

# KENWOOD

REGULATED DC POWER SUPPLY

PA18-1.2A PA18-3A  
PA18-6A PA36-1.2A  
PA36-3A PA70-1A

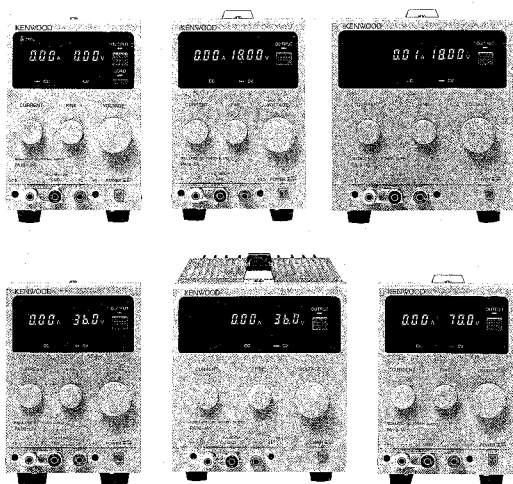
OPTION

EXTERNAL I/O UNIT

OP-13A

## SERVICE MANUAL

KENWOOD CORPORATION



## WARNING

The following instructions are for use by qualified personnel only. To avoid electric shock, do not perform any servicing other than contained in the operating instructions unless you are qualified to do so.

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# ADJUSTMENT

To obtain the best performance, periodically calibrate the unit. Sometimes, only one mode need be calibrated, while at other times, all modes should be calibrated. When one mode is calibrated, it must be noted that the other modes may be affected. When calibrating all modes, perform the calibration in the specified sequence.

The following calibration requires an accurate measuring instrument and an insulated adjusting flat blade screwdriver. If they are not available, contact your dealer. For optimum adjustment, turn the power on and warm up the unit sufficiently (more than 30 minutes) before starting.

Before calibrating the unit, check the power supply voltage.

## TEST EQUIPMENT REQUIRED

The following instrument or their equivalent should be used for making adjustment.

Multimeter 45 Fluke

| Item                    | Adjustment VR | P.C.B.                                                                                        | Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------------|---------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| V. OFF                  | VR4           | PA18-1.2A<br>W02-2274-08<br>PA18-3A<br>W02-2276-08<br>PA18-6A<br>W02-2278-08                  | Set the COARSE and FINE potentiometers on the front panel to the minimum positions, and adjust VR4 so that the output Voltage reads 0.000 V.                                                                                                                                                                                                                                                                                               |
| A. OFF                  | VR5           | PA18-1.2A<br>W02-2279-08<br>PA36-3A<br>W02-2280-08<br>PA70-1A<br>W02-2281-08                  | Set the CURRENT potentiometer to the minimum position, and adjust VR5 so that the output current reads $-0.000 \square A (\square : 1 \text{ to } 4)$ .                                                                                                                                                                                                                                                                                    |
| Output voltage (V. ADJ) | VR1           |                                                                                               | Set the COARSE and FINE potentiometers to the maximum positions, and adjust VR1 to read the rated output voltage.                                                                                                                                                                                                                                                                                                                          |
| Output current (A. ADJ) | VR2           |                                                                                               | Set the CURRENT potentiometer to the maximum position, and adjust VR2 to read the rated output current.                                                                                                                                                                                                                                                                                                                                    |
| CV                      | VR1<br>VR2    | TOP<br>↑<br> | <ul style="list-style-type: none"> <li>Set the multimeter to 19.00 V, and adjust VR1 (CV<sub>L</sub>) on the digital panel meter so that the voltage reads 19.00 V.</li> <li>With the PA36-1.2A, PA36-3A and PA70-1A the output voltages of which are above 19 V, use the similar procedure as above but adjust VR2 (CV<sub>H</sub>). With the PA18-1.2A, PA18-3A and PA18-6A set the Power switch ON/OFF and adjust to 18.5 V.</li> </ul> |
| CC                      | VR3           |                                                                                               | Adjust VR3 (CC) so that the CC display becomes the same at the maximum output current.                                                                                                                                                                                                                                                                                                                                                     |

| Model     | Specifications | Output voltage setting | Output current setting |
|-----------|----------------|------------------------|------------------------|
|           |                | [V]                    | [A]                    |
| PA18-1.2A | 18.5           |                        | 1.28                   |
| PA18-3A   |                |                        | 3.19                   |
| PA18-6A   |                |                        | 6.38                   |
| PA36-1.2A | 37             |                        | 1.28                   |
| PA36-3A   |                |                        | 3.19                   |
| PA70-1A   | 72             |                        | 1.06                   |

Table 1

# PARTS LIST

## PA18-3A Y86-1930-00

| REF. NO          | PARTS NO                       | NAME & DESCRIPTION |
|------------------|--------------------------------|--------------------|
| A01-1237-08      | CASE                           |                    |
| A03-0129-08      | FRONT PANEL                    |                    |
| A11-0525-08      | FILTER                         |                    |
| B40-2737-24      | SERIAL NO. PLATE               |                    |
| B42-3733-08      | FUSE RATING LABEL              |                    |
| B42-3885-08      | EXTERNAL CONTROL LABEL         |                    |
| B42-6035-08      | RATING:AC100V 50/60HZ 100W     |                    |
| B42-6035-08      | RATING:AC120V 50/60HZ 100W     |                    |
| B42-6037-08      | RATING:AC220V 50/60HZ 100W     |                    |
| B42-6038-08      | RATING:AC240V 50/60HZ 100W     |                    |
| B42-6039-08      | RATING:AC120V 60HZ 100W        |                    |
| B63-0175-00      | INSTRUCTION MANUAL:JAPANESE    |                    |
| B63-0176-00      | INSTRUCTION MANUAL:ENGLISH     |                    |
| E12-0101-15      | SENSOR PLUG                    |                    |
| E21-0670-03      | TERMINAL,RED                   |                    |
| E21-0671-03      | TERMINAL,BLACK                 |                    |
| E21-0672-03      | TERMINAL,WHITE                 |                    |
| E24-0500-04      | SHORTING BAR                   |                    |
| E28-0542-08      | LEADS                          |                    |
| E30-0027-35      | DI/CSA POWER CORD              |                    |
| E30-0545-05      | JIS POWER CORD                 |                    |
| E30-0571-15      | SAA POWER CORD                 |                    |
| E30-1815-05      | CBS POWER CORD                 |                    |
| E30-1807-05      | BS POWER CORD                  |                    |
| F01-0885-08      | HEAT SINK                      |                    |
| F05-2021-09      | FUSE(E1200K) 3A/250V           |                    |
| F05-2023-05      | FUSE(E1320K) 2A/250V           |                    |
| F11-1243-08      | SHIELD CASE                    |                    |
| F20-0515-08      | INSULATOR:FOR Q6               |                    |
| F20-0517-08      | INSULATOR:FOR Q6/Q11           |                    |
| F51-6008-08      | FUSE(EA300K) 3A/125V           |                    |
| H10-2853-08      | FOAMED STYRENE PAD (FRONT)     |                    |
| H10-2854-08      | FOAMED STYRENE PAD (REAR)      |                    |
| H20-1734-08      | VINYL COVER                    |                    |
| H53-0119-08      | CARTON BOX                     |                    |
| J03-0529-08      | PORT                           |                    |
| J10-1071-08      | CLAMP:FOR 2-CORE AC CORD       |                    |
| J10-1072-08      | CLAMP:FOR 3-CORE AC CORD       |                    |
| J21-4725-08      | BRACKET:FOR P.C.B              |                    |
| J21-4758-08      | BRACKET:FOR AC CORD BUSHING    |                    |
| J20-0516-08      | BRACKET:FOR EXT. CONTROL BOARD |                    |
| J20-0519-08      | BRACKET:FOR P.C.B              |                    |
| J30-0532-08      | VOLUME SPACER                  |                    |
| J30-0635-08      | VOLUME SPACER:FOR VR01         |                    |
| J42-0083-05      | BUSHING:FOR 2-CORE AC CORD     |                    |
| K01-0417-05      | HANDLE                         |                    |
| K21-0907-14      | ERROR                          |                    |
| K21-0911-04      | ERROR:VINE/CURRENT             |                    |
| K27-0500-04      | PUSH BUTTON,ORANGE:POWER       |                    |
| K27-0557-04      | BUTTON,RED:OUTPUT              |                    |
| L07-1523-08      | POWER TRANSFORMER              |                    |
| M00-0718-05      | SCREW:SENS PAN HD #X10         |                    |
| M00-0720-05      | SCREW:SENS PAN HD #X10         |                    |
| M00-0757-05      | SCREW:SENS BINDING TAPTITE 3X5 |                    |
| M00-0777-05      | SCREW:SENS PAN HD #X10         |                    |
| M00-0780-05      | SCREW:SENS PAN HD #X10         |                    |
| M00-0787-08      | SCREW:SENS TAPTITE 3X10        |                    |
| M14-0404-04      | FLANGE NUT #3                  |                    |
| M33-3006-41      | SCREW:FLAT HD #526             |                    |
| M40-3006-41      | SCREW:BINDING TAPTITE 3X6      |                    |
| M40-3012-41      | SCREW:BINDING TAPTITE 3X12     |                    |
| M40-2533-08      | PUSH SWITCH:POWER              |                    |
| M02-3275-08      | PIST. CONTROL UNIT             |                    |
| M02-3276-08      | ANT UNIT                       |                    |
| M02-2303-08      | D.P.M. UNIT                    |                    |
| Y801 320-3503-08 | VOLUME 10K                     |                    |
| Y802 320-3508-08 | VOLUME 1K                      |                    |
| Y803 320-3504-08 | VOLUME 10K                     |                    |

## PA18-3A AMP UNIT W02-2276-08

| REF. NO           | PARTS NO                        | NAME & DESCRIPTION |
|-------------------|---------------------------------|--------------------|
| E10-0162-08       | SENSING TERMINAL                |                    |
| E21-0674-08       | EXTERNAL OUTPUT TERMINAL        |                    |
| E40-7141-08       | PIN CONNECTOR 3P(LINE VOLT AGE) |                    |
| E40-7142-08       | PIN CONNECTOR 1P(LINE VOLT AGE) |                    |
| E40-7171-08       | PIN CONNECTOR 2P                |                    |
| J13-9518-08       | FUSE CLIP:FOR EA300K            |                    |
| J70-0260-08       | PCB (WAGUUTIDE)                 |                    |
| R52-9150-05       | JUMPING RES. 200 OHM(1 OHM)     |                    |
| R52-1081-05       | JUMPING RES. 200 OHM(1 OHM)     |                    |
| C1 C90-3019-08    | CAP. ELECTRO 1000 105°C 35V     |                    |
| C2 C00D11222K     | CAP. NYLAR 220P 105 50V         |                    |
| C3 C01-2559-08    | CAP. CERAMIC 0.1 0.25V 50V      |                    |
| C4 C02D11472K     | CAP. NYLAR 4700P 105 50V        |                    |
| C5 C02D11103K     | CAP. NYLAR 0.01 105 50V         |                    |
| C6 NO USE         |                                 |                    |
| C7 C90-3020-08    | CAP. ELECTRO 100 105°C 25V      |                    |
| C8 CFBAAH22K      | CAP. POLYESTER 0.22P 105 250V   |                    |
| C9 NO USE         |                                 |                    |
| C10 C90-3021-08   | CAP. ELECTRO 2200 105°C 35V     |                    |
| C11 CFBAAH1J22K   | CAP. POLYESTER 0.22P 105 63V    |                    |
| C12 C90-3033-08   | CAP. ELECTRO 220 105°C 25V      |                    |
| C13 C90-3033-08   | CAP. ELECTRO 220 105°C 25V      |                    |
| C14 CFBAAH1J104K  | CAP. POLYESTER 0.1 105 63V      |                    |
| C15 CFBAAH1J104K  | CAP. POLYESTER 0.1 105 63V      |                    |
| C16 NO USE        |                                 |                    |
| C17 C90-3034-08   | CAP. ELECTRO 100 105°C 16V      |                    |
| C18 C90-3034-08   | CAP. ELECTRO 100 105°C 16V      |                    |
| C19 C90-3022-08   | CAP. ELECTRO 4.7 105°C 50V      |                    |
| C20 CFBAAH1J104K  | CAP. POLYESTER 0.1 105 63V      |                    |
| C21 NO USE        |                                 |                    |
| C22 C91-2559-08   | CAP. CERAMIC 0.1 0.25V 50V      |                    |
| C26 C90-3174-08   | CAP. ELECTRO 10 1% 50V          |                    |
| C27 NO USE        |                                 |                    |
| C28 C90-3020-08   | CAP. ELECTRO 100 105°C 25V      |                    |
| C29 C91-2559-08   | CAP. CERAMIC 0.1 0.25V 50V      |                    |
| C30 NO USE        |                                 |                    |
| C31 C90-3020-08   | CAP. ELECTRO 100 105°C 25V      |                    |
| C32 CFBAAH1J104K  | CAP. POLYESTER 1P 105 63V       |                    |
| CN1 E40-7180-08   | PIN CONNECTOR 5P                |                    |
| CN2 E40-7327-08   | PIN CONNECTOR 12P               |                    |
| CN3 E40-7328-08   | PIN CONNECTOR 15P               |                    |
| CN4 E40-7329-08   | PIN CONNECTOR 2P                |                    |
| CN5 E40-7218-08   | PIN CONNECTOR 3P                |                    |
| CN6 E40-7219-08   | PIN CONNECTOR 3P                |                    |
| CN7 E40-7220-08   | PIN CONNECTOR 4P                |                    |
| CN8 E40-7220-08   | PIN CONNECTOR 4P                |                    |
| CX11 E40-7332-08  | PIN CONNECTOR 4P                |                    |
| CX12 E40-7333-08  | PIN CONNECTOR 2P                |                    |
| CX13 E40-7333-08  | PIN CONNECTOR 2P                |                    |
| CX14 E40-7333-08  | PIN CONNECTOR 2P                |                    |
| CX20 E40-3240-05  | PIN CONNECTOR 5P                |                    |
| CNGP1 E40-7333-08 | PIN CONNECTOR 2P                |                    |
| C01 C90-3018-08   | CAP. ELECTRO 1 105°C 50V        |                    |
| C02 C91-1233-08   | CAP. CERAMIC 0.1 205 250V       |                    |
| C02 NO USE        |                                 |                    |
| C03 C90-3041-08   | CAP. ELECTRO 2.2 105°C 50V      |                    |
| D1 134742         | DIOBE,STACK                     |                    |
| D2 E4A15-01       | DIOBE                           |                    |
| D3 1SS270A        | DIOBE                           |                    |
| D4 1SS270A        | DIOBE                           |                    |
| D5 1SS270A        | DIOBE                           |                    |
| D6 1SS270A        | DIOBE                           |                    |
| D7 1SS270A        | DIOBE                           |                    |
| D8 NO USE         |                                 |                    |
| D9 D10D408        | DIOBE,STACK                     |                    |
| D10 E4A15-01      | DIOBE                           |                    |
| D11 134842        | DIOBE,STACK                     |                    |
| D14 1SS270A       | DIOBE                           |                    |
| D15 1SS270A       | DIOBE                           |                    |
| D16 1SS270A       | DIOBE                           |                    |
| D24 1SS270A       | DIOBE                           |                    |
| D25 1SS270A       | DIOBE                           |                    |
| D26 NO USE        |                                 |                    |
| D27 E4A15-01      | DIOBE                           |                    |
| D28 E4A15-01      | DIOBE                           |                    |
| D29 E4A15-01      | DIOBE                           |                    |
| D31 E4A15-01      | DIOBE                           |                    |
| D32 E4A15-01      | DIOBE                           |                    |
| D33 E4A15-01      | DIOBE                           |                    |
| D34 1SS270A       | DIOBE                           |                    |

# PARTS LIST

| REF. NO | PARTS NO       | NAME & DESCRIPTION              |
|---------|----------------|---------------------------------|
| D37     | 8EA15-01       | DIODE                           |
| D38     | 15527A1        | DIODE                           |
| D39     | 8EA15-01       | DIODE                           |
| D01     | 30D1           | DIODE                           |
| I01     | UPC151C        | IC, OP AMP                      |
| I02     | UPC151C        | IC, OP AMP                      |
| I03     | UPC100J3       | IC, VARIABLE SHUNT REGULATOR    |
| I04     | UPC70805H      | IC, 3-TERM. REGULATOR           |
| I05     | UPC70805H      | IC, 3-TERM. REGULATOR           |
| I06     | UPC100J3       | IC, VARIABLE SHUNT REGULATOR    |
| I07     | 1K607C         | IC, OP AMP                      |
| I08     | UPC100J3       | IC, VARIABLE SHUNT REGULATOR    |
| I09     | HA17AL12A      | IC, TERMINAL FIXED VOLTAGE REG. |
| Q1      | 2SC1815(GR)    | TR, SI, NPN                     |
| Q2      | 2SC1815(GR)    | TR, SI, NPN                     |
| Q3      | 2SC1815(GR)    | TR, SI, NPN                     |
| Q4      | 2SC1815(GR)    | TR, SI, NPN                     |
| Q5      | 2SC1815(GR)    | TR, SI, NPN                     |
| Q6      | 2SB114B(O)     | TR, SI, NPN                     |
| Q7      | 2SC223B(Y)     | TR, SI, NPN                     |
| Q8      | 2SC2421(Y)     | TR, SI, NPN                     |
| Q9      | 2SC1815(GR)    | TR, SI, NPN                     |
| Q10     | 2SC1815(GR)    | TR, SI, NPN                     |
| Q13     | 2SC1815(GR)    | TR, SI, NPN                     |
| Q17     | DTA143EF       | TR, DIGITAL                     |
| Q11A    | 2SD1148(O)     | TR, SI, NPN                     |
| Q11B    | 2SD1148(O)     | TR, SI, NPN                     |
| R1      | RD148B2C122J   | RES. CARBON 1.2K 5% 1/6W        |
| R2      | RD148B2C122J   | RES. CARBON 1.2K 5% 1/6W        |
| R3      | RD148B2C302J   | RES. CARBON 3K 5% 1/6W          |
| R4      | RD148B2C510J   | RES. CARBON 51 5% 1/6W          |
| R5      | RD148B2C102J   | RES. CARBON 1K 5% 1/6W          |
| R6      | RD148B2C75J    | RES. CARBON 27K 5% 1/6W         |
| R7      | RM148B2C5101F  | RES. METAL FILM 5.1K 1% 1/6W    |
| R8      | RD148B2C202J   | RES. CARBON 2K 5% 1/6W          |
| R9      | RD148B2C122J   | RES. CARBON 1K 5% 1/6W          |
| R10     | RD148B2C510J   | RES. CARBON 510 5% 1/6W         |
| R11     | RD148B2C613J   | RES. CARBON 51K 5% 1/6W         |
| R12     | RD USE         |                                 |
| R13     | RD148B2C202J   | RES. CARBON 2K 5% 1/6W          |
| R14     | RD148B2C122J   | RES. CARBON 1.5K 5% 1/6W        |
| R15     | RD148B2C102J   | RES. CARBON 1K 5% 1/6W          |
| R16     | RD148B2C512J   | RES. CARBON 5.1K 5% 1/6W        |
| R17     | RD USE         |                                 |
| R18     | RD148B2C513J   | RES. CARBON 51K 5% 1/6W         |
| R19     | RD148B2C103J   | RES. CARBON 10K 5% 1/6W         |
| R20     | RD148B2C102J   | RES. CARBON 1K 5% 1/6W          |
| R21     | RM148B2C3008F  | RES. METAL FILM 300K 1% 1/6W    |
| R22     | RD148B2C102J   | RES. CARBON 1K 5% 1/6W          |
| R23     | RM148B2C9101F  | RES. METAL FILM 9.1K 1% 1/6W    |
| R24     | RM148B2C3001F  | RES. METAL FILM 3K 1% 1/6W      |
| R27     | RD148B2C102J   | RES. CARBON 1K 5% 1/6W          |
| R28     | RD148B2C103J   | RES. CARBON 10K 5% 1/6W         |
| R29     | RD148B2C152J   | RES. METAL FILM 1.5K 5% 2W      |
| R30     | RD148B2C103J   | RES. METAL FILM 0.33 5% 1W      |
| R34     | RD148B2C122J   | RES. CARBON 1.2K 5% 1/6W        |
| R35     | RD148B2C122J   | RES. CARBON 1.2K 5% 1/6W        |
| R36     | RD148B2C102J   | RES. CARBON 3K 5% 1/6W          |
| R37     | RD148B2C510J   | RES. CARBON 51 5% 1/6W          |
| R38     | RD148B2C133J   | RES. CARBON 13K 5% 1/6W         |
| R39     | RD148B2C27J    | RES. CARBON 27K 5% 1/6W         |
| R43     | RD148B2C103J   | RES. CARBON 10K 5% 1/6W         |
| R44     | RD148B2C101J   | RES. CARBON 100 5% 1/6W         |
| R45     | RD148B2C202J   | RES. CARBON 2K 5% 1/2W          |
| R51     | RM148B2C2401F  | RES. METAL FILM 2.4K 1% 1/6W    |
| R52     | RM148B2C9001F  | RES. METAL FILM 9K 1% 1/6W      |
| R53     | RD148B2C101J   | RES. CARBON 100 5% 1/6W         |
| R54     | RD148B2C101J   | RES. CARBON 100 5% 1/6W         |
| R55     | RD148B2C5102F  | RES. METAL FILM 51K 1% 1/6W     |
| R56     | RD148B2C102F   | RES. METAL FILM 51K 1% 1/6W     |
| R57     | RD USE         |                                 |
| R58     | RM148B2C5102F  | RES. METAL FILM 51K 1% 1/6W     |
| R59     | RM148B2C5102F  | RES. METAL FILM 51K 1% 1/6W     |
| R60     | RD148B2C11J    | RES. CARBON 510 5% 1/6W         |
| R61     | RM148B2C9101F  | RES. METAL FILM 9.1K 1% 1/6W    |
| R62     | RD148B2C302J   | RES. CARBON 3K 5% 1/6W          |
| R63     | RD USE         |                                 |
| R64     | RM148B2C7500F  | RES. METAL FILM 750 1% 1/6W     |
| R67     | RD148B2C30R15J | RES. METAL FILM 0.15 5% 2W      |
| R68     | RD148B2C333J   | RES. CARBON 33K 5% 1/6W         |
| R74     | RD148B2C103J   | RES. CARBON 10K 5% 1/6W         |
| R75     | RD148B2C202J   | RES. CARBON 2K 5% 1/2W          |

| REF. NO | PARTS NO      | NAME & DESCRIPTION           |
|---------|---------------|------------------------------|
| R85     | RD148B2C101J  | RES. CARBON 100 5% 1/2W      |
| R86     | RD148B2C102J  | RES. METAL FILM 1K 5% 1W     |
| R87     | RD148B2C102J  | RES. METAL FILM 1K 5% 1W     |
| R88     | RD148B2C104J  | RES. CARBON 100K 5% 1/6W     |
| R91     | RD148B2C103J  | RES. CARBON 10K 5% 1/6W      |
| R94     | RD148B2C106J  | RES. CARBON 10 5% 1/6W       |
| R95     | RD USE        |                              |
| R96     | RD148B2C102J  | RES. CARBON 0.1K 5% 1/6W     |
| R32A    | RD148B2C303J  | RES. METAL FILM 0.33 5% 1W   |
| R32B    | RD148B2C303J  | RES. METAL FILM 0.33 5% 1W   |
| R01     | RM148B2C1005F | RES. METAL FILM 100K 1% 1/6W |
| RTN1    | 1000-5        | THERMISTOR                   |
| RY1     | S76-0604-08   | RELAY                        |
| RY2     | S76-0604-08   | RELAY                        |
| RY3     | S76-0604-08   | RELAY                        |
| RY4     | S76-0630-08   | RELAY                        |
| SW2     | S31-1512-08   | MASTER/SLAVE SWITCH          |
| VR1     | B12-1564-08   | RES. SEMI FIXED 1K           |
| VR2     | B12-5547-08   | RES. SEMI FIXED 100K         |
| VR3     | RD USE        |                              |
| VR4     | B12-3567-08   | RES. SEMI FIXED 10K          |
| VR5     | B12-3567-08   | RES. SEMI FIXED 10K          |

# PARTS LIST

| REF. NO | PARTS NO      | NAME & DESCRIPTION                |
|---------|---------------|-----------------------------------|
| D98     | ERA15-01      | DIODE                             |
| D99     | ERA15-01      | DIODE                             |
| D01     | ERA15-01      | DIODE                             |
| IC1     | WPC151C       | IC, OP AMP                        |
| IC2     | WPC151C       | IC, OP AMP                        |
| IC3     | WPC1509J      | IC, VARIABLE SHUNT REGULATOR      |
| IC4     | WPC1505B      | IC, 3-TERMINAL REGULATOR          |
| IC5     | WPC1505B      | IC, 3-TERMINAL REGULATOR          |
| IC6     | WPC1505J      | IC, VARIABLE SHUNT REGULATOR      |
| IC7     | WPC1505B      | IC, OP AMP                        |
| IC8     | WPC1505J      | IC, VARIABLE SHUNT REGULATOR      |
| IC9     | WPC1505J      | IC, 3-TERMINAL FIXED VOLTAGE REG. |
| Q1      | 2SC1815(CR)   | TR, SI, NPN                       |
| Q2      | 2SC1815(CR)   | TR, SI, NPN                       |
| Q3      | 2SC1815(CR)   | TR, SI, NPN                       |
| Q4      | 2SC1815(CR)   | TR, SI, NPN                       |
| Q5      | 2SC1815(CR)   | TR, SI, NPN                       |
| Q6      | 2SD114B(O)    | TR, SI, NPN                       |
| Q7      | 2SD238C(J)    | TR, SI, NPN                       |
| Q8      | 2SD421(T)     | TR, SI, NPN                       |
| Q9      | 2SC1815(CR)   | TR, SI, NPN                       |
| Q10     | 2SC1815(CR)   | TR, SI, NPN                       |
| Q11     | 2SD114B(O)    | TR, SI, NPN                       |
| Q12     | NO USE        |                                   |
| Q13     | 2SC1815(CR)   | TR, SI, NPN                       |
| Q17     | DTA143EF      | TR, DIGITAL                       |
| R1      | RD14BB2C122J  | RES, CARBON 1.2K 5% 1/6W          |
| R2      | RD14BB2C122J  | RES, CARBON 1.2K 5% 1/6W          |
| R3      | RD14BB2C302J  | RES, CARBON 3K 5% 1/6W            |
| R4      | RD14BB2C510J  | RES, CARBON 51 5% 1/6W            |
| R5      | RD14BB2C122J  | RES, CARBON 12K 5% 1/6W           |
| R6      | RD14BB2C272J  | RES, CARBON 27K 5% 1/6W           |
| R7      | KN14RK2C2401F | RES, METAL FILM 2.4K 1% 1/6W      |
| R8      | RD14BB2C202J  | RES, CARBON 2K 5% 1/6W            |
| R9      | RD14BB2C122J  | RES, CARBON 1K 5% 1/6W            |
| R10     | RD14BB2C102J  | RES, CARBON 10K 5% 1/6W           |
| R11     | RD14BB2C510J  | RES, CARBON 51K 5% 1/6W           |
| R12     | NO USE        |                                   |
| R13     | RD14BB2C202J  | RES, CARBON 2K 5% 1/6W            |
| R14     | RD14BB2C152J  | RES, CARBON 1.5K 5% 1/6W          |
| R15     | RD14BB2C102J  | RES, CARBON 1K 5% 1/6W            |
| R16     | RD14BB2C512J  | RES, CARBON 5.1K 5% 1/6W          |
| R17     | NO USE        |                                   |
| R18     | RD14BB2C513J  | RES, CARBON 51K 5% 1/6W           |
| R19     | RD14BB2C102J  | RES, CARBON 10K 5% 1/6W           |
| R20     | RD14BB2C102J  | RES, CARBON 1K 5% 1/6W            |
| R21     | KN14RK3C2703F | RES, METAL FILM 270K 1% 1/6W      |
| R22     | RD14BB2C102J  | RES, CARBON 1K 5% 1/6W            |
| R23     | KN14RK2C9101F | RES, METAL FILM 9.1K 1% 1/6W      |
| R24     | KN14RK2C3001F | RES, METAL FILM 3K 1% 1/6W        |
| R27     | RD14BB2C102J  | RES, CARBON 1K 5% 1/6W            |
| R28     | RD14BB2C102J  | RES, CARBON 10K 5% 1/6W           |
| R29     | KN14G3D3022J  | RES, METAL FILM 3.0K 5% 2W        |
| R30     | KN14G334K47J  | RES, METAL FILM 0.47 5% 1W        |
| R31     | NO USE        |                                   |
| R32     | KN14G334K47J  | RES, METAL FILM 0.47 5% 1W        |
| R33     | NO USE        |                                   |
| R34     | RD14BB2C122J  | RES, CARBON 1.2K 5% 1/6W          |
| R35     | RD14BB2C122J  | RES, CARBON 1.2K 5% 1/6W          |
| R36     | RD14BB2C302J  | RES, CARBON 3K 5% 1/6W            |
| R37     | RD14BB2C510J  | RES, CARBON 51 5% 1/6W            |
| R38     | RD14BB2C333J  | RES, CARBON 33K 5% 1/6W           |
| R39     | RD14BB2C272J  | RES, CARBON 27K 5% 1/6W           |
| R43     | RD14BB2C102J  | RES, CARBON 10K 5% 1/6W           |
| R44     | RD14BB2C102J  | RES, CARBON 10K 5% 1/6W           |
| R45     | RD14BB2C622J  | RES, CARBON 6.2K 5% 1/2W          |
| R51     | KN14RK2C2401F | RES, METAL FILM 2.4K 1% 1/6W      |
| R52     | KN14RK2C3001F | RES, METAL FILM 3K 1% 1/6W        |
| R53     | RD14BB2C811J  | RES, CARBON 81 5% 1/6W            |
| R54     | RD14BB2C102J  | RES, CARBON 10K 5% 1/6W           |
| R55     | KN14RK2C5102F | RES, METAL FILM 5.1K 1% 1/6W      |
| R56     | KN14RK2C5102F | RES, METAL FILM 5.1K 1% 1/6W      |
| R57     | NO USE        |                                   |
| R58     | KN14RK2C5102F | RES, METAL FILM 5.1K 1% 1/6W      |
| R59     | KN14RK2C511J  | RES, CARBON 51 5% 1/6W            |
| R61     | KN14RK2C9101F | RES, METAL FILM 9.1K 1% 1/6W      |
| R62     | RD14BB2C302J  | RES, CARBON 3K 5% 1/6W            |
| R63     | NO USE        |                                   |
| R64     | KN14RK2C201F  | RES, METAL FILM 2.0K 1% 1/6W      |
| R67     | KN14G3D3022J  | RES, METAL FILM 0.22 5% 2W        |
| R68     | RD14BB2C333J  | RES, CARBON 33K 5% 1/6W           |
| R74     | RD14BB2C102J  | RES, CARBON 10K 5% 1/6W           |
| R75     | RD14BB2C622J  | RES, CARBON 6.2K 5% 1/2W          |
| R85     | RD14BB2H161J  | RES, CARBON 16K 5% 1/2W           |

| REF. NO | PARTS NO      | NAME & DESCRIPTION           |
|---------|---------------|------------------------------|
| R86     | KN14G334K102J | RES, METAL FILM 1K 5% 1W     |
| R87     | KN14G334K102J | RES, METAL FILM 1K 5% 1W     |
| R88     | RD14BB2C104J  | RES, CARBON 10K 5% 1/6W      |
| R91     | RD14BB2C102J  | RES, CARBON 10K 5% 1/6W      |
| R94     | RD14BB2C510J  | RES, CARBON 51 5% 1/6W       |
| R95     | NO USE        |                              |
| R96     | RD14BB2C622J  | RES, CARBON 6.2K 5% 1/6W     |
| R01     | KN14BB2C1003F | RES, METAL FILM 100K 1% 1/5W |
| RT01    | 100D-5        | THERMISTOR                   |
| RY1     | S76-0504-08   | RELAY                        |
| RY2     | S76-0504-08   | RELAY                        |
| RY3     | S76-0504-08   | RELAY                        |
| RY4     | S76-0504-08   | RELAY                        |
| SW2     | S31-1512-08   | MASTER/SLAVE SWITCH          |
| YR1     | R12-1504-08   | RES, SEMI FIXED 15K          |
| YR2     | R12-1547-08   | RES, SEMI FIXED 150K         |
| YR3     | NO USE        |                              |
| YR4     | R12-1507-08   | RES, SEMI FIXED 15K          |
| YR5     | R12-1507-08   | RES, SEMI FIXED 15K          |

# PARTS LIST

## PA36-3A Y86-1960-00

| REF. NO     | PARTS NO                         | NAME & DESCRIPTION |
|-------------|----------------------------------|--------------------|
| A91-1238-08 | COVER                            |                    |
| A60-0123-08 | FRONT PANEL                      |                    |
| B11-0528-08 | FILTER                           |                    |
| B45-2737-24 | SERIAL NO. PLATE                 |                    |
| B42-3758-08 | FUSE RATING LABEL                |                    |
| B42-3888-08 | EXTERNAL CONTROL LABEL           |                    |
| B42-6045-08 | RATING:AC100V 50/60HZ 170W       |                    |
| B42-6046-08 | RATING:AC120V 50/60HZ 170W       |                    |
| B42-6047-08 | RATING:AC220V 50/60HZ 170W       |                    |
| B42-6048-08 | RATING:AC240V 50/60HZ 170W       |                    |
| B42-6049-08 | RATING:AC120V 60HZ 170W          |                    |
| B63-0178-08 | INSTRUCTION MANUAL: JAPANESE     |                    |
| B63-0176-08 | INSTRUCTION MANUAL: ENGLISH      |                    |
| E12-0401-15 | SENSOR PLUG                      |                    |
| E21-0870-03 | TERMINAL, RED                    |                    |
| E21-0871-03 | TERMINAL, BLACK                  |                    |
| E21-0872-03 | TERMINAL, WHITE                  |                    |
| E28-0506-04 | SHORTING BAR                     |                    |
| E28-0542-08 | LEG: NS                          |                    |
| E30-0037-38 | UL/CSA POWER CORD                |                    |
| E30-0545-05 | J15 POWER CORD                   |                    |
| E30-0571-16 | SAA POWER CORD                   |                    |
| E39-1815-05 | CZE POWER CORD                   |                    |
| E39-1867-05 | NS POWER CORD                    |                    |
| F01-0885-08 | HEAT SINK                        |                    |
| F05-3022-05 | FUSE (S1320X) 3A/250V            |                    |
| F11-1244-08 | FIELD CASE                       |                    |
| F20-0517-08 | INSULATOR: FOR Q6/Q11            |                    |
| F20-0518-08 | INSULATOR: FOR Q11A/Q11B/Q11C    |                    |
| F30-0094-05 | FUSE (S1320X) 3A/250V            |                    |
| F51-0010-08 | FUSE (S1300X) 5A/125V            |                    |
| H10-2856-08 | FOAMED STYRENE PAD (FRONT)       |                    |
| H10-2857-08 | FOAMED STYRENE PAD (REAR)        |                    |
| E20-1734-08 | VINYL COVER                      |                    |
| B50-0122-08 | CARTON BOX                       |                    |
| J02-0528-08 | FOOT                             |                    |
| J10-1871-08 | CLAMP: FOR 2-CORE AC CORD        |                    |
| J10-1872-08 | CLAMP: FOR 3-CORE AC CORD        |                    |
| J21-0720-08 | BRACKET: FOR P.C.W.              |                    |
| J21-0726-08 | BRACKET: FOR AC CORD BUSHING     |                    |
| J20-0516-08 | BRACKET: FOR EXT. CONTROL BOARD  |                    |
| J70-0532-08 | VOLUME SPACER                    |                    |
| J30-0635-08 | VOLUME SPACER: FOR VR01          |                    |
| J02-0083-05 | BUSHING: FOR 2-CORE AC CORD      |                    |
| E01-0417-05 | HANDLE                           |                    |
| E21-0887-14 | KNOB                             |                    |
| J21-0911-04 | KNOB: FINE/CURRENT               |                    |
| J27-0509-04 | PUSH BUTTON, ORANGE: POWER       |                    |
| J27-0537-04 | BUTTON, RED: OUTPUT              |                    |
| L07-1526-08 | POWER TRANSFORMER                |                    |
| M09-0718-05 | SCREW, SENS PAN HD X3/8          |                    |
| M09-0720-05 | SCREW, SENS PAN HD X4/10         |                    |
| M09-0757-05 | SCREW, SENS BINDING TAPTITE 3/16 |                    |
| M09-0777-05 | SCREW, SENS PAN HD X4/16         |                    |
| M09-0789-05 | SCREW, SENS PAN HD X3/16         |                    |
| M09-0787-08 | SCREW, SENS TAPTITE 3/16         |                    |
| M14-0104-04 | FLANGE W/7 NS                    |                    |
| B32-3006-41 | SCREW, FLAT HD X3/8              |                    |
| M09-3006-41 | SCREW, BINDING TAPTITE 3/16      |                    |
| M09-3012-41 | SCREW, BINDING TAPTITE 3/12      |                    |
| S40-2633-08 | PUSH SWITCH: POWER               |                    |
| M03-2276-08 | EXT. CONTROL UNIT                |                    |
| W02-2280-08 | AMP UNIT                         |                    |
| W02-3303-08 | D.P.N. UNIT                      |                    |
| VR01        | VOLUME                           | 10X                |
| VR02        | VOLUME                           | 1X                 |
| VR03        | VOLUME                           | 10X                |

## PA36-3A AMP UNIT W02-2280-08

| REF. NO     | PARTS NO                        | NAME & DESCRIPTION              |
|-------------|---------------------------------|---------------------------------|
| E15-0152-08 | SEWING TERMINAL                 |                                 |
| E21-0674-08 | EXTERNAL OUTPUT TERMINAL        |                                 |
| E45-7141-08 | PIN CONNECTOR 2P (LINE VOLTAGE) |                                 |
| E45-7142-08 | PIN CONNECTOR 1P (LINE VOLTAGE) |                                 |
| E49-7171-08 | PIN CONNECTOR 2P                |                                 |
| J13-0518-08 | FUSE CLIP: FOR 6X30MM           |                                 |
| J73-0280-08 | PCB (UNMOUNTED)                 |                                 |
| M02-0160-05 | JUMPING RES. ZERO OHM (Q42)     |                                 |
| M02-1061-05 | JUMPING RES. ZERO OHM (S42)     |                                 |
| C01         | CAP. 3018-08                    | CAP. ELECTRO 1000 105°C 35V     |
| C02         | C02M1H103X                      | CAP. RYLAR 0.01 105°C 50V       |
| C03         | C03-2559-08                     | CAP. CERAMIC 0.1 0.25F 50V      |
| C04         | C04M1H472Z                      | CAP. RYLAR 4700P 105°C 50V      |
| C05         | C05M1H103X                      | CAP. RYLAR 0.01 105°C 50V       |
| C06         | NO USE                          |                                 |
| C07         | C07-3020-08                     | CAP. ELECTRO 100 105°C 25V      |
| C08         | C08M2H222X                      | CAP. POLYESTER 0.22P 105°C 250V |
| C09         | NO USE                          |                                 |
| C10         | C09-4593-08                     | CAP. ELECTRO 2200 105°C 63V     |
| C11         | C09M1H122X                      | CAP. POLYESTER 0.22P 105°C 63V  |
| C12         | C09-3033-08                     | CAP. ELECTRO 220 105°C 25V      |
| C13         | C09-3033-08                     | CAP. ELECTRO 220 105°C 25V      |
| C14         | C09M1H104X                      | CAP. POLYESTER 0.1 105°C 63V    |
| C15         | C09M1H104X                      | CAP. POLYESTER 0.1 105°C 63V    |
| C16         | NO USE                          |                                 |
| C17         | C09-3034-08                     | CAP. ELECTRO 100 105°C 16V      |
| C18         | C09-3033-08                     | CAP. ELECTRO 100 105°C 16V      |
| C19         | C09-3022-08                     | CAP. ELECTRO 4.7 105°C 25V      |
| C20         | C09M1H104X                      | CAP. POLYESTER 0.1 105°C 63V    |
| C21         | NO USE                          |                                 |
| C22         | C01-2559-08                     | CAP. CERAMIC 0.1 0.25F 50V      |
| C23         | C09-3174-08                     | CAP. ELECTRO 10 15°C 50V        |
| C24         | C02M1H472X                      | CAP. RYLAR 4700P 105°C 50V      |
| C25         | C09-3020-08                     | CAP. ELECTRO 100 105°C 25V      |
| C26         | C01-2559-08                     | CAP. CERAMIC 0.1 0.25F 50V      |
| C27         | NO USE                          |                                 |
| C31         | C08-3048-08                     | CAP. ELECTRO 100 105°C 50V      |
| C32         | C09M1H104X                      | CAP. POLYESTER 0.1 105°C 63V    |
| C33         | C09-7184-08                     | PIN CONNECTOR 5P                |
| C34         | C34-7328-08                     | PIN CONNECTOR 12P               |
| C35         | C40-7328-08                     | PIN CONNECTOR 15P               |
| C36         | C40-7126-08                     | PIN CONNECTOR 2P                |
| C37         | C40-7218-08                     | PIN CONNECTOR 3P                |
| C38         | C40-7218-08                     | PIN CONNECTOR 3P                |
| C39         | C40-7220-08                     | PIN CONNECTOR 4P                |
| C40         | C40-7220-08                     | PIN CONNECTOR 4P                |
| C41         | C40-7332-08                     | PIN CONNECTOR 4P                |
| C42         | C40-7333-08                     | PIN CONNECTOR 2P                |
| C43         | C40-7333-08                     | PIN CONNECTOR 2P                |
| C44         | C40-7333-08                     | PIN CONNECTOR 2P                |
| C45         | C40-7333-08                     | PIN CONNECTOR 2P                |
| C46         | C40-3240-05                     | PIN CONNECTOR 5P                |
| C47         | C40-7333-08                     | PIN CONNECTOR 2P                |
| C48         | C40-7333-08                     | PIN CONNECTOR 2P                |
| C01         | C01-3018-08                     | CAP. ELECTRO 1 105°C 50V        |
| C01         | C01-1322-08                     | CAP. CERAMIC 0.1 20% 50V        |
| C02         | NO USE                          |                                 |
| C03         | C03-3041-08                     | CAP. ELECTRO 2.2 105°C 50V      |
| D1          | 1S4R42                          | DIODE, STACK                    |
| D2          | 1S4R15-01                       | DIODE                           |
| D3          | 1S5270A                         | DIODE                           |
| D4          | 1S5270A                         | DIODE                           |
| D5          | 1S5270A                         | DIODE                           |
| D6          | 1S5270A                         | DIODE                           |
| D7          | 1S5270A                         | DIODE                           |
| D8          | NO USE                          |                                 |
| D9          | 1D0XN40                         | DIODE, STACK                    |
| D10         | 1R415-01                        | DIODE                           |
| D11         | 1S4R42                          | DIODE, STACK                    |
| D14         | 1S5270A                         | DIODE                           |
| D15         | 1S5270A                         | DIODE                           |
| D16         | 1S5270A                         | DIODE                           |
| D24         | 1S5270A                         | DIODE                           |
| D25         | 1S5270A                         | DIODE                           |
| D26         | NO USE                          |                                 |
| D27         | 1R415-01                        | DIODE                           |
| D28         | 1R415-01                        | DIODE                           |
| D29         | 1R415-01                        | DIODE                           |
| D30         | 1R415-01                        | DIODE                           |
| D31         | 1R415-01                        | DIODE                           |
| D32         | 1R415-01                        | DIODE                           |
| D33         | 1R415-01                        | DIODE                           |
| D34         | 1S5270A                         | DIODE                           |

# PARTS LIST

| REF. NO | PARTS NO      | NAME & DESCRIPTION             |
|---------|---------------|--------------------------------|
| D37     | 8E115-01      | D1.0DE                         |
| D38     | 1SS270A       | D1.0DE                         |
| D39     | 8E115-01      | D1.0DE                         |
| D01     | 309D1         | D1.0DE                         |
| I01     | WPC151C       | IC-OP AMP                      |
| I02     | WPC151C       | IC-OP AMP                      |
| I03     | UPC1093J      | IC-VARIABLE SHUNT REGULATOR    |
| I04     | WPC79N65B     | IC-3-TERMINAL REGULATOR        |
| I05     | WPC79N65B     | IC-3-TERMINAL REGULATOR        |
| I06     | UPC1093J      | IC-VARIABLE SHUNT REGULATOR    |
| I07     | 18667C6       | IC-OP AMP                      |
| I08     | UPC1093J      | IC-VARIABLE SHUNT REGULATOR    |
| I09     | 8A178-12A     | IC-TERMINAL FIXED VOLTAGE REG. |
| Q1      | 2SC1815(GR)   | TR. SI. NPN                    |
| Q2      | 2SC1815(GR)   | TR. SI. NPN                    |
| Q3      | 2SC1815(GR)   | TR. SI. NPN                    |
| Q4      | 2SC1815(GR)   | TR. SI. NPN                    |
| Q5      | 2SC1815(GR)   | TR. SI. NPN                    |
| Q6      | 2SD1148(O)    | TR. SI. NPN                    |
| Q7      | 2SC2258(T)    | TR. SI. NPN                    |
| Q8      | 2SC2451(T)    | TR. SI. NPN                    |
| Q9      | 2SC1815(GR)   | TR. SI. NPN                    |
| Q10     | 2SC1815(GR)   | TR. SI. NPN                    |
| Q11     | 2SD1148(O)    | TR. SI. NPN                    |
| Q12     | NO USE        |                                |
| Q13     | 2SC1815(GR)   | TR. SI. NPN                    |
| Q17     | DTA142EF      | TR. DIGITAL                    |
| Q11A    | 2SD1148(O)    | TR. SI. NPN                    |
| Q11B    | 2SD1148(O)    | TR. SI. NPN                    |
| Q11C    | 2SD1148(O)    | TR. SI. NPN                    |
| R1      | RD148R2C122J  | RES. CARBON 1.2K 5% 1/6W       |
| R2      | RD148R2C122J  | RES. CARBON 1.2K 5% 1/6W       |
| R3      | RD148R2C302J  | RES. CARBON 3K 5% 1/6W         |
| R4      | RD148R2C513J  | RES. CARBON 51K 5% 1/6W        |
| R5      | RD148R2C122J  | RES. CARBON 1.2K 5% 1/6W       |
| R6      | RD148R2C273J  | RES. CARBON 27K 5% 1/6W        |
| R7      | RD148R2C2401F | RES. METAL FILM 2.4K 1% 1/6W   |
| R8      | RD148R2C202J  | RES. CARBON 2K 5% 1/6W         |
| R9      | RD148R2C102J  | RES. CARBON 1K 5% 1/6W         |
| R10     | RD148R2C242J  | RES. CARBON 2.4K 5% 1/6W       |
| R11     | RD148R2C513J  | RES. CARBON 51K 5% 1/6W        |
| R12     | NO USE        |                                |
| R13     | RD148R2C202J  | RES. CARBON 2K 5% 1/6W         |
| R14     | RD148R2C182J  | RES. CARBON 1.8K 5% 1/6W       |
| R15     | RD148R2C102J  | RES. CARBON 1K 5% 1/6W         |
| R16     | RD148R2C512J  | RES. CARBON 5.1K 5% 1/6W       |
| R17     | NO USE        |                                |
| R18     | RD148R2C513J  | RES. CARBON 51K 5% 1/6W        |
| R19     | RD148R2C103J  | RES. CARBON 10K 5% 1/6W        |
| R20     | RD148R2C102J  | RES. CARBON 1K 5% 1/6W         |
| R21     | RD148R2C3000F | RES. METAL FILM 300K 1% 1/6W   |
| R22     | RD148R2C182J  | RES. CARBON 1.8K 5% 1/6W       |
| R23     | RD148R2C0101F | RES. METAL FILM 0.1K 1% 1/6W   |
| R24     | RD148R2C3001F | RES. METAL FILM 3K 1% 1/6W     |
| R27     | RD148R2C102J  | RES. CARBON 1K 5% 1/6W         |
| R28     | RD148R2C103J  | RES. CARBON 10K 5% 1/6W        |
| R29     | RS14GB3002J   | RES. METAL FILM 3.0K 5% 2W     |
| R30     | RS14GB3002J   | RES. METAL FILM 0.51 5% 1W     |
| R31     | NO USE        |                                |
| R32     | RS14GB3002J   | RES. METAL FILM 0.51 5% 1W     |
| R33     | NO USE        |                                |
| R34     | RD148R2C122J  | RES. CARBON 1.2K 5% 1/6W       |
| R35     | RD148R2C122J  | RES. CARBON 1.2K 5% 1/6W       |
| R36     | RD148R2C302J  | RES. CARBON 3K 5% 1/6W         |
| R37     | RD148R2C513J  | RES. CARBON 51K 5% 1/6W        |
| R38     | RD148R2C302J  | RES. CARBON 3K 5% 1/6W         |
| R39     | RD148R2C273J  | RES. CARBON 27K 5% 1/6W        |
| R43     | RD148R2C193J  | RES. CARBON 19K 5% 1/6W        |
| R44     | RD148R2C101J  | RES. CARBON 10K 5% 1/6W        |
| R45     | RD148R2H622J  | RES. CARBON 8.2K 5% 1/2W       |
| R51     | RD148R2C2401F | RES. METAL FILM 2.4K 1% 1/6W   |
| R52     | RD148R2C3001F | RES. METAL FILM 3K 1% 1/6W     |
| R53     | RD148R2C0101J | RES. CARBON 0.1K 5% 1/6W       |
| R54     | RD148R2C101J  | RES. CARBON 10K 5% 1/6W        |
| R55     | RD148R2C5102F | RES. METAL FILM 51K 1% 1/6W    |
| R56     | RD148R2C5102F | RES. METAL FILM 51K 1% 1/6W    |
| R57     | NO USE        |                                |
| R58     | RD148R2C5102F | RES. METAL FILM 51K 1% 1/6W    |
| R59     | RD148R2C5102F | RES. METAL FILM 51K 1% 1/6W    |
| R60     | RD148R2C511J  | RES. CARBON 51K 5% 1/6W        |
| R61     | RD148R2C0101F | RES. METAL FILM 0.1K 1% 1/6W   |
| R62     | RD148R2C302J  | RES. CARBON 3K 5% 1/6W         |
| R63     | NO USE        |                                |
| R64     | RD148R2C7500F | RES. METAL FILM 750 1% 1/6W    |
| R67     | RS14GB30015J  | RES. METAL FILM 0.15 5% 2W     |
| R68     | RD148R2C302J  | RES. CARBON 3K 5% 1/6W         |

| REF. NO | PARTS NO      | NAME & DESCRIPTION    | QTY     | 1/6W    |
|---------|---------------|-----------------------|---------|---------|
| R74     | RD148R2C103J  | RES. CARBON           | 10K     | 5% 1/6W |
| R75     | RD148R2H622J  | RES. CARBON           | 8.2K    | 5% 1/2W |
| R85     | RD148R2R191J  | RES. CARBON           | 19K     | 5% 1/2W |
| R86     | RS14GB30102J  | RES. METAL FILM 1K    | 5% 1W   |         |
| R87     | RS14GB30102J  | RES. METAL FILM 1K    | 5% 1W   |         |
| R88     | RD148R2C104J  | RES. CARBON           | 100K    | 5% 1/6W |
| R91     | RD148R2C103J  | RES. CARBON           | 10K     | 5% 1/6W |
| R94     | RD148R2C513J  | RES. CARBON           | 51K     | 5% 1/6W |
| R95     | NO USE        |                       |         |         |
| R96     | RD148R2C011J  | RES. CARBON           | 0.1K    | 5% 1/6W |
| R32A    | RS14GB30051J  | RES. METAL FILM 0.51  | 5% 1W   |         |
| R32B    | RS14GB30051J  | RES. METAL FILM 0.51  | 5% 1W   |         |
| R32C    | RS14GB30051J  | RES. METAL FILM 0.51  | 5% 1W   |         |
| R01     | RD148R2C1003F | RES. METAL FILM 100K  | 1% 1/6W |         |
| RT1     | 1000-5        | THERMISTOR            |         |         |
| RY1     | S7G-0604-08   | RELAY                 |         |         |
| RY2     | S7G-0604-08   | RELAY                 |         |         |
| RY3     | S7G-0604-08   | RELAY                 |         |         |
| RY4     | S7G-0604-08   | RELAY                 |         |         |
| SW2     | S3J-1512-08   | MASTER/SLAVE SWITCH   |         |         |
| YB1     | R12-1564-08   | RES. SEMI FIXED 1K5   |         |         |
| YB2     | R12-1567-08   | RES. SEMI FIXED 100K5 |         |         |
| YB3     | NO USE        |                       |         |         |
| YB4     | R12-1567-08   | RES. SEMI FIXED 10K5  |         |         |
| YB5     | R12-1567-08   | RES. SEMI FIXED 10K5  |         |         |

## PARTS LIST

[illegible]

| PA70-1A EXT. CONTROL UNIT |                |                           |                  |
|---------------------------|----------------|---------------------------|------------------|
| W02-2275-08               |                |                           |                  |
| REF. NO                   | PARTS NO       | NAME & DESCRIPTION        |                  |
|                           | E23-004-084-08 | ELECTRIC CONTROL TERMINAL |                  |
|                           | Y74-0261-08    | PCB (UNOBTAINED)          |                  |
| C1                        | CK45013472E    | RES, 100K                 | ZERO OHMS (100K) |
|                           |                | GAP, CERAMIC              | 4700P (100K)     |
| CN10                      | 856-7328-08    | PIN CONNECTOR 15P         |                  |
| CN19                      | 856-7333-08    | PIN CONNECTOR 2P          |                  |
| D13                       | 188270A        | DIODE                     |                  |
| Q12                       | 25C1416(GR)    | TR, 51, NPN               |                  |
| R41                       | R014002512J    | RES, CARBON               | 6.1K 5% 1/4W     |
| R77                       | R014002621J    | RES, CARBON               | 6.2K 5% 1/4W     |
| E67                       | RN140251002P   | RES, METAL FILM 10K       | 1% 1/4W          |
| E78                       | RN140251002P   | RES, METAL FILM 10K       | 1% 1/4W          |
| S43                       | S62-0100-08    | N/S SWITCH                |                  |
| S44                       | S62-0100-08    | N/S SWITCH                |                  |
| S45                       | S62-0100-08    | N/S SWITCH                |                  |
| S46                       | S62-0100-08    | N/S SWITCH                |                  |
| S47                       | S62-0100-08    | N/S SWITCH                |                  |

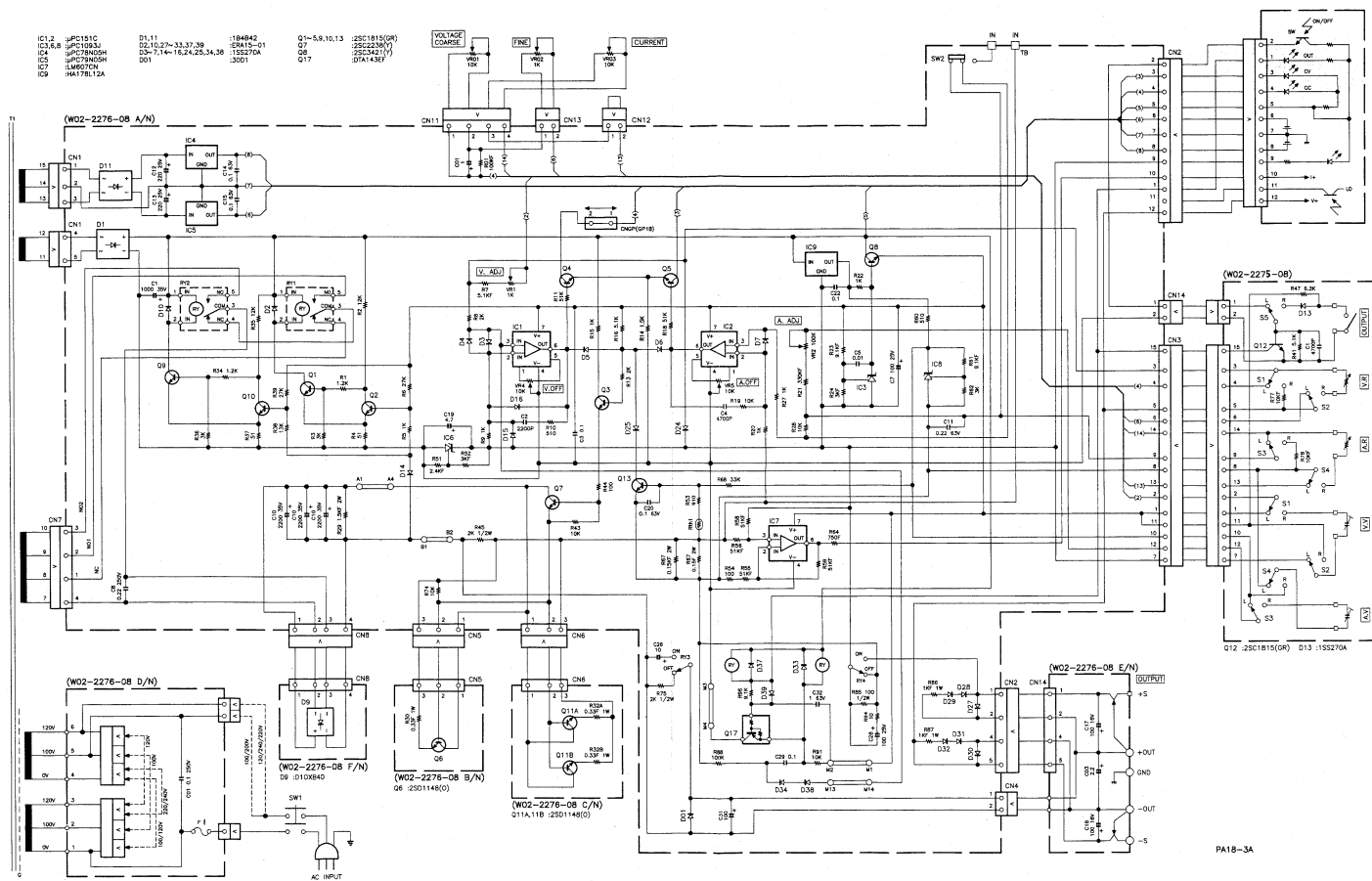
| PA18-1.2A/PA A36-1.2A/PA A70-1A |              |     |                           |
|---------------------------------|--------------|-----|---------------------------|
| DIGITAL PANEL METER CIRCUIT     |              |     |                           |
| W02-2303-08                     |              |     |                           |
| REF. NO                         | PARTS NO     | QTY | DESCRIPTION               |
|                                 | Z36-0542-08  |     | PIE RES 1/2W 125PP        |
|                                 | JA1-8532-08  |     | PCB SUPPORT               |
|                                 |              |     | 100% TAPPING 3.516        |
| C1                              | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C2                              | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C3                              | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C4                              | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C5                              | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C6                              | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C7                              | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C8                              | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C9                              | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C10                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C11                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C12                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C13                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C14                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C15                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C16                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C17                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C18                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C19                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C20                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C21                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C22                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C23                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C24                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C25                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C26                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C27                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C28                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C29                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C30                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C31                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C32                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C33                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C34                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C35                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C36                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C37                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C38                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C39                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C40                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C41                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C42                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C43                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C44                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C45                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C46                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C47                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C48                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C49                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C50                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C51                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C52                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C53                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C54                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C55                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C56                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C57                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C58                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C59                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C60                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C61                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C62                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C63                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C64                             | C06K85F11041 |     | CAP. ELECTRO 100 .005 10V |
| C65                             | C06K85F11041 |     | CAP. ELECTRO 100 .0       |

## PARTS LIST

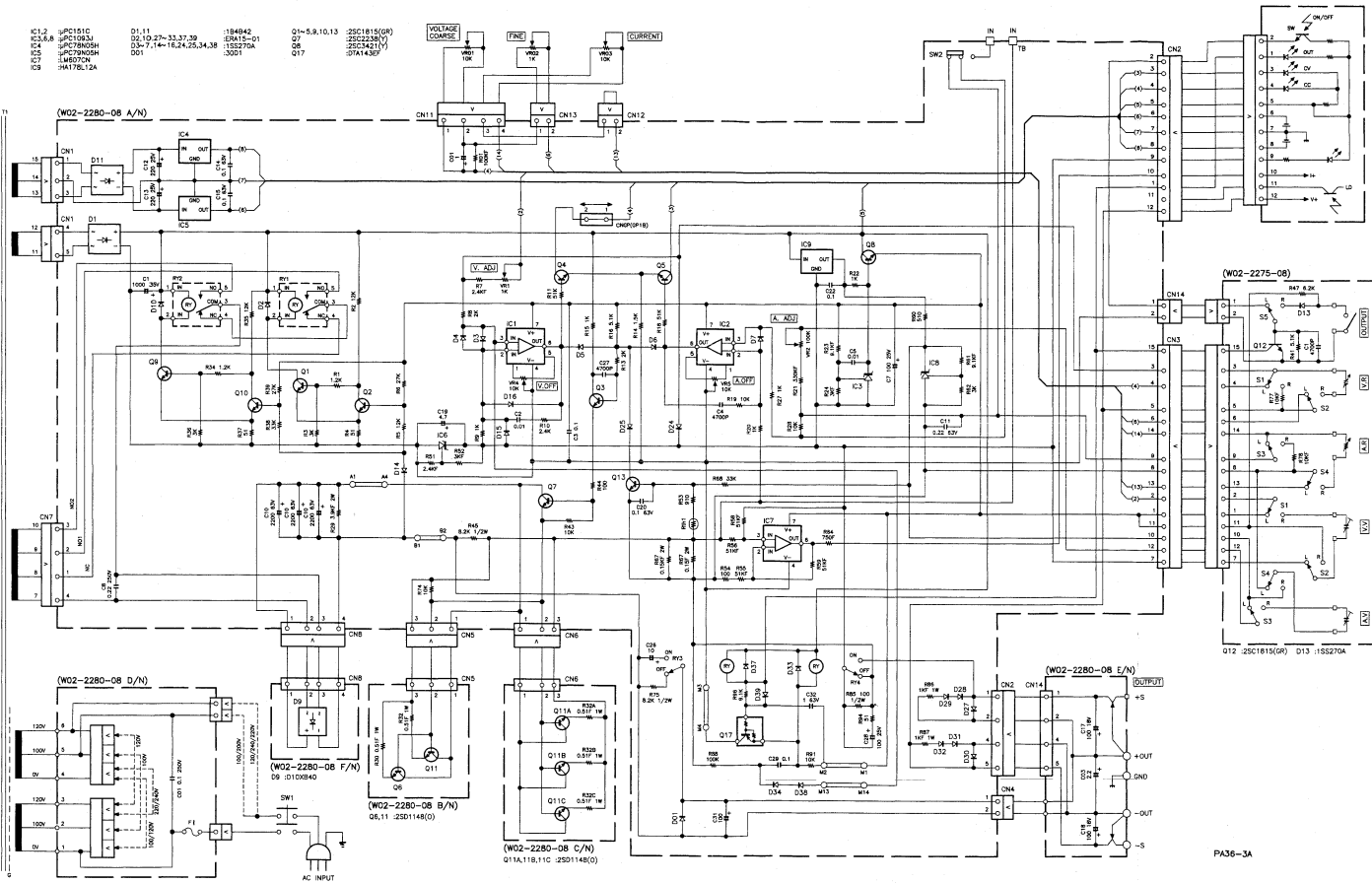
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|----------------------------------|--------------|------|-----------------------|
| W02-2304-08                      |              |      |                       |
| REV.                             | PARTS NO.    | QTY  | DESCRIPTION           |
|                                  | ISA-0546-08  |      | WORK ASSY Y24P JUMPER |
|                                  | Z61-0532-08  |      | PCB SUPPORT           |
|                                  | W02-2304-08  |      | PCB TAPPING 3,516     |
| C1                               | C48F81B1019H | CAP. | ELECTRO 10K 10% 50V   |
| C2                               | C48F81B1019H | CAP. | ELECTRO 10K 10% 50V   |
| C3                               | C48F81B1019H | CAP. | CERAMIC 0.1 10% 50V   |
| C4                               | C48F81B1019H | CAP. | CERAMIC 0.1 10% 50V   |
| C5                               | C48F81B1019H | CAP. | CERAMIC 0.1 10% 50V   |
| C6                               | C48F81B1019H | CAP. | CERAMIC 0.1 10% 50V   |
| C7                               | C48F81B1019H | CAP. | CERAMIC 0.1 10% 50V   |
| C8                               | C48F81B1019H | CAP. | CERAMIC 0.1 10% 50V   |
| C9                               | C48F81B1019H | CAP. | CERAMIC 0.1 10% 50V   |
| C10                              | C48F81B1019H | CAP. | CERAMIC 0.1 10% 50V   |
| C11                              | C48F81B1019H | CAP. | CERAMIC 0.1 10% 50V   |
| C12                              | C48F81B1019H | CAP. | CERAMIC 0.1 10% 50V   |
| C13                              | C48F81B1019H | CAP. | CERAMIC 0.1 10% 50V   |
| C14                              | C48F81B1019H | CAP. | CERAMIC 0.1 10% 50V   |
| C15                              | C48F81B1019H | CAP. | ELECTRO 4.7 10% 50V   |
| C16                              | C48F81B1019H | CAP. | ELECTRO 4.7 10% 50V   |
| C17                              | C48F81B1019H | CAP. | CERAMIC 0.1 10% 50V   |
| C18                              | C48F81B1019H | CAP. | CERAMIC 0.1 10% 50V   |
| C19                              | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C20                              | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C21                              | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C22                              | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C23                              | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C24                              | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C25                              | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C26                              | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C27                              | C48F81B1019H | CAP. | CERAMIC 0.1 10% 50V   |
| C28                              | C48F81B1019H | CAP. | CERAMIC 0.1 10% 50V   |
| C29                              | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
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| C32                              | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C33                              | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C34                              | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C35                              | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C36                              | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C37                              | C48F81B1019H | CAP. | CERAMIC 0.1 10% 50V   |
| C38                              | C48F81B1019H | CAP. | CERAMIC 0.1 10% 50V   |
| C39                              | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C40                              | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
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| C47                              | C48F81B1019H | CAP. | CERAMIC 0.1 10% 50V   |
| C48                              | C48F81B1019H | CAP. | CERAMIC 0.1 10% 50V   |
| C49                              | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C50                              | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C51                              | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C52                              | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
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| C63                              | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C64                              | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
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| C66                              | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C67                              | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
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| C71                              | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C72                              | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C73                              | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
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| C95                              | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C96                              | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C97                              | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C98                              | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C99                              | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C100                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C101                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C102                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
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| C107                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
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| C115                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C116                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C117                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C118                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C119                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C120                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C121                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C122                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C123                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C124                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C125                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C126                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C127                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C128                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C129                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C130                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C131                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C132                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C133                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C134                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C135                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C136                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C137                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C138                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C139                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C140                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C141                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C142                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C143                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C144                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C145                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C146                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C147                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C148                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C149                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C150                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C151                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C152                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C153                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
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| C157                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
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| C159                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
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| C161                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
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| C163                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
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| C166                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C167                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C168                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C169                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
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| C171                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C172                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
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| C174                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C175                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C176                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C177                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C178                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C179                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
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| C183                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C184                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C185                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C186                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C187                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C188                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C189                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C190                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C191                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C192                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C193                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C194                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C195                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C196                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C197                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C198                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C199                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C200                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C201                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C202                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C203                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C204                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C205                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C206                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C207                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C208                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C209                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C210                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C211                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C212                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C213                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C214                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C215                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C216                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C217                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C218                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C219                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C220                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C221                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C222                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C223                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
| C224                             | C48F81B1019H | CAP. | CERAMIC 470P 10% 50V  |
|                                  |              |      |                       |

[illegible]

# SCHEMATIC DIAGRAM PA18-3A

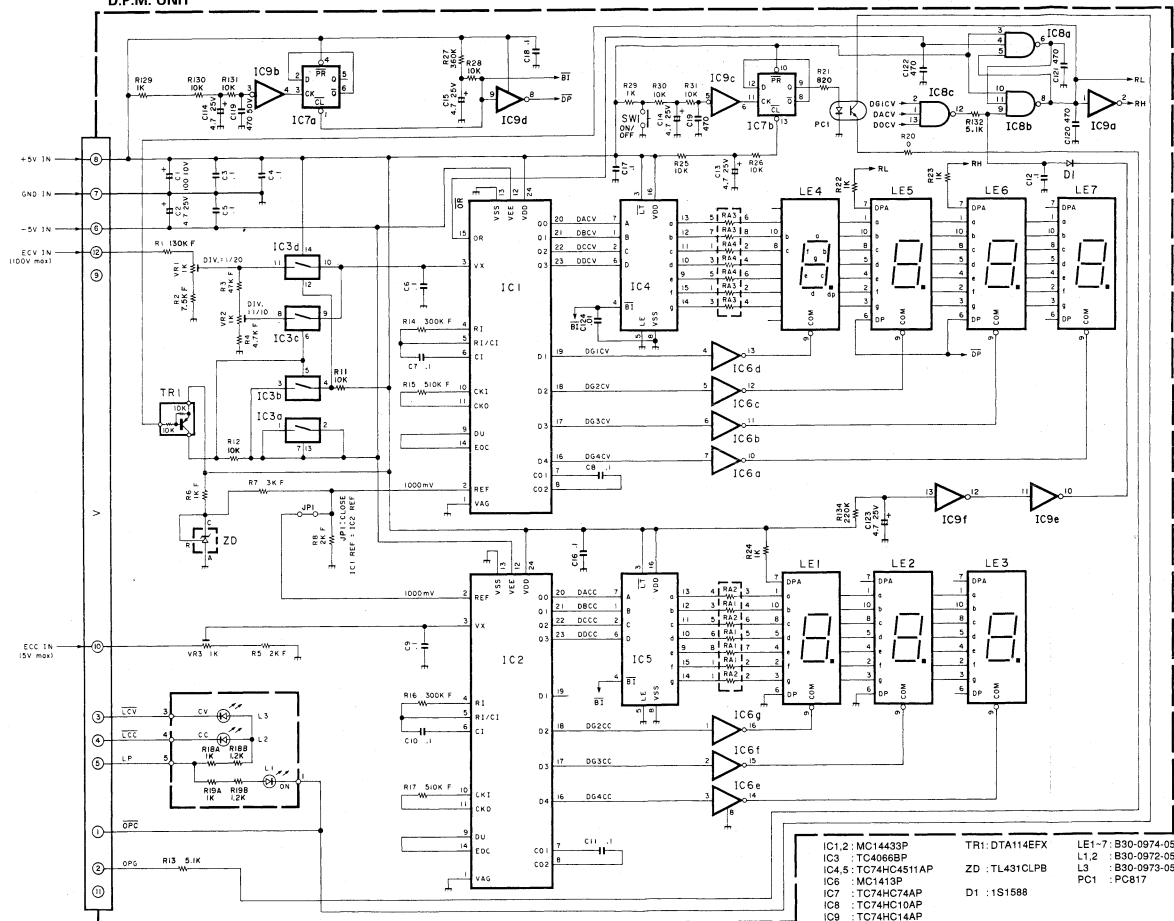


## SCHEMATIC DIAGRAM PA36-3A

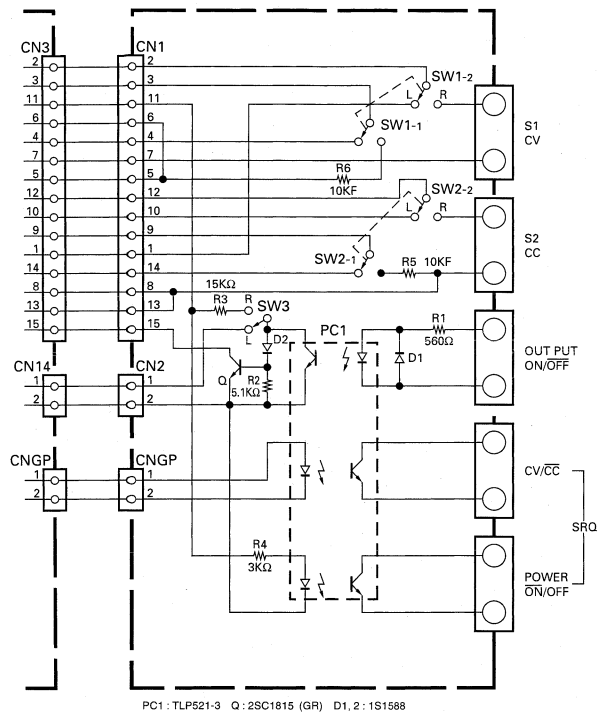


# SCHEMATIC DIAGRAM PA18-1.2A/3A/PA36-1.2A/3A/PA70-1A

D.P.M. UNIT



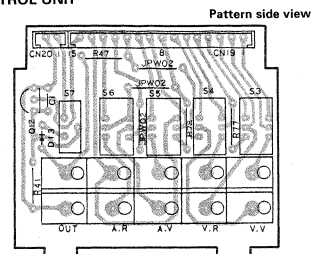
## SCHEMATIC DIAGRAM (OPTION OP-13A)



OP-13A

## P.C. BOARD

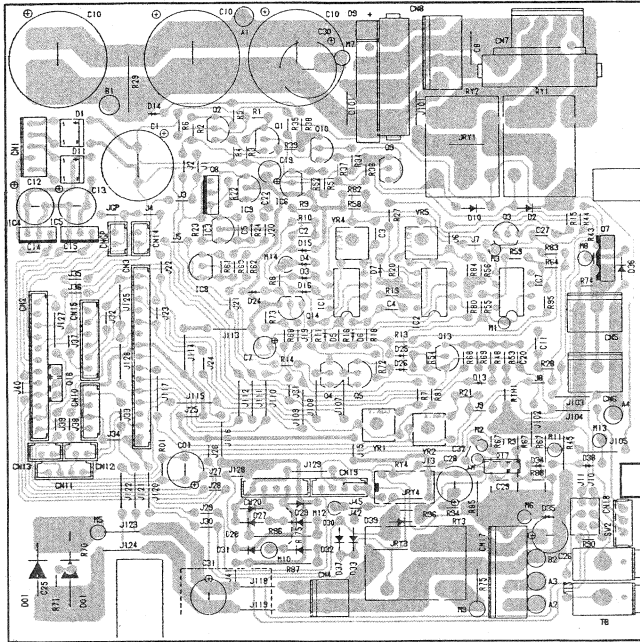
### EXT. CONTROL UNIT



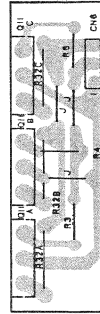
## P.C. BOARD

AMP UNIT

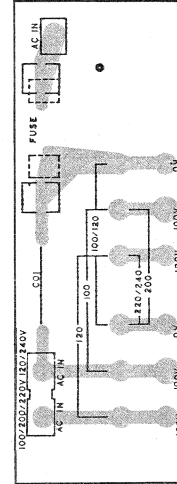
### Pattern side view



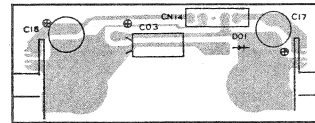
### Pattern side view



**Pattern side view**

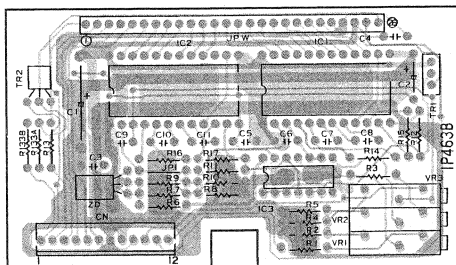
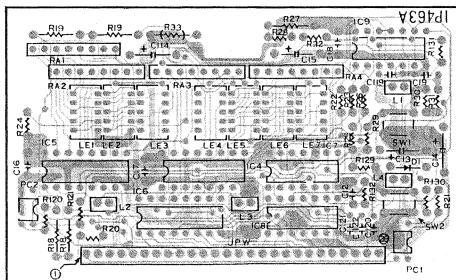


### Pattern side view



# P.C. BOARD

## D.P.M. UNIT



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