

# TENMA®



**Constant Power Switch Mode Bench PSU**

**Model: 72-8355**

## IMPORTANT SAFETY INFORMATION

**When using electrical appliances, basic safety precautions should always be followed to reduce the risk of fire, electric shock and injury to persons or property.**

**Read all instructions before using the appliance and retain for future reference.**

- Check that the voltage indicated on the rating plate corresponds with that of the local network before connecting the appliance to the mains power supply.
- Do not operate this appliance with a damaged plug or cord, after a malfunction or after being dropped or damaged in any way.
- Check the product before use for any damage. Should you notice any damage on the cable or casing, do not use.
- This appliance contained no user-serviceable parts. All repairs should only be carried out by a qualified engineer. Improper repairs may place the user at risk of harm.
- This product must be grounded through the earth connection in the mains lead for safe operation and to reduce ripple and noise.
- This product is for indoor use only.
- Avoid touching the exposed metal of the output terminals.
- Do not block or obstruct any cooling vent opening.
- Avoid severe impacts or rough handling that leads to damage.
- Do not discharge static electricity.
- This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory, or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.
- Children should be supervised to ensure that they do not play with the appliance.
- Always disconnect from the mains when the product is not in use or before cleaning.
- Do not use the appliance for any purpose other than that for which it is designed.
- Do not operate or store in an environment of high humidity or where moisture may enter the product as this can reduce insulation and lead to electric shock.

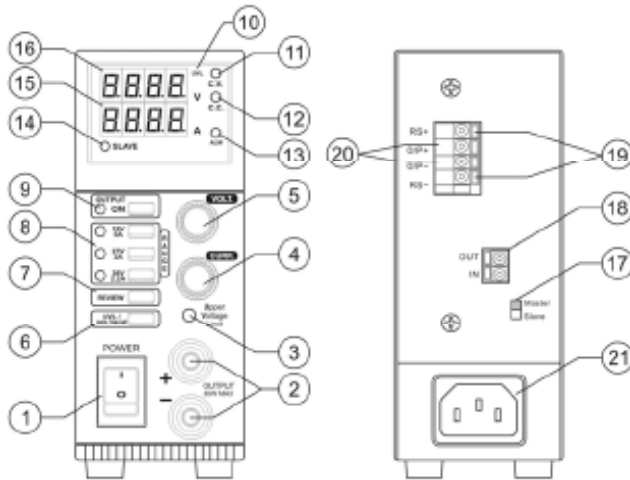
## WHAT'S INCLUDED

- Power Supply Unit
- Mains power lead
- User Manual

## PRODUCT OVERVIEW

### Main Features

- • Efficient switch mode design
- • Extremely compact footprint
- • Remote sensing
- • Four digit LED display
- • Simultaneous display of voltage and current
- • Auto selecting constant voltage (CV) and constant current (CC) modes
- • Ultra quiet convection cooling
- • Short circuit, overload, over voltage and thermal protection
- • 75% efficiency at maximum output



### Front panel controls

1. POWER – Master on/off selector
2. OUTPUT– Power output terminals
3. UVL – Recessed screw adjustment for UVL (upper voltage limit)
4. CURR – Current limit adjustment
5. VOLT – Output voltage adjustment
6. UVL/VOLTAGE – Press to view upper voltage limit
7. REVIEW – Press to display voltage and current limit settings
8. RANGE – Select desired output voltage and current range
9. OUTPUT ON – Activates supply output
10. UVL – Upper Voltage Limit Indicator, illuminates when UVL is displayed
11. C.V. – Constant Voltage Indicator, illuminates when supply is in CV mode
12. C.C. – Constant Current Indicator, illuminates when supply is in CC mode
13. ALM – Indicates output voltage is either over the set Upper Voltage Limit or power supply is in over temperature protection
14. SLAVE – Illuminates when supply in Slave Mode. No light assumes supply is in MASTER or stand alone mode.
15. Four Digit Ammeter display
16. Four Digit Voltmeter display

### Rear panel connections

17. MASTER/SLAVE selector – Use select mode in Master/Slave configuration. For normal operation, this switch should be set to MASTER (default)
18. OUT/IN terminals – Connections for use in the Master/Slave control parallel operation mode
19. RS+ and RS– Remote sensing terminals
20. OUT+ and OUT– Alternative output terminals, in some permanent applications the location of these terminals may be more convenient.
21. INPUT POWER jack – For connection of supplied AC power cord.

## OPERATION

### Stand alone operation

- Make certain that the power supply is set for MASTER operation. To do this, make sure the MASTER/SLAVE selector on the rear panel (17) set to MASTER position. All controls will function as with any a normal power supply.
- With no load connected to the power supply, turn the power supply ON via the POWER switch on the front panel (1).
- The LED display should light up, however there will not be any reading on the voltmeter or ammeter.
- Press the OUTPUT ON button (9), its green LED will light up and the voltmeter will display the set output voltage.
- Take note of the preset RANGE (8) by which LED is illuminated. Adjust the VOLT control (5) and note the effect on displayed voltage on the LED display.

### Selection of Voltage and Current Range

- The three buttons in the RANGE panel (8) will determine the voltage and current range available from the supply. Depress the corresponding button to place the power supply in the desired range.
- The appropriate LED will illuminate to show which range the supply is in.

**Note:** To protect the connected load, the OUTPUT (9) will return to OFF status any time the output RANGE (8) is changed. The Volt and Amp display will return to zero.

### Viewing Settings

- The REVIEW button (7) allows you to check voltage and current limiting settings of the power supply while the OUTPUT (9) is turned off, or when no load is connected. This is especially helpful since conventional power supplies require the connection of some type of load to view the current limit setting.
- To operate, press and hold the REVIEW button (7) to display voltage and current limiting values.

**Note:** This is a momentary push button and will only display the settings while held depressed.

### Setting the Current Limiting Value

- Press and hold the PREVIEW button (7).
- Turn the current adjustment (5) to your desired current limit value.

### Viewing the Upper Voltage Limit (UVL)

Press UVL/VOLTAGE button (6) to display the default value of Upper Voltage Limit. The UVL LED (10) will light up during this operation.

### Setting the Upper Voltage Limit (UVL) value

- This limited access setting utilizes a recessed screwdriver adjustment on the front panel (3). Note this is a delicate control and care should be exercised when adjustment is made.
- While pressing the UVL button (6), insert the small screw driver into (3), slowly turn clockwise to increase and counter-clockwise to decrease the UVL value.

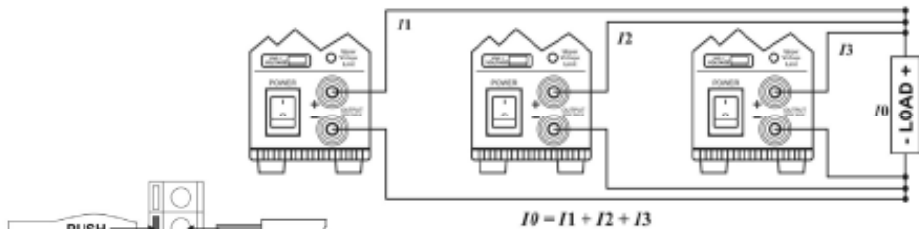
**Note:** that only one UVL value can be set for all three ranges. When the output voltage exceeds the set UVL, the output terminal will automatically turn off and the ALM LED (13) will illuminate.

## MASTER & SLAVE OPERATION

- Two or more Tenma 72-8355 Power Supplies can be connected in parallel to increase output current to the sum of each supply. In this mode, the designated MASTER supply will control voltage and current settings of the SLAVE supplies.

### Preparation and connecting the Control Terminals (18)

- Ensure that all power supplies are set to the same UVL (6) and voltage RANGE (8).
- Set the voltage and current limit of all SLAVE units to maximum values.
- Switch off all power supplies before connection.
- Make certain the MASTER supply has switch (17) set in the MASTER position.
- Set the switch (17) to SLAVE position of all the SLAVE supplies.
- Refer to Fig 8.1 and 8.2 for rear connections of the OUT/IN terminals (18) of the MASTER and SLAVE units.
- Take note that the connection begins at the OUT of the MASTER and feeds the IN of the first SLAVE unit. If additional SLAVE units are used, connect the OUT of the first SLAVE, to the IN of the second SLAVE. Then connect the OUT of the second SLAVE to the IN of the third SLAVE and so on.



### Output terminal connection and operation

- You can either use the front OUTPUT terminals (2) or rear O/P+ and O/P- terminals (20) to connect to the load as shown in Fig 8.3 depending on your application and requirements.
- For proper performance, all power cables should be of the same thickness and length.
- Switch on the MASTER unit first and set to desired voltage, then switch on the SLAVE units.
- The SLAVE indicator LED (14) should light up in the SLAVE units as a confirmation of proper connection.
- All output voltage and current of the SLAVE units are now controlled by the MASTER.

**Important Note:** If the load connected to the MASTER/SLAVE paralleled supplies falls to zero amperes, the output voltage will no longer be controlled by the MASTER unit. Make sure to keep a minimum amount of current draw on the supplies that is at least several percent of the rated current. This can be accomplished by supplying a small removable load such as a resistor.

## Remote Sensing Operation

- In situations where the load current is very high, or when there is a long distance of cable between the output of the supply and the load, a voltage drop can occur. This can create problems in applications where precise voltage levels are critical. For this situation, RS+ / RS- terminals (19) are provided on the rear panel for remote sense connection.

## Connection and operation

- Ensure that the front panel OUTPUT selector (9) is OFF.
- Connect the load to either the front OUTPUT (2) or rear O/P alternative output (19) connections.
- Using separate leads, connect the RS terminals (19) to the load as well, be careful not to reverse polarity.
- If desired, utilize the REVIEW (7) function to verify proper voltage and current settings.
- Switch the OUTPUT selector (9) ON.

**Note:** Be extremely careful not to reverse the polarity between the main output and remote sensing terminals. Do not leave the load connected to the remote sensing terminals when not connected to the supply output. If the load must be disconnected while the supply is on, remove the remote sensing connections first.

## SPECIFICATIONS

Input Voltage	90 ~ 264Vac
No load Input Current at 230VAC	≤0.1A
Full Load Input Current at 230Vac	≤0.5A
AC Input Frequency	47Hz ~ 63Hz
Efficiency	≥75%
Power Factor	≥0.9
Constant Voltage and Current Range Selection:	0-16V / 5A selection I 0~16.4V / 0~5.1A 0-27V / 3A selection II 0~27.6V / 0~3.1A 0-36V / 2.2A selection III 0~36.8V / 0~2.3A
Constant Voltage Characteristics :	Load Regulation (0~100%) ≤20mV Line Regulation (±10%) ≤4mV Ripple & Noise (p-p) ≤30mV
Constant Current Characteristics :	Load Regulation (0~100%) ≤10mA Line Regulation (±10%) ≤10mA
Meter Accuracy :	Voltmeter Accuracy ±1% +2 counts Ammeter Accuracy ±1% +2 counts
Protection	Adjustable Upper Voltage Limit, Current Limiting Protection, Short Circuit, Overload, Over Temperature Protection
Cooling	Natural Convection
Dimensions in mm (WxHxD)	127 x 52 x 335mm / 5" (H) x 2" (W) x 13" (D).
Weight in Kg	1.9Kgs / 4.2Lbs

## **MAINTENANCE**

### **Cleaning**

- Use a damp cloth and a small amount of liquid detergent if necessary.
- Never submerge the power supply in liquid or allow any liquid to enter the case.
- Do not use any chemicals, abrasives or solvents that could damage the power supply casing.

### **Changing the fuse**

- Replace the fuse only with one of exactly the same type and rating.
- Disconnect the mains power and unplug the mains lead before replacing the fuse.



**INFORMATION ON WASTE DISPOSAL FOR CONSUMERS OF ELECTRICAL & ELECTRONIC EQUIPMENT.**

When this product has reached the end of its life it must be treated as Waste Electrical & Electronic Equipment (WEEE). Any WEEE marked products must not be mixed with general household waste, but kept separate for the treatment, recovery and recycling of the materials used. Contact your local authority for details of recycling schemes in your area.



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