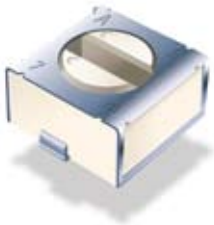


# APPLICATION NOTE

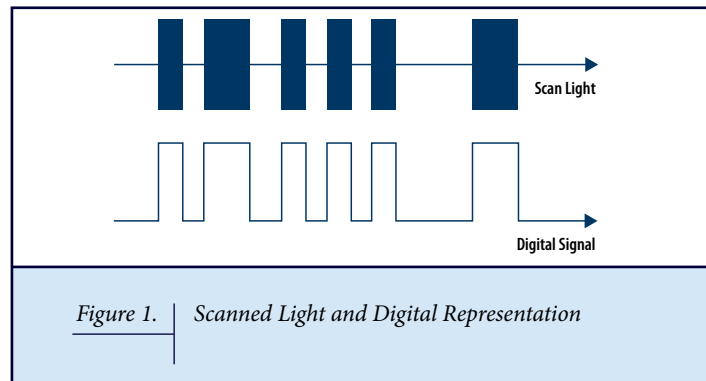
3312

Barcode Scanner

Bourns® Model 3312 trimmer. A better choice.



Barcode scanners scan across a bar code and measure the intensity of the reflected light. The light variation is converted into a digital signal.



A barcode scanner contains two basic sections. The first section is a scanner that converts the image into a digital representation. The second section is a decoder, which combines the binary digital signals into a series of characters. The decoded information is sent to the computer via keyboard or serial interface.

## Input Device

An input device accepts the reflected light and converts the optical reflection into digital/analog signals. There are two major methods used for input; laser beam and CCD (charge-coupled device). CCD scanners can be very small, but they have less depth of field than laser scanners.

## Decoders

A decoder interprets the symbolic information and passes it to a host computer or stores the information in memory. A decoder accepts the digital signal from the input device and converts it to bars and spaces. Then it quantifies the element width and decodes the signal. Finally, it performs character checks. After the decoding process is complete, it transmits the data to a host computer. Decoders can be divided into two categories: on-line decoders and portable decoders. The on-line decoder uses the power from an AC adapter or a computer and the latter uses a battery.

## Trimmers

Trimmers are located in the laser diode driver and are used to bias and adjust the feedback of the amplifier. Figure 2 shows a simple barcode scanner block diagram.

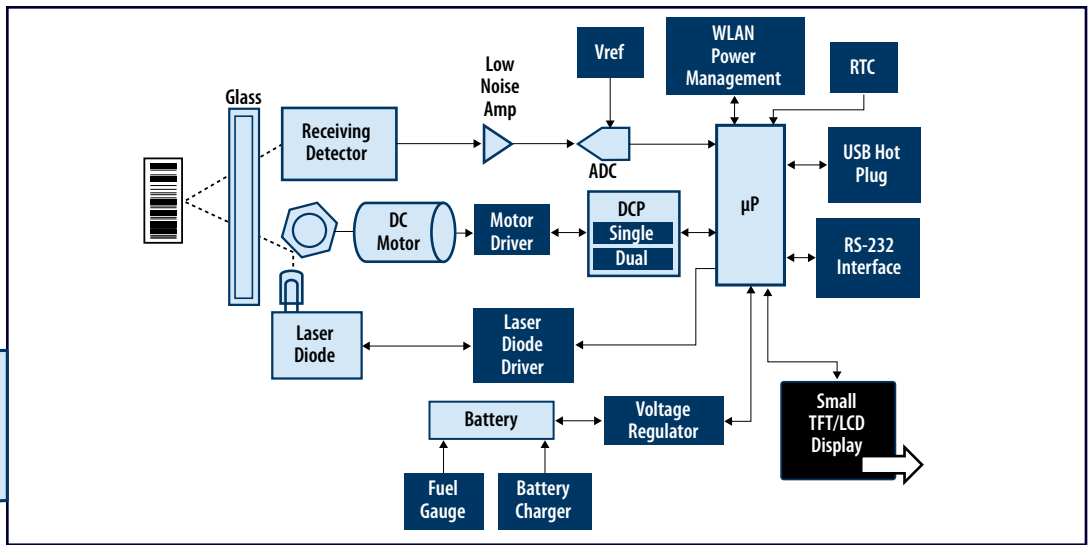
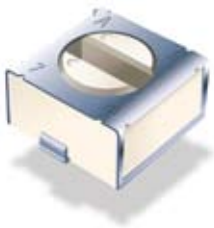


Figure 2. Barcode Scanner Block Diagram

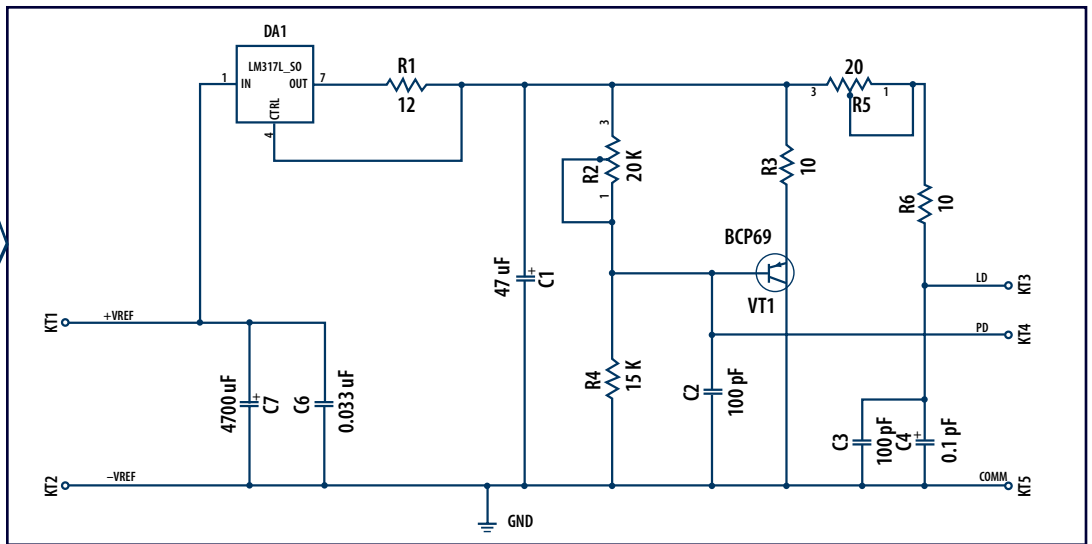


Figure 3. Laser Diode Driver Schematic

**3312****Barcode Scanner***Bourns® Model 3312 trimmer. A better choice.*

**B**ourns® Trimpot® product line recently released Model 3312, a 2 mm sealed single-turn trimming potentiometer. Model 3312 is well suited for space restricted high reliability applications. The sealed feature gives Model 3312 better electrical parameters when compared to its open-frame counterparts. Model 3312 is currently the only trimmer available in 10, 20 and 50 ohm total resistance values for applications requiring small resistance corrections.

For more information on the 3312 and other resistive products from Bourns, please visit

[www.bourns.com](http://www.bourns.com)

**SPECIFICATIONS****Electrical Characteristics**

Standard Resistance Range	10 $\Omega$ to 2 M $\Omega$
Resistance Tolerance	$\pm 20$ % std.
Adjustability	
Voltage Divider	$\pm 0.2$ %
Rheostat	$\pm 0.4$ %
Resolution	Essentially Infinite
Adjustment Angle	240° nom.

**Environmental Characteristics**

Power Rating (50 volts max.)	
70 °C	0.1 watt
125 °C	0 watt
Operating Temperature Range	-55 °C to +125 °C
Temperature Coefficient	$\leq 100 \Omega \pm 150$ PPM/°C; $> 100 \Omega \pm 100$ PPM/°C
Vibration	20 G TRS $\pm 1$ %; VRS $\pm 1$ %
Shock	100 G TRS $\pm 1$ %; VRS $\pm 1$ %
Rotational Life	25 cycles TRS $\pm 3$ %

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