Fluke 8050A Multimeter - Add Continuity Tone and TM1637 LED Display
Connections

The 328P and 8050A ICs use GND as their +5 VCC and -5 as their GND

328P IC		8050A IC		other board connects
1	RST	NC		connects to 8050A IC 40 VCC(gnd) through 10k resistor
2	D0	6	Fb (volt)	
3	D1	19	Fc (mA)	
4	D2	37	Z	
5	D3	36	Y	
6	D4	35	X	
7	VCC	40	VCC (gnd)	also connects to LED VCC
8	GND	20	GND (-5)	also connects to LED GND and passive buzzer
9	XTAL	NC		connects to GND through 20pf cap
10	XTAL	NC		connects to GND through 20pf cap
11	D5	34	W	
12	D6	23	HV	
13	D7	22	DP	
14	D8	3	RNGa	
15	D9	4	RNGb	
16	D10	5	RNGc	
17	D11	NC		connects to passive buzzer through 100 ohm resistor
18	D12	NC		connects to LED CLK
19	D13	NC		connects to LED DIO
20	VCC	40	VCC (gnd)	
21	AREF	NC		
22	GND	20	GND (-5)	
23	A0	15	ST0	
24	A1	14	ST1	
25	A2	13	ST2	
26	A3	12	ST3	
27	A4	11	ST4	
28	A5	NC		connects to LF347 pin 7 through 15k ohm resistor

LED Display

VCC	connects to pin 40 of 8050A IC
GND	connects to pin 20 of 8050A IC
DIO	connects to pin 19 of 328P
CLK	connects to pin 18 of 328P

LF347

OA1 is configured as an ultra high input impedance voltage follower buffer to sense the voltage from the rear lead of R8 (the 220K 2 watt resistor) on the 8050A board

OA2 is configured as an inverter amplifier with a 10x gain to shift voltage from the 0 to 6 volt range into the 0 to -5 volt range required for the 328P and to better scale the desired range

1 OA1out	connects to OA1- and to a 2k ohm resistor to OA2-
2 OA1-	connects to OA1out
3 OA1+	connects to the rear lead of R8 (220k ohm 2 watt resistor) through pin header
4 +VCC (+6)	connects to TP3 of 8050A board through pin header
5 OA2 +	connects to ground (pin 40 of 8050A IC (VCC (gnd)))
6 OA2-	connects to a 2k ohm resistor to OA1out and to a 20k ohm resistor to OA2out
7 OA2out	connects to a 20k ohm resistor to OA2- and to a 15k ohm input protection resistor to 328A pin 28(A5)
8 NC	
9 NC	
10 NC	
11 -VCC (-5)	connect to 8050A IC pin 20 (GND (-5))
12 NC	
13 NC	
14 NC	