

CA18300

Triple-Output Regulated DC Power Supplies



Madell Technology Corporation

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1. Introduction

CA18300 series DC power supplies are triple outputs, voltage and current adjustable high precision, low ripple, linear power supplies with constant voltage or constant current (CV, CC) controls.

The CA18300 DC power supplies have 3 digits four LED displays of voltage and current. All the models equipped with 5V and 3A output fixed output. The two adjustable channels can be used as independently isolated, serial or parallel. Also, one channel can be the master of the other channel. The output voltage is the summation of the two channels when the power supply is used in serial mode, and the output current is the summation of the two channels when it is used in parallel mode.

Table 1

	CA18302D	CA18303D	CA18305D
Output Voltage	0-30V	0-30V	0-30V
Output Current	0-2A	0-3A	0-5A
Fixed channel	5V, 3A	5V, 3A	5V, 3A

2. Specifications

2.1 Input Voltage: 220VAC±10%, 60Hz

2.2 Adjustment

2.2.1 Output voltage range: see Table 1

2.2.2 Output current range: see Table 1

2.2.3 Stability: CV≤0.01%+3mV, CC≤0.2%+3mA

2.2.4 Load stability: CV≤0.01%+3mV(I≤3A), CC≤0.2%+3mA(I≤3A)
CV≤0.02%+5mV(I>3A), CC≤0.2%+5mA(I>3A)

2.2.5 Ripple and noise:

CV≤1.0mVrms%(I≤3A), CC≤03mArms(I≤3A)
CV≤2.0mVrms%(I>3A), CC≤6mArms(I>3A)

2.2.6 Protection: Current limit and short circuit cut off

2.2.7 Voltage display precision: ±(0.5% of reading + 2 digits)

2.2.8 Current display precision: ±(1% of reading + 2 digits)

2.3 Fixed channel

2.3.1 Output voltage: 5V±0.25V

2.3.2 Maximum output current: 3A

2.3.3 Voltage stability: ≤5mV

2.3.4 Load stability: ≤15mV

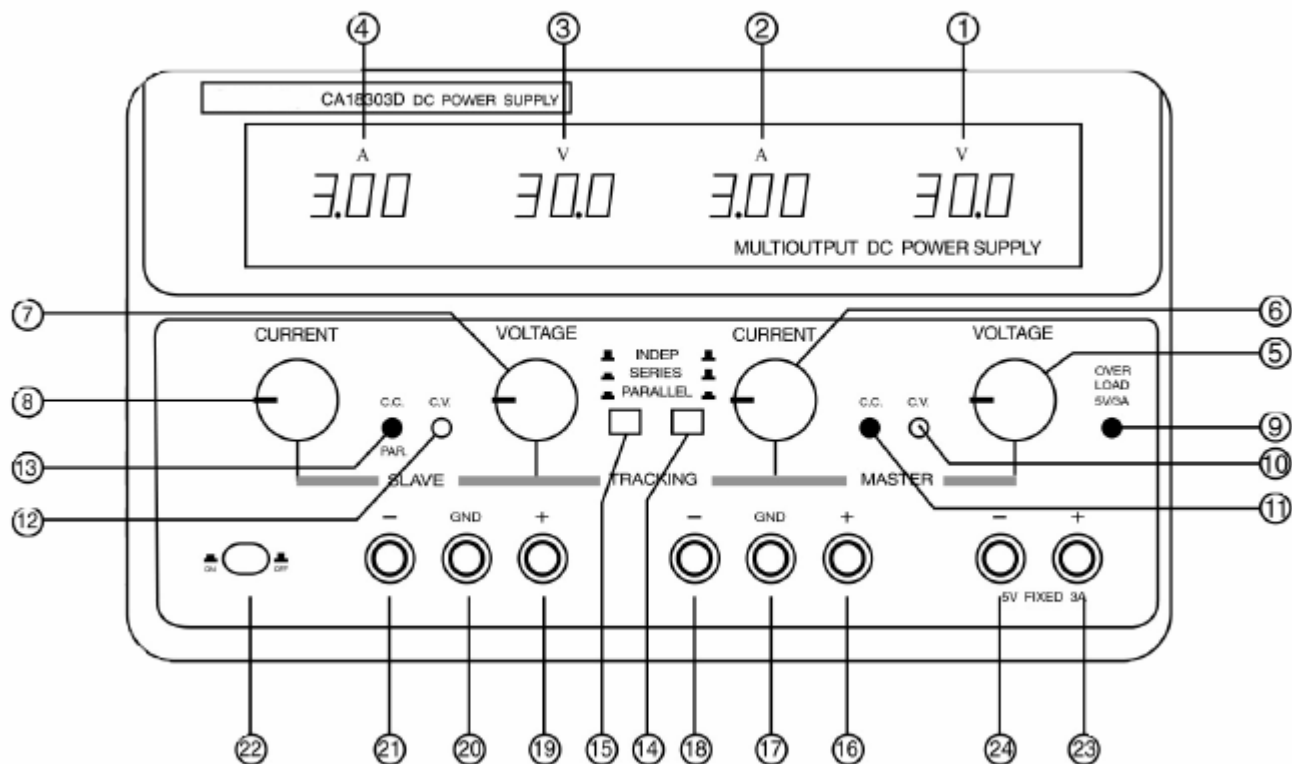
2.3.5 Ripple and noise: ≤20mVrms

2.3.6: Protection: Current limit and short circuit cut off

2.4 Operating condition: 0~+40°C, relative Humidity: <80%

3. Operation

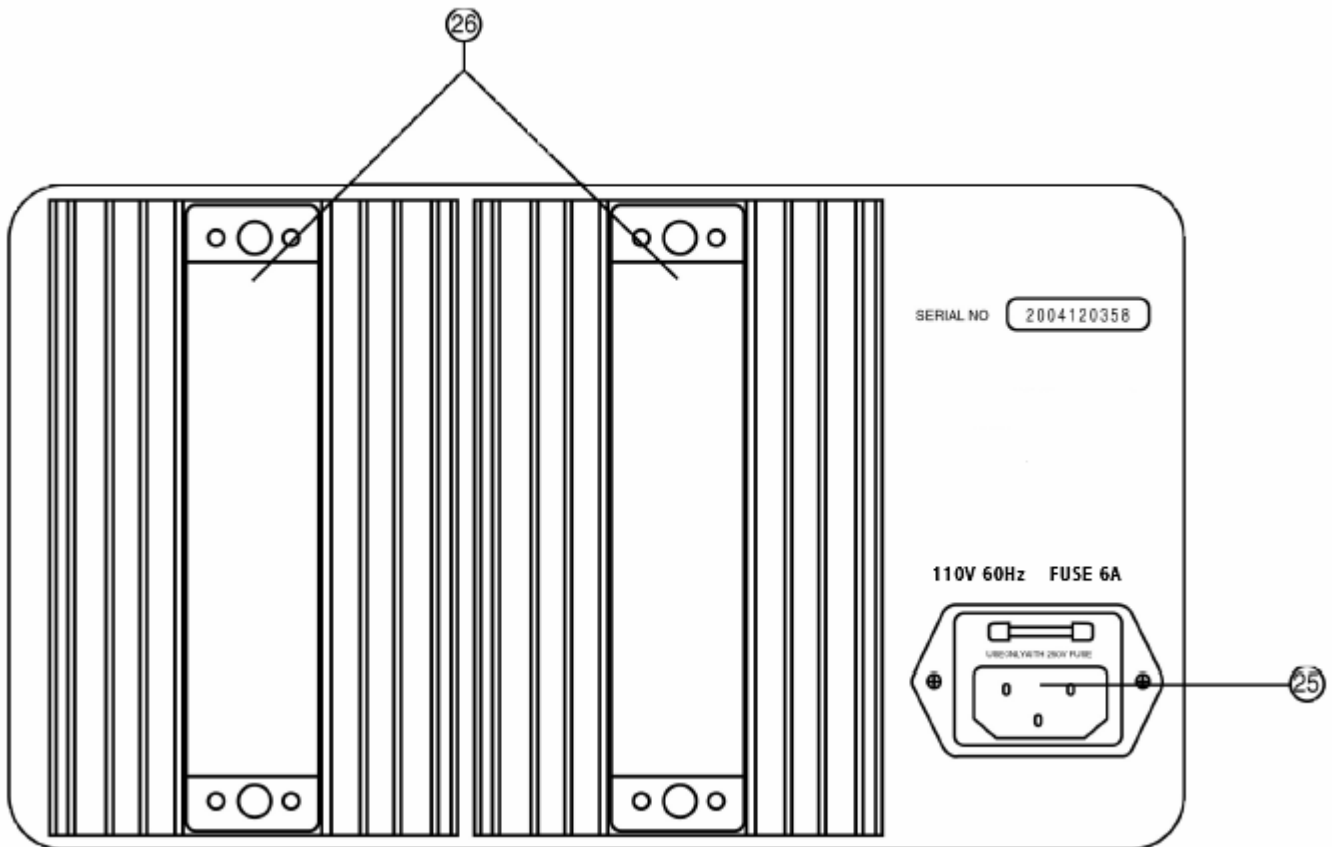
3.1 Front and back panels



3.1.1 Front panel

- (1) Master channel voltage
- (2) Master channel current
- (3) Slave channel voltage
- (4) Slave channel current
- (5) Master channel voltage adjustment knob
- (6) Master channel current adjustment knob
- (7) Slave channel voltage adjustment knob
- (8) Slave channel current adjustment knob
- (9) Fixed 5V channel overload indicator
- (10) Master channel constant voltage indicator
- (11) Master channel constant current indicator
- (12) Slave channel constant voltage indicator
- (13) Slave channel constant current indicator
- (14),(15) independent, serial and parallel switches
- (16) Master channel positive output
- (17),(20) Ground, connected to the enclosure
- (18) Master channel negative output
- (19) Slave channel positive output

- (21) Slave channel negative output
- (22) Input power switch
- (23) Fixed 5V positive output
- (24) Fixed 5V negative output



3.1.2 Back panel

- (25) AC power socket and fuse, 110V or 220V AC, as specified on the back panel.
- (26) Heat sink

3.2 Operation Instructions

3.2.1 Independent mode

- 3.2.1.1 Set switches (14) and (15) both at the up position.
- 3.2.1.2 If used in constant voltage mode, turn the current knobs (6) and (8) clockwise to the maximum, adjust the voltage knobs (5) and (7) to the desired values.
- 3.2.1.3 If used in constant current mode, turn the voltage knobs (5) and (7) clockwise to the maximum, adjust the current knobs (6) and (8) to the desired values.
- 3.2.1.4 Current limit setting: turn the current knobs (6) and (8) count clockwise to the minimum, adjust the voltage knobs (5) and (7) to the desired values, short circuit outputs (16) and (18), also (19) and (21), turn the current knobs (6) and (8) clockwise to the desired values.

3.2.2 Serial mode

- 3.2.2.1 Set switches (14) at up and (15) at down positions. Turn the current knobs (6) and (8) clockwise to

the maximum, adjust the master voltage knob (5) and the slave channel voltage tracks the master voltage. Total output voltage is the summation of the master and slave. Serial mode output can be obtained from connectors (16) and (21).

3.2.2.2 In serial mode, the currents of the master and slave channels are still independent. If the slave current is not set at the maximum, the slave voltage will not track master voltage when the load current exceeds the slave set current.

3.2.2.3 In serial mode, connectors (18) and (19) are shorted internally, no external connection is necessary. If both of the negative connectors (18) and (21) are shorted to ground connectors (17) and (20), the connections should be removed. Otherwise the slave channel will be shorted to the ground.

3.2.3 Parallel mode

3.2.3.1 Set switches (14) and (15) both at the down position. Master and slave channels are in parallel mode now, parallel indication light (13) on, output voltages of the master and slave will change at the same time when master voltage knob (5) is adjusted.

3.2.3.2 In parallel mode, both the slave voltage and current adjustments (7) and (8) are disabled. Both channel's currents are controlled by the master current knob (6). Total current output is the summation of the master and slave channels.

3.2.3.3 In parallel mode, Connectors (16) and (19), (18) and (21) are connected internally, no external connection is necessary. Load should be connected to (16) and (18).

4. Attention

4.1 Although the power supply has current limit and overload protection, the output load is still applied on the internal circuit. The power supply should be turned off immediately if short circuit happens. Turn on the power supply after the problem is resolved.

4.2 The AC power supply should be disconnected when the power supply needs to be repaired. Only trained professionals are authorized to perform any repair work.

4.3 The power supply should be stored in a dry and well ventilated area. Input power supply should be disconnected if not used in a long period.

4.4 The heat sink (26) will be hot during operation. Do not cover or block the heat sink, be careful not to touch it to prevent bodily injury.

4.5 Good A/C ground connection is required for safe operation.

4.6 If the power supply has not been used for a long period, give the power supply 15 to 20 minutes to warm up and reach to a stable condition.

5. Maintenance

The power supply should be used in a normal working environment. Do not place it under direct sunshine, or in shaking or chemical smoke areas.

Warning: Do not perform the following steps if you are not a trained professional.

5.1 Fuse replacement

The power supply will not work if the fuse is burnt or absent. Check and fix any existing problems before the new fuse is inserted. Use a fuse with the same specifications as the original one. Disconnect the AC power before

replacing the fuse.

Warning: to prevent fire, use only a 250V or above fuse with the specified current.

5.2 Cleaning

Do not spray cleaning liquid directly on to the power supply. Use a wet soft cloth to clean the outside box. Do not use gasoline or other erosive chemical liquid to clean.

6. Contents

6.1 Power supply unit

6.2 User's manual

6.3 Power cable

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