

**INSTRUCTION
MANUAL**

MODEL 260T

**DIGITAL
CLAMP METER**

The meter is completely portable, LCD, 3-1/2 digit clamp meter with insulation test function (with option 500V insulation tester unit). Designed for use by electricians, technicians, servicemen and hobbyists who require an instrument that is accurate, reliable, and always ready for use. It is powered by a standard 9V transistor radio type battery, providing 150-200 operating hours, depending upon the type of battery and usage. It has a rugged design, is easy to hold in operator's hand, and convenient to use.

1. Operating Features

| | |
|-----------------|--|
| AC Current | 0.01A to 1000A (with Peak Hold function) |
| Insulation Test | 100K Ω to 2000M Ω (With option 500V insulation tester unit) |
| AC Voltage | 0.1V to 750V |
| DC Voltage | 100 μ V to 1000V |
| Resistance | 100m Ω to 2M Ω |
| Continuity Test | <100 Ω with audio tone |
| Temperature | 0 to 1000 $^{\circ}$ C, 0 to 1400 $^{\circ}$ F |

The meter display is a liquid crystal assembly providing a readable display in all light conditions. The decimal point is automatically positioned, and the polarity sign (minus) is lighted for negative DC measurement (plus is understood if no sign appears), so that the display is direct reading in units selected at the rotary switch. Overrange measurements are indicated by blanking all but the most significant digit, decimal point, and polarity sign (if negative). In addition the display includes a low battery indication. If low battery is indicated, operator should replace the used battery with a new one.

2. Specifications

The following specifications assume a 1-year calibration cycle and an operating temperature of 18°C to 28°C (64°F to 82°F) at relative humidity up to 80% unless otherwise noted.

2.1 AC Current (Average sensing, calibrated to rms of sine wave)

| Range | Resolution | Accuracy (50Hz–60Hz) |
|----------------------|------------|--|
| 20A | 10mA | ± (3% of reading +5 digits) |
| 200A | 100mA | ± (2% of reading +5 digits) |
| 1000A | 1A | ± (2% of reading +5 digits) for 800A and below ± (3% of reading +5 digits) for other current. |
| Overload Protection: | | 1200A within 60 seconds. |
| Jaw Opening: | | 2" (5cm) |

2.2 AC Current (Peak hold function)

| Range | Resolution | Accuracy (50Hz–60Hz) |
|-------|------------|---|
| 20A | 10mA | ± (6% of reading +10 digits) |
| 200A | 100mA | ± (4% of reading +10 digits) |
| 1000A | 1A | ± (4% of reading +10 digits) for 800A and below. ± (6% of reading +10 digits) for others |

Display reading: Peak value, calibrated to rms of sine wave.

Acquisition time: 100mS

Display decay Rate: < 4-digit per 60 seconds.

Application: use for measuring transient signal

2.3 Insulation Test (With option 500V insulation tester unit)

| Range | Resolution | Accuracy |
|--------|------------|---|
| 20MΩ | 10KΩ | ± (2% of reading + 2 digits) |
| 2000MΩ | 1MΩ | ± (4% of reading + 2 digits) for 500MΩ and below. ± (5% of reading + 2 digits) for others. |

2.4 AC Voltage (Average sensing, calibrated to rms of sine wave)

| Range | Resolution | Accuracy (50Hz – 500Hz) |
|----------------------|------------|---------------------------------|
| 200V | 0.1V | ± (1.2% of reading + 10 digits) |
| 750V | 1V | ± (1.2% of reading + 10 digits) |
| Input impedance: | | 450KΩ on all ranges. |
| Overload Protection: | | 750V AC/DC on all ranges. |

2.5 DC Voltage

| Range | Resolution | Accuracy |
|-------|------------|-------------------------------|
| 200mV | 100μV | ± (0.5% of reading + 1 digit) |
| 20V | 10mV | ± (0.5% of reading + 1 digit) |
| 1000V | 1V | ± (0.5% of reading + 1 digit) |

Overload protection: 1000V DC/peak AC on all ranges.

Input impedance: 1MΩ on all ranges.

2.6 Resistance

| Range | Resolution | Accuracy |
|--------------|--------------|----------------------------------|
| 200 Ω | 0.1 Ω | $\pm(1\%$ of reading +3 digits) |
| 20K Ω | 10 Ω | $\pm(1\%$ of reading + 2 digits) |
| 2M Ω | 1K Ω | $\pm(1\%$ of reading + 2 digits) |

Overload protection: 500V DC/rms AC on all ranges.
Open circuit voltage: < 0.35V on all ranges, except
< 3.2V on 200 Ω range. The low power ohm ranges will not turn on silicon junction, so in-circuit resistance measurements can be made with these ranges.

2.7 Continuity Test

Range: 200 Ω
Buzzer sound: With resistance less than 100 Ω .
Overload Protection: 500V DC/rms AC.

2.8 Temperature

| Range | Resolution | Accuracy |
|-------------------|------------------|--|
| 200 $^{\circ}$ C | 0.1 $^{\circ}$ C | $\pm(2\%$ of reading + 1 $^{\circ}$ C) |
| 750 $^{\circ}$ C | 1 $^{\circ}$ C | $\pm(3\%$ of reading + 1 $^{\circ}$ C) |
| 200 $^{\circ}$ F | 0.1 $^{\circ}$ F | $\pm(2\%$ of reading + 2 $^{\circ}$ F) |
| 1400 $^{\circ}$ F | 11 $^{\circ}$ F | $\pm(3\%$ of reading + 2 $^{\circ}$ F) |

Overload protection : 60VDC/24CAC on all ranges

2.9 Environment

Temperature

Normal Operation:

18 $^{\circ}$ C – 28 $^{\circ}$ C (64 $^{\circ}$ F – 82 $^{\circ}$ F)

Usable condition:

0 $^{\circ}$ C – 50 $^{\circ}$ C (32 $^{\circ}$ F – 122 $^{\circ}$ F)

Storage:

–20 $^{\circ}$ C – +60 $^{\circ}$ C (–30 $^{\circ}$ F – 140 $^{\circ}$ F)
battery removed and < 80% R.H.

Relative Humidity:

max. 80%

Temperature Coefficient:

Less than 0.15 times the applicable accuracy specification for 0 $^{\circ}$ C to 18 $^{\circ}$ C (32 $^{\circ}$ F to 64.4 $^{\circ}$ F) and 28 $^{\circ}$ C to 50 $^{\circ}$ C (82.4 $^{\circ}$ F to 122 $^{\circ}$ F).

2.10 Function Characteristics

Measurement method:

Dual slope integration.

Reading Rate:

3 readings/Sec.

Polarity:

Automatic, indicated minus, assumed plus.

Overload indication:

Blanking of all digits, except MSD, decimal point and polarity sign.

Power requirements:

9V Battery.

Battery life:

Up to 200 hours typical with Alkaline.
Up to 150 hours typical with Zinc carbon.

Battery indication:

Display indicates LO BAT when approximately 20% of battery life remains.

Display:

LCD, 3-1/2 digit (1999 count), 0.5" high.


Dimension: 9" L x 2.7" W x 1.5" H.
(23cm L x 7cm W x 3.7" H)
approx

Weight: 11 ounces (310 grams)
including battery, approx.

2.11 Accessories

Instruction manual
Test leads
Alligator Clips
9V Zinc-carbon battery.
Carrying Case.
Thermocouple TPK-01

2.12 Input Overload Protection

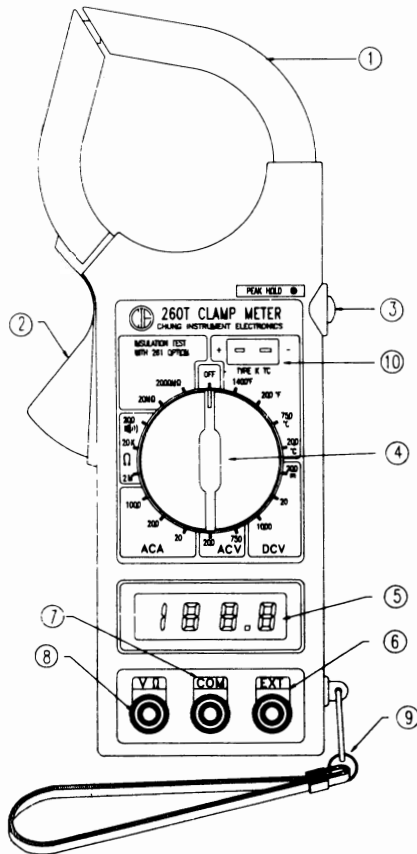
The symbol  on the front panel of the instrument is an international symbol meaning "REFER TO OPERATION INSTRUMENTS" Warning and safety precautions to avoid personal injury and instrument damage.

Caution:
Exceeding the maximum input overload limits can damage the meter. Each measurement function equipped with input overload protection. The overload limits for each function and range are as follows:

| Function | Range | Input | Max. Input |
|--------------------------------|---|------------------------------------|--|
| DC V | 200mV 20V 1000V | V Ω and COM | 500V DC, 350V AC (15 Sec, 200mv Range) 1200V DC, 850V AC (all other Ranges) |
| ACV | 200V, 750V | V Ω and COM | 1200V DC, 850V AC |
| ACA | 20A, 200A, 1000A | | 1200A |
| Ω Continuity Test | 200 Ω , 20K Ω , 2M Ω (\cdot)) | V Ω and COM | 500V DC/rms AC |
| Insulation Tester | 20M Ω 2000M Ω | V Ω and COM EXT and COM | 500V DC/rms AC |
| Temperature | 200 $^{\circ}$ C, 750 $^{\circ}$ C 200 $^{\circ}$ F, 1400 $^{\circ}$ F | Temperature Female Connector | 60VDC/24VAC |

To avoid electrical shock and/or instrument damage do not connect the COM input terminal to any source of more than 500 volts DC or AC rms above earth ground.

3. Operation And Recalibration



- Transformer Jaws:**
Pick up the AC current flowing through the conductor.
- Trigger:**
Press the lever to open the transformer jaws. When the lever is released, the jaws will close again.
- Peak Hold Switch:**
A push switch, (Push On/push OFF, do not pull to select function). When measuring the peak value of the starting current of motors, set the switch to the "Peak-Hold" position.
- Rotary Switch**
A rotary switch is used to select measurement Function and Range.
- Display:**
3-1/2 digit (1999), decimal point, minus polarity, overrange and LO BAT indicators.
- EXT Input Connector:**
Used to accept insulation tester unit EXT banana plugs when measuring insulation resistance.
- COM Input Connector:**
LOW input for all voltage, resistance, continuity measurement. Will accept banana plugs. When measuring insulation resistance, used to accept insulation tester unit COM banana plugs.
- V. Ω Input Connector:**
High input for all voltage, resistance, continuity, measurement, will accept banana plugs. When measuring insulation resistance, used to accept insulation tester unit V. Ω banana plugs.
- Drop-Proof Wrist Strap:**
Prevents the instrument from slipping off the hand while in use.
- Temperature Female Connector:**
Thermocouples input for all temperature measurement, used to accept male connector of K-type thermocouples.

3.1 AC Current Measurement

1. Make sure that "Peak Hold" switch is not pressed.
2. Set Function/Range Switch to the ACA 1000A range. If the display indicates one or more leading zeros, shift to the 200A or 20A range to improve the resolution of the measurement.
3. Press the trigger to open the transformer jaws and clamp one conductor only. It is impossible to make measurements when two or three conductors are clamped at the same time.
4. Display reading is flow of AC current through the conductor
5. Press the trigger to open the transformer jaws and remove clamp meter from the conductor.

3.2 Peak-Hold AC Current Measurement.

1. Set Function/Range Switch to the ACA 20A, 200A or 1000A position.
2. Press the trigger to open the transformer jaws and clamp one conductor only.
3. Press the peak-hold switch to peak-hold position.
4. Turn on the tested equipment's power switch to get the peak value of the starting current.

3.3 Insulation Resistance Tester.

1. Set Function/Range Switch to the insulation test 2000M Ω range. It is normal for the display to be unstable.

2. Insert the three banana plugs of the insulation tester unit into the clamp meter V. Ω , COM, EXT jacks.
3. Set the insulation tester unit range switch to the 2000M Ω position.
4. Connect the test leads of the insulation tester unit L.E input jacks, to the equipment under test (equipment's power must be OFF).
5. Set the insulation tester power switch to the ON position.
6. Depress the PUSH 500V push-push switch, The 500V on red LED lamp will light. Clamp meter display reading is the insulation resistance value. If the reading is below 19M Ω , change clamp meter and insulation tester unit to 20M Ω range. This can increase the accuracy.
7. If the insulation tester unit is not in use, place the power switch to power OFF position, and remove the test leads from the E.L input jacks. This will increase battery life and prevent electrical shock hazard.

3.4 Recalibration (Qualified personnel only)

Under normal operating conditions, the meter should be calibrated once a year to maintain the specifications. Use the following procedure to calibrate the meter. This procedure assumes an ambient temperature of $23\pm 2^{\circ}\text{C}$ (70° to 77°F) and a relative humidity of less than 80%. The temperature of the units should be allowed to stabilize for at least 30 minutes before calibration begins.

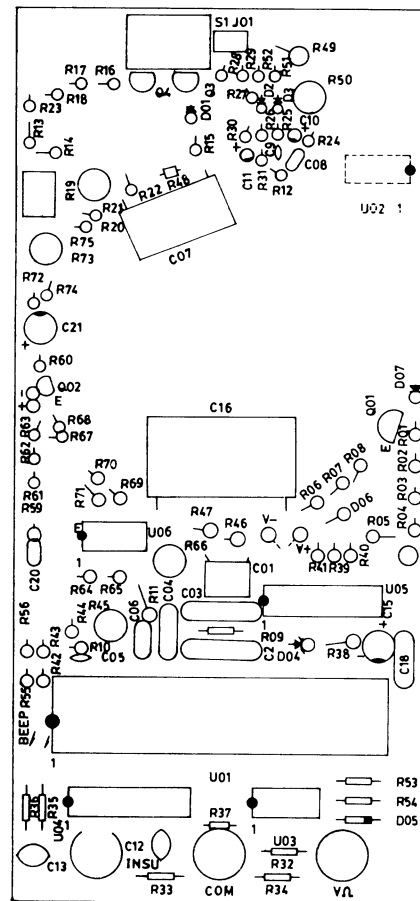
1. DCV calibration procedure
 - A. Set Function/Range Switch to DC 200mV range.
 - B. Input 190.0mV DC from calibrator.
 - C. Read display and adjust R45 for 189.9–190.1 display reading.

2. Peak-Hold AC current zero adjust procedure.
 - A. Set Function/Range Switch to AC 200A range.
 - B. Display will read 00.0. Press the peak-hold switch to peak-hold position and adjust R19 for 00.0 display reading.
 - C. Release the peak-hold function.
3. AC current calibration procedure
 - A. Set Function/Range Switch to AC 200A range.
 - B. AC 10A (50Hz or 60Hz) current flow through 10 turn conductor wire from calibrator.
 - C. Press the trigger to open the transformer jaws and clamp the 10 turn conductor wire, (conductor in center of jaws will increase the accuracy).
 - D. Read display and adjust R50 for 99.9 – 100.1 display reading.
4. Peak-Hold AC current calibration procedure

This procedure is continuation of AC current calibration procedure

 - E. Press the peak-hold switch to peak-hold position.
 - F. Read display and adjust R21 for 99.9–100.1 display reading.
5. Temperature zero adjust procedure
 - A. Set Function/Range Switch to 200 °C range.
 - B. Immerse the probe tip into 0 °C bath 30 seconds.
 - C. Adjust R66 (200ΩVR) for 00.0 display reading.
 - D. Set Function/Range Switch to 200 °F range.
 - E. Adjust R73 (250KVR) for 32.0 display reading.

Recalibration Location Diagram



2. Insert the three banana plugs of the insulation tester unit into the clamp meter V. Ω , COM, EXT jacks.
3. Set the insulation tester unit range switch to the 2000M Ω position.
4. Connect the test leads of the insulation tester unit L.E input jacks, to the equipment under test (equipment's power must be OFF).
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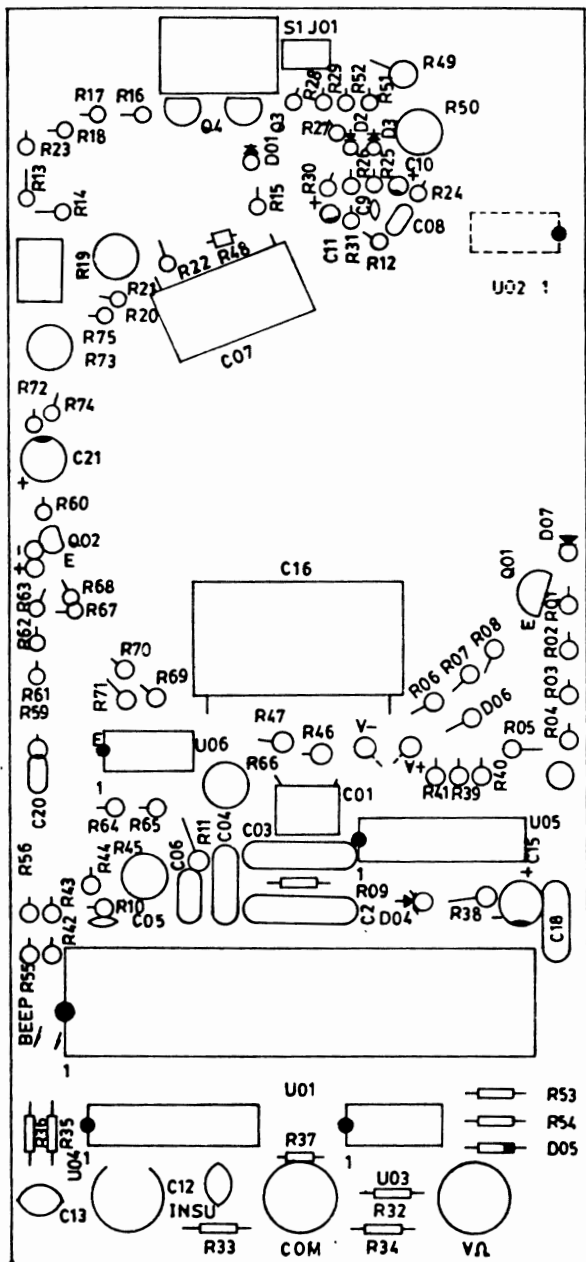
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 - C. Press the trigger to open the transformer jaws and clamp the 10 turn conductor wire, (conductor in center of jaws will increase the accuracy).
 - D. Read display and adjust R50 for 99.9 – 100.1 display reading.
4. Peak-Hold AC current calibration procedure

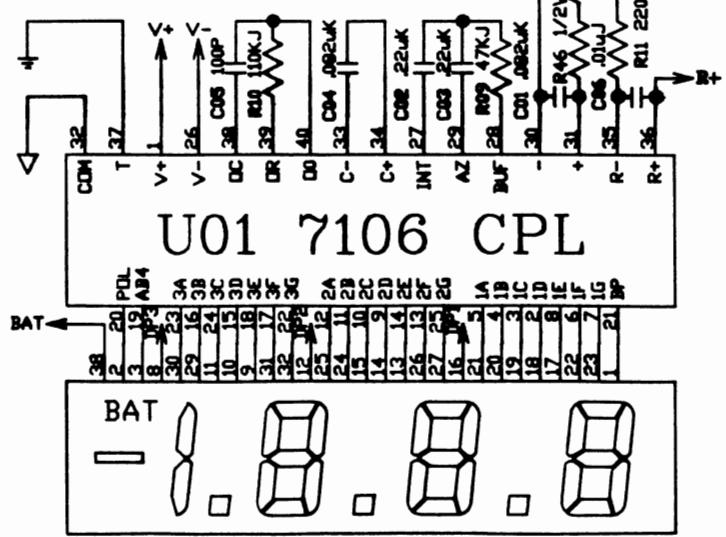
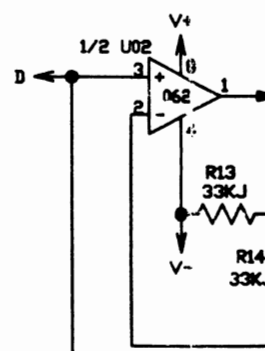
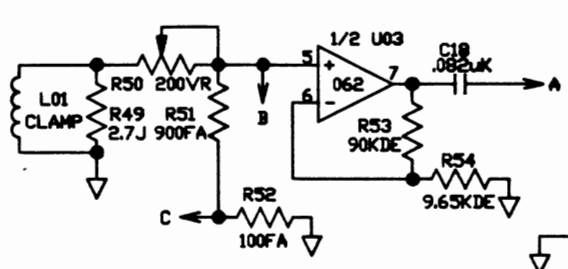
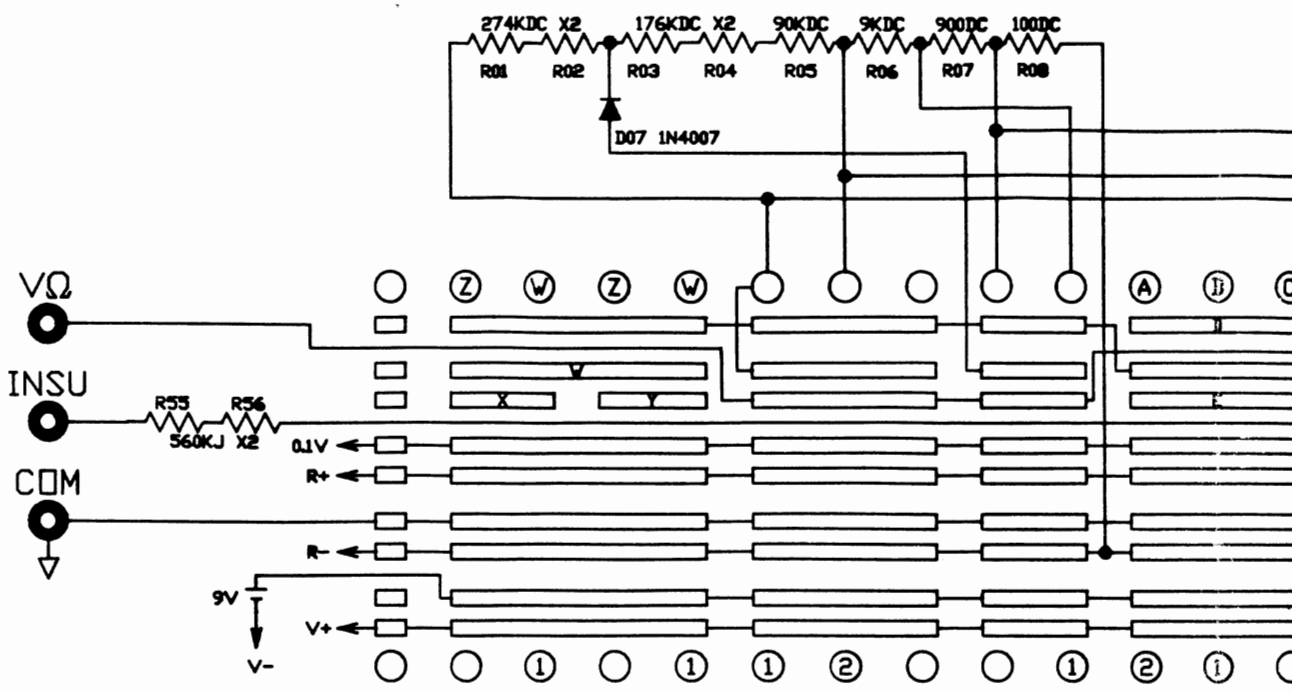
This procedure is continuation of AC current calibration procedure

 - E. Press the peak-hold switch to peak-hold position.
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 - C. Adjust R66 (200 Ω VR) for 00.0 display reading.
 - D. Set Function/Range Switch to 200^oF range.
 - E. Adjust R73 (250KVR) for 32.0 display reading.

Recalibration Location Diagram

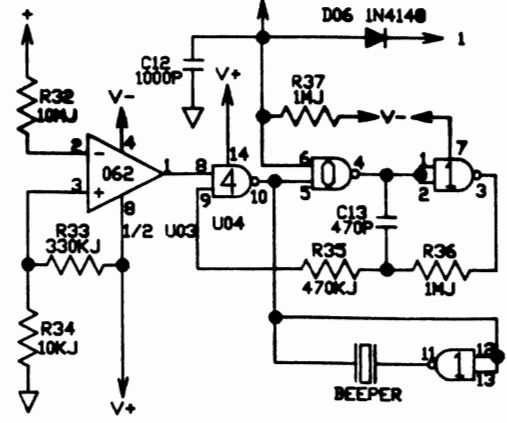
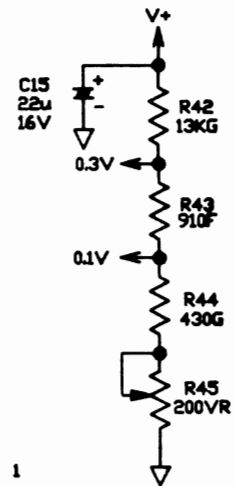
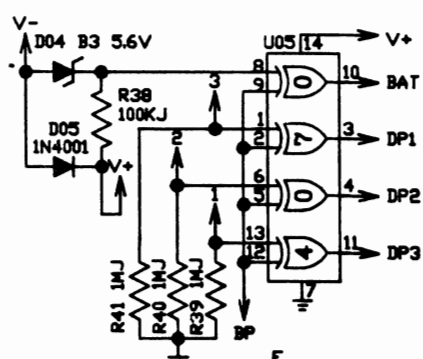
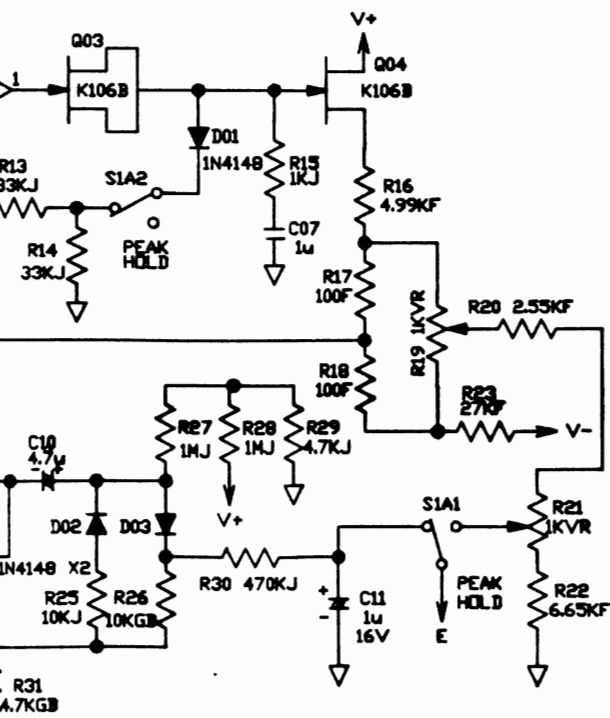
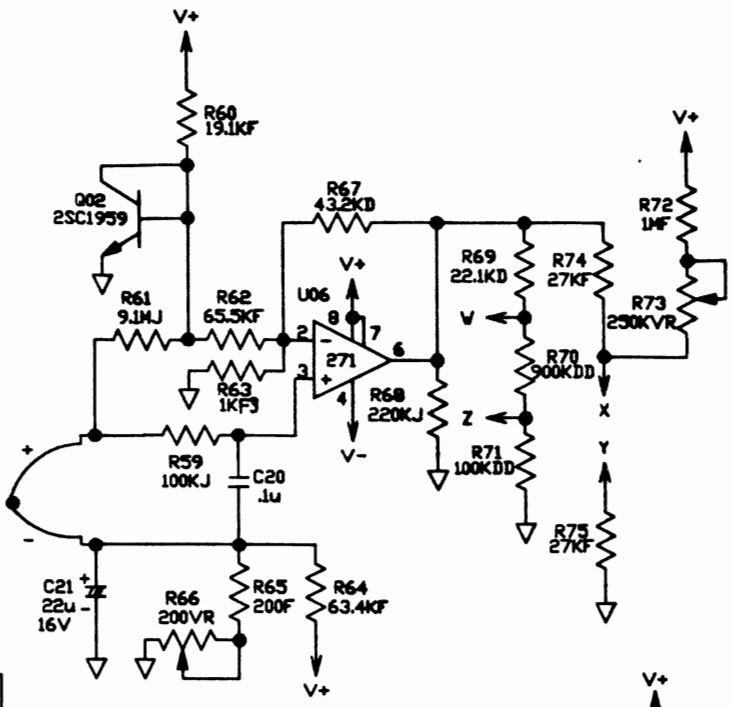
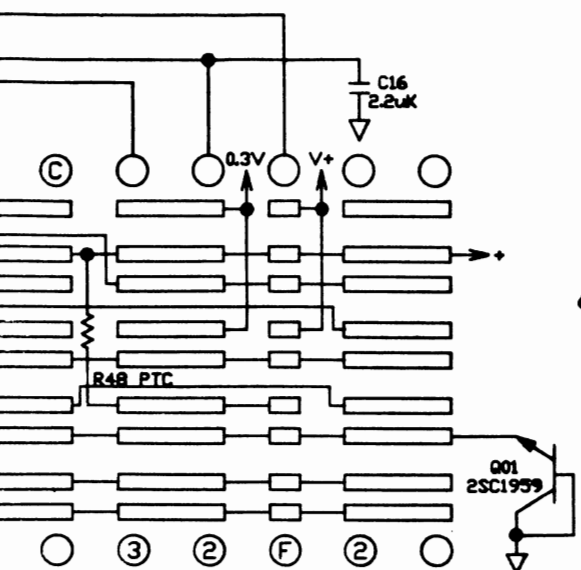


— TEMP — — DCV — — ACV — — ACA —
 OFF 1400°F 200°F 750°C 200°C 200m 20 1000 750 200 20 200 100



| | |
|----------|-------|
| C. I. E. | MODEL |
| | 260T |

— — Ω — — INSU —
 1000 2M 20K 200 20M 2000M



NOTES

1. UNLESS OTHERWISE SPECIFIED
2. ALL RESISTANCE VALUES IN OHMS 1/4W
3. ALL CAPACITANCE VALUES IN MICROFARADS

| NAME | DWG | SHEET | OF | REV | DSGN | DWN | CKD | APPVD | APPVD |
|------|------|-------|-----------|-----|------|----------|-----|-------|-------|
| | 260T | DATE | 78, 9, 23 | | | 陳碧雲 | | | 張大子 |
| | | CHX | | | | 78.12.15 | | | |

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