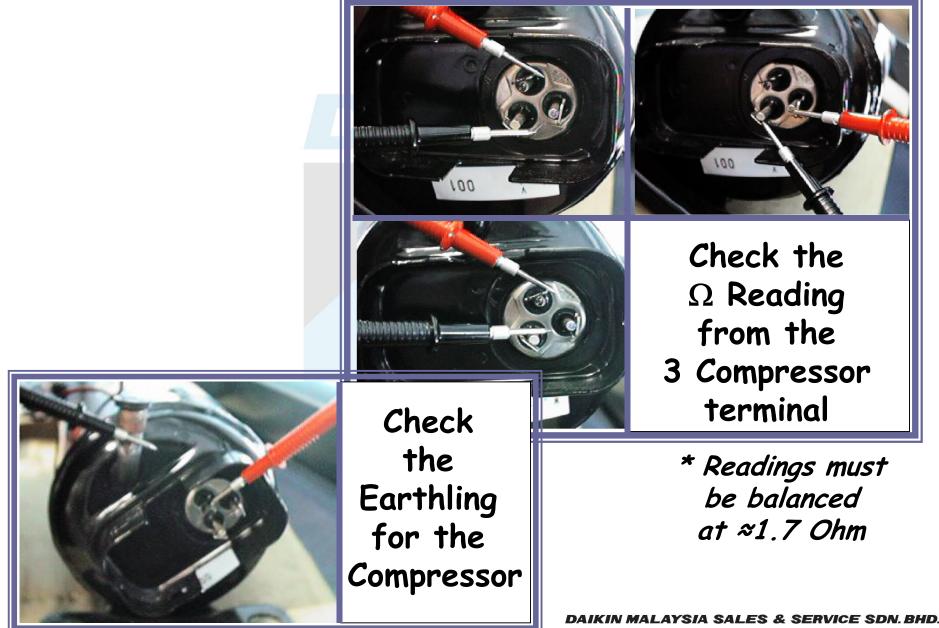
					. 3	Obj	ect	8	
Ma	lfunction code	Malfunction Contents	Supposed causes	RA	SkyAir	VRV	Package	HRV	Chiller
	U9	Malfunction of transmission (other system)	Detect of communication between other indoor unit and outdoor unit Other indoor unit electronic expension valve failure			0	0		
	นต	Detect of indoot/outdoor power- supply	Wrong model connections Improper power supply Wrong PCB connected Delect of PCB	0		1			
	ปห	Malfunction of field satting	Maifunction of field setting by render controller Delect of render controller witing Delective connection of optimal delica Delect of indexer unit PCII		0				
	บห	Improper combination of indoor and outdoor units	Escass of connected indoor units Matturction of field setting Uncanceled service mode Detect of outdoor unit PCB	Γ		0	0	0	
	ปห	Remote temperature satting wire disconnection	Remote temperature setting wire disconnection Detect of connector contact					2	0
	UC	Malfunction of setting of centralized controller address	Address duplication of centralized controller		0	0	0		
Ę	UE	Matunction of transmission between indoor unit and centralized controller	Maifunction of whing between indoor unit and centralized controller Detect of setting of group number Detect of indoor unit PCB		0	0	0	0	0
Syna	UF	Wining and piping mismatch	Improper connection of transmission witing between indoor-outdoor units and outdoor-outdoor units		0	0	0		
	UR	Mailunction of system	Improper connection of Itansmission witing between Indoor- outdoor units and outdoor-outdoor units Defact of Indoor and outdoor unit PCB (RA Mismatching Indoor and outdoor units, Defact of voltage, Freeze protection In other indoor unit	(0)		0	0	8	
	បដ	Malfunction of transmission (Accessory davices)	Defact of accessory devices Faulty wiring			0			0
	M1	Malfunction of centralized remote controller PCB	Detect of cantralized remote controllar PCB	0	0	0	0	0	0
	118	Maltunction of transmission between optional controllers for centralized control.	Other centralized control power disconnection Explanate of Internetwise Science Centralized control resal switch CN Explanate of Internetwise Science Centralized control resal switch CN	0	0	0	0	0	0
	118	Improper combination of optional controllers for centralized control	Improper combination of optional controllers for centralized control More than one master controller is connected Faulty setting of centralized control Detect of centralized control	0	0	0	0	0	0
	МС	Address duplication, improper setting	Address duplication of central remote controller	0	0	0	0	0	0
	80	External protection device actuated	Actuation of external protection device Defect of output signal wiring Defect of control PCB			1		0	
	54	Malfunction of Indoor air thermistor	Detect of connecting connector Detect of thermistor for indoor air Detect of control PCB					0	
	85	Malfunction of outdoor air thermistor	Detect of connector contact Detect of outdoor air thermistor Detect of control PCB					0	
	88	Malfunction of damper system	Delect of connector contact Delect of limit switch Delect of damper motor Delect of control PCS		Γ			0	
8	าย	System No.2 Compressor overload	Shortage of relifigerant amount Delect of connector contact Leakage of four way valve						0
5	21	System No. 2 Compressor overcurrent	Shortage of retrigerant amount Short-circuit Detect of compressor			Į.			0
	72	System No.2 Fan motor overcurrent	Defect of tan motor connector contact Defect of tan motor Defect of PCB	Γ					0
	13	System No. 2 Matunction of high pressure (HPS) actuated	Detry head exchanger Shortage of water volume Clogged miniperult piping Dated 5t connector contact Detect of HPS					2	0
	34	System No. 2 Matunction of low pressure switch (LPS)	Clogged refrigerant piping Defact of connector contact. Shortage of gas Defact of LPS						Ö
	75	System No. 2 Maifunction of low pressure sensor	Detect of connector contact Detect of low pressure sensor Detect of PCB						0
	78	System No.2 Molfunction of high pressure sensor	Delect of connector contact Detect of high pressure sensor Detect of PCB						0

				Objects								
Ma	lfunction code	Supposed causes		RA	SkyAir	VRV	Package	HRV	Chiller			
	77								0			
	78	System No. 2 Malfunction of tan Inter look	Datact of relay contact Broken wite			8	83		0			
	78	System No. 2 Malandion of current sensor of compressor	Defact of current sensor Defact of compressor Defact of outdoor unit PCB						0			
	x	System No. 2 Malfunction of pump inter look	Cooling water pump interlock actuated	\square					0			
	80	Malfunction of antering water semperature thermistor	Detect of connector contact Detect of entering water temperature thermistor	- 5	-		223		0			
	81	Malfunction of leaving water semperature thermistor	Detect of connector contact Detect of leaving water temperature thermistor						0			
1	82	System No. 1 Malfunction of refrigerant thermistor	Detect of connector contact Detect of retrigerant thermistor						0			
	83	System No.2 Malfunction of refrigerant thermistor	Detect of connector contact Detect of rotrigerant thermistor	F					0			
	84	System No. 1 Maltundion of heat exchanger thermister	Delect of connector contact Delect of heat exchanger thermistor	1		-	23		0			
	85	System No. 2 Maltundion of heat exchanger themistor	Delect of connector contact Delect of heat exchanger thermistor						0			
	85	System No. 2 Naturdion of discharge pipe thermistor	Detect of connecting connector Detect of discharge pipe thermistor						0			
	88	System No. 2 Maltundion of discharge pipe temperature	Shortage of gas Detect of discharge pipe thermistor Detect of connector contact Clogged refrigerant piping						0			
Othena	89	Mailunction of brazed-plate heat exchanger freezing	Dirty heat exchanger Shortage of telrigerant amount Delect of thermistor			-			0			
õ	88	System No. 2 Kulundon of lawing wate temperature hemister	Defact of connector contact Defact of leaving water temperature thermistor						0			
	85	System No. 1 Waltedor of suction pipe themistor 1 for heating	Detect of connector contact Detect of suction pipe thermistor		-				0			
	85	System No. 1 Webnotor of suction pipe themistor 2 for heating	Delect of connector contact Delect of suction pipe thermistor	- 2	-				0			
	88	Abnormal high hot water temperature	Three-way valve mailunction Detect of thermistor Detect of water temperature setting		-	-	-		0			
	30	Abromal chilled water quantity, abromal AXP	Shortage of water volume Disconnection of AXP		-	-	-		0			
	91	System No. 2 Maturation of electronic expansion valve	Delact of connector contact: Delact of electronic arganision valve coll						0			
	8	System No.2 Maturction of suction pipe themistor	Delect of connector contect Delect of connector contect Delect of suction pipe thermistor	1		9	83		0			
	99	Malturdion of transmission (bolween heat recisim wentilation unit and tan unit)	Delect of tan unit PCB Delect of connecting whe between (1) and (2)		-	-		0				
	95	System No. 1	Defect of tan inverter unit		-	<u></u>		-	0			
	95	Maltunction of Invertiar system System No. 2	Detect of tan invertor unit	1					0			
	20	Mailunction of invertier system Mailunction of thermal storage unit	Delect of thermal storage unit			-			0			
	31	Malfunction of thermal storage	Aduation of thermal storage brine pump overcurrent (OC)		1. 1		-		0			
	38	brine pump Malfunction of thermal storage brine tank	Low water level of thermal storage brine tank		<u> </u>	9	23		0			

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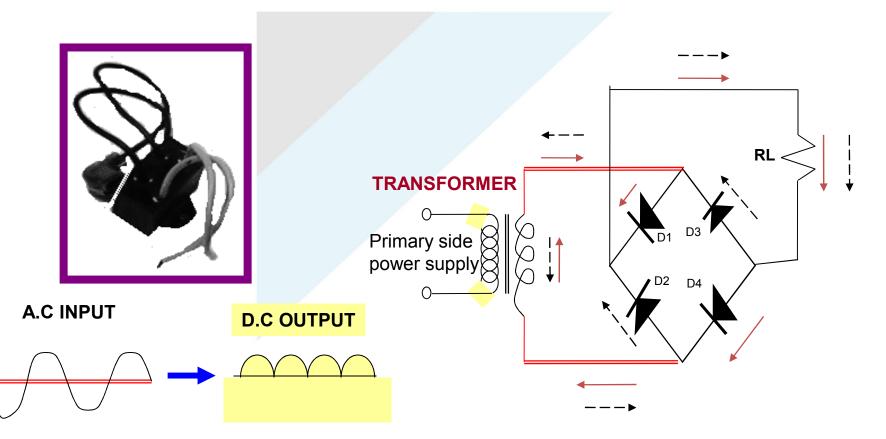
Checking Components (Compressor)





Checking Components (Rectifier)

For some certain air conditioners, direct current is to activate the magnetic contactor. The rectifier converts alternating current to direct current by the commutation diodes let the current pass in a direction only. The current flows as shown below.

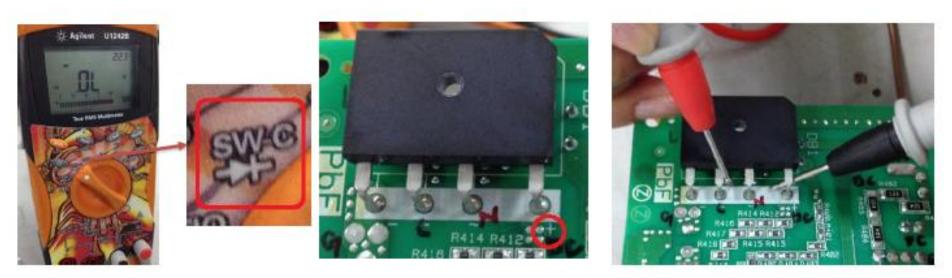




Checking Components (Rectifier)

PCB check- Diode bridge

- 1. Change setting in multimeter to 'SW-C'
- Make sure terminal negative (-) multimeter is tap to terminal positive (+) diode bridge.
- Measure voltage between terminal (+) and other terminal of diode bridge.

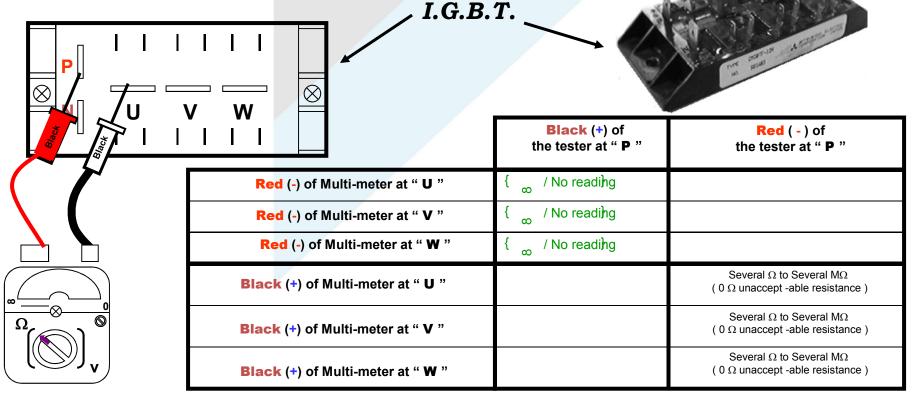


* Readings must show that the diode function is normal



For 2MK58FV1N AND 3MK75FV1N

The purpose of the Isolated Gate Bipolar Transistor (I.G.B.T) is to convert a 300 Direct Current Voltage (DCV) to a 100 Actual Current Voltage (ACV), to the compressor.Be sure that the power Supply is "Turn OFF " for more than 1 min before dismantle the I.G.B.T. The procedure of checking the I.G.B.T. is listed below : -



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PCB check- IPM

- 1. Change setting in multimeter to measure resistance value.
- Make sure terminal positive (+) multimeter is tap to terminal 'P' of IPM while terminal terminal negative (-) to terminal U,V,W
- 3. Measure the resistance value.



* Readings must be balanced at >1M Ohm

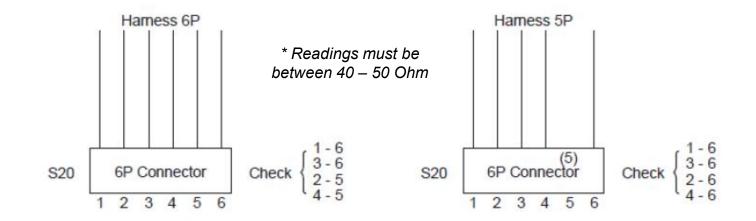


Checking Components (Thermistor)

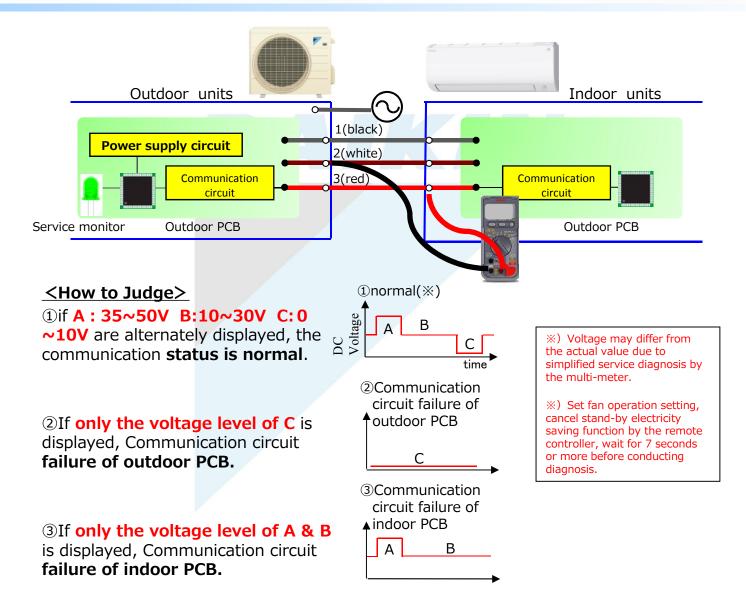
<u>Air Thermistor</u>	OHMS C	Chart
	Thermistor / Temperature °C	Ω = Ohms
	-20 °c	211.0 (Κ Ω)
	-15 °c	150.0 (KΩ)
0	-10 °c	116.5 (KΩ)
	0 °C	67.2 (KΩ)
	5 °C	51.9 (KΩ)
Coil Thermister	10 °c	40.0 (Κ Ω)
Coil Thermistor	15 °c	31.8 (K Ω)
	20 °c	25.0 (Κ Ω)
	25 °c	20.0 (Κ Ω)
	30 °c	16.0 (KΩ)
	35 °c	13.0 (KΩ)
	40 °c	10.6 (KΩ)
	45 °c	8.7 (KΩ)
	50 °c	7.2(KΩ)



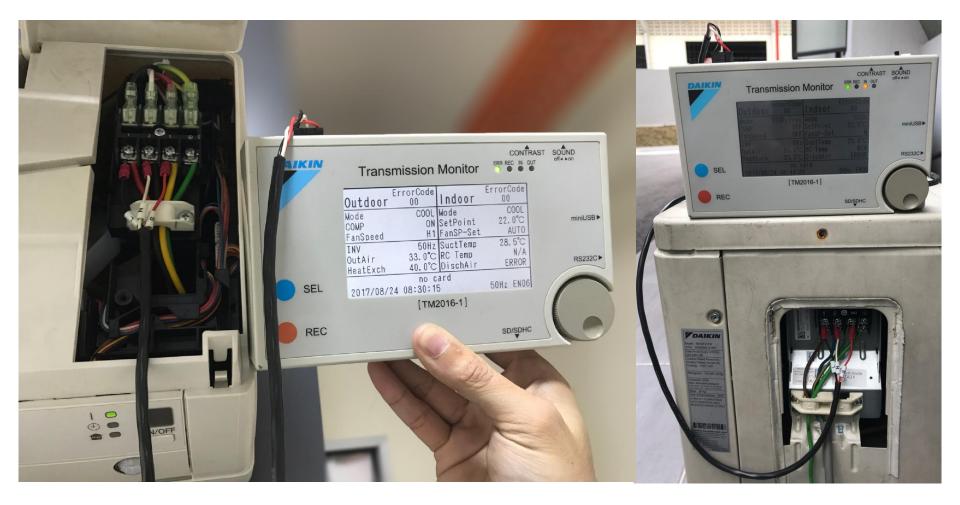
- Check if the EXV connector is correctly connected to PCB.
- Turn power off and on again, and check if EXV generates a latching sound.
- If the EXV does not generate a latching sound in above step b., disconnect connector and check continuity using a multimeter.
- Check the continuity between pins [1-6, 3-6, 2-5, 4-5 (between pins 1-6, 2-6, 3-6, 4-6 for harness 5P models)]. If there is no continuity between the pins, EXV coil is faulty.
- If the continuity is confirmed in step d., outdoor PCB is faulty.



Communications Checking



Transmission Monitor (Wiring)





Transmission Monitor (Outdoor)

Outdoor	ErrorCode 00	Indoor	ErrorCode 00
Mode COMP FanSpeed	COOL ON H8	Mode SetPoint FanSP-Set	C00L 16.0°C
INV OutAir HeatExch	59Hz 28.5°C 34.0°C		570rpm Orpm
no card 2017/10/29 11:11:14 50Hz EN06			

INV = Inverter Compressor Frequency OutAir = Outdoor Ambient Air Temperature HeatExch = Condenser Coil Temperature

Outdoor	ErrorCode 00	Indoor	ErrorCode 00	
Mode COMP FanSpeed	COOL	Mode SetPoint FanSP-Set	COOL 16.0°C H	
EEV Power Fan-SP1	146pls OW 940rpm		570rpm Orpm	
2017/10/2	no card 2017/10/29 11:11:28 50Hz EN06			

EEV = EXV Opening Power = Momentary Power Consumption Fan-SP1 = Lower Fan Speed

Outdoor	ErrorCode 00	Indoor	ErrorCode 00
Mode COMP	COOL	Mode SetPoint	C00L 16. 0°C
FanSpeed	H8	SetPoint FanSP-Set	H
DiscTemp INV-Temp CTCurrent	62°C 41°C 4. 5A	Fan 1SP Fan 2SP	570rpm Orpm
2017/10/2	no ca 9 11:11:21	rd	50Hz EN06

DiscTemp = Compressor Discharge Temperature INV-Temp = Inverter Fin Temperature CTCurrent = Condenser Total Current

Outdoor	ErrorCode 00	Indoor	ErrorCode 00
Mode COMP FanSpeed	ON	Mode SetPoint FanSP-Set	COOL 16.0°C H
Fan-SP2 Capacity Type	Orpm 10.0kW Cool	Fan 1SP Fan 2SP	570rpm Orpm
2017/10/29	50Hz EN06		

Fan-SP2 = Upper Fan Speed Capacity = Unit Capacity Information Type = Unit Information



Transmission Monitor (Indoor)

Outdoor	ErrorCode 00	Indoor	ErrorCode 00
Mode COMP		Mode	COOL
FanSpeed	UN H8	SetPoint FanSP-Set	16.0℃ #
Fan-SP2	Orpm	SuctTemp	23. 5°C
Capacity Type		RC Temp DischAir	N/A ERROR
no card			
2017/10/2	9 11:11:50		50Hz EN06

SuctTemp = Room Thermistor Temperature RC Temp = Wired RC Detection Temperature DischAir = Discharge Air Temperature

Outdoor	ErrorCode 00	Indoor	ErrorCode 00
Mode	COOL	Mode SetPoint	COOL
FanSpeed	H8	FanSP-Set	16.0°С Н
Fan-SP2 Capacity	Orpm 10.0kW	EvaTemp2 EvaTemp1	11.5°C ERROR
Туре	Cool	RmHumid	79%
2017/10/2	no ca 9 11:11:55	rd	50Hz EN06

EvaTemp2 = Evaporator Coil Inlet Temperature EvaTemp2 = Evaporator Coil Intermediate Temp. RmHumid = Room Humidity

Outdoor	ErrorCode 00	Indoor	ErrorCode 00
Mode COMP FanSpeed	COOL ON H8	Mode SetPoint FanSP-Set	СООL 16.0°С Н
Fan-SP2 Capacity Type		Fan 1SP	570rpm Orpm
no card 2017/10/29 11:12:00 50Hz EN06			

Fan1SP = Fan 1 Speed Fan2SP = Fan 2 Speed

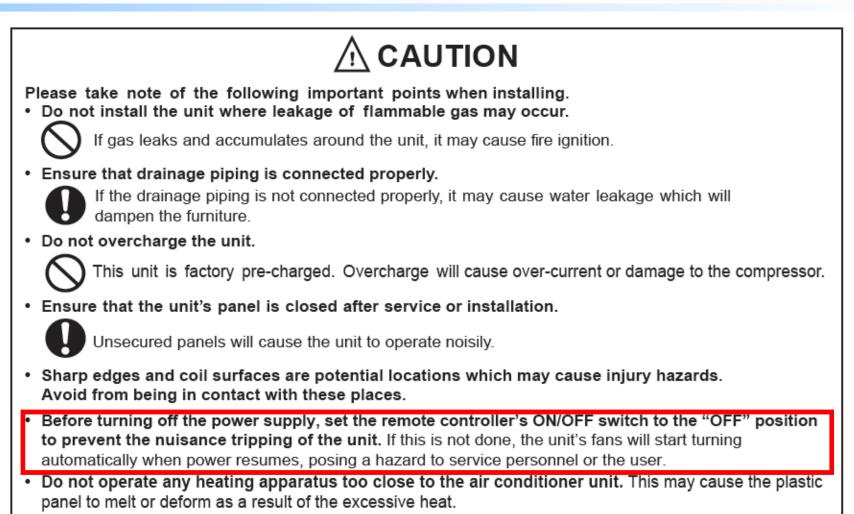


- Installation and maintenance should be performed by qualified persons who are familiar with local code and regulation, and experienced with this type of appliance.
- All field wiring must be installed in accordance with the national wiring regulation.

- Ensure that the rated voltage of the unit corresponds to that of the name plate before commencing wiring work according to the wiring diagram.
- The unit must be GROUNDED to prevent possible hazard due to insulation failure.
- All electrical wiring must not touch the refrigerant piping or any moving parts of the fan motors.
- Confirm that the unit has been switched OFF before installing or servicing the unit.
- Disconnect from the main power supply before servicing the air conditioner unit.
- DO NOT pull out the power cord when the power is ON. This may cause serious electrical shocks which may result in fire hazards.
- Keep the indoor and outdoor units, power cable and transmission wiring, at least 1m from TVs and radios, to prevent distorted pictures and static. {Depending on the type and source of the electrical waves, static may be heard even when more than 1m away}.



Safety Precautions



- · Ensure the color of wires of the outdoor unit and the terminal markings are same to the indoors respectively.
- IMPORTANT : DO NOT INSTALL OR USE THE AIR CONDITIONER UNIT IN A LAUNDRY ROOM.
- Do not use joined and twisted wires for incoming power supply.

