



USER'S MANUAL

Single output DC Bench Power Supplies
with Large LCD

APS-1721/1721L/1721LS



www.tmatlantic.com

General Description:

Your new DC Regulated Power Source provides accurate&stable DC power. It is ideal for test benches, laboratories, schools & repair facilities. The multi-turn voltage control knob helps the user accurately dial in a precise voltage. It is easy to read digital outputs (voltage & current) through a large LCD displays. It incorporates SMT PC boards &a cooling fan for reliable performance.

Features:

- *SMD adhesive sheet element technology for internal PCB construction
- *Attractive yellow large liquid crystal display shows voltage & current
- *A cooling fan
- *Multiloop high precision voltage regulation
- *Progressive current regulation
- *Dual terminal system. Safety test style or expandable screw terminals
- *Overload protection circuit
- *Low ripple voltage: <1mVp-p
- *Output polarity: positive or negative
- *Rugged reinforced metal frame construction

Specifications:

Voltage	Current	Display
0-120VDC	0-1A	100mV 1mA

Source effect: $5 \times 10^{-4} = 2\text{mV}$

Load effect: $5 \times 10^{-4} = 2\text{mV}$

Ripple coefficient: <250uV

Stepped current: 30mA±1mA

1. General Description:

Utilizes SMD technology

Single/Dual Output Light and Compact

Output Polarity: Positive and Negative

LCD Display shows Voltage and Current value

Low Ripple Voltage Less Than 1mVp-p

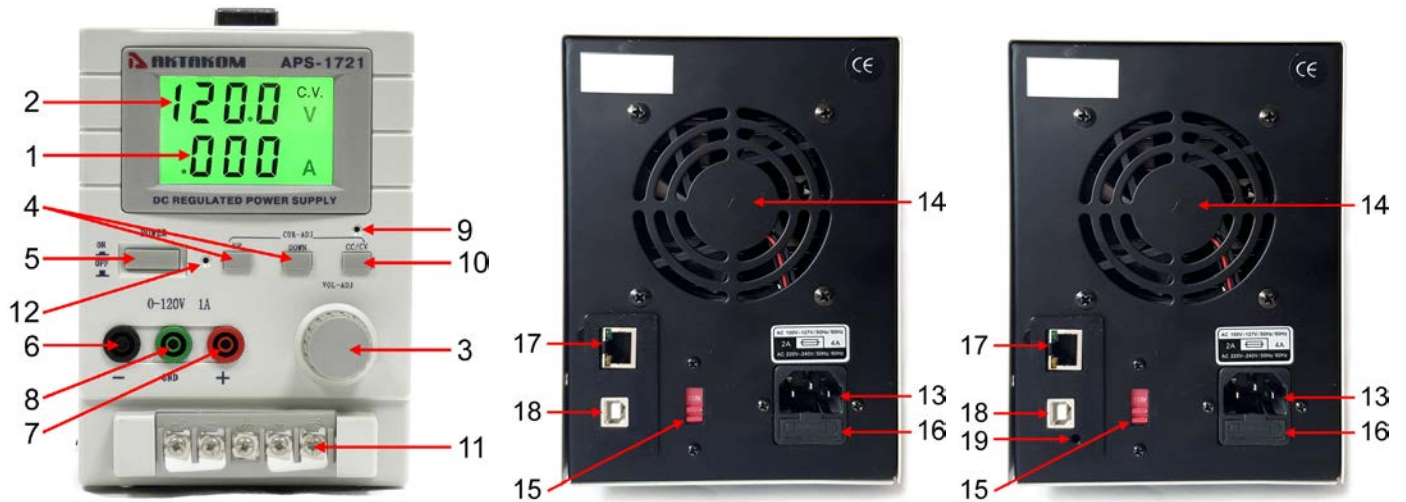
Overload Protection Circuit

Applicable for School, Production Line, Laboratory and Maintenance

Specifications:

Input Voltage	110V/220V AC	50Hz/60Hz
Voltage Regulation	$CV \leq 5 \times 10^{-5} mV$	
Load Regulation	$CV \leq 5 \times 10^{-5} mV$	
Ripple & Noise	$CV < 0.5 mV r.m.s$	$CC < 2 mA r.m.s$
Protection	current Limiting	
Voltage Indication Accuracy		LCD $\pm 1\% + 2$ Digits
Current Indication Accuracy		LCD $\pm 2\% + 2$ Digits
Ambient Temperature		0 ~ +40°C
Humidity	<90%	
Dimensions(Single)	180(w)×130(H)×300(D)	
Weight	6.8kg	
Accessory	Instruction Manual, Power cord , Test Lead	

Front Panel Controls



Front panel

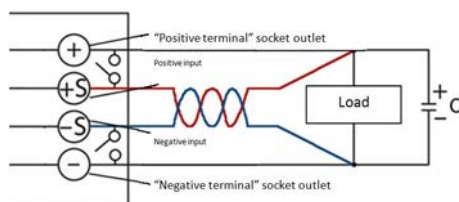
Rear panel

Rear panel (APS-1721LS)

- (1) Current Indication
- (2) Voltage Indication
- (3) Fine (10 Turns) adjustment of Voltage
- (4) Up/Down Adjustment of Current
- (5) Power On/Off
- (6) Negative Output Terminal
- (7) Positive Output Terminal
- (8) Ground Connection
- (9) Constant Current Indicator
- (10) Constant Current Switch
- (11) External Power Output Connection*
- (12) Interface Indicator (APS-1721L and APS-1721LS only):
 - Green – LAN Interface is used, no data transfer
 - Green blinking – LAN Interface is used, data transfer
 - Red – USB Interface is used, no data transfer
 - Red blinking – USB Interface is used, data transfer
- (13) Grounding Power cable
- (14) Cooling fan
- (15) Transfer switch
- (16) Fuse
- (17) LAN Interface (APS-1721L and APS-1721LS only)
- (18) USB Interface (APS-1721L and APS-1721LS only)
- (19) Trigger Input (APS-1721LS only)

* External Power Output is used for four-wire connection method. Power supply to load four-wire (4-wire) connection method is designed for the influence decrease (compensation) of the connecting

wires resistance. This feature is rather useful because the resistive value of the wires resistance, when connecting the load, distorts the set output voltage of the power supply. Therefore the power supply output voltage can differ from the true value. This connection allows you to compensate up to 1V of the dynamic voltage drop on the connecting wires. To implement the four-wire connection it's necessary to connect + /-SENSE control inputs of the power supply to the load point under control using a thin twisted shielded pair.



If the load placed distantly from the power source it can cause the output voltage oscillation of the power supply. There can be a capacitor of 100 μ F connected parallel to the load in order to eliminate this effect.

The unit has one output display. The display has two figures. One is Voltage and the other is current. The Voltage is 0-50 Volts with 0-3Amps. The fan of unit turns on when the temperature reaches 140°F or 60°C. It has a standard 110V/220VAC input only with fuse protecting.

2. Pre-starting procedure

1. Connect the power cord to the device.
2. Connect the device to the AC network with a standard cable through a socket equipped with a protective grounding.
3. Turn «VOL-ADJ» voltage regulator counterclockwise until it stops.
4. Power on the device by pressing POWER button. When the device is on, the digital indicators of the output voltage and current should light up.
5. Turn «VOL-ADJ» voltage regulator clockwise until it stops to make sure that the output voltage increases to the maximum value, then counterclockwise until it stops to check that the output voltage decreases to 0.
6. Set «VOL-ADJ» regulator to the middle position.
7. Press CC/CV button, the red CC mode indicator will light up. Short-circuit the output terminals «+» and «-». Then by pressing UP and DOWN buttons check that the current limit value can be set between zero and the maximum value. Press CC/CV button again, the red CC indicator will turn off.

3. Operating procedure

3.1. Operation in constant current mode

1. Using «VOL-ADJ» regulator set the required output voltage value (at this moment nothing should be connected to the output terminals «+» and «-»).
2. Press «CC/CV» button, the red CC mode indicator will light up. Short-circuit the output terminals «+» and «-». Use UP and DOWN buttons to set the maximum allowable current value (current limit) for your load. If in operating mode the load resistance change causes the exceeding of the specified current limit,

the device will automatically enter the current stabilization mode and the output voltage will drop proportionally.

Press CC/CV button again, the red CC indicator will turn off.

3. Open the output terminals «+» and «-» and connect the load to the device.

4. Disconnect the load before switching off the device.

3.2. Operation in constant voltage mode

1. Regulate «VOL-ADJ» voltage regulator so as to obtain the maximum allowable load voltage at the device output. If in the operating mode the load resistance value change causes the exceeding of specified voltage limit value, the device will automatically switch to constant voltage mode with the preset voltage limit value at the output terminals «+» and «-», and the output current will decrease proportionally.

2. Short-circuit the output terminals. Press CC/CV button, the red CC mode indicator will light up. Short-circuit the output terminals «+» and «-». Use UP and DOWN buttons to set the maximum allowable current value (current limit) for your load.

Press CC/CV button again, the red CC indicator will turn off.

3. Open the output terminals «+» and «-» and connect the load to the device.

4. Disconnect the load before switching off the device.

3.3. Remote control (APS-1721L and APS-1721 with LS option only)

The package of the purchased device (APS-1721L, APS-1721 with LS option) includes software (shareware version), which does not have a physical medium (CD-disk).

You can download the software from www.tmatlantic.com.

If necessary the software can be recorded to the CD and shipped to the customer for an additional cost.

To download the shareware version of the software, go to www.tmatlantic.com, log in with your username and password. If you have not previously registered on www.tmatlantic.com, follow the link "Registration" and specify all the necessary data. Then select your device from the list and enter its serial number.

ATTENTION! Serial number must be entered exactly as it appears on the device, with all the letters, numbers and other characters. Next, you need to register your AKTAKOM product if you have not done so already, and accept the License Agreement, then you will be provided with links to the files available for download.

Power supply with L or LS option provides remote control via USB or LAN (TCP/IP protocol).

1. The first connection to the PC must be done via the USB interface. This will allow you to set the local network parameters to connect the power supply via LAN interface.

For the automatic search and connection of the device, it is not recommended to run Aktakom Power Manager (APM) program installed on your PC but first to connect the device USB cable to the PC, and then to run the program and agree with the automatic device search.

ATTENTION! When you run Aktakom Power Manager for the first time it will require the License key. This key can be obtained (copied) on www.tmatlantic.com after the device registration. You can also enter the key later. If after the program run the key is not entered the program will work in demo mode.

2. The USB interface has priority. When the USB cable is connected, the device control is transferred to the PC and the program connected via USB.

ATTENTION! Disconnection of the USB or LAN cable or the control program will return the voltage and current values manually preset by LOAD button and front panel knobs. It is always recommended to turn off LOAD button before entering remote control mode.

3. LAN interface should be pre-configured. Therefore you may use Aktakom Net Configurator (ANC) program (version 1.1.0.6 or higher). ANC program can be downloaded free of charge from www.tmatlantic.com.

4. For the power supply remote control you can use Aktakom Power Manager and Aktakom Power Manager Light (APMLight) software or create your own program using the software development kit (SDK). The SDK comes in two variants: APSxxxxL_SDK_Base Basic SDK and APSxxxxL_SDK Complete SDK.

5. Aktakom Power Manager Light (APMLight) software (shareware version) provides remote control of the output voltage and stabilization current of the power supply in manual mode directly in the program.

6. Aktakom Power Manager (APM) software provides wide opportunities to control the output voltage and stabilization current both in arbitrary (manual) and functional modes. Functional control is a powerful tool of APM program which allows you not only to automatically control the device using a computer but also to program it for autonomous operation according to a predetermined algorithm. The functional control mode in APM allows you to automatically control the output parameters (voltage or current) of the power supply according to the law set by the graphical and tabular editors. In the convenient graphical editor user can set both 10 standard forms of changing parameters (which are: sine, square, triangle, saw, flash, pulse, 2 types of exponentials, 2 types of S-curves) and almost any arbitrary shape that can be described as formula. Using this software user can control the output voltage and current of both power supplies equipped with control ADCs and without ADCs. At the same time in power supplies with ADC the values are measured hardwarily at the device output, and for power supplies without ADC the parameters are determined by the specified value. It is possible to work with the program in the hardware emulation mode (this software version is an additional paid option and should be purchased separately).

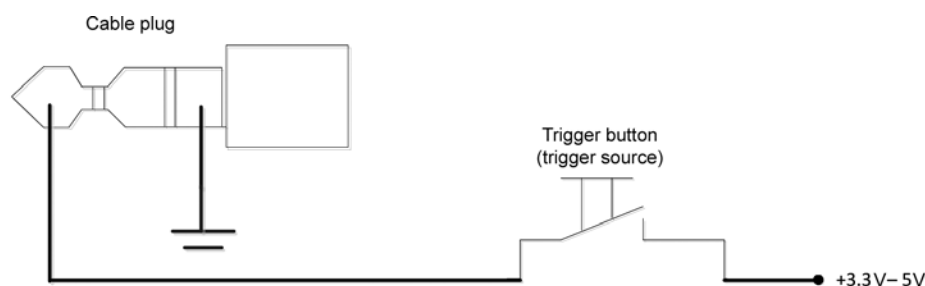
7. For detailed information about SDK and its use please visit www.tmatlantic.com.

8. The software is licensed. When you run the program for the first time you should accept the license agreement.

3.4. External trigger (APS-1721 with LS option only)

Power supply with LS option provides external triggering capability on a signal set to the external trigger input.

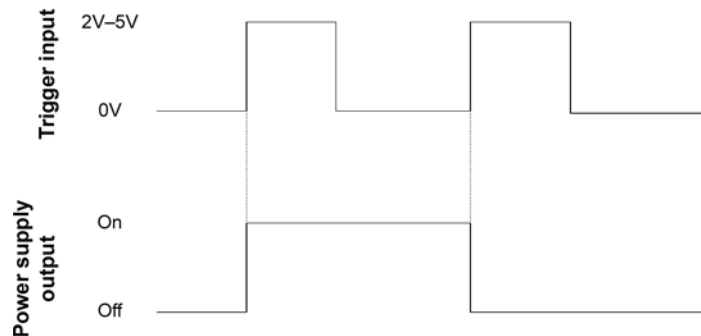
Trigger signal is 0 to 5V DC voltage (5.5V max), the current should not exceed 5mA (input resistance of the trigger input is 3.6k Ω). Trigger connector is a standard stereo 3.5mm jack audio connector. The connection method is shown below.



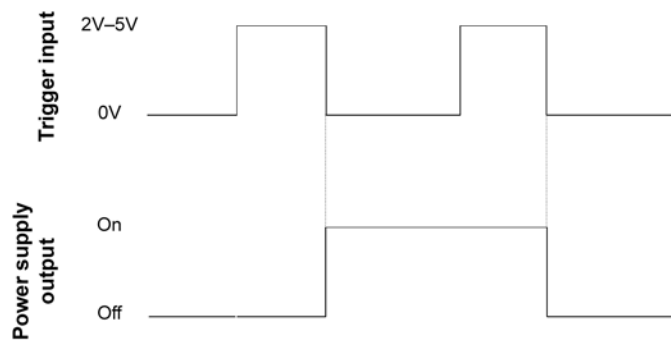
Trigger input is not galvanically connected to the circuits inside the power supply. Triggering occurs in accordance with a trigger event.

Trigger events:

1. Rising Edge. Power supply output turns on when the transition of the trigger signal from the lower state to the upper state is detected.



2. Falling Edge. Power supply output turns on when the transition of the trigger signal from the upper state to the lower state is detected.



Event trigger mode should be activated in Aktakom Power Manager (APM) and Aktakom Power Manager Light (APMLight) software first. Activated trigger events set the prespecified output voltage or stabilization current in the program or provide a transition to the next step of the functional control set in Aktakom Power Manager.

Detailed trigger use is described in the software description.

4. Attention:

4.1 The mains power must be switched off before servicing and servicing should be referred to a qualified person.

4.2 The unit should be stored in a dry and well ventilated place and the power cord should be removed for long periods of inactivity.

5. Accessories:

5.1 Power cord----- one piece

5.2 Instruction Manual-----one piece

5.3 One set of Banana plug to Alligator Clips

5.4 One set of hook up wires for external hook up.

5.5 External trigger cable (APS-1721LS only)