

30V- 2A Dual Power Supply
Scientech 4075

Product Tutorials
Ver. 1.1



Designed & Manufactured in India by-

An ISO 9001:2008 company

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Scientech 4075 30V- 2A Dual Power Supply

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Safety Instructions

Read the following safety instructions carefully before operating the product.

To avoid any personal injury, or damage to the product, or any products connected to it;

Do not operate the instrument if you suspect any damage within.

The instrument should be serviced by qualified personnel only.

For your Safety:

Use proper Mains cord : Use only the mains cord designed for this product. Ensure that the mains cord is suitable for your country.

Ground the Instrument : This product is grounded through the protective earth conductor of the mains cord. To avoid electric shock the grounding conductor must be connected to the earth ground. Before making connections to the input terminals, ensure that the instrument is properly grounded.

Observe Terminal Ratings : To avoid fire or shock hazards, observe all ratings and marks on the instrument.

Use only the proper Fuse : Use the fuse type and rating specified for this product.

Use in proper Atmosphere : Please refer to operating conditions given in the manual.

- 1. Do not operate in wet / damp conditions.**
- 2. Do not operate in an explosive atmosphere.**
- 3. Keep the product dust free, clean and dry.**

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Introduction

The **30V, 2A Dual Power Supply Scientech 4075** has been designed as a *constant current (CC)* and *constant voltage (CV)* source for laboratories, industries and field testing applications, featuring low power loss, compact and light weight. It provides floating, DC output voltages and is ideally suitable for complex analog and digital applications.

The DC output can be continuously adjusted from 0 -30V with coarse and fine controls. Current limit is also adjustable from 0-2A. Any over loading for adjusted current limit, is indicated by flashing "ORA" and "ORB" LEDs. When the maximum setting is crossed or the overheating has occurred, the LED will lit up. A special automatic overload (current) protection circuit limits the maximum current to 2A.

Two displays (one 3-digit display for voltage & other 3-digit for current) are used to read the instantaneous values. These two can be switched simultaneously for either of the DC outputs. In addition to low residual ripple and noise, it has excellent line and load regulation. The **30V, 2A Dual Power Supply** is also provided with all protective circuits to ensure trouble free operation.



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Features

- **Floating DC Supply Voltages**
- **DC: 2 x 0 - 30V; 0-2 A**
- **Automatic Overload (Current Protection)**
- **Constant Voltage & Constant Current Operation**
- **Digital Display for Voltage and Current**
- **Adjustable Current Limiter**

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Technical Specifications

DC Output	: Dual output 0-30V, continuously variable by means of coarse and fine controls
Output Current	: 2A (maximum) each
Setting Resolution	: Voltage: 10mV Current: 5mA
Internal Resistance	: $\leq 15\text{m}\Omega$
Stability	: $\leq 2.5\text{mV}$
Recovery Time	: $\leq 50 \mu\text{s}$
Load Regulation	: $\leq (0.05\% + 10 \text{ mV})$
Line Regulation	: $\leq (0.05\% + 10\text{mV})$
Temp. Coefficient	: $\leq (0.05\% + 5 \text{ mV}/^\circ\text{C})$
Ripple & Noise	: $\leq 1 \text{ mVrms}$
Current Limit	: Adjustable between 100 mA to 2A
Display	: 3 digits for voltage 3 digits for current
Accuracy	: $\pm (1 \% \text{ of reading} + 1 \text{ digit})$
Over Range Indication	: By flashing 'ORA' and 'ORB' LED

General Information:

Built in over voltage, overload, overheat & short circuit protection.

All outputs are floating.

Insulation:

Between chassis and output terminal. :> 10 M Ω at 100V DC

Between chassis and :> 50 M Ω at 500V DC

AC plug

Power Supply : 230 V AC $\pm 10\%$, 50 Hz

Operating Conditions : 0-40⁰C; 90% RH

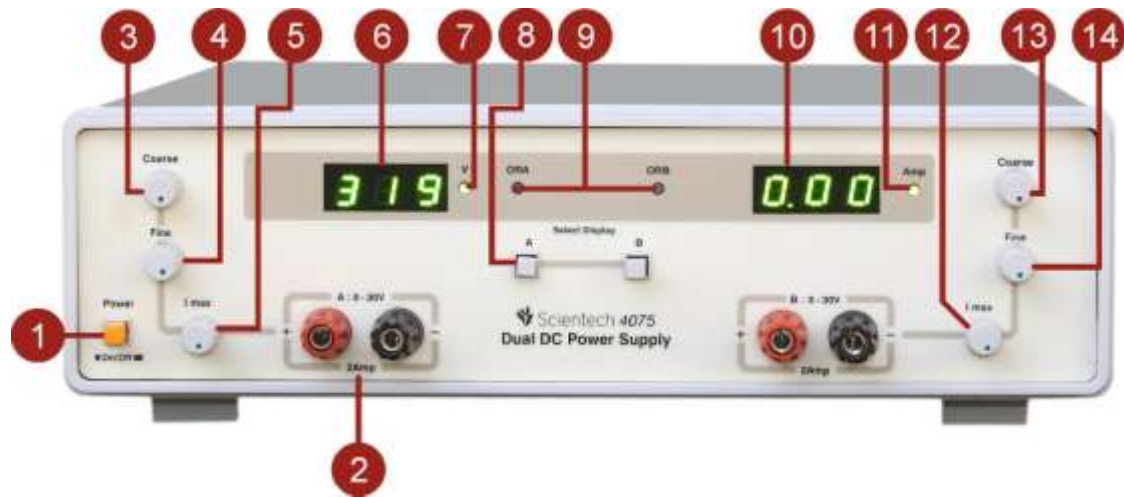
Dimension (mm) : W 285 x H75 x D 385

Weight : 5 Kgs. approximately

(Subject to Change)

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Front Panel Control



- 1 Power:** Push switch for supplying power to instrument.
- 2 A: 0-30V & B: 0-30 (4mm banana terminals):** Output terminals for 4mm banana plugs or cable connection. The output voltages are short circuit protected.
- 3 & 13 Coarse (Adjusting Knob):** For the coarse setting of the output voltages at A & B respectively.
Adjustment range: 0-30V.
- 4 & 14 Fine (Adjusting Knob):** For the fine settings of the output voltage for A & B output terminals. Adjustment range approximately 2.1 V.
- 5 & 12 I max (Adjusting Knob):** For current limit setting of the outputs A & B respectively. Adjustment range 100mA - 2A each.
- 6 & 10 Digital Display (7-Segment LED):** 3-digits readout for output voltage & 3 digit readout for output current.
- 7 & 11 A & V Indicators:** Two LEDs indicates the unit of the display.
- 8 Select Display (Push Buttons):** Two push buttons can be pressed one at a time. When pressed each button select displays (Voltage & Current) simultaneously for the respective voltage source i.e. A or B to show the instantaneous values.
- 9 ORA & ORB (Overload Indicators):** LEDs for overload indication for respective DC outputs are provided. Fixed DC output. In case of overheating or output current in excess of set limit corresponding OR LED lits up.

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Operating Instructions

General Information:

The logical front panel layout of **30V- 2A Dual Power Supply** makes it easy to become familiar with the operation of the instruments. However, even experienced users should read the following instructions thoroughly before using the instrument.

After unpacking the instrument, check for any mechanical damage or loose parts inside. Should there be any transportation damage, inform the supplier immediately and do not put the instrument into operation.

Safety:

The case chassis and all measuring parts are connected to the protective earth contact of the inlet. The mains plug shall only be inserted in a socket outlet provided with a protective earth contact. The protective action must not be negated by the use of an extension cord without a protective conductor.

Warning !

Any interruption of the protective conductor inside or outside the instrument or disconnection of the protective earth terminal is likely to make the instrument dangerous. Intentional interruption is prohibited. The mains/line plug should be inserted before connections are made to measuring circuits.

When removing the metal case or replacing, the instrument must be completely disconnected from the mains supply. If any measurement or calibration procedures are unavoidable on the opened-up instrument, these must only be carried out by qualified personnel acquainted with the danger involved.

Operating Conditions:

The ambient temperature range during operation should be between 0° to 50°C and should not exceed -20°C to +70°C during transportation or storage. The operational position should be normal however; the ventilation holes on the **30V, 2A Dual Power Supply** must not be obstructed. Prior to calibration a preheat run of approximately 30 minutes is required.

First Time Operation:

After unpacking the instrument check for any mechanical damages. The instrument should be plugged in mains-plug of proper mains supply 230V \pm 10%. Switch on the instrument. The power 'On' is indicated by lighting of displays.

Operation:

The Power Supply has an electrically floating output. This permits easy series connection with other Power Supply units, to increase supply voltage or current respectively.

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Functional Checks

The **30V, 2A Dual Power Supply** should regularly be tested to assure proper functioning. The following test checks out the power supplies performance and suggestions for adjusting specific values. The adjustment will only be meaningful if the below indicated or equivalent instruments are used. Prior to the functional test or adjustment, the instrument should be on for at least 30 minutes.

Measuring Instruments required:

1. 4 ½ Digit DMM Handheld 4011 or equivalent
2. Scientech Oscilloscope 801/831 or equivalent
3. Rheostat: 100 Ω - 2A and 17 Ω - 5.5A.

Test Procedure:

0- 30V DC output (common for both outputs)

1. **Check of maximum DC output voltage:** Set the Coarse and Fine knobs to maximum, the maximum DC output reading should be between 31V and 33 V which also can be verified on DMM.
2. **Check of minimum DC output voltage:** Set the Coarse and Fine knobs to minimum, the minimum DC output reading should be 0.00V which when measured on DMM will be approximately 25mV. for load resistor of < 5 K Ω .
3. **Check of minimum current limit setting:** Set DC output to 10V & connect 5 Ω load to the output terminals. Adjust current limit knob I maximum to minimum the reading on the display should be < 100mA.
4. **Check of maximum output current:** Set the DC output voltage to 10V, connect 5 Ω load to the output terminals. Adjust the I max current limit knob to maximum, the reading on the display, should be between 2.02 A and 2.2A
5. **Check of over load indicators:** Set the instrument as in 3. When the output terminals are short circuited, 'ORA' or 'ORB' LED should lit up.
6. **Check of residual ripple and noise:** Connect any load to DC output and adjust the I_{max}, to maximum of 2A and check the ripple and noise on oscilloscope, the ripple and noise should not be more than 1mV_{rms}.

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Warranty

1. We guarantee this product against all manufacturing defects for **12 months** from the date of sale by us or through our dealers.
2. The guarantee will become void, if
 - a. The product is not operated as per the instruction given in the Learning Material.
 - b. The agreed payment terms and other conditions of sale are not followed.
 - c. The customer resells the instrument to another party.
 - d. Any attempt is made to service and modify the instrument.
3. The non-working of the product is to be communicated to us immediately giving full details of the complaints and defects noticed specifically mentioning the type, serial number of the product and date of purchase etc.
4. The repair work will be carried out, provided the product is dispatched securely packed and insured. The transportation charges shall be borne by the customer.

Hope you enjoyed the Scientech Experience.

List of Accessories

1. Mains Cord1 No