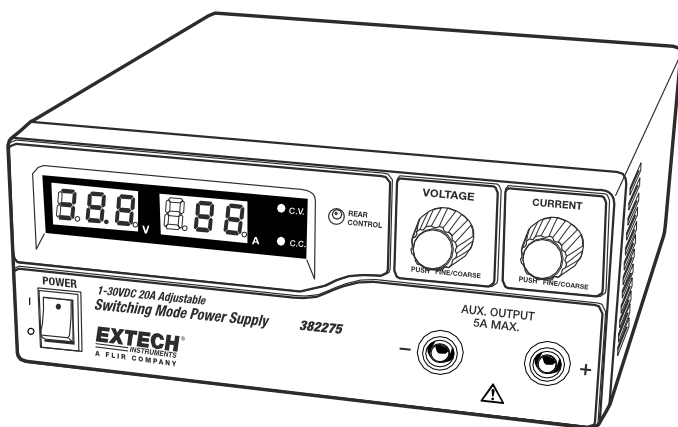


Model 382275 (120 V) and Model 382276 (240 V)

Single Output Laboratory Grade Switching DC Power Supply



Introduction

Congratulations on your purchase of the Extech 382275 (120 V) or 382276 (240 V) Single Output Laboratory Grade DC Power Supply.

The dual action (coarse/fine tune) rotary encoder allows for quick and precise voltage and current level adjustments. Setting, changing, and checking the current limit level can be performed easily without sparking the output poles.

The remote-control feature allows the user to remotely perform the following tasks:

- Output power ON/OFF
- Voltage and Current Level Adjustments

The three presets facilitate quick access to frequently used voltage and current settings.

This power supply is shipped fully tested and calibrated and, with proper use, will provide years of reliable service.

Safety

WARNING!

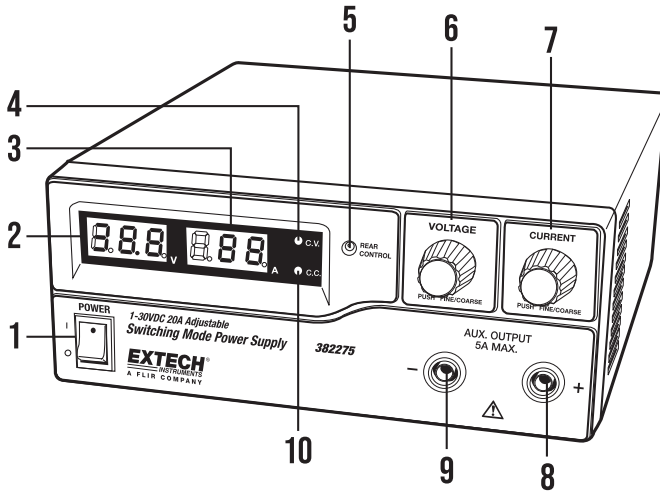
Do not use this power supply with electric motors or for charging purposes on electroplating equipment or similar devices. Return EMF and voltage transients generated by electric motors can damage this power supply. This power supply was designed for use on electronic equipment only and not intended for use on electrical equipment of any kind.

- Do not use this power supply near water.
- Do not operate or touch this power supply with wet hands.
- Do not open the casing of the power supply when it is connected to AC power.
- Refer all servicing to qualified service personnel only.
- Before replacing the fuse, identify and repair any damage.
- Replace the fuse with a fuse of the specified type and rating only.

CAUTION

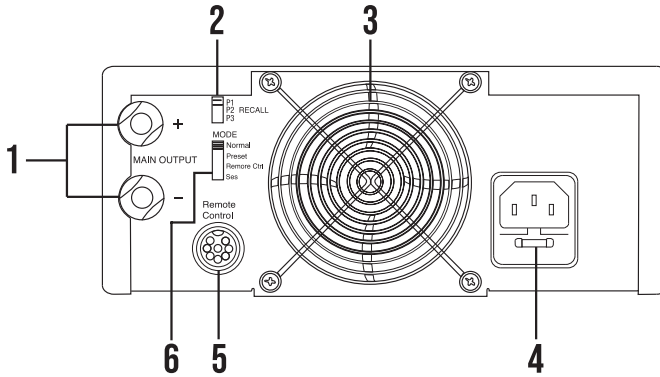
- Use a grounded 3-pin AC source.
- This unit is intended for indoor use only.
- Do not operate or place this unit in direct sunlight or in a humid location
- Avoid environments where dust or dirt can enter the power supply casing.
- Do not place the power supply near a heat source.
- Before plugging into local AC mains, check the rating label at the back of the unit for 120 V or 240 V operation. The model 382275 can be powered by 120 V only. The model 382276 can be powered by 240 V only.
- Do not block the ventilation openings of the unit.
- This unit must be used within the specified rating; excessive continuous loading may cause damage to the power supply.
- The gauge size of the input power cable must be at least 3 in. (0.75 mm) and the total length of power cable must not exceed 9.8 ft. (3 m).

Front Panel Description



1. Power switch ON/OFF
2. Voltage display
3. Current display
4. Constant voltage LED indicator
5. Rear Control Indicator (switches ON in Preset, Remote Control, and Set Mode)
6. Output voltage control knob (Controls the main and auxiliary output voltage)
7. Output current control knob (Controls the main and auxiliary output current)
8. Positive auxiliary output terminal (5 A, maximum)
9. Negative auxiliary output terminal (5 A, maximum)
10. Constant current LED indicator

Rear Panel Description



1. Main output (20 A, maximum)
2. P1, P2 and P3 recall switch
3. Cooling fan for ventilation
4. AC input plug and fuse
5. Remote control connector
6. Mode switch

Operational Modes

Mode Selection

The power supply has four (4) modes of operation: NORMAL, PRESET, SET and REMOTE-CONTROL. Slide the Mode selection switch to the desired mode. The power supply defaults to the NORMAL mode.

Normal Mode

Normal mode is the factory preset mode. The power supply's output voltage and current are controlled by the dual action knobs. Push the knobs to toggle the coarse and fine tuning; notice the subtle changes in brightness of the related LED.

Adjust the knob to the desired value first with the coarse adjustment and then with the fine tune adjustment. Turn the Current knob gently in any direction to check the preset current level. The display will resume its normal brightness after a few seconds to confirm the adjustment.

Preset Mode

In the PRESET mode, the rear control indicator is switched ON to indicate that the panel voltage and current controls are disabled.

There are three preset outputs, P1, P2 and P3, selectable via the Recall switch, located on the rear of the power supply. The preset values are factory set per the table, below.

Presets	Output Voltage	Output Current
P1	5 V	Maximum
P2	13.8 V	Maximum
P3	25 V	Maximum

Set Mode

In the SET mode, the three presets (P1, P2, and P3) can be changed.

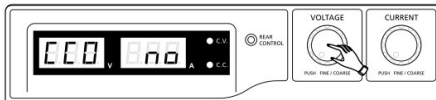
1. Set the Mode switch (rear of the power supply) to the SET position.
2. Select a preset using the Recall switch (P1, P2 or P3).
3. Use the front panel Voltage control knob to set the desired voltage.
4. Use the front panel Current control knob to set the desired current.
5. Repeat this procedure for the remaining presets.
6. Set the Recall switch to the PRESET position to store the changes.

Note: Presets are remembered when the power supply is switched OFF.

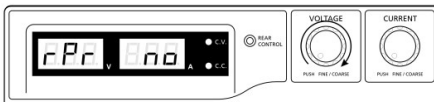
Caution: Check the output voltage of the preset before connecting to a load. To check a preset, set the Mode switch to the PRESET position and set the Recall switch to the P1, P2 or P3 position. The Voltage and Current values, for the corresponding preset, will then display.

Reset the Presets to Factory Default

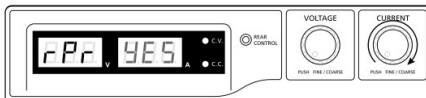
1. Long press the Voltage control knob to access the menu.



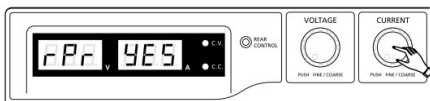
2. When the display shows **CC0**, rotate the knob until the voltage meter shows **rPr**.



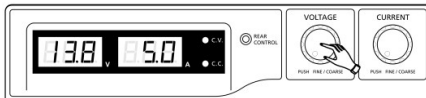
3. With the Current meter showing **no**, rotate the Current control knob until the Current meter shows **YES**.



4. Press the Current control knob once to confirm.















5. Press the Voltage control knob to exit the menu.



Power up Checks

- 1. Check the power supply rating label and verify that it complies with your AC mains voltage (120 V or 240 V), and then set the Mode switch (on back of supply) to the Normal position.
- 2. Listen for the cooling fan when switching ON. The power supply performs a series of self-tests upon startup, including a cooling fan test. The **CV**, **V** and **A** indicators will switch ON and indicate voltage and current (0.0). To check the current, turn the control knob one click, in either direction. The current display will return to 0.0 after a few seconds.

The Table below illustrates the self-test sequence:

Self-Test Displays in Sequence	Test Description
	Software version
	Display check
	C.V. indicator check
	C.C. indicator check
	Rear indicator check
	C.V. recheck
	Test continuing
	Over voltage protection check
	Overload protection check
	Over temperature protection check
	Fan check
	Output off (remote control mode)

Operation

WARNING: Do not use this power supply with electric motors for any reason or with electroplating equipment, or similar devices, for charging purposes. Return EMF and voltage transients, generated by electric motors, can damage this power supply. This power supply was designed for use on electronic equipment only and not intended for use on electrical equipment of any kind.

Using the Control Knobs

The rotary control knobs offer fine and coarse tuning, with notched movement.

1. Push the knobs to toggle between coarse and fine tuning, notice the subtle changes in brightness of the related LED.
2. Adjust the knobs to the desired values by using coarse and then fine tuning. The display will resume its normal brightness after a few seconds to confirm the adjustment.

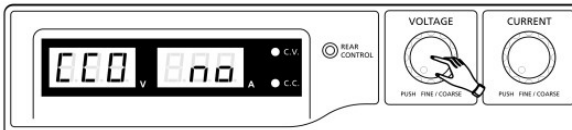
Connecting to UUT (Unit Under Test)

1. Connect the equipment to the power supply. Red (+) is connected to the positive polarity input of the UUT and Black (-) is connected to the negative polarity input of the UUT.
2. Switch ON the supply first; the panel meter and green CV Indicator should switch ON.
3. Switch ON the UUT; the panel meter and green CV Indicator should remain on.
4. The UUT is now ready. When done, switch off the UUT first, and then the power supply.
5. When disconnecting the power supply from the UUT, disconnect the remote sensing wire first and then disconnect the output cables.

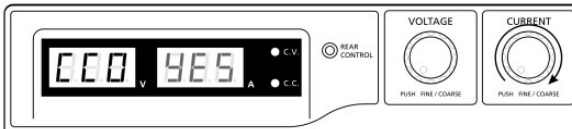
Zero Function

The power supply automatically zeroes the Current meter upon power-up. To manually zero the display, follow these steps:

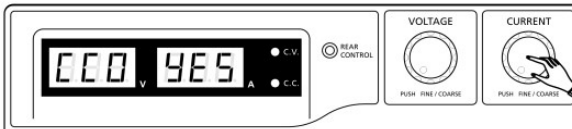
1. Long press the Voltage control knob to access the menu.



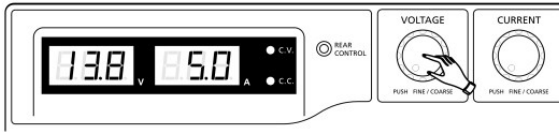
2. Rotate the Current control knob until the meter shows the following:



3. Press the Current control knob once, to confirm. The display will show YES.



4. Press the Voltage control knob to exit the menu.



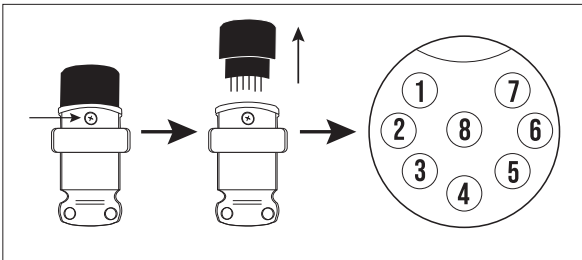
Remote Control

The supplied 8-pin connector allows remote control operation. The connector uses 22 AWG wire. Remote control allows adjustment of voltage, current, and output ON/OFF switching.

Remote ON-OFF Control

The remote control ON-OFF function can be activated in any of the modes (NORMAL, PRESET, REMOTE, SET). Follow the steps, below:

1. Remove the cap (black) by first removing the screw and then pulling up on the cap, as shown below.



2. If pin 5 is open, the output is ON.
3. If pin 5 is shorted to ground (PIN 4), the output is OFF.
4. When the output is OFF, the C.V. and C.C. LED will flash. The output voltage and current settings will be shown on the panel meter.
5. When the output is OFF, the voltage and current control knobs are used to change settings.

Remote Voltage and Current Control

There are two methods, explained below, for the remote adjustment of voltage and current. Each method requires that the Current remote-control mode be enabled, otherwise the unit will remain in the CC mode.

Method A: Using two external variable DC voltage sources

To remotely adjust the output voltage, insert a variable voltage (0 to 5 VDC) to the remote-control terminal, as described below.

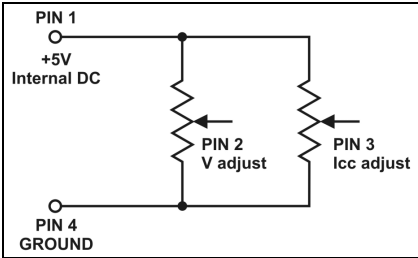
Warning! Do not insert voltage > 5 V, or the over-voltage protection (OVP) will be triggered.

1. Switch the supply OFF and disconnect the main output.
2. To test the voltage control, connect pin 2 (positive) to pin 4 (ground) ONLY.
3. Switch ON the power supply.
4. Vary the voltage from 0 to 5 V to verify the full output voltage range of the supply, as displayed on the Voltage meter.
5. Switch OFF the power supply.
6. To test the Current control:
 - Short the power supply main output terminals with a 10 AWG wire
 - Raise the Voltage control to maximum
 - Set the Current control to minumum
 - Switch ON the power supply
 - Raise the Current control and observe the displayed Current
 - Lower the Current control
7. Switch OFF the power supply.
8. Remove the shorting wire from the main ouput terminals

Remote Socket PIN assignment for external variable voltage source		
PIN	FUNCTION	NOTES
1	Internal +5 V DC	50 mA maximum
2	Voltage Adjustment	0 to 5 V
3	Current Adjustment	0 to 5 V
4	Ground	
5	Output OFF	Short to ground
6	Unused	
7	Unused	
8	Unused	

Method B: Using two external variable 5k ohm resistors

- 1. Switch OFF the power supply and disconnect the main output.
- 2. Prepare two 5k ohm variable resistors and connect pins 1, 2, 3 and 4, as shown below.



- 3. Switch the power supply ON.
- 4. Test the Voltage control: Adjust the pin 2 variable resistor to verify the full output voltage range of the power supply as displayed on the Voltage meter.
- 5. Turn OFF the power supply.
- 6. Test the Current control:
 - Short the power supply main output terminals with a 10 AWG wire
 - Raise the Voltage control to maximum
 - Set the Current control (pin 3 resistor) to mininum
 - Switch ON the power supply
 - Raise the Current control and observe the displayed Current
 - Lower the current control
- 7. Switch OFF the power supply.
- 8. Remove the shorting wire from the main ouput terminals.

Remote Socket PIN assignment for external variable resistors		
PIN	FUNCTION	NOTES
1	Internal +5 V DC	
2	Voltage Adjustment	Variable part of resistor
3	Current Adjustment	Variable part of resistor
4	Ground	
5	Output OFF	Short to ground
6	Unused	
7	Unused	
8	Unused	

Safety Protection

OUP: Over Voltage Protection



This power supply has built-in over-voltage protection. When the output voltage exceeds the specified range, the output power will switch OFF (**OUP** warning appears).

To reset the warning, switch OFF the power supply and remove all loading. If the problem persists, please contact customer support.

OTP: Over Temperature Protection



The power supply has a built-in sensor that checks for over-heating. In an overheating condition, the **OTP** warning appears, and the outputs switch OFF. When this warning appears, switch OFF the unit and remove all loading. Check the load and the output settings and allow the unit to cool for at least 30 minutes before use.

Ensure that the ventilation openings are unobstructed, that the power supply has proper clearance, and that the cooling fan is operational. The cooling fan changes speed, based on the measured internal temperature.

Temperature (approx.)	Fan Operation
< 100°F (38°C)	Fan OFF
> 113°F (45°C)	Fan low speed
> 158°F (70°C)	Fan high speed
> 176°F (80°C)	Fan high speed (power supply output switches OFF)

OLP: Overload Protection



Normally, overload protection (OLP) is provided by the CC constant current function. However, if the CC mode fails, serious damage to equipment can result. OLP is used to minimize damage to the load.

Switch OFF the power supply when the **OLP** warning appears. To reset the warning, switch OFF the unit and remove all loading. Switch the unit ON again and check for the warning. If the warning persists, please contact customer support.

Maintenance

Cleaning

Disconnect the mains plug from the power outlet before cleaning. Wipe the power supply with a damp, soft cloth, as necessary. A mild household detergent may be used. Do not use solvents or abrasives when cleaning. Do not allow moisture to enter the power supply.

Specifications

Output Specifications

Output (back)	Variable output voltage	1 to 30 V DC
	Variable output current	1 to 20 A
Voltage regulation	Load (10 to 100% load)	50 mV
	Line (170 to 264 V AC)	20 mV
Current regulation	Load (90 to 10% rated voltage)	100 mA
	Line (170 to 264 V AC variation)	50 mA
	Ripple and noise (peak-peak) voltage	50 mV
	Current Ripple and noise (rms)	30 mA
Output (front)	Variable output voltage	1 to 30 V DC
	Variable output current	1 to 5 A
Voltage regulation	Load (10 to 100% load)	350 mV
	Line (170 to 264 V AC)	20 mV
Current regulation	Load (90 to 10% rated voltage)	100 mA
	Line (170 to 264 V AC variation)	50 mA
	Ripple and noise (peak-peak) voltage	50 mV
	Current ripple and noise (rms)	30 mA
Meter accuracy	Voltage meter	± (0.2% + 3 digits)
	Current meter	± (0.2% + 3 digits)
Tracking over voltage Protection	1 to 5 V	Default value + 2V
	5 to 20 V	Default value + 3V
	20 to 30 V	Default value + 4V

General Specifications

Input Voltage	100 to 120 V AC 50/60 Hz (382275)
	200 to 240 V AC 50/60 Hz (382276)
Rated Load Input Current	5.9 A (382275)
	3.1 A (382276)
Fuses	8 A (250 V) time delay; glass, 5 x 20 mm (382275)
	4 A (250 V) time delay; glass, 5 x 20 mm (382276)
Efficiency	87% at optimal load
Switching Frequency	75 to 95 kHz
Cooling Method	Thermostatic control fan
Protections	Overload, short circuit by constant current, output tracking, over voltage, over temperature
Transient Response Time	1.5ms (50 to 100% of load)
Power Factor Control	0.95 (minimum) at optimal load
Special Features	Three (3) user defined presets and remote control
Operating temperature	32 to 104°F (0 to 40°C)
Operating humidity	10 to 80% RH non-condensing
Storage temperature	5 to 158°F (-15 to 70°C)
Storage humidity	0 to 85% RH non-condensing
Altitude	7000 ft. (2000 m)
Pollution Degree	2
Main Supply Voltage Fluctuation	± 10% of the nominal voltage
Dimensions (W x H x D)	7.9 x 3.5 x 8.5 in. (200 x 90 x 215 mm)
Weight	5.7 lbs. (2.6 kg)
CE Compliance	EMC: 2014/30/EU EN 55032: 2015/A1: 2020 EN 55035: 2017/A11: 2020 EN IEC 61000-3-2: 2019/A1: 2021 EN 61000-3-3: 2013/A1: 2019
	LVD: 2014/35/EU EN IEC 62368-1: 2020+A11: 2020
	RoHS: 2011/65/EU including Am EU 201 EN IEC 63000:2018

Two-year Warranty

Teledyne FLIR warrants this Extech brand instrument to be free of defects in parts and workmanship for two years from date of shipment. To view the full warranty text please visit:

<https://www.flir.com/support-center/warranty/instruments/extech-product-warranty/>

Calibration and Repair Services

Teledyne FLIR offers calibration and repair services for the Extech brand products we sell. We offer NIST traceable calibration for most of our products.

Customer Support

Local Telephone Support List: <https://support.flir.com/contact>

Return Material Authorization (RMA): <https://customer.flir.com/Home>

Customer Service: <https://support.flir.com/ContactService>

Technical Support: <https://support.flir.com>

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