Multi-purpose Bargraph Display Meter

The BM Bargraph Meter is a 10-segment LED display meter for quick visual indication of voltage inputs or signal levels. Its small size, integrated, multi-function design makes it very useful as multi-purpose indicators. It is compatible with the LM391x series of bargraph display drivers for linear or VU meter applications. The adjustable display scale range can be used for expanded scale voltmeters or signal displays.

### Features:

- BAR or DOT mode selection
- Adjustable brightness control
- Use with LM3914/5/6
- Constant current LED display
- Adjustable input display scale range
- Easy-to-use integrated design

### Benefits:

- Small size for tight installations
- Easy-to-use and setup
- Quick visual indication of signal
- Simple, integrated module

### Applications:

- Small and economical
- Voltmeter, current meter
- Signal, VU level meter
- Expanded scale meter
- Audio spectrum display

### Technical Specifications:

- Typical LM3914/5/6 module.
  - Operating voltage: 4.5-15V DC, up to 30V with optional LM7808/12 regulator.
  - Dimension: 1.77"x1.2" (45x30.5mm).
  - PCB: 1/16" FR4, ROHS, HASL, double-sided, plated holes,
  - Input signal range (nominal): 0.0-1.25V, VR divider adjustable, 0.0-0.13V W/op-amp
  - Internal reference voltage: 1.25V
  - Operating temperature: -15°C to +45°C
  - Standby current (LEDs off): 8mA
  - Input current into signal pin: <0.07mA (approx. 70K Ohms resistance)
  - Maximum current (BAR mode): 120mA
  - Maximum current (DOT mode): 20mA, current limited.
  - Minimum full scale input voltage: 1.25V
  - Minimum input differential voltage: 0.5V, R set adjustable.
  - Accuracy: +/- 1 Segment (LED) at 100mV differential per segment
  - Accuracy drift (+45°C): + 1 segment (LED) at 100mV differential per segment

**Note:** Do not use in wet or damp locations. Do not exceed the specifications of the unit. The unit should be mounted away from sunlight for easier viewing of the display. See BM Bargraph Meter schematic and LM3914, LM3915 or LM3916 data sheets for more technical information.
Control Adjustments

INPUT ADJUST  Adjusts the maximum input level (10th LED).
LOW ADJUST    Adjusts the minimum start level (first LED).
BRIGHTNESS    Sets the minimum brightness level of the display.
INPUT         Input power and signal connections.

Setup

The internal circuit high input reference voltage (full scale, pin 6/7) is fixed at approximately 1.25 volts. Only the low reference voltage (first LED) needs be adjusted (LOW ADJ). The minimum input voltage to display a full-scale reading is 1.25V. The minimum differential input voltage is 0.5V. Adjust R2 for different input differentials.

Set VR1 to center and VR2 to CW (right side). Apply power and calibration input signal. Adjust VR1 until the meter displays full scale (10th LED). If the minimum display scale is not 0V, apply minimum signal for 1st or no LED display. Adjust VR2 for 1st or no LED display. Test display with varying input signal. Fine adjustment on VR1/2 maybe required for accurate 1st or 10th LED display.

All components are available from Digi-Key (digi-key.com) All resistors are 1/8W. VRs are Bourns 3362P series for top adjust or 3362S for side adjust.

For Cascading Bargraph Meters:
1. High ref. of low bargraph (1st) must be connected to low ref. of 2nd bargraph.
2. Both signal inputs must be connected together only 1 adjustment VR1 is required.
3. Lower bargraph (1st display module) setup. Cut signal trace at pin #6 to pin #7 (location B). Solder jumper wire location B (1st module) to location A (2nd module).

A light dependent resistor (PDV-P9203-ND or similar) can be added and connected parallel to VR3 for automatic brightness control.