LDG Electronics

Voter 4+1 Repeater Voter

For All Repeaters

LDG Electronics, 1445 Parran Road, Saint Leonard, MD 20685

Contents

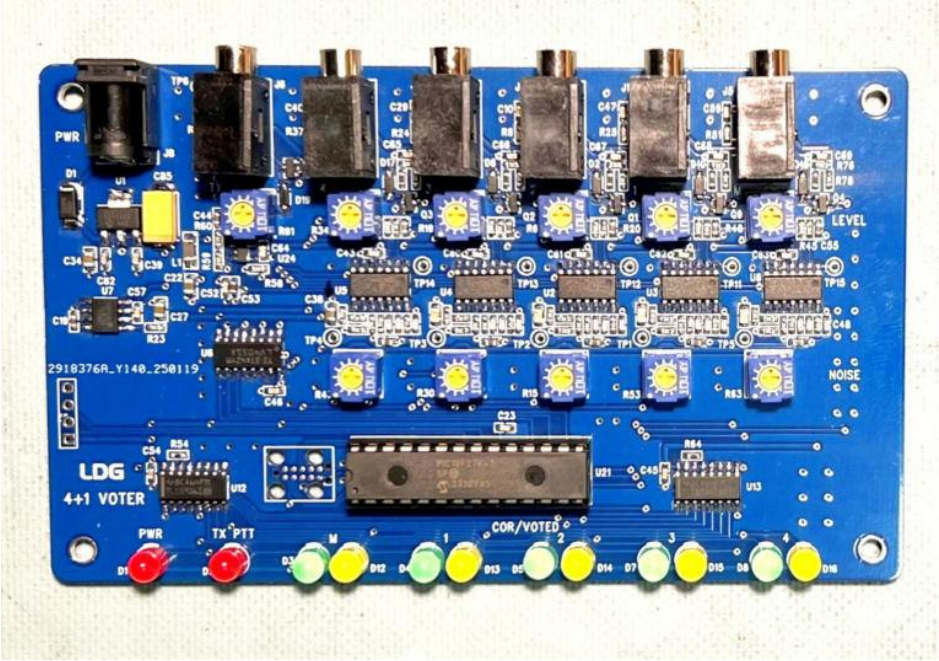
Specifications & Ratings

1. Adjustments:
   a. LEVEL: Set to 1.0 P-P AC with full-quiet DTMF signal.
   b. NOISE: Set to 4.0 VDC with open squelch noise.
   c. OUT: Set output level.
2. Input and output COR: ground going signal
3. Audio input impedance range: high impedance 10kΩ
4. Operating voltage: 13.8 VDC +/-15%, 0.1 amp
5. Size: 5.0 x 3.5 inches (150 x 90 mm)
6. Weight: 1 pounds (500 grams)
7. Includes: LDG Voter 4+1, 6’ DC power cable (5.5x2.5mm), Voter 4+1 manual.

Introducing the LDG Voter 4+1

Congratulations on selecting the LDG Electronics Voter 4+1 receiver voter. The LDG Voter 4+1 is a five-channel automated selector based on the noise level of the receiver inputs. Five channels are available: four remote receivers and one for the main site.

The voter is based on the RVS-8 Voter project that appeared in QST magazine 1996.



Welcome Notes

Welcome to the LDG Electronics family of amateur radio equipment! Starting in 1995 and based in St. Leonard, Maryland, LDG defines state of the art equipment for the Amateur ("Ham") radio community.
In addition to offering established equipment we're continuing to grow our product line. Check our website (https://www.ldgelectronics.com) often to learn about new developments! We also offer complete product support through our website, and we're here for you for any questions that you might have. All of our products are supported with a two-year transferable warranty. When you sell your LDG product provide the new owner with a copy of the original sales receipt and the two-year warranty transfers to the new owner.

There is no need to complete a warranty card or to register our products. Your product receipt establishes eligibility for warranty service; save that receipt! Send your receipt copy with the product when you ship your product to us for repair. Products sent to LDG without a receipt are considered requests for out-of-warranty repair.

LDG does not warranty against product damage or abuse. This means that a product failure, as determined by LDG, to be caused by the customer or by other natural calamity (e.g. lightning) is not covered under the two-year warranty. Damage can be caused by failure to heed the product's published limitations and specifications or by not following good Amateur practice.

OUT OF WARRANTY SERVICE

We will gladly provide service any time a product fails after the warranty. Send the product to us for repair. We will determine what needs to be done, and, based on your prior instruction, either contact you with an estimate or fix it and contact you with a request to pay any repair charges. Please contact LDG with any questions before you send us an out-of-warranty product for repair.

RETURNING YOUR PRODUCT FOR SERVICE

Returning a product to LDG is easy. We do not require a return merchandise authorization, and there is no need to contact LDG to return your product. Visit the Customer Support Center on our website and download the LDG Product Repair Form. On the Repair Form tell us exactly what happened (or didn't happen) and why you believe the product needs servicing. The technician will attempt to duplicate the problem(s) you had based on how well you describe it so please be accurate and complete.

Ask your shipper for a tracking number or delivery verification. Please include your email address so our shipper can alert you when your product is being returned to you. Be assured that our staff makes every effort to complete repairs ahead of our published wait time. Your patience is appreciated.

Repairs can take four to eight weeks, but are usually faster. The most recent information is found at the LDG Customer Support Center. Send your carefully packaged unit with the Repair Form to:

LDG Electronics, Inc. Attn: Repair Department 1445 Parran Rd
St. Leonard, MD 20685

PRODUCT FEEDBACK

We encourage product feedback! Tell us what you think of your LDG product. In a card, letter, or email (preferred) tell us how you use the product and how well it worked in your application. Send along a photo or even a schematic or drawing to illustrate your narrative. We like to share your comments with our staff, our dealers, and even other customers at the LDG website.

Your LDG Voter 4+1

The LDG Voter 4+1 is a five-channel automated selector based on the noise level of the receiver inputs. Five channels are available: four remote receivers and one for the main site.

Each 1/8” (3.5mm) stereo input has an audio, COR, and ground signal. The audio is a voice analog signal with a target level of 1.0V P-P AC. The noise signal is derived from the audio signal through a 4.0 KHz high pass filter and provides a DC level of 0 to 5.0V, where more noise is a higher voltage. The COR is a ground-going DC signal to indicate a valid channel available for voting.

The voter software scans the CORs for a valid signal, checks to see which noise level is lowest, then selects the audio. An audio multiplexer is used to select the audio signal. The audio output is adjustable with a pot. The COR output is ground going through an output 2n7000 FET transistor.

The firmware provides a bit of hysteresis where a new channel will only be voted if the noise level is at least 10% higher than the previously voted channel. The scan loop is about a half second to keep from switching too often.

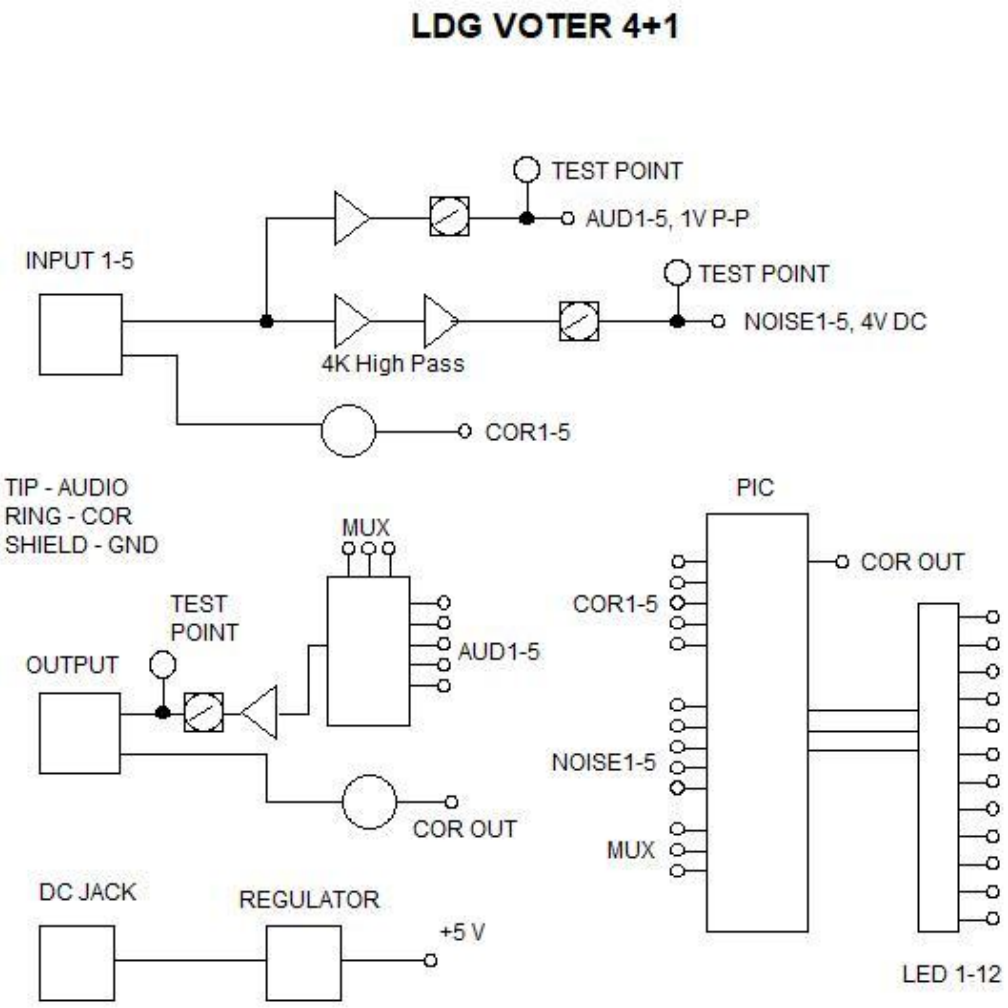
There are 12 LEDs driven through a multiplexer. Each channel has a yellow COR LED to show the channel is valid for measuring. A green LED will correspond to the current voted channel. A red LED will show there is at least one valid COR input.

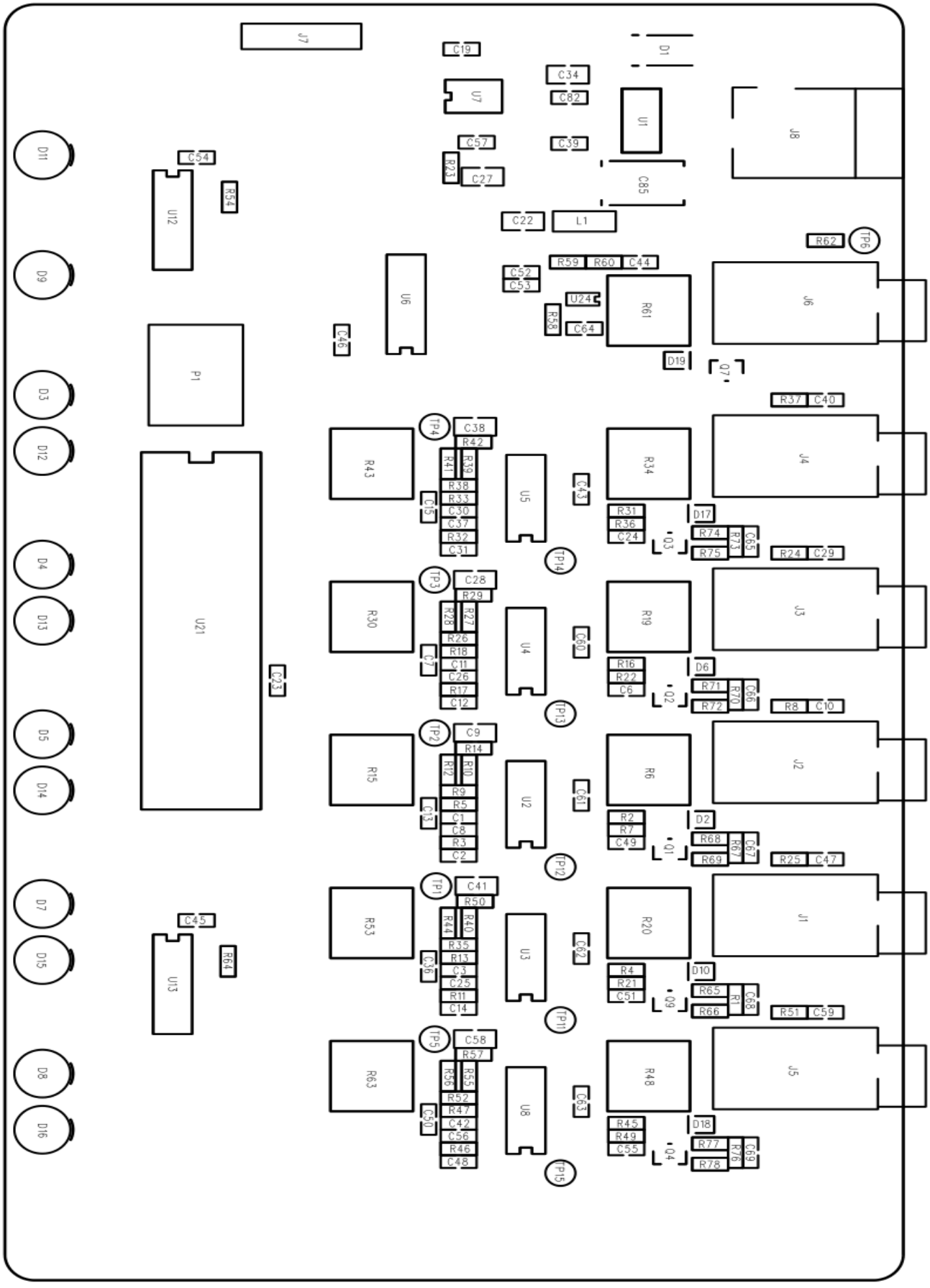
Test points are available at each pot. The input audio should be 1.0V P-P AC with a touchtone audio being received. To set the noise pots, open the squelch on the receiver. With no signal on the receiver, adjust the noise pot to 4.0 volts DC.

The power LED is driven by the processor to show that voting operation is active. A 2.5x5.5 mm power jack provides 13.8 VDC (+/-15%) at 100mA to the voter.

CE

Block Diagram

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C22
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R62
TP6
R59
R60
C44
C52
C53
U24
U6
R61
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R58
C64
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R34
J4
R41
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C31
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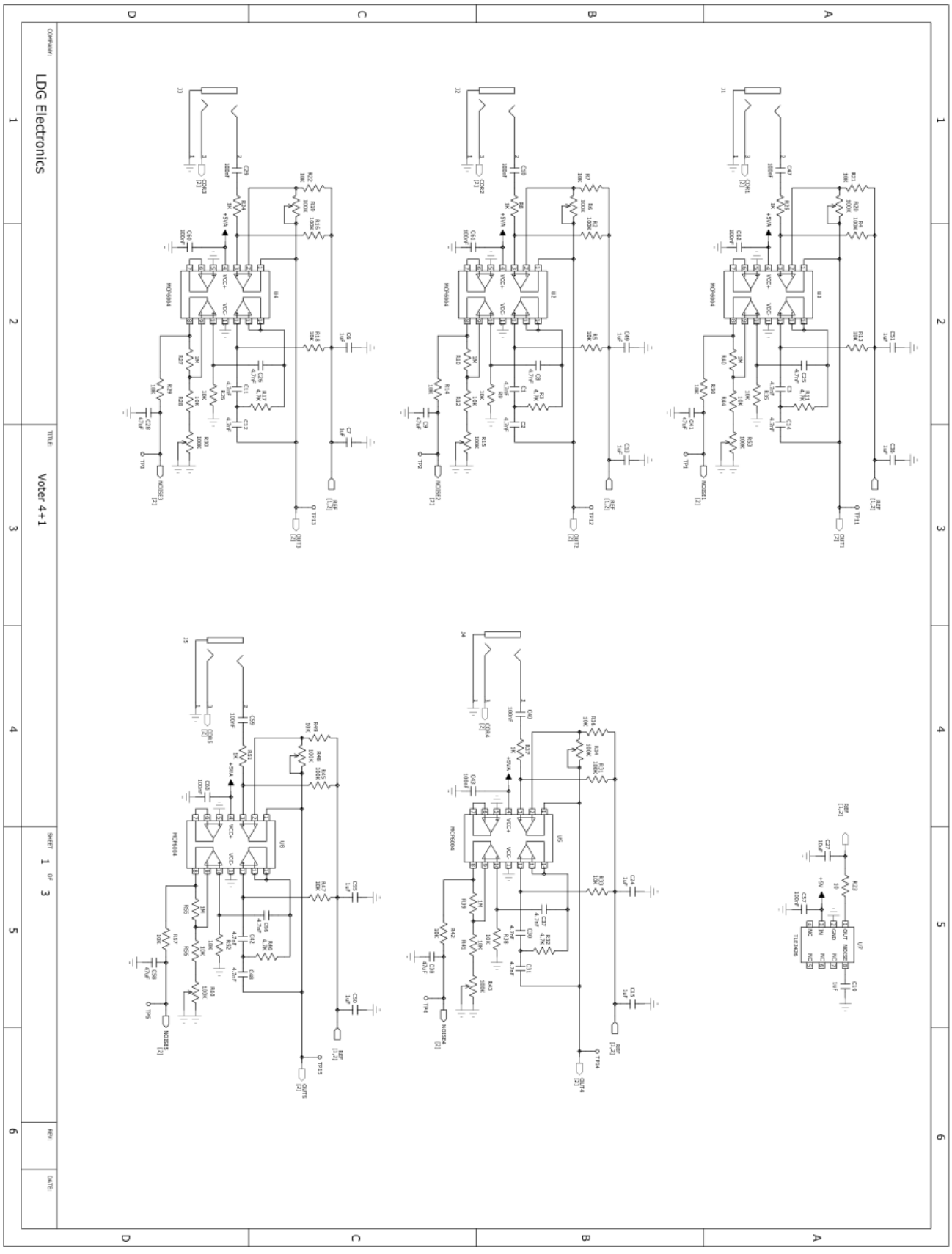
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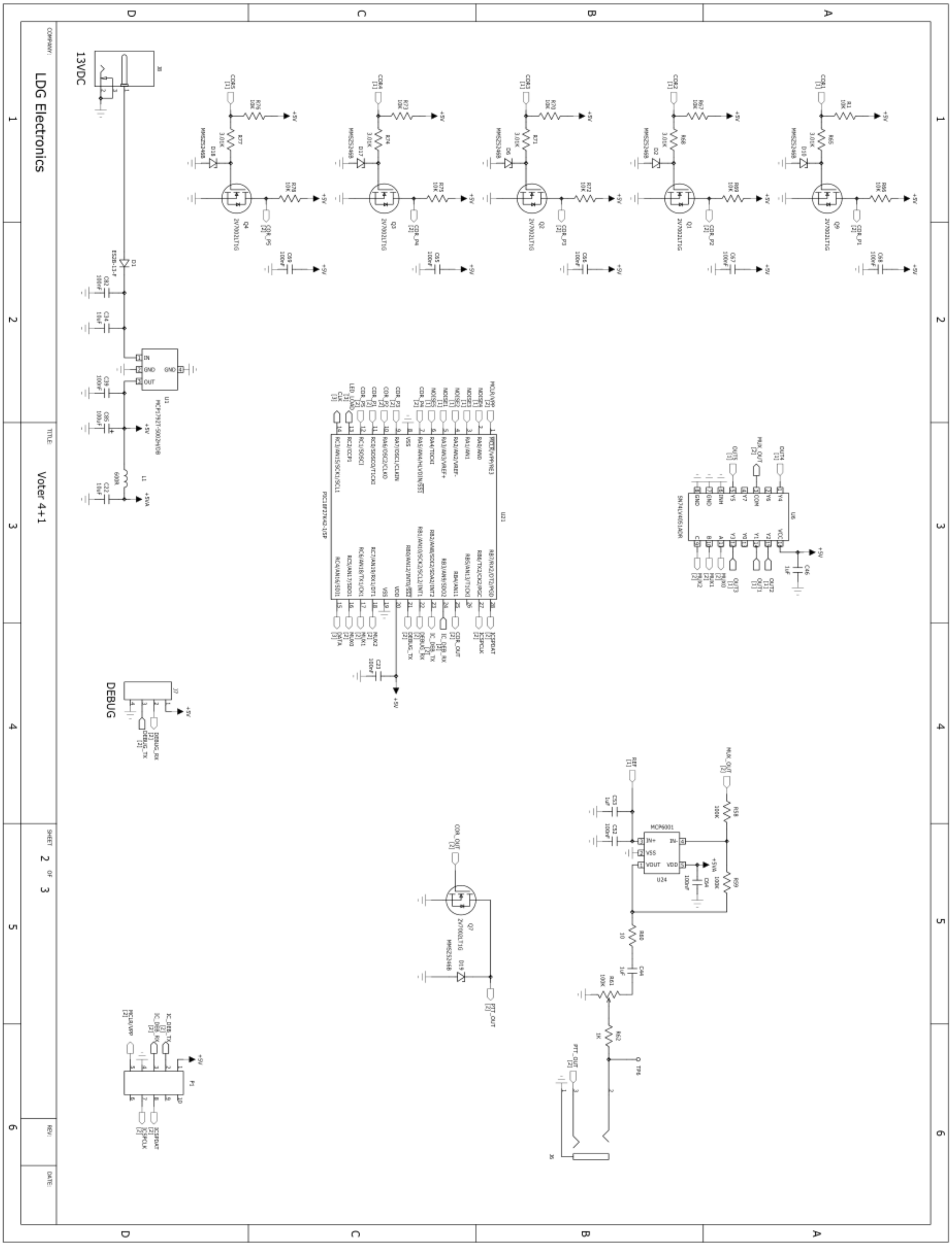
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Voter 4+1
13VDC
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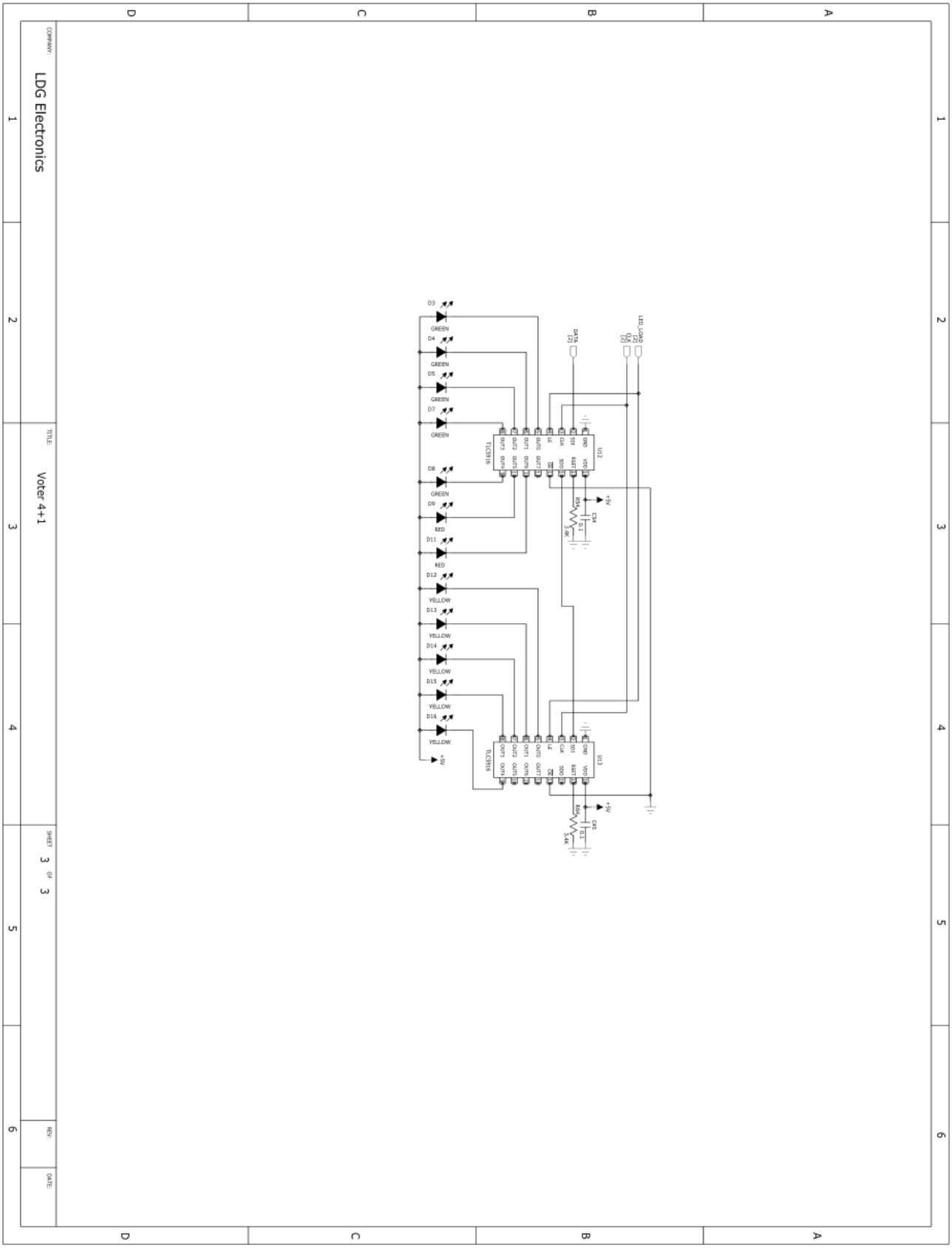
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Voter 4+1
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