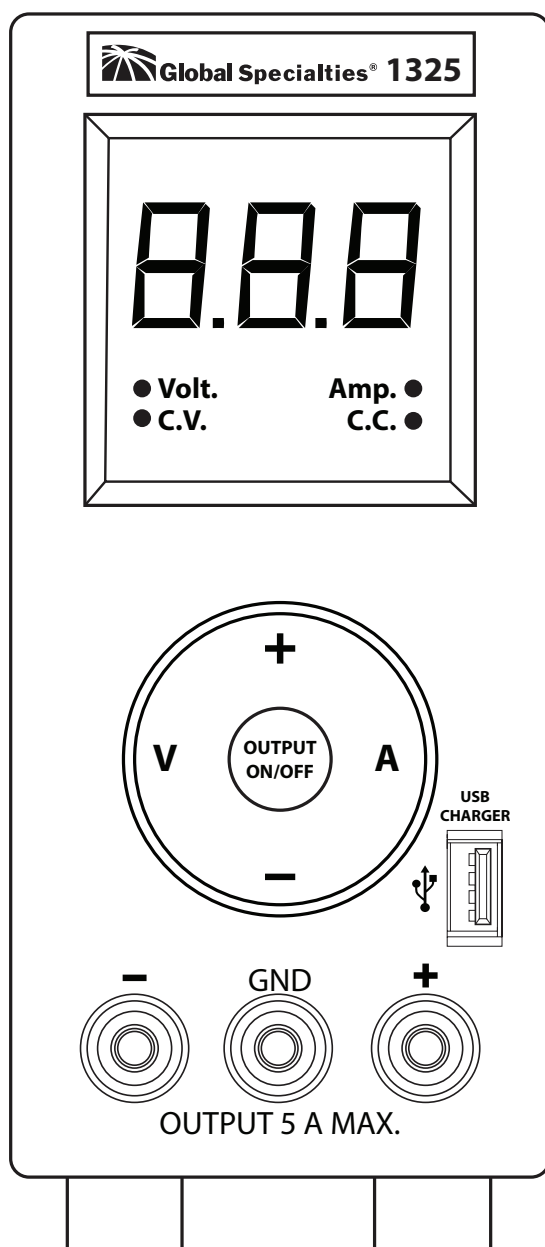


1325

80W (16V/5A) Power Supply with USB Output

User Manual



Safety Summary

The following safety precautions apply to both operating and maintenance personnel and must be observed during all phases of operation, service, and repair of this instrument. Before applying power, follow the installation instructions and become familiar with the operating instructions for this instrument.

GROUND THE INSTRUMENT

To minimize shock hazard, the instrument chassis and cabinet must be connected to an electrical ground. This instrument is grounded through the ground conductor of the supplied, three-conductor ac power cable. The power cable must be plugged into an approved three-conductor electrical outlet. Do not alter the ground connection. Without the protective ground connection, all accessible conductive parts (including control knobs) can render an electric shock. The power cable meets IEC safety standards.

DO NOT OPERATE IN AN EXPLOSIVE ATMOSPHERE

Do not operate the instrument in the presence of flammable gases or fumes. Operation of any electrical instrument in such an environment constitutes a definite safety hazard.

KEEP AWAY FROM LIVE CIRCUITS

Instrument covers must not be removed by operating personnel. Component replacement and internal adjustments must be made by qualified maintenance personnel. Disconnect the power cord before removing the instrument covers and replacing components. Under certain conditions, even with the power cable removed, dangerous voltages may exist. To avoid injuries, always disconnect power and discharge circuits before touching them.

DO NOT SUBSTITUTE PARTS OR MODIFY THE INSTRUMENT

Do not install substitute parts or perform any unauthorized modifications to this instrument. Return the instrument to Global Specialties (Cal Test Electronics) for service and repair to ensure that safety features are maintained.

WARNINGS AND CAUTIONS

WARNING and **CAUTION** statements, such as the following examples, denote a hazard and appear throughout this manual. Follow all instructions contained in these statements.

A **WARNING** statement calls attention to an operating procedure, practice, or condition, which, if not followed correctly, could result in injury or death to personnel.

A **CAUTION** statement calls attention to an operating procedure, practice, or condition, which, if not followed correctly, could result in damage to or destruction of parts or the entire product.

WARNING

Do not alter the ground connection. Without the protective ground connection, all accessible conductive parts (including control knobs) can render an electric shock. The power jack and mating plug of the power cable meet IEC safety standards.

WARNING

To avoid electrical shock hazard, disconnect power cord before removing covers. Refer servicing to qualified personnel.

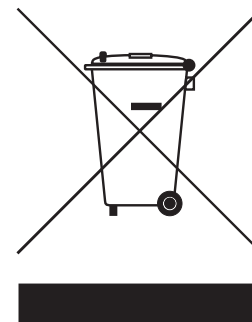
CAUTION

Before connecting the line cord to the AC mains, check the rear panel AC line voltage indicator. Applying a line voltage other than the indicated voltage can destroy the AC line fuses. For continued fire protection, replace fuses only with those of

the specified voltage and current ratings.

CAUTION

This product uses components which can be damaged by electro-static discharge (ESD). To avoid damage, be sure to follow proper procedures for handling, storing and transporting parts and sub-assemblies which contain ESD-sensitive components.



Compliance Statements

Disposal of Old Electrical & Electronic Equipment (Applicable in the European Union and other European countries with separate collection systems). This product is subject to Directive 2012/19/EU of the European Parliament and the Council of the European Union on waste electrical and electronic equipment (WEEE), and in jurisdictions adopting that Directive, is marked as being put on the market after August 13, 2005, and should not be disposed of as unsorted municipal waste. Please utilize your local WEEE collection facilities in the disposition of this product and otherwise observe all applicable requirements.

1 Introduction

The 1325 is a micro-controller based switching DC power supply with a total supply capability of 80 W. By using a digital + / - keypad operation control, you can easily set the output voltage and current levels. The 1325's small size and quiet operation make it ideal for laboratory, work shop, or educational applications where bench space is limited.

The 1325 has a USB charger output, constant current operation, tracking OVP, floating ground design, small footprint, output on/off push button and a small form factor.

1.1 Features

- 80 W Power
- Voltage: 1 V to 16 V
- Current: 0 A to 5 A
- Small compact size
- 3-Digit display shows voltage or current
- Automatic crossover and constant current (CC)
- Constant voltage operation
- USB charging port, 5 VDC and 1.2 A Max
- Tracking Over Voltage Protection (OVP)
- Over Temperature Protection (OTP)

1.2 Controls & Indicators

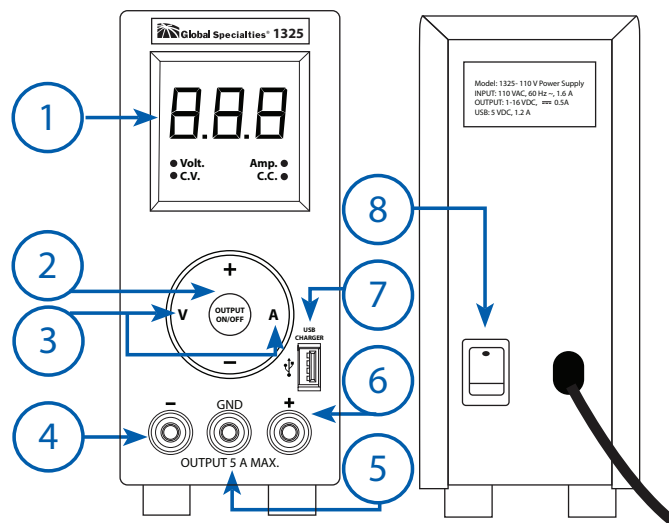


Figure 1 Front and Rear Panel

1. **LCD Display Panel.** 3-Digit display. Indicator will light next to “Volt.” when voltage is being displayed or next to “Amp.” when current is being displayed. Indicator light will show when in (CV) Constant Voltage mode or (CC) Constant Current mode.
2. **Output On/Off Button.** Push this button to turn the Main output ON/OFF. When set to “OFF,” the display will show “OFF.”
3. **Voltage/Current Selection Buttons.** Push “V” to view/change the voltage settings. Push “A” to view/change the current settings. To change the settings use the “+” and “-” buttons.
4. **Main Output Terminal Negative (-).** Black color
5. **Ground Terminal.** Green color
6. **Main Output Terminal Positive (+).** Red color
7. **USB Charging Port.** 5 VDC. Use this to charge your phone or other USB device. (Not all USB devices can be charged using the charging port. Please refer to your device’s documentation for compatibility issues.)
8. **Power On/Off Toggle Switch**

2 Operating the Power Supply

2.1 Connection and Operation Procedure

1. Plug the unit into 110 VAC grounded outlet.
2. Switch on the power supply using the toggle switch on the back and the LED display will come on showing "OFF" indicating that output is off. The "Volt." indicator will light showing that you are displaying voltage. The "C.V." indicator will light showing that you are in Constant Voltage mode.
3. Push "V" to view/change the voltage settings. Push "A" to view/change the current limit settings.
4. The (+) and (-) keys are used to adjust the value of output voltage or output current limit setting. Press the (+)/(-) once to view the set value without changing the setting. Press (+)/(-) again and the value will start to change.
5. Connect to your load positive to positive and negative to negative.
6. Turn on the output terminal and check if display shows (CV).
7. If display shows (CC), either your preset current limiting value is too low or your load requires more voltage and current. You need to re-access the voltage and current requirement of your load and increase the voltage or current accordingly until (CV) appears.

2.2 Automatic Crossover

The power supply functions as a constant voltage source (CV) as long as the load current is less than the set current limit value. When the load current is equal to or greater than the set current limit value, the power supply will automatically cross over to the constant current mode, voltage will drop, (CC) will show on the LCD display panel and it will operate as a constant current source.

When the load current drops below the preset current limiting value, the supply returns to constant voltage (CV) mode.

2.3 Tracking Output Over Voltage Protection (OVP)

This is to protect the connected load in the event that the output voltage control circuit malfunctions. In the case where the output voltage reaches 15% higher than the set voltage, Over Voltage Protection will engage. The display will show OVP and the main output will switch OFF. The protection message can be cleared by powering up the unit again or by pressing the output ON/OFF key.

2.4 Over Temperature Protection (OTP)

When the temperature inside the power supply becomes higher than a predetermined value, the output of the power supply will automatically switch OFF and the display will show OTP. When the temperature inside the power supply drops to an acceptable level, the protection message can be cleared by powering up the unit again or pressing the output ON/OFF key.

2.5 Ground Connection

Depending on the application, the power supply output terminals can be grounded in one of the following setups:

- Negative ground – black (-) negative terminal is shorted with green GND terminal.
- Positive ground – red (+) positive terminal is shorted with green GND terminal.
- Floating ground – green terminal is not shorted with any of the output terminals.

When operating this power supply as a floating ground, high impedance leakage can exist between the power supply circuitry and the chassis ground.

3 Specifications

All specifications apply to the unit after a temperature stabilization time of 15 minutes over an ambient temperature range of $25\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$.

1325 Power Supply	
Electrical Specificaitons	
Output Voltage	1–16 VDC
Output Current	0-5 A
Switching Operation Frequency	75 kHz to 95 kHz
Efficiency at Max Power	$\geq 82\%$
Voltmeter and Ammeter Display	3 Digit 7-Segments LED
Voltmeter Accuracy	$\pm 1\%$ rdg + 3 digits
Ammeter Accuracy	$\pm 1\%$ rdg + 5 digits
Resolution	0.1V, 0.01A
Line Input	120 VAC (50-60 Hz) $\pm 10\%$
Full Load Input Current at 120 VAC	1.8 A
Cooling System	Natural Convection
Constant Voltage Characteristics	
Load regulation (10%-90%)	$\pm 50\text{ mV}$
Line regulation (min to max)	$\pm 20\text{ mV}$
Ripple (rms)	$\pm 20\text{ mV}$
Noise (peak to peak)	$\pm 100\text{ mV}$
Constant Current Characteristics	
Load regulation (10%-90%)	$\pm 30\text{ mA}$
Line regulation (min to max)	$\pm 10\text{ mA}$
USB Output	

Output Voltage	5 V ($\pm 5\%$)
Output Current	1.2 A Max
Environmental Conditions	
Operating Temp/Humidity	max RH of 80% at 31°C decreasing linearly to 50% at 40°C
Altitude	up to 2,000 m
Polution Degree	Polution Degree 2
Mechanical Characteristics	
Weight	3.0 lbs (1.4 kg)
Dimensions	2.8 x 6.0 x 7.9 in (70 x 150 x 200 mm)

Specifications are subject to change without notice. To ensure the most current version of this manual, please download the current version from our website.

4 Service and Warranty Information

4.1 Limited One-Year Warranty

Cal Test Electronics warrants this product to be free from defective material or workmanship for a period of 1 year from the date of original purchase. Under this warranty, Cal Test Electronics is limited to repairing the defective device when returned to the factory, shipping charges prepaid, within the warranty period.

Units returned to Cal Test Electronics that have been subject to abuse, misuse, damage or accident, or have been connected, installed or adjusted contrary to the instructions furnished by Cal Test Electronics, or that have been repaired by unauthorized persons, will not be covered by this warranty.

Cal Test Electronics reserves the right to discontinue models, change specifications, price, or design of this device at any time without notice and without incurring any obligation whatsoever.

The purchaser agrees to assume all liabilities for any damages and/or bodily injury which may result from the use or misuse of this device by the purchaser, his employees, or agents.

This warranty is in lieu of all other representations or warranties expressed or implied and no agent or representative of Cal Test Electronics is authorized to assume any other obligation in connection with the sale and purchase of this device.

4.2 Calibration and Repair



450864-001 Rev. B



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Specialties

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