Order No. MAC0202001S2

Service Manual

Room Air Conditioner

Supplement

CS-E9BKP CU-E9BKP5
CS-E12BKP CU-E12BKP5

Subject : Correction Of Operations Details and Electronic Circuit Diagram

Please file and use this supplement manual together with the service manual for Model No. CS-E9BKP/CU-E9BKP5, CS-E12BKP/CU-E12BKP5, Order No. MAC0112083C2.

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

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Panasonic

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1 Product Specifications (Page: 9)

	Unit	CS-E9BKP	CU-E9BKP5
Refrigerant (R410A)	g (oz)	—	840 (29.7)

2 Operation Details

2.1. BASIC FUNCTION

2.1.1. Internal Setting Temperature (Page: 16 & 17)

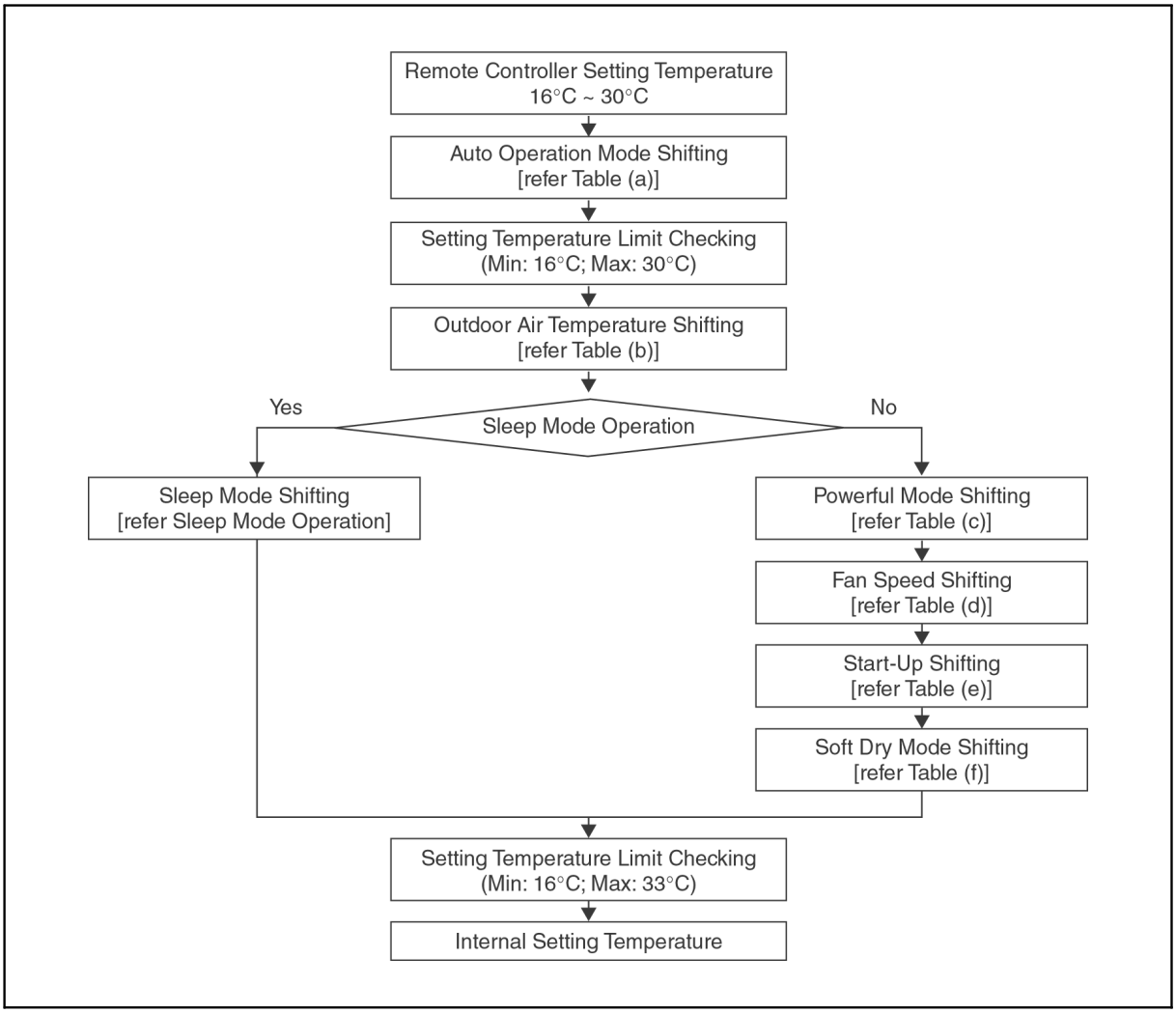


Table (a): Auto Operation Mode Setting

Mode Shift:	Temperature Shift (°C)

Table (b): Outdoor Air Temperature Shifting

Mode:	Outdoor Temperature, X (°C):	Temperature Shift (°C)

Table (c): Powerful Mode Shifting

Mode:	Period, X (min):	Temperature Shift (°C)

Table (d): Fan Speed Shifting

Mode:	Fan Speed:	Temperature Shift (°C)

Table (e): Start-Up Shifting

Mode within 60 Minutes from Start-up:	Temperature Shift (°C)

Table (f): Soft Dry Mode Shifting

Mode:	Temperature Shift (°C)

2.1.2. Frequency Instruction for Compressor Operation (Page: 18 - 20)

Table on Frequency Number

No.	Frequency (Hz)		Remarks
	E9BKP	E12BKP	
13	39.0	52.0	Fc
15	47.0	62.0	Fc max. (E9BKP)
16	49.0	67.0	Fc max. (E12BKP)
17	56.0	68.5	Fh
30	90.0	110.0	Fh max.

Table on Initial Frequency Zone

Temperature, X (°C) (Intake Air - Internal Setting)	Freq. No. - E12BKP
	Cooling
X < -2.5	1
-2.5 ≦ X < -1.5	1
-1.5 ≦ X < -1.0	1
-1.0 ≦ X < -0.5	1
-0.5 ≦ X < +1.0	4
+0.5 ≦ X < +1.0	6
+1.0 ≦ X < +1.5	9
+1.5 ≦ X < +2.5	16
X ≧ +2.5	16

Table on Shifting Frequency Zone

Temperature, X (°C) (Intake Air - Internal Setting)	Zone	Frequency No. Shifting:	
		Cooling Mode / Soft Dry Mode	Heating Mode
X ≦ -2.5	0	Shift to Freq. MIN	Shift to Freq. MAX
-2.5 ≦ X ≦ -1.5	1	Shift to Freq. MIN	Shift to Freq. MAX
-1.5 ≦ X ≦ -1.0	2	-2 Freq. No.	+2 Freq. No.
-1.0 ≦ X ≦ -0.5	3	-1 Freq. No.	+1 Freq. No.
-0.5 ≦ X ≦ +1.0	4	Same Freq. No.	Same Freq. No.
+0.5 ≦ X ≦ +1.0	5	+1 Freq. No.	-1 Freq. No.
+1.0 ≦ X ≦ +1.5	6	+2 Freq. No.	-2 Freq. No.
+1.5 ≦ X ≦ +2.5	7	Shift to Freq. MAX	Shift to Freq. MIN
X ≧ +2.5	8	Shift to Freq. MAX	Shift to Freq. MIN

Condition:	Freq. no. for E9BKP		Freq. no. for E12BKP		Remarks
	MIN	MAX	MIN	MAX	
Cooling Mode	1	15	1	16	(a)
- if remote controller set ≦ 28°C & fan speed = Hi	7	15	7	16	(a), (c)
- if remote controller set ≦ 28°C & fan speed = Me-, Me, Me+, Auto	5	15	6	16	(a), (c)
- if remote controller set ≦ 28°C & fan speed = Lo	4	15	5	16	(a), (c)
- if Powerful Mode ON	7	15	7	16	(a), (c)
Soft Dry Mode	4	7	4	8	
Heating Mode	1	30	1	30	(b)
- if remote controller set ≧ 18°C & fan speed = Hi	10	30	10	30	(b), (d)
- if remote control set ≧ 18°C & fan speed = Me-, Me, Me+, Auto	9	30	9	30	(b), (d)
- if remote controller set ≧ 18°C & fan speed = Lo	8	30	8	30	(b), (d)
- if Powerful Mode ON	10	30	10	30	(b), (d)

(a) If frequency decreases from MAX, the following frequency performed will be depending to outdoor temperature, as given in below table (for 30 seconds only) and then continues as normal rule.

(b) (If frequency increases from Freq. No. 17, the following frequency performed is as below (for 30 seconds only) and then continue as normal rule.

(c) When temperature different (intake - setting) < -1.0 °C or Thermo-Off activated and only valid for 120 seconds; not applicable during Sleep Mode, Soft Dry Mode, and Anti-freezing control.

(d) When temperature different (intake - setting) > +1.5 °C or Thermo-Off activated and only valid for 130 seconds.

(b) The frequency judged falls on frequency shifting zone number 0 or 1 (shift to Frequency MIN) at Cooling mode operation.

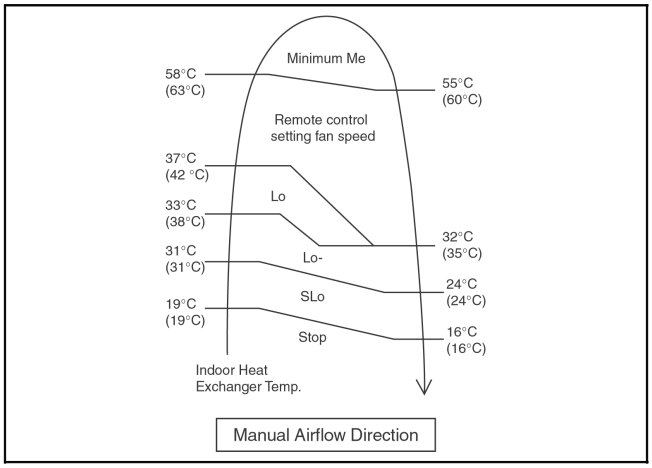
(d) The frequency judged falls on frequency shifting zone number 7 or 8 (shift to Frequency MAX) at Cooling mode operation.

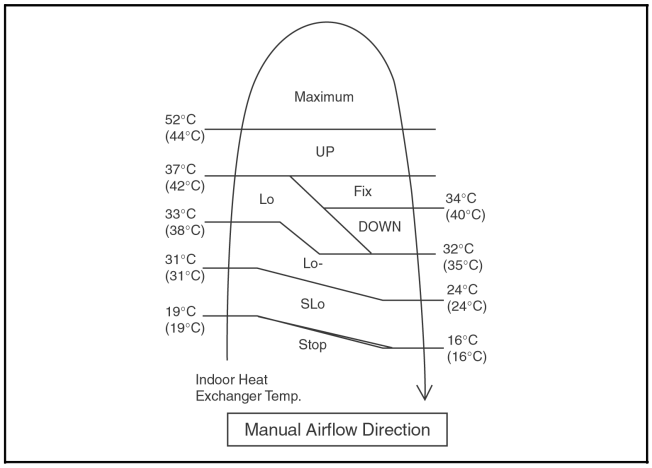
The instructed frequency is the value referred by the frequency number, which resulted from previous instructed frequency number with the numbers of frequency numbers to be shifted, in Table on Frequency Number at automatic fan speed.

2.1.3. Indoor Fan Motor Operation (Page: 21)

Fan Speed No.	CS-E9BKP				CS-E12BKP				Remark
	Voltage (V)	Cooling	Dry	Heating	Voltage (v)	Cooling	Dry	Heating	
5	3.15				3.23				- Auto operation mode judgment (H). - ON timer preparation sampling (H). - Sleep shift operation (H).
11	3.39			Me-	3.60	Me			- Powerful Mode at Lo fan for E12BKP (C).
27	3.89				4.05	SHi			
28	3.90	SHi			4.08				

2.1.4. Heating Mode Indoor Fan Motor Operation (Anti Cold draft Control) (Page: 22 & 23)





Note:

1. UP:
   - If move from Lo or Lo-, the fan speed will be shifted to Maximum.

2.2. Protection Control Features

2.2.1. Indoor Power Relay Control (Page: 28)

However, during instantaneous power failure (< 0.5s), power relay will turn off. Then, it will turn on 3 minutes after power recover and the unit will operate as previous operation condition.

2.2.2. Total Running Current Control (Page: 28)

1. When the total outdoor unit running current (AC) exceeds X value, the frequency instructed for compressor operation will be decreased a step to smaller frequency number.

2. If the running current does not exceed X value for five seconds, the frequency instructed will be increased a step at one time to bigger frequency number.

2.2.3. IPM (Power transistor) Prevention Control (Page: 29)

A. DC Peak Current Control

1. When electric current to IPM exceeds set value of 22.5 ± 3.5 A, the compressor will stop operate. Then, operation will restart after three minutes.

2. If the set value is exceeded again within 30 seconds after the compressor starts, the operation will restart after one minute. If this condition repeats continuously for seven times, all indoor and outdoor relays will be cut off.

2.2.4. Low Pressure Control (Gas Leakage Detection) (Page: 29)

Conditions	E9BKP		E12BKP	
	Cooling/Soft Dry	Heating	Cooling/Soft Dry	Heating
1. Compressor frequency (Hz)	≥ 47	≥ 56	≥ 67	≥ 68.5

Note: Conditions 1 and 2 needed to be happened continuously for 5 minutes.

2.2.5. Low Operation Frequency Protection Control (Page: 30)

Temperature, T, for:	Cooling/Soft Dry	Heating
Indoor intake air (°C)	T < 15 or T ≥ 30	—
Outdoor air (°C)	T < 16 or T ≥ 38	T < 4 or T ≥ 24

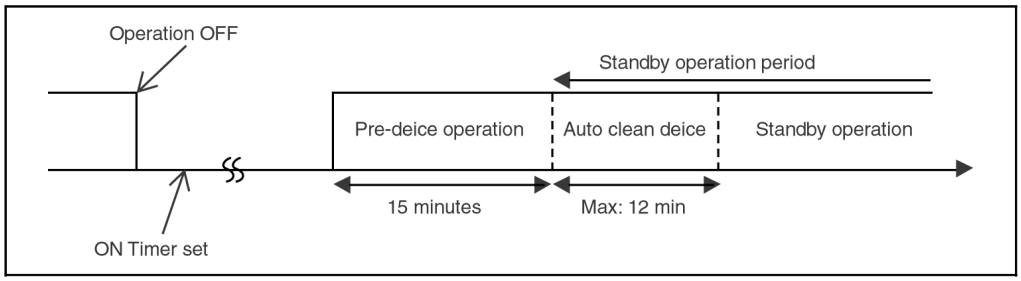
2.2.6. Anti-Fog Discharge Control (Page: 32)

Operation time, T (min)	E9BKP	E12BKP
0 < T ≤ 30	Max 33 Hz	Max 44 Hz
30 < T ≤ 90	Max 26 Hz	Max 36 Hz
90 < T ≤ 420	Max 26 Hz	Max 36 Hz

2.2.7. Intake Air Temperature Control (Page: 33)

1. When the intake air temperature is 10°C or above and remote controller setting fan speed is Lo or lower.

2.2.8. Auto Clean Deice Control (Page: 34)



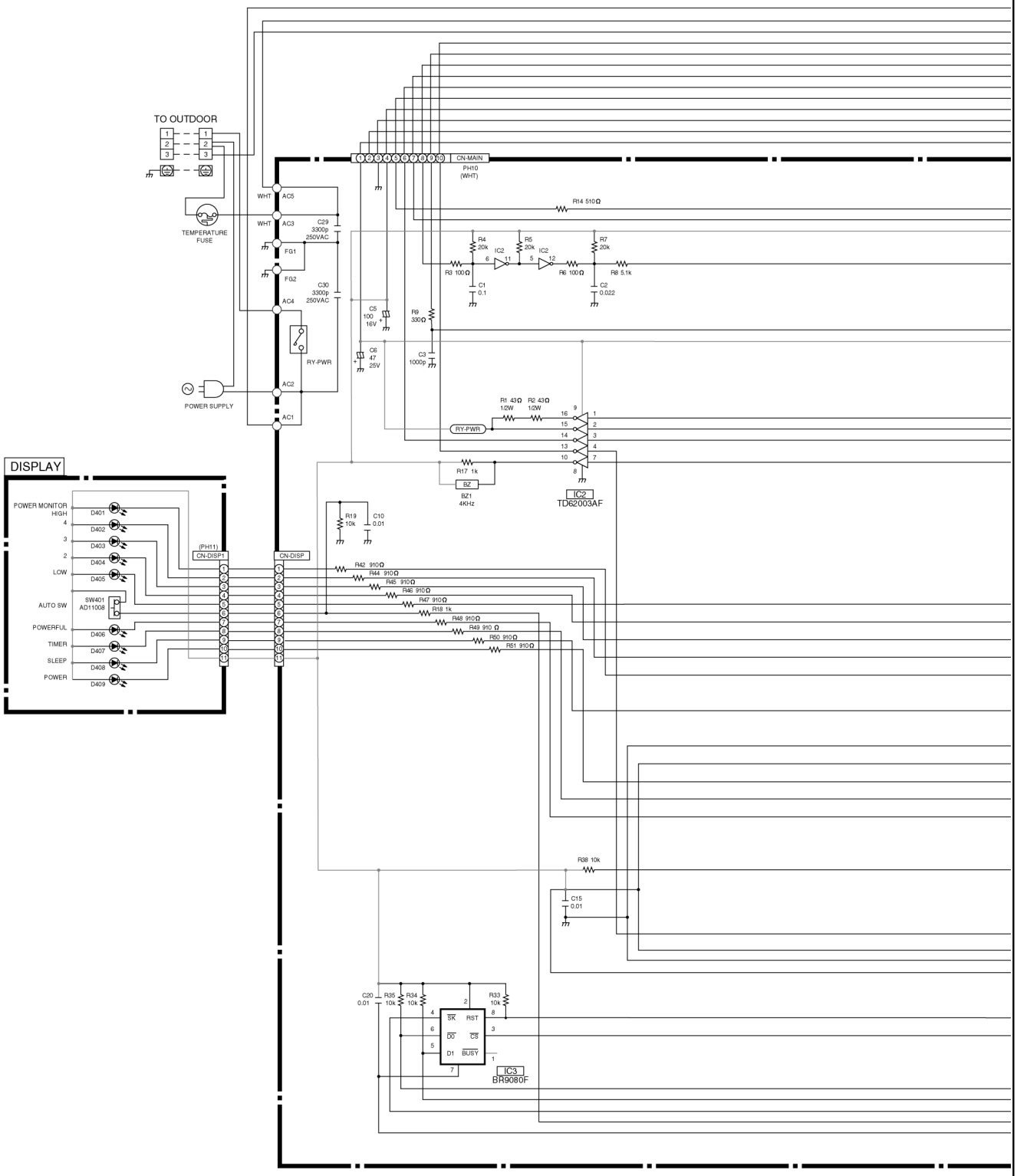
3 Installation Instructions (Page: 54)

New						
Model	Piping size		Common Length (m)	Max. Elevation (m)	Max. Piping Length (m)	Additional Refrigerant (g/m)
	Gas	Liquid				
E9BK	3/8”	1/4”	7.5	5	15	10

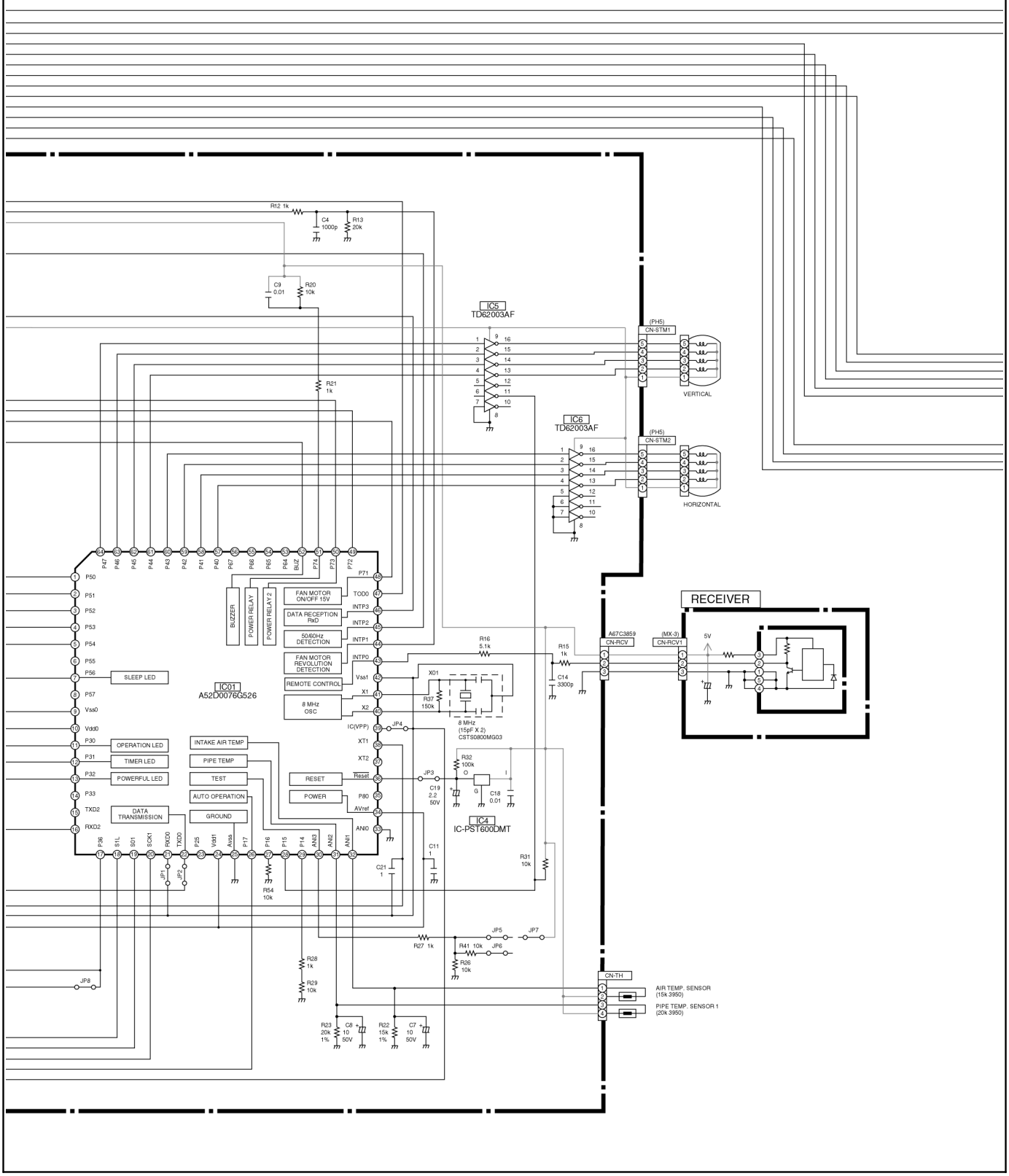
4 Electronic Circuit Diagram (Page: 77 - 82)

• CS-E9BKP / CS-E12BKP5

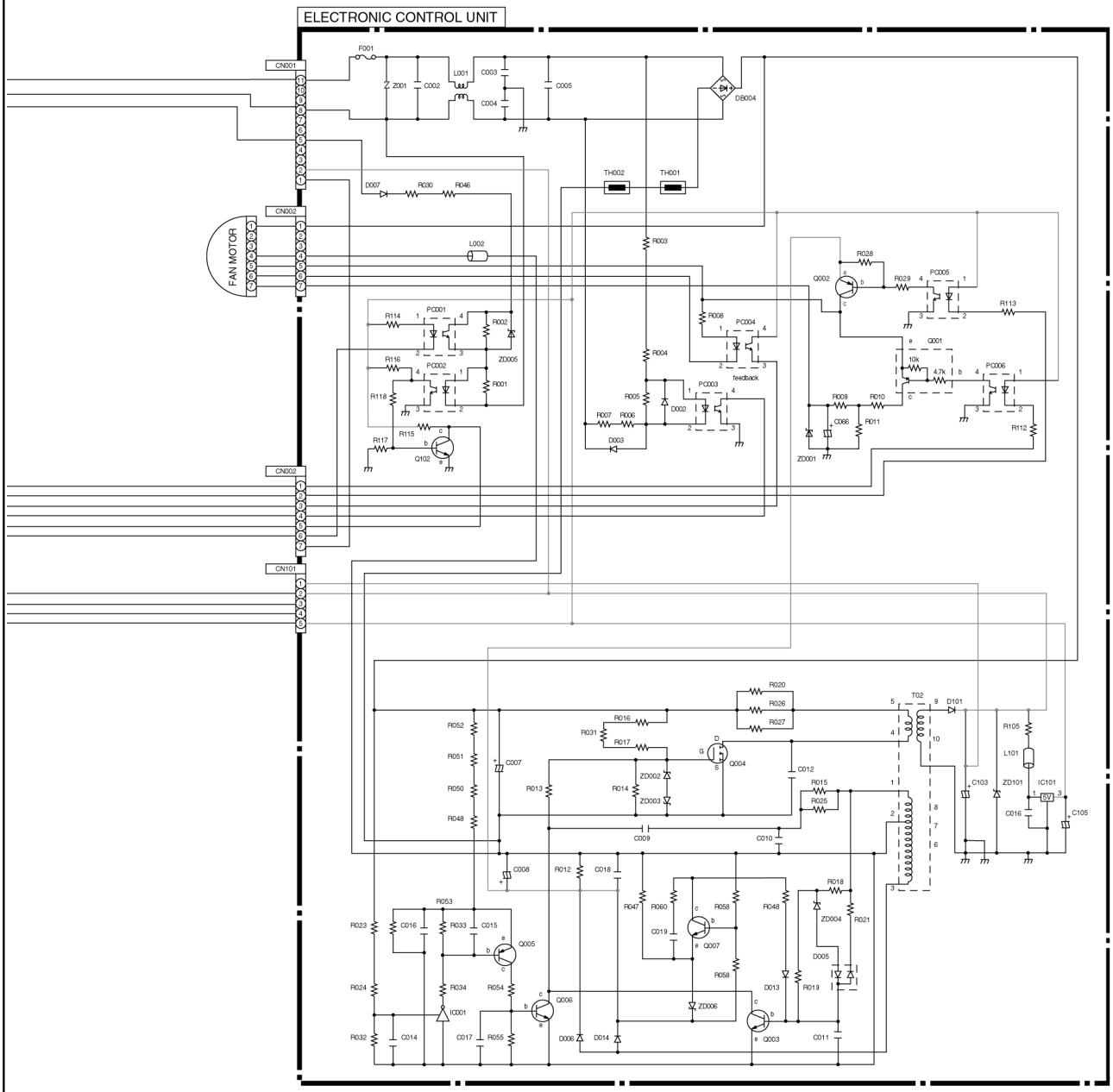
SCHEMATIC DIAGRAM 1/3



SCHEMATIC DIAGRAM 2/3

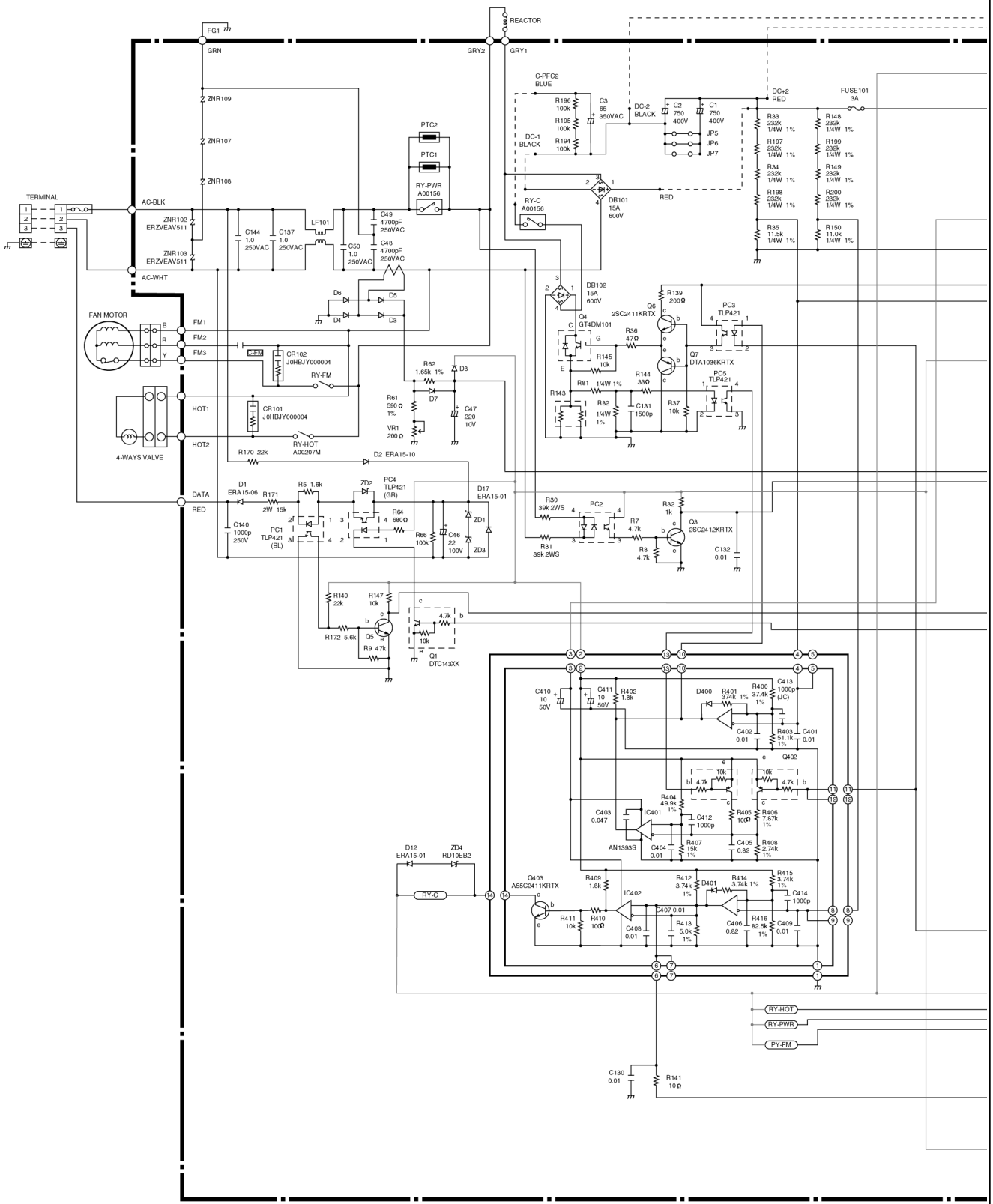


SCHEMATIC DIAGRAM 3/3

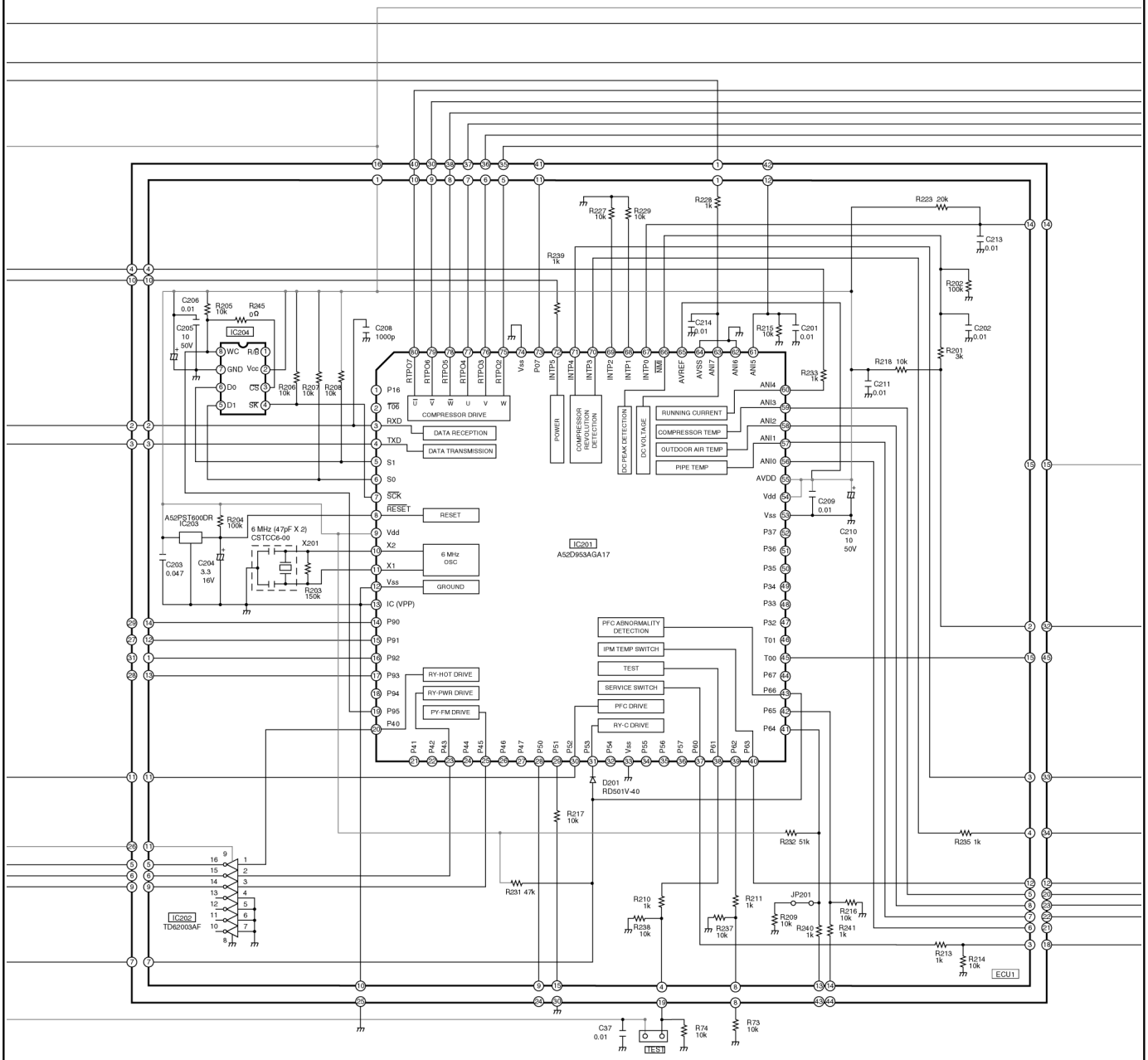


• CU-E9BKP / CU-E12BKP5

SCHEMATIC DIAGRAM 1/3



SCHEMATIC DIAGRAM 2/3



SCHEMATIC DIAGRAM 3/3