# **SERVICE MANUAL**

# **HITACHI**

TECHNICAL INFORMATION
FOR SERVICE PERSONNEL ONLY

# air Home Multi

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# **SPLIT UNIT AIR CONDITIONER**

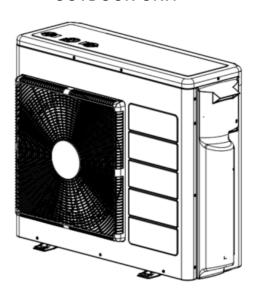
#### **MODEL**

**RAM-E53N2HAE** 

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### **OUTDOOR UNIT**



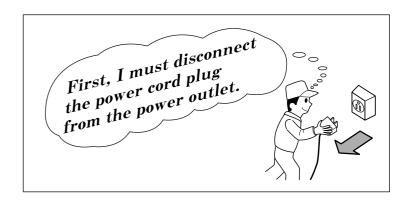
**RAM-E53N2HAE** 

Cooling & Heating



# SAFETY DURING REPAIR WORK

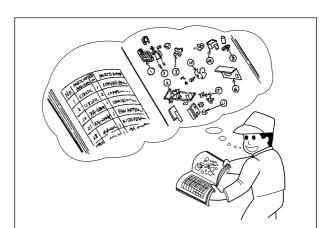
 In order to disassemble and repair the unit in question, be sure to disconnect the power cord plug from the power outlet before starting the work.



2. If it is necessary to replace any parts, they should be replaced with respective genuine parts for the unit, and the replacement must be effected in correct manner according to the instructions in the Service Manual of the unit.

If the contacts of electrical parts are defective, replace the electrical parts without trying to repair them.

- 3. After completion of repairs, the initial state should be restored.
- 4. Lead wires should be connected and laid as in the initial state.
- 5. Modification of the unit by the user himself should absolutely be prohibited.



- 6. Tools and measuring instruments for use in repairs or inspection should be accurately calibrated in advance.
- 7. In installing the unit having been repaired, be careful to prevent the occurrence of any accident such as electrical shock, leak of current, or bodily injury due to the drop of any part.
- 8. To check the insulation of the unit, measure the insulation resistance between the power cord plug and grounding terminal of the unit. The insulation resistance should be  $1M\Omega$  or more as measured by a 500V DC megger.
- The initial location of installation such as window, floor or the other should be checked for being and safe enough to support the repaired unit again.
   If it is found not so strong and safe, the unit should be installed at the initial location after reinforced or at a new location.
- 10. Any inflammable object must not be placed about the location of installation.
- 11. Check the grounding to see whether it is proper or not, and if it is found improper, connect the grounding terminal to the earth.



#### WORKING STANDARDS FOR PREVENTING BREAKAGE OF SEMICONDUCTORS

#### Scope

The standards provide for items to be generally observed in carrying and handling semiconductors in relative manufacturers during maintenance and handling thereof. (They apply the same to handling of abnormal goods such as rejected goods being returned).

#### 2. Object parts

- (1) Micro computer
- (2) Integrated circuits (I.C.)
- (3) Field-effective transistor (F.E.T.)
- (4) P.C. boards or the like to which the parts mentioned in (1) and (2) of this paragraph are equipped.

#### 3. Items to be observed in handling

(1) Use a conductive container for carrying and storing of parts. (Even rejected goods should be handled in the same way).

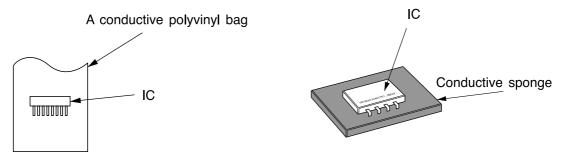


Fig. 1. Conductive container

- (2) When any part is handled uncovered (in counting, packing and the like), the handling person must always use himself as a body earth. (Make yourself a body earth by passing  $1M\Omega$  earth resistance through a ring or bracelet).
- (3) Be careful not to touch the parts with your clothing when you hold a part even if a body earth is being taken.
- (4) Be sure to place a part on a metal plate with grounding.
- (5) Be careful not to fail to turn off power when you repair the printed circuit board. At the same time, try to repair the printed circuit board on a grounded metal plate.

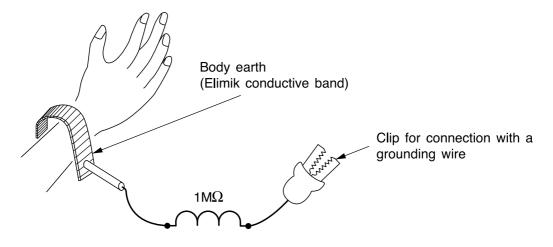


Fig. 2. Body Earth

(6) Use a three wire type soldering iron including a grounding wire.

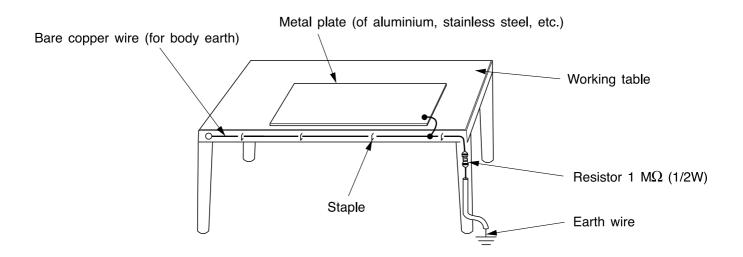


Fig. 3. Grounding of the working table

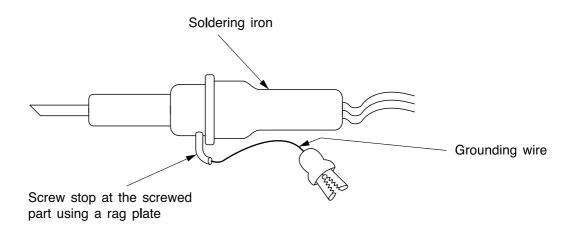


Fig. 4. Grounding a solder iron

Use a high insulation mode (100V,  $10M\Omega$  or higher) when ordinary iron is to be used.

(7) In checking circuits for maintenance, inspection or some others, be careful not to have the test probes of the measuring instrument short circuit a load circuit or the like.

# **A** CAUTION

- 1. In quiet or stop operation, slight flowing noise of refrigerant in the refrigerating cycle is heard occasionally, but this noise is not abnormal for the operation.
- 2. When it thunders nearby, it is recommend to stop the operation and to disconnect the power cord plug from the power outlet for safety.
- 3. In the event of power failure, the air conditioner will restart automatically in the previously selected mode once the power is restored. In the event of power failure during TIMER operation, the air conditioner will not start automatically. Re-press ON/OFF button after 3 minutes from when the unit off or power recovery.
- 4. If the room air conditioner is stopped by adjusting thermostat, or miss operation, and re-start in a moment, there is occasion that the cooling and heating operation does not start for 3 minutes, it is not abnormal and this is the result of the operation of IC delay circuit. This IC delay circuit ensures that there is no danger of blowing fuse or damaging parts even if operation is restarted accidentally.
- 5. This room air conditioner should not be used at the cooling operation when the outside temperature is below  $-10^{\circ}$ C (14°F).
- 6. This room air conditioner (the reverse cycle) should not be used when the outside temperature is below -15°C (5°F).
  - If the reverse cycle is used under this condition, the outside heat exchanger is frosted and efficiency falls.
- 7. When the outside heat exchanger is frosted, the frost is melted by operating the hot gas system, it is not trouble that at this time fan stops and the vapour may rise from the outside heat exchanger.

## **SPECIFICATIONS**

TYPE		DC INVERTER DUAL SYSTEM MULTI		
		OUTDOOR UNIT		
MODEL		RAM-E53N2HAE		
POWER SOURCE		1 PHASE, 50Hz, 220-240V		
TOTAL INPUT	(W)			
TOTAL AMPERES	(A)	REFER TO THE SPECIFICATIONS PAGE		
COOLING CAPACITY	(kW)	REFER TO THE SPECIFICATIONS PAGE		
HEATING CAPACITY	(B.T.U.)			
	W	850		
DIMENSIONS (mm)	Н	750		
	D	298		
NET WEIGHT	(kg)	51		

\* After installation

MODEL		RAM-E53N2HAE		
FAN MOTOR		47 W		
FAN MOTOR CAPACITOR		NO		
FAN MOTOR PROTECTOR		NO		
COMPRESSOR		JX151XK2		
COMPRESSOR MOTOR CAPACIT	OR	NO		
OVERLOAD PROTECTOR		YES		
OVERHEAT PROTECTOR		YES		
FUSE (for MICROPROCESSOR)		5.0A		
POWER RELAY		G4A		
POWER SWITCH		NO		
TEMPORARY SWITCH		NO		
SERVICE SWITCH		YES		
TRANSFORMER		NO		
VARISTOR		ERZVA9V431		
NOISE SUPPRESSOR		YES		
THERMOSTAT		YES(IC)		
REMOTE CONTROL SWITCH (LIQUID CRYSTAL)		NO		
	UNIT	1590g		
REFRIGERANT CHARGING VOLUME (Refrigerant R32)		WITHOUT REFRIGERANT BECAUSE COUPLING IS FLARE TYPE.		
	PIPES (MAX.)	MAX. 35m		

<sup>\*\*</sup> RAM- E53N2HAE Additional charge of refrigerant is not required

# SPECIFICATIONS FOR INDOOR UNITS COMBINATION

	TYPE	DC INVERTER DUAL SYSTEM MULTI COOLING & HEATING
MODEL	OUTDOOR UNIT	RAM-E53N2HAE
PHASE/\	OLTAGE/FREQUENCY	1 PHASE, 220-240V, 50Hz
CIRCUIT AM	IPERES TO CONNECT (A)	16A
	CAPACITY (kW)	5.30
	(B.T.U./h)	18,080
COOLING	TOTAL INPUT (W)	1,350
(FOUR UNITS)	EER (B.T.U./hW)	13.40
	TOTAL AMPERES (A)	2.25 ~ 9.45
	POWER FACTOR (%)	99
	CAPACITY (kW)	6.30
	(B.T.U./h)	21,490
HEATING	TOTAL INPUT (W)	1,610
(FOUR UNITS)	EER (B.T.U./hW)	13.35
	TOTAL AMPERES (A)	2.85 ~ 10.18
	POWER FACTOR (%)	99
MAXIMUI	M LENGTH OF PIPING	MAX. 35m (TWO UNIT TOTAL)
	STANDARD	CE (EMC&LVD)

MODEL		RAM-E53N2HAE	
	W	1008	
PACKING	Н	800	
(mm)	D	404	
	cu.ft.	11.22	
GROSS WEIGHT (kg)		56	
FLARE NUT SIZE (SM	ALL/LARGE)	(6.35D/9.52D)X2	

## OPERATION SCOPE

	INDOOR SUCTION TEMPERATURE (°C)	OUTDOOR SUCTION TEMPERATURE (°C)	INDOOR SUCTION HUMIDITY (%)
COOLING OPERATION SCOPE	- 10 ~ 46	<b>−10 ~ 46</b>	BELOW 80
HEATING OPERATION SCOPE	-15 ~ 24`	<b>−15 ~ 24</b>	_

# 2 ROOM MULTI-SPLIT INVERTER TYPE RAC: RAM-E53N2HAE POSSIBLE COMBINATION TO OPERATE (SAME TIME OPERATION)

					COOLING	i						HEATING				
	POSSI		CADACITY DATI	NC.	OUTDOOR UNIT		AMDEDE			CADACITY DATI	NC	OUTDOOR UNIT		AMDEDE		
	OMBINA TO OPE		CAPACITY RATII (kW) (RANGE)	NG	POWER CONSUMPTION		AMPERE (A) at		EER	CAPACITY RATII (kW) (RANGE)		POWER CONSUMPTION		AMPERE (A) at		COP
				TOTAL	(W)	220V	- 230V -	240V		, , ,	TOTAL	(W)	220V	- 230V	- 240V	
	1.5	1.5	1.5 (1.50-1.70)	1.5	430 (400-480)	1.98	- 1.90 -	1.82	3.49	2.0 (1.50-2.20)	2.0	610 (550-850)	2.81	- 2.69	2.58	3.28
	1.8	1.8	2.0 (1.70-2.00)	1.8	495 (400-750)	2.28	- 2.18 -	2.09	3.64	2.5 (2.00-3.00)	2.5	730 (550-1100)	3.37	- 3.22	3.09	3.42
FIND	2.5	2.5	2.5 (1.70-2.80)	2.5	700 (400-980)	3.23	- 3.09 -	2.96	3.57	3.4 (2.00-4.00)	3.4	800 (550-1600)	3.69	- 3.53	3.38	4.25
ONE I	3.5	3.5	3.5 (1.70-3.90)	3.5	1030 (400-1280)	4.75	- 4.55 -	4.36	3.40	4.3 (2.00-5.20)	4.3	930 (550-1820)	4.29	- 4.11	3.93	4.62
	5.0	5.0	5.0 (1.70-5.50)	5.0	1510 (400-1660)	6.97	- 6.67 -	6.39	3.31	6.5 (2.00-7.00)	6.3	1080 (550-2580)	4.98	- 4.77	4.57	5.83
	6.0	6.0	6.0 (1.70-6.00)	5.3	1510 (400-1660)	6.97	- 6.67 -	6.39	3.51	7.2 (2.00-7.00)	6.3	1210 (550-2950)	5.58	- 5.34	5.12	5.21
	3.0	1.5 + 1.5	1.5 + 1.5 (2.40-3.50)	3.0	920 (400-1000)	4.25	- 4.06 -	3.89	3.26	2.0 + 2.0 (2.70-4.50)	4.0	1060 (550-1380)	4.89	- 4.68	4.48	3.77
	3.3	1.5 + 1.8	1.5 + 1.8 (2.40-3.80)	3.3	1020 (400-1300)	4.71	- 4.50 -	4.31	3.24	2.0 + 2.5 (2.70-5.00)	4.5	1250 (550-1870)	5.77	- 5.52	5.29	3.60
	4.0	1.5 + 2.5	1.5 + 2.5 (2.40-4.50)	4.0	1180 (400-1250)	5.45	- 5.21 -	4.99	3.39	2.0 + 3.4 (2.70-5.90)	5.4	1550 (550-2010)	7.15	- 6.84	6.56	3.48
	5.0	1.5 + 3.5	1.5 + 3.5	5.0	1480 (400-1660)	6.83	- 6.53 -	6.26	3.38	2.0 + 4.3	6.3	1590 (550-2010)	7.34	- 7.02	6.73	3.96
	5.7	1.5 + 4.2	(2.40-5.50) 1.4 + 3.9	5.3	1550	7.15	- 6.84 -	6.56	3.42	(2.70-6.80) 1.8 + 4.6	6.3	1820	8.40	- 8.03	7.70	3.46
	6.5	1.5 + 5.0	(2.40-6.00) 1.2 + 4.1	5.3	(400-1660) 1660 (400-1660)	7.66	- 7.33 -	7.02	3.19	(2.7-7.00) 1.5 + 4.8	6.3	(550-2010) 1820	8.40	- 8.03	7.70	3.46
	7.5	1.5 + 6.0	(2.40-6.00) 1.1 + 4.2	5.3	(400-1660) 1660	7.66	- 7.33 -	7.02	3.19	(2.70-7.00) 1.3 + 5.0	6.3	(550-2010) 1820	8.40	- 8.03	7.70	3.46
	3.6	1.8 + 1.8	(2.40-6.00) 1.8 + 1.8	3.6	(400-1660) 1080	4.98	- 4.77 -	4.57	3.33	(2.7-7.00) 2.5 + 2.5	5.0	(550-2010) 1290	5.95	- 5.69	5.46	3.88
	4.3	1.8 + 2.5	(2.40-4.00) 1.8 + 2.5	4.3	(400-1300) 1220 (400-1450)	5.63	- 5.39 -	5.16	3.52	(2.70-6.90) 2.5 + 3.4	5.9	(550-1550) 1530 (550-1030)	7.06	- 6.75	6.47	3.86
	5.3	1.8 + 3.5	(2.40-4.70) 1.8 + 3.5	5.3	1358 (400-1660)	6.27	- 5.99 -	5.74	3.90	(2.7-7.00) 2.3 + 4.0	6.3	(550-1920) 1615 (550-2010)	7.45	- 7.13	6.83	3.90
STIN	6.0	1.8 + 4.2	(2.40-5.80) 1.6 + 3.7 (2.40-5.80)	5.3	1550 (400-1660)	7.15	- 6.84 -	6.56	3.42	(2.7-7.00) 2.0 + 4.3 (2.7-7.00)	6.3	(550-2010) 1820 (550-2010)	8.40	- 8.03	7.70	3.46
TWO UNITS	6.8	1.8 + 5.0	1.4 + 3.9 (2.40-6.00)	5.3	1550 (400-1660)	7.15	- 6.84 -	6.56	3.42	1.8 + 4.6 (2.7-7.00)	6.3	1820 (550-2010)	8.40	- 8.03	7.70	3.46
	7.8	1.8 + 6.0	1.2 + 4.1 (2.40-8.50)	5.3	1660 (400-1800)	7.66	- 7.33 -	7.02	3.19	1.6 + 4.7 (2.7-7.00)	6.3	1820 (550-2250)	8.40	- 8.03	7.70	3.46
	5.0	2.5 + 2.5	2.5 + 2.5 (2.40-5.50)	5.0	1470 (400-1800)	6.78	- 6.49 -	6.22	3.40	3.2 + 3.2 (2.7-7.00)	6.3	1780 (550-2250)	8.21	- 7.86	7.53	3.54
	6.0	2.5 + 3.5	2.2 + 3.1 (2.40-6.00)	5.3	1550 (400-1800)	7.15	- 6.84 -	6.56	3.42	2.8 + 3.5 (2.7-7.00)	6.3	1820 (550-2250)	8.40	- 8.03	7.70	3.46
	6.7	2.5 + 4.2	2.0 + 3.3 (2.40-6.00)	5.3	1550 (400-1800)	7.15	- 6.84 -	6.56	3.42	2.5 + 3.8 (2.7-7.00)	6.3	1820 (550-2250)	8.40	- 8.03	7.70	3.46
	7.5	2.5 + 5.0	1.8 + 3.5 (2.40-6.00)	5.3	1660 (400-1800)	7.66	- 7.33 -	7.02	3.19	2.2 + 4.1 (2.7-7.00)	6.3	1820 (550-2250)	8.40	- 8.03	7.70	3.46
	8.5	2.5 + 6.0	1.6 + 3.7 (2.40-6.00)	5.3	1660 (400-1800)	7.66	- 7.33 -	7.02	3.19	2.0 + 4.3 (2.7-7.00)	6.3	1820 (550-2250)	8.40	- 8.03	7.70	3.46
	7.0	3.5 + 3.5	2.7 + 2.7 (2.40-6.00)	5.3	1660 (400-1800)	7.66	- 7.33 -	7.02	3.19	3.2 + 3.2 (2.70-7.00)	6.3	1820 (550-2250)	8.40	- 8.03	7.70	3.46
	7.7	3.5 + 4.2	2.4 + 2.9 (2.40-6.00)	5.3	1660 (400-1800)	7.66	- 7.33 -	7.02	3.19	2.9 + 3.4 (2.7-7.00)	6.3	1820 (550-2250)	8.40	- 8.03	7.70	3.46
	8.5	3.5 + 5.0	2.2 + 3.1 (2.40-6.00)	5.3	1660 (400-1800)	7.66	- 7.33 -	7.02	3.19	2.5 + 3.8 (2.7-7.00)	6.3	1820 (550-2250)	8.40	- 8.03	7.70	3.46
	8.4	4.2 + 4.2	2.7 + 2.7 (2.40-6.00)	5.3	1660 (400-1800)	7.66	- 7.33 -	7.02	3.19	3.2 + 3.2 (2.7-7.00)	6.3	1820 (550-2250)	8.40	- 8.03	7.70	3.46

Two indoor units should be connected at least Total nominal cooling capacity should not be more than 8.5kW.

# DUAL SYSTEM MULTI RAC: RAM-E53N2HAE POSSIBLE COMBINATION TO OPERATE (SAME TIME OPERATION)

Two units can be installed with one outdoor unit.

And total nominal cooling capacity should not be more than 8.5kW.

NOMINAL COOLING	INDOOR UNIT		ITY (kW) it operation	SUITABLE ROOM SIZE (m <sup>2</sup> ) at one unit operation		
CAPACITY (Kw)	MODEL	COOLING	HEATING	COOLING	HEATING	
1.5kW	RAK-DJ15QHAE	1.50-1.70	1.50-2.20	8-12	9-11	
1.8kW	RAK-DJ18RHAE	1.70-2.00	2.00-3.00	8-12	9-11	
2.5kW	RAK-DJ25RHAE	1.70-2.80	2.00-4.00	11-17	14-18	
3.5kW	RAK-DJ35RHAE	1.70-3.90	2.00-5.20	16-24	17-22	
5.0kW	RAK-DJ50RHAE	1.70-5.50	2.00-7.00	23-24	23-29	
6.0kW	RAK-DJ60RHAE	1.70-6.00	2.00-7.00	23-24	23-29	

Be sure to connect two indoor units to this outdoor unit. If not, condensed water may drop, resulting in trouble

<sup>\*</sup>Up to Two indoor unit is only applicable for RAM-E53N2HAE.

# DUAL SYSTEM MULTI R.A.C. RAM-E53N2HAE INDOOR UNITS COMBINATIONS TO BE ABLE TO INSTALL

CONNECTING POSITION ON OUTDOOR UNIT (VALVE

POSSIBLE COMBINATIONS TO INSTALL (kW)		SUITABLE ROOM SIZE TO INSTALL (m²)	CONNECTING POSITION ON OUTDOOR UNIT (VALVE DIAMETER) (mm)		
			No.1	No.2	
			6.35/9.52D	6.35/9.52D	
	1.5+1.5	(8-12) + (8-12)	1.5	1.5	
	1.5+1.8	(8-12) + (8-12)	1.5	1.8	
	1.5+2.5	(8-12) + (11-17)	1.5	2.5	
	1.5+3.5	(8-12) + (16-24)	1.5	3.5	
	1.5+4.2	(8-12) + (23-24)	1.5	4.2	
	1.5+5.0	(8-12) + (23-24)	1.5	5.0	
TS	1.8+1.8	(8-12) + (8-12)	1.8	1.8	
TWO UNITS	1.8+2.5	(8-12) + (11-17)	1.8	2.5	
Q	1.8+3.5	(8-12) + (16-24)	1.8	3.5	
≥	1.8+4.2	(8-12) + (23-24)	1.8	4.2	
	1.8+5.0	(8-12) + (23-24)	1.8	5.0	
	2.5+2.5	(11-17) + (11-17)	2.5	2.5	
	2.5+3.5	(11-17) + (16-24)	2.5	3.5	
	2.5+5.0	(11-17) + (23-24)	2.5	5.0	
	3.5+3.5	(16-24) + (16-24)	3.5	3.5	
	3.5+5.0	(12-19) + (19-27)	3.5	5.0	

# **1.5**, **2.5**, **3.5** & **5.0** means indoor units cooling capacity class.

- (1) Marking
  - $\odot$ : needs flare adapter (9.52  $\rightarrow$  12.7D): Part No. TA261D-4 001
- (2) Suitable room size is determined based on the conditions below:
  - Climate is in the temperate zone likeTokyo, Japan.
  - · For usual residential use.
  - Smaller figure is for light construction which means light thermally sealed.
  - Larger figure is for heavy constructions, which means well thermally sealed.

# HITACHI

# **R32 SAFETY PRECAUTIONS (Additional)**

#### Installation (Space)

- Must ensure the installation of pipe-work shall be kept to a minimum. Avoid use dented pipe and do not allow acute bending.
- Must ensure that pipe-work shall be protected from physical damage.
- Must comply with national gas regulations, state municipal rules and legislation. Notify relevant authorities in accordance with all applicable regulations.
- Must ensure mechanical connections be accessible for maintenance purposes.

#### Unventilated areas

- Warning: The appliance shall be stored in a well-ventilated area where the room size corresponds to the room area as specified.
- Warning: The appliance shall be stored in a room without continuously operating open flames (e.g. an operating gas appliance) and ignition sources (e.g. an operating electric heater).

#### **Qualification of workers**

- When conducting any repair/servicing works, please ensure it is carried out by competent person only.
- Warning: Every working procedure that affects safety means shall only be carried out by competent persons. Examples for such working procedures are:
  - breaking into the refrigerating circuit.
  - opening of sealed components
  - opening of ventilated enclosures.

#### Information on servicing

- Prior to beginning work on systems, safety checks are necessary to ensure that the risk of ignition is minimized.
- Work shall be undertaken under a controlled procedure so as to minimized the risk of flammable gas or vapor being present while the work is being performed.
- Work in confined spaces shall be avoided. The area around the workspace shall be sectioned off. Ensure that the conditions within the area have been made safe by control of flammable material.

#### Checking for presence of refrigerant

- The area shall be checked with an appropriate refrigerant detector prior to and during work. The leak detection equipment should be suitable for use with all applicable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.

#### Presence of fire extinguisher

- If any hot work is to be conducted, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO2 fire extinguisher adjacent to the charging area.

#### No ignition sources

- All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal. Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. "No Smoking" signs shall be displayed.

#### Ventilated area

- Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

#### Checks to the refrigeration equipment

- Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times the manufacturer's maintenance and service guidelines shall be followed. If in doubt, consult the manufacturer's technical department for assistance.

The following checks shall be applied to installations.

- The charge size is in accordance with the room size within which the refrigerant containing parts are installed;
- The ventilation machinery and outlets are operating adequately and are not obstructed;
- If an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant;
- Marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected;
- Refrigeration pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

# **Cautions**

#### Checks to electrical devices

- Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment so all parties are advised.
- Initial safety checks shall include:
  - that capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;
  - that no live electrical components and wiring are exposed while charging, recovering or purging the system;
  - that there is continuity of earth bonding.

#### Repairs to sealed components

- During repairs to sealed components, all electrical supplies shall be disconnected prior to any removal of sealed covers, etc. If it is absolutely necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.
- Ensure that by working on electrical components, the casing is not altered in such a way that the level of protection is affected, including damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of glands, etc.
- Ensure that the apparatus is mounted securely.
- Ensure that seals or sealing materials have not degraded to the point that they no longer serve the purpose of preventing the ingress of flammable atmospheres. Replacement parts shall be in accordance with the manufacturer's specifications.

#### Repair to intrinsically safe components

- Do not apply any permanent inductive or capacitance loads to the circuit without ensuring that this will not exceed the permissible voltage and current permitted for the equipment in use.
- Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere.
- Replace components only with parts specified by the manufacturer. Other parts may result in the ignition of refrigerant in the atmosphere from a leak.

#### Cabling

- Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

# Detection of flammable refrigerants Removal and evacuation

- The refrigerant charge shall be recovered into the correct recovery cylinders and the system shall be "flushed" with oxygen free nitrogen (OFN) to render the unit safe. This process may need to be repeated several times.
- Compressed air or oxygen shall not be used for purging refrigerant systems.
- Flushing shall be achieved by breaking the vacuum in the system with OFN and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum. This process shall be repeated until no refrigerant is within the system. When the final OFN charge is used, the system shall be vented down to atmospheric pressure to enable work to take place.
- The vacuum pump is not near to any ignition sources and that ventilation is available at all times.

#### Charging procedures

- Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimise the amount of refrigerant contained in them.
- Cylinders shall be kept upright.
- Ensure that the refrigeration system is earthed prior to charging the system with refrigerant.
- Label the system when charging is complete (if not already).
- Extreme care shall be taken not to overfill the refrigeration system.
- Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas. The system shall be leak-tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.

# **Cautions**

#### **Decommissioning**

- Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail.
- Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of reclaimed refrigerant.
- Electrical power must be available before the task is commenced.
- Become familiar with the equipment and its operation.
- Isolate system electrically.
- Before attempting the procedure, ensure that:
  - mechanical handling equipment is available, if required, for handling refrigerant cylinders;
  - all personal protective equipment is available and being used correctly;
  - the recovery process is supervised at all times by a competent person;
  - recovery equipment and cylinders conform to the appropriate standards.
- Pump down refrigerant system, if possible.
- If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
- Make sure that cylinder is situated on the scales before recovery takes place.
- Start the recovery machine and operate in accordance with manufacturer's instructions.
- Do not overfill cylinders. (No more than 80 % volume liquid charge).
- Do not exceed the maximum working pressure of the cylinder, even temporarily.
- When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
- Recovered refrigerant shall not be charged into another refrigeration system unless it has been cleaned and checked.

#### Labelling

- Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed.
- Ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.

#### Recovery

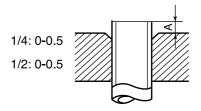
- When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed.
- Ensure that the correct number of cylinders for holding the total system charge are available. All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant).
- Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.
- The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of all appropriate refrigerants.
- A set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leakfree disconnect couplings and in good condition. Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release.
- The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant waste transfer note arranged.
- Do not mix refrigerants in recovery units and especially not in cylinders.
- If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant.
- The evacuation process shall be carried out prior to returning the compressor to the suppliers.
- Only electric heating to the compressor body shall be employed to accelerate this process.

#### 1. Refrigerant Piping Materials

- (1) Thickness of Refrigerant Piping Although the thickness is same as that for HCFC-22 model, as R32 model features higher pressure, be sure to confirm the thickness prior to use.
  - \*Do not use thin pipes (thinner than 0.7 mm).
- (2) Flare's Expansion Pipe
  The projection when the new flare
  tool is used, is as follows. When
  using the conventional flare tool, be
  sure to secure the following projection
  by using a gauge for projection
  adjustment.
  - When using the conventional flare tool, use a gauge for projection adjustment.
- (3) Flare Nut Dimensions
  Along with changes in the expansion
  pipe dimensions, the opposite side
  dimensions of flare nuts whose
  nominal diameter is 1/2 change so
  that different torque wrenches must
  be used.
  - \*Figures in ( ) denote those for HCFC-22.

Nominal diameter	Outside diameter (mm)	Thickness (mm)
1/4	6.35	0.8
3/8	9.52	0.8

Projection "A"(mm) for Flare Tool for R32 (Clutch Type)



Nominal diameter	Opposite Side Dimensions (mm) of Flare Nuts for R32
1/4	17 (17)
3/8	22 (22)

#### 2. Servicing Tools

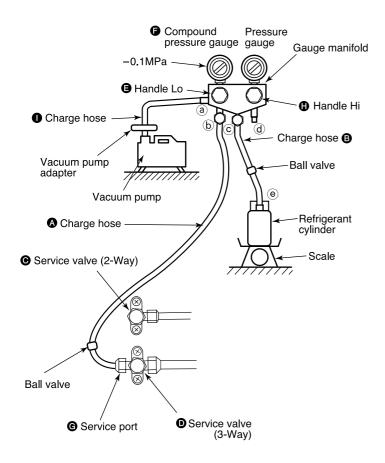
(Changes in the Product and Components)

- In order to prevent any other refrigerant from being charged, R32 model is provided with the outdoor unit whose control valve has a different service port diameter (port size: 7/16 UNF 20 threads per inch).
   → 1/2 UNF 20 threads per inch).
- In order to secure larger pressure resisting strength, flare expansion pipe dimensions and flare nut dimensions have been changed.

#### (New Tools for R32)

New tools for R32	Applicable to HCFC-22 Model	Changes
Gauge manifold	×	As pressure is high, it is impossible to measure by means of conventional gauge. In order to prevent any other refrigerant from being charged, each port diameter has been changed.
Charge hose	×	In order to increase pressure resistance, hose materials and port size have been changed (to 1/2 UNF 20 threads per inch). When purchasing a charge hose, be sure to confirm the port size.
Electronic balance for refrigerant charging	0	As pressure is high and gasification speed is fast, it is difficult to read the indicated value by means of charging cylinder, as air bubbles occur.
Torque wrench	× (nominal diam. 1/2, 5/8)	The opposite side dimensions of flare nuts increase. Incidentally, a common wrench is used for nominal diameters 1/4 and 3/8.
Flare tool (clutch type)	0	By increasing the clamp bar's receiving hole, strengh of spring in the tool has been improved.
Gauge for projection adjustment	_	Used when performing flare processing by means of conventional flare tool.
Vacuum pump adapter	0	Connected to conventional vacuum pump.
Gas leakage detector	×	Exclusive for HFC refrigerant.

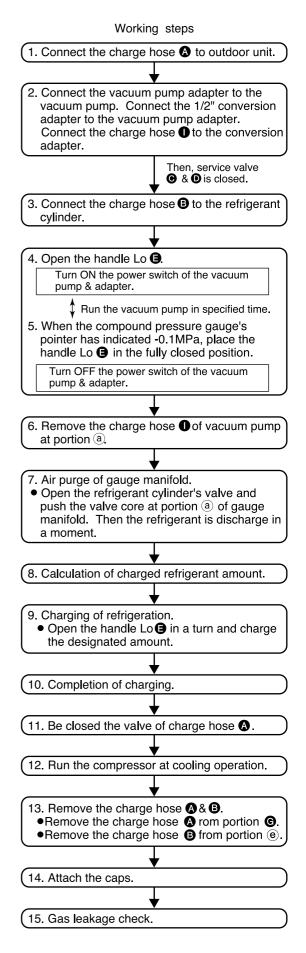
- Incidentally, the "refrigerant cylinder" comes with the refrigerant designation (R32) and protector coating in the U.S.'s ARI specified rose color (ARI color code: PMS 507).
- Also, the "charge port and packing for refrigerant cylinder" require 1/2 UNF 20 threads per inch corresponding to the charge hose's port size.



# **A** CAUTION

- Be sure to use the vacuum pump, vacuum pump adapter and gauge manifold to refer to their instruction manuals beforehand.
- 2. Ascertain that the vacuum pump is filled with oil to the level designated on the oil gauge.
- After closed the ball valve of charge hose, it should be disconnected at service port side and refrigerant cylinder side at first.

Next, after discharging the remained gas in the charge hose by opening the ball valve a little, disconnect it at gauge manifold side. You can prevent from being released the refrigerant suddenly by connecting the ball valve to service port. And you can work with more safety.

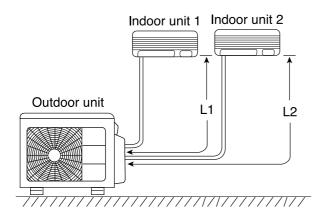


### **RAM-E53N2HAE**

#### **INSTALLATION**

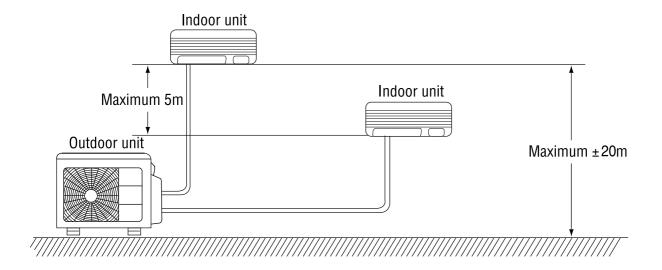
#### PIPE LENGTH

- (1) Total 35m maximum pipe length.
- (2) Minimum piping length for each indoor unit is 3m.
- (3) Maximum piping length for one indoor unit is 25m. Additional charge of refrigerant is not required.



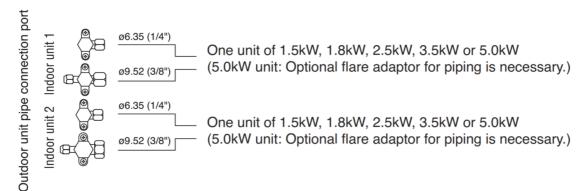
#### HIGHT DIFFERENCE

- (1) Height: maximum ± 20m
- (2) Height difference between indoor units should not be more than 5m.



- To the outdoor unit, up to two indoor units can be connected until the total value of capacity to 8.5kW.
- Make sure to connect to two indoor units.

#### **MODEL RAM-E53N2HAE**

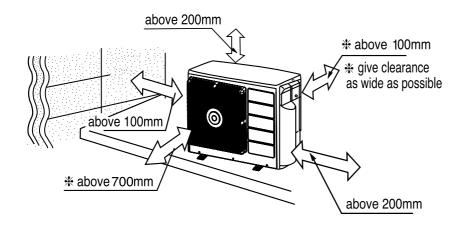


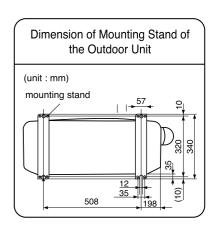
Flare adaptor for piping

The flare adaptor for piping is required depending on combination of indoor units.

 ø9.52(3/8") → ø 12.7 (1/2")
 Parts number TA261D-4 001

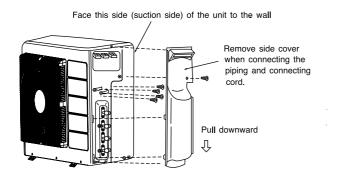
- · Remove the side cover.
- · For installation, refer as shown below.
- The space indicated with a  $\Leftrightarrow$  mark is required to guarantee the air conditioner's performance. Install the airconditioner in a place big enough to provide ample space for servicing and repairs later on.





#### Connecting the pipe

- Install the unit in a stable place to minimize vibrationor noise.
- · After arranging the cord and pipes, secure them inplace.



• Hold the handle of the side cover. Slide down and takeoff the corner hook, then pull. Reverse these stepswhen installing.

- 1. Remove flare nut from service valve.
- 2. Apply refrigerant oil to flare nut sections of servicevalve and pipings.
- 3. Match center of piping to large diameter side service valve and tank assembly, and tighten flarenut first by hand, then securely tighten using torque wrench.
- 4. Perform air purge and gas leak inspection.
- 5. Wrap the insulating material arround side piping using vinyl tape.

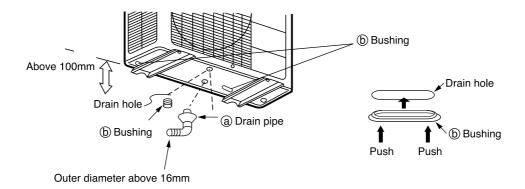
### Condensed water disposal of outdoor unit

- · There is holes on the base of outdoor unit for condensed water to exhaust.
- To lead condensed water to the drain hole, place the outdoor unit on the mounting stand (optional) or on blocks to raise its
  level more than 100mm from the ground surface. Connect the drain pipe as shown in the figure. Cover two other water
  drain holes with the bushings included. (To insall a bushing, push in both ends of the bushing so that it aligns with the drain
  hole.)
- · When connecting the drain pipe, make sure that the bushing does not lift off or deviate from the base.
- · Install the outdoor unit on a stable, flat surface and check to see that the condensed water drains.

#### When Using and Installing in Cold Areas

When the air conditioner is used in low temperature and in snowy conditions, water from the heat exchanger may freeze on the base surface to cause poor drainage. When using the air conditioner in such areas, do not install the bushings. Keep a minimum of 250mm between the drain hole and the ground. When using the drain pipe, consult your sales agent.

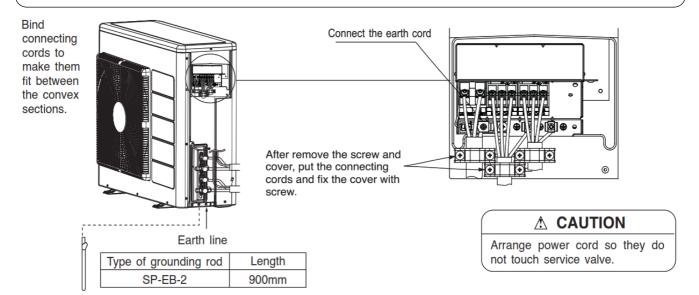
\* For more details, refer to the Installation Manual for Cold Areas.

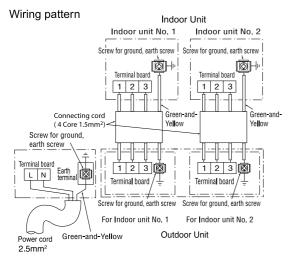


# Connection of the connecting cords and power cord. (Outdoor unit) RAM -E53N2HAE

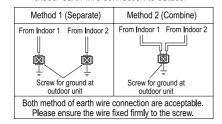
#### **A** WARNING

- Connecting cord should be connected according to Fig.1, that the Indoor unit No. shall match with terminal board No. of Outdoor unit.
- · Be sure to fix the connecting cord with the band as shown below. Otherwise water leakage causes short circuit or faults.





# Fig. 1 Indoor earth wire connection to outdoor



#### **▲** WARNING

# Connection of the power cord and connecting cord



Power cord and

Connecting cord

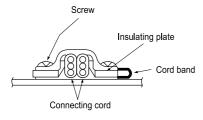
Securely screw in the power cord and connecting cord so that it will not get loose or disconnect.

Tightening torque reference value: 1.2 to 1.6 N•m (12 to 16 kgf•cm) Excessive tightening may damage the interior of the cord requiring replacement.

#### **A** CAUTION

 To prevent a connection error, connecting cords should be bundled and taped to each respective pipe. If connecting cords are mixed with other indoor units, a refrigeration cycle abnormality may occur, causing dripping.

 When putting two connecting cords through the band.



#### ▲ WARNING

- Leave some space in the connecting cord for maintenance purpose and be sure to secure it with the cord band.
- Secure the connecting cord along the coated part of the wire using the cord band. Do not exert pressure on the wire as this may cause overheating or fire.



· Hold the handle of the side cover, slide down and take off the corner hook, then pull. Reverse these steps when installing.

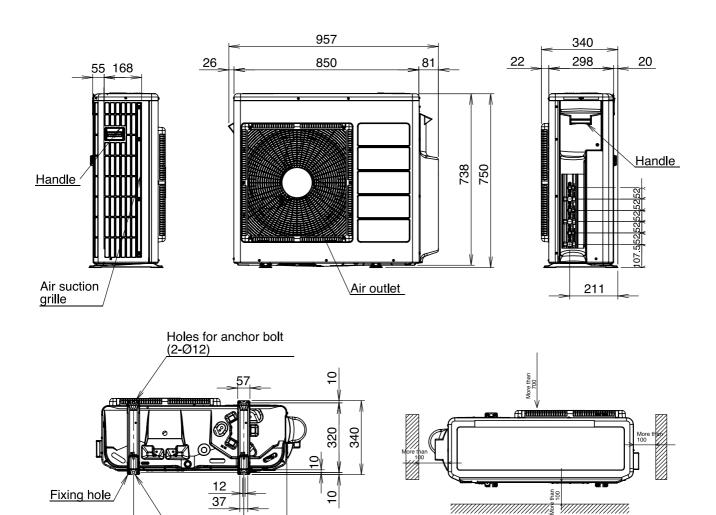
### **CONSTRUCTION AND DIMENSIONAL DIAGRAM**

507

198

Notch for anchor bolt (2-Ø12 Notchs)

## **MODEL RAM-E53N2HAE**



Service space

### MAIN PARTS COMPONENT

## **FAN MOTOR**

Fan Motor Specifications

MODEL			RAM-E53N2HAE
POWER SOURCE			DC: 120 ~ 380V
OUTPUT			47W
CONNECTION			M M M M M M M M M M M M M M M M M M M
RESISTANCE VALUE $(\Omega)$	20°C (68°F)	2M	38.2 ± 3.9

BLU : BLUE YEL : YELLOW BRN : BROWN WHT : WHITE

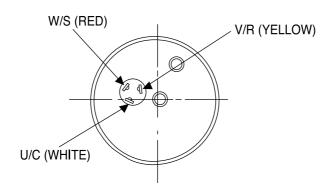
GRY: GRAY ORN: ORANGE GRN: GREEN RED: RED

BLK: BLACK PNK: PINK VIO: VIOLET

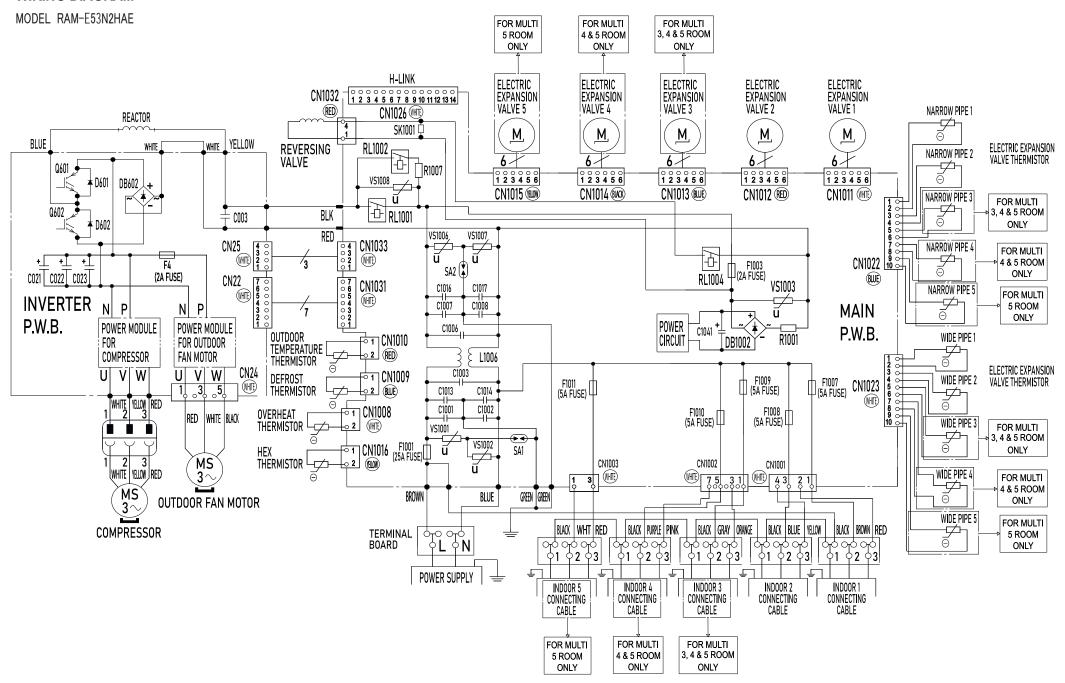
### **COMPRESSOR MOTOR**

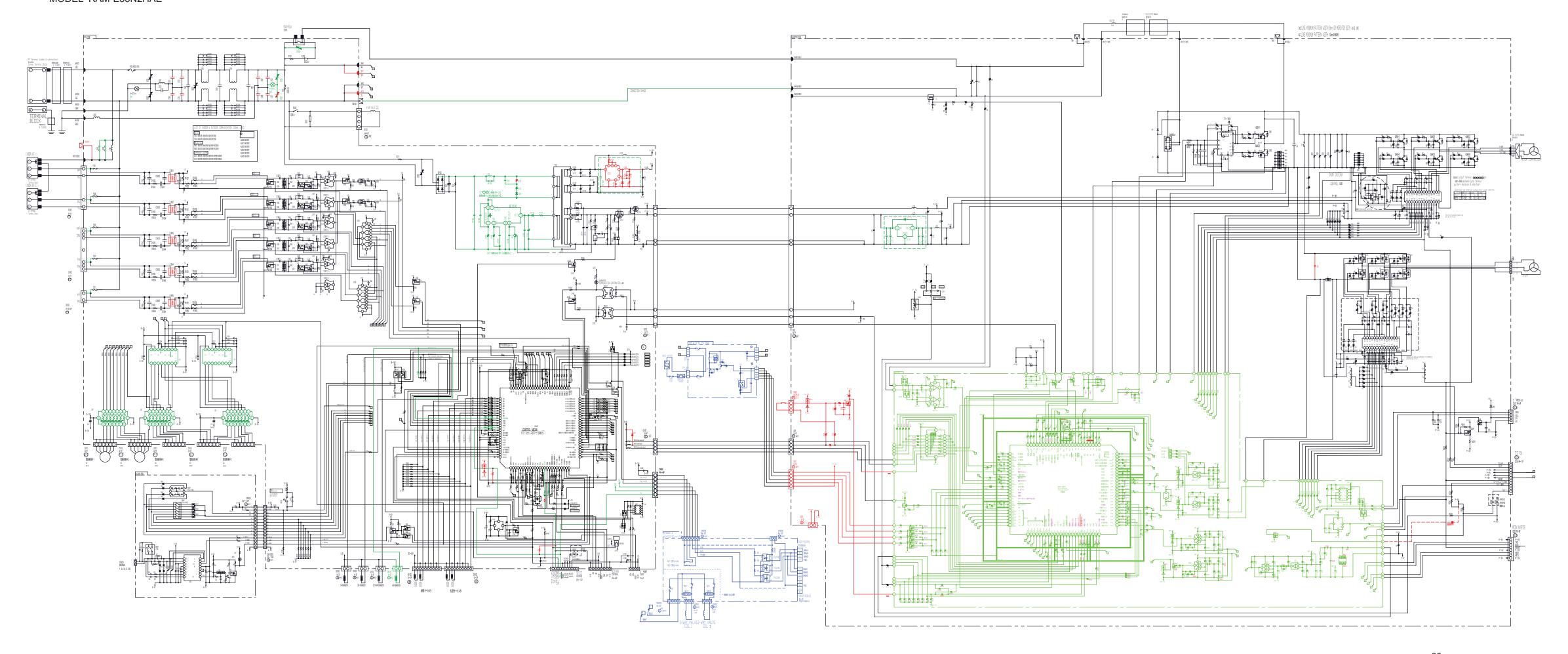
# Compressor Motor Specifications

MODEL			RAM-E53N2HAE
COMPRESSOR MODEL			JX151XK2
PHASE			SINGLE
RATED VOLTAGE			AC 220 ~ 240 V
RATED FREQUENCY			50/60 Hz
POLE NUMBER			4
CONNECTION			WHITE  M  M  YELLOW   RED
RESISTANCE VALUE $(\Omega)$	20°C (68°F)	2M	1.298 ± 7%
TILOIOTAINOE VALUE (\$2)	75°C (167°F)	2M	1.579 ± 7%



### **WIRING DIAGRAM**





# CIRCUIT DIAGRAM MOUNTING PART

MODEL RAM-E53N2HAE

MAIN PCBA (GROUP A: 5 ROOM, GROUP B: 4 ROOM, GROUP C: 3 ROOM, GROUP D: 2 ROOM)

Symbol	DRAWING No.	NAME OF PART	RATING	Model Number	Manufacturer	MOUNT	FORM	PCB	AB	Part No.	A	GRO B		_
BARE PCB	RRZKP587	MULTI-MAIN-PWB	CEW-3		JCH/WH	н		MAIN	Α	$\neg$	0	0	0	t
R1007	RRTA1511	10W-TEIKO	1000.5%,10W	BGR10CN101J	KOA	Н		MAIN	A	6	0	0	0	۲
R1011	RRTA1521	5W-TEIKO	2.20.5%,9W	BGR5CN2R2J	KOA	Н		MAIN	A	7	0	0	0	t
C1003		LE684-MX	0.69 F ACSTOV F-CAPA	1 F684-WX-C3 5 30	OKAYA DENKI	Н		MAIN	A	10	0	0	0	г
C1003 C1006	RRCP2931	LE684-MX	0.68LF AC310V F-CAPA	LE684-MX-C3.5 XL	OKAYA DENKI	H		MAIN	A	10	0	0	0	г
C1015	RRCP2931	LE684-MX	0.69LF.AC310V.F-CAPA	LEGS4-MX-C3.5 XL	OKAYA DENKI	н		MAIN	Δ	10	0	0	0	г
C1041	RRCP3233	D688LB450Z	68uF,450V,KXX3	EKXQ451EMC880WMN3S	MPPON CHEMI-CON	H		MAIN	Ä	16	0	0	0	г
C1824	RRCPP066	LE104-FX	0.1uF.AC310V	LE104-FX3131	OKAYA DENKI	Н		MAIN	Δ	11	0	0	0	F
C1834	RRCPP068	LE104-FX	0.1uE AC310V	LE104-FX3131	OKAYA DENKI	H		MAIN	Δ.	11	0	0.1	0	۲
C1844	RRCPP066	LE104-FX	0.1uF.AC310V	LE104-FX3131	OKAYA DENKI	H		MAIN	Δ.	11	0	0	0	t
C1854	RRCPP068	LE104-FX	0.1uE AC310V	LE104-FX3131	OKAYA DENKI	H		MAIN	Δ.	11	0.1	ō		۰
C1864	RRCPP066	LE104-FX	0.1uF.AC310V	LE104-FX3131	OKAYA DENKI	Н		MAIN	A	11	0	- 1	- 1	۲
D1105	RRFR5854	S21200-F	200V 1.5A	\$2L20LI-5001P12.5	SHINDENGEN	Н		MAIN	Δ.		0	0	0	۰
CB1002	RREB4602	D2SB60A	600V.2A	D25860A-7001	SHINDENGEN	- 1		MAIN			ŏ	ŏ	ŏ	t
074000	DDEACSES	TOTALIPEDEA	Shit Chill Dooletey	TOTALINGSCADID D	TACUIDA			HAR.		-	ō l	ō	ō	۰
C-0022	DOCADOO	TOTALIPEDEA	State Clasife Descripting	TOTALINGICACIO E	POSCURA.			000			ā	ā	-	۲
C1101	RREAP199	STREA161HVD	SWITCHING REGULATOR	STREATG1HVD	Sanken Electric Co., Ltd.	H	DP	MAIN			0	0	0	H
C1121	RREAGIN	NJM23R2D	DODC CONVERTER	NJM2362D	JRC	- 8	DP DP	MAIN	2	20	×		ŏ	۲
PD1101	RREG5766	LTV-817CHA	DGDC CONVERTER	LTV-817-0	ITE-ON	Ĥ	UP	MAIN			ö	ŏ	ö	H
		TV-STITTHA					-					0	-	۰
PO1102 PD1811	RREG5766 RREG5268	LTY-817CHA	+	LTV-817-0 TV-817-0	LITE-ON LITE-ON			MAIN	-	2	Š	8	00	F
PQ1811 PQ1812	RREGS766	LTV-817CHA	ł	LTV-817-D	LITE-ON	H		MAIN		22	v	0	0	۲
		RE1201	0.tuF,1200.279/ms	RE1201-C-PBF		-		MAIN	A	6	8 1	8	8	۲
SK1001	RRCT2488	COLLOTO ME TET	W.TUP, LOAL 2/5VITS	REIZUIKUPBE	OKAYA DENKI									
F1001 F1003	RRPMPC65	GDU-25FUSE-TSP	250V.25A		MPPON SEISEN CABLE	- 8		MAIN	A	28	×	00	00	F
F 1003	RRPN2875	FBR-SAFUSE	2A.250V	FCU 250V 2A (EM) 8H17	MPPON SEISEN CABLE MPPON SEISEN CABLE	H		MAIN		29	v	0	v	۰
F1007	RRPN3369	HSR-SAPUSE	5A,250V	FBR 250V 5A (EM)	MPPON SEISEN CABLE MPPON SEISEN CABLE				A	30	0		0	L
F1008	RRPN3309	FBR-SAFUSE	5A.250V	FBR 250V SA (EM)		Н		MAIN	Α.	8	0	0	٥	L
F1009	RRP43369	FBR-SAFUSE	5A.2507	FBR 250Y 5A (EM)	NIPPON SEISEN CABLE	Н		MAIN	Α.	30	U	0	0	
F1010 F1011	RRPN3399	FER-SAFUSE	5A.250V	FBR 250Y 5A (EM)	MPPON SEISEN CABLE	Н	_	MAIN	Α.	30	0	0		
F1011	RRPN3389	FBR-SAFUSE	5A.2507	FBR 250Y 5A (EM)	INIPPON SEISEN CABLE	Н	-	MAIN	A	30	0			L
RL1001	RRRB1300	G4A-RELAY	AC250V.20A.DC12V	G4A-1A-E DC12	OMRON	Н		MAIN	Α	33	0	0	0	F
RL1002	RRRB1330	FTR-F3-RY	AC250V.3A.DC12V	FTR-F3AA012E	FUJITSU COMPONENT	Н		MAIN		34			0	L
RL1004	RRRB1330	FTR-F3-RY	AC250V,3A,DC12V	FTR-F3AA012E	FUJITSU COMPONENT	Н		MAIN	A	34	0	0	0	
RU1001 ITAB COVER	RTRF1096	STC-250-23	PVC.BLUE	STC-250-23	SHINAGAWA SHOKO	н		MAIN				0	0	
L1006	RRMHP102	NF-COIL-F13U	1.5mH, 20A	NF-COIL-F13U	QINGDAD YUNLU ENERGY TECHNOLOGY CO., LTD	Н		MAIN	A	38	0	0	0	
L1008	RRMH3728	HC-REACTOR	3.6mH±15%	RRM-03728-S	TABUCHI	Н		MAIN					0	
L1100						Н		MAIN						
L1106	RRMH3983	COIL-331K	330uH±10%	RCH108NP-331KS10730001-B25	Sumida Electric	H		MAIN	A	49	0	0	0	t
L1801	RRMFP166	IF-TRANS		UU9LF	SUMDA	Н		MAIN		41	0	0	0	
L1802	RRMFP166	IF-TRANS		UUSLF	SUMDA	Н		MAIN	A	41	0	0	0	L
L1803	RRMFP166	IF-TRANS		UU9LF	SUMDA	Н		MAIN			0	0	0	
L1804	RRMFP166	F-TRANS		UUSLF	SUMDA	H	-	MAIN		41		0		
L1805	RRMFP166	IF-TRANS		UU9LF	SUMDA	н		MAIN	A	41	0			L
T1101	RRMF4327	SW-TRANS-TAM		C-A11-00365B	TAMURA	Н	-	MAIN			0	0	0	Г
SW1301	RRSG1905	SLDE-SW	DC12V.0.1A		ALPS ELECTRIC CO., LTD	Н		MAIN	A	45	0	0	0	F
CN1001	RRPAP053	NV-POST-4P	WHITE	B04P-NV (LF) (SN)	ST	Н	-	MAIN		48		0		г
CN1002	RRPA1336	VH-POST-4P	WHITE	B4P7-VHILFI(SN)	JST	Н	-	MAIN	A	49	0	0	0	
CN1003	RRPA1SS4	VH-POST-2P	WHITE	ROPS-VHLEVSNI	JST	Н		MAIN		50		- 1	- 1	г
CN1005	RRPB2660	PH-POST11P	WHITE	B11B-PH-K-S/LFI/SNI	UST	Н		MAIN	A	51	0	0	0	F
CN1006	RRPR2f87	PH-POST-RP	MHITE	BRB-PH-K-S1 FYSNI	JST	н		MAIN	A	52	0	0	0	г
CN1007	RRPA2675	PH-POST-4P	WHITE	B4B-PH-K-S(LF)(SN)	JST	Н		MAIN		53		0	0	Г
CN1008	RRPA2467	XA-POST2PW	WHITE	B02B-XASK-1NLFYSNI	JST	H		MAIN	A	54	0		0	Г
CN1009	RRPA2480	XA-POST2PA	BLUE	BOZB-XAEK-INLEVSNI	ST .	- 1	-	MAIN	A	55	0 1	0	0	г
CN1010	RRPA2469	XA-POST2PR XA-POST3P	RED	B02B-XARK-1N(LF)(SN)	JST	H		MAIN	Δ	56	0	0	ō	т
CN1010 CN1011	RRPB2425		WHITE	B08B-XASK-1-A	JST	- 1		MAIN	Â	57	8	8	ŏ	F
CN1012	RRP82615	XA-POST-EP	RED	BOSB-XARK-TILFI(SN)	JST	H		MAIN	Δ	58	0	0	ō	۰
CN1013	RRP82616	XA-POST-6P	BLUE	BOSB-XAEK-10 FYSNI	ST	H H		MAIN	Â	59	ŏ	6	ŏ	H
CN1014	RRPB2614	XA-POST-EP	BLACK	BOSB-XAKK-1(LF)(SN)	IST	H		MAIN			ŏ	ŏ	Ť	H
CN1015	RRPR2617	XA-POST-FP	YELLOW	BOSB-XAYK-10 FISNI	ST	H	_	MAIN			ŏ	$\overline{\cdot}$	⇁ᅥ	
CN1016	RRPAP287	B02B-XAYK-1N	YELLOW	BU28-XAYK-1(LF)(SN)	IST .	1 8		MAIN		62	ŏ	0	0	H
CN1022	RRPBP052	B10B-XAEK-1	RUE	B10B-XAEK-1-A	ST	H		MAIN	A	63	ō	ō	ŏ	۲
CN1023	RRPSP051	B10B-XASK-1	WHITE	B10B-XASK-1-A	St.	1 8	-	MAIN	2	22	8 1	ŏ	ŏ	t
CN1026	RRP82729	CZ-POST14P	MHITE	B14B-CZHK-B-1(LF)(SN)(V)	ST	H		MAIN				ŏ	ŏ	۰
CN1031	RRPR2426	XA-POST-7P	MARITE	BITS-XASK-1-AU PISM	RT		-	MAIN		8	ŏ	8 1	ŏ	F
CN1032	RRPA2462	VH-POST-2P	RED	B2P4-VH-RILEVSNI	LST	H		MAIN	-2-	67	ö	Ö	ö	t
CN1032 CN1033	RRPA2663	XA-POST-4P	WHITE	B04B-XASK-10,F(SN)	UST	H		MAIN		68	ö	0	0	۲
		ATT WO INTE	mnit	BARBANSKI KULTON	100			mAIN				-		
CNSS		100000000000000000000000000000000000000	house s		t	Н	-	MAIN						L
WH1001	DD0009030A	#CORD-AS	WWG12, Brown, Blue	DD0009330A	JCH-WH	н		MAIN			٥	0	٥	L
WH1002	DD0006550A	#CORD-AS	AWG12, Brown, Blue	DD00000000A	JCH-WH	Н	-	MAIN	A	71	0	0	0	F
WH1034	DD0006067A	#G-CORD-AS	AWG20, Green	DD0009097A	JCH-WH	Н		MAIN	A	72	0	0	0	F
WH1006	DD3009097A	WG-CORD-AS	AWG20, Green	DD3009097A	JCH-WH	Н		MAIN		72		0	0	
WH1013 5R	DD0009100A	#5RCORD-AS	AWG16, Black	DD0009100A	JCH-WH	Н		MAIN		73			. ]	H
MH1013 4R	DD0009101A	WARCORD-AS	AWG16, Black	DD0009101A	JCH-WH	Н		MAIN		74		0		
WH1013 3R	DD0009102A	#SRCORD-AS	AWG16, Black	DD0009102A	JCH-WH	Н		MAIN	A	75	∸	⋽	0	
WH1013 2R	DD0009103A	W2RCORD-AS	AWG16, Black	DD0009103A	JCH-WH	Н		MAIN	A	76	-	•		t
								MAIN					- 1	
WH61								MAIN						

Rev Sented DRAWNING No. NAME OF PART RATING Model Number Manufacturer MOUNT FORM PCS As Part GROUP	Rey Symbol DRAWNO No. NAME OF PART RATING Model Number Manufacturer MOUNT FORM POR AND Part GROUP	Nov Symbol GRANNON NO. NAME OF PART BATTING Model Number Manufacturer MOUNT FORM PCS Age Part GROUP Re-	y Switod GRAWING No. NAME OF PART RATING Model Number Manufacturer MODINT FORM PCB Last Part GROUP
No.   A   B   C	The Synthe Dissamily to   MANE OF PART   NATING   Made Number   Manufacture   MACON   FORD   FOR   60   60   60   60   60   60   60   6	Spin   Deferring   Spin   Deferring   Spin	
R102 T1048T2H T1048T2H 1MD,5%,12W RCRSC17824051 KOA A - MAN A 46 0 0 0 0 0 R105 R105 R1598T2H R1388T2H 1525%,12W M0512C152A1R51 KOA A - MAN A 44 0 0 0 0	D R1400 RRTC15272 AF0022R-07HL 19LD5H, 1/16W1,1005 AF0022R-07HL YAGEO C 1005 MAIN A   22 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	CHIT ANDATOREZ MANUSTROSZ MANUSTR	
R1106 M3303ATZZJ M3308ATZZJ 330LQ,5%,119W, 9506 RK7381JTT033AJ KOA C 9508 MAIN A 30 D O O D R1107 M10096TZAJ M10096TZAJ 10Q,5%,18W,2012 RK7389ATTD100J KOA C 2012 MAIN B 36 D O D	R1492 RRTC15727 AF0402UR-071KL 140_5%, 116W,1005 AF0402UR-071KL YAGEO C 1005 MANN A 2 23 0 0 0 0 0 0 R4493	C1413 A1042T016Z A1042	C1034   RREAP234   TBC60003AFWG   7th DMOS translator army   TBC60003AFWG/Z;FKZ   TOSHIBA   C   P.SOP   MAN   A   99   O   O   O   O   O   O   O   O
R1110 M1001ATZZJ M001ATZZJ 14Q_5%_110W_1608 RK7381_JITD102J KQA C 1608 MAN A 39 0 0 0 0 R1111 MCZ01ATZZJ MCZ01ATZZJ 22kQ_5%_110W_1608 9K7381_JITD22ZJ KQA C 1608 MAN A 32 0 0 0 0	R1494 RRTC15737 AF0402JR40VRL 00,5%,1/16W,1005 AF0402JR40VRL YAGEO C 1005 MAIN A 25 0 0 0 0 0 0 R1503 - C 1005 MAIN A	ModREFORE   ModREFORE   MODREFORE   MODREFORE   MODREFORE   MALBON   C   1000   MANN   A   54   0   0   0   0   0   0   0   0   0	C1036   RREAP234   TED62003AFWG
R1112 M0300ATZZF M0300ATZZF 33ML (N, 11/10V1,1608 99/37H).TTD0330ZF KCA C 1608 MANN 8 31 0 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1	R1508   -     C 1005 MAIN A	C511 B A102270502 A002270162 0022590478027 0022590478027 0022590478027 0022590478027 0022590478027 00225904780279027 00225904780279027 00225904780279027 00225904780279027 00225904780279027 00225904780279027 00225904780279027902790279027902790279027902790279	C4491   MREAPYS   REFMENDEEP   JEGFFYDD S   REFMENDEEPPED   REMESAS   C   MAIN   A 191   O   O   O   O   O   O   O   O   O
R1115 M1000AT22F M1000AT22F 15NO_1%_110W_1608 R673HJTTD1002F KOA C 1608 MAIN B 38 0 0 0 0 R1117 - A - MAIN A	D R1854 RRTC15734 AF0402.R-0710KL 1040_5%,116W,1005 AF0402.R-0710KL YAGEO C 1005 MANN A 21 0 0 0 0 0 R18515 RRTC15727 AF0402.R-071KL 1040_5%,116W,1005 AF0402.R-071KL YAGEO C 1005 MANN A 22 0 0 0 0 0	C1420 A1022T050Z A022T050Z 9402810250CT WALSN C 1005 MANN A 51 0 0 0 0 0 C1421 A1022T050Z 41022T050Z 3402810250CCT WALSN C 1005 MANN A 51 0 0 0 0 0	VS1002 SRELPS11 87221452221K951V87
R1120 M0002ATZZJ M0002ATZZJ 20M_5/N,1/10W,1608 RK7381JTT0203J KOA C 1608 MAN A 33 0 0 0 0 R1121 M1003ATZZJ M1003ATZZJ 100M_5/N,1/10W,1608 RK7381JTT010AJ KOA C 1608 MAN A 37 0 0 0 0	R1816 BRTC15734 AF0402JR-0710KL 10KQ_5%, 1/16W, 1005 AF0402JR-0710KL YAGEO C 1005 MAIN A 21 0 0 0 0 0 0 R1817 BRTC15729 AF0402JR-072KL 2KQ_5%, 1/16W, 1005 AF0402JR-072KL YAGEO C 1005 MAIN A 17 0 0 0 0	CH22 A1022T0502 A1022T0502 A1022T0502 MAUSIN C 1005 MAN A 51 0 0 0 0 C C C C C C C C C C C C C C C	
PITTO	R1820	C-125 A1042T016Z A1042T016Z 9422E194K160CT N0ALSIN C 1005 MANN A 54 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	VS1007 SREEP311 872214522145971987 S144230E2019MSS TDK P - MANN A 118 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
RE1126   RETCE-1812   MPERICENCY   TRACE_SIS, 1998; (105)   APPAREZ REFORMON,   YALGED   C   1005   MARN   A   20   0   0   0   0   0   0   0   0	REST   RECTIFIED   PROGRAMMENT   COLOR VINES   PROGRAMMENT   PROGRAMMENT   COLOR VINES   COLOR VIN	1421   1427/1970	562 9R32F932 RA-2430CV7-Y5 5400-220% PA-2430CV7-Y5) DKNYA DENO R - MANI A 107 0 0 0 0 0 F1007 (FUSE CLIP) R8PH3039 RUSE-CLIP FCSTR. LITTELFUSE R - MANI A 102 2 2 2 2 2
NISS   ADDITIONAL SUBSTITUTE   ADDITIONAL	R1825 M0000ATZZJ M0000ATZZJ 00.5%,1/10W,1408 RK73Z1JTTD K0A C 1468 MAIN A 40 0 0 0 0 0 0 0 R1826 M9109CT28F M9109CT28F B10,1%,14W,3216 RK73H28TTD91R0F K0A C 3216 MAIN B 26 0 0 0 0 0	Column   C	F1008 (FUSE CLIP) RRPM3094 FUSE CLIP FCS1FL LITTELFUSE R - MAIN A 106 2 2 2 2 2 F1009 (FUSE CLIP) RRPM3094 FUSE CLIP FCS1FL LITTELFUSE R - MAIN A 106 2 2 2 2 2 -
R1131 RRTC15734 AFFACOZIR-G7190K. 1900.5%, 1/1904.1005 AFFACOZIR-G7190K. 1900.5%, 1/1904.1005 C 5005 MANN A 21 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RRIE27 RRTC15727 AFA022R-ROTINEL   NGL.514, V198W, V105 AFA022R-ROTINEL   YAGED   C   1005   MANN  A   23   O   O   O   O   O   O   O   O   O	MALES   MARCHINEL   MALESTANCE   MALESTANCE   MALES	F1000 (FUSE CLIP) RRPM0094 PUSE CLIP FCS1FL LITTELFUSE R - MANN A 1 106 2 2 2 F1011 FUSE CLIP) RRPM0094 PUSE CLIP FCS1FL LITTELFUSE R - MANN A 1 106 2 2
R1300 BRTC15734 AF9002/R4710ML 1900_SV,1190V,1005 AF9042/R4710KL YAGED C 1005 MANN A 21 0 0 0 0 R1301 BRTC15734 AF9002/R4710ML 1900_SV,1190V,1005 AF9042/R4710KL YAGED C 1005 MANN A 21 0 0 0 0	PRISES   PRINCE   P	CH481 ANDEXIDIDE_MINISTRUCTURE_MINISTRUCTU	Collections/Speciality   Collections/Special
R1307 BRTC15714 AF0405FR-077K1SL 7.15kQ,1%,115W,905 AF0402FR-077K1SL YAGED C 1005 MAIN A 6 0 0 0 0 R1308 BRTC15714 AF0405FR-077K1SL 7.15kQ,1%,115W,9005 AF0402FR-077K1SL YAGED C 1005 MAIN A 6 0 0 0 0	R1832 M18008T2AJ M18008T2AJ 1800_5%,18W_2012 RXCJ82ATTD181J KOA C 2012 MANN B 35 0 0 0 0 0 R1833 M2001AT2ZJ M2001AT2ZJ M205%,19W_10W_1608 RXCJ82ATTD182J KOA C 1608 MANN B 34 0 0 0 0 0	\$400,000,000   \$1,000,000   \$1,000,000   \$1,000	O1103   RREGS491 25C2411   32V.500mA   25C2411K T145R   ROHM   C   - MANN A   120   O   O   O   O   O   O   O   O   O
R1310 RRTC15727 AFDM22/R-071KL 140_5%,116W,1005 AFDM22/R-071KL YAGED C 1005 MANN A 23 0 0 0 0 R1313 RRTC15727 AFDM22/R-071KL 140_5%,116W,1005 AFDM22/R-071KL YAGED C 1005 MANN A 23 0 0 0 0	0 R1834 DA7958T2HJ DA7958T2HJ 470,5%, 12W CFB1/CT52A470J KOA A - MAIN A 41 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	C1485 A1011T0S0Z A1011T0S0Z A1011T0S0Z MALSIN C 1005 MAIN A 50 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Q1302   RREG4883   DTA114EETL   50V,50%A (00,0100)   DTA114EETL   ROHM   C - MAN A   122   O   O   O   O   O   O   O   O   O
R1314 RRTC15277 AFW002.R47HL HLD.5H,119H.1005 AFM023.R47HL YAGEO C 1005 MAN A 23 0 0 0 0 R1315 RRTC15277 AFW002.R47HL HLD.5H,119H.1005 AFM023.R47HL YAGEO C 1005 MAN A 23 0 0 0 0 R1315 RRTC15277 AFW002.R47HL HLD.5H,119H.1005 AFM023.R47HL YAGEO C 1005 MAN A 23 0 0 0 0 R1315 RRTC15277 AFW002.R47HL HLD.5H,119H.1005 AFM023.R47HL YAGEO C 1005 MAN A 23 0 0 0 0 R1315 RRTC15277 AFW002.R47HL HLD.5H,119H.1005 AFM023.R47HL YAGEO C 1005 MAN A 23 0 0 0 0 0 R1315 RRTC15277 AFW002.R47HL HLD.5H,119H.1005 AFM023.R47HL YAGEO C 1005 MAN A 23 0 0 0 0 R1315 RRTC15277 AFW002.R47HL HLD.5H,119H.1005 AFM023.R47HL YAGEO C 1005 MAN A 23 0 0 0 0 R1315 RRTC15277 AFW002.R47HL HLD.5H,119H.1005 AFM023.R47HL YAGEO C 1005 MAN A 23 0 0 0 0 R1315 RRTC15277 AFW002.R47HL HLD.5H,119H.1005 AFM023.R47HL YAGEO C 1005 MAN A 23 0 0 0 0 R1315 RRTC15277 AFW002.R47HL HLD.5H,119H.1005 AFW0023.R47HL YAGEO C 1005 MAN A 23 0 0 0 0 0 R1315 RRTC15277 AFW0023.R47HL HLD.5H,119H.1005 AFW0023.R47HL YAGEO C 1005 MAN A 23 0 0 0 0 R1315 RRTC15277 AFW0023.R47HL HLD.5H,119H.1005 AFW0023.R47HL YAGEO C 1005 MAN A 23 0 0 0 0 R1315 RRTC15277 AFW0023.R47HL HLD.5H,119H.1005 AFW0023.R47HL YAGEO C 1005 MAN A 23 0 0 0 0 R1315 RRTC15277 AFW0023.R47HL YAGEO C 1005 MAN A 23 0 0 0 0 R1315 RRTC15277 AFW0023.R47HL YAGEO C 1005 MAN A 23 0 0 0 0 R1315 RRTC15277 AFW0023.R47HL YAGEO C 1005 MAN A 23 0 0 0 0 R1315 RRTC15277 AFW0023.R47HL YAGEO C 1005 MAN A 23 0 0 0 0 R1315 RRTC15277 AFW0023.R47HL YAGEO C 1005 MAN A 23 0 0 0 0 R1315 RRTC15277 AFW0023.R47HL YAGEO C 1005 MAN A 23 0 0 0 0 R1315 RRTC15277 AFW0023.R47HL YAGEO C 1005 MAN A 23 0 0 0 0 0 R1315 RRTC15277 AFW0023.R47HL YAGEO C 1005 MAN A 23 0 0 0 0 0 R1315 RRTC15277 AFW0023.R47HL YAGEO C 1005 MAN A 23 0 0 0 0 0 R1315 RRTC15277 AFW0023.R47HL YAGEO C 1005 MAN A 23 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	R1836 M91905CT38F M91905CT38F 910.1%, 1MW.2216 902794STT09190F MCA C 2216 MMMN B 26 0 0 0 0 0 0   0   0   0   0   0   0	C1501 BRCPP0211 ERSIEMZ21F129971 220x2-29V ERSIEMZ21F12P907 AUSHI R . MANN A 70 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	01952 REGGARZ DTC144ETL 50V.50m.4.0NL0100.0 DTC144EETL ROHM C - MAN A 117 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
R1317 BRTC15727 AF0402/R-071NL 140_5%,116W,1005 AF0402/R-071NL YAGEO C 1005 MAIN A 2 2 0 0 0 0 R1322 RRTC15733 AF0402/R-075K1L 5.160_5%,116W,1005 AF0402/R-075K1L YAGEO C 1005 MAIN A 8 0 0 0 0	RRIESSS RRTC161983 AF040267R.0710KS2 93.500,1%,1198W;1035 AF040267R.0710KS2 YAGEO C 1105 MAIN A 19 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	C1506 A4011T0502 A4011T0502 A4011T0502 A4011T0502 D4028V001350CT WALSIN C 1005 MANN A 50 0 0 0 0 - C1507 A4011T0502 A4011T0502 A4011T0502 D4028V001350CT WALSIN C 1005 MANN A 50 0 0 0 0 -	Q1482     SREG4883   D7A114EETL
R1323 RRTC15733 AFG4021R-075K1L 5.Nd_5N,1/16W,005 AFG4022R-075K1L YAGEO C 1005 MAN A 8 0 0 0 0 R132A RRTC15733 AFG4021R-075K1L 5.Nd_5N,1/16W,005 AFG4022R-075K1L YAGEO C 1005 MAN A 8 0 0 0 0	R1841 M6800CT2BJ M6800	C1566 A101170502 A101170502 D101170502 MIZENIO1300CT WALSIN C 1005 MAN A 50 0 0 0 0 - C1569 A101170502 A101170502 MIZENIO1300CT WALSIN C 1005 MAN A 50 0 0 0 0 -	21503 - C - MAN A
Program		C1510   A10470162   M0427062   M0425064   M04250   M042	D1901   RRECARR3   DTA114EETL   SOV.500A.000/1902   DTA114EETL   ROMM   C   MANN A 122   O   O   O   O
1331   87C16199   AF000FR-0720L   20.11, 1161/1100   AF0402FR-0720L   YAGEO   C 1002   MANN A 8 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	MISSES   MOUGRAIZZE   MOUGRAIZZE   MOUGRAIZZE   MOUSENIZET   MOUSENI	Chicago   Marin   House   Marin   House   Marin   House   Marin   House   Ho	27833   REGISTAR   R.CSSTSSINK   SW1/SHAM, RAZUM-WW   CERSS-SURVINNH   REC   C   SU1-23   MWN   A   179   O   O   O   O
R132 RRTCH156 AFGREFATZEL Sch.1%, 1988 1005 AFGREFATZEL NAGEO C 1055 MAN A 10 0 0 0 0 1033 RRTCH156 AFGREFATZEL NAGEO C 1055 MAN A 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	R1548   RRTC15716   AF0402FR-0710KL   10KQ,1%,116W,1005   AF0402FR-0710KL   VAGEO   C   1005   MANN A   22   O   O   O   O   O   O   O   O	CHR   CARSTROME	01805 RREG-8883 0TA114EETL 50V-50MA_10M_010MQ DTA114EETL ROHM C - MARN A 122 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Description   Proceedings	R1850 D47035T2EJ D47035T2EJ A704D_5%, 14W CFW4CT52A474J KOA A - MAN A 42 0 0 0	C1823 RRCP3450 SF2D183K 0.016sF50VF-CAPA SF2D183KTV RUBYCON R - MAN A 67 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	01822 RREGS137 DTC123YE SDV,000mA_23MC19MC DTC123YE TL ROHM C - MANN A 158 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
R1337 SRTC16198 AFFMORFN-072ML 20L1;15;176W1,1005 AFFM02FR-072ML YALGED C 1005 IMANN A 18 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	PRISS2 MISSORIEZA MISSORIEZA SISSUS/SILSMI, SONZOEZ ROZSZATILITEST KOA C 2012 MARIN B 35 0 0 0	CHES   ADSTRUCT   AD	D1824   RREGS197   DTC123YE   S9V,100mA,2 S6/01960   DTC123YE TL   ROMM   C - MANN A   118   D   D   D   C
PRISS   STRICTS-1988   PRISSESS-2022.   Dot. 15, 1698   1050   C   PRISSES   PRISSES   C   PRISSES	R1855   M0000ATZZJ   M000ATZZJ   M000ATZ	C1831 A2256T050Z A2256T050Z D50382239500CT WALSN C 1608 MAN A 57 0 0 0 0 C C1832 GRCPP046 CS45 E204472M-VKA CS45 E204472M-VKA T0X P - MAN A 75 0 0 0 0 0	O1828   RREG4883   O7A114EETL   -50V,-50mA,10kO1900   O7A114EETL   ROHM   C - MANN A 122 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
R1866 RRTC15734 AF0402.R-0710KL 10KD_5%,1198W,1005 AF0402.R-0710KL YAGEO C 1005 MAN A 21 0 0 0 0 R1862 RRTC15734 AF0402.R-0710KL 10KD_5%,1196W,1005 AF0402.R-0710KL YAGEO C 1005 MAN A 21 0 0 0 0	R1857 RRTC15727 AF9402JR-071KL 14Q_5/N, N16W, 1005 AF0402JR-071KL YAGEO C 1005 MANN A 23 0 0 0 0 0 0 R1858 RRTC15716 AF0402FR-0710ML 10ALD 11N, N16W, 1005 AF0402FR-0710ML YAGEO C 1005 MANN A 22 0 0 0 0 0	C1833 RRCP3460 60F3D183K 0.018JF_50V_F-CAPA 50F2D183KTV RUBYCON R - MANN A 67 0 0 0 0 0 C1836 A2236T050Z A2236T050Z A2236T050Z A2236T050Z A2236T050Z	21830   RREG4883   DTA114EETL   50V, 50m4, 10M2/10M2   DTA114EETL   ROHM   C - MAIN A   122   O   O   O   O
R1563 RRTC15722 AFFMCZIR.CP100RL 1000.5%,1169Y.1005 AFFMCZIR.CP100RL YAGED C 1005 MANN A 24 0 0 0 0 0 R1584 RRTC15722 AFFMCZIR.CP100RL 1000.5%,1169Y.1005 AFFMCZIR.CP100RL YAGED C 1005 MANN A 24 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	R1899   RRTCH1919   AFF0402FR-0710KS  19.50.7   N.1901/1005   AFF0402FR-0710KS  YAGEO C 1005   MANN A 1 91 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	\$100 - \$1	01833   SREG6190   DTODMEEB   \$90,500A,500A7040   DTODMEEBTL   ROHM   C - MANN A   121   0   0   0   0   0   0   0   0   0
RTIGS - BRTC1572 AFPAGZ:R4710RE 1 100.5% 1116M;1005 AFPAGZ:R4710RE 1 140ED C 1005 MAN A 24 0 0 0 0 0 R156F BRTC15722 AFPAGZ:R4710RE 1 100.5% 1116M;1005 AFPAGZ:R4710RE 1 140ED C 1005 MAN A 24 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1800.581   1800.5817AJ   1800.5817AJ   1800.581,18W.0102   1800.582ATTD181J   180A   C 2012   180M B 35 0   1805.5817AJ   1800.5817AJ		01836   RREGISTO   DTODHEEB   SUI,SINA,100,010,00   DTODHEEBTL   ROHM   C - MAN A   121   O   O   O   O
R1888 RRTC15722 AF0402/R-07100RL 1000_5%,1198W,1005 AF0402/R-07100RL YAGEO C 1005 MAN A 24 0 0 0 0 R1889 RRTC15722 AF0402/R-07100RL 1000_5%,1198W,1005 AF0402/R-07100RL YAGEO C 1005 MAN A 24 0 0 0 0	R1864 D47095T2HJ D47095T2HJ 470,5%,12W CF810CT52A470J KDA A - MAN A 41 0	C1843 RRCP3460 S0F20183K 0.0184F,50V.F-CAPA S0F20183KTV RUBYCON R - MANN A 67 0 0 0 0 - C1846 A2236T050Z A2236T050Z A2236T050Z 2000 A 67 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	L1001 JUMPER JUMPER A - MAIN A 125 0 0 0 0 0 L 1002 JUMPER JUMPER A - MAIN A 125 0 0 0 0 0
R1370   RRTC15722   AFPAGGIR, G710GRL   1000.5%, 119W, 1005   AFPAGGIR, A74GEO		C1847   A1046TOSCZ   A1046TOSCZ   MALSIN   C 1608   MANN   B 15 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1004
R1373 BRTC15722 AFPA02JR47100RL 1000_5N_1196W_1005 AFPA02JR-07100RL 1406ED C 1005 MANN A 24 0 0 0 0 R1374 BRTC15722 AFPA02JR-07100RL 1000_5N_1196W_1005 AFPA02JR-07100RL 1406ED C 1005 MANN A 24 0 0 0 0	R1869   RRTC16193   AFP0402FR-077K1S;   10.50,0.1%,179M,005   AFP040FR-077K1S;   YAGEO   C   1005   MAIN   A   19   0   0   0   0   0   0   0   0   0	CHAP   ACCOUNTS   AC	1108
R1375 RRTC15722 AF0402,R-07100RL 1000L5N, 1160V,1005 AF0402,R-07100RL YAGED C 1005 MAIN A 24 0 0 0 0 R1379 RRTC15727 AF0402,R-071NL 110,5%, 1160V,1005 AF0402,R-071NL YAGED C 1005 MAIN A 23 0 0 0 0	R1882 RRTC15716 AF0402FR.0710KL 10k0_11%,116W,1005 AF0402FR.0710KL YAGEO C 1005 MAN A 22 0 0 0 0 0 0 0 181883 RRTC15729 AF0402LR.072KL 2k0_5%,116W,1005 AF0402LR.072KL YAGEO C 1005 MAN A 17 0 0 0 0 0	C1853 RRCP3480 S0F20183K 0.018uF,50V,F.CAPA S0F20183KTV RUBYCON R - MAIN A 67 0 0 0 C1856 42236T050Z 42236T050Z 50F20183KTV RUBYCON R - MAIN A 67 0 0 0 0 0	L1822 C - MANN A
R1380 RRTC15737 MFW022,R-0719M, 1940,25%,1789W,1005 MFW022,R-0719M, 1940,650 C 1005 MARN A 21 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	REND   SPECIALIZE   PARESER PARES   SOLS N. VINE USB   PARESER PARES   N. VIACO   C 950   GM   A 1 7 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	C1656   222517502   222517502   203517502   369520250007   304.50   C   1695   3848   A   7   0   0   0   0   0   0   0   0   0	1.1824 - C - MANN A
R1003 RRTC15734 AF9002/R0710ML 70LL59L110W,1005 AF90422/R0710ML 7A0ED C 1005 MANN A 21 0 0 0 0 R100 R100 RRTC15734 AF902/R0710ML 70LL59L110W,1005 AF90422/R0710ML 7A0ED C 1005 MANN A 21 0 0 0 0 R100 R100 R100 R100 R100 R10	PRINCES   PRIN		MY001
R1405 8RTC16191 4F0402FRJ71KL 140,1%,116W,1005 AF0402FRJ71KL YAGEO C 1005 MAN A 15 0 0 0 0 R1406 M0201AT2ZJ M0201AT2ZJ 22K0,5%,1110W,1608 RK738IJTTD22ZJ KOA C 1608 MAN A 32 0 0 0 0	\$1886   \$RETC15734   \$476402.R479584,   \$184.0.54, \$1981,1055   \$476402.R479584, \$746E0   C   \$1955   \$8481   A   21   0   0   0   0   0   0   0   0   0		UNID12 A - MANN A
Fig.   \$100,000   \$100,000   \$200,000   \$200,000   \$1	R1891 RRTC15714 AF0402FR477K1SL 7.19xQ,1%,1/9W,1005 AF0402FR477K1SL YAGEO C 1005 MANN A 1 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	CHR   SECTION   CHR	00/1014 A - MANN A
R1410 RRTC15122 AFRACIZ-ROTIOR. 100L5%, 1196W, 1005 AFRACIZ-ROTIORL YAGED C 1005 MANN A 24 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Registration   Regi	C1881 A10427016Z A10427016Z SEZECTIONAL MANN A 54 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	W1010 - A - MANN A
REF   SECTION   APPROXIMATION   DOG 5, 1989 005   PARTICIPATE   APPROXIMATION   DOG 5, 1989 005   PARTICIPATE   APPROXIMATION   DOG 55, 1989 005   PARTICIPATE   APPROXIMATION   DOG 55, 1989 005   PARTICIPATE   APPROXIMATION   DOG 55, 1989 005   PARTICIPATE   APPROXIMATION   DOG 50, 1989 005   PARTICIPATE   APPROXIMATION   DOG 5	2002   98CP9411   2514-750A198PY6A   806-FACISOVY2   C514-F2GA188NY6A   TOK   P   - MAN A 73 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	C1883 AGRENTUSZ AGRENTUSZ SOURCESZ SOURCESZCT NALDEN C 1608 MAN A 64 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	UNIO19 A - MAIN A
R1414 RRTC15737 AF0402/R-070RL ID.5%,1198V,1005 AF0402/R-070RL VAGEO C 1005 MAN A 25 0 0 0 0 R1415 RRTC15725 AF0402/R-07398RL 3800,5%,1198V,1005 AF0402/R-07390RL YAGEO C 1005 MAN A 10 0 0 0 0	C1008 RRCP9411 CS14-F2GA109MYKA 0.01uF,AC300V,Y2 CS14-F2GA109MYKA TDK P - MAIN A 73 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Colses   Analytroist   Analy	MY1021
R1416 RRTC15724 APPW022R-0710ML 1900.5%, 1769/L1005 APPW022R-0710ML YAGED C 9005 MANN A 21 0 0 0 0 R1417 RRTC15722 APPW022R-0710ML 1900.5%, 1769/L100.5 APPW022R-0710ML YAGED C 9005 MANN A 21 0 0 0 0 R1418 RRTC15722 APPW022R-0710ML 1900.5%, 1769/L100.5% APPW022R-0710ML YAGED C 9005 MANN A 24 0 0 0 0 0 R1418 RRTC15722 APPW022R-0710ML 1900.5%, 1769/L100.5%	C1013 RRCP9411	C1887   MARQETONICE   MARGETONICE   MARGEMENTANCE   MARGEMENT	MY1023 JUMPER JUMPER A - MANN A 125 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
R1419 BRTC15722 AF5M02/R-07100RL 1000.5%,1/190//1005 AF5M32/R-07100RL YAGEO C 1005 MAIN A 24 0 0 0 0 R1420 RRTC15734 AF5M02/R-0710ML 10M_5%,1/190//1005 AF5M32/R-0710ML YAGEO C 1005 MAIN A 21	C1017 RRCP3411 CS14-F2G4103MYNA 801uF,AC300V,YZ CS14-F2GA103MYNA TDK P - MAIN A 73 0 0 0 0 0	01101 RREB4400 SARS011 860V.1.2A SARS011V1 SANKEN A . MAIN A 65 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	JUNIOS JAMPER JUMPER A - MAIN A 125 0 0 0 0 0 JUNIOS JUNIOS JUNIOS JUNIOS A - MAIN A 125 0 0 0 0 0 0 JUNIOS JUNIOS A - MAIN A 125 0 0 0 0 0
H155 - NECCUES - MARIAGE ARRIVA - NECES AS VINES SE - MARIAGE ARRIVA - NACIO - C - 005 - 004 - 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	C1101 RRCPR666 LN1038810008AFDTH BR0pF,DCNW LN10388100988FDTH MALSN P - MAIN A 74 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	01106 RREBARDS 01NL2UU 2007/1A D1NL2UU-3060 SHINDENGEN A - MAIN A 86 0 0 0 0 0 0 0 0 0 11/107 RREBARDS 01NL2UU 2007/1A D1NL2UU-3060 SHINDENGEN A - MAIN A 86 0 0 0 0 0 0	NY1028 JUNPER JUNPER A - MAIN A 125 0 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1
R1423 - C 1005 MAIN A	C1033   P   MANN A	D1108   RRESPASS   D1NL20U   2007.1A   D1NL20U-5060   SHINDENGEN   A - MANN A   86   O   O   O   O   O   O   O   O   O	MY1000 JUMPER JUMPER A - MANN A 125 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
R1435 RRTC15734 AFGM02/R47100L 100/L951,1169/L1005 AFGM02/R47100L 7/AGEO C 1005 MAN A 21 0 0 0 0 R1437 RRTC15734 AFGM02/R47100L 100/L951,1169/L1005 AFGM02/R47100L 7/AGEO C 1005 MAN A 21 0 0 0 0	C1107   A102270502   A1022705	01401 RREBS215 005226 80V.100mA KDS226-RTK/PH KEC C SOT-23 MAIN A 83 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
R1438 RRTC15730 AF0402/R-072K2L 2.2kL,5%,116W,1005 AF0402/R-072K2L YAGEO C 1005 MAIN A 14 0 0 0 0 R1439 RRTC15730 AF0402/R-072K2L 2.2kL,5%,116W,1005 AF0402/R-072K2L YAGEO C 1005 MAIN A 14 0 0 0 0	Section   Control   Cont	01482 RREBS212 MDS184 80V,100mA KDS184-RTK/PH KEC C S0T-23 MAIN A 81 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Symbol   Colonia Colonia   March Colonia   M
R1440 RRTC15370 AF0402/R-072K2. 2.0L,5%, 1/16W,1005 AF9432/R-072K2L YAGEO C 1005 MAIN A 14 0 0 0 0 R1441 RRTC15730 AF0402/R-072K2L 2.0L,5%, 1/16W,1005 AF9432/R-072K2L YAGEO C 1005 MAIN A 14 0 0 0 0 0 R1441 RRTC15730 AF0402/R-072K2L 2.0L,5%, 1/16W,1005 AF9432/R-072K2L YAGEO C 1005 MAIN A 14 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 C1112 RRCPP4S7 ERS1EM331G13850T 3304-25V ERS1EM331G13850T AISHI R - MANN A 72 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	01502   C   JUANN A   C   C   JUANN A   S   C   C   C   C   C   C   C   C   C	TAB1002 RRP.2542 TAB-350 250V_00A TR6224-31 RHYTHM KYOSHIN R - MAN A 133 0 0 0 0 0
R1442 BRTC15730 AFPAGGR.R470K2. 226.05%,1989.W056 AFPAGGR.R470K3L YAGED C 1005 (MAN) A 1 14 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	C1116   RRCP7989   ERS1EMAT1G188901   V10F,25V   ERS1EMAT1G18890T   AISHI   R - MANN A 89 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	D1864   RRESE215   KRS226   B0V.100mA   KRS258-RTKPH   KEC	
R1450 RRTC15722 AF0402.R-07100RL 1000_5%,1196W,1005 AF0402.R-07100RL YAGEO C 1005 MAN A 24 0 0 0 0 R1451 RRTC15722 AF0402.R-07100RL 1000_5%,1196W,1005 AF0402.R-07100RL YAGEO C 1005 MAN A 24 0 0 0 0	C1117   ASSUTTIONE ADMITTONE	Part	
R1452 RRTC15722 AF9402.R-0710RL 1000_5%,1199/1,1005 AF9402.R-07100RL YAGEO C 1005 MAIN A 24 0 0 0 0 R1453 RRTC15722 AF9402.R-0710RL 1000_5%,1199/1,1005 AF9402.R-07100RL YAGEO C 1005 MAIN A 24 0 0 0 0 R1453 RRTC15722 AF9402.R-07100RL 1000_5%,1199/1,1005 AF9402.R-07100RL YAGEO C 1005 MAIN A 24 0 0 0 0 R1453 RRTC15722 AF9402.R-07100RL YAGEO C 1005 MAIN A 24 0 0 0 0 R1453 RRTC15722 AF9402.R-07100RL YAGEO C 1005 MAIN A 24 0 0 0 0 R1453 RRTC15722 AF9402.R-07100RL YAGEO C 1005 MAIN A 24 0 0 0 0 R1453 RRTC15722 AF9402.R-07100RL YAGEO C 1005 MAIN A 24 0 0 0 0 R1453 RRTC15722 AF9402.R-07100RL YAGEO C 1005 MAIN A 24 0 0 0 0 R1453 RRTC15722 AF9402.R-07100RL YAGEO C 1005 MAIN A 24 0 0 0 0 R1453 RRTC15722 AF9402.R-07100RL YAGEO C 1005 MAIN A 24 0 0 0 0 R1453 RRTC15722 AF9402.R-07100RL YAGEO C 1005 MAIN A 24 0 0 0 0 R1453 RRTC15722 AF9402.R-07100RL YAGEO C 1005 MAIN A 24 0 0 0 0 R1453 RRTC15722 AF9402.R-07100RL YAGEO C 1005 MAIN A 24 0 0 0 0 R1453 RRTC15722 AF9402.R-07100RL YAGEO C 1005 MAIN A 24 0 0 0 0 R1453 RRTC15722 AF9402.R-07100RL YAGEO C 1005 MAIN A 24 0 0 0 0 R1453 RRTC15722 AF9402.R-07100RL YAGEO C 1005 MAIN A 24 0 0 0 0 R1453 RRTC15722 AF9402.R-07100RL YAGEO C 1005 MAIN A 24 0 0 0 0 R1453 RRTC15722 AF9402.R-07100RL YAGEO C 1005 MAIN A 24 0 0 0 0 R1453 RRTC15722 AF9402.R-07100RL YAGEO C 1005 MAIN A 24 0 0 0 0 R1453 RRTC15722 AF9402.R-07100RL YAGEO C 1005 MAIN A 24 0 0 0 0 R1453 RRTC15722 AF9402.R-07100RL YAGEO C 1005 MAIN A 24 0 0 0 0 R1453 RRTC15722 AF9402.R-07100RL YAGEO C 1005 MAIN A 24 0 0 0 0 0 R1453 RRTC1572 AF9402.R-07100RL YAGEO C 1005 MAIN A 24 0 0 0 0 0 R1453 RRTC1572 AF9402.R-07100RL YAGEO C 1005 MAIN A 24 0 0 0 0 0 R1453 RRTC1572 RRTC	C1133   A1046T1563Z   A1046T	D1809 RRESS215 005226 801/100mA 005226-RTK/PH NEC C S0T-23 MANN A 83 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
CALL DETECTS PROCESSES AND ACCUSED ACCUSED AND ACCUSED	PRINCE PRINCE   1 100 (600) A 50 0 0 0 0 0	USST 96456275 MUSSZ6 80Y,100MA MUSSZ6-NIKPH REC C SU123 MANN A 83 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
R1463 RRTC15202 AF0402.R-07330RL 3000_5%, 1198/1,1005 AF0402.R-07330RL YAGEO C 1005 MANN A 12 0 0 0 0 R1464 RRTC15734 AF0402.R-0719KL 1060_5%, 1198/1,1005 AF0402.R-0710KL YAGEO C 1005 MANN A 21 0 0 0 0	C1332 410427016Z A10427016Z 94028104K160CT WALSIN C 1005 MAN A 54 0 0 0 0		
R1465   RRTC15737   MF0402,R-076RL   00.5%,1198V,1005   MF0402,R-076RL   YAGED   C   1005   MANN   A   25   O   O   O   O	CTSSS   PATUREZIUNINE   MANAZTONISE   DATOSSIONATION   C   0005   MARN   A   S4   O   O   O   O	D1552   RREBS505   SAM_E120RW   Rad   SAM_E120RW1786   ROCHM   C   MANN A   90   0   0   0   0   0   0   0   0	
THE STREET STREETS SECRETARY SECRETA	C1355 A104270164 A104270164   SMULSIN C 1006 MANN A 54 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	L01402   RREBS179   SML-E12MBW   Green   SML-E12MBW189   ROLHM   C - MARN A   89   C   O   O   C	
R1471 RRTC15704 AF04020R-0734011 3.014.0,0.5%,11989,1005 AF04020R-0734011 YAGEO C 1005 MANN A 13 0 0 0 0 R1472 RRTC15705 AF04020R-0734741 13.744.0,0.5%,11989,1005 AF04020R-0734741 YAGEO C 1005 MANN A 11 0 0 0 0	C1338 A104ZT016Z A104ZT016Z SA002810AK180CT WALSN C 1005 MANN A 54 0 0 0 0 0 0 0 10 0 0 0 0 0 0 0 0 0 0 0	D1404   RREBS179   SML-E12MRW   Green   SML-E12MRW186   ROHM   C - MANN A 89 0 0	
R1473 RRTC15704 AFF04020R-073601L 8.014.0.0.514,1190f(1005 AFF04020R-073601L YAGEO C 9005 MAN A 13 0 0 0 0 R1474 RRTC15704 AFF04020R-073601L 90140,0514,1190f(1005 AFF04020R-073601L YAGEO C 9005 MAN A 13 0 0 0 0 R1474 RRTC15704 AFF04020R-073601L YAGEO C 9005 MAN A 13 0 0 0 0 R1474 RRTC15704 AFF04020R-073601L YAGEO C 9005 MAN A 13 0 0 0 0 R1474 RRTC15704 AFF04020R-073601L YAGEO C 9005 MAN A 13 0 0 0 0 R1474 RRTC15704 AFF04020R-073601L YAGEO C 9005 MAN A 13 0 0 0 0 R1474 RRTC15704 AFF04020R-073601L YAGEO C 9005 MAN A 13 0 0 0 0 R1474 RRTC15704 AFF04020R-073601L YAGEO C 9005 MAN A 13 0 0 0 0 R1474 RRTC15704 AFF04020R-073601L YAGEO C 9005 MAN A 13 0 0 0 0 R1474 RRTC15704 AFF04020R-073601L YAGEO C 9005 MAN A 13 0 0 0 0 R1474 RRTC15704 AFF04020R-073601L YAGEO C 9005 MAN A 13 0 0 0 0 R1474 RRTC15704 AFF04020R-073601L YAGEO C 9005 MAN A 13 0 0 0 0 R1474 RRTC15704 AFF04020R-073601L YAGEO C 9005 MAN A 13 0 0 0 0 R1474 RRTC15704 AFF04020R-073601L YAGEO C 9005 MAN A 13 0 0 0 0 R1474 RRTC15704 AFF04020R-073601L YAGEO C 9005 MAN A 13 0 0 0 0 R1474 RRTC15704 AFF04020R-073601L YAGEO C 9005 MAN A 13 0 0 0 0 R1474 RRTC15704 AFF04020R-073601L YAGEO C 9005 MAN A 13 0 0 0 0 R1474 RRTC15704	C1340 A1942T0162 A1942T0162   S402810416CT   NALSIN	251465   \$6086179   \$0.4 (23860)	
PICLUS   PICCUSTAS   PICUSTAS   PICCUSTAS   PICCUSTAS   PICCUSTAS   PICCUSTAS   PICCUSTA	C1230   MANDETFINE   MANDETFINE   MANDETFINE   MANDETFINE   C1   WISS   MAN   A   5   0   0   0   0   0   0   0   0   0	2010   198207   20   20   20   20   20   20   20	
R1462 RRTC15727 AF0M20LR.071M2 HL0,5%,116M/1005 AF0M20LR.071M2 VAGEO C 1005 MANN A 23 0 0 0 0 R1483 RRTC15722 AF0M20LR.071M2 H00.5%,116M/1005 AF0M20LR.071M2 VAGEO C 1005 MANN A 24 0 0 0 0	C1402 BRCPP196 GRM15SC81C4T4KE010 Q47uF,19V GRM15SC81C4T4KE010 MURRATA C 1105 MANN A 65 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	201413	
R1484 RRTC15733 AF9402JR-075K1L 5140_511,176W,1005 AF9402JR-075K1L YAGEO C 1005 MAN A 8 0 0 0 0 0 R1485 RRTC15733 AF9402JR-075K1L 5140_511,176W,1005 AF9402JR-075K1L YAGEO C 1005 MAN A 8 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		101006 RREAMSOT SKYLLVORAP AND GATE SKYLLVORAPWINGA TEXAS INSTRUMENTS S TSSOP MAIN A 59 0 0 0 0	
R1486 RRTC15/25 AF0402/R-07390RL 3800_5%,1%6W,1005 AF0402/R-07390RL YAGEO C 1005 MAIN A 10 0 0 0 0 0 R1487 RRTC15/25 AF0402/R-07390RL 3800_5%,1%6W,1005 AF0402/R-07390RL YAGEO C 1005 MAIN A 10 0 0 0	C 1005 MAIN A	C1027 RREA6/24 NJM2903CG-TE2 DUAL COMPARATOR NJM2903CG/TE2) JRC S S.OP MAIN A 97 0 0 0 0 0 C C1028 RREA4907 SN74LV08AP AND GATE SN74LV08APWRG4 TEXAS INSTRUMENTS S TSSOP MAIN A 96 0 0 0 0 0	

### INVERTER PCBA (GROUP A: MODEL > 5.3kW, GROUP B: MODEL ≤ 5.3kW)

ev -	Symbol	DRAWING No.	NAME OF PART	RATING	Model Number	Manufacturer	MOUNT	FORM	PC8	A/Β		Α	Т
1	C003	RRCP2925	LE335	3.3uF	LE335-C3.5 XT	OKAYA DENKI	н		INVERTER				F
	C021	RRCPP130	D500U-450V	500uF 450V 500uF 450V	ECST451LINS01KA60M ECST451LINS01KA60M	NIPPON CHEMI-CON	т.		INVERTER	A.	10	8	Н
- 1	0023	RRCPP130	D500U-450V	500uF 450V	ECST451LINS01KA60M	NIPPON CHEMI-CON	H	-	INVERTER				۰
- 1	C024	101011100	2200720	2000 7007	COST CONTROL TO COST	MIT OF CILLIPCON	н		INVERTER	â	10	Ť	+
- 1	0032	RRCP3102	AFP104		AFP450V104K-C3.5	OKAYA DENKI	H	-	INVERTER			Ó	
1	084	BBCPP001	AFX450V105K	1µF.DC450V	AFX450V105K-C3.5 XT	OKAYA DENKI	Н	-	INVERTER	Δ	11	0	
- 1		RRCP3102	AFP104		AFP450V104K-C3.5	OKAYA DENKI	Н	-	INVERTER	Α	12	0	П
	DS01	RREBP268	S30K60T		S30K60T	SHINDENGEN	Н		INVERTER	A.	14	0	
	D902	RREEP268	S30K60T		S30K60T	SHINDENGEN	Н	-	NVERTER			0	
	D603	-		-	-	<u> </u>	н	-	NVERTER NVERTER	A	÷	-	-
	DB602	RREB4831	D25XB60		D25XB60-7000	SHINDENGEN		-				÷	П
	UB602 ca	RRPN2875	FCU-2AFUSE	E00V,25A 2A,250V		NIPPON SEISEN CABLE	H	-	INVERTER INVERTER	A	18	0	Н
- 1	0601	RREGP255	RGTHROTSES	VA250V	FCU 250V 2A (EM) 8H17 RGTH60TS65GC11	ROHM		-	NVERTER			8	н
- 1		RREGP255	RGTH60TS65		RGTH60T965GC11	ROHM	H	-	INVERTER	Ŷ.	21	ő	1
- 1	0602 0711	RREGP250	ICSSNSTER	SMV/SA	ICSSNSTER	EMC	- 11	TO-220	NVERTER	2	1 22	ŏ	+
- 1	Q712	RREGP210	JOSENSOFR	500V.5A	JOSSINSTER	ISMC	Н	TO-220	NVERTER	Δ	22	0	1
- 1	0713	RREGP210	JCSSN50FR	500V.5A	JCSSN50FR	JSMC	H	TO-220	INVERTER	A	22	ō	П
- 1	0714	RREGP210	JCSSN50FR	500V.5A	JCSSN50FR	JSMC	Н	TO-220	INVERTER	Α	22	0	1
- 1	0715	RREGP210	JCSSN50FR	500V.5A	JCSSN50FR	JSMC	Н	TO-220	INVERTER	Α	22	0	-
	Q796	RREGP210	JCSSNS0FR	500V,5A	JCSSN50FR	JSMC	Н	TO-220	INVERTER	Α	22	0	ď
	Q901 Q902	RREGP193	RGT30TM65	650V.8A	RGT30TM6SDGC9	ROHM	Н	TO-220NFM	NVERTER	A.		_	Ę
		RREGP193	RGT30TM65	650V,8A	RGT30TM65DGC9	ROHM	Н	TO-220NFM	NVERTER	Α	23	-	-
	Q903 C904	RREGP193	RGT30TM65	650V.BA 650V.BA	RGT30TM5SDGC9	ROHM	H.	TO-220NFM TO-220NFM	INVERTER	A	23	<u> </u>	- 8
	U904	RREGP193	RGT301M65	650V.8A	RGT30TM65DGC9	ROHM	H	TO-220NFM				-	1 8
	Q906	RREGP193	RGT301M65	6507.8A	RGT30TM65DGC9	ROHM	H.	TO-22UNEM	MUEDTED	Ŷ.	23	·	H
- 1	Q901	RREGP260	RGTSUTMSSD	650V.13A	RGT50TM65DGC9	ROHM	H	TO-220NFM	MUEDTED	â	24	0	+
- 1	Q902	RREGP260	RGT50TM65D	650V.13A	RGT50TM65DGC9	ROHM	Н	TO-220NFM	MUEDTED	â	24	ŏ	+
- 1	0903	RREGP260	RGTS0TM6SD	650V,13A	RGT50TM65DGC9	ROHM	H	TO-220NFM	INVERTER	2	52	ŏ	+
- 1	0904	RREGP260	RGT50TM65D	650V.13A	RGT50TM65DGC9	ROHM	H	TO-220NFM	INVERTER	Δ	24	0	Η.
- 1	Q905	RREGP260	RGT50TM65D	650V,13A	RIGTSOTMESDIGC9	ROHM	H	TO-220NFM	INVERTER	A	24	0	1
	Q906	RREGP260	RGT50TM65D	650V.13A	RGTS0TM6SDGC9	ROHM	Н	TO-220NFM	INVERTER	A.	24	0	$\mathbf{r}$
ı	CT1				-		Н		INVERTER	A		-	_
	CN13	RRPA2732	PH-P06-4P8	BLACK	B4B-PH-K-K/LF)(SN)	JST	н		INVERTER		27	9	
	CN18	RRPB2739	PH-POS11PB	BLACK	B11B-PH-K-K	JST	Н	-	INVERTER				1
	CNZO CNZZ	RRP82736	PH-POS-8PB XA-POST-7P	BLACK	BBB-PH-K-K	JST IST	H	-	INVERTER INVERTER	A	29	00	Н
	CN24	RRP82426 RRP#1335	VH-POST-3P	WHITE	B07B-XASK-1-A(LF)(SN) B3PS-VHILFI/SN)	JSI	H						1 8
1	CN25	RRPA7683	VA-POST-3P	WHITE	BD4B-XASK-1LF/(SN)	BI	- #	-	INVERTER INVERTER	Ą.	37	8	H
- 1	CN471	RRPB2278	XA-POST-SP	WHITE	B0SB-XASK-1(LF)(SN)	JST	н	-		Â		Ť	+
	CM477	RRP42468	XA-POSTSPR	RI ACX	RIDE XAKK, INT FISNI	IST	H H	-	INVERTER	2	÷	H	+
- 1	PCN401						Н		INVERTER	Δ		-	Η.
- 1	WHS	0000082220	#CORD.48	AWG12. Yellow	DD0008222D	CHWH	Н		INVERTER			0	1
- 1	WH7	C00009065A	#CORD-AS	AWG12, Blue	DD0009065A	JCH-WH	H	-	INVERTER	A	35	0	17
- 1	WH12-1	CD0009065A	#CORD-AS	AWG12, White	DD0009065A	JCH-WH	Н	-	INVERTER	Α	36		(
- 1	WH12-2	DD0009065A		AWG12, White	DD0009065A	JCH-WH	Н	-	INVERTER				1
	WH8	CC0009062A	#CORD-AS	AWG16, White	DD0009062A	JCH-WH	Н		INVERTER	A.	37	0	1
	WH9	DD0009062A	#CORD-AS	AWG16, Yellow	DD0009062A	JCH-WH	н		NVERTER				-
- 1	WH10		#CORD-AS	AWG16, Red	DD0009062A	JCH-WH	Н		NVERTER				
	WH901	0000059668	#CORD-AS	AWG12 Black	DD00059668	JCH-WH JCH-WH	- #		NVERTER				Н
	WH902 WH904	UUUUU5967B	PLUNU-AS	AWG12, Red	DD000999/R	JCH-WH	H	-	INVERTER INVERTER	A	39	0	+
1	WH904 SSW1	_	<del></del>		<del></del>	<del> </del>	- #	-	NVERTER NVERTER	A	<b>←</b>	<b>⊢</b>	+
1	TAB1	_	<del></del>		<del></del>		H		INVERTER	A	۰	÷	+
- 1	TAR?				t .	t e	H		NVERTER		H	H÷.	+
1	Q901 - Q903 SUPPORT	CC0009047A	PM.7Δ	1	DD0009047A	JCH-WH	Н		NVERTER			0	1
1	Q904 - Q906 SUPPORT	DD0009047A	IPM-ZA	1	DD0009047A	JCH-WH	H		INVERTER	Â	12	ŏ	Н
- 1	DB602 SUPPORT	CC0009025A	DB-ZA		DD0009025A	JCH-WH	H		INVERTER	Α	43	0	
	D601 & O601SUPPORT D602 & O602 SUPPORT	DD0009024A	IGBT-ZA		DD0009024A DD0009024A	JCH-WH	Н		INVERTER	Α	44	0	
	D902 & Q902 SUPPORT	DD0009024A	IGBT-ZA			JCH-WH	Н	-	INVERTER	Α	44	0	ľ
	MAIN PCB SILICON	RXJV8Z29	KE-4956-T		RXJV8229	JCH-WH	Н		INVERTER	A.	47	0	-
	HIC SILICON	RXJV9117	ECC3015S		RXUV9117	JCH-WH	Н		INVERTER				
ı	0021, 0022, 0023 BOND	RXJVBV82	BOND-CK11		RXUVBV82	JCH-WH	Н	-	INVERTER			0	
	Q711 FAN-FIN MS SCREW	3SJ0627308	M3-SCREW		3SJG62730B	JCH-WH	Н		INVERTER				
	Q712 FAN-FIN M3 SCREW	3SJ062730B	M3-SCREW	-	3SJG62730B	JCH-WH	Н	-	INVERTER				
	Q713 FAN-FIN M3 SCREW	3SJ962730B	M3-SCREW	-	3SJG62730B	JCH-WH	- 11	-	INVERTER	Ą.	12	8	Н
	Q714 FAN-FIN M3 SCREW	3SJ062730B	M3-SCREW M3-SCREW	-	3SJG62730B 3SJG62730B	JCH-WH JCH-WH	H		INVERTER			0	Н
	0715 FAN-FIN M3 SCREW 0716 FAN-FIN M3 SCREW	3SJG62730B 3SJG62730B	M3-SCREW		35,0627308	JCHWH JCHWH	- #	-	INVERTER				н
1													
ı	Q711, Q712, Q713 FAN-FIN	DD0009026A			DD0009026A	JCH-WH	Н		INVERTER				

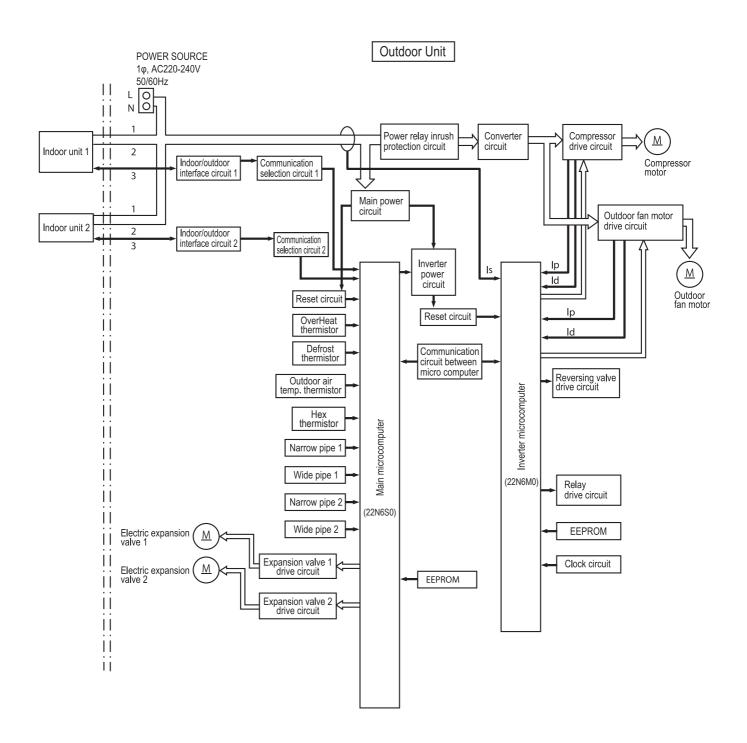
av Symbol DRAWING No. NAME OF PART	RATING Model Number	r Manufacturer	MOUNT FOR	M PCR AR Part GROU	Rev Symbol	DRAWING No. NAME OF PART	RATING	Model Number	Manufacturer	MOUNT FORM PCR AR Part GROUP Re-	Symbol DRAWNS No.	NAME OF PART	RATING	Model Number	Manufacturer	MOUNT	FORM PCR	AR Pat GR	ROUP
R001 RRTEP010 RCR16CT52A1434F 1.43M0	Q.0.5%,14W RCR16CT52A1434		Α .	INVERTER A 26 0	R922	M1004AT2ZJ M1004AT2ZJ	1MO,5%,1/10W,1608	RK73B1JTTD105J	KOA	MOUNT FORM PCB AB Part GROUP Ro. C 1508 INVERTER A 1 50 0 C C 1508 INVERTER A 6 0 C C 1508 INVERTER A	C913 A2222T050Z	2222T050Z	IONINO	0402B222K500CT	WALSIN	0	1005 INVERTER	A 36	A O
R002 JUMPER JUMPER		_	A -	INVERTER A 0	R923	M0000AT2ZJ M0000AT2ZJ	0Ω,5%,1/10W,1608	RK73Z1JTTD	KOA	C 1608 INVERTER A 6 O	C914 A1042T050Z A	1042T050Z		0402B104M500CT	WALSIN WALSIN	C	1005 INVERTER 1005 INVERTER	A 31	0
R006			C 16	B INVERTER A	R925					C 3216 INVERTER A	C916 -	III III III III III III III III III II		-					
R007	1%,2W,5025 ERJB1CFR10U		C 160	8 INVERTER A	R926 R927					C 3216 INVERTER A	C917 A1022T050Z // C920 D3966T035Z //	1022T050Z	0.737/16	0402B102K500CT 35ML35MEFCT56.3X7	WALSIN RUBYCON	C	1005 INVERTER	A 33	0
P011 PPTC2227 ER IB1CER1011 0.10.1	1%.2W.5025 ERJB1CFR10U	Panasonic Panasonic	C 500	5 INVERTER A 23 0 5 INVERTER A 23 0	R928	M1000ATZZJ M1000ATZZJ	1000.5%, 1/10W, 1608	RK73B1JTTD101J	KOA	C 1609 MAEDTED A 7 O	C921 D3966T0357 D	13965T0357	I9uF.35V.ML	35ML35MEFCT56.3X7	RUBYCON	R	<ul> <li>INVERTER</li> <li>INVERTER</li> </ul>		
R012 RRTC2237 ERJB1CFR10U 0.10,1	1%,2W,5025 ERJB1CFR10U 1%,2W,5025 ERJB1CFR10U	Panasonic	C 500	5 INVERTER A 23 O	R941	M2409AT2ZJ M2409AT2ZJ	240,5%,1/10W,1608	RK7381JTTD240J RK7381JTTD240J	KOA	C 1608 INVERTER A 16 O C 1608 INVERTER A 16 O	C922 D3966T035Z D	13966T035Z	BuF,35V,ML	35ML39MEFCT56.3X7	RUBYCON	R	<ul> <li>INVERTER</li> </ul>	A 43	0
R013 RRTC2237 ERUB1CFR10U 0.10,1 R014 RRTC2237 ERUB1CFR10U 0.10.1	1%,2W,5025 ERJB1CFR10U 1%,2W,5025 ERJB1CFR10U	Panasonic Panasonic	C 500	S INVERTER A 23 O S INVERTER A 23 O	R942 R943	M2409AT2ZJ M2409AT2ZJ M2409AT2ZJ M2409AT2ZJ	24D,5%,1/10W,1608 24D,5%,1/10W,1608	RK73B1JTTD240J RK73B1JTTD240J	KOA KOA	C 1608 INVERTER A 16 0	C923 A1042T050Z A C924 A1042T050Z A	1042T050Z 1042T050Z		0402B104M500CT 0402B104M500CT	WALSIN WALSIN	- C	1006 INVERTER 1006 INVERTER	A 31	0
R015 RRTC2237 ERJB1CFR10U 0.10,1	1%,2W,5025 ERJB1CFR10U	Panasonic	C 500	5 INVERTER A 23 0 5 INVERTER A 23 0	R944	M2409AT2ZJ M2409AT2ZJ	24Ω,5%,1/10W,1608	RK7381JTTD240J	KOA	C 1608 INVERTER A 16 O C 1608 INVERTER A 16 O	C925 A1042T050Z	1042T050Z		0402B104M500CT	WALSIN	С	1005 INVERTER 1005 INVERTER	A 31	0
	0,5%,1W RCR60CT52A334J 0,5%,1W RCR60CT52A334J	KOA	Α .	INVERTER A 27 O	R945	M2409AT2ZJ M2409AT2ZJ	24Ω,5%,1/10W,1608 24Ω,5%,1/10W,1608	RK7381JTTD240J RK7381JTTD240J	KOA	C 1608 INVERTER A 16 0	$\overline{}$					+	1608 INVERTER 1005 INVERTER	++-	$\dashv$
R120		-	C 20	NVERTER   A   27   O     NVERTER   A   27   O     2   NVERTER   A	R951	M2409AT2ZJ M2409AT2ZJ M4702AT2ZJ M4702AT2ZJ	47kΩ,5%,1/10W,1608	RK7381JTTD473J	KOA	C 1608 INVERTER A 16 O C 1608 INVERTER A 16 O C 1608 INVERTER A 18 O C 1608 INVERTER A 18 O C 1608 INVERTER A 18 O	C940 -					С	1608 INVERTER	Α -	-
R121		-	C 201	2 INVERTER A	R952	M4702AT2ZJ M4702AT2ZJ M4702AT2ZJ M4702AT2ZJ	47kΩ,5%,1/10W,1608 47kΩ,5%,1/10W,1608	RK7381JTTD473J RK7381JTTD473J	KOA	C 1608 INVERTER A 18 O	C941 A1042T050Z A	1042T050Z		0402B104M500CT	WALSIN	C	1005 INVERTER 1608 INVERTER	A 31	0
R131		_	C 160	6 INVERTER A	R954	M4702AT2ZJ M4702AT2ZJ	47kΩ,5%,1/10W,1608	RK7381JTTD473J	KOA	C 1608 INVERTER A 18 O C 1608 INVERTER A 18 O	C952					č	1608 INVERTER 1608 INVERTER	·	=
			-		R955	M4702AT2ZJ M4702AT2ZJ M4702AT2ZJ M4702AT2ZJ	47kΩ,5%,1/10W,1608 47kΩ,5%,1/10W,1608	RK7381JTTD473J RK7381JTTD473J	KOA	C 1608 INVERTER A 18 0 C 1608 INVERTER A 18 0	C953				-	C	1608 INVERTER	Α -	=
R150 M0000AT2ZJ M0000AT2ZJ 00.5%	6.1/10W.1608 RK73Z1JTTD	KOA	C 160	8 INVERTER A 6 0	R961	M7509AT2ZJ M7509AT2ZJ	750.5% 1/10W 1608	RK7381JTTD750J	KOA	C 1608 INVERTER A 22 0	C955					i č	1608 INVERTER	A .	$\div$
R151		-	C 160	8 INVERTER A	R962	M7509AT2ZJ M7509AT2ZJ M7509AT2ZJ M7509AT2ZJ	750,5%,1/10W,1608	RK7381JTTD750J	KOA	C 1608 INVERTER A 22 0	C956					С	1608 INVERTER	Α -	=
	5%, 1/10W,1608 RK73B1JTTD101J	KOA	C 160	B INVERTER A 7 0	R964	M7509AT2ZJ M7509AT2ZJ	750,5%,1/10W,1608 750,5%,1/10W,1608	RK73B1JTTD750J RK73B1JTTD750J	KOA	C 1608 INVERTER A 22 0 C 1608 INVERTER A 22 0 C 1608 INVERTER A 22 0	C981					6	1608 NVERTER 1608 NVERTER 1608 NVERTER 1608 NVERTER 1006 NVERTER 1006 NVERTER	A -	-
R219 M1002AT2ZJ M1002AT2ZJ 10kD,5 R220	5%,1/10W,1608 RK73B1JTTD103J	KOA	C 160	8 INVERTER A 9 0 8 INVERTER A	R965	M7509AT2ZJ M7509AT2ZJ M7509AT2ZJ M7509AT2ZJ	750,5%,1/10W,1608	RK7381JTTD750J	KOA	C 1608 INVERTER A 22 O C 1608 INVERTER A 22 O	D002 -				-	С	<ul> <li>INVERTER</li> <li>UMD2 INVERTER</li> </ul>	A -	=
R220		+	C 160	8 INVERTER A	R966		75Ω,5%,1/10W,1608 24Ω,5%,1/10W,1608	RK7381JTTD750J RK7381JTTD240J	KOA KOA	C 1608 INVERTER A 22 O	D111 RREB5605 1	SS3S5VM	80V,100mA	1SS355VMTE-17	ROHM	C C	UMD2 INVERTER	A 53	0
R221	5%,1/10W,1608 RK73B1JTTD101J	KOA	C 160	8 INVERTER A	R972	M2409AT2ZJ M2409AT2ZJ	24Ω,5%,1/10W,1608	RK73B1JTTD240J	KOA	C 1608 INVERTER A 16 O	D201					C 8	- INVERTER IOT-23 INVERTER	Α -	_
R281 M1002AT2ZJ M1002AT2ZJ 10kO.5	- 5%,1/10W,1608 RK73B1JTTD103J	KOA	C 32	6 INVERTER A R INVERTER A 9 0	R973	M2409AT2ZJ M2409AT2ZJ M2409AT2ZJ M2409AT2ZJ	24Ω,5%,1/10W,1608 24Ω,5%,1/10W,1608	RK7381JTTD240J RK7381JTTD240J	KOA KOA	C 1608 INVERTER A 16 0	D286 RREBS605 1		80V,100mA 80V,100mA	18S355VMTE-17 1SS355VMTE-17	ROHM	C C	UMD2 INVERTER UMD2 INVERTER	A 53	0
R286 M1201AT2ZJ M1201AT2ZJ 1.2kQ.	5%,1/10W,1608 RX73B1JTTD122J		C 160	B INVERTER A 9 0 B INVERTER A 11 0	R975	M2409AT2ZJ M2409AT2ZJ	24D,5%,1/10W,1608	RK7381JTTD240J	KOA	C 1608 INVERTER A 16 0	D673 RREB5605	SS359VM	0V,100mA	1SS355VMTE-17	ROHM	Ĉ	UMD2 INVERTER	A 53	0
pane	,5%,1/10W,1608 RK73B1JTTD512J	KOA	C 160	8 INVERTER A 20 0	R976		240,5%,1/10W,1608 00.5%,1/10W,1608	RK7381JTTD240J RK73Z1JTTD	KOA KOA	C 1608 INVERTER A 16 0 C 1608 INVERTER A 6 0 C 1608 INVERTER A C 1608 INVERTER A	D711 - D712 -				-	10	<ul> <li>INVERTER</li> <li>INVERTER</li> </ul>	A -	-
R307 M1001AT2ZJ M1001AT2ZJ 1kΩ,59	%,1/10W,1608 RK73B1JTTD102J	KOA	C 160	B INVERTER A B O B INVERTER A 9 O	R982					C 1608 INVERTER A	0713					c	NVERTER     NVERTER UMD2 NVERTER	Α -	=
R309 M1002AT2ZJ M1002AT2ZJ 10kQ,5	5%,1/10W,1608 RK73B1JTTD103J ,1%,2W,5025 ERJB1CFR02U	KOA Panasonin	C 160	8 INVERTER A 9 0	R983 R984		<u> </u>	<del> </del>		C 1608 INVERTER A	D721 RREBS605 1	SS355VM SS365VM	80V,100mA 80V,100mA	1SS355VMTE-17 1SS355VMTE-17	ROHM ROHM	0	UMD2 INVERTER	A 53	0
R602 RRTCP002 ERUB1CFR02U 0.020,	.1%.2W.5025 ERJB1CFR02U	Panasonic	C 500	5 INVERTER A 24 0 5 INVERTER A 24 0	C009					C 1608 INVERTER A C 1005 INVERTER A	D723 RREB5605 1	\$\$355VM	80V,100mA	1SS355VMTE-17	ROHM	č	UMD2 INVERTER UMD2 INVERTER	A 53	ō
REGIT   RETCPOOZ   ERJBICPROZU   0.000,	(1%,2W,5025 ERJB1CFR02U 11%,2W,5025 ERJB1CFR02U	Panasonic Panasonic	C 500	S INVERTER A 24 0	C010	<del> </del>	<u> </u>	<del>                                     </del>		R - INVERTER A	D724 RREB5605 1	SS355VM SS365VM	80V,100mA 80V,100mA	188359VMTE-17 188359VMTE-17	ROHM	0	UMD2 INVERTER UMD2 INVERTER	A 53	0
REGS CHURCHUZ CHURCHTUZO (LUCI)	, rajamjarita ENDIGHNIZU	reneono	C 500	C MARDTED A	Cess					C - INVERTER A	D726 RREBS605			188399VMTE-17 188399VMTE-17	ROHM	č	UMD2 INVERTER	A 53	ŏ
	0.1% 1/2W MF1/2CCT52A180	E WOA	C 500	5 NVERTER A	C112	A334AT025Z A334AT025Z A225AT025Z A225AT025Z		0805B334K250CT 0805B225K250CT	WALSIN WALSIN	C - INVERTER A C 2012 INVERTER A 38 0	D901				<u> </u>	C	UMD2 INVERTER - INVERTER - INVERTER - INVERTER	Α -	=
R609 \$1803ST2HF \$1803ST2HF 180kD,	1,1%,1/2W MF1/2CCT52A180		À .	INVERTER A 28 0	C114					C - INVENTER A	D903					C	- INVERTER	A -	-
R663 M5100AT2ZJ M5100AT2ZJ 5100,5 R664 M3001AT2ZJ M3001AT2ZJ 3k0,59	5%,1/10W,1608 RK73B1JTTD511J %,1/10W,1608 RK73B1JTTD302J		C 160	8 INVERTER A 19 0	C118	RROPP368 ERS1CM331F12P50T RROPP369 ERS1EM471G16B50T	330uF,16V	ERS1CM331F12P50T ERS1EM471G16B50T	AISHI	R - INVERTER A 45 0	D911 RREB5605 1 D912 RREB5605 1		80V,100mA 80V,100mA	1SS355VMTE-17 1SS355VMTE-17	ROHM ROHM				
R665 M3001AT2ZJ M3001AT2ZJ 3kQ,59	%,1/10W,1608 RK73B1JTTD302J	KOA	C 160	8 INVERTER A 17 0	C121	RRCP16732 ERS1EM471F20P50T	470uF,25V 470uF,25V	ERS1EM471F20P50T	AISHI	R - INVERTER A 46 0 R - INVERTER A 49 0	D913 RREBS605 1	5S355VM SS355VM	10V,100mA 10V,100mA	188355VMTE-17	ROHM	C	UMD2 INVERTER UMD2 INVERTER	A 53	0
	5%,1/10W,1608 RK73B1JTTD203J	KOA	C 160	8 NVERTER A 17 0 8 NVERTER A 17 0 8 NVERTER A 15 0 8 NVERTER A 15 0	C123	RRCPP370 ERS1AM101D11P50T	100uF,10V	ERS1AM101D11P50T	AISH	R - INVERTER A 47 0  C 1006 INVERTER A 35 0	D914 RREB5605 1 D915 RREB5605 1	SS3S5VM	0V,100mA	1SS355VMTE-17	ROHM	С	UMD2 INVERTER UMD2 INVERTER	A 53	0
R668 M2002AT2ZJ M2002AT2ZJ 20kD,5 R671 M2409AT2ZJ M2409AT2ZJ 24D,51	5%,1/10W,1608 RK73B1JTTD203J 76,1/10W,1608 RK73B1JTTD240J	KOA				A1042T016Z A1042T016Z		0402B104K160CT	WALSIN	C 1005 INVERTER A 35 O		SS355VM SS355VM	80V,100mA 80V,100mA	1SS355VMTE-17 1SS355VMTE-17	ROHM ROHM	С	UMD2 INVERTER	A 53	0
R672 M1500AT2ZJ M1500AT2ZJ 1500,5	5%,1/10W,1608 RK73B1JTTD151J	KOA	C 160	8 INVERTER A 12 0 8 INVERTER A 16 0	C126	A1042T050Z A1042T050Z		0402B104M500CT	WALSIN	C 1006 INVERTER A 31 0 R - INVERTER A 49 0	LD301			UDZVTE-176R88		A	<ul> <li>INVERTER</li> <li>UMD2 INVERTER</li> </ul>	A -	=
R673 M2409AT2ZJ M2409AT2ZJ 24Q,59 R674 M2002AT2ZJ M2002AT2ZJ 20kQ,5	76,1/10W,1608 RK73B1JTTD240J 5%,1/10W,1608 RK73B1JTTD203J	KUA	C 160	B INVERTER A 15 0	C219	RRCP16732 ERS1EM471F20P50T	470sF,25V		AISHI .	C 1006 INVERTER A	ZD120 RREBP159 U ZD701 -	IUZV15-1/6RBB		UUZVIE-1/6NBB	ROHM -	C	INVERTER	A 55	÷
R675 M2409AT2ZJ M2409AT2ZJ 240,51	76,1/10W,1608 RK73B1JTTD240J 5%,1/10W,1608 RK73B1JTTD151J		C 160	B INVERTER A 16 0	C272	A1011T050Z A1011T050Z A1011T050Z A1011T050Z		0402N101J500CT 0402N101J500CT	WALSIN WALSIN	C 1005 INVERTER A 32 O	ZD702 -					С	<ul> <li>INVERTER</li> </ul>	Α -	=
R677 M2409AT2ZJ M2409AT2ZJ 240.51	5%,1/10W,1608 RK/3B1JTTD240J		C 160	8 NVERTER A 15 0 8 NVERTER A 16 0 8 NVERTER A 12 0 8 NVERTER A 16 0	C286	A101110502 A101110502 A1042T016Z A1042T016Z			WALSIN	C 1006 INVERTER A	ZD703	DZVTE-1722B		UDZVTE-17228	ROHM	C	- INVERTER - INVERTER - INVERTER - INVERTER	A 56	0
R873 W2496ATZZI W2499ATZZ 240,59 R874 W2000ATZZI W2000ATZZ 250,70 R875 W2496ATZZI W2496ATZZ 240,59 R875 W2496ATZZI W2496ATZZ 240,59 R877 W2496ATZZI W2496ATZZ 240,59 R877 W2496ATZZI W2496ATZZ 240,59 R878 W2600ATZZI W2496ATZZ 240,59 R878 W2600ATZZI W2496ATZZ 240,59	5%,1/10W,1608 RK73B1JTTD203J	KOA	C 160	NVERTER   A   15   O	D961	A1011T050Z A1011T050Z A1011T050Z A1011T050Z		0402N101J500CT	WALSIN WALSIN	C 1005 INVERTER A 22 0 C 1005 INVERTER A 32 0 C 1005 INVERTER A 32 0 R - INVERTER A 44 0 C 2012 INVERTER A 42 0 R - INVERTER A 43 0 C 2012 INVERTER A 43 0	ZD902 RREBP208 U			UDZVTE-17228	ROMM ROMM  JRC INFINEON TECHNOLOGIES	C	UMD2 INVERTER	A 56	0
			C 32	6 INVERTER A	0662		100uF 25V.RZ	0402N101JS00CT URZ1E101MDD1TD		C 1005 INVERTER A 32 0	ZD903					C C	- INVERTER	A -	<u>-</u> ⊢
R715			C 32	6 INVERTER A	C964	RRCP3073 GRM21BB105		GRM21BB31E105KA98L	NICHICON MURATA	C 2012 INVERTER A 42 O	C4 RREAP265	LIM78MOSSOL1	V,1190mW	NJM78M0SSDL1(TE1)	JRC	č	- INVERTER	A 59	ō
R716, M1004AT2ZJ M1004AT2ZJ 1MD,5 R717 M1001AT2ZJ M1001AT2ZJ 1KD,59	5%, 1/10W, 1608 RK73B1JTTD105J %, 1/10W, 1608 RK73B1, ITTD102J	KOA	C 160	B INVERTER A 10 O	0965	D3966T035Z D3966T035Z A1042T0507 A1042T0507	39uF,35V,ML	35ML39MEFCT56.3X7	RUBYCON Wal SIN	R - INVERTER A 43 0	IC641 RREAP014 2 IC702 RREAP080 6	EDL23N06PJ EDL04106PT		2EDL23N06PJ 6EDL04106PT	INFINEON TECHNOLOGIES	8	DSO INVERTER	A 57	0
R718 M1000AT27.1 M1000AT27.1 1000.5	5%,1/10W,1608 RK73B1JTTD101J	KOA	C 160	8 INVERTER A 8 0 8 INVERTER A 7 0	D967	A1042T050Z A1042T050Z			WALSIN	C 1006 INVERTER A 31 O C 1006 INVERTER A 31 O	IC901 RREAP080 6	EDL04106PT	ich IGBT DRIVER	GEDL04106PT	INFINEON TECHNOLOGIES INFINEON TECHNOLOGIES	S	DSO INVERTER	A 58	ö
R720 M1102AT2ZF M1102AT2ZF 11kQ,1 R721 M2001AT2ZJ M2001AT2ZJ 29Q,59	1%,1/10W,1608 RK73H1JTTD1102 %,1/10W,1608 RK73R1JTTD2021		C 160	8 INVERTER A 13 0 8 INVERTER A 14 0	C668			-		C - INVERTER A	IC911				-	C P	INVERTER     INVERTER	A -	_
R722 M2001AT2ZJ M2001AT2ZJ 2kΩ,59	%,1/10W,1608 RK73B1JTTD202J	KOA	C 160	8 INVERTER A 14 0 8 INVERTER A 14 0	C702	RRCP3073 GRM2188105			MURATA	C 2012 INVERTER A 42 O C 1006 INVERTER A 36 O	Q201					С			
R723 M2001AT2ZJ M2001AT2ZJ 2kΩ,59 R724 M2001AT2ZJ M2001AT2ZJ 2kΩ,59	%,1/10W,1608 RK73B1JTTD202J %,1/10W,1608 RK73B1JTTD202J		C 160	8 INVERTER A 14 0 8 INVERTER A 14 0	C703	A2222T050Z A2222T050Z A1032T050Z A1032T050Z		0402B222K500CT 0402B103K500CT	WALSIN WALSIN	C 1005 INVERTER A 36 0 C 1005 INVERTER A 34 0	Q286 RREG5603 0 Q287 -	TC114EEBT	0V,50mA,10kΩ/10kΩ	DTC114EEBTL	ROHM	C	<ul> <li>INVERTER</li> </ul>	A 60	0
R725 M2001AT2ZJ M2001AT2ZJ 2kQ.59	%.1/10W.1608 RK73B1JTTD202J	KOA	C 160	8 INVERTER A 14 0 8 INVERTER A 14 0	C706	A1042T0167 A1042T0167		0402B104K160CT	WALSIN	C 1006 INVERTER A 35 0 C 1006 INVERTER A 39 0	L103 JUMPER L					A	- INVERTER	A 64	0
R726 M2001AT2ZJ M2001AT2ZJ 2kD,59 R727 M1000AT2ZJ M1000AT2ZJ 1000,5	%,1/10W,1608 RK73B1JTTD202J 5%,1/10W,1608 RK73B1JTTD101J	KOA	C 160	8 INVERTER A 14 0	C711	A3311T050Z A3311T050Z A3311T050Z A3311T050Z		0402N331J500CT 0402N331J500CT	WALSIN WALSIN	C 1006 INVERTER A 39 O	L104 JUMPER L L105 JUMPER L					A	INVERTER     INVESTED	A 64	0
2226	5%,1/10W,1608 RK73B1JTTD101J		C 160	8 INVERTER A 7 0 8 INVERTER A 7 0 8 INVERTER A 7 0	C713	A3311T050Z A3311T050Z		0402N331J500CT	WALSIN	C 1005 INVERTER A 39 O C 1005 INVERTER A 39 O C 1005 INVERTER A 39 O	JW003 JUMPER .	UMPER				A	<ul> <li>INVERTER</li> </ul>	4 64	0
R729 M1000AT2ZJ M1000AT2ZJ 1000.5 R730 M1000AT2ZJ M1000AT2ZJ 1000.5	5%,1/10W,1608 RK73B1JTTD101J 5%,1/10W,1608 RK73B1JTTD101J	KOA				A3311T060Z A3311T060Z A3311T060Z A3311T060Z		0402N331J500CT 0402N331J500CT	WALSIN WALSIN	C 1005 INVERTER A 39 0 C 1005 INVERTER A 39 0	JW004 JUMPER JP2 M0000AT2ZJ I	UMPER IDDODATEZI	IQ.5%.1/10W.1608	RK73Z1JTTD	MOV	A	<ul> <li>INVERTER</li> <li>1608 INVERTER</li> </ul>	A 64 1	0
R731 M1000AT2ZJ M1000AT2ZJ 1000,5	5%,1/10W,1608 RK73B1JTTD101J		C 160	B INVERTER A 7 0	C716	A3311T050Z A3311T050Z		0402N331J500CT	WALSIN	C 1005 INVERTER A 39 O	JP3 -		na, a n, al 1018, 1000	- INTERNATION		С	1608 INVERTER	A -	-
	5%,1/10W,1608 RK73B1JTTD101J ,1%,2W,5025 ERJB1CFR02U	KOA Danasania	C 160	NWENTER A 7 0	C717	A1042T050Z A1042T050Z A1022T050Z A1022T050Z		0402B104M500CT 0402B102K500CT	WALSIN WALSIN	C 1055 NORTHER A 39 0 0 C 1055 NORTHER A 30 0 C 1055 NORTHER A 31 0 C 1055 NORTHER A 31 0 C 1055 NORTHER A 31 0 C 1055 NORTHER A 3 0 C 1055 NORTHER A 30 0 C 1055 NORTHER A 30 0 C 1055 NORTHER A 31 0 C 10	JP701 - JP702 M0000AT2ZJ I	10000AT271	IQ.5%.1/10W.1608	- DW7274 ITTD	· MOA		1608 INVERTER 1608 INVERTER		
R771 M2002AT2ZJ M2002AT2ZJ 20kΩ,5	5%,1/10W,1608 RK73B1JTTD203J	KOA	C 160	B INVERTER A 15 0	C719					C 1005 INVERTER A	JP901					С	1608 INVERTER	Α -	-
R772 M2002AT2ZJ M2002AT2ZJ 20kΩ,5	5%,1/10W,1608 RK73B1JTTD203J 5%,1/10W,1608 RK73B1JTTD203J	KOA	C 160	B INVERTER A 15 0	C721	D3966T035Z D3966T035Z D3966T035Z D3966T035Z	39uF,35V,ML 39uF,35V,ML	35ML35MEFCT56.3X7 35ML35MEFCT56.3X7	RUBYCON RUBYCON	R - INVERTER A 43 O	JP902 M0000AT2ZJ I	100000AT2ZJ	IO,5%,1/10W,1608	RK73Z1JTTD	KOA	С	1608 INVERTER	A 6	0
R774 M2002AT2ZJ M2002AT2ZJ 20KD,5	5%, 1/10W, 1608 RK73B1JTTD203J	KOA	C 160	8 NVERTER A 15 0 8 NVERTER A 15 0 8 NVERTER A 15 0 8 NVERTER A 15 0 8 NVERTER A 15 0	C723	D3966T035Z D3966T035Z	39uF,35V,ML 39uF,35V,ML		RUBYCON	R - INVERTER A 43 0									$\exists$
R775 M2002AT2ZJ M2002AT2ZJ 20kD,5 R776 M2002AT2ZJ M2002AT2ZJ 20kD,5	5%,1/10W,1608 RK73B1JTTD203J 5%,1/10W,1608 RK73B1JTTD203J	KOA	C 160	B INVERTER A 15 0	C724	A1042T050Z A1042T050Z A1042T050Z A1042T050Z		0402B104M500CT 0402B104M500CT	WALSIN WALSIN	C 1005 INVERTER A 31 O						$\Box$			=
R781 M4702AT2ZJ M4702AT2ZJ 47kQ.5	5%.1/10W.1608 RK73B1JTTD473J	KOA	C 160	B INVERTER A 18 0	C726	A1042T050Z A1042T050Z A1042T050Z A1042T050Z	<b>-</b>	0402B104M500CT 0402B104M500CT	WALSIN WALSIN	C 1005 INVENTER A 31 O	$\vdash$				<b>-</b>	+	-	111	$\dashv$
R782 M4702AT2ZJ M4702AT2ZJ 47kΩ,5	5%.1/10W.1608 RK73B1JTTD473J	KOA	C 160	8 INVERTER A 18 0 8 INVERTER A 18 0 8 INVERTER A 18 0	C731	F F	-	1		C 1005 INVERTER A 31 O C 1608 INVERTER A						$\Box$		+	=
R783 M4702AT2ZJ M4702AT2ZJ 47kQ,5 R784 M4702AT2ZJ M4702AT2ZJ 47kQ,5	5%,1/10W,1608 RK73B1JTTD473J 5%,1/10W,1608 RK73B1JTTD473J	KOA KOA	C 160	B INVERTER A 18 0	C732 C733	<del>                                     </del>	<del></del>	+		C 1608 INVERTER A	$\vdash$				<b>-</b>	+	-	Ħ	$\dashv$
R785 M4702AT2ZJ M4702AT2ZJ 47kQ,5	5%,1/10W,1608 RK73B1JTTD473J	KOA	C 160	8 INVERTER A 18 0 8 INVERTER A 18 0 8 INVERTER A 18 0	C734					C 1608 INVERTER A C 1608 INVERTER A						$\perp$			_
	5%,1/10W,1608 RK73B1JTTD473J 5%,1/10W,1608 RK73B1JTTD101J	KOA KOA	C 160	B INVERTER A 18 0	C735	<del>                                     </del>	<u> </u>	<del> </del>		C 1608 NNERTER A	$\vdash$			· · · · · · · · · · · · · · · · · · ·	-	+		++-	$\dashv$
R788 M1000AT2ZJ M1000AT2ZJ 1000.5	5%,1/10W,1608 RK73B1JTTD101J	KOA	C 160	8 NVERTER A 7 0 8 NVERTER A 7 0 8 NVERTER A 7 0 8 NVERTER A 7 0	C736 C737	A1011T050Z A1011T050Z		0402N101J500CT	WALSIN	C 1005 INVERTER A 32 O						$\Box$			コ
	5%,1/10W,1608 RK73B1JTTD101J 5%,1/10W,1608 RK73B1JTTD101J	KOA KOA	C 160	B INVERTER A 7 0 B INVERTER A 7 0	C738	A1011T050Z A1011T050Z A1011T050Z A1011T050Z		0402N101J500CT 0402N101J500CT	WALSIN WALSIN	C 1005 INVERTER A 32 O	$\vdash$					+		++	$\dashv$
R791 M1000AT2ZJ M1000AT2ZJ 1000,5	5%.1/10W.1608 RK73B1JTTD101J		C 160	8 INVERTER A 7 0 8 INVERTER A 7 0	C740	A1011T050Z A1011T050Z		0402N101J500CT	WALSIN	C 1005 INVERTER A 32 O									_
R792 M1000AT2ZJ M1000AT2ZJ 1000,5 R901 M5109AT2ZJ M5109AT2ZJ 510,51	5%,1/10W,1608 RK73B1JTTD101J 76,1/10W,1608 RK73B1JTTD510J	KOA	C 160	8 INVERTER A 7 0 8 INVERTER A 21 0	C741	A1011T050Z A1011T050Z A1011T050Z A1011T050Z		0402N101J500CT 0402N101J500CT	WALSIN WALSIN	C 1005 INVERTER A 32 0 C 1005 INVERTER A 32 0	$\vdash$					+		$\mathbf{H}$	-7
R902 M5109AT2ZJ M5109AT2ZJ 510,51	%,1/10W,1608 RK73B1JTTD510J	KOA	C 160	8 INVERTER A 21 0	C772	A1042T050Z A1042T050Z		0402B104M500CT	WALSIN	C 1005 INVERTER A 31 0								ш	$\exists$
	%,1/10W,160B RK73B1JTTD510J %,1/10W,160B RK73B1JTTD510J	KOA	C 160	B INVERTER A 21 0	C805	A1042T016Z A1042T016Z		0402B104K160CT	WALSIN WALSIN	C 1005 INVERTER A 35 0 C 1005 INVERTER A 41 0						$\Box$		$\blacksquare$	7
R906 M5109AT2ZJ M5109AT2ZJ 51U,51	%,1/10W,1908 RK73B1JTTD510J	KOA	C 160	8 INVERTER A 21 0 8 INVERTER A 21 0	C901	A6811T050Z A6811T050Z A6811T050Z A6811T050Z		0402N681J500CT	WALSIN	C 1006 INVERTER A 41 0 C 1006 INVERTER A 41 0 C 1006 INVERTER A 41 0	$\vdash$					+		++	$\exists$
R906 M5109AT2ZJ M5109AT2ZJ S10,51	%,1/10W,1608 RK73B1JTTD510J 5%,1/10W,1608 RK73B1JTTD203J	KOA	C 160	8 INVERTER A 21 0 8 INVERTER A 15 0	C902	AG811T050Z AG811T050Z		0402N681J500CT 0402N681J500CT	WALSIN WALSIN	C 1006 INVERTER A 41 O C 1006 INVERTER A 41 O						$\Box$			_
R908 M2002AT2ZJ M2002AT2ZJ 20kD,5	5%.1/10W.1608 RK73B1JTTD203J	KOA	C 160	8 INVERTER A 15 0	C904	A6811T050Z A6811T050Z	<b> </b>	0402N681J500CT	WALSIN	C 1005 INVERTER A 41 0	$\vdash$				<b>-</b>	+	_	++	$\dashv$
R909 M2002AT2ZJ M2002AT2ZJ 20kΩ,5	5%,1/10W,1608 RK73B1JTTD203J					A6811T050Z A6811T050Z A6811T050Z A6811T050Z		0402N681J500CT	WALSIN	C 1005 INVERTER A 41 0						$\Box$		Ħ	
PS910 M2002AT2ZJ M2002AT2ZJ 20k0_5 R911 M2002AT2ZJ M2002AT2ZJ 20k0_5	5%,1/10W,1608 RK73B1JTTD203J 5%,1/10W,1608 RK73B1JTTD203J	KOA	C 160	8 INVERTER A 15 0 8 INVERTER A 15 0	C906		220uF 25V	ERS1EM221F12P50T	WALSIN AISHI	C 1005 INVERTER A 411 O R - INVERTER A 48 O C 2012 INVERTER A 42 O	$\vdash$				-	+	-	++	$\dashv$
R912 M2002AT2ZJ M2002AT2ZJ 20kΩ,5	5%,1/10W,1608 RK73B1JTTD203J	KOA	C 160	8 INVERTER A 15 0 8 INVERTER A 7 0	C911	RRCP9371 ERS1EM221F12P50T RRCP3073 GRM21BB105		GRM21BB31E105KA98L	MURATA	C 2012 INVERTER A 42 O						$\Box$		$\Box$	_
PERET #M1000AT2ZJ #M1000AT2ZJ 1000.5	5%,1/10W,1608 RK73B1JTTD101J	pKOA	C 160	B INVERTER A 7 0	C912	A2232T060Z A2232T060Z		D4028223K500CT	WALSIN	C 1005 INVERTER A 37 0						$\vdash$		ш	_

#### HIC PCBA (SUB-PCBA OF INVERTER PCBA)

v Symbol C128	DRAWING No.	NAME OF PART A1042T016Z	RATING	Model Number 0402B104K160CT	Manufacturer WALSIN	MOUNT	1005 H	CB A/B Par No.		av Symb	ol DRAWII	ING No. NAM	IE OF PART	RATING	Model Number	Manufacturer		PCB A/B P	at GROUP Re	Symbi R407	ol DRAWING N	NAME OF PART	RATING	Model Number	Manufacturer		FORM PCE		art Giv
C129	A1046T025Z	A1046T025Z		0603B104K250CT	WILL SIN	č		6C A 44 6C A 44		Q891		===						HIC B		8408	1	1			1		1005 HC		_
C191	A1046T025Z	A1046T025Z		0603B104K250CT	WALSIN	0	1608 H	6C A 44	$\Box$	R200	RRTC15	5716 AF0402F	R-0710KL IR-07510RI	10kD,1%,1/16W,1005 510D,5%,1/16W,1005	AF0402FR-0710KL AF0402 IR-07510RI	YAGEO	C 1005	HIC B 1	0	R409	-	AEDMOS ID OTHOW				1	1005 HIC	181	Ŧ
(20)	RRTC15734	A104210162 AF0402/R-0710KI	1060 SW 1/16W 1005	0402B104K160CT 4F0402 IR-0710KI	WALSIN VAGEO	6	1005 F	SC A 5	-	9203	RRTC15	5726 AF0402.	IN-U/STUNL	510U,5%,1/16W,1005	AF04023R-07510RL	YAGEU	C 1005	HIC B 3		R431	981C16303	AF04023R-0710RL AF0402FR-023K32I	3.32k0.1%,1/16W,1005	AF0402JR-0710KL AF0402FR-073K32L	YAGED YAGED	1 8 1	1005 HIC 1005 HIC	4817	#
C203	-	- CONTRACTOR CONTRACTOR	-				1005 H	IC A -	-	R206		5733 AF0402.	R-075K1L	5.1kQ.5%.1/16W.1005	AF0402JR-075K1L	YAGEO	C 1005	HIC A :	1	8471		-	-	·	·		1005 HC	A .	+
C204	A4712T050Z	A4712T050Z		04028471K500CT	WALSIN	С	1005 H	6C A 48		R208	RRTC15	5734 AF0402J	R-0710K).	10kΩ,5%,1/16W,1005	AF0402JR-0710K).	YAGEO	C 1005	HIC B 1	1	R472							1005 HC	. A .	_
	A4732T025Z			3402B473K250CT 3402B471K500CT	WALSIN WALSIN	C	1005 H	IC A 49	$\vdash$	R209	RRTC15	5734 AF0402.J	IR-0710KL	10kO,5%,1/16W,1005	AF0402.JR-0710KL AF0402.JR-0710KL	YAGEO YAGEO	C 1005 C 1005	HIC B 1	1	R473		<u> </u>	-	-			1005 HIC 1005 HIC	- 141-	4
	84712T0502	A4712T0502			WALSIN	č	1005 F	HC A 48	-	9212		5725 AF0402		3900 5% 1/16W 1005	ACTARO ID (17500D)	YAGEO	C 1005	HIC A 2	Ė	R475		4F0402 (R,0710K)	10kO 5% 1/16W 1005	AF0402 IR.0710KI	VACEO		1005 HC		+
C209	-	-		-	-		1005 F	IC A -		R213	RRTC15	5734 AF0402J	IR-0710KL	10kD.5%.1/16W.1005 390D,5%,1/16W,1005	AF0402JR-0710KL AF0402JR-07390RL	YAGEO	C 1005	HIC A 1	1	R476	RRTC15734	AF0402JR-0710KL	10kQ.5%,1/16W,1005	AF0402JR-0710KL	YAGEO	Č	1005 HC	A 1	1
C210	RRCPP196	GRM155C81C474KE01D		GRM155C81C474KE01D	MURATA	٥	1005 H	6C B 50	$\Box$	R214	RRTC15	5725 AF0402.	R-07390RL	3900,5%,1/16W,1005	AF0402JR-07390RL	YAGEO	C 1005	HC A 2	6	R477	RRTC15734	AF0402JR-0710KL	10kQ 5% 1/16W 1005	AF0402JR-0710KL	YAGEO	c l	1005 HIC	JAL 1	Ŧ
C211	A4732T025Z	A4/32/1025Z		04028473K250CT	WALSIN	С	1005 H	8C R 49	$\vdash$	R215	RRICIS	5722 AF0402J	IR-0/100NL	1000,5%,1/16W,1005 10k0,5%,1/16W,1005	AF0402JR-07100RL AF0402JR-0710KL	YAGEO	C 1005	HIC A	-	10478	NRTC15/34	AF0402JR-0710KL	10kΩ,5%,1/16W,1005 430Ω,5%,1/16W,1005	AF0402JR-0710KL AF0402JR-07430RL	YAGEO	0	1005 HIC	10 1	#
C215	•			•		-	- 1	ic B :	-	R223	RRTC15	5734 AF0402. 5734 AF0402.	R-0710KL	10kD,5%,1/16W,1005	AF0402JR-0710KL	YAGEO	C 1005 C 1005	HIC A 1	1	3526	RRTC15/38		4300,5%,1/16W,1005	AF0402.JR-07430RL	YAGED	č	1005 HIC 1005 HIC	: <del>1812</del>	át-
C216	RRTC15734	AF0402JR-0710KL	10kO,5%,1/16W,1005	AF0402JR-0710KL	YAGEO	0	1005 1005 1005 2012	6C B 11		R224	RRTC15	5725 AF0402, 5733 AF0402,	R-07390RL	3900 5% 1/16W 1005	AF0402JR-07390RL	YAGEO	C 1005	HIC A 2	6	R527	RRTC15738		4300 5% 1/16W 1005	AF0402.IR-07430RL	YAGEO	C	1005 HIC	B 29	12
C217	A1042T01EZ A22SCT02SZ	A1042T016Z A22SCT02SZ		04028104K160CT 0805X22SK2S0CT	WALSIN WALSIN	C	1005 H	EC A 43	$\vdash$	R225	RRTC15	5733 AF0402J 5734 AF0402J	IR-075K1L	5.1kQ.5%,1/16W,1005	AF0402JR-075K1L	YAGEO	C 1005 C 1005	HIC B 3	1	R528	RRTC15738	AF0402JR-07430RL AF0402JR-07430RL	4300,5%,1/16W,1005	AF0402JR-07430RL AF0402JR-07430RL	YAGEO	C	1005 HIC 1005 HIC	A 28	4
1222	AZZOC TUZSZ	AZZSC10ZSZ		USUSAZZSKZSUCI	HALDIN				-	9228	RRICH	5725 AF0402	B-07 1002	10k0,5%,1/16W,1005 3900,5%,1/16W,1005	AF0402.JR-0710K), AF0402.JR.07390RI	VAGEO	C 1005	HIC A		9530	RRTC15738	AF0402.R-07430RL	4300,5%,1/16W,1005	AF0402.R-07430RL	VACEO	1 × 1	1005 HI	1819	#
	RRTC15734		10kO.5%, 1/16W, 1005	AF0402JR-0710KL	YAGEO	C	1005 H 1005 H	IC B 11		R229				-			- 1005 C 1005	HIC A	-	9631	RRTC15722	AF0402.JR-07100RL AF0402.JR-07100RL	1000,5%,1/16W,1005	AF0402JR-07100RL	YAGEO	C	1005 HIC	B 7	
C224	RRTC15734 A1042T016Z	AF0402JR-0710KL	10kΩ,5%,1/16W,1005	AF0402JR-0710KL 0402B104K160CT	YAGEO WALSIN	C	1005 H	EC A 11	_	R230	RRTC16	6202 AF0402. 5722 AF0402.	IR-07330RL	3300,5%,1/16W,1005 1000,5%,1/16W,1005	AF0402JR-07330RL AF0402JR-07100RL	YAGEO	C 1005	HIC A 2	4	R632	RRTC15722	AF0402JR-07100RL AF0402JR-070RL	100Ω,5%,1/16W,1005 0Ω,5%,1/16W,1005	AF0402JR-07100RL AF0402JR-070RL	YAGEO	C L	1005 HC	<u> 1817</u>	4
C225	RRTC15734	A104210162 AF0402JR-0710KL	10kQ.5%.1/16W.1005	AF0402.IR-0710KL	WALSIN	C C	1005 H	B 43	-	RZ34	PRICIS	5730 AF0402J	IR-0/100NL	2 2kO 5%, 1/16W, 1005	AF0402JR-072K2L	YAGEO VAGEO	C 1005	HIC A		R634	MRTC15/3/	AFD40ZJR-U/UNL	0U,5%,1/16W,1005	AF040ZUR-07URG	YAUEU	6	1005 HU	-121-2	+
C234	A1042T016Z	A1042T016Z	1000 2 N. H 1011 . 1002	0402B104K160CT	YAGEO WALSIN					R239						-				70,35	1						1005 HIC 1005 HIC	181	$\pm$
C235	A1042T016Z	A1042T016Z		0402B104K160CT	WALSIN	٥	1005 H	IC A 43		R240	RRTC15	5727 AF0402.	IR-071K).	1k0,5%,1/16W,1005	AF0402JR-071KL	YAGEO	C 1005	HIC B	9	R637	RRTC15734	AF0402JR-0710KL	10kQ.5%,1/16W,1005	AF0402JR-0710KL	YAGEO	c	1005 HIC	A 1	Ŧ
C236	A1042T016Z A1042T016Z	A1042T016Z		0402B104K160CT 0402B104K160CT	WALSIN	C	1005 H	EC A 43	$\vdash$	R243	+	<del>-</del>			+	_	- 1006	HIC A	<del></del>		RRTC15723	AF0402,IR-07160RL	1600,5%,1/16W,1005	AF0402JR-07160RL	YAGEO	C	1005 HIC	A 15	4
C238	A104210162 A1042T0162	A1042T016Z	l			ř	1005 H 1005 H 1005 H 1005 H 1005 H	記 日報	$\vdash$	8247	RRTC19	5722 AF0402.		1000,5%,1/16W,1005	AF0402JR-07100RL	YAGEO	C 1005 C 1005	HIC A	<del>                                      </del>	R650	RRTC15/34	AF0402FR-0713K3L AF0402JR-0710KL	13.38Ω,1%,1/16W,1005 10kΩ,5%,1/16W,1005	AF0402FR-0713K3L AF0402JR-0710KL	YAGEO	<del>  }  </del>	1005 HIC 1005 HIC 1005 HIC	:121÷	+
	A1042T016Z			0402B104K160CT	WALSIN	C	1005 H	IC A 43		R248	RRTC15	5722 AF0402.	IR-07100RL	1000,5%,1/16W,1005	AF0402JR-07100RL	YAGEO	C 1005	HIC B	7	R681	-	1		-		· I	1005 HIC	B -	#
C240	A1042T016Z A1042T016Z	A1042T016Z		0402B104K160CT 0402B104K160CT	WALSIN					R251	RRTC15	5714 AF0402F 5716 AF0402F	R-077K15L	7.15k0.1%,1/16W.1005 10k0,1%,1/16W,1005	AF0402FR-077K15L AF0402FR-0710KL	YAGEO VAGEO	C 1005	HIC B 3	5	R682	+	<del>                                     </del>		<del></del>	<del></del>	H-T	1005 HIC	481	+
C251	A2225T050Z	A2225T050Z	<b> </b>	0603N222JS00CT	WALSIN	l č	1005 H 1608 H 1005 H	E 8 45	-	R253	RRTC15	5716 AF0402F	R-0710KL	10kD,1%,1/16W,1005	AF0402FR-0710KL	YAGEO	C 1005 C 1005	HIC B 1	ŏ	R650		f -		f -	ŧ –	<del>     </del>	1005 HIC 1005 HIC	181	+
	A1022T050Z			0402B102K500CT	WALSIN	C	1005 H	0C B 40		R254		-					. 1995	HIC R		R691			7.15k0,1%,1/16W,1005	AF0402FR-077K1SL	YAGEO	С	1005 HC	3 B   3	5
C271	A1042T016Z	A1042T016Z		0402B104K160CT	WALSIN	C	1005 H	IC A 43	$\Box$	R255	RRTC16	6211 AF0402F	R-075KSL	5.6kO,1%,1/16W,1005 7.15kO,1%,1/16W,1005	AF0402FR-075KEL	YAGEO	C 1005	HIC B 3	4	9692	RRTC16191	AF0402FR-071KL	1kO,1%,1/16W,1005	AF0402FR-071KL	YAGEO	С	1005 HC	4813	45
C281	pci0421016Z	p. run 210162	t e	UNUZBTUAKTEUCT	mecSIN	U.	1005 H	BC B -	<del></del>	R255	BRTC46	5714 AF0402F 5727 AF0402J	RJ071K1	7.15k0,1%,1/16W,1005 1k0,5%,1/16W,1005	AF0402FR-077K1SL AF0402JR-071KL	YAGEO YAGEO	C 1005	HIC B	9	9694	BRTC16464	AF0402FR-0716KSL	16 SkO 1% 1/16W 1005	AF0402FR-0716KSL	VAGEO	i i	1005 HC	<del>         </del>	<u>.</u>
C288			F	1	F					R258	RRTC15	5714 AF0402F	R-077K15L	7.15kQ.1%.1/16W.1005	AF0402FR-077K15L	YAGEO	C 1005 C 1005	HIC A 3	š				10kΩ,1%,1/16W,1005		YAGEO	1 č	1005 HIC 1005 HIC	ाडी है	4
C291	A1046T025Z	A1046T025Z		0603B104K250CT	WALSIN	C	1608 H	IC A 44		R259	RRTC19	5722 AF0402.		100O,5%,1/16W,1005	AF0402JR-07100RL	YAGEO	C 1005	HIC B		R696	RRTC16191	AF0402FR-071KL	1kΩ,1%,1/16W,1005	AF0402FR-071KL	YAGEO	C	1005 HIC	B 8	4
C292	A4732T095Z A1042T016Z	A4732T025Z A4642T0462		0402B473K250CT	WALSIN	- 6	1005 H	IC   A   49	$\vdash$	R260 R263	RRTC15	5726 AF0402. 5734 AF0402.	R-07510RL	5100,5%,1/16W,1005 10kΩ,5%,1/16W,1005	AF0402 JR-07510RL	YAGEO VAGEO	C 1005 C 1005	HIC A 3	9	R697	RRTC15716	AF0402FR-0710KL AF0402FR-072KL	10kQ 1%, 1/16W 1005 2kQ 1%, 1/16W 1005	AF0402FR-0710KL AF0402FR-072KL	YAGEO VAGEO	181	1005 HC	18 7	41
C293	n.04210162	- 1010E				٠.	1000 H	EC A 43	<del></del>	R264	RRTC15	5734 AF0402J 5734 AF0402J	IR-0710KI	10kO 5% 1/18W 1005	AF0402JR-0710KL AF0402JR-0710KL	YAGEO	C 1005	HIC A 1	<del>                                      </del>	9699	RRTC15722	4F0402 IR-07100R1	1000 S% 1/16W, 1005	AF0402JR-07100RL	YAGEO	C	1005 HIC	B 7	7
C321	A1036T050Z	A1036T0S0Z		0603B103K500CT	WALSIN	Ċ	1608 H	IC B 42		R265	RRTCH	5722 AF0402.	R-07100RL	10kD 5% 1/16W 1005 1000,5% 1/16W,1005	AF0402JR-07100RL					R701	RRTC16207		1000.5% 1/16W 1005 4700,5% 1/16W 1005	AF0402JR-07470RL	YAGEO	С	1005 HIC	A 2	9
C641	A1032T025Z	A1032T025Z		04028103K250CT	WALSIN WALSIN	C	1005 H	IC A 41	$\Box$	R266	RRTC15	5722 AF0402.	R-07100RL	1000,5%,1/16W,1005	AF0402JR-07100RL	YAGEO	C 1005	HIC B	7	R702	RRTC16207	AF0422JR-07470RL	4700,5%,1/16W,1005	AF0422JR-07470RL	YAGEO	C	1005 HIC	A 2	£Ε
C662	A102210502	A102210502		04028102K500C1	WALSIN	- C	1005 H	B B 40	-	R271	PDTC10	5733 AF0402.J	ID N7CV11	5.1kO.5%,1/16W,1005	AF0402JR-075K1L	VACEO	C 1005	HC B	-	P704	DDTC16207	AF0402JR-07470RL	470U,5%,1/16W,1005	AF0402JR-07470RL	VACEO	6	1005 HC	1 2 2	<del>/-</del>
0891	A1032T0257	A1032T0257		0402B103K250CT	WALSIN WALSIN	· c				9272	BRTC19	5733 AF0402. 5725 AF0402.	IR.075K1I	5.1kQ.5%,1/16W.1005	AF0402JR-075K1L	VAGEO	C 1005	HIC B 3		8705	RRTC16207	AF0402.IR-07470RL AF0402.IR-07470RL	4700 5% 1/16W 1005	AF0402JR-07470RL	YAGEO	č	1005 HIC 1005 HIC	1 2 2	4
C692				0402B104K160CT	WALSIN	Ĉ	1005 F	IC A 43		R273	RRTC15	5725 AF0402.	R-07390RL		AF0402JR-07390RL		C 1005 C 1005	HIC A 2	6	R706	RRTC16207	AF0402JR-07470RL	4700,5%,1/16W,1005	AF0402JR-07470RL	YAGEO	C	1005 HIC	A 2	<u> </u>
C693	A4722T050Z	A4722T050Z		0402B472K500CT	WALSIN	C	1005 H	IC A 46	-	R274	RRTC15	5725 AF0402. 5722 AF0402.	R-07390RL	3900,5%,1/16W,1005 1000,5%,1/16W,1005	AF0402JR-07390RL AF0402JR-07100RL	YAGEO	C 1005 C 1005	HIC A 2	6	R719 R758	RRTC15737	AF0402JR-070Rt.	0Ω,5%,1/16W,1005	AF0402JR-070RL	YAGEO	С	1005 HIC 1005 HIC	A 6	4
C762	A1032T0957	A1032T0257		0402B103K250CT	WALSIN	Ċ	1005 H	IC A 41	-	R276	BRTC16	5722 AF0402J 5722 AF0402J	IR-07100RL	1000,5%,1/16W,1005	AF0402JR-07100RL	YAGEO YAGEO	C 1005 C 1005	HIC A	7	9759	RRTC16204	AF0402FR-0734K8L	34.8kD.1%.1/16W.1005	AF0402FR-0734KBL	VAGEO	ċ	1005 HIC 1005 HIC	1 2	4
C764						1	- 18	ICTAT -	-	R277				1000,5%,1/16W,1005	AF0402JR-07100RL	YAGEO				R760	RRTC16200	AF0402FR-0723K2L	23.2kD,1%,1/16W,1005	AF0402FR-0723K2L	YAGEO				生
	M0000AT2ZJ M0000AT2ZJ	M0000AT2ZJ	1Ω.5%,1/10W,1608	RK73Z1JTTD	KOA KOA	C	1608 H	IC A 22		R278	RRTC15	5722 AF0402.1 5734 AF0402.1	R-07100RL	1000,5%,1/16W,1005 10kD,5%,1/16W,1005	AF0402JR-07100RL AF0402JR-0710KL	YAGEO	C 1005 C 1005	HIC A	7	2761	RRTC16206	AF0402FR-074K22L AF0402FR-0723K2L	4.22kQ.1%.1/16W.1005 23.2kQ.1%.1/16W.1005	AF0402FR-074K22L AF0402FR-0723K2L	YAGEO		1005 HC		4
C808		MUUUUM122J	VLI,5%,1/10W,1606	RK73Z1JTTD	NUR	-	1000 1	IC A -	-	D191	COTO	6213 AF04025	D 070971	8.2kQ.1%,1/16W,1005	AF0402FR-078K2L	YAGEO	C 1005	HIC A	-	0702	PDTC16200		4.22kO,1%,1/16W,1005	AF0402FR-074K22L	VACEO	č	1005 HIC 1005 HIC	12 5	<del>/-</del>
C891						1	· B	ec B -		R283	RRTC15	5734 AF0402. 5734 AF0402.	R-0710KL R-0710KL	10kO 5% 1/16W 1005	AF0402JR-0710KL AF0402JR-0710KL	YAGEO	C 1005	HIC B 1	ĭ	R764	RRTC16197	AF0402FR-0717K4L AF0402FR-0717K4L	17.4kQ.1%.1/16W.1005 17.4kQ.1%.1/16W.1005	AF0402FR-0717K4L AF0402FR-0717K4L	YAGED	č	1005 HC	A 1	7
C892					-		- IB	BC A -	-	R284	RRTC15			10kΩ,5%,1/16W,1005		YAGEO	C 1005 C 1005	HC B 1	1	R767	RRTC16197				YAGEO	С	1005 HIC	A 1	4
C831	A1042T016Z	A1042T016Z		0402B104K160CT	WALSIN	C	1005	IC A 43 IC B -	$\vdash$	R287	RRTC16	6211 AF0402F	-R-075K6L	5.6kO.1%,1/16W.1005	AFD402FR-075K6L	YAGEO	C 1005 - 1005	HIC B 3	4	R769	RRTC15716	AF0402FR-0710KL	10k0,1%,1/16W,1005	AF0402FR-0710KL	YAGEO	C	1005 HIC 1005 HIC	1415	4
0251	RREBS605	1SS355VM	80V.100mA	1SS359VMTE-17	ROHM	Ċ	UMD2 H	IC B 57	-	R289	RRTC16	6201 AF0402F	R-0730K1L	30.1kQ.1%,1/16W.1005	AF0402FR-0730K1L	YAGEO	C 1005	HIC A 2	3	R805	RRTC15737	AF0402JR-070RL	00.5%,1/16W,1005	AF0402JR-070RL	YAGEO	С	1005 HIC	B 6	6
0271	RREBS212	KDS184	80V,100mA	KDS184-RTK/PH	KEC	С	S0T-23 H	RC B 54		R290	- F	-		-			- 1005	HIC A		R831		-			-	- I	1005 HIC	- IAI	I
0272	RREBS213	KDS181	80V,100mA 80V,100mA	KDS181-RTK/PH KDS226-RTK/PH	KEC	C	SOT-23 H	HC B 55	$\vdash$	R291		6210 AF0402F	R-075K23L	5.23kQ,1%,1/16W,1005	AF0402FR-075K23L AF0402FR-0710KL	YAGEO	C 1005	HIC A 3	3	R832		4F0402 IR.0710KI	10k0 5% 1/16W 1005	AF0402JR-0710KL	- MACCO		1005 HIC 1005 HIC		+
0321	RREBS212	KDS184	30V.100mA	KDS184-RTK/PH	REC	C	S0T-23 H	IC A 54	-	R293	RRTC16	5716 AF0402F 6210 AF0402F	R-075K23L	10kΩ 1% 1/16W 1005 5.23kΩ 1% 1/16W 1005	AF0402FR-075K23L	YAGEO	C 1005	HIC A 3	3	7834	RRTC15/34	AF0402JR-0710KL	10kQ.5%.1/16W.1005	AF0402JR-0710KL	YAGED	C	1005 HIC	C B 11	#
0322	RREB5213	KDS181	80V.100mA	KDG181-RTK/PH	KEC	C				R294	RRTC16	6195 AF0402F	R-0715K0L	15kQ 1% 1/16W 1005 15kQ 1% 1/16W 1005	AF0402FR-0715K0L	YAGEO	C 1005	HIC A 1	4	R890							1005 HIC	C B -	I
D431 D691	MNEBS605	15SJSSVM	80V,100mA	1SS3SSVMTE-17	ROHM	C _	UMD2 H SOT-23 H SOT-23 H	st A 57	-			6195 AF0402F 5716 AF0402F		15kΩ,1%,1/16W,1005 10kΩ,1%,1/16W,1005	AF0402FR-0715K0L AF0402FR-0710KL	YAGEO	C 1005	HIC A 1	-	R891		+		t	+ -		1005 HIC 1005 HIC		4
0761	RREBS215	KDS226	80V.100mA 80V.100mA	KDS226-RTK/PH KDS236-RTK/PH	REC	1 8	SOI -23	분유	$\vdash$	8301	nr((C1)	DI 10 AF-04025	TS-ev refit.	- INNELS, 176, 1716WC1005	-	-	C 1005	HE A		10002		<del></del>		t	t		1005 HIC	: IBI -	+
0801										R302							- 1005	HIC A		R894							1005 HIC	B -	. T
D802	1			$\vdash$			- B	HC B -		R303		6191 AF0402F	R-071KL	1kD,1%,1/16W,1005	AF0402FR-071KL	YAGEO		HIC A		R295		$\vdash =$		$\vdash =$			1005 HIC 1005 HIC		
	RRERSEAS	10032200A	- 90V 100mA	155355/MTF-17	ROHM	1 :	IMD2 H	EC A F		R304		5734 AF04001	R.0710K1	10kO 5% 1/16W 1005	AF0402 IR.0710KI	VAGEO		HIC A 1		R896		<del> </del>	-	<del> </del>	-		nuth HC	+ 151 -	+
0891	-	-	-	-	-	Ť		IC A 57	1	R310	-		1 1000	-	- Thomas and the same	-	. 1005	HIC A		R898		1		1	1	1	1005 HC	181	$\pm$
0892							. 1	ec R .		8311		-					- 1005	HIC A		9899						-	1005 HC	i A	Ŧ
EEPRON IC12	RREAP186	M24128-BRDW6TP	128800	M24128-BRDW6TP	STMicroelectronics	S	ISSOP8 H	IC A 66	$\vdash$	R312		- AED400	RJ171KRI	1.8kO 1% 1/16W 1005	AFRAROFR, N71KRI	VACEO	- 1005	HIC B 1	-	R990		AF0402JR-07100RL AF0402JR-07100RL	1000,5%,1/16W,1005 1000,5%,1/16W,1005	AF0402JR-07100RL AF0402 IR-07100RL	YAGEO	c C	1005 HIC	4417	+
C2	RREASS28	KID65003AF	7ch transistor array	KID65003AF	KEC	Ċ	P-SOP H	IC A 67		8322	RRICH	5707 AF04025	R-071KBL	1.8kQ.1%,1/16W.1005	AF0402FR-071KBL	YAGEO	C 1005	HIC R 1	8	R9992	RRTC15722	AF0402.IR-07100RL	1000,5%,1/16W,1005	AF0402JR-071009L	YAGEO	Ĉ.	1005 HIC	7 A 7	7
IC3	RREA5276	NJM2742M		NJM2742M(TE1)	JRC	S	SOP H	IC R 63				5734 AF0402J	IR-0710K).	10kΩ,5%,1/16W,1005	AF0402JR-0710KL	YAGEO	C 1005	HIC B 1	1	001		CSTNE10M0G55	10MHz	CSTNE10M0G550000RD	MURATA	н	HC	A 7	4
C5	RREA6124	NJM2903CG-TE2	DUAL COMPARATOR	NJM2903CG(TE2)	JRC		SOP H	IC A 64	$\vdash$	R326			R-070RL	00.5%.1/16W.1005	AF0402JR-070RL	YAGEO	C 1005		4	ZD121		UDZVTE-176R88	6.697-6.93Y.200mW	UDZVTE-176.8B	ROHM		UMD2 HC		
IC7	RREA6124	NJM2903CG-TE2	DUAL COMPARATOR	NJM2903CG(TE2)	JRC	S		0C A 64	ш.	R350			IR-0710KL	10kΩ,5%,1/16W,1005	AF0402JR-0710KL	YAGE0		HIC B 1	1	ZD122		UDZVTE-176R88	6.69V-6.93V,200mW	UDZVTE-176.8B	ROHM		UMD2 HC		3
IC991	RREAP444	NJU7046F3	7V,480nW	NJU7046F3	JRC	S	SOT-23-5 H	IC A 65	$\vdash$	R351	RRTCH	5734 AF0402.	R-0710K)_	10kΩ,5%,1/16W,1005	AF0402JR-0710KL	YAGEO	C 1005	HC B 1	1	20123	A225CT0252	A225CT025Z		0805X225K250CT	WALSIN	C	2012 HC	B 4	4
ID471	t		t e	t	t -	+ :-	<del>                                     </del>	BC A -	+	R352	BRTC16	5734 451410	B.0710k0	10kO 5% 1/16W 1005	AF0402 (RJ0710K)	VAGEO	- 1005 C 1005	HIC B	+	20124	+	t	<del></del>	<del></del>	t		- HC	Α .	+
JP472				<u> </u>						R354	RRTC15	5734 AF0402J	IR-0710K).	10kD,5%,1/16W,1005	AF0402JR-0710K0.	YAGEO	C 1005	HIC B 1	1								=		$\pm$
JP473							. F	IC A -		R355	RRTC15	5734 AF0402J	R-0710K)	10kD.5%, 1/16W, 1005	AF0402JR-0710KL	YAGEO	C 1005	HIC R 1	1							$\Box$	=	ᄑ	#
JP474	<u> </u>				<u> </u>		<u> </u>	BC A -		R356	RRTCH	5734 AF0402.	IN-U710KL	10kD,5%,1/16W,1005	AF0402JR-0710KL	YAGEO	C 1005 C 1005	HIC A 1	11	_	-					$\vdash$	-	+	+
JP481 JP482	•			-		+ -	- IB	ects:	-	R350		5734 AF0402.1 5734 AF0402.1	R-0710K). R-0710K).	10kΩ 5% 1/16W 1005 10kΩ 5% 1/16W 1005	AF0402.IR-0710KL AF0402.IR-0710KL	YAGEO				-	+-	<del>                                     </del>		<del>                                     </del>	<del>                                     </del>	+	-	+	+
JP483							- B	EC B -		R361	RRTC19	5734 AF0402. 5734 AF0402.		10kD,5%,1/16W,1005 10kD,5%,1/16W,1005	AF0402JR-0710KL AF0402JR-0710KL	YAGEO	C 1005 C 1005	HIC B 1	1								=		1
JP484	RRTC15737	AF0402,R-070RL	0Ω,5%,1/16W,1005	AF0402JR-070RL	YAGEO	C	1005 H	IC B 6	$\vdash$	R362	RRTC15	5734 AF0402.	R-0710K).	10kΩ,5%,1/16W,1005	AF0402JR-0710KL	YAGEO	C 1005	HIC B 1	11					_	-	$\vdash$	工	#	工
JP7 1810	RRTC15737	AF0402JR-070RL	0Ω,5%,1/16W,1005	AF0402JR-070RL	YAGEO	C C	1005 H	IC A 6	-	R364	RRTC15	5734 AF0402J	IN-U/1UK). IRJ0710K)	10kQ,5%,1/16W,1005 10kQ,5%,1/16W,1005	AF0402JR-0710KL AF0402JR-0710KI	YAGEO YAGEO	C 1005			$\vdash$	+	+	-	<del></del>	+	$\vdash$	-	+	+
LD301	RREB6205	SML-D1208W	ORANGE	SML-D1208WT86	ROHM	Ċ		IC A 58	-	R366				-	- Statement name		1005	HIC B	1	-	1 -	t	<del> </del>	t	t	-	-	++	+
MICON	RREAP248	RSF566TEBOFP	LFQFP/100/0.5	RSF566TEBDFP	Renesas Electronics Comoratino	A		BC A 68	$\Box$	R367					1		. 1006	HIC B				1		1		-	$\neg$	$\mathbf{T}$	$\top$
2001				-	Lorporation	+			$\vdash$	D271		5722 AF0412	D 07100DI	100Q.5%.1/16W.1005	AF0402JR-07100RL	VACEO			+	-	+-	+	<del></del>	+	+	+	-	++	+
0203		DTC143EEBT	50V.100mA.4.7kQ/4.7kQ	DTC143EEBTL	ROHM	Ċ	1 1	6C B -	_	R373	RRTC19	5734 AF0402J		10kD,5%,1/16W,1005	AF0402JR-0710KL	YAGEO	C 1005	HIC B 1	1	-	+	t		t	1	-		$\overline{}$	+
0431		9CX19	50V,500mA	BCX19T116	ROHM	Ĉ	S0T-23 H	6C B 62		8401	_				-		- 1005	HIC B											#
O432 O471	$\vdash$					Ī	- IB	IC B -		R402 R403	+=	_=			-		1005	HIC B		$\vdash$				_		$\vdash$ $\top$	平	$\blacksquare$	+
0471	t -		<del></del>	t	<del></del>	<del>                                     </del>	1 1	C A .	<del></del>	9414	+	<del>-t-</del>		<del>!                                    </del>	t	-	- 1005 - 1005	HIC B	<del>     </del>	_	+	<del>                                     </del>		<del>                                     </del>	+	+	+	$\pm$	+
0473								IC A -		R404 R405	$\pm$						- 1005	HIC B								-	=	$\pm$	ᆂ
						1 .	. 15	IC A -		9,416							. 1005	HIC A								1			-T

### **BLOCK DIAGRAM**

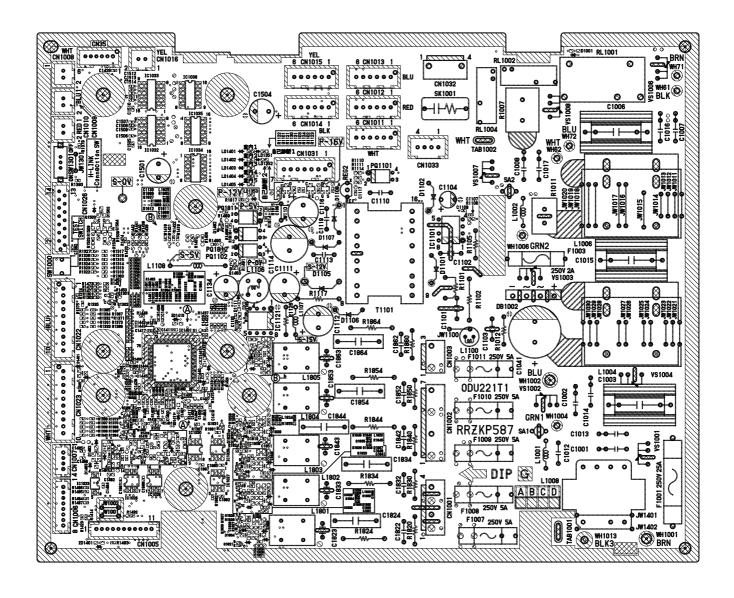
#### MODEL RAM-E53N2HAE



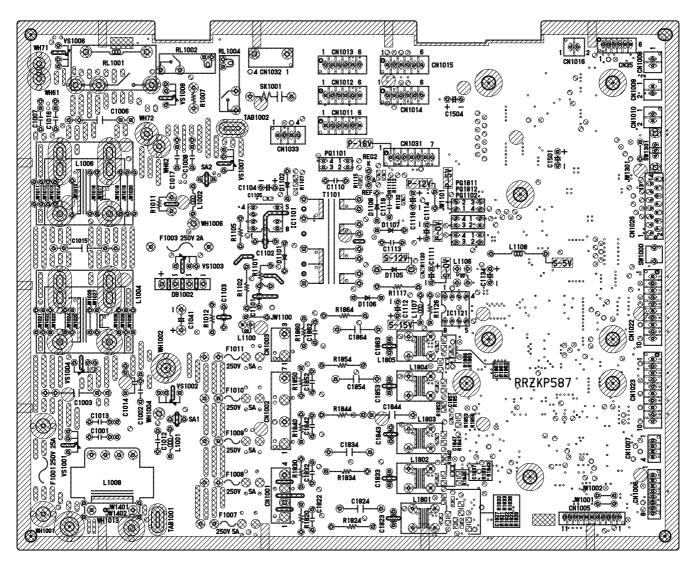
## PRINTED WIRING BOARD LOCATION DIAGRAM

■ RAM-E53N2HAE

Main board [component side]

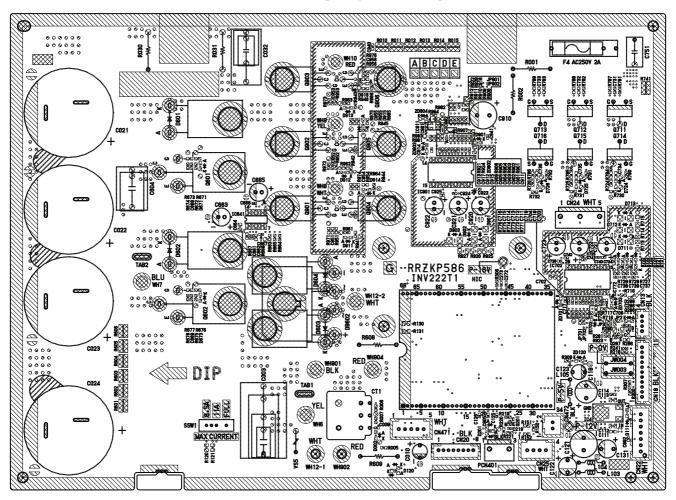


# Main board [solder side]

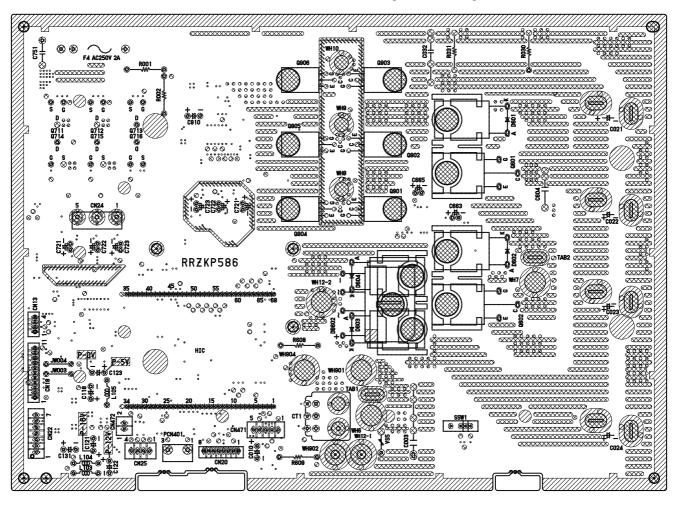


### ■ RAM-E53N2HAE

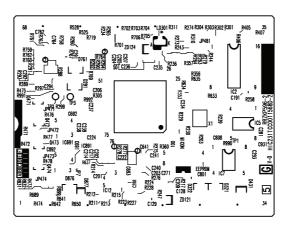
# Inverter board [component side]



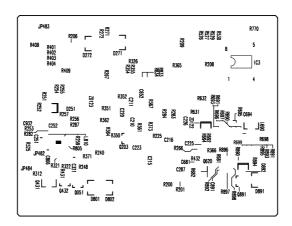
# Inverter board [solder side]



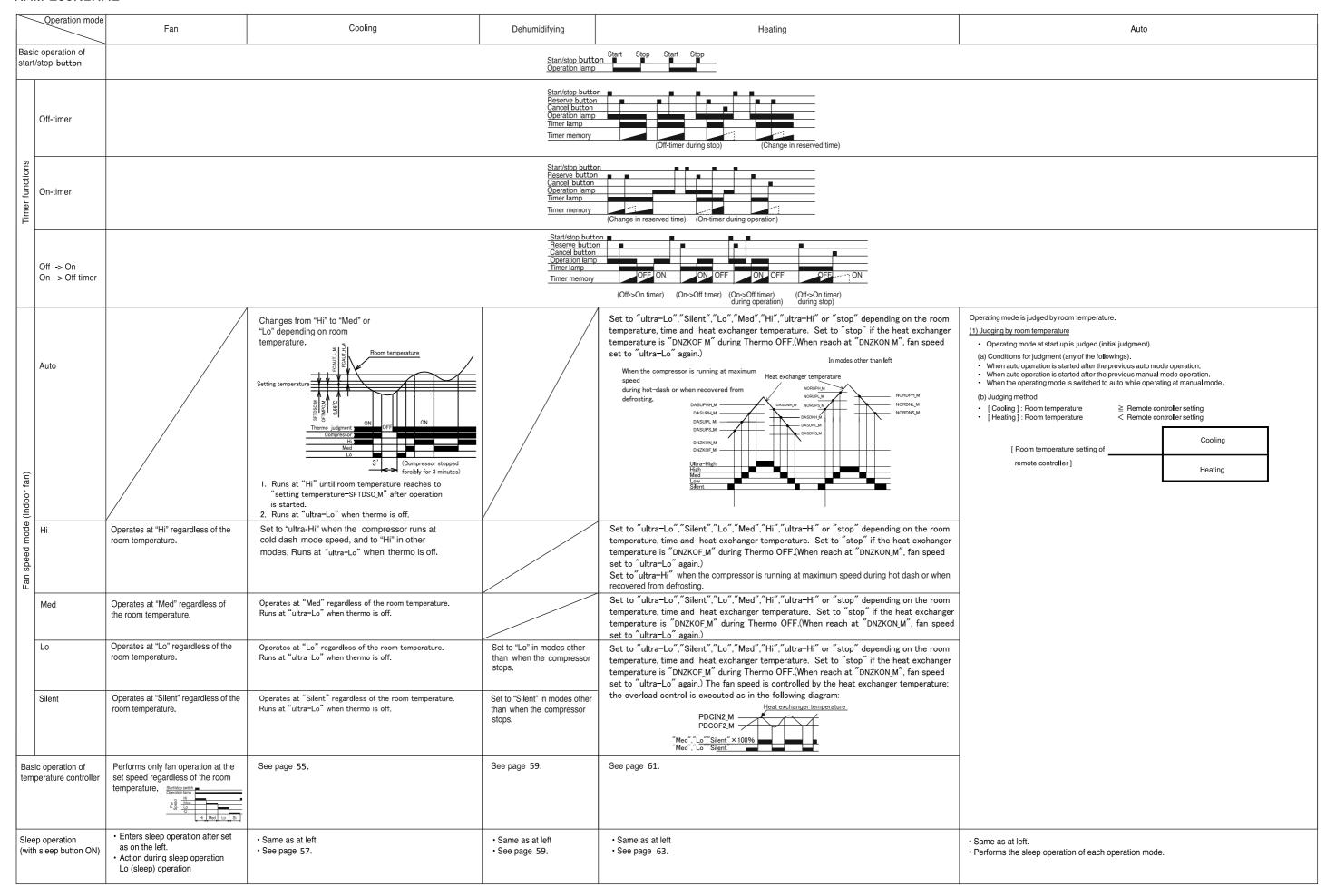
# [Inverter HIC board] top side



# [Inverter HIC board] bottom side



### BASIC MODE RAM-E53N2HAE

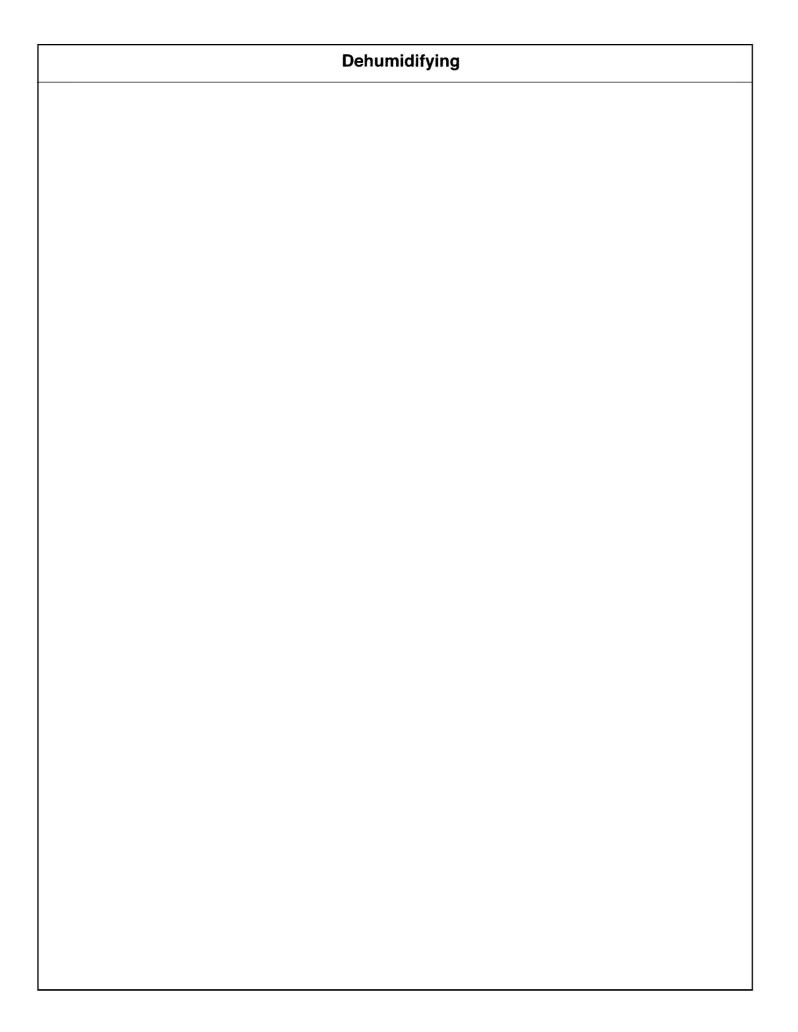


## RAM-E53N2HAE

Basic Cooling Operation	

Cooling Sleep Operation	

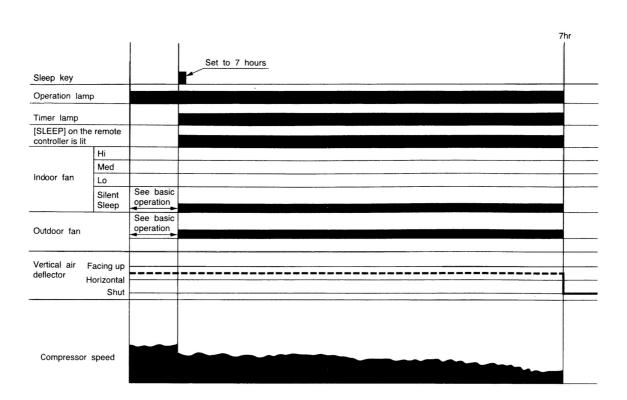
Cooling Defrost



Dehumidifying	Sleep	Operation

Basic	ic Heating Operation

## **Heating Sleep Operation**



### Notes:

- (1) The sleep operation starts when the sleep key is pressed.
- (2) When the sleep key is set, the indoor fan is set to "Sleep Silent" (FWSOY\_M).
- (3) The indoor fan speed does not change even when the fan speed mode is changed.
- (4) When defrosting is to be set during sleep operation, defrosting is engaged and sleep operation is restored after defrosting.
- (5) If the set time is changed during sleep operation, all data including set temperature, time, etc. is cleared and restarted.
- (6) If sleep operation is canceled by the cancel key or sleep key all data is cleared.
- (7) If the position of air deflector is being operated using remote control, the operation will be performed at any desired position of air deflector.

### NOTE:

1. Refer to the PWRITE-ZU data for the constats expressed by capital alphabet letters in the drawing.

### MODEL RAM-E53N2HAE

### **EXPANSION VALVES**

The expansion valves are initialized when power is supplied. The valve for unit 1 is fully closed (–520 pulses), and then that for unit 2 is fully opened (480 pulses). The valve for unit 2 is fully closed (–520 pulses), and then that for unit 3 is fully opened (480 pulses). The valve for unit 3 is fully closed (–520 pulses), and then that for unit 4 is fully opened (480 pulses). The valve for unit 4 is fully closed (–520 pulses). When the valve for unit 1, 2, 3, 4 is fully closed (0 pulse), start-up is possible.

The start openings are held during the steady speed period when the compressor is started. After the steady speed period is finished, the TD control is entered. The start openings are set to PSTARTC\*K\_d when the outdoor temperature at start 40°C or more, and to PSTARTC\*\_d when it is less than 40°C.

\* Indicate number of operating indoor unit

### Compressor rotation speed

When the compressor is started, it will be in steady speed period.

The compressor speed and duration during steady speed period is as below:

COMP Speed	Duration	Outdoor
·.		
(min <sup>-1</sup> )	(sec)	Temperature (°C)
SDRCT1_C1	TSKTM1_C1	> STAROTP_C
SDRCT1 C2	TSKTM1 C2	≤ STAROTP C

After the steady speed period is finished, the speed increases at the rate of SDSTEP (min-1) within TSKSPT (sec) until the target speed is reached.

### **DEFROST**

Reversing valve defrost system is employed: it consists of balancing period→ reversing cycle period→ balancing period.

- (1) Defrost start condition
  - · When all the following conditions are established defrost is executed:
  - (1) Normal operation
  - ② Heat exchange temperature is within defrost range specified by outdoor temperature and heat exchange temperature. (Defrost signal occurred).
  - 3 Defrost inhibit period linked to outdoor temperature has elapsed.
- (2) Defrost release condition
  - · If any of the following conditions is established, defrost is released:
  - (1) Heat exchange temperature returns (heat exchange temperature ≥ DEFOFF).
  - 2 Defrost max time of 12 minutes has elapsed.
  - Released by condition ① during balancing period: When remaining balancing period has elapsed, returned to initial condition (ASTUS=0).
  - Released by condition (1) or (2) during reverse cycle period: [TDF415\_\*U] shifted to balancing period.
- (3) Output during defrost
  - Indoor defrost request: Transmitted to all units being operated in heating mode.
  - Compressor : Balancing period for [TDF414\_\*U] (min-1) → Starting of reverse cycle period by [SDRCT2] min-1 for [TSKTM2] (sec) → Accelerating by [DFSTEP (min-1) for duration [TDFSPT] (sec) in remaining reverse cycle period until defrost MAX speed [DEFMAX] is reached → Balancing period for [TDF415\_\*U] (sec).
  - · Electric expansion valve

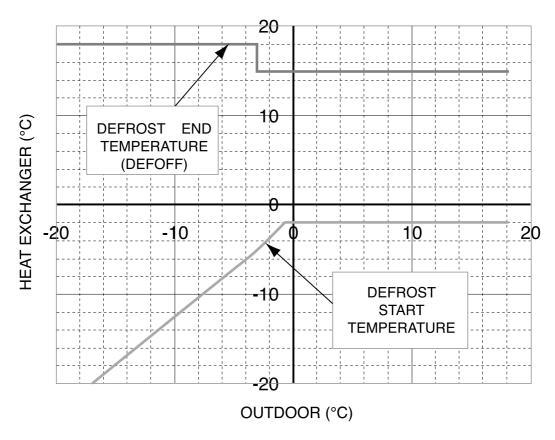
Unit being stopped : [FULL CLOSE] 30 seconds after balancing period has passed → [FULL CLOSE] during

reverse cycle period→ [PCLOSH\_d] 15 seconds before balancing period is finished

Unit being operated : [DFCTPS\_d] 30 seconds before balancing period is finish → Synchronized with step-up of rotation speed of compressor, opened by [DFSPPS\_d] pulse and reaches MAX opening

degree [DFPSMX\_d] when rotation speed of compressor reaches [DEFMAX].

### RAM-E53N2HAE DEFROST TEMPERATURE



- \* above graph is showing the ideal value by micon program.
- \* guaranteed temperature range of this model is -15°C to +21°C at heating.

<sup>\*</sup> Indicate number of operating indoor unit.

# MODEL RAM-E53N2HAE

• Time chart when executing defrost (Unit 1 operated and Unit 2 stopped)

### MODEL RAM-G55N2HAE

### **AUTO-FRESH DEFROST**

• During heating operation is stopped, and when auto-fresh condition is established, defrost operation will be performed while operation is stopped.

Auto-fresh consists of balancing period at start of defrost for [TDF414\_\*U] seconds → Reverse cycle period for MAX 12 minutes.

### (1) Start conditions for auto-fresh

- When all the following conditions are established, auto-fresh is executed:
- (1) Defrost request signal is present.
- 2 All indoor units are stopped.
- 3 15 minutes of auto-fresh inhibit period has elapsed.
- (4) Compressor is ON when operation is stopped.
- ⑤ Compressor delay command is sent from indoor unit when operation is stopped.

### (2) Release condition of auto-fresh

- If any one of following conditions is established, auto-fresh is released:
- (1) Heat exchange temperature returns (heat exchange temperature ≥ DEFOFF)
- 2 12 minutes of defrost MAX time has elapsed.
- 3 Failure occurred.
- 4 Either unit 1 or unit 2 or unit 3 or unit 4 started operation.
- Released during start of balancing period : Stopped or started after remaining balancing period has elapsed.
  Released during reverse cycle period : Stopped or started after balancing for 3 minutes.

### (3) Outputs during auto-fresh

[Indoor unit defrost request]: Transmitted only to unit to which auto-fresh is applied (indoor unit stopped last). [Compressor]: Accelerated by DFSTEP min<sup>-1</sup>/TDFSPT seconds and reaches defrost MAX speed [DEFMAX]. [Electric expansion valve]:

Unit auto-fresh not applied: FULL CLOSE when balancing for 30 seconds has elapsed at start of defrost.

Unit auto-fresh applied: Synchronized with step-up of rotation speed of compressor, opened by [DFSPPS\_d] pulses and reaches MAX opening degree [DEFSMX\_d] when rotation speed of compressor reaches [DEFMAX].

### (4) Note

- Shifted to auto-fresh in defrost mode when operation is stopped.
- All indoor units must be stopped to fulfill condition for auto-fresh.
   If signal is delayed, auto-fresh condition will not be established.
- \* Indicate number of operating unit.

### MODEL RAM-E53N2HAE

### FORCED COOLING

• In order to accumulate refrigerant, units operate in cooling cycle. Execution condition and operation status are shown below.

[Execution condition]

- With indoor unit 1 2 not operated, when forced cooling switch is turned ON, forced cooling will be performed.
- Always operation status of indoor units are monitored and forced cooling is inhibited when operation of any unit is detected. [Operation status]
- · Outdoor unit fan: Fixed in LO.
- Compressor rotation speed: Fixed in 3000min-1.
- Expansion valve/reversing valve : Set in normal conditions. [Note]
- During forced cooling, if failure occurs in outdoor unit, thermostat is turned off. However, it is not counted.
- Since rotation speed of compressor is fixed in 3000min<sup>-1</sup> during forced cooling, steady speed period of compressor at start is not performed.

•	The	following	shows t	he d	operation	state	of	forced	cooling
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TSKTM1\_C and PSTARTC2\$ are EEPROM data.

### MODEL RAM-G55N2HAE

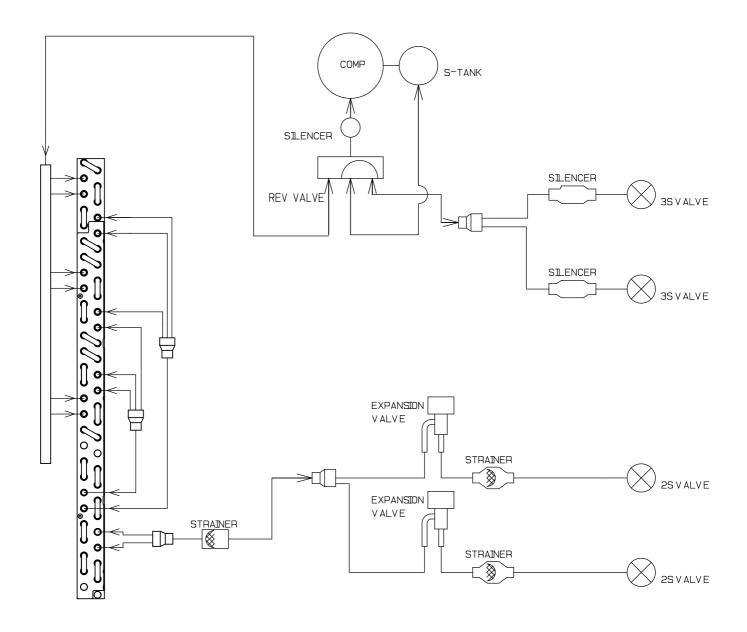
### PROCESSING AT OVERHEAT THERMISTOR (OH) HIGH TEMPERATURE

- - If any expansion valve is operated at 480 pulses and the OH temperature > [NDOWN\_ON], the compressor speed will be reduced at a rate of 100 min<sup>-1</sup>/30 seconds.
  - This reduced rotation speed is based on the speed when the reduction started, and will be maintained until the reduction is finished. However, the reference speed will be exchanged only if the target speed is lower than the speed when the reduction started.
  - If [NDOWN\_OFF] ≤ OH temperature ≤ [NDOWN\_ON] and the OH temperature does not rise from that 20 seconds before, the reduction of compressor speed will not occur.
- - The restriction will be released when OH temperature < [NDOWN\_OFF], and the compressor speed will be increased at a rate of 50 min<sup>-1</sup>/30 seconds to restore the target speed.

When one unit is operated for cooling

# REFRIGERATING CYCLE DIAGRAM

### MODEL RAM-E53N2HAE



### **DESCRIPTION OF MAIN OPERATION CIRCUIT**

### ■ RAM-E53N2HAE

### 1. Main Power Supply Circuit

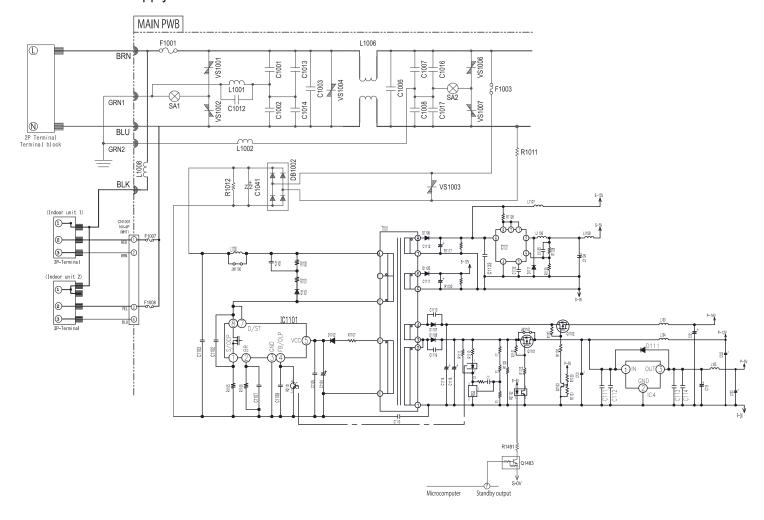


Fig. 1-1

- AC 220 ~ 240V power supplied to the 2P terminal block is supplied to DB1002 via the noise filter circuit, 2A fuse (F1003), and varistor VS1003. High voltage DC smoothed by DB1002 and C1041 is used to create DC voltage on the transformer's secondary side by the switch control IC (IC1101) and switching transformer (T1101).
- Secondary side DC voltage is used in the following six systems:
  - (1) S-15V: Power supply for communication circuit between outdoor and indoor
  - (2) S-12V: Operating power supply for electric expansion valve
  - (3) S-5V : Power supply for main microcomputer and peripheral circuits
  - (4) P-16V: Power supply for compressor motor driver circuit and fan motor driver circuit
  - (5) P-12V: Power supply for reversing valve relay, power relay, in-rush current relay, and compressor motor operating amplification and fan motor current amplification.
  - (6) P-5V : Power supply for inverter microcomputer and peripheral circuits
- Primary Components
  - (1) C1001, C1002, C1012, C1013, C1014, C1003, C1006, C1007, C1008, C1016, C1017, L1006 Absorb electrical noise generated during operation of the compressor, and reduce noise level emitted to the power line.
  - (2) SA1, VS1001, VS1002, VS1004, SA2, VS1006, VS1007, VS1003 Absorb external surges, such as induced lightning.
  - (3) IC1101
    - IC for control of switching power.
  - (4) IC4
    - DC/DC converter IC for generating P-12V and P-5V.
  - (5) IC1121
    - DC/DC converter IC for generating S-15V and S-5V.

- Inverter Microcomputer Power Control
   The power to the inverter microcomputer in turned ON/OFF by commands from the main microcomputer, Q1483, PQ1102, Q1101, and Q1102 are related.
- Specifications and Checkpoints for Main Power Supply Circuits

Output Name	Voltage Specification	Primary Load	$\pm$ Measurement Location	Examples of Possible Failure Modes for Output Failures (for Reference)
S-15V output	15.5 <sup>±1.5</sup> V	Indoor/outdoor communication	Tester ⊕ terminal: S-15V indicator (Main PWB : L1107) Tester ⊖ terminal: S-0V indicator (Main PWB : S-0V test point)	LD1401 ~ LD1402 (green) do not light or blink.
S-12V output	12+4,-2 V	Expansion valve	Tester ⊕ terminal: S-12V indicator (Main PWB : D1105)  Tester ⊝ terminal: S-0V indicator (Main PWB : S-0V test point)	LD1351 (red) blinks 5 or 6 times (related to refrigerant cycle error) and stops.
S-5V output	5 ±0.4 V	Main microcomputer thermistor	Tester ⊕ terminal: S-5V indicator (Main PWB : L1108) Tester ⊖ terminal: S-0V indicator (Main PWB : S-0V test point)	LD1353 (green) does not blink. LD1351 (red) does not blink. Outdoor unit does not operate.
P-16V output	15.5 ±1.5 V	Compressor IPM DC fan drive circuit Converter circuit	Tester ⊕ terminal: P-16V indicator (Main PWB : Q1102), (Inverter PWB : P-16V test point)  Tester ⊖ terminal: P-0V indicator (Main PWB : PQ1102), (Inverter PWB : JW004)	LD1351 blinks 3, 4 or 12 times and then stops.
P-12V output	12 <sup>±1</sup> V	IC2, 3, 4, relay circuits	Tester ® terminal: P-12V indicator (Main PWB: Q1101), (Inverter PWB: P-12V test point) Tester © terminal: P-0V indicator (Main PWB: PQ1102), (Inverter PWB: JW004)	LD1351 blinks 2, 4, 8 or 14 times and then stops.
P-5V output	5 ±0.4 V	Inverter microcomputer	Tester ® terminal: P-5V indicator (Main PWB : PQ1811), (Inverter PWB : L105) Tester © terminal: P-0V indicator (Main PWB : PQ1102), (Inverter PWB : JW004)	LD1351 blinks 8 times.

- Check each voltage. If the above specifications are satisfied, the main power supply circuit can be considered normal.
- Due to high voltage, be particularly careful to avoid electric shock. Further, take care to avoid short-circuit accidents caused by incorrect connection of measuring instruments. Otherwise, the board could be damaged.
- Even after the power is turned off, an electric charge remains in the smoothing capacitor, and a voltage of 260V to 360V is applied between the terminals of the smoothing capacitor.

### 2. Converter Circuit

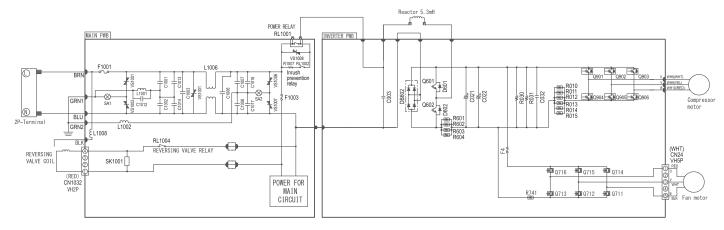


Fig. 2-1

• This circuit rectifies the AC220-240V between L and N on the 2P terminal block, and creates a DC voltage.

During operation of the compressor, the rectified circuit voltage is approximately (DC320V - 360V).

- Primary Components
- (1) Q901, Q902, Q903, Q904, Q905, Q906 used for configuration of inverter section.

### Reference:

In case of Q901, Q902, Q903, Q904, Q905, Q906 failure or broken, immediately after starting the compressor, it might stop due to abnormal speed reduction, switching failure, Ip cut, etc.

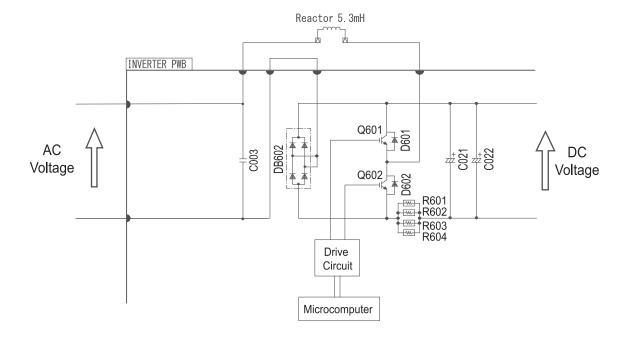
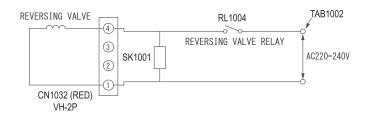


Fig. 2-2

- (2) Smoothing Capacitor (C021~C022,  $500\mu F$  450V) Boosts and smoothes (averages) DC voltage rectified by the DB602, Q601, Q602.
- (3) Power supply rectification, power factor improvement element (DB602, Q601, Q602) It works to rectify the AC voltage of 220-240V supplied from the terminal block to DC voltage. Also, when the load on the compressor is rising, switching Q601 and Q602 performs power factor correction and boost.

### 3. Reversing Valve Control Circuit



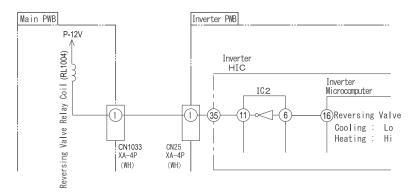


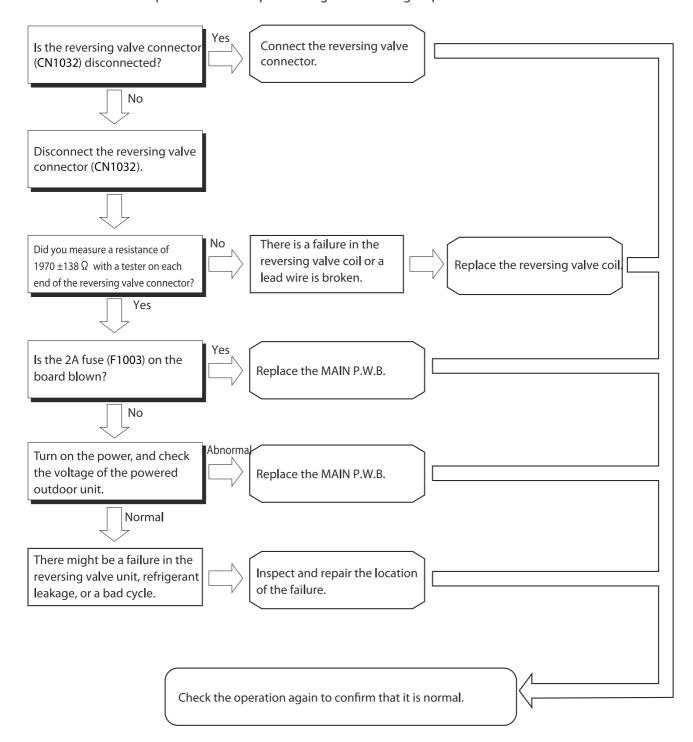
Figure 3-1

- The reversing valve is controlled by operation commands from the indoor microcomputer. Current is applied to the reversing valve coil in the direction designated for each operation mode to slide the valve.
- Before checking the power to the reversing valve, remove the CN1032 connector, measure the resistance at both ends of the connector to see if it is  $1970 \pm 138 \ \Omega$ . Perform the following power checks only if the result of this check is normal. If this check produces an abnormal result, either a lead wire is broken or there is a failure in the reversing valve.
- Voltage at each point is approximately as shown below table when measure by tester. (When voltage between pin 1 to pin 4 of CN1032 is measured).

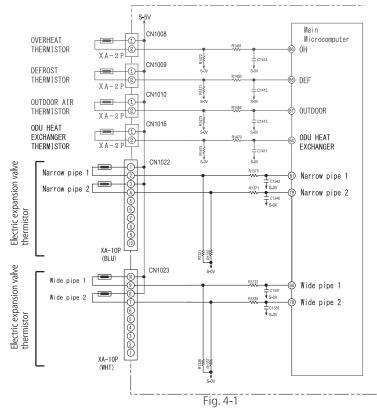
Op	peration Condition	Voltage between pin 1 to pin 4 of CN1032
Cooling General operation of cooling		About 0V
	In normal heating operation	About AC 220-240V
Heating	MAX. rotation speed instructed by indoor microcomputer after defrost is completed.	About AC 220-240V
	Defrosting	About 0V

# Inspection when Timer Lamp on Indoor Unit Flashes Once

Note: Be sure to turn the power off before performing the following inspection.



### 4. Temperature Detection Circuit



- The OH thermistor circuit detects compressor head surface temperature, the DEF thermistor circuit detects defrost operating temperature, and the outside air temperature thermistor circuit detects the outside air temperature. In addition, the electric expansion valve thermistor (narrow pipe 1) detects the temperature of narrow pipe going to indoor unit 1 and (wide pipe 1) detects the temperature of the wide pipe going to indoor unit 1. (Narrow pipe 2) and (wide pipe 2) are for indoor unit 2.
- Thermistors are negative resistance elements. The resistance value grows smaller as the temperature rises, and grows larger as the temperature falls.
- If the compressor overheats, the resistance value of the OH thermistor grows smaller. S-5V is divided between the OH thermistor and R1472, and therefore the voltage of pin ® on the main microcomputer rises.
- The voltage of pin ® on the main microcomputer is compared with the value set and stored internally. If the set value is exceeded it is determined that the compressor has overheated, and operation is stopped.
- If frost accumulates on the outdoor heat exchanger, the temperature of the heat exchanger will fall rapidly. Therefore, the resistance value for DEF thermistor grows large and the voltage of pin ® on the microcomputer falls. If this voltage drops below the value set and stored internally, defrosting of the main microcomputer will start.
- Outdoor temperature is read by the outdoor temperature thermistor (voltage of pin ® on the microcomputer).
   Commands from the indoor microcomputer, values read from the outdoor temperature thermistor, and values read from the OH thermistor are taken into account to control the speed of the compressor and the speed of the outdoor fan.
   Typical values that indicate the relationship between outdoor temperature and voltage are shown below.

Table 4-1

Outdoor temperature (°C)	-10	0	10	20	30	40
Voltage (V) at both ends of R1473	1.19	1.69	2.23	2.75	3.22	3.62

- The ODU heat exchanger thermistor circuit measure the heat exchanger intermediate temperature of the outdoor
  unit, and microcomputer estimate the pressure of compressor according to the temperature data. When the pressure
  reach the internal set value of the microcomputer, the microcomputer will adjust the speed of the compressor to
  protect the pressure of compressor.
- The temperatures at narrow pipe 1 2 and wide pipe 1 2 are read by thermistors, and the amount that electric expansion valves 1 2 are opened is changed to control the distribution of refrigerant.

Reference:

When a thermistor is open and disconnected, pins ® - ® on the main microcomputer are approximately 0V. When there is a short-circuit in a thermistor, these pins are approximately 5V, LD1351 will lit and LD1352 blinks during stanby mode or running. Except for overheat thermistor, if there is a short-circuit in a overheat thermistor the LED indication during stanby mode and running will be different as below Table 4-2. The number of blinks by LD1352 indicates the area/portion in unit that thermistor detect have problem.

Table 4-2

Unit condition LD1351 indication		LD1352 indication	
	Stanby Mode	Lit	1 time blinking
	Running	6 times blinking	Off

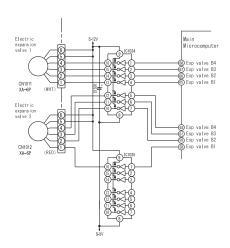


Fig. 5-1

- There are 2 electric expansion valves for indoor units 1-2.
- The electric expansion valves are powered by S-12V for expansion valves. 1- or 2-phase current is applied to 4-phase wound wires, switching the poles of the wound wires to control valve openings.
- The relationship between the switching direction of the current phase and the open/close direction of the valves is shown in the following table. When current is applied, approximately 0.9V passes through pins ①-④ of CN1011 and CN1012; when no current is applied, it is approximately 12V. When the power is reset, the expansion valve is initialized for approximately 35 seconds. During initialization, use a tester to measure pins①-④ on CN1011 and CN1012. If there is a pin that does not change at approximately 0.9V or 12V, there is an abnormality in that expansion valve or the control microcomputer.
- The logic waveform for when an expansion valve operates is shown in Fig. 5-2.

Table 5-1

Table 5 1									
CN1011, CN1012	Lead wire			F	ower co	ondition	ıs		·
Pin No.		1	2	3	4	5	6	7	8
4	White	ON	ON	OFF	OFF	OFF	OFF	OFF	ON
3	Yellow	OFF	ON	ON	ON	OFF	OFF	OFF	OFF
2	Orange	OFF	OFF	OFF	ON	ON	ON	OFF	OFF
①	Blue	OFF	OFF	OFF	OFF	OFF	ON	ON	ON
Operation mode $1 \rightarrow 2 \rightarrow 3 \rightarrow 4 \rightarrow 5 \rightarrow 6 \rightarrow 7 \rightarrow 8  \text{VALVE CLOSE} \\ 8 \rightarrow 7 \rightarrow 6 \rightarrow 5 \rightarrow 4 \rightarrow 3 \rightarrow 2 \rightarrow 1  \text{VALVE OPEN}$									

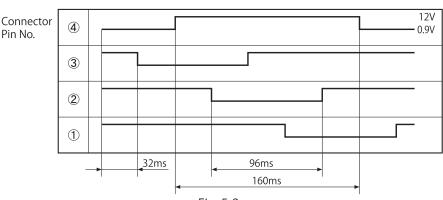


Fig. 5-2

When controlling an expansion valve, the temperature of the compressor head is detected and then the opening is adjusted to stabilize the valve to the target temperature.

This control cycle is performed once every 20 seconds, and a few pulses are output.

### 6. Outdoor Fan Motor Control Circuit

• This outdoor unit is equipped with a built-in outdoor fan motor control circuit.

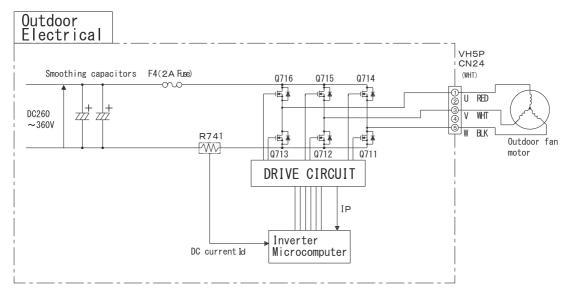


Fig. 6-1

Based on operation commands from the indoor microcomputer, the speed of the outdoor fan motor on this unit is determined by the main microcomputer and controlled by the inverter microcomputer.

Actual speed is estimated based on DC waveforms from R741 to control the speed so that it matches the operational commands.

Overcurrent and other failures in the outdoor fan motor are detected by the magnitude of the direct current.

### (1) Control of outdoor fan motor at startup

If the propeller fan is already rotating at the start of operation, due to disturbances such as strong wind, operational behavior will vary according to the direction and speed of such rotation as described below. Favorable wind is defined as wind that blows outward from the mouth ring.

Strong headwind : Control is not performed, to protect the equipment, and the propeller is blown in the

opposite direction by the wind. The unit starts automatically once the wind has weakened.

Headwind : After the speed reduces gradually and finally stops, the speed is controlled in the normal

direction.

Favorable wind : The speed of the fan is controlled normally.

Strong favorable wind: Control is not performed, to protect the equipment, and the propeller is blown in the

normal direction by the wind. The unit starts automatically once the wind has weakened.

### (2) Control of outdoor fan motor during operation

The speed of the propeller fan might drop during operation of the outdoor fan motor due to disturbances such as strong wind.

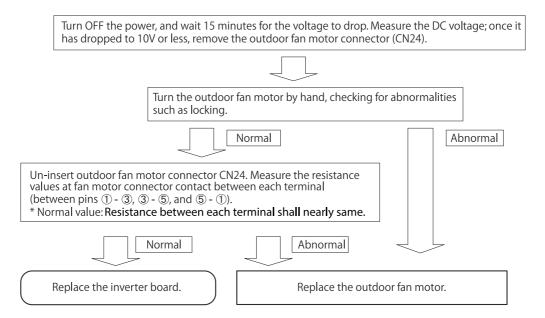
If such conditions continue for a long period of time, the propeller fan will stop. (Self-diagnosis lamp LD1351: Blinks 11 times)

When the fan is restarted, the operation described in (1) above is used.

- (3) Confirmation method when self-diagnosis lamp LD1351 blinks 12 times If LD1351 on the Main P.W.B. blinks 12 times (fan lock detected) and operation stops, use the following procedure to check the unit.
  - 1. Mechanical locking caused by the insertion of foreign objects such as sticks into the propeller fan or freezing due to the accumulation of snow will cause fan lock to be detected and causing the unit stop it operation.

    Remove any foreign objects.
  - 2. Check whether CN24 is securely inserted. A poor connection will cause a fan lock detection and causing the unit stop it operation. If CN24 is loose, insert it securely.
  - Strong wind around the outdoor unit might cause a fan lock detection.
     Check if the unit restarts. (Several minutes might be required for the unit to restart.)
     If the unit continues to operate after restarting, there is no failure in the outdoor fan motor or electrical components.
  - 4. Perform a check of the outdoor fan motor. The procedure is shown below.

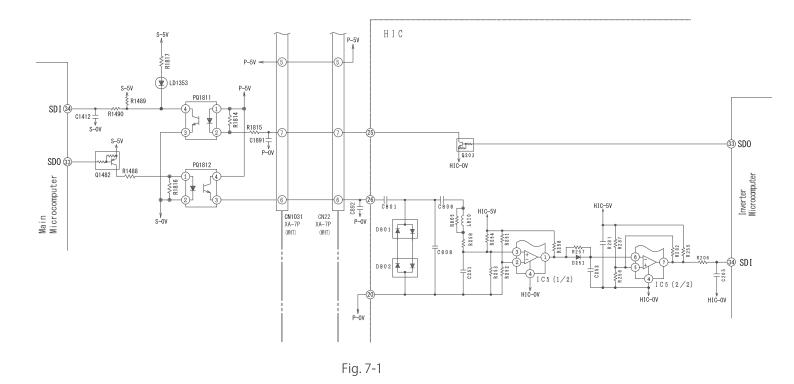
### Procedure for Checking the Outdoor Fan Motor



- 5. Insert the outdoor fan motor connector (CN24).
- \* Also use the above procedure if F4 (2A fuse) is blown. Caution
- \* The power supply for the outdoor fan motor is also used as the power supply for the compressor, and therefore has a high voltage (DC260 to 360V). Use sufficient caution to avoid electric shock when checking operations and performing repairs.

### 7. Circuits for Communication between Microcomputers

• This unit uses two microcomputers: a main microcomputer and an inverter microcomputer. The two-way communication circuit shown in Fig. 7-1 is used for communication between these two microcomputers.



- Signals from the main microcomputer to the inverter microcomputer follow this route: main microcomputer  $\textcircled{3} \rightarrow Q1482 \rightarrow PQ1812 \rightarrow IC5 \rightarrow inverter microcomputer \textcircled{4}.$
- Signals from the inverter microcomputer to the main microcomputer follow this route: inverter microcomputer ③ → Q203 → PQ1811 → main microcomputer ④.

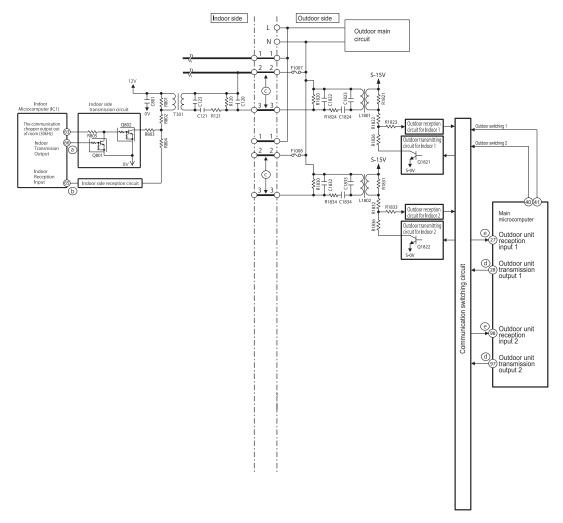
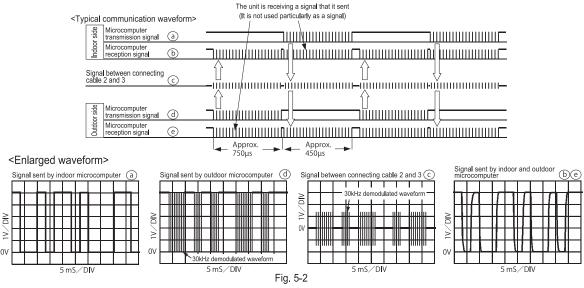


Fig. 5-1



- \* Indoor and outdoor communications are conducted by using lines 2 and 3 of connecting cable. Line 2 of connecting cable is share with a transmission channel that powers the indoor unit.
- \* Data communicated between the indoor and outdoor units are outputted from the microcomputer as serial signals and are transmitted as demodulated by a 31kHz carier wave (for indoor) and a 30kHz carier wave (for outdoor).

### Check

If the communication fails between the indoor and outdoor units for some reason, the product will give a self-diagnosis display either by "the timer lamp blinking 3 times (indoor failure)" or "the the timer lamp blinking 12 times (outdoor failure)" depending on the cause.

### 8. Hibernation Mode

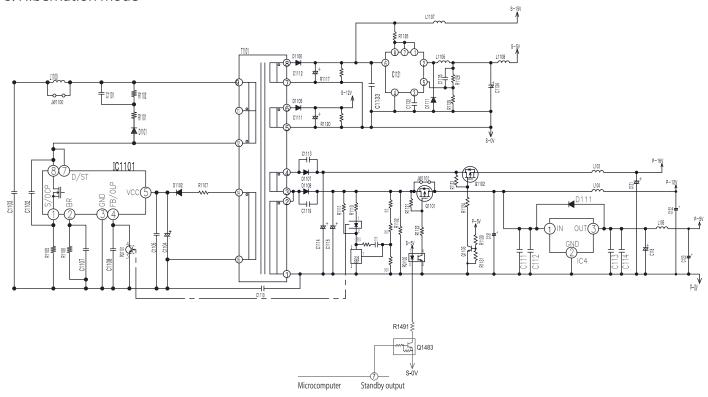


Fig. 8-1

- This model have designed to enter hibernation mode for energy saving and power consumption reduction during stanby.
- Unit will enter hibernation mode during below stanby condition if not received any signal from remote controller and expansion valve already completed initialization.
  - 1) Stanby continuesly
  - 2) Unit in running condition, then off the unit by remote controller and leave the unit in stanby condition.
- During hibernation activation, main microcomputer pin 7 will change to LOW condition.

  Due to this pin become LOW Q1483, PQ1102 and Q1101 will be OFF. As Q1101 OFF, P-12V and P-5V will drop to 0V.

  Due to P-5V drop to 0V, Q1103 will be OFF and causing P-16V also drop to 0V.
- During hibernation mode, DC voltage will be as below condition.

(1) S-15V: Maintain at 15V (2) S-12V: Maintain at 12V (3) S-5V: Maintain at 5V (4) P-16V: Drop to 0V (5) P-12V: Drop to 0V (6) P-5V: Drop to 0V

All LED on the Main P.W.B and Inverter P.W.B (LD301, LD1351, LD1352, LD1353, LD1401, LD1402, LD1403, LD1404, LD1405) will be OFF during this mode.

- If outdoor unit have failure/error, all indication including error diagnosis LED will be OFF once the smoothing capacitor (C021 ~ C022) voltage reduce to 29V.
- For inspection during hibernation mode, service person can measure DC voltage S-15V, S-12V and S-5V on Main P.W.B.

But to measure DC voltage P-16V, P-12V and P-5V on Inverter P.W.B., service person shall on the indoor unit by remote controller first. This will change the unit from hibernation mode to normal.

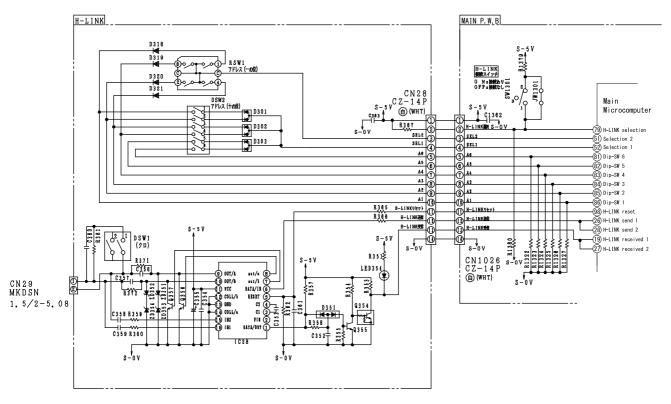


Fig. 10-1

- This model have designed to be connected to Central Control Station through H-LINK board.
- This H-LINK board are sell as optional part and it part number is SPX-RAMHLK.
- H-LINK board CN28 shall be connected to MAIN board CN1026 through 11 pin cord assembly.
- RSW1 and DSW2 shall be set accordingly to the refrigerant cycle number that determine by service personal.
- Central Control station shall be connected to H-LINK board through CN29.
- DSW1 pin 1 shall be switch on only one position in whole H-LINK system.
- SW1301 must be switch on to activate the H-LINK.
- Hibernation mode will be automatically disable if the unit activate the H-LINK system.
- Detail of installation of the H-LINK board shall refer to next page {H-LINK Board (SPX-RAMHLK) Installation Manual}.

# 10.1 H-LINK Board (SPX-RAMHLK) Installation Manual

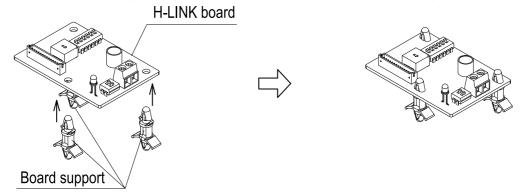
# 10.1.1 Check through H-LINK board accessories.

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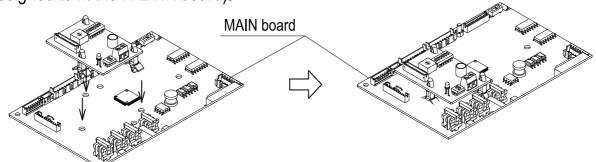
No	Part Name	Quantity
1	H-LINK board	1
2	Board support	3
3	14 pin cord	1
4	Installation manual	1

### 10.1.2 H-LINK board installation

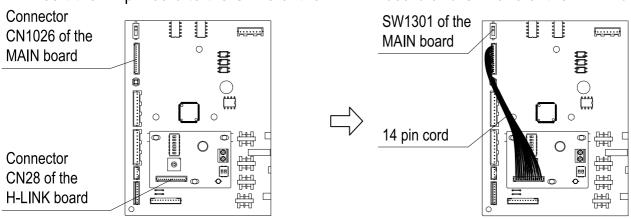
i. Assemble board support (3 pcs) to H-LINK board holes as following picture.



ii. Insert the H-LINK board into the MAIN board (please use 3 holes on MAIN board that designed to fit the H-LINK board).

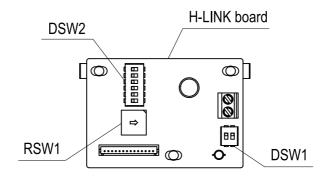


iii. Insert the 14 pin cord to the CN28 of the H-LINK board and CN1026 of the MAIN board.



iv. Set the SW1301 of the MAIN board to ON condition before start the H-LINK operation (default position from factory is OFF condition).

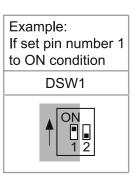
# 10.1.3 DIP switch setting.



i. DSW1 setting (terminal resistance setting).

Terminal resistance setting set by pin number 1 of DSW1. (Default setting from factory is pin number 1 of DSW1 set to OFF condition).

Terminal resistance should be ON in only one position in whole H-LINK. After checking terminal resistance setting of whole H-LINK, pin number 1 of DSW1 should be set properly.



ii. DSW2 and RSW1 setting.Refrigerant cycle number is set by DSW2 and RSW1.

DSW2 (tens digit)

RSW1 (ones digit)

Set it inserting a screwdriver

DSW2

RSW1

ON

1 2 3 4 5 6

Default setting from factory for DSW2 and RSW1 are set to OFF and 0 respectively.

Example: Setting cycle number to 15

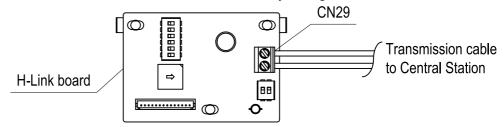
DSW2

RSW1

Pin number 1 is ON

The set position is 5

10.1.4 Connect the H-LINK board to the Central Station by fixing the transmision cable at CN29.



The transmission cable used shall be as below.

- i. 2 cores cable (0.75mm² to 1.25mm²). Model: VCTF, VCT, CVV, MVVS, CVVS VVR, VVF.
- ii. 2 cores twist pair cable. Model: KPEV, KPEV-S.

Total length of the transmission cable shall be below than 1000m.

# 10.2 Error code during H-LINK operation.

- If the is any abnomallity to the unit, error code will be display at Central Control Station.
- Error code displayed, its self-diagnosis and it suspected cause of the error shall refer to below table.

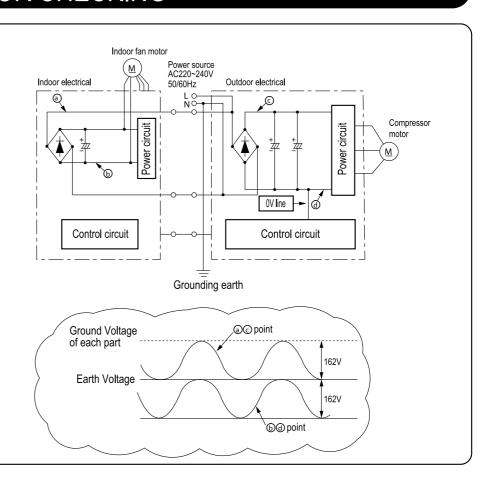
Error Code	Self-Diagnosis Name	Suspected Area	Main cause
7 1	Four way valve malfunction	Indoor	Four way valve malfunction
7 3	Indoor communication circuit fault	Indoor	Indoor communication circuit fault
7 5	Power relay contact welding	Indoor	Power relay contact welding
7 6	Abnormal water level	Indoor	Abnormal water level
7 9	Thermistor problem	Indoor	Thermistor problem
7 A	Indoor fan problem	Indoor	Indoor fan problem
7 C	Outdoor communication circuit fault	Indoor	Outdoor communication circuit fault
7 D	EEPROM reading error	Indoor	EEPROM reading error
8 2	Ip cut stop	Outdoor	Ip cut input signal detection
8 3	Abnormal low speed	Outdoor	Detect out of step condition
8 4	Switching failure	Outdoor	Detect out of step condition
8 5	Overload stop	0utdoor	At the lowest speed with overload
8 6	OH stop	Outdoor	OH has reached stopping temperature
8 7	Thermistor fault	Outdoor	Thermistor disconnection / short circuit
8 8	Communication error between INV	Outdoor	Communication error between microcomputer
8 9	Misconnection	Outdoor	Connect a single model
8 A	Power supply voltage error	Outdoor	DC voltage is out of the limit value range
8 B	Fan error detection 1	Outdoor	Fan OVL stop
8 C	Fan error detection 2	Outdoor	Fan Ip cut, out of step etc.
8 D	EEPROM Error	Outdoor	Read error (ACK, checksum)
8 E	Overvoltage error	Outdoor	DC voltage is out of the limit value range
8 F	Circuit abnormality	Outdoor	ACT circuit, Is / Vs abnormality etc.
		Indoor	Outdoor communication circuit fault
61	Connection problem	Indoor	EEPROM reading error
		Outdoor	Connect a single model

# PRECAUTION FOR CHECKING



- 1. Remember that the 0V line is biased to 162V in reference to the ground level.
- 2. Also noted that it takes about 15 minutes until the voltage fall after the power switch is turned OFF.



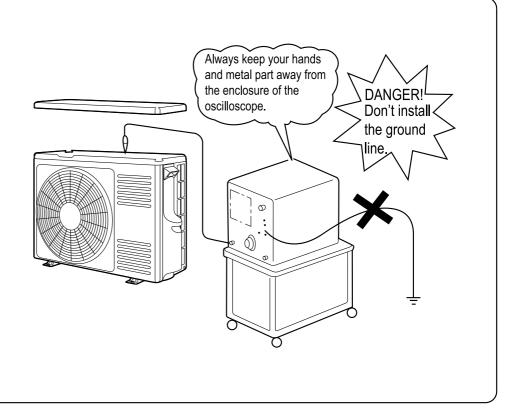




DANGER

When using an oscilloscope, never ground it. Don't forget that high voltages as noted above may apply to the oscilloscope.





# **SELF CHECK**

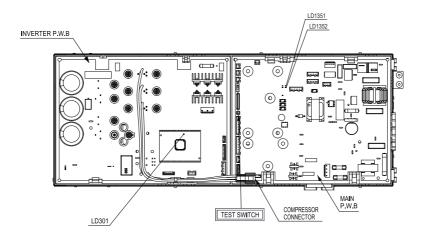
When it is difficult to judge whether the compressor or the electrical part is faulty resulting self diagnosis lamp LD1351 blink 2,3,4 or 5 times, please confirm first the compressor terminal insulation by using mega ohm checker. If the insulation is normal, proceed to below self-check method.

- Self-check diagnosis method
  - 1. Switch OFF main power supply.
  - 2. Switch ON main power supply.
  - 3. Press and hold the TEST SWITCH at outdoor for more than 5 sec, until LD1351 fast blinks and then release the TEST SWITCH.
  - 4. Self-check result will display at LD301. Refer to below table for the detail of the diagnosis result.
  - 5. Switch OFF main power supply once done.

### ■Self-check diagnosis result

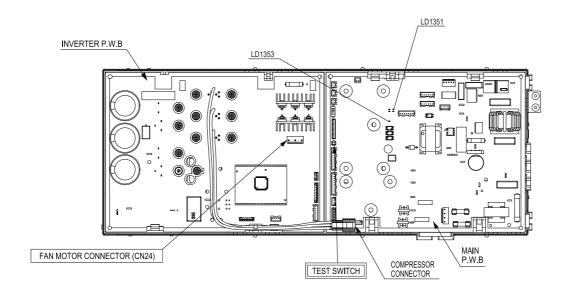
[SELF-CHECK] DIAGNOSIS RESULT			
LD301	DIAGNOSIS CONTENT	REPAIR METHOD	
1 TIME BLINK	ELECTRICAL OK	CHANGE COMPRESSOR	
2 TIMES BLINK	PEAK CURRENT CUT OFF SIGNAL DETECTED	CHANGE INVERTER P.W.B	
7 TIMES BLINK	COMPRESSOR CURRENT ABNORMAL	COMPRESSOR CONNECTOR LOOSE $\rightarrow$ CHECK CONNECTOR AFTER CHECK COMPRESSOR CHANGE INVERTER P.W.B	
10 TIMES BLINK	DC VOLTAGE ABNORMAL	AC VOLTAGE ABNORMAL (BEYOND RATED ± 10%)  CONNECT WITH CORRECT AC VOLTAGE AC VOLTAGE NORMAL (WITHIN RATED ± 10%)  CONNECTOR (CN1033,CN25) BAD INSERTION → CHECK CONNECTOR OTHER → CHANGE BOTH MAIN & INVERTER P.W.B	
13 TIMES BLINK	EEPROM READING ERROR	CHANGE BOTH MAIN & INVERTER P.W.B	

In case abnormality found at the checking result, please confirm the connecting cord having problem or not before replace the defect part according to the table of self-check diagnosis result.



# Collect refrigerant using test switch operation

- 1. Turn OFF the breaker and wait for 1 minute or more before turn ON back the breaker.
- 2. Detach the electrical cover of outdoor unit and ensure LD1353 is blinking once.
- 3. Wait 20 seconds or more before pressing the test switch for 1 second or more to start the forced cooling operation.
- 4. Pressing the test switch again for 1 second or more will stop the operation.



### Cautions

- 1. Do not any circumstances operate the outdoor unit for more than 5 minutes.
- 2. Doing work with the compressor connector removed will cause the LD1351 to blink 4 times. It will not start the operation.
- 3. For another test run, turn OFF the breaker and turn it back ON to reset the power supply. (The test switch is accepted only once after power ON. After operation by remote controller, it is not accepted.)
- 4. When the operation with the test switch is done, turn OFF the breaker.
- 5. Do not press the test switch more than 5 seconds to start or stop the operation. Unit will enter self-check mode which will drive to wrong judgement on the unit condition.

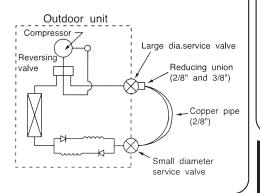
Turn OFF the breaker and turn it back ON to reset the power supply if the unit mistakenly enter the self-check mode.

# How to operate the outdoor unit indipendently

1. Connect the large dia. pipe side and small dia. pipe side service valves using a pipe.

Connect the small diameter service valve and the large diameter service valve using the reducing union and copper pipe as shown on the right.

Charge refrigerant of 300g after vacuuming (※1)



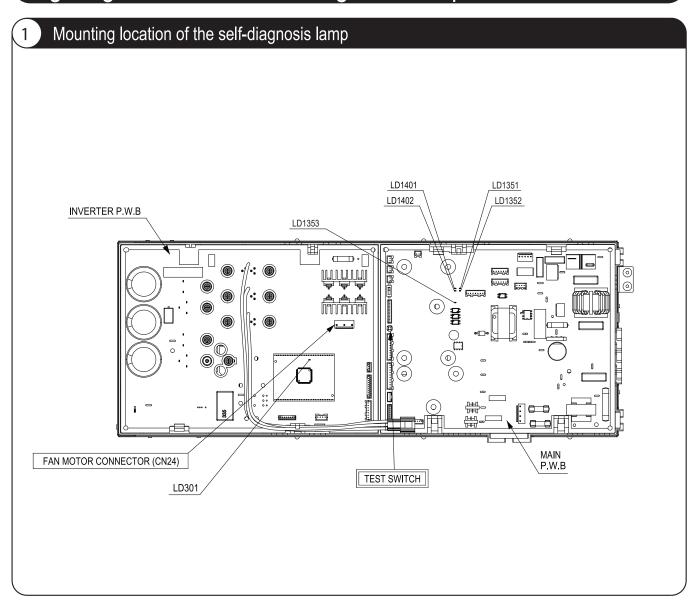
Parts to be prepared

- (1) Reducing union 2/8" (6.35mm) 3/8" (9.52mm)
- (2) Copper pipe (2/8" and 3/8")

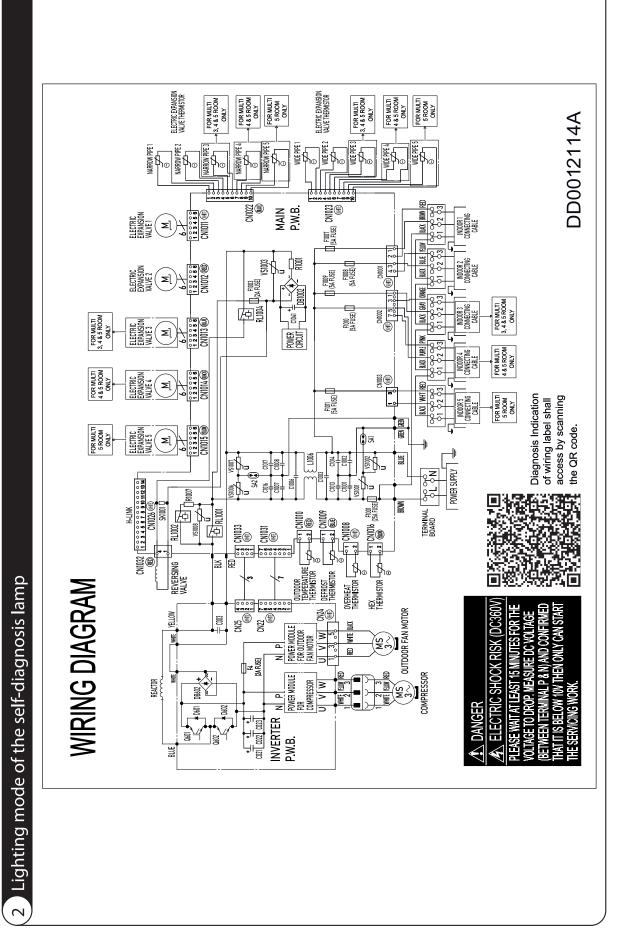
Do not operate more than 5 minutes

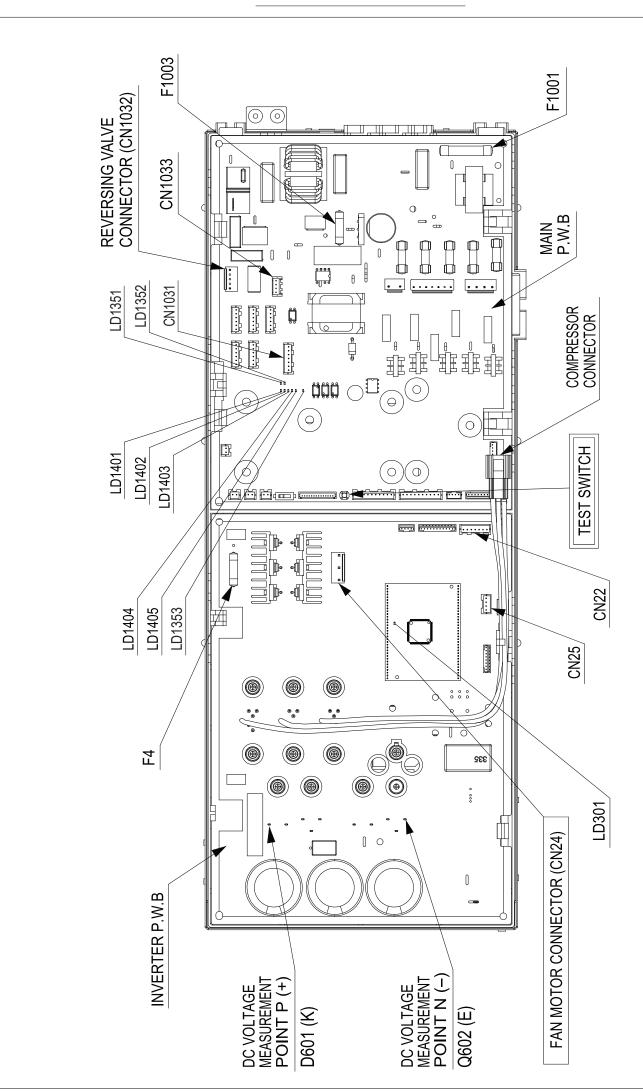
The operation method is the same as "Collect refrigerant using test switch". %1 The charging amount of 300g is equivalent to the load in normal operation.

# Lighting mode of the self-diagnosis lamp



# Lighting mode of the self-diagnosis lamp





LED INDICATION DURING OPERATION						
LED	STATUS		SELF-DIAGNOSE CONTENT	CHECKING POINT	REPAIR METHOD	
LD1353	BLINK		NORMAL	NORMAL (BLINKING TIMING IS NOT MALFUNCTION	٧).	
	OFF	STANDBY MODE	NORMAL	LED WILL OFF DURING STANDBY MODE.		
		OTHER THAN STANDBY MODE	ABNORMAL	NO POWER SUPPLY AT TERMINAL "L - N". $\longrightarrow$ CIRCUIT DEFECT. $\longrightarrow$	CHECK POWER CABLE. CHANGE BOTH MAIN & INVERTER P.W.B.	
	■ LIT		ABNORMAL	CIRCUIT DEFECT. →	CHANGE BOTH MAIN & INVERTER P.W.B.	
LD1401 (INDOOR 1) LD1402 (INDOOR 2) LD1403 (INDOOR3) LD1404 (INDOOR4) LD1405 (INDOOR 5)	■ LIT		CONNECTING	CONNECTED NORMALLY WITH INDOOR UNIT.		
	1 TIME BLINK		COMMUNICATION ERROR BETWEEN INDOOR/OUTDOOR	CONNECTING CABLE DISCONNECTED	CHANGE CONNECTING CABLE. ADJUST CONNECTING CABLE. CHANGE FUSE AFTER CHECK CABLE. CHANGE BOTH MAIN & INVERTER P.W.B.	
	OFF	STANDBY MODE	NORMAL	LED WILL OFF DURING STANDBY MODE.		
		OTHER THAN STANDBY MODE	ABNORMAL	INDOOR UNIT IS NOT CONNECTED. IF ALREADY CONNECTED, CONFIRM ABOVE 1 TIME	E BLINK CHECKING POINT.	

LED INDICATION DURING COMPRESSOR OPERATE		
LD301 OPERATION STATUS		
LIT NORMAL		
BLINK REPEATINGLY WITH 2 SEC LIT - 0.3 SEC OFF	OVERLOAD (NORMAL)	

[THE CONTENT OF  $\,\%\,1]$  - ACCORDING TO THE INDOOR UNIT THAT BE INSTALLED THE GAS SENSOR.

LED INDICATION DURING STOP				
LD1351	LD1352	SELF-DIAGNOSE CONTENT	CHECKING POINT REPAIR METHOD	
OFF	OFF	NO POWER SUPPLY	NO POWER SUPPLY AT TERMINAL "L - N"	
		NORMAL STOP		
LIT BLINK	THERMISTOR ABNORMAL	BLINK ABNORMAL LOCATION 1 TIME OH THERMISTOR 2 TIMES DEF THERMISTOR 3 TIMES OUTDOOR THERMISTOR 20 TIMES HEX THERMISTOR 8 TIMES THERMISTOR 8 TIMES THERMISTOR 1 TIMES OUTDOOR THERMISTOR 1 TIMES THERMISTOR 1 TIMES THERMISTOR 1 TIMES THERMISTOR 1 TIMES THERMISTOR 1 THERMISTOR THERMISTOR 1 THERMISTOR THERMISTOR 1 THERMISTOR THERMISTOR 1 THERMISTOR THERMIS	IPE 4	
			THERMISTOR WIRE SHORTED OR CUT. ————————————————————————————————————	
1 TIME BLINK	-	RESET STOP	WAITING COMPRESSOR TO START.   OTHER.   NORMAL.  IF STILL NOT SOLVE AFTER CHECK THE CONNECTING CABLE, CHANGE MAIN P	P.W.B.
2 TIMES BLINK		PEAK CURRENT CUT	SERVICE VALVE NOT OPEN. ————————————————————————————————————	
3 TIMES BLINK		ABNORMAL LOW SPEED ROTATION	COMPRESSOR CONNECTOR NOT ———————————————————————————————————	JLT
4 TIMES BLINK		SWITCHING FAILURE	INSULATION, PROCEED TO [SELF-CHECK].	
5 TIMES BLINK		OVERLOAD LOWER LIMIT CUT	OUTDOOR UNIT SURROUNDING IS   REMOVE THE CAUSE OF BLOCKING.  OTHER.   CHECK REFRIGERANT CYCLE.	
6 TIMES BLINK		COMPRESSOR TEMPERATURE RISE	SERVICE VALVE NOT OPEN. — — — — — — — — — — — — — — — — — — —	
8 TIMES BLINK		COMMUNICATION ERROR BETWEEN MICON	BAD CONNECTOR INSERTION (CN1031, ————————————————————————————————————	3.

		INDOOR TYPE MISMATCH	REFER LD1401 ~ LD1405.	
9 TIMES BLINK	OFF	(SINGLE/MULTI)	CHECK INDOOR TYPE.	REPLACE INDOOR P.W.B./UNIT
	LIT	GAS SENSOR ERROR	GAS SENSOR (INDOOR).	CHECK INDOOR UNIT. PLEASE REFER TO $\%$ 1.
10 TIMES BLINK	OFF	POWER SUPPLY VOLTAGE ERROR	ABNORMAL (BEYOND RATED  VOLTAGE ±10%).  NORMAL (WITHIN RATED VOLTAGE ±10%).  BAD CONNECTOR INSERTION  (CN1033,CN25).  OTHER.	CHECK CONNECTOR INSERTION.
11 TIMES BLINK		FAN STOP BY STRONG WIND	TEMPORARY STOP DUE TO STRONG WIND.	FAN WILL ROTATE AGAIN AFTER WIND BECOME WEAK.
12 TIMES BLINK -	OFF	FAN LOCK STOP	TEMPORARY STOP DUE TO STRONG WIND. $\longrightarrow$ PROPELLAR FAN LOCK. $\longrightarrow$ CONDUCT OUTDOOR FAN MOTOR CHECK. $\rightarrow$	REMOVE THE THING THAT BLOCKING FAN.
	LIT	SERVICE VALVE CLOSE	ALL INDOOR UNIT LED 3 TIMES BLINKING. ————————————————————————————————————	CHECK THE SERVICE VALVE. IF SERVICE VALVE ALREADY OPEN, PLEASE TRY RERUN THE UNIT.
13 TIMES BLINK	OFF	EEPROM READING ERROR	LD301 ALSO BLINK 13 TIMES. $\longrightarrow$ OTHER. $\longrightarrow$	CHANGE INVERTER P.W.B. IF STILL NOT SOLVE, CHANGE MAIN P.W.B. CHANGE MAIN P.W.B.
14 TIMES BLINK		DC VOLTAGE ABNORMAL	CONFIRM AC POWER SUPPLY & DC $\longrightarrow$ VOLTAGE IS NORMAL. COMPRESSOR LOAD ABNORMAL. $\longrightarrow$	CHANGE INVERTER P.W.B. INSPECT THE COMPRESSOR.
15 TIMES BLINK		CIRCUIT ABNORMAL	VOLTAGE AND CURRENT DETECTION CIRCUIT →	CHANGE INVERTER P.W.B.
16 TIMES BLINK		HIGH LOAD STOP	SERVICE VALVE NOT OPEN.  OUTDOOR UNIT SURROUNDING IS  BLOCKED. CLOGGED FILTER IN INDOOR UNIT.	REMOVE THE CAUSE OF BLOCKING.

DURING UNIT STOP, TO DETERMINE WHETHER THE COMPRESSOR OR THE ELECTRICAL IS FAULTY WHEN SELF-DIAGNOSIS BLINK 2,3,4 OR 5 TIMES HAPPEN, CONFIRM THE COMPRESSOR TERMINAL INSULATION BY USING MEGA OHM CHECKER. IF THE INSULATION IS NORMAL, PROCEED TO BELOW [SELF-CHECK] METHOD. TAKE NOTE THAT DURING [SELF-CHECK], THERE ARE POSSIBILITY LOUD SOUND FROM IPM CAN BE HEARD IN THE CASE OF IPM IS BROKEN.

### [SELF-CHECK] DIAGNOSIS METHOD

- 1. SWITCH OFF MAIN POWER SUPPLY.
- 2. SWITCH ON MAIN POWER SUPPLY.
- 3. PRESS AND HOLD THE TEST SWITCH AT OUTDOOR FOR MORE THAN 5 SEC, UNTIL LD1351 FAST BLINKS AND THEN RELEASE THE TEST SWITCH.
- 4. SELF-CHEK RESULT WILL DISPLAY AT LD301. REFER TO BELOW TABLE FOR THE DETAIL OF THE DIAGNOSIS RESULT.
- 5. SWITCH OFF MAIN POWER SUPPLY ONCE DONE.

### [SELF-CHECK] DIAGNOSIS RESULT

LD301	DIAGNOSIS CONTENT	REPAIR METHOD	
1 TIME BLINK	K ELECTRICAL OK. CHANGE COMPRESSOR.		
2 TIMES BLINK	PEAK CURRENT CUT OFF SIGNAL DETECTED.	CHANGE INVERTER P.W.B.	
7 TIMES BLINK	COMPRESSOR CURRENT ABNORMAL.	COMPRESSOR CONNECTOR LOOSE => CHECK CONNECTOR.  AFTER CHECK COMPRESSOR CHANGE INVERTER P.W.B.	
10 TIMES BLINK	AC VOLTAGE ABNORMAL (BEYOND RATED ± 10%).  CONNECT WITH CORRECT AC VOLTAGE.  AC VOLTAGE NORMAL (WITHIN RATED ± 10%).  CONNECTOR (CN1033,CN25) BAD INSERTION => CHECK CONNECTO  OTHER => CHANGE BOTH MAIN & INVERTER P.W.B.		
13 TIMES BLINK	EEPROM READING ERROR.	CHANGE INVERTER P.W.B.	

### [OUTDOOR FAN MOTOR CHECK] DIAGNOSIS METHOD

- 1. SWITCH OFF MAIN POWER SUPPLY.
- 2. UN-INSERT OUTDOOR FAN MOTOR CONNECTOR CN24.
- 3. MAKE SURE NO ABNORMALITIES AT THE FAN SHAFT.
- 4. MEASURE RESISTANCE AT FAN MOTOR CONNECTOR CONTACT.
  - > NORMAL RESISTANCE BETWEEN EACH TERMINAL SHALL BE NEARLY SAME.

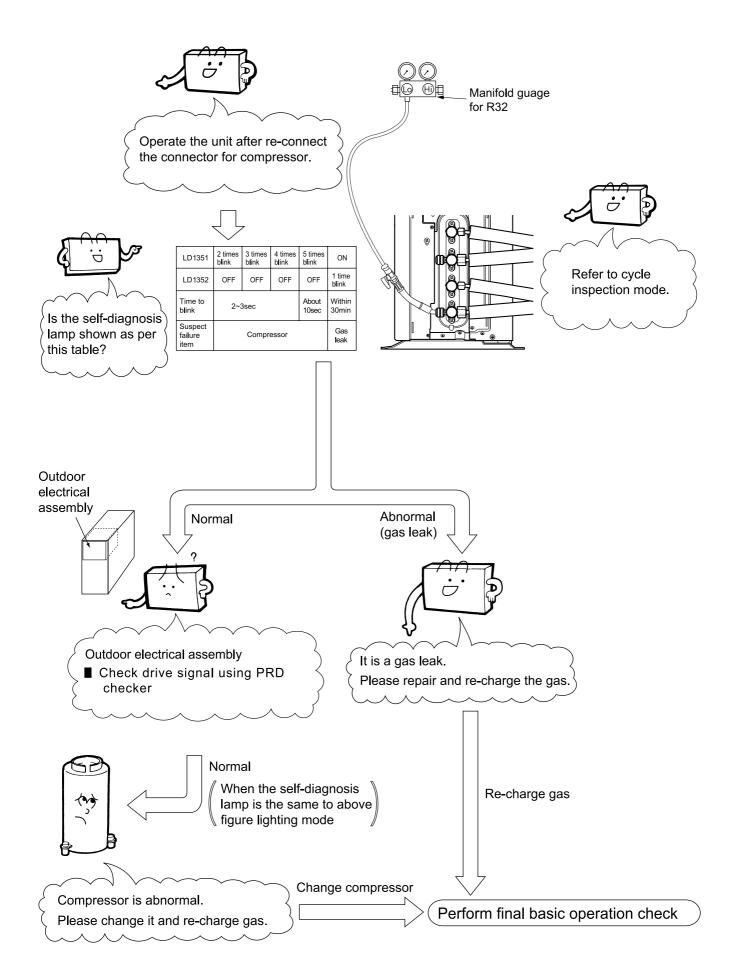
MOTOR NORMAL : CHANGE INVERTER P.W.B.

MOTOR ABNORMAL : CHANGE FAN MOTOR AND INVERTER P.W.B. (IF REQUIRED).

### OTHERS CHECKING POINT

- 1. REVERSING VALVE NOT OPERATE.
  - > UN-INSERT THE CONNECTOR AND CHECK THE LEAD WIRE.
  - => IF OK, CHECK REVERSING VALVE COIL.
- 2. COMMUNICATION ERROR OR OUTDOOR UNIT NO OPERATION.
  - => CHECK CONNECTING CABLE BETWEEN INDOOR AND OUTDOOR UNIT.

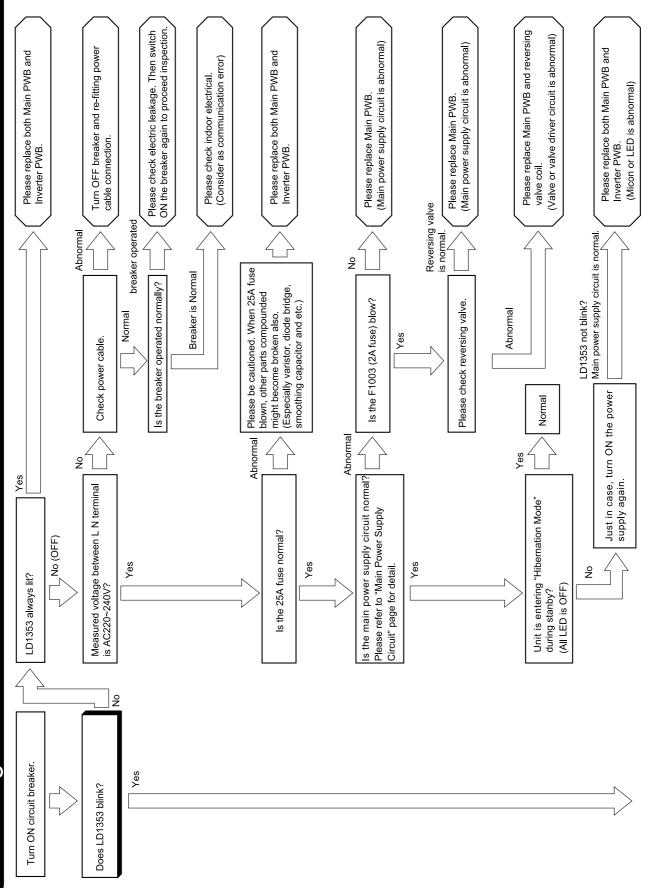
# Refrigerant cycle check (gas leak or compressor failure)

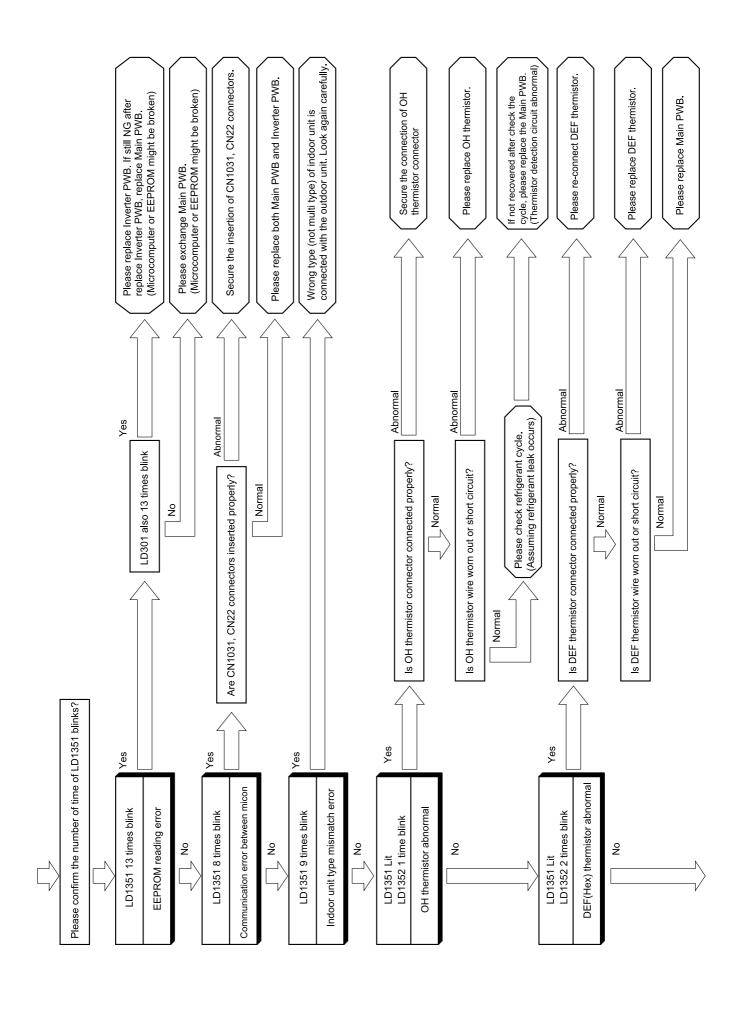


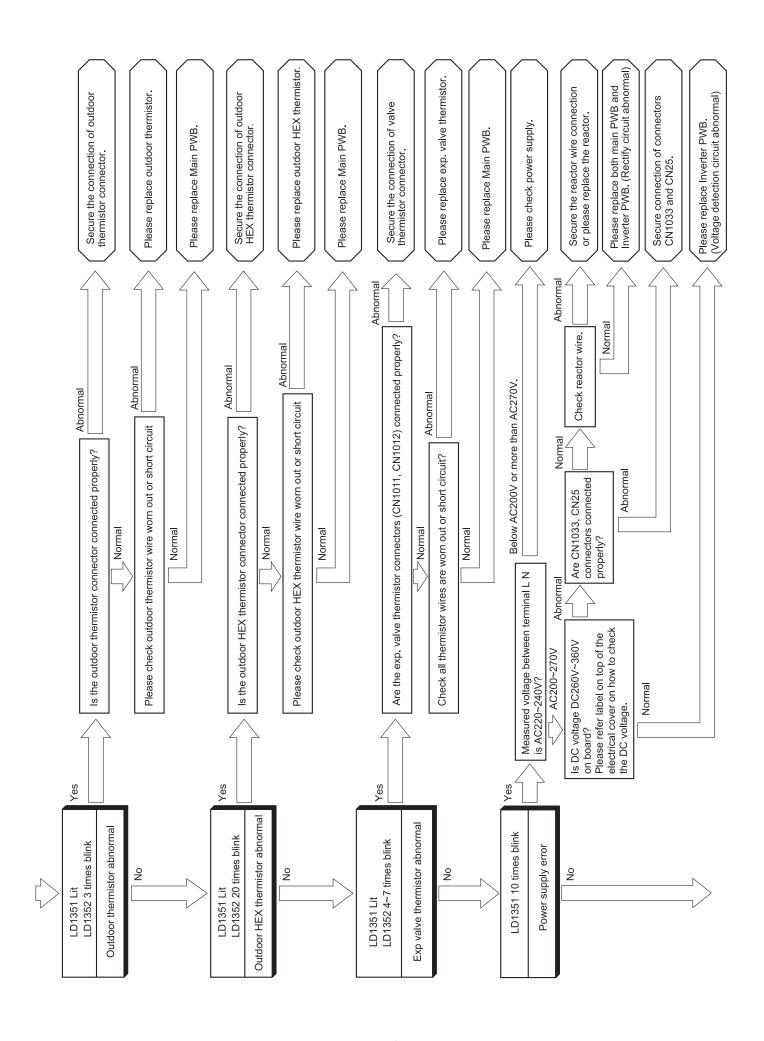
<u>List of error code when using Self-Diagnosis Memory Function</u> Please refer to the display screen of wireless or wired remote control. (This error code only for error happen at outdoor side).

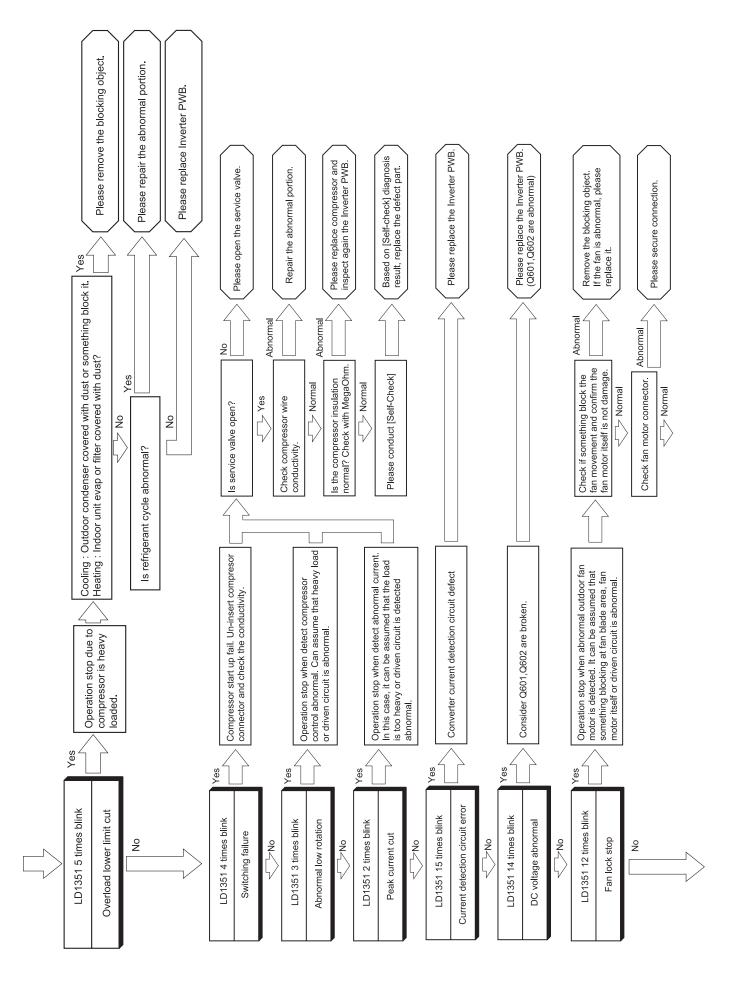
INDOOR OPERATION LAMP BLINKING	WIRELESS REMOTE CONTROL DISPLAY	WIRED REMOTE CONTROL DISPLAY	SELF-DIAGNOSE CONTENT	ERROR DESCRIPTION DETAIL	MAIN CHECK POINT
2 times	002 01	02 I \$	Peak current cut.	Over current is detected.	1. Compressor 2. Inverter P.W.B.
3 times	003 01	(8) % (5) Q (1) Q	Compressor abnormal low speed rotation.	Position detection signal has no input during operation.	1. Compressor 2. Inverter P.W.B.
4 times	004 01	04 I 35	Compressor switching failure.	Fail to switch from initial low frequency sync to position detection sync.	1. Compressor 2. Inverter P.W.B.
5 times	005 01	05 1	Overload lower limit cut.	Overlaod condition still presisting even rotation speed is below the lower rpm limit.	Outdoor unit is expose to direct sunlight or its air flow blocked.     Fan motor     Fan motor circuit     The voltage is extremely low
6 times	006 01	06 I \$6	OH thermistor temperature rise.	OH thermistor is operating.	Leak of refrigerant     Compressor     OH thermistor circuit     Fan motor     Fan motor circuit
8 times	008 01	® % ♦ ф 08 I	Communication error between microcomputer.	Communication between inverter microcomputer and main microcomputer failed.	Connector insertion at CN1031 & CN22     Main and Inverter P.W.B.
9 times	009 01	(A) (B) (C) (D) (D) (D) (D) (D) (D) (D) (D) (D) (D	Indoor type mismatch.	Single model connected.	1. Main P.W.B. 2. Indoor unit
10 times	010 01	8 8 0 th	Abnormal power source.	Power supply voltage is incorrect.	Power supply voltage     Main or Inverter P.W.B. or both     P.W.B.
12 times	012 00	8 % ¢ † 12 I	Fan motor faulty.	Outdoor fan rpm is not rotate as intended rpm.	1. Fan motor 2. Fan motor circuit
13 times	013 01	13	EEPROM reading error.	Microcomputer cannot read the data in EEPROM.	1. Inverter P.W.B. If still NG after change Inverter P.W.B, change Main P.W.B.
14 times	014 01	(A) (B) (C) (C) (D) (D) (D) (D) (D) (D) (D) (D) (D) (D	Active converter defect.	Over voltage is detected or compressor load is abnormal.	1. Inverter P.W.B. 2. Compressor
7 times	071 01	③ ※ ◇ ↓ 71 I	Overheat Thermistor		
7 times	072 01	③ ※ ◇ ¢ 72 I	Defrost Thermistor		
7 times	073 01	③ ※ ◇ □ 73 I	Outdoor Temperature Thermistor		
7 times	074 01	(A)	Narror pipe thermistor abnormal (Indoor no.1)	hermistor's connector not connected 1. Thermistor	
7 times	075 01	8 % 0 ¢ 75 I	Wide pipe thermistor abnormal (Indoor no.1)	or thermistor's wire worn out or shorted.  2. Connection of thermistor faulty 3. Thermistor circuit	
7 times	076 01	®	Narror pipe thermistor abnormal (Indoor no.2)		
7 times	077 01	(8) (% ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )	Wide pipe thermistor abnormal (Indoor no.2)		
7 times	090 01	90 1	Outdoor heat exchanger thermistor abnormal		

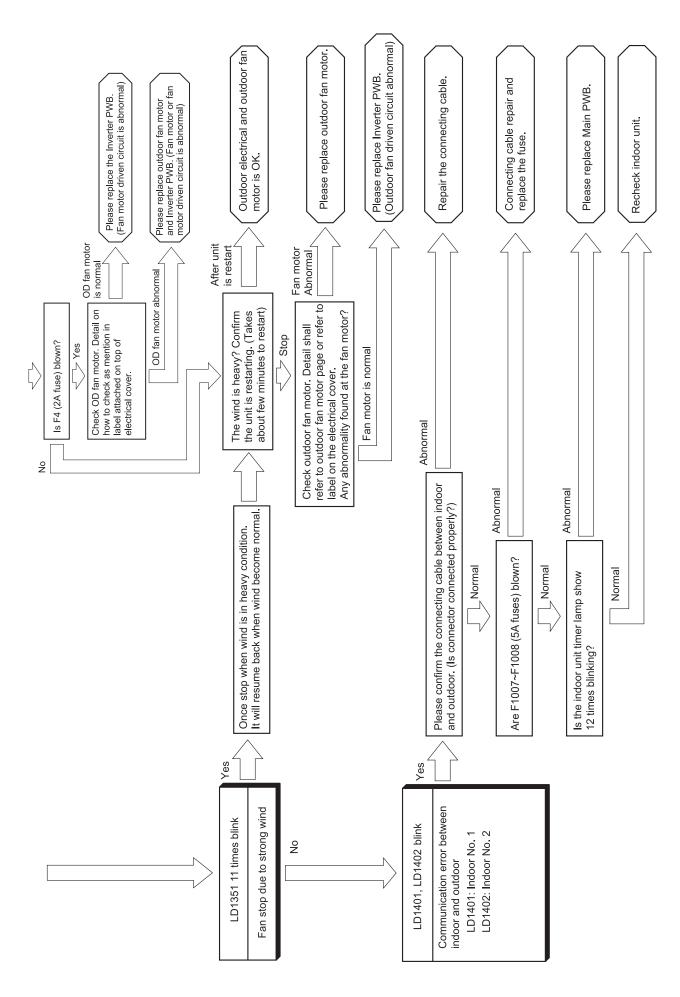
# Checking Electrical Parts of Outdoor Unit







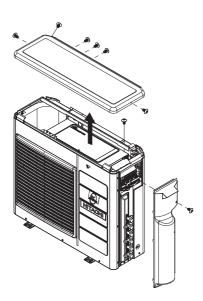




### **DISMANTLE AND ASSEMBLY PROCEDURE**

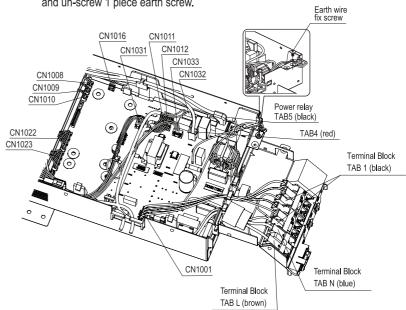
### ■ RAM - E53N2HAE

- 1. Electrical parts (preparation to remove board)
- (1) Remove screw that fix the service valve cover and push it down to take it out.
- (2) Remove the screws on both sides of top cover and then remove the top cover.

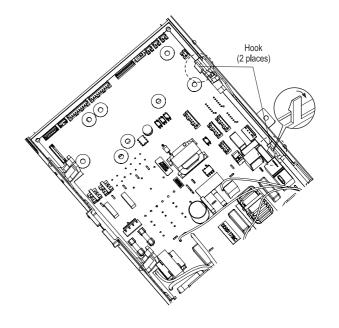


(3) Remove the screws that holding the electrical cover and then remove the cover.

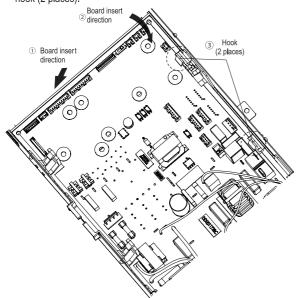
- 2. Dismantle procedure of main board
- (1) Un-insert connector (12 places), TAB terminal (6 places) and un-screw 1 piece earth screw.



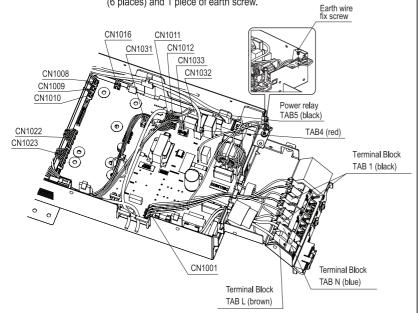
(2) Release the hooks (2 places) that locking the board and lift up the board to take it out.



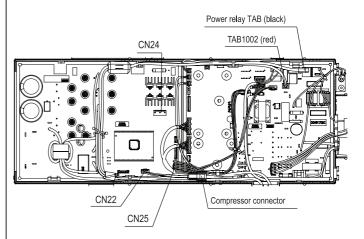
- 3. Assembly procedure of main board
- (1) Insert back the board into pcb support and lock it with hook (2 places).



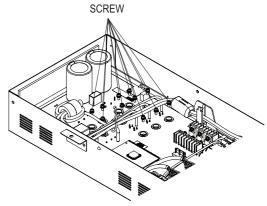
(2) Insert back the connectors (12 places), TAB terminals (6 places) and 1 piece of earth screw.



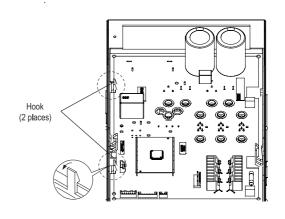
- 4. Dismantle procedure of inverter board
- (1) Un-insert connectors (4 places) and TAB terminal (2 places).



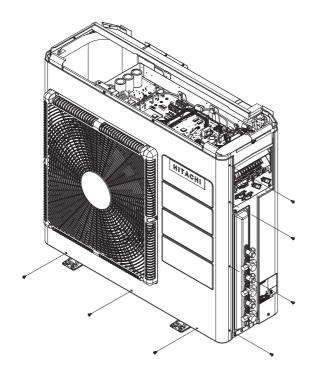
(2) Remove screw (11 pieces) that fixed the board.



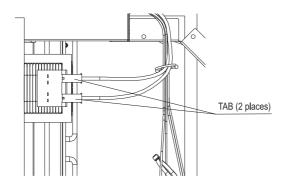
(3) Take out the board by lift up after release the hook that hold the board in its place.



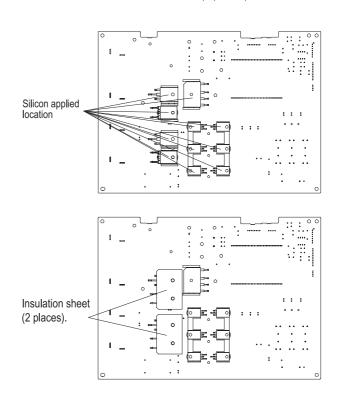
(4) Remove the screw (7 places) that fixed the cabinet then remove the cabinet.



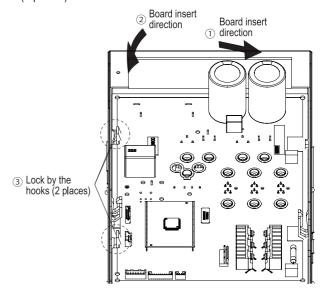
(5) Un-insert the TAB terminal (2 places) that fixed to the reactor.



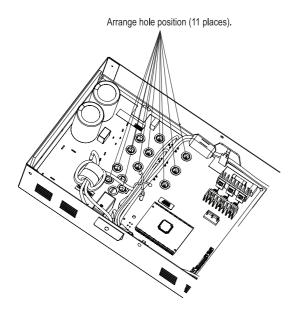
- 5. Assembly procedure of inverter board
- (1) Preparation before insert back the board. Applied silicon uniformly with small amount to 11 places of electronic part at back side of board. Then fix back the insulation sheet (2 places).



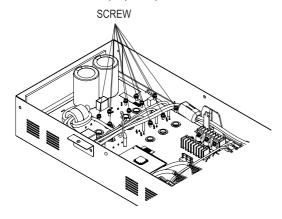
(2) Insert the board into the pcb support and fix it with hooks (2 places).



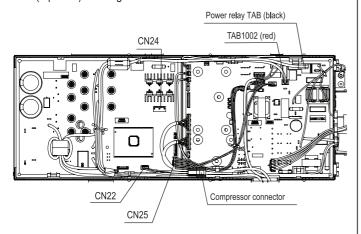
(3) Arrange the board position so that hole for fixing screw and holes at heat sink are concentric.



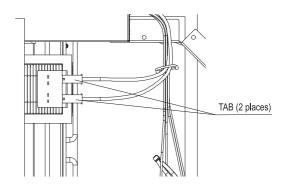
(4) Fix the board with screw (11 pieces).



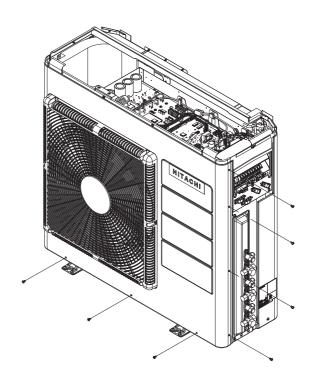
(5) Insert back connector (4 places) and TAB terminal (2 places) at it original location.



(6) Insert back TAB (2 places) to the reactor.

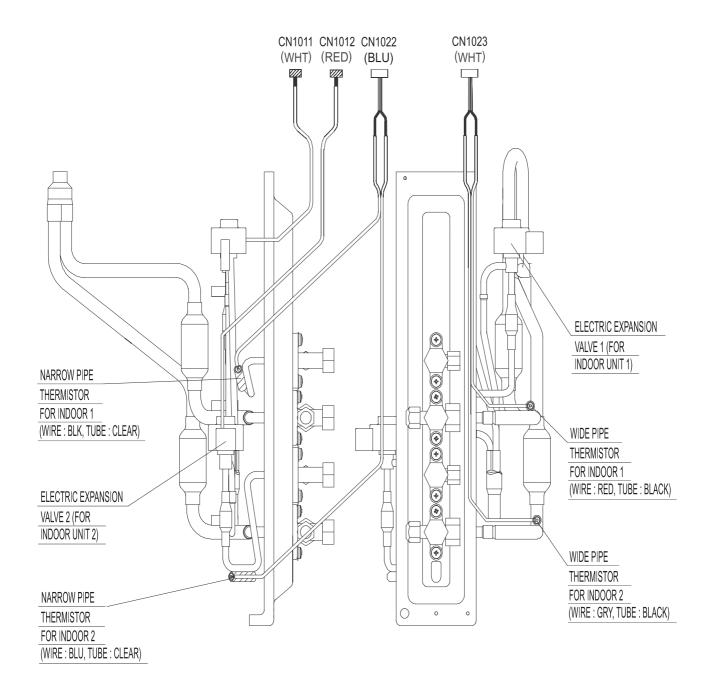


(7) Fix back the cabinet with screw (7 places).



# **ELECTRIC EXPANSION VALVE & PIPE THERMISTOR POSITION CHARTS**

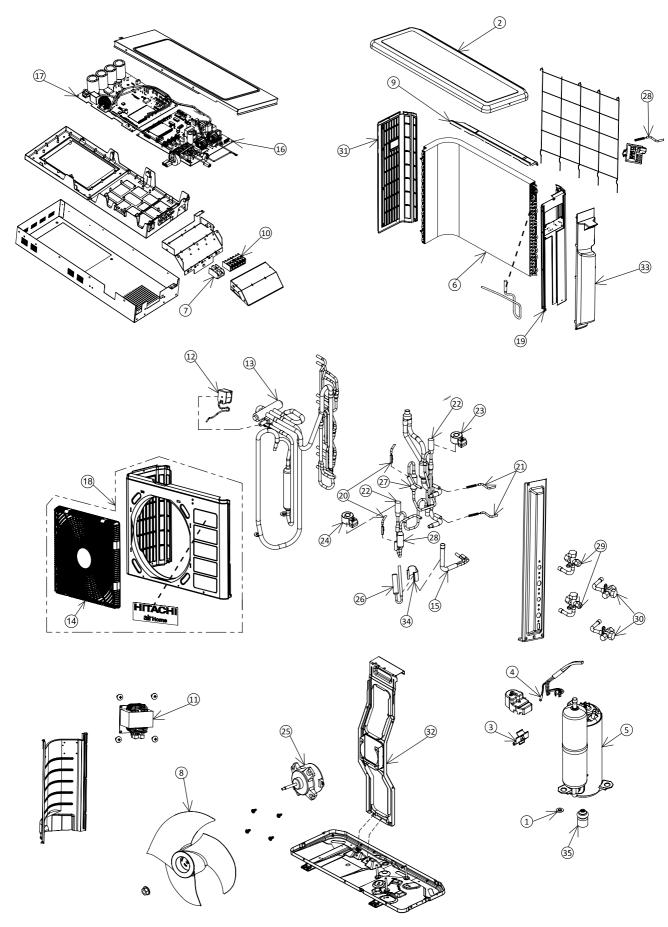
MODEL: RAM-E53N2HAE



# **DIAGRAM**

# **OUTDOOR UNIT**

MODEL: RAM-E53N2HAE



## **MODEL RAM -E53N2HAE**

NO.	PART NO.		Q'TY / UNIT	PARTS NAME
1	KPNT1	001	6	PUSH NUT
2	PMRAC-30MH1	S05	1	TOP COVER
3	PMRAC-25NH4	S09	1	OVERHEAT THERMISTOR SUPPORT
4	PMRAM-72Q8	S03	1	THERMISTOR (OH)
5	PMRAM-53NP2E	S03	1	COMPRESSOR
6	PMM-G55N2HAE	S06	1	CONDENSER
7	PMRAC-63CA1	S02	1	TERMINAL BOARD (2P)
8	PMRAC-70YHA	S07	1	PROPELLER FAN
9	PMRAC-S24HPA	S05	1	NET-CV
10	PMRAC-VX13CET	S04	1	TERMINAL BOARD (3P)
11	PMRAM-33NP2E	S05	1	REACTOR
12	PMRAM-33NP2B	S06	1	COIL (REVERSING VALVE)
13	PMRAM-33NP2B	S07	1	REVERSING VALVE
14	PMRAC-50NPD	S07	1	D-GRILL
15	PMRAM-53NP2E	S04	1	STRAINER (CO-PIPE-AS)
16	PMM-G55N2HAE	S01	1	P.W.B (MAIN)
17	PMM-G55N2HAE	S02	1	P.W.B (INVERTER)
18	PMM-G55N2HAE	S03	1	CABINET
19	PMRAM-53NP2B	S04	1	SIDE PLATER R
20	PMRAM-53NP2E	S06	1	THERMISTOR-V-N
21	PMRAM-53NP2E	S07	1	THERMISTOR-V-W
22	PMRAM-53NP2E	S08	2	EXPANSION VALVE
23	PMRAM-53NP2B	S08	1	EXPANSION VALVE COIL (W)
24	PMRAM-53NP2B	S09	1	EXPANSION VALVE COIL (R)
25	PMM-G55N2HAE	S05	1	FAN MOTOR
26	PMRAM-55QH4	S05	1	THERMISTOR (DEFROST)
27	PMRAM-65QH4	919	1	STRAINER (ST-PIPE-AS 3)
28	PMRAM-65QH4	S10	1	THERMISTOR (OUTSIDE TEMPERATURE)
29	PMRAC-X13CX	902	2	VALVE (2S)
30	PMSMARTY235M	902	2	VALVE (3S)
31	PMRAM-72Q9	S05	1	SIDE PLATE L
32	PMRAM-72Q9	S08	1	SUPPORT (FAN MOTOR)
33	PMRAM-72Q9	S09	1	SV-COVER
34	PMRAM-72QH5	S20	1	SUPPORT (DEF-THERMISTOR)
35	RAC-2226HV	805	3	COMPRESSOR RUBBER

# **HITACHI**

RAM-E53N2HAE PM NO. 0833E

Printed in Malaysia

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

# ROOM AIR CONDITIONER

**FEB 2023 Refrigeration & Air-Conditioning Division**