

# FOS

## **Fiber Optic Source**

### *Service Information Sheet*

#### **Introduction**

This *Service Information* provides the following service information for the FOS 850, FOS 1300, and FOS 850/1300 Fiber Optic Sources (hereafter referred to as the FOS).

- Parts and warranty service information
- Specifications
- Cleaning procedures
- Required equipment
- Performance tests
- Procedures for disassembling and reassembling the FOS
- Calibration adjustments
- Parts and accessories lists
- Diagrams showing calibration adjustment points
- Schematics

For operating instructions, refer to the *Fiber Optic Source Instruction Sheet*.

#### **Parts and Warranty Service**

The FOS is warranted to be free from defects in material and workmanship for one year, while under normal use. Parts and repairs are warranted for 90 days.

Refer to the *Instruction Sheet* for the complete warranty statement.

To order parts, receive operating assistance, or get the location of the nearest Fluke distributor or Service Center, call:

U.S.A.: 1-888-993-5853

Canada: 1-800-363-5853

Europe: +31-402-675-200

Japan: +81-3-3434-0181

Singapore: +65-738-5655

Anywhere in the world: +1-425-446-4519

For operating assistance in the USA, call 1-800-283-5853.

Visit the Fluke Networks web site at **[www.flukenetworks.com](http://www.flukenetworks.com)**.

#### **Precautions and Safety Information**



The FOS is rated as a class 1 LED source per IEC 825.



**To avoid injury, do not service the FOS unless you are qualified to do so.**



**While servicing the FOS, always follow guidelines for preventing electrostatic discharge (ESD). Otherwise, ESD can damage sensitive components, causing immediate or delayed failure of the FOS.**

## Specifications

Accuracy is specified for a period of one year after calibration, at 18 °C to 28 °C (64 °F to 82 °F) with relative humidity to 75%. Specifications are shown in Table 1.

**Table 1. Specifications**

<b>Type</b>	Infrared LED
<b>Wavelength</b>	850 nm $\pm$ 30 nm 1300 nm -40/+50 nm 850/1300 nm $\pm$ 30 nm, -40/+50 nm
<b>Output Power</b>	-20 dBm, nominal into 62.5/125 micron multimode fiber
<b>Output Connector Type</b>	Fixed ST
<b>Beam Divergence</b>	0.3 radians
<b>Pulse Duration</b>	Continuous wave
<b>Maximum Output</b>	200 $\mu$ W (radiated into free space)
<b>Stability</b>	$\pm$ 0.2 dB per 8 hours at 20 °C after 20 minute warmup
<b>Temperature Coefficient</b>	-0.08 dB per °C, < 18 °C or > 20 °C
<b>Battery Type</b>	9 V alkaline, NEDA 1604A or IEC 6LR61
<b>Battery Life</b>	16 hours minimum, 24 hours typical, 9 V alkaline
<b>Low Battery Indication</b>	Blinking LED indicator
<b>Operating Temperature</b>	0 °C to +40 °C
<b>Storage Temperature</b>	-20 °C to +70 °C
<b>Humidity</b>	0 °C to 40 °C up to 75% RH

## Low Battery Detection

A steady, green LED on the FOS indicates a good battery. A blinking LED indicates a low battery that needs to be replaced.

## Cleaning the Optical Connector

Most problems with optical light sources result from contaminated connectors. Therefore, always clean the connector before troubleshooting or calibration.

To clean the FOS ST connector, wipe the internal portion gently with an optical-grade swab dampened with optical-grade alcohol. To remove loose dirt and dust from the connector, use filtered, compressed air.

Always cover the connector with a dust cap when the unit is not in use.

## Required Equipment

The following equipment is required for servicing the FOS:

- Calibrated Fiber Optic Reference Power Meter
- One ST/ST multimode fiber optic patch cable

## Performance Tests

Use the performance tests to confirm that the FOS is working properly. If the FOS fails any of these tests, clean the fiber connectors, verify that the connections are solid, then retest the FOS. If the FOS still fails a test, it needs calibration adjustments or repair.

1. Connect the FOS to the calibrated reference power meter with a patch cable.
2. Turn the FOS on to the wavelength being tested and let it stabilize for 20 minutes.
3. Turn the reference power meter on and set the input to the wavelength being tested.
4. Verify that the FOS output is -20 dBm  $\pm$ 0.5 dBm
5. For a dual source, repeat steps 1 through 4 for each wavelength.

## Disassembling and Reassembling the FOS

To perform calibration adjustments on the FOS, you must disassemble it. When you finish the adjustments, reassemble it. A Phillips-head screwdriver is required for disassembling and reassembling the FOS. To disassemble the FOS, proceed as follows:

1. Set the FOS switch to **OFF**.

2. Remove the battery door; then disconnect the battery.
3. Remove the two Phillips screws found under the battery door; then separate the top and bottom cases.
4. To remove the PCA, remove the Phillips screw near S1/SW1; then lift out the PCA.

To reassemble the FOS, proceed as follows:

1. Reinsert the PCA; then replace the screw that holds the PCA.
2. Tuck the battery wires into the notch at the side of the battery compartment.
3. Tuck the battery wires down against the PCA so they will not interfere with S1/SW1.
4. Set S1/SW1 to the **OFF** position.
5. Set the slide switch on the top case to the **OFF** position. Place the lanyard into the notch in the bottom case.
6. Put the top and bottom cases together; then replace the two screws under the battery door.

### **Calibration Adjustments for Serial Numbers < 79370000 or with an "N" Prefix**

Refer to the FOS drawing (Figure 1) for the locations of components.

1. Connect the FOS to the reference power meter with a patch cable. Turn the FOS on and let it stabilize for 20 minutes.
2. Turn the FOM on and set it to the desired wavelength.
3. For 850 nm calibration, adjust R21 until the output on the reference power meter reads  $-20 \text{ dBm} \pm 0.5 \text{ dBm}$ . For 1300 nm calibration, adjust R20 until the output on the reference power meter reads  $-20 \text{ dBm} \pm 0.5 \text{ dBm}$ .
4. Follow the procedures given in the earlier section "Performance Tests".
5. Apply insulating varnish, such as red GLPT, to each potentiometer adjusted.
6. Reassemble the FOS as described in the earlier section "Disassembling and Reassembling the FOS".

### **Calibration Adjustments for Serial Numbers $\geq 79370000$**

Refer to the FOS drawing (Figure 3) for the locations of components.

1. Connect the FOS to the reference power meter with a patch cable. Turn the FOS on and let it stabilize for 20 minutes.
2. Turn the reference power meter on and set the input it to the desired wavelength.
3. For 850 nm calibration, adjust R10 until the output on the reference power meter reads  $-20 \pm 0.5 \text{ dBm}$ . For 1300 nm calibration, adjust R9 until the output on the DMM reads  $-20 \pm 0.5 \text{ dBm}$ .
4. Follow the procedures given in the earlier section "Performance Tests".
5. Apply insulating varnish, such as red GLPT, to each potentiometer adjusted.
6. Reassemble the FOS as described in the earlier section "Disassembling and Reassembling the FOS".

### **Parts and Accessories**

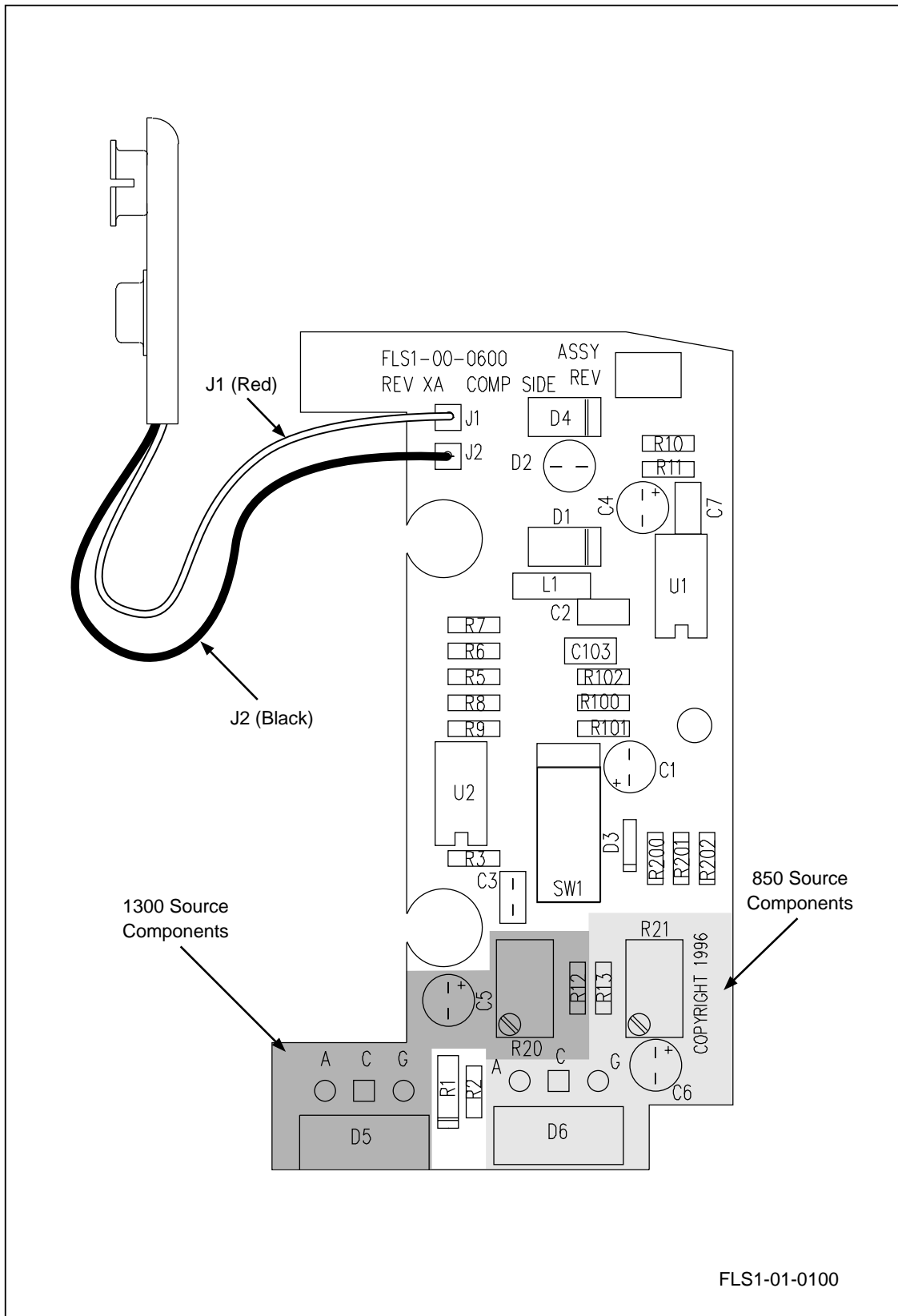
Tables 2 and 3 list replacement parts and accessories available from Fluke for the FOS.

**Table 2. Fluke Replacement Parts for the FOS**

Description	Fluke Part Number
FOS-850/1300 Plastic Case Assembly	617412
Battery Door	200474
Slide Switch Actuator	200482
850 LED	602755
1300 LED	602760

**Table 3. Accessories for the FOM and FOS**

Description	Fluke Part Number
ST to ST Multimode Patch Cable, 1m	617453
ST to ST Adapter	602810
ST to FC Patch Cable	617487
ST to SC Patch Cable	617511
ST to SMA Patch Cable	617545



**Figure 1. FOS Calibration Adjustment Points for SN < 79370000 or with an "N" Prefix**

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eq1f.eps

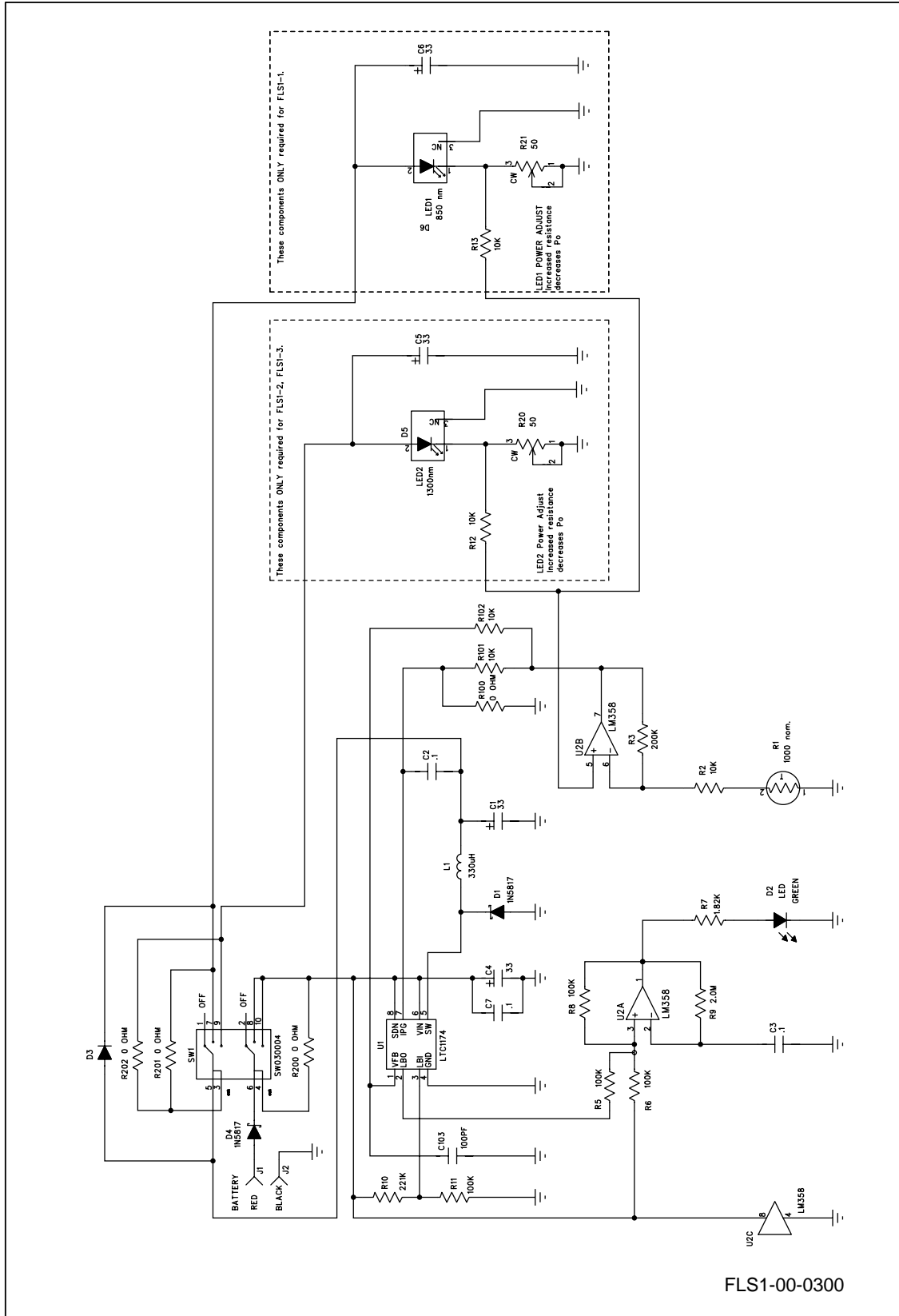
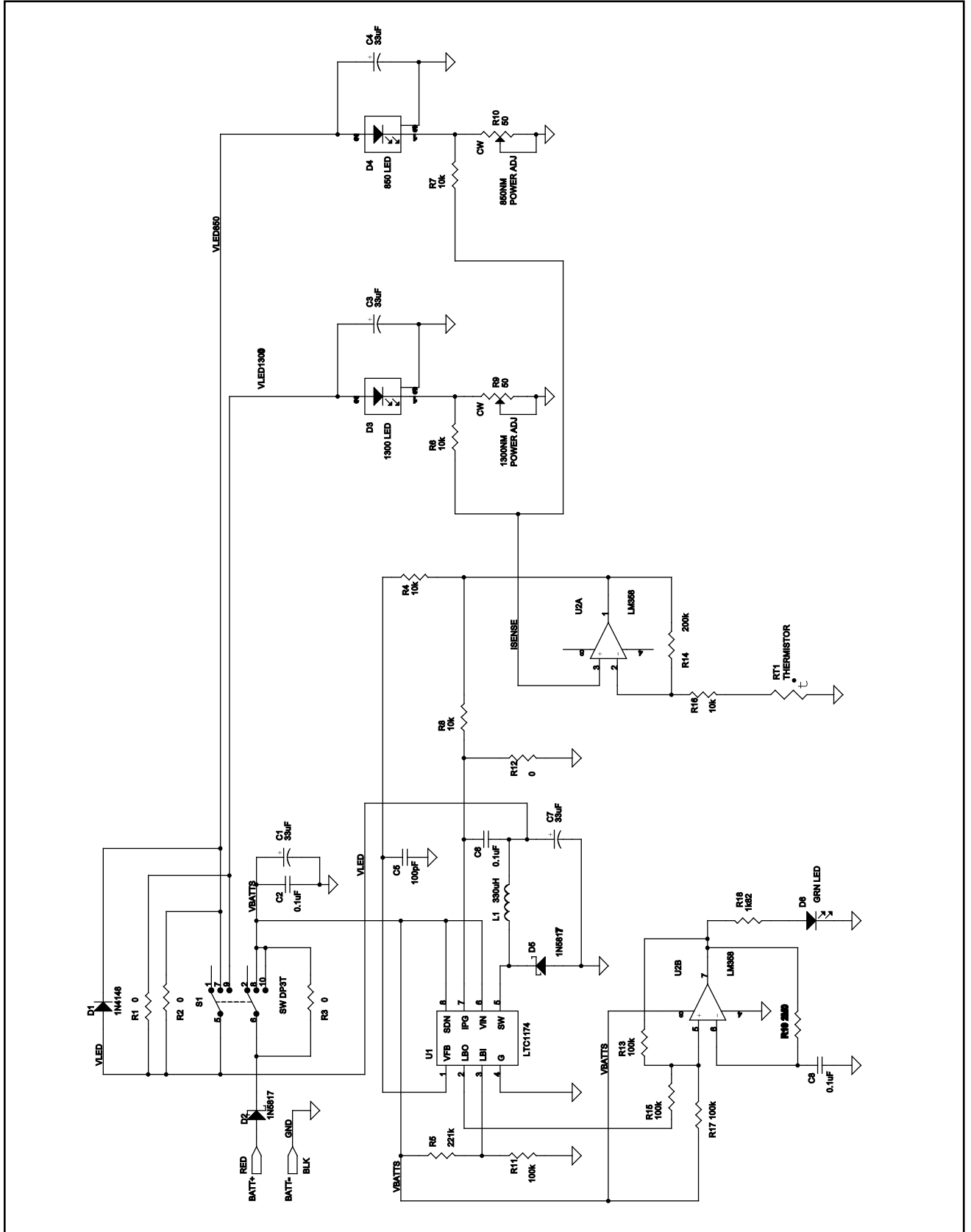


Figure 3. Fiber Optic Source Schematic for SN < 79370000 or with an "N" Prefix

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**Figure 4. Fiber Optic Source Schematic for  $SN \geq 79370000$**

