

# Keysight Technologies

## How Auto-Parallel Capability Extends the Range of Your Bench Power Supply

### Application Brief

There may be times when you need when more current than your DC bench power supply can provide. Instead of trying to find a higher output current power supply in your lab, you can use the built-in auto-parallel mode available in the new E36312A and E36313A bench power supplies.

Auto-parallel mode uses built-in relays to combine channels 2 and 3 into a single higher current DC output channel rated for 25V and 4A. The readback system measures as a single channel too!

You can enable auto-parallel in two easy steps:

**Step 1:** Press the Output Settings button

**Step 2:** Press the Mode Parallel button

Auto-parallel front panel output connections are shown on the large graphics display. In figure 1, Channel 2 (highlighted in green) is connected to the load. The display shows that Channel 2 is now rated for 25V and 4A, while the output connectors on Channel 3 (highlighted in blue) are disabled.

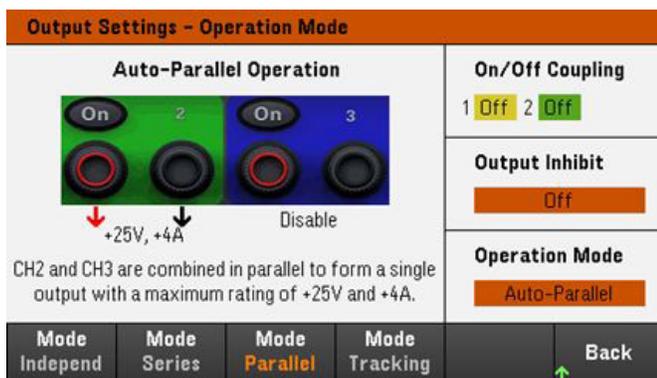


Figure 1. Setting up auto-parallel mode.

A 4-wire operation can be easily configured using the Channel 2 rear panel output connector. Note that 4-wire, or remote sensing, improves the voltage regulation at the load by monitoring the voltage at the load rather than at the output terminals. This automatically compensates for the voltage drop in the load leads, which is especially useful for CV operation with load impedance that varies or has significant lead resistance. Activate 4-wire remote voltage sensing by pressing Source Settings > Sense 4w buttons.

The E36300 series bench power supplies have a large, crisp display that lets you see all three output channels at the same time. By toggling the meter key button you can drill down for more detailed information on each channel. The channels and the display are color coded so you can easily track each channel.

By selecting Channel 2 (highlighted in green) and toggling the meter key button, you will see more detail on Channel 2 settings and measurements.

In figure 2, the power supply was set for 12V, and the current limit default is set to 4A. The power supply read back (measurement system) is displaying, 12.000V, 3.452A, and 41.420 W. You will notice that Channel 3 (dark blue color) is now blanked out and showing that it is in connected in parallel with Channel 2.



Figure 2. Auto parallel mode example.

You can enter or change the voltage and current limit settings by.

1. Using the front panel voltage knob (figure 3). The output voltage will change when the knob is turned. You can easily see this on the display.
2. Using the numeric entry field in the meter display, if you know the exact voltage value that you want. Use the navigation keys to select the field (it will be highlighted) and use the numeric entry keys and enter the value.
3. Pressing the Source Settings key and using the navigation keys to highlight the voltage field. Enter the voltage value using the numeric keys. You can use the voltage knob to adjust the value in the voltage field as well.

We hope this helps you get higher current capability on demand, using auto-parallel mode. For more information, visit:  
[www.keysight.com/find/E36312a](http://www.keysight.com/find/E36312a)



Figure 3. Keysight's E36312A Triple output DC power supply.

[www.keysight.com/find/E36312a](http://www.keysight.com/find/E36312a)

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