

Y8100

DC/AC
Current Probe

Instruction Manual

FLUKE®

Y8100

DC/AC Current Probe

Instruction Manual

PN 534271

February 1980 Rev. 2, 11/94

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Section 1**Introduction and Specifications****1-1. DESCRIPTION**

1-2. The Fluke Y8100 DC/AC Current Probe is a clamp-on probe that is used with a voltmeter, multimeter, or oscilloscope to read dc, ac, or composite (ac on dc) current measurements. The jaws on the Y8100 are designed to clamp around conductors up to $\frac{1}{4}$ inch in diameter. The pistol shape allows safe, easy, one-hand operation when making current measurements.

1-3. APPLICATIONS

1-4. The Y8100 can be used to measure any of the following:

- . Ground currents ac and dc.
- . Power supply ripple.
- . Current distribution in multiple systems.
- . Current balance in two wires ac and dc.
- . Current in audio distribution systems (using 440 to 1000 Hz signals).
- . Starting currents without introducing impedance (imparts negligible inductance in the mH range).
- . Transformer currents
- . Battery currents
- . Current distribution and perform ripple current tests in plating operations.
- . Current transients (dc to 1 kHz) when used with an oscilloscope.

1-5. FEATURES

1-6. As shown in Figure 1-1, major features of the Y8100 include the following. Table 1-1 provides the specifications for the Y8100.

1. Jaws - The jaws can enclose conductors up to $\frac{3}{4}$ inch (19 mm) in diameter. Except at the core closure, the jaws are insulated. The closure is chamfered for positive alignment and minimum air gap. The jaws are rated for voltages up to 600V dc or 480V ac. Inspect core closure area frequently for foreign material. Centering of conductors smaller than $\frac{3}{4}$ inch in diameter is desirable, but not critical for specified accuracy.

WARNING

Do not use at voltages above 600V dc or 480V ac. Avoid snapping the jaws as that could damage the core.

2. Jaw Trigger - The jaw trigger is designed for easy, one-hand operation and positioned for maximum protection from circuit voltages.

3. Slide Lock - The slide lock mechanically locks the push-to-read switch in the on or off position.

4. Push-To-Read- Switch - The push-to-read switch turns the Y8100 on for zeroing and measurement. Switch operation also demagnetizes the core.

5. Output Banana Jacks - The output banana jacks are color coded red for positive and black for negative with reference to the current direction arrow. They will accept standard dual banana connector plugs or individual banana plug leads.

6. Connection Cable - A 5-foot cable with standard dual banana connectors is supplied. A molded tab indicates the negative lead on the connectors.

7. Battery Compartment - The battery compartment can be reached by removing the butt plate, which is held in place by a single phillips screw. Contained in the battery compartment is the battery holder, which slides out to accept four "AA" alkaline batteries (6 volts) required for operation of the Y8100.

NOTE

Support the battery holder when removing it to prevent unnecessary stress on the flexible leads connected to the unit. Cell polarity is molded into the battery holder and should be carefully observed when installing batteries.

8. Zero Adjustment Thumbwheel - Used to zero the voltage output from the Y8100 on the meter before taking current readings.

9. Battery-Low Indicator Light - Lights whenever battery voltage falls below that required for proper operation. Alkaline battery life under continuous operation is approximately 20 hours.

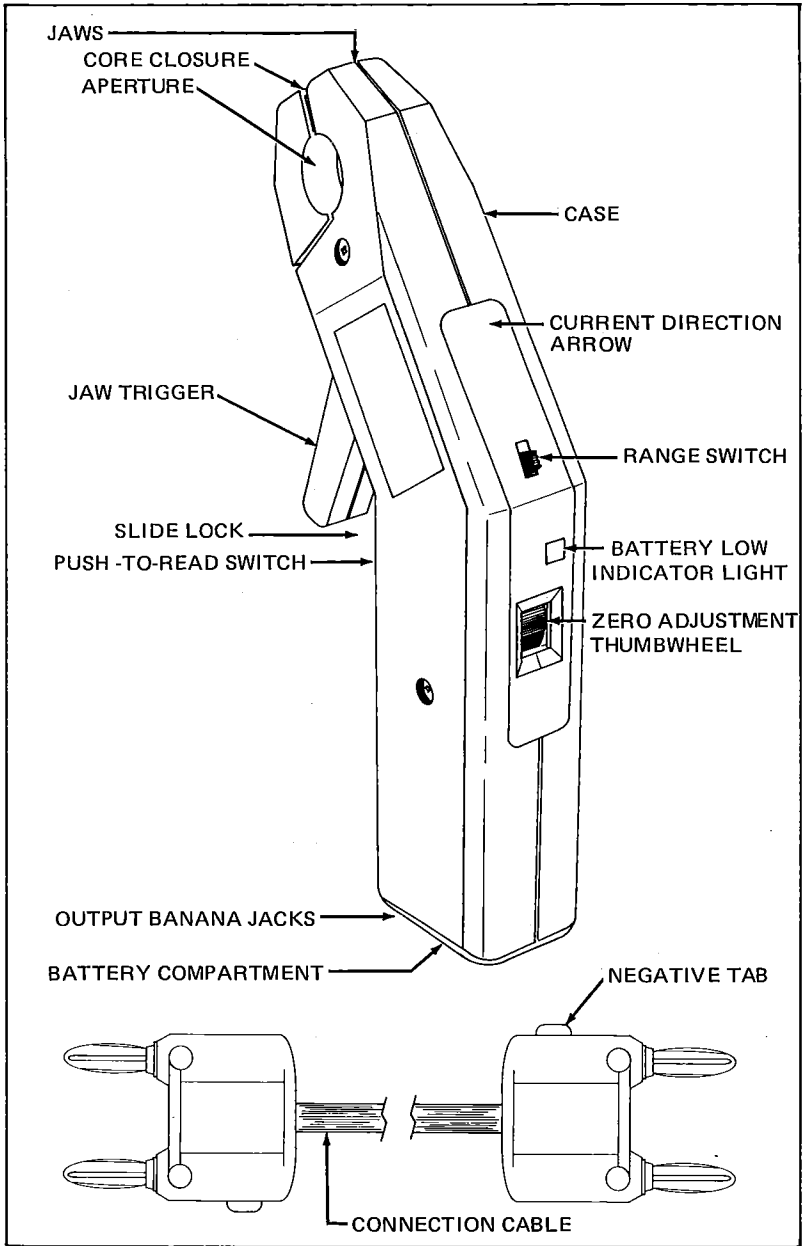


Figure 1-1. Fluke Y8100 DC/AC Current Probe

Y8100

10. Range Switch - The range switch is a two position slide switch for either 20A or 200A operation.
11. Current Direction Arrow - A positive (+) reading on dc indicates current in the direction of the arrow.
12. Case - The case is made of high-impact, high-dielectric, precision-molded plastic.

1-7. UNPACKING

1-8. The Y8100 was packed and shipped in a container especially designed to protect your current probe. Check your shipment thoroughly. If anything is wrong, contact the place of purchase immediately or the nearest Fluke Service Center.

1-9. If reshipment is necessary, please use the original shipping container. If the original container is not available, a new one can be obtained from Fluke Corporation. Please give the instrument model number when requesting a new container.

Table 1-1. Specifications

RANGES: 20A ac or dc 200A ac or dc
RATED OUTPUT: 2V at full range
ACCURACY:
- DC to 65 Hz: <100A, $\pm 2\%$ of range $\pm 0.7A$ >100A, $\pm 3\%$ of range $\pm 0.7A$
65 Hz to 1 kHz: <100A, add $\pm 3\%$ of reading 100A, add $\pm 6\%$ of reading
CALIBRATION CYCLE: 1 year
FREQUENCY RESPONSE: dc to 1.0 kHz
RECOMMENDED LOAD: $\geq 3.0\text{ k}\Omega$
TEMPERATURE RANGE: $+15^{\circ}\text{C}$ to $+35^{\circ}\text{C}$; for specified accuracy -10°C to $+50^{\circ}\text{C}$; storage and operation at reduced accuracy.
HEATING LIMITATION: Prolonged operation above 200A ac or 1 kHz can cause damage to the Y8100.
WORKING VOLTAGE RATING: Core to output, 600V dc or 480V ac max Output to ground, 42V dc or 30V ac max
APERTURE SIZE: $\frac{3}{4}$ " (19 mm) diameter
SIZE-OVERALL: 9" x 4 $\frac{1}{2}$ " x 1-7/16" (230 mm x 115 mm x 37 mm)
WEIGHT: 14 ounces (0.4 kg), with batteries
POWER: 4; "AA" cells
BATTERY LIFE: Alkaline-20 hours continuous

CAUTION

The Y8100 is not to be used at circuit voltages above 600V dc or 480V ac.

Section 2

Operating Instructions

2-1. INTRODUCTION

2-2. The following measurement techniques are provided as guidelines to be followed when using the Y8100. Included are procedures for measuring ac, dc, composite (ac on dc) currents, safety hints, and measurement notes. These procedures should be read carefully before using the Y8100.

2-3. SAFETY HINTS

1. Remove batteries when not using the current probe for an extended period of time.
2. Do not clamp the probe onto anything other than the conductor being measured. The probe may hang from aperture if necessary to read the remote meter.
3. Observe all maximum circuit voltage warnings.
4. The aperture is insulated except at core closure. Withstand voltage from core to output terminals and case is safe for the working voltage specified. Avoid touching uninsulated core closure area to conductor.

2-4. MEASUREMENT NOTES

1. There can be a few millivolts of thermal drift during the first 60 to 120 seconds of warmup of the current probe. For maximum dc accuracy, a warmup of 60 seconds before zeroing will eliminate 90-95% of the drift.
2. The Earth's magnetic field is an influence to be zeroed out before taking dc readings. Depending on geographical location and immediate environment, the magnitude of error current indication can be ± 200 mA. Being careful to zero and read with the probe at the same angle and orientation will minimize any error from this influence.

3. It is not possible to totally zero the output of the current probe in ac measurements, due to pick-up of stray ac fields and a small amount of normal amplifier noise. This output is typically 1.0 to 5.0 mV reflecting 20 mA to 200 mA on the 20A range.
4. When using a meter which does not provide dc blocking on ac ranges, the dc zeroing procedure should be followed to obtain a minimum reading on the meter (it may not be possible to completely zero the output, as explained in note 3, above.) Alternately, at 60 Hz and higher frequencies, the dc may be blocked by use of a non-polarized capacitor with a 50 mfd, 5V rating in series with the positive (red) lead from the current probe.
5. Where possible, when reading low ac or dc current, looping a number of turns of the conductor through the aperture will multiply the sensitivity of the reading. Note that this will not cause multiplication of the influences that tend to produce errors. To obtain the actual current, the reading on the meter must be divided by the total number of turns through the aperture (use a higher scale on the meter when necessary to prevent going off scale).
6. Make certain that the core closes completely on larger conductors, $\frac{3}{4}$ inch diameter maximum.
7. Keep core closure area clean of foreign material.

CAUTION

The current probe, although designed for rugged use, is a precision measurement tool. Do not snap jaws, doing so may damage the core and/or alter the zero set on dc.

8. Conductors smaller than $\frac{3}{4}$ inch should be centered in the aperture for maximum accuracy. However, conductor position within the aperture is not critical in attaining the accuracy specified in Table 1-1. Overall accuracy is determined by adding the error of the indicating instrument to that of the probe. Measurement of high dc currents, exposure to large transient currents, or turning the Y8100 or the source current off while the probe is clamped around a conductor carrying current may result in a small residual magnetic field in the core. Before attempting to read lower dc currents, this potential cause for error in readings should be eliminated by removing the unit from the conductor, and turning it on and off a few times (this will demagnetize the core) and then repeating the zeroing steps. When practical, this procedure is recommended for all dc measurements and is good practice for any current measurement.
9. Rated voltage between the uninsulated core closure and the output terminals will protect any connected equipment when used in circuits up to 600V dc or 480V ac.

WARNING

Do not use the Y8100 on voltages exceeding 600V dc or 480V ac.

2-5. MEASURING AC CURRENT

1. Select a voltmeter (input impedance $\geq 3k$ ohm).
2. Connect current probe to voltmeter with banana plug cable supplied, or other appropriate cable.
3. Select 20A or 200A range on current probe using the range switch.
4. Turn on the voltmeter. Select proper ac voltage range (full-scale readings will go to 2.0V). Determine scale factors: On the 20A range, the scale is 0.1V per amp, e.g., a 15A reading, will be displayed as 1.5V. On the 200A range, the scale is 0.01V per amp, e.g., a 65A reading will be displayed as 0.65V.
5. Turn current probe on using push-to-read switch. If desired, lock on using the slide lock.
6. Select a spot along the conductor to be measured where the influence of stray fields from adjacent conductors and large ferrous objects is at a minimum.
7. Use Jaw Trigger to open jaws and clamp around conductor.

NOTE

When measuring current in an ac line cord, the jaws should be clamped around only one conductor (black or hot wire in a three-wire cord). If the jaws are clamped around both current carrying conductors, the currents will cancel and produce a zero reading.

8. Read current indication on meter. Observe proper scale factor.

WARNING

Do not measure circuits over 480V ac.

2-6. MEASURING DC CURRENT

1. Select a voltmeter (input impedance $\geq 3k$ ohm).
2. Connect current probe to voltmeter with banana plug cable supplied, or an equivalent appropriate cable.
3. Select 20A or 200A range on current probe using the Range Switch.
4. Turn voltmeter on.
5. Select suitable dc voltage range on the voltmeter (full-scale will go to 2.0V).
6. Turn current probe on with push-to-read switch. Lock on with slide lock.
7. Select a spot along the conductor to be measured where the influence of stray fields from adjacent conductors and large ferrous objects is at a minimum.

8. Hold the current probe at right angles to the conductor 2 to 4 inches away from the selected spot at the same angle and orientation as will be used for final reading.
9. Zero the output of the current probe on the voltmeter using the zero adjustment thumbwheel. Output may be either + or -.
10. Leave the current probe turned on.
11. Use jaw trigger to open jaws and clamp around conductor.

CAUTION

Release jaw trigger gently. Allowing the jaws to snap closed may alter the zero set.

12. Read current on meter. Observe proper scale factor.

WARNING

Do not measure on circuits over 600V dc.

13. To accurately measure low dc currents after measurement of a higher dc current, exposure to large transient currents, or if the current probe, or the source current has been turned off while still clamped around a conductor carrying current, remove the current probe from the conductor, turn it on and off a few times to demagnetize the core and repeat zeroing steps numbers 4 through 10 above.

2-7. MEASURING COMPOSITE (AC-ON-DC) CURRENT

1. To measure the dc component of the composite current, proceed as if measuring dc currents.
2. Switch the voltmeter to a proper ac voltage range to measure the ac (ripple) component of the composite current. The meter must provide dc blocking (see "measurement note" number 4).

Section 3

Theory of Operation

3-1. INTRODUCTION

3-2. A magnetic field is generated around a current-carrying conductor with a strength and direction directly proportional to the magnitude and polarity of the current (ampere's law). The Y8100 Current Probe concentrates that field in a magnetic core built into it's jaws. The field is measured with a Hall-effect device mounted in a narrow air-gap in the core. A Hall-effect device is a small semiconductor that produces an output voltage directly proportional to the strength and direction of a magnetic field into which it is placed. The voltage output of the Y8100 is then an accurate analog voltage equivalent to the ac, dc, or composite (ac-on-dc) current in the conductor, amplified and scaled for 2V full-scale to a voltmeter.

Section 4

Maintenance

WARNING

THESE SERVICING INSTRUCTIONS ARE FOR USE BY QUALIFIED PERSONNEL ONLY. TO AVOID ELECTRIC SHOCK, DO NOT PERFORM ANY SERVICING OTHER THAN THAT CONTAINED IN THE OPERATING INSTRUCTIONS UNLESS YOU ARE QUALIFIED TO DO SO.

4-1. INTRODUCTION

4-2. Included in this section are procedures for battery installation, calibration, and troubleshooting. General maintenance of the Y8100 includes periodic cleaning and inspection. To clean, wipe the unit with a damp cloth, make sure the core and aperture are kept free from dirt and foreign substances.

4-3. BATTERY INSTALLATION

CAUTION

If the Y8100 is not to be used for an extended period, it is recommended that the batteries be removed to protect the unit.

4-4. There are four "AA" alkaline batteries that supply +6V operating power for the Y8100. (See Figure 4-1). A "batteries low" indicator light, located just above the "zero adjustment thumbwheel," will come on whenever the batteries require replacement.

4-5. To install new batteries, remove the battery cover (butt plate) by unscrewing the single phillips screw. Carefully remove the plastic battery holder being sure not to pull too hard and loosen or disconnect the two flexible leads to the unit. The battery holder has cell polarity indicator marks (+) (-) to ensure proper installation of the four new batteries. Install the batteries as indicated on the battery holder and carefully insert the encased batteries back in the handle. Install the battery cover (butt plate).

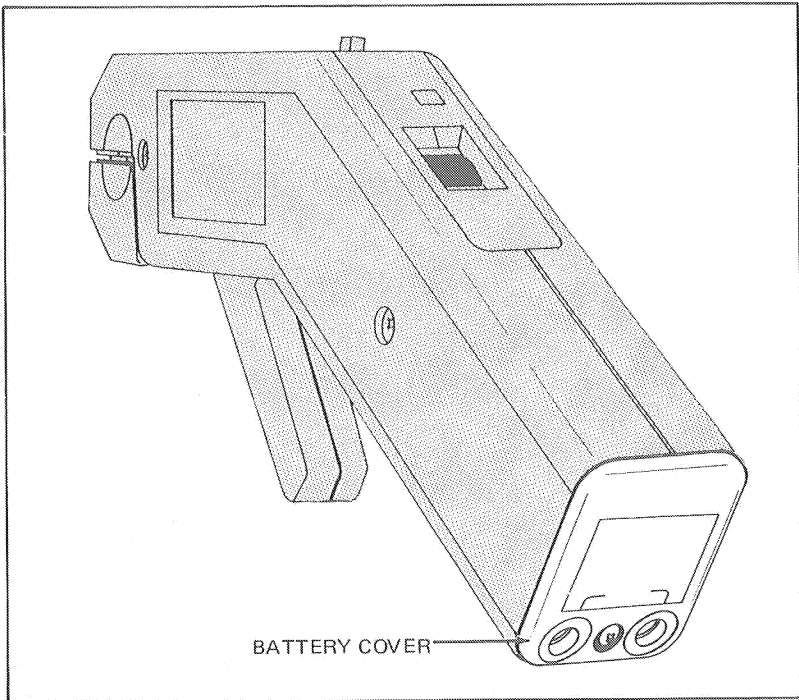


Figure 4-1. Battery Cover

4-6. CALIBRATION

4-7. Complete calibration of the Model Y8100 Current Probe is accomplished by adjusting four potentiometers. As illustrated in Figure 4-2, all four potentiometers are accessible through holes in the plastic case under the two decals.

4-8. EQUIPMENT REQUIRED

4-9. Table 4-1 lists the equipment required to perform the calibration adjustment procedures.

4-10. ADJUSTMENT PROCEDURES

4-11. The four adjustments are (1) ac response, (2) coarse dc zero, (3) 20 amp range calibration, and (4) 200 amp range calibration. Instructions for each adjustment ends with a limit that represents the specification listed in Table 1-1 of this manual for that measurement. It is suggested that all four measurements be checked for need of re-adjustment before removing one or both decals. These limits can also be used as an acceptance test on receiving the probe. See Figure 4-3 for calibration set ups.

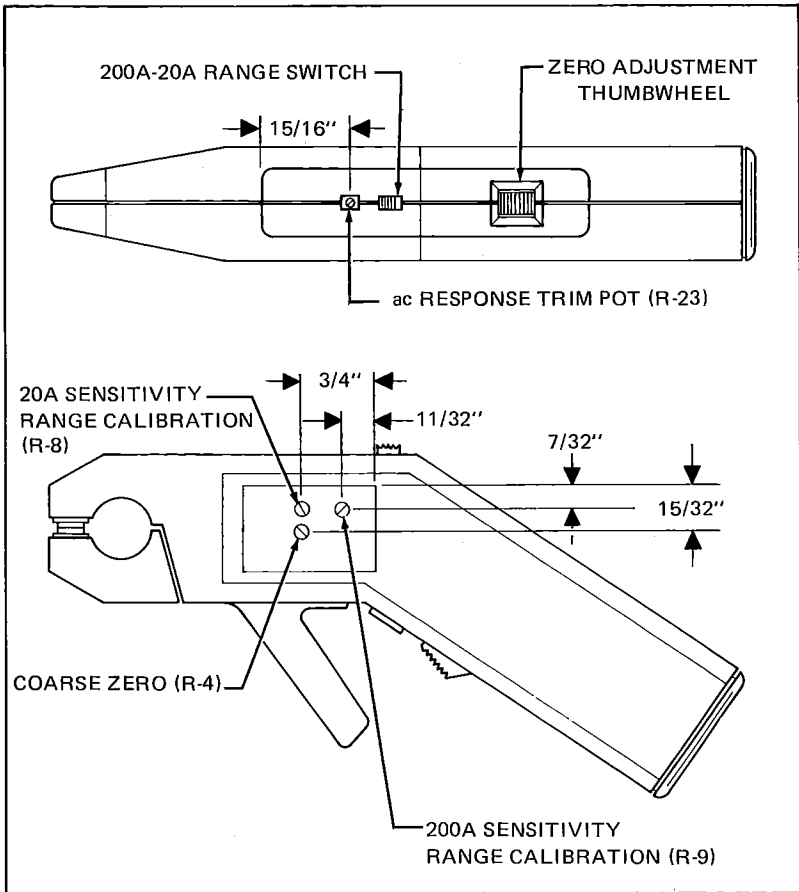


Figure 4-2. Trim Adjustments Locations

Table 4-1. Calibration Equipment

INSTRUMENT TYPE	RECOMMENDED	REQUIREMENT
AC-DC Current Calibrator	JF 5100A and JF 5220A	.3%, 2 amps to 20 amps dc, and 50 Hz to 1 kHz
Digital Multimeter	JF 8600A	.25% ac and dc volts
2 Wire Coils	1 and 10 turns no. 14 varnished	15 to 18 in. dia.

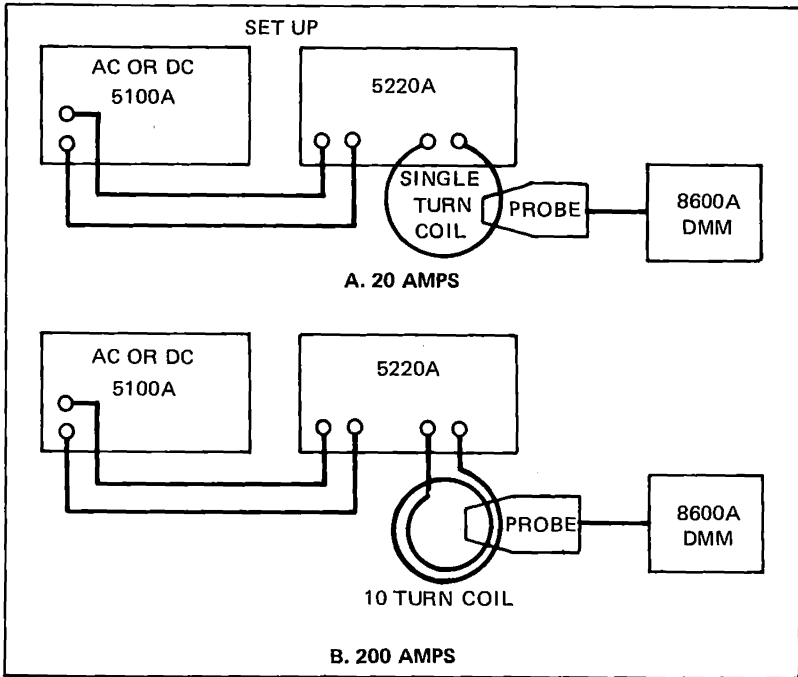


Figure 4-3. Calibration Set Ups

1. AC response adjustments.
 - a. Turn the Y8100 on and lock with the slide lock.
 - b. Set the range switch to the 200A position.
 - c. Clamp the Y8100 around the single turn coil (see Figure 4-3).
 - d. Set the ac current source at 50 Hz, for $0.200 \pm 0.001V$ reading on the DMM.
 - e. Change the source to 1 kHz without changing level adjustments.
 - f. Adjust the ac response trimming potentiometer for $0.196 \pm 0.001V$ on the DMM. (The specification is represented by a reading of $0.200 \pm 0.053V$).

NOTE

If a large change from the original factory setting of the trimming potentiometer has been necessary at 1 kHz, the adjustment sequence should be repeated.

2. Coarse dc zero adjustment.
 - a. Turn the Y8100 on and lock with the slide lock.

- b. Set the range switch to the 200A position.
- c. Connect the Y8100 output to the DMM and set to the 2V dc voltage range.
- d. Adjust the coarse dc zero trimming potentiometer until a numerically equal positive and negative dc voltage reading is obtained at each end-stop of the zero adjustment thumbwheel. If zero adjustment occurs well within the thumbwheel range, internal adjustment is not required.

NOTE

Typical current adjustment span of the zero adjustment thumbwheel is +5A to -5A (10A total), which will be +0.050V to -0.050V (0.100V total) on the DMM for the 200A range setting.

3. 20A range calibration adjustment.
 - a. Turn the Y8100 on and lock with the slide lock.
 - b. Set the Y8100 range switch to the 20A position.
 - c. Set the ac current source to 10A at 50 Hz.
 - d. Clamp the Y8100 around the one turn coil, as shown in Figure 4-3-A.
 - e. Connect the voltage output of the Y8100 to the DMM and set to the 2V ac range.
 - f. Adjust the 20A calibration trimming potentiometer for $1.000 \pm 0.001V$ ac reading on the DMM. (The specification is represented by a reading of $1.00 \pm 0.11V$).
4. 200A range calibration adjustment.
 - a. Turn the Y8100 on and lock with the slide lock.
 - b. Set the Y8100 range switch to the 200A position.
 - c. Set the ac current source to 18A at 50 Hz, this is the equivalent of 180A ac when clamped on the ten-turn coil.
 - d. Clamp the Y8100 around the ten-turn coil (see Figure 4-3-B).
 - e. Connect the voltage output of the Y8100 to the DMM and select the 2V ac range.
 - f. Adjust the 200A calibration trimming potentiometer for a $1.818 \pm 0.001V$ ac reading on the DMM. Adjustment is calibrated 1% high to ensure accuracy at all input levels. (The specification is represented by a reading of $1.800 \pm 0.067V$).
 - g. Cover adjustment opening with a new set of decals. These are included with your calibration kit or may be obtained from Fluke Corporation.

NOTE

The Y8100 should be zeroed and calibrated while being held as closely as possible to the same angle and orientation to avoid introducing a small incremental error due to the Earth's magnetic field.

4-12. DEMAGNETIZING CIRCUIT CHECK PROCEDURE

1. Set the dc current source to 0.0A (turn off).
2. Turn the Y8100 on and lock with the slide lock.
3. Clamp the Y8100 around the ten-turn coil (see Figure 4-3-B).
4. Connect the voltage output of the DMM and set to a low dc range.
5. Zero the voltage output of the Y8100 on the DMM.
6. Turn the dc current source on and adjust for approximately 10A.
7. Turn the current source off.
8. Notice a positive voltage offset in the Y8100 output to the DMM due to a small residual flux in the magnetic core.
9. Turn the Y8100 off and on. The offset should return to a zero reading $\pm 0.05V$.

4-13. TROUBLESHOOTING

4-14. Before referencing the following troubleshooting guide for the Y8100, check the obvious potential source of problems such as the ON/OFF switches, power source (batteries), and loose or incorrect connections on the Y8100 and peripheral equipment.

4-15. The following troubleshooting guide (Table 4-2) is keyed to the Y8100 schematic (Section 6) and presented by test and symptom with the related possible cause shown in the right-hand column of the chart.

CAUTION

If it is determined that the core, coil, or sensor is defective, return the probe to the Fluke Corporation for repair, either directly or through a Fluke Corporation Service Center. These parts are not field replaceable.

Table 4-2. Troubleshooting Guide

TEST AND SYMPTOM	POSSIBLE CAUSE
<p>1. Initial Procedure Low battery indicator is on when unit is turn on.</p>	Low batteries, Q2, Q3
<p>No output at output jacks and low battery indicator off.</p>	Dead batteries, CR1
<p>2. Output Tests (No Input Current) Cannot vary output with thumb zero knob.</p>	<p>1. No -V supply (-3.0 to -4.5V dc) IC2, CR2, CR3, C2, C3</p>
<p>DC output voltage continues to drift after unit is turned on.</p>	<p>2. No Hall generator control current. Check voltage across R17 = 0.35V dc $\pm 15\%$, if not check IC1, CE-1, Q1, *open HG-1 (should be 40Ω to 120Ω measured from red to black lead of HG-1)</p>
<p>Cannot zero output with thumb zero knob.</p>	Defective HG-1
<p>Output $> \pm 3.0V$ dc and cannot adjust with thumb zero knob or coarse zero.</p>	Coarse zero out at Cal, IC1, HG-1
<p>Excessive noise at output (should be < 3.0 mV ac on the 20A range).</p>	IC1, HG-1**
<p>3. Core Demagnetizing Test Turning unit on and off does not remove dc residual in the core (typical $< 0.2A$).</p>	IC1, HG-1**
<p>4. AC or DC Current Test Output reading out of tolerance on 20A range</p>	S2, S3, C1, L1
<p>Output reading out of tolerance on 200A range.</p>	R8 out of calibration (see Amplifier Gain Test).
	R9 out of calibration (see Amplifier Gain Test).

Table 4-2. Troubleshooting Guide (cont)

TEST AND SYMPTOM	POSSIBLE CAUSE
<p>5. Amplifier Gain Test With unit in proper calibration, positive to negative swing of thumb zero control is greater than 15V dc on the 20A or 200A range.</p>	<p>Excessive amplifier gain caused by:</p> <ul style="list-style-type: none"> a) poor core alignment at core closure area b) foreign material on surface of closure area c) Hall Generator not properly installed in core gap d) Improper Hall Generator Control Current (see control current check under Output tests)
<p>6. Frequency Test Output reading correct at 60 Hz, but out of tolerance at 1 kHz on the 200A range.</p> <p>*—If the Hall generator is open, shorting the Control Current leads (Point 3 and 4 at the printed circuit board) will cause the correct voltage reading across R17 ($0.35V \pm 15\%$).</p> <p>**—If the Hall generator is defective, shorting the Hall Voltage leads (Points 5 and 6 at the printed circuit board) will cause a zero output voltage to be obtainable by adjustment of the thumb or coarse zero controls. the noise level on the output will decrease to < 3.0 mV ac on the 10A range.</p>	<p>R23 out of calibration, L2 open</p>

Section 5

List of Replaceable Parts

5-1. INTRODUCTION

5-2. This section contains a illustrated list of replaceable parts for the Y8100. Parts are listed by assembly; alphabetized by reference designator. Each assembly is accompanied by an illustration showing the location of each part and its reference designator. The parts lists give the following information:

- Reference designator
- Description
- Fluke stock number
- Total quantity
- Any special notes (i.e., factory-selected part)

5-3. HOW TO OBTAIN PARTS

5-4. Electrical components may be ordered directly from the manufacturer by using the manufacturers part number, or from the Fluke Corporation and its authorized representatives by using the part number under the heading FLUKE STOCK NO. In the U.S., order directly from the Fluke Parts Dept. by calling 1-800-526-4731. Parts price information is available from the Fluke Corporation or its representative. Prices are also available in a Fluke Replacement parts Catalog which is available on request.

5-5. In the event that the part ordered has been replaced by a new or improved part, the replacement will be accompanied by an explanatory note and installation instructions, if necessary.

5-6. To ensure prompt delivery of the correct part, include the following information when you place an order:

- Instrument model and serial number
- Part number and revision level of the pca containing the part.
- Reference designator
- Fluke stock number
- Description (as given under the DESCRIPTION heading)
- Quantity

5-7. SERVICE CENTERS

5-8. A list of service centers is located at the end of this section.

Table 5-1. Final Assembly

REFERENCE DISIGNATORS	DESCRIPTION	FLUKE STOCK NO.	TOT QTY	NOTES
A1	MAIN & POWER PCB ASSEMBLIES	529081	1	
B1-4	BATTERY, 1.5V, 0-150MA, AA ALKALINE	376576	4	
H1	SCREW, 3-24 X .313	542514	1	
H2	SCREW, 4-24 X .313	542522	1	
H3	SCREW, 4-40 X .75	542530	1	
H4	SCREW, 4-20 X .75	542548	1	
H5	HING PIN	542555	1	
H6	SCREW, 6-19 X .875	542563	1	
H7	SCREW, 6-19 X 1.0	542571	1	
H8	NUT, 4-40 X .25	542589	1	
H9	WASHER, FIBER	542597	1	
J1	CONNECTOR, BANANA, RED (NOT SHOWN)	542423	1	
J2	CONNECTOR, BANANA, BLACK (NOT SHOWN)	542431	1	
MP1	DECAL, TOP (FUNCTION)	534511	1	1
MP2	DECAL, SIDE (LOAD/MODEL)	534503	1	2
MP3	DECAL, BACK COVER	534529	1	
MP4	BUTTON, SWITCH (TO S2, S3)	542472	1	
MP5	BUTTON, TRIGGER LOCK	542480	1	
MP6	COVER, BACK/REAR	542498	1	
MP7	KNOB, POT (TO R3)	542506	1	
MP8	SPRING SWITCH	542605	1	
MP9	SPRINT TRIGGER	542613	1	
MP10	HOLDER, BATTERY	542464	1	
MP11	OUTPUT CABLE	543900	1	
NOTES				
1. The Function Label must be replaced if the unit is opened.				
2. The Load/Model Label must be taken off and replaced when the unit is calibrated.				

Table 5-2. A1, PCB Assembly

REFERENCE DISIGNATORS	DESCRIPTION	FLUKE STOCK NO.	TOT QTY	NOTES
C1, 2, 3	CAP, ELECT. 22 UF, 16V	_____	3	
C4	CAP, CER, 270 PF	542373	1	
C5	CAP,CER,0.1UF,+20%,50V,Z5U	597575	1	
CR1, 2, 3	DIODE, GERMANIUM	149187	3	
CR4	DIODE, LIGHT EMITTING (LED)	542407	1	
HG1	CORE ASSEMBLY			1
Q1	TRANSISTOR,SI,PNP,SMALL SIGNAL	215897	1	
Q2, Q3	TRANSISTOR	542399	2	
R1	RES,MF,909,+1%,0.125W,100PPM	312629	1	
R2	RES,MF,59K,+1%,0.125W,100PPM	261677	1	
R3	RES,PANEL MTG (POT) 200	542332	1	
R4	RES,CER (POT) 5K, COARSE ZERO	542357	1	
R5	RES,MF,54.9K,+1%,0.125W,100PPM	271353	1	
R6, 7	RES,MF,49.9K,+1%,0.125W,100PPM	268821	2	
R8	RES,CER (POT) 2K SENSITIVITY RANGE CAL	_____	1	
R9	RES,CER (POT) 20K, SENSITIVITY RANGE	_____	1	
R10, R11	RES,MF,24.9K,+1%,0.125W,100PPM	291369	2	
R12, R13	RES,MF,100K,+1%,0.125w,100PPM	248807	2	
R14	RES,CC,2.4K,+5%,0.25W	193433	1	
R15	RES,MF,1.3K,+1%,0.125W,100PPM	343921	1	
R16	RES,CC,150K,+5%,0.25W	182212	1	
R17	RES,MTL,FILM 210 +1%,0.125W,100PPM	327999	1	
R18	RES,CC,1M,+5%,0.25W	182204	1	
R19	RES,CC,510K,+5%,0.25W	275685	1	
R20	RES,MF,1.58K,+1%,0.125W,100PPM	344341	1	
R21	RES,MF,9.53K,+1%,125W,100PPM	288563	1	
R22	RES,CC,20K,+5%,0.25W	221614	1	
R23	RES,CER (POT) 100 +10% AC RESPONSE	542324	1	
R24	RES,CC,1.6K,+5%,0.25W	266197	1	
R25	RES,MF,1K,+1%,0.125W,100PPM	168229	1	
R26	RES,MF,13.7K,+1%,0.125W,100PPM	236752	1	
S1	SWITCH,SLIDE,DPDT,RANGE	542449	1	
S2, 3	SWITCH,SNAP ACTION,ZERO ADJUST	542456	2	
U1	IC,OP AMP,QUAD,14 PIN DIP	402669	1	
U2	IC,CMOS,HEX INVERTER	404681	1	
VR1	IC,LOW VOLTAGE REF	720698	1	
NOTES				
1. If the Core, Coil, or Hall Generator is damaged or fails, return to the factory or authorized service center. These are not field replaceable parts. (Illustrated in Section 6)				

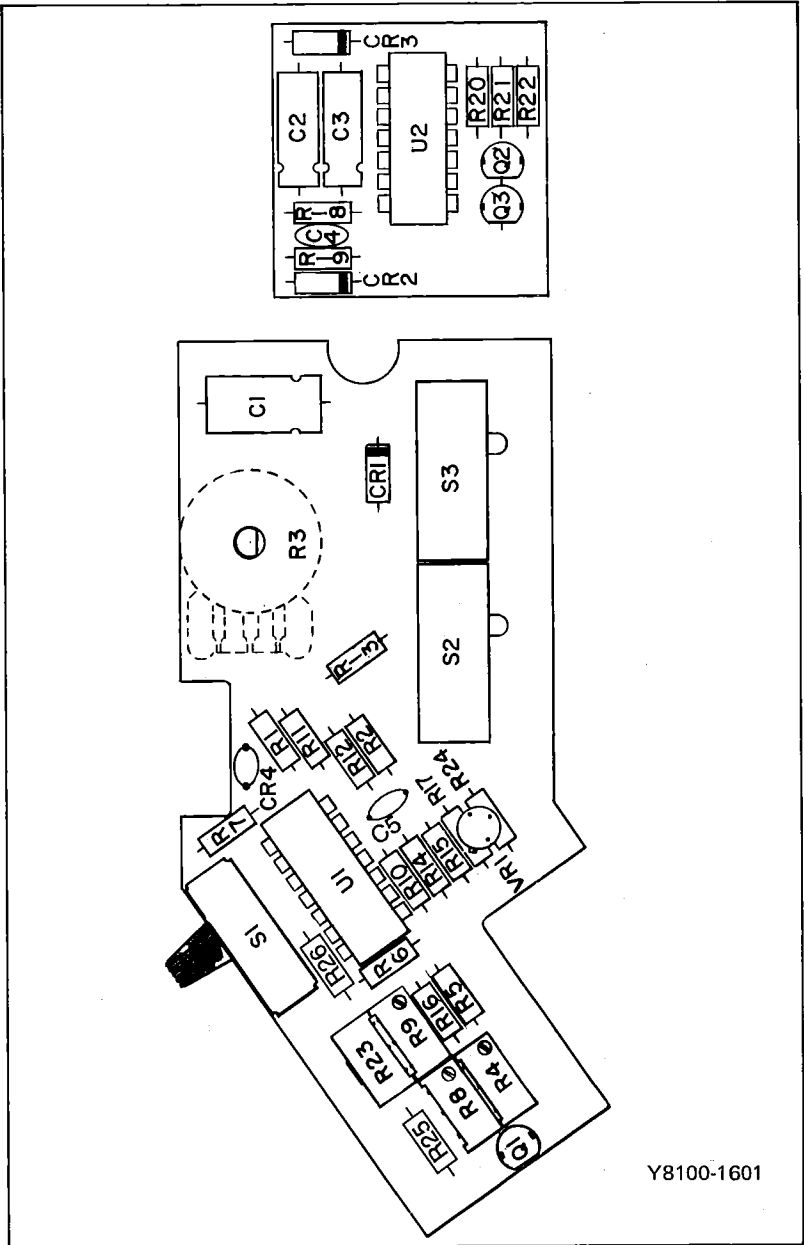


Figure 5-1. A1,PCB Assembly

SERVICE CENTERS

USA

California

Fluke Service Center
Fremont, CA 94538
TEL: (510) 651-5112
FAX: (510) 651-4962

Fluke Service Center
Irvine, CA 92714
TEL: (714) 863-9031
FAX: (714) 757-7556

Florida

Fluke Service Center
TEL: (407) 331-2929
FAX: (407) 331-3366
or 331-7710

Illinois

Fluke Service Center
TEL: (708) 705-0500
FAX: (708) 705-9989

New Jersey

Fluke Service Center
TEL: (201) 599-9500
(599-0919)
FAX: (201) 599-2093

Texas

Fluke Service Center
TEL: (214) 406-1000
FAX: (214) 406-1072

Washington

Fluke Service Center
Fluke Corporation
TEL: (206) 356-5560
FAX: (206) 356-6390

INTERNATIONAL

Argentina

Coasin S.A.
TEL: 54-1-552-5248
FAX: 54-1-11-1427

Viditec S.A

TEL: 54-1-636-1199
FAX: 54-1-636-2185

Australia

Phillips Customer
Support
Scientific and
Industrial
TEL: 61-3-881-3666
FAX: 61-3-881-3636

Phillips Customer

Support
Scientific and
Industrial
TEL: 61-2-888-0416
FAX: 61-2-888-0440

Austria

Fluke Vertriebsges.
m.b.H.
TEL: 43-1-614-100
FAX: 43-1-61410-10

Belgium

N.V. Fluke
Belgium/S.A.
TEL: 218-2-331-2777
FAX: 32-2-331-1489

Bolivia

Coasin Bolivia S.R.L.
TEL: 591-2-340962
FAX: 591-2-359268

Canada

Fluke Electronics
Canada Inc.
TEL: 905-890-7600
FAX: 905-890-6866

Chile

Intronica
Instrumentacion
Electronica, S.A.C.I.
TEL: 56-2-232-3888
FAX: 56-2-231-6700

China

Fluke Service Center
TEL: 86-1-512-3435
or 6351
FAX: 86-1-512-3437

Colombia

Systemas E
Instrumentacion,
Ltda.
TEL: 57-1-287-5424
FAX: 57-1-287-248

Costa Rica

Electronic
Engineering, S.A.
TEL: 506-253-3759
FAX: 506-225-1286

Danmark

Fluke Danmark A/S
TEL: 45-43-44-1900
FAX: 45-43-43-9192

Ecuador

Proteco Coasin Cia.,
Ltda.
TEL: 593-2-230283
or 520005
FAX: 593-2-561980

Fiji

Communications
Pacific, Ltd.
TEL: 679 312744
FAX: 679 300379

Finland

Fluke Finland Oy
TEL: 358-0-5026-
6247
FAX: 358-0-5026-414

France

Fluke France S.A.
TEL: 33-1-48-966361
FAX: 33-1-48-966330

Germany

Fluke Deutschland
GmbH
TEL: 49-89-99611-
260
FAX: 49-89-99611-
270

Fluke Deutschland

TEL: 49-40-6797-434
FAX: 49-40-6797-421

Hong Kong

Schmidt & Co (H.K.)
Ltd.
TEL: 852-9223-5623
FAX: 852 834-1848

Ireland, Republic of

Fluke U.K. LTD.
TEL: 44-923-240511
FAX: 44-923-225067

India

Hinditron Services
Pvt. Inc.
TEL: 91-80-334-8266
FAX: 91-80-3345022

Hinditron Services

Pvt. Ltd
TEL: 91-22-837-0013
FAX: 91-22-837-0087

Hindtron Services

Pvt. Ltd.
TEL: 91-11-641-0380
FAX: 91-11-642-9118

Hinditron Services

Pvt. Ltd.
TEL: 91 842-844033

Indonesia

P. T. Daeng Brothers
TEL: 62-21-520-1122
FAX: 62-21-520-5189

Isarel

R.D.T Equipment and
Systems, Ltd.
TEL: 972-3-645-0745
FAX: 972-3-647-8908

Italy

Fluke Italia S.R.L.
TEL: 39-2-268434-
435
FAX: 39-2-250-1645

SERVICE CENTERS (CONT)

Japan

Fluke Corporation
 TEL: 81-3-3434-0188
 FAX: 81-3-3434-0170

Korea

B&P International
 Co., Ltd.
 TEL: 82 02 546-1457
 FAX: 82 02 546-1458

IL MYOUNG, INC.

TEL: 82 2 552-8582-4
 FAX: 82 2 553-0388

Malaysia

CNN. SDN. BHD.
 TEL: 60-4-657-9584
 FAX: 60-4-657-0835

Mexico

Mexel Mexicana De
 Electronica
 TEL: 52-5-682-8040
 FAX: 52-5-687-8695

Mexicana De Electronica

TEL: 52-16-23-02-35
 FAX: 52-16-23-02-35

Netherlands

Fluke Europe B.V.
 TEL: 31-40-644-226
 FAX: 31-40-644-260

Fluke Netherland B.V.

Technische Service
 Prof. Act.
 TEL: 31-40-722-626
 FAX: 31-40-723-337

New Zealand

Phillips Customer
 Support
 Scientific & Industrial
 TEL: 64-9-894-4160
 FAX: 64-9-849-7814

Norway

Fluke Norway A/S
 TEL: 47-22-653400
 FAX: 47-22-653407

Pakistan (Philips)

Philips Electrical
 Industries of
 Pakistan, Ltd.

Peru

Importaciones &
 Representaciones
 Electronicas S.A.
 TEL: 51-14-23-5099
 FAX: 51-14-31-0707

Philippines

Spark Electronics
 Corp.
 TEL: 63-2-700-621
 FAX: 63-2-721-0491

Portugal

Fluke Iberica, S.L.
 TEL: 351-1-795-1712
 FAX: 351-1-795-1713

Singapore

Fluke Corporation
 TEL: 65-276-5161
 FAX: 65-276-5759

South Africa

Spescom
 Measuregraph (PTY)
 Ltd.
 TEL: 27-11-315-0757
 FAX: 27-11-805-1192

Spain

Fluke Iberica S.L.
 TEL: 34-1-804-2301
 FAX: 34-1-804-2496

Sweden

Fluke Sverige AB
 TEL: 46-8-751-0235
 FAX: 46-8-751-0480

Switzerland

Fluke Switzerland
 AG
 TEL: 41-1-730-3310
 FAX: 41-1-730-3932

Taiwan

Schmidt Electronics
 Corp.
 TEL: 886-2-501-3468
 FAX: 886-2-502-9692

Thailand

Measuretronix Ltd.
 TEL: 66-2-375-2733,
 375-2734
 FAX: 66-2-374-9965

United Kingdom

Fluke U.K. LTD.
 TEL: 44-923-240511
 FAX: 44-923-225067

Uruguay

Coasin Uruguayaya
 S.A.
 TEL: 598-2-789-015
 FAX: 598-2-492-199

Venezuela

Coasin C.A.
 TEL: 58-2-241-0309,
 241-1248
 FAX: 58-2-241-1939

Vietnam

Schmidt-Vietnam
 Co., Ltd.
 TEL: 84-4-346186
 FAX: 84-4-346188

Section 6
Schematic Diagrams

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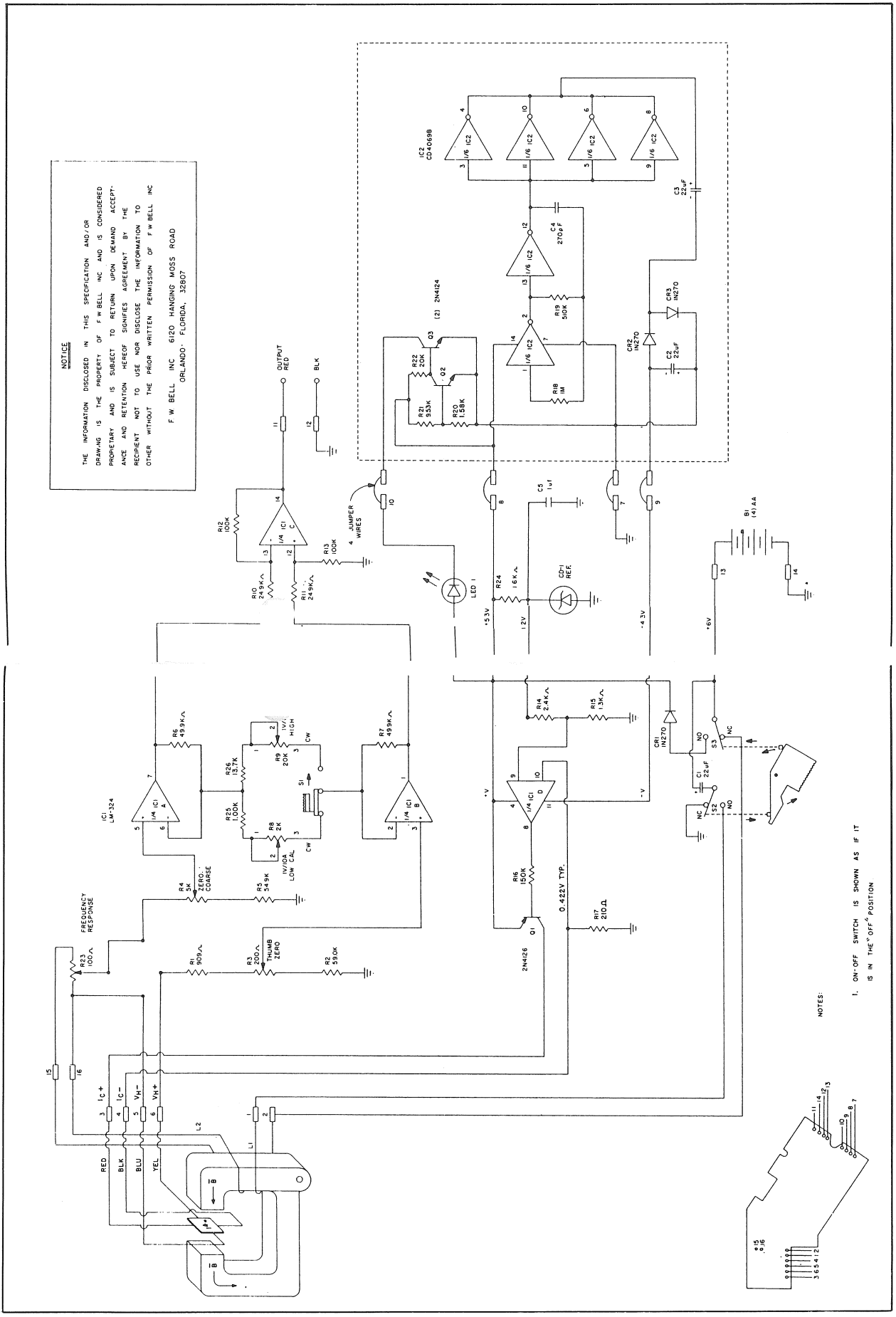


Figure 6-1. Y8100 Schematic