

# **TENMA®**



**Multiple Channel Digital Control and  
Programmable DC Power Supply  
Model: 72-2630, 72-2635, 72-2640 and 72-2645**

## **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.**

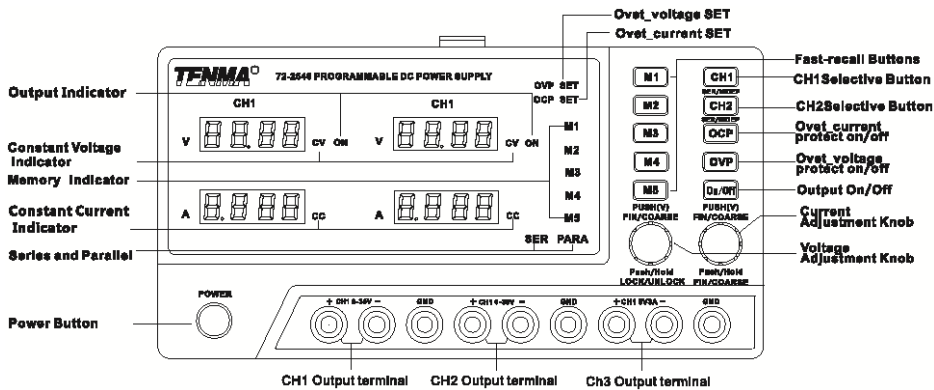
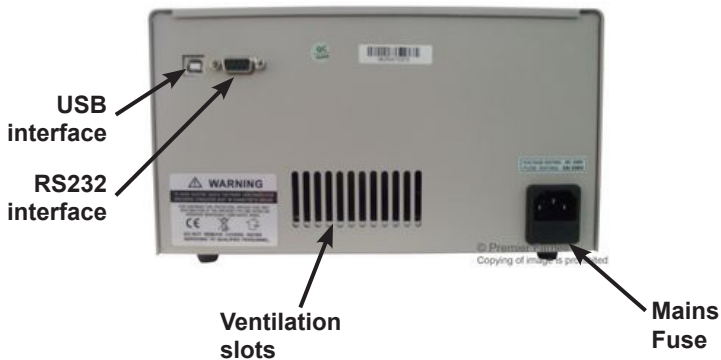
**Read all instructions before using the appliance and retain for future reference.**

- 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.
- Do not block or obstruct the cooling fan 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.

## **PRODUCT OVERVIEW**

### **Main Features**

- Low noise, stepless speed cooling fan.
- Over temperature protection.
- Digital panel - 4 digit LED display.
- Software calibration.
- Audible output sounder.
- Key lock function.
- Overload and reverse polarity protection.
- 5 pairs of memory function.
- Shutdown memory function.
- USB and RS232 interface (72-2635 and 72-2645 only).



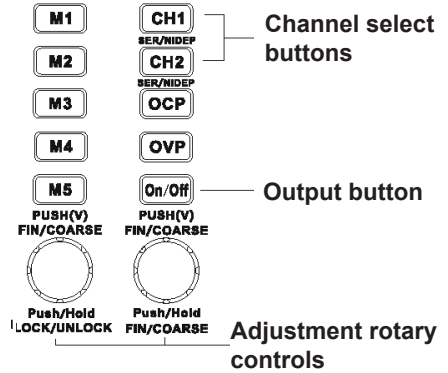
**WHAT'S INCLUDED**

- Power Supply Unit
- Mains power lead
- USB cable (72-2635 and 72-2645 only)
- User Manual

## OPERATION

### Front panel control keys

- Press the POWER button on the front control panel to switch the power supply on.
- The setting defaults to the last used on initial power on.
- Press the power button again to turn the power supply off.

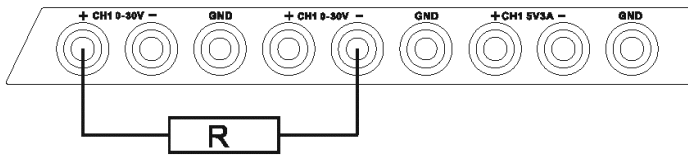


### Setting the output

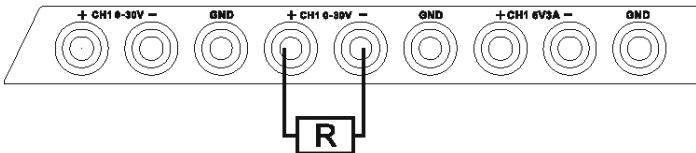
- Connect the load to the front panel terminals.
- Press the button CH1 and the CH1 display indicator flashes; press CH1 again and the first digit on the channel 1 display flashes. The voltage value can be set by adjusting the voltage adjustment rotary control. Press the voltage control and the digit to be adjusted can be changed.
- Press the button CH1 again to switch to the current setting, when the value can be set by adjusting the rotary control following the same operating sequence.
- After the voltage and current values are set, press the button ON/OFF to turn on the output, then the ON indicator on the display will be lit.
- Press the button ON/OFF again to turn off the output.
- Channel 2 can be configured using the same sequence of operation using the CH2 button.

### Series or Parallel operation

- Press and hold the button CH1 for 3 seconds to be in the series mode.
- When the SER indicator on the display lights, the power supply is in series mode. In this mode, CH2 is the master operation and CH1 is the slave operation and the CH1 operation is shielded.
- Press the button ON/OFF and then the output can be turned on or off.



- Press and hold the button CH1 for 3 seconds to be in the parallel mode.
- When the PARA indicator on the display lights, the power supply is in the parallel mode. In this mode, CH2 is the master operation and CH1 is the slave operation, and the CH1 operation is shielded.
- Press the button ON/OFF and then the output can be turned on or off.



### **Saving setting to memory**

- There are 5 internal memory addresses that can be used to store settings.
- All current settings including voltage, current, OCP and OVP are stored.
- The output is always OFF and the front panel key lock is OFF by default when recalling stored settings from memory.
- To store a setting press and hold any of the five buttons M1, M2, M3, M4 and M5.
- The LED will blink and the setting is stored when the LED goes off.

### **Recalling a setting from memory**

- To recall a setting press any of the five buttons M1, M2, M3, M4 and M5.
- The setting is restored.

### **Overcurrent Protection setting**

- Press and hold the button OCP for 3 seconds to enter the OCP setting mode, and the indicator OCP SET displays. The current set values on both CH1 and CH2 are displayed accordingly.
- By adjusting the current rotary control, the OCP value can be changed.
- Press and hold the button OCP again for 3 seconds to exit.
- Press the button OCP to switch on the Overcurrent Protection mode and the indicator OCP is lit.
- Press the button OCP again to quit the OCP mode and the indicator OCP will turn off.
- When the OCP mode is on, if the current value on the load or the setting current is more than that set in the OCP mode, the output will be switched off.

### **Overcurrent Protection setting**

- Press and hold the button OVP for 3 seconds to enter the OVP setting mode, and the indicator OVP SET displays. The current set values on both CH1 and CH2 are displayed accordingly.
- By adjusting the voltage rotary control, the OVP value can be changed.
- Press and hold the button OVP again for 3 seconds to exit.
- Press the button OVP to switch on the Overvoltage Protection mode and the indicator OVP is lit.
- Press the button OVP again to quit the OVP mode and the indicator OVP will turn off.
- When the OVP mode is on, if the voltage value on the load or the setting voltage is more than that set in the OVP mode, the output will be switched off.

### **Keyboard Lock**

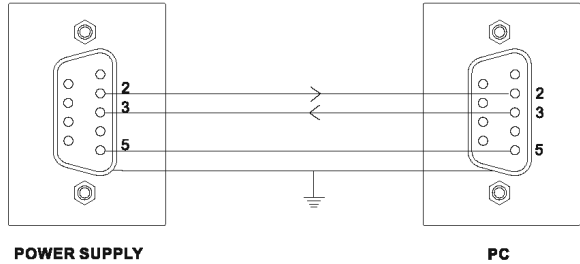
- Press and hold the voltage rotary control for 3 seconds, and then the front panel controls will be locked.
- Press and hold it again for 3 seconds, and they will be unlocked.

### **Sounder ON/OFF**

- Press and hold the current rotary control for 3 seconds, and the sounder will be disabled.
- Press and hold it again for 3 seconds, and it will be restored.

## REMOTE CONTROL

- COM setting Set up the COM port inside the PC according to the following:
- Baud rate: 9600
- Parity bit: None
- Data bit: 8
- Stop bit: 1
- Data flow control: None



### Functionality Check

- Run this query command via the terminal check application such as MTTY (Multi-threaded TTY).
- \*DIN?
- This should return the identification information if the interface is functioning:  
Manufacturer, model name, software version.  
TENMA 72-2645 Vx.xx

### Remote Control Syntax V2.0

#### Command format : VSET <X>:<NR2>

1. VSET: command header
2. X:output channel
3. : separator
4. NR2: parameter

#### Command Details:

1. **LOCK<NR2>**
  - Description: LOCK or UN LOCK the front panel
  - Example:LOCK1
  - LOCK the front panel
  - Example:LOCK0
  - UNLOCK the front panel
2. **ISET<X>:<NR2>**
  - Description: Sets the output current.
  - Example:ISET1:2.225
  - Response time 50ms
  - Sets the CH1 output current to 2.225A
3. **ISET<X>?**
  - Description: Returns the output current setting.
  - Example: ISET1?
  - Returns the CH1 output current setting.
4. **VSET<X>:<NR2>**
  - Description: Sets the output voltage.
  - Example VSET1:20.50
  - Sets the CH1 voltage to 20.50V

**5. VSET<X>?**

- Description: Returns the output voltage setting.
- Example VSET1?
- Returns the CH1 voltage setting

**6. IOUT<X>?**

- Description: Returns the actual output current.
- Example IOUT1?
- Returns the CH1 output current

**7. VOUT<X>?**

- Description: Returns the actual output voltage.
- Example VOUT1?
- Returns the CH1 output voltage

**8. OUT<Boolean>**

- Description: Turns on or off the output.
- Boolean: 0 OFF, 1 ON
- Example: OUT1 Turns on the output

**9. BEEP<Boolean>**

- Description: Turns on or off the beep. Boolean:
- boolean logic.
- Example BEEP1 Turns on the beep.

**10. STATUS?**

- Description: Returns the POWER SUPPLY status.
- Contents 8 bits in the following format

Bit	Item	Description
0	CH1	0=CC mode, I=CV mode
1	CH2	0=CC mode, I=CV mode
2,3,4,5	N/A	
6	Output	0=Off, I=On
7	N/AN/A	

**11. \*IDN?**

- Description: Returns the 72-26XX identification.
- Example \*IDN?
- Contents TENMA 72-26XX V2.0 (Manufacturer, model name,).

**12. RCL<NR1>**

- Description: Recalls a panel setting.

## 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.
- Fuse required T3A/250V 20x5mm dia (72-2630 & 72-2635) and T5A/250V 20x5mm dia (72-2640 & 72-2645).

## SPECIFICATIONS

Models	72-2630 & 72-2635	72-2640 & 72-2645
Voltage range	0-30V x2, 5V x1	0-30V x2, 5V x1
Current range	0-3A x2, 3A x1	0-5A x2, 3A x1
<b>Load regulation</b>		
Voltage	≤0.01%+3mV	≤0.01%+5mV
Current	≤0.1%+5mA	≤0.1%+10mA
<b>Line regulation</b>		
Voltage	≤0.01%+3mV	≤0.01%+3mV
Current	≤0.1%+3mA	≤0.1%+3mA
<b>Setup resolution</b>		
Voltage	10mV	10mV
Current	1mA	1mA
<b>Setup Accuracy (25°C±5°C)</b>		
Voltage	≤0.05%+20mV	≤0.05%+20mV
Current	≤0.5%+5mA	≤0.5%+10mA
<b>Ripple (20-20M)</b>		
Voltage	≤1mVrms	≤2mVrms
Current	≤3mArms	≤3mArms
<b>Temp. Coefficient</b>		
Voltage	≤150ppm	≤150ppm
Current	≤150ppm	≤150ppm
<b>Read Back Accuracy</b>		
Voltage	10mV	10mV
Current	1mA	1mA
<b>Read Back Temp. Coefficient</b>		
Voltage	≤150ppm	≤150ppm
Current	≤150ppm	≤150ppm



### 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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