



Digital-Control and Programmable DC Power Supply

Models: 72-2685, 72-2690, 72-2695, 72-2700,
72-2705, 72-2710, 72-2715 & 72-2720



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.

Made in China. PR2 9PP
V1.0

WHAT'S INSIDE?

Details	Page Number
Safety Instructions	2
Front Panel	3
Voltage and Current Adjustment Knob Operation	3
Operation of LOCK Function	5
Operation of Over Current Protection	5
Specifications	6
Remote Control	7

Main Features

- 4-digit display
- Low noise
- Cooling fan controlled by Heatsink temperature
- Constant voltage
- Digital panel control
- Software calibration
- Over Current Protection
- 2 adjusting modes of voltage and current
- Button lock function

Safety Instructions

- Do not block or obstruct the cooling fan vent opening.
- Avoid severe impacts or rough handling that could lead to damage.
- Do not discharge static electricity.
- Do not disassemble unless you are qualified as service personnel.

AC Input



- AC input voltage: 110V / 120V / 220V / 230V, 50 / 60Hz
- Connect the protective grounding conductor of the AC power cord to an earth ground, to avoid electrical shock.

Operation Environment

- Location: Indoor, no direct sunlight, dust free, almost non-conductive pollution.
- Relative humidity: <80%
- Altitude: <2000m
- Temperature: 0 to 40°C (32 to 104°F)

Storage Environment

- Location: Indoor
- Relative humidity: <70%
- Temperature: -10 to 70°C (14 to 158°F)

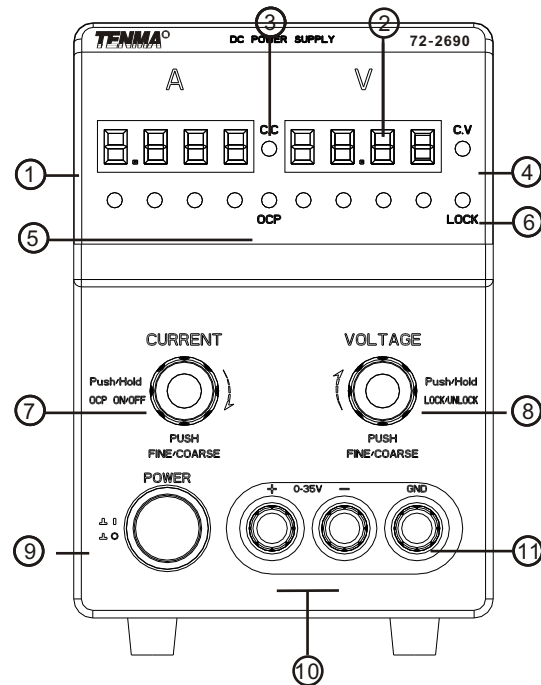
Fuse Type



Model	110/120V	220/230V
72-2685/72-2705	T4A/250V	T2A/250V
72-2690/72-2710	T5A/250V	T3A/250V
72-2695/72-2715	T5A/250V	T3A/250V
72-2700/72-2720	T5A/250V	T3A/250V

- To ensure fire protection, replace the fuse only with the specified type and rating.
- Disconnect the power cord before fuse replacement.
- Make sure the cause of the fuse blowout is fixed before fuse replacement.

Front Panel



1. Displays the setup value of the output current.
2. Voltmeter displays the setup value of the output voltage.
3. Constant current mode.
4. Constant voltage mode
5. Over current protection active.
6. Panel LOCK indicator.
7. Adjustment knob for current.
8. Adjustment knob for voltage.
9. Power ON/OFF button.
10. Output terminals.

Voltage and Current Adjustment Knob Operation

There are two adjustment modes for the voltage and current levels - Mode 1 and Mode 2. Mode 1: before setting, push the knobs to adjust the voltage and current levels. Mode 2: adjust directly, there is no need to push the knobs. These two modes can be shifted by pushing the voltage adjustment knob and the current adjustment knob at the same time and holding for two seconds.

3. VSET <X>: <NR2>

Description: Sets the output voltage.

Example: VSET1:20.50.

Sets the CH1 voltage to 20.50V.

4. VSET <X>?

Description: Returns the output voltage setting.

Example VSET1?

Returns the CH1 voltage setting.

5. IOUT<X>?

Description: Returns the actual output current.

Example IOUT1?

Returns the CH1 output current.

6. VOUT <X>?

Description: Returns the actual output voltage.

Example VOUT1?

Returns the CH1 output voltage.

7. OUT<Boolean>

Description: Turns on or off the output.

Boolean: 0 OFF, 1 ON.

Example: OUT1 turns on the output.

8. STATUS?

Description: Returns the POWER SUPPLY status.

Contents 8 bits in the following format:

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

9. *IDN?

Description: Returns the 72-2685 identification.

Example: *IDN?

10. RCL<NR1>

Description: Recalls a panel setting.

NR1 - 5: Memory number 1 to 5.

Example: RCL1 recalls the panel setting stored in memory number 1.

11. SAV<NR1>

Description: Stores the panel setting.

NR1 - 5: Memory number 1 to 5

Example: SAV1 stores the panel setting in memory number 1.

12. OCP<NR1>

Description: Over current.

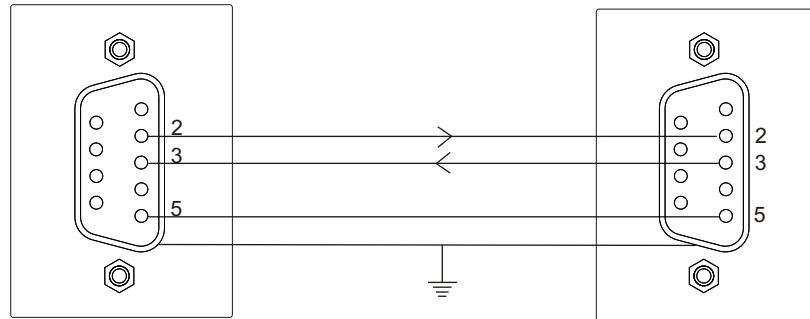
Example: OCP1 OCP OPEN.

REMOTE CONTROL

COM setting: Set up the COM port inside the PC according to the following list:

- Baud rate: 9600
- Parity bit: None
- Data bit: 8
- Stop bit: 1
- Data flow control: None

RS232 Interface Definition



72-2710 DC Power Supply

PC

Functionality check

Run this query command via the terminal application such as Multi-threaded TTY.

*DIN?

This should return the identification information:
Manufacturer, model name, software version.
TENMA 72-2685 Vx.xx

KD Series 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. ISET<X>:<NR2>

Description: Sets the output current

Example: **ISET1:2.225**

Response time: 50ms

Sets the CH1 output current to 2.225A

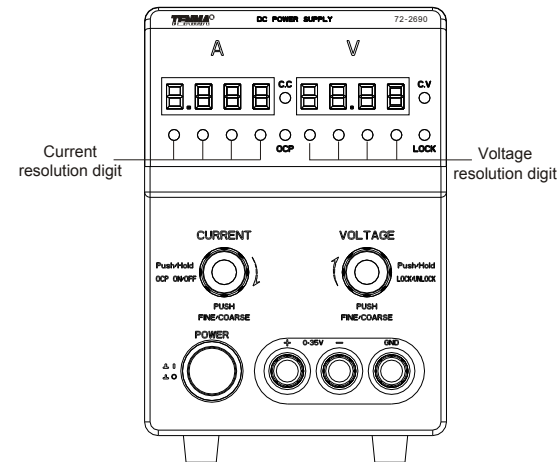
2. ISET <X>?

Description: Returns the output current setting

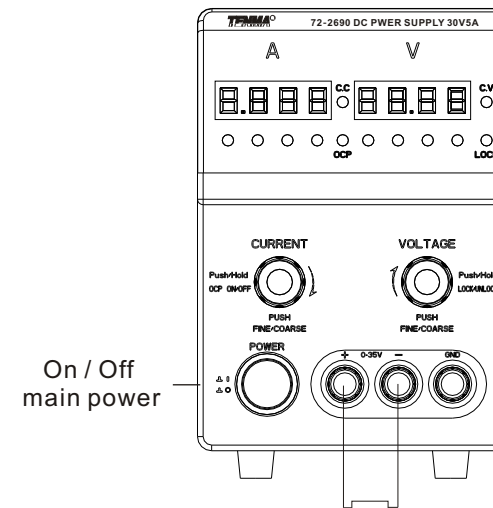
Example: **ISET1?**

Returns the CH1 output current setting.

Mode 1



Power switch and output terminals



On / Off main power

Voltage adjustment knob: Push the voltage adjustment knob and then one of the voltage indicators will light up, meaning the voltage output can be changed by adjusting the knob.

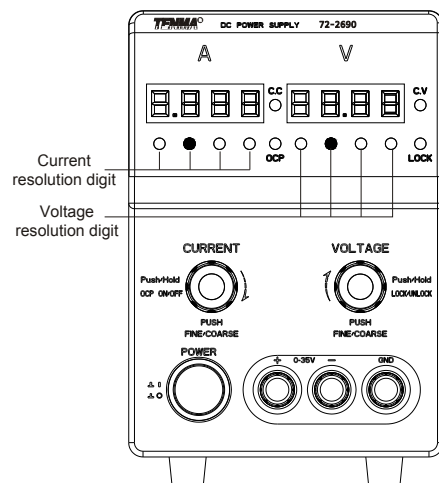
Meanwhile the rotation can be changed by pushing the voltage knob.

Current adjustment knob: Push the current adjustment knob and then one of the current digit indicators will light up, meaning the current output can be changed by adjusting the knob.

Push the knob again to light up another indicator, which changed the resolution of the knob rotation.

Mode 2

In Mode 2, rotate the adjustment knobs to adjust the voltage and current values. The default adjusting resolution of the voltage initial settings is 1V while that of the current is 100mA. The voltage and current adjusting resolution can be changed by pushing the knobs.



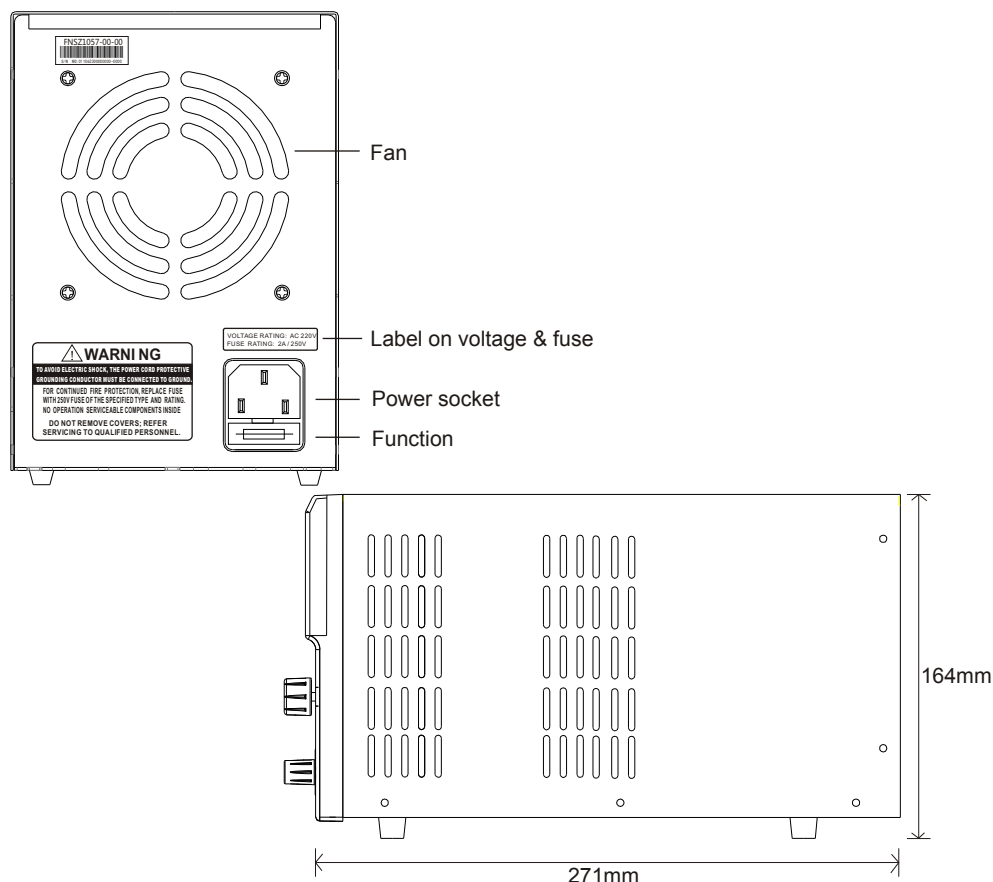
Operation of LOCK Function

Press and hold for three seconds to lock the front panel and then press again and hold for 3 seconds to unlock.

Operation of Over Current Protection

Press and hold for three seconds to start OCP mode, where the output will be cut off when the output current reaches the set value. In the OCP mode, press the knob to recover the output.

Rear Panel & Dimension Figure



Specifications

Note: The specifications below are tested under temperatures ranging from -5°C to 25°C and having been warmed up for 20 minutes.

Models	72-2685/72-2705	72-2960/72-2710	72-2695/72-2715	72-2700/72-2720
Voltage	0-30V	0-30V	0-60V	0-60V
Current	0-3A	0-5A	0-2A	0-3A
Load Regulation				
Voltage	$\leq 0.01\% + 2\text{mV}$	$\leq 0.01\% + 2\text{mV}$	$\leq 0.01\% + 2\text{mV}$	$\leq 0.01\% + 2\text{mV}$
Current	$\leq 0.1\% + 5\text{mA}$	$\leq 0.1\% + 5\text{mA}$	$\leq 0.1\% + 5\text{mA}$	$\leq 0.1\% + 5\text{mA}$
Line Regulation				
Voltage	$\leq 0.01\% + 3\text{mV}$	$\leq 0.01\% + 3\text{mV}$	$\leq 0.01\% + 3\text{mV}$	$\leq 0.01\% + 3\text{mV}$
Current	$\leq 0.1\% + 3\text{mA}$	$\leq 0.1\% + 3\text{mA}$	$\leq 0.1\% + 3\text{mA}$	$\leq 0.1\% + 3\text{mA}$
Setup Resolution				
Voltage	10mV	10mV	10mV	10mV
Current	1mA	1mA	1mA	1mA
Setup Accuracy (-5°C to 25°C)				
Voltage	$\leq 0.5\% + 20\text{mV}$	$\leq 0.5\% + 20\text{mV}$	$\leq 0.5\% + 30\text{mV}$	$\leq 0.5\% + 30\text{mV}$
Current	$\leq 0.5\% + 5\text{mA}$	$\leq 0.5\% + 10\text{mA}$	$\leq 0.5\% + 5\text{mA}$	$\leq 0.5\% + 5\text{mA}$
Ripple (20-20m)				
Voltage	$\leq 1\text{mVrms}$	$\leq 2\text{mVrms}$	$\leq 1\text{mVrms}$	$\leq 1\text{mVrms}$
Current	$\leq 3\text{mA rms}$	$\leq 3\text{mA rms}$	$\leq 3\text{mA rms}$	$\leq 3\text{mA rms}$
Temperature Coefficient				
Voltage	$\leq 150\text{ppm}$	$\leq 150\text{ppm}$	$\leq 150\text{ppm}$	$\leq 150\text{ppm}$
Current	$\leq 150\text{ppm}$	$\leq 150\text{ppm}$	$\leq 150\text{ppm}$	$\leq 150\text{ppm}$
Read Back Resolution				
Voltage	10mV	10mV	10mV	10mV
Current	1mA	1mA	1mA	1mA
Read Back Temperature Coefficient				
Voltage	$\leq 150\text{ppm}$	$\leq 150\text{ppm}$	$\leq 150\text{ppm}$	$\leq 150\text{ppm}$
Current	$\leq 150\text{ppm}$	$\leq 150\text{ppm}$	$\leq 150\text{ppm}$	$\leq 150\text{ppm}$
Interfaces				
USB RS232, for models 72-2705, 72-2710, 72-2715 & 72-2720				
Accessories				
User manual x1, power cord x1, USB cable (72-2705, 72-2710, 72-2715, 72-2720)				
Weight & Dimensions (WxHxD)				
72-2685, 72-2690, 72-2695, 72-2700: 110x156x260mm				
72-2685: 4kg, 72-2690: 4.8kg				