Advanced Power Pack SP

Operating Instructions

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www.sifcoasc.com

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Overview

Congratulation's you've purchased a brand new production power pack with a number of advanced features. We've designed this user friendly guide to walk you step-by-step through each feature of your new power pack. We'll show you what keys to press and what happens when you press them. Follow along section-by-section and you will quickly become proficient operating your power pack.

The SIFCO Advanced Power Pack is a rectifier that will perform the selective (brush) plating process. The Advanced Power Pack ranges in sizes from 15 Amps to 500 Amps. The size of the power pack is determined by the amperage and voltage of the unit.

Getting Started

From the beginning, we will help you unpack the unit, ensure all the contents are present and explain your new power pack. Turn to page 7 to get started.

The Basics

What do all the buttons on the control panel do? How do I get power out of the unit? In this section we will introduce you to the basic power pack operations. Turn to page 9 to get started.

Calibration

Calibration enables consistent performance, quality results and is regularly required by government and quality policies. Review the PE Manual for more information.

Do you need additional help?

Contact us at 1-800-765-4131 or www.sifcoasc.com

Unpacking

Inspect the box for damage. If any damage is present contact the shipping carrier as well as SIFCO ASC. The box should contain your Power Pack as well as the operating manual and calibration paperwork. If you need to contact SIFCO ASC, please reference the model and serial number which is found on the back or top of the unit.

Safety

This power pack is designed for selective plating of industrial applications.

- The unit should be unplugged for installation, maintenance and cleaning.
- To avoid electrical shock and/or damage to the unit, do not immerse the unit, cord or plug in any liquid.
- This unit is not intended for outdoor use.
- Make sure unit is connected to the correct input voltage.
- Always plug unit into an outlet that is grounded.
- Do not use if the unit, cord or plug have been damaged or are malfunctioning.
- Always place the unit upright in the position it was intended to operate. Do not mount or operate the unit at an angle or on its side.
- Do not cover or block the output fan.
- Only an authorized SIFCO ASC service center should handle any repairs.
- Any tampering with, opening of or abuse of the unit will void the warranty.

The power pack is temperature controlled. If the power pack exceeds temperatures of 104˚F, output will decrease and the unit will overload. Once the power pack is cooled down you may restart it.

If contaminated air (i.e. vapors from the plating solution) gets into the power pack the internal components of the power pack can be damaged. Because of this, the solution should be kept 12 inches away from the power pack. Any solutions that get on the keypads or outside of the power pack should be immediately removed. If not, the solutions can damage the key pads over time.

Always disconnect the power pack before servicing. Never connect loads such as batteries or generators to the power pack. Inside the power pack there are components that have High Voltages and are marked as such. Only qualified personnel should service the power pack.

Different types of Advanced Power Packs

SP 15 Light Weight Power Pack

SP 15, SP 30, SP 60 Power Pack

SP 150 Power Pack

SP 300, SP 500 Power Pack

- 100% constant voltage and current regulation
- Output ripple <2% at 100% of output current
- Forward/reverse polarity switching
- Audible reverse alarm
- Camlock connections for plating leads
- Polycarbonate keypad and multifunction LCD display
- LCD displays for amperage, voltage, and ampere-hours
- Over-temperature protection
- Program options
- Two-year manufacturer's warranty
- CE compliant

Increase your flexibility with the optional remote control unit for full functionality from up to 60 feet from the power supply!

Part Number	Description
60000110	Remote Control (115 VAC)
60000130	Remote Control (230 VAC)

SIFCO Process® Advanced DC Switch Mode Power Packs

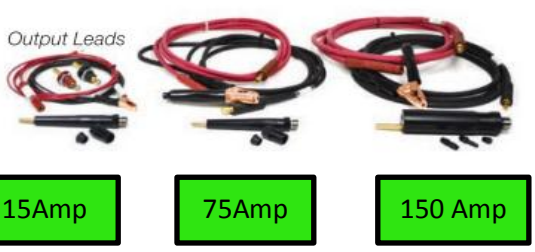
Part Number	Model	Amps Output	Volts Output	Weight Lb. (Kg)	Line Amps
60115201	SP 15-20-115-1 LW (115 VAC)	15	20	18, (9)	20
60115201	SP 15-20-115-1 LW (115 VAC)	15	20	18, (9)	20
Dimensions: (15" [37 cm] W x 8" [19 cm] H x 12" [30 cm] D)					
61115501	SP 15-50-115-1 (115 VAC)	15	50	55, (25)	9
61115503	SP 15-50-230-1 (230 VAC)	15	50	55, (25)	9
61130201	SP 30-20-115-1 (115 VAC)	30	20	55, (25)	7
61130203	SP 30-20-230-1 (230 VAC)	30	20	55, (25)	4
61130503	SP 30-50-230-1 (230 VAC)	30	50	55, (25)	13.5
61160201	SP 60-20-115-1 (115 VAC)	60	20	55, (25)	14
61160203	SP 60-20-230-1 (230 VAC)	60	20	55, (25)	7
Dimensions: (14" [37 cm] W x 12" [29 cm] H x 15" [38 cm] D)					
61150243	SP 150-24-230-3 (230 VAC)	150	24	66, (30)	12
61150244	SP 150-24-400-3 (400 VAC)	150	24	66, (30)	12
Dimensions: (21.5" [55 cm] W x 6.25" [16 cm] H x 21.25" [54 cm] D)					
61300203	*SP 300-20-230-3 (230VAC)	300	20	220, (100)	20
61300205	*SP 300-20-460-3 (230VAC)	300	20	220, (100)	20
60500183	*SP 500-18-230-3 (230 VAC)	500	18	309, (140)	29
60500185	*SP 500-18-460-3 (460 VAC)	500	18	309, (140)	29
Dimensions: (32" [80 cm] W x 40" [100 cm] H x 16 [40 cm] D)					

Output Leads

Description	Part Number
Lead Positive Red 15 Amp, 3m (9.8 ft.) (includes fork terminal and 75 amp female connector)	60352020
Lead Negative Black 15 Amp, 3m (9.8 ft.) (includes fork terminal and alligator clamp)	60352025
Lead Positive Red 75 Amp, 3m (9.8 ft.) (includes #8 modified ring, twistlock 150 amp plug, and 75 amp female connector)	60352030
Lead Negative Black 75 Amp, 3m (9.8 ft.) (includes #8 modified ring, twistlock 150 amp plug, and alligator clamp)	60352035
Lead Positive Red 150 Amp, 3m (9.8 ft.) (includes twistlock 150 amp plug and 150 amp female connector)	60352050

Adapters

Description	Part Number
Adapter for 15 Amp Lead to SP Power Pack - RED	20506105
Adapter for 15 Amp Lead to SP Power Pack - BLACK	20506106
AC-M8 Adapter for #75 Handle	12401250
FT adapter 90 degree handle	12401252
ID/PT adapter for 90 degree handle	12401253



15Amp 75Amp 150 Amp

Handles

FT & ID/PT 90 Degree Handle Adapters

TIP: The Output Leads are not supplied with the power pack and must be ordered separately.

Getting Started

Your power pack was designed and tested to be simple to use and error free. We will assist you from unpacking to production through a simple step by step process.

In this section we will explain how to:

- Inventory the package contents
- Familiarize yourself with the power pack
- Identify the controls
- Plug in your power pack

Inventory the Package Contents

Open the carton and remove entire contents. The following items are included with every power pack. After taking inventory, if you discover that an item is missing please contact us. If the part was damaged in transit please contact your carrier.

Power Pack

Calibration Certificate

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Calibration Certificate No. 2434 Page 1 of 2

-Date Certification/Calibration: May 7, 2015
-Next Calibration Due: May 7, 2016
-Equipment Calibrated: **Electroplating Rectifier** – Power Pack
-Model Number: 61160201 pe1068
-Serial Number: pe1113/69.017
Owner/Operator: Sifo ASC

This is to certify that the SIFCO Power Pack (Electroplating Rectifier) listed on this document was calibrated on the date shown using the manufacturers Calibration Test Procedure and is within the limits and tolerances specified by the manufacturer which meet or exceed the standards set forth by MIL-STD 868 **.**

Operational Manual

Advanced Power Pack SP

Operating Instructions

Getting Familiar with your Power Pack

Plugging in your Power Pack

TIP: It is strongly recommended that only a certified and experienced electrician perform any unit wiring.

Before using your power pack inspect the cord and plug for any damage.

The Basics

The next few pages will introduce you to the basic operation of your Power Pack. In the sections that follow, we will explain the main features of your power pack.

In this section we will explain:

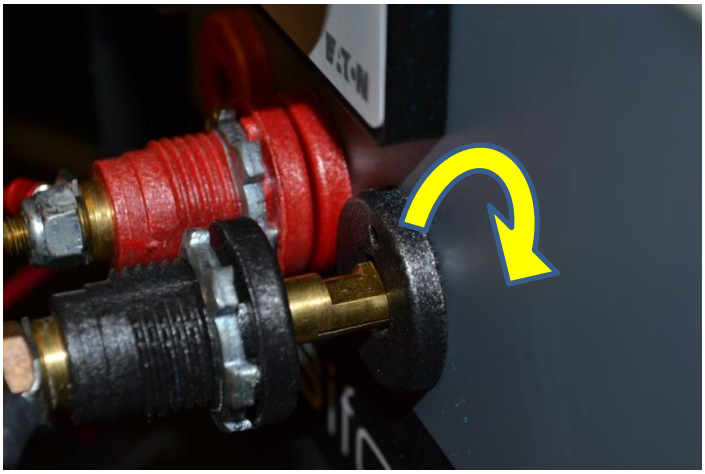
- Attaching a load
- Getting power out of your unit
- Voltage output
- Amp-hour meter
- Reading the amp-hour meter

Attaching a Load

TIP: To attach a load you will need the power pack and output leads (shown below.)

1. Insert the positive (red) male terminal into the positive (red) lead output terminal on the front of the power pack; this is the output terminal. Turn the lead adapter clockwise. Turn until it locks into place.
   The power pack has two positive output terminals. This allows you to have one lead to use for preparatory tools and a second lead attached to your plating tool. It also allows you to have connections to two handles to use on the larger plating tools.

2. Insert the negative (black) male terminal in the black output terminal on the front of the power pack.



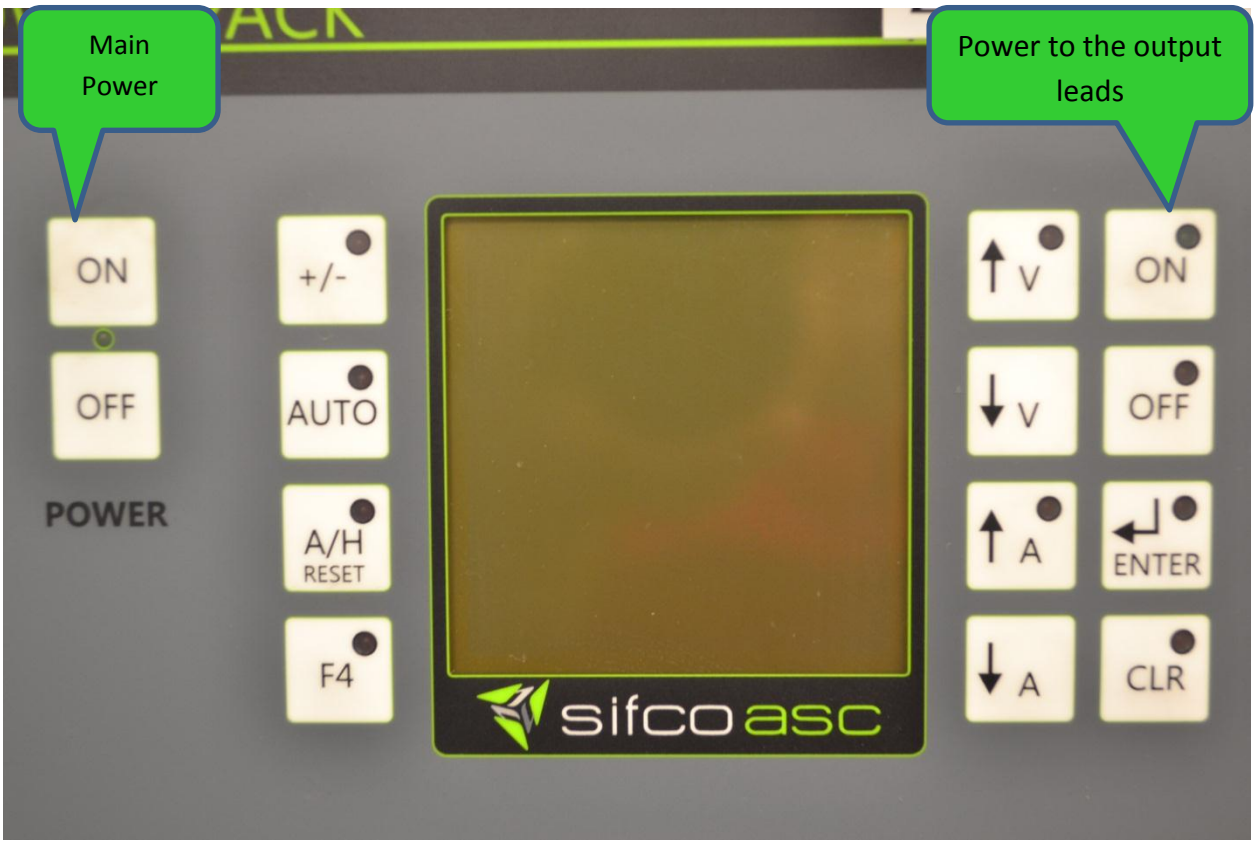
Turning the Power Pack on

Once you have plugged your power pack into the correct AC voltage and are certain that nothing is blocking the cooling fan, follow these steps to turn your unit on.

Ensure the power pack is plugged into an approved outlet (not a power strip) and that it is rated for the rating panel found on the back of the power pack.

TIP: If this is your first time operating the power pack, ensure your leads are not connected to each other or to a workpiece.

1. Turn on the main power on the front of the unit.
2. After the main power is on, turn on the power to the output terminal leads on the front of the unit.



Adjusting the Voltmeter and Ammeter

The SIFCO Process Advanced Power Pack can be operated using constant voltage or constant current. Selective brush plating operations are typicaly, carried out using constant voltage.

To operate the unit in constant voltage, push the amperage up button till it stops. This is to ensure that full amount of amperage is available for use.

The voltage adjustment button is used to control the prepatory and plating operations.

TIP: You can limit your plating amperage by using the amperage button to set the amperage to a desired level.

TIP: The response of the voltmeter to a voltage adjustment under no load will be slow. This is normal. The response under load is significantly faster.

Amp-Hr Meter

The Amp-hr meter measures the quantity of electricity passed through the dc circuit (amps & time) and allows the thickness of SIFCO Process deposits to be controlled. To set your Amp-hr meter to zero you need to hold the A/H Reset button until the display reads 000.0000. To set your Amp-hr to a desired value turn to page 16.

TIP: If the LED on the A/H button is off then the counter is disabled and not recording Amp-hr.

1. Main Power

2. Power to the output leads

3. Polarity Switch Forward/Reverse

4. Voltage control

5. Auto

6. Reset Amp-hour meter

7. Access main menu

8. Clear

9. Amperage control

10. Preset the Amp-hr counter

Forward and Reverse

To switch polarity between forward and reverse push the +/- button. When using the power pack in reverse (-) an audible beep will be heard, a – sign will appear before the set voltage number and the +/- led will turn red. When using the power pack in forward the voltage value will not have a symbol in front of it. There is no audible beep or lighted led when in the forward (+) polarity.

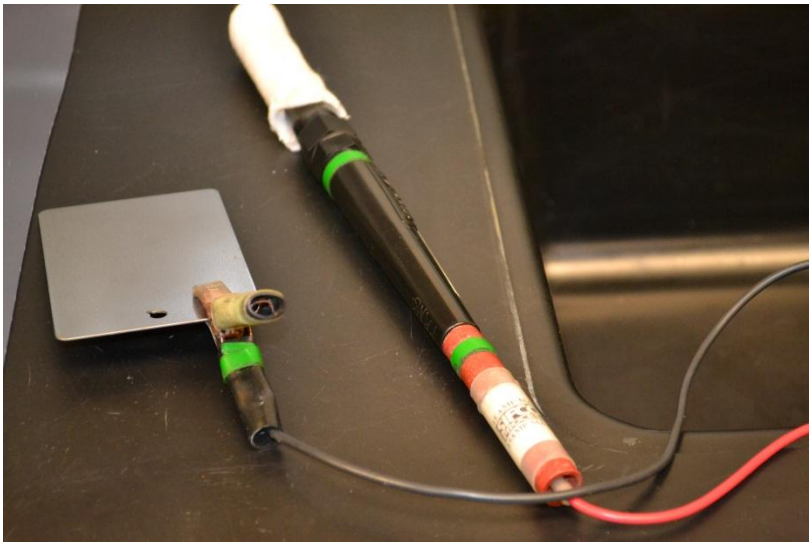
Typical Operation Cycle

The following shows how the power pack is used in the operation of selective brush plating. This example is for Copper 2050 on Stainless Steel.

Step	Operation	Material	Volts	Polarity	Visual Test & Comments
1	Electroclean	Electro cleaning code 1010/4100	10	Forward	
2	Rinse	Clean Tap Water			No water break.
3	Prewet and Etch	No. 4 Etching 1024/4250	8	Reverse	Uniform, light gray etched surface. Color of solution in cover at first becomes yellow. Continue etching until color becomes green. Prewetting improves uniformity of etch.
4	Rinse	Clean Tap Water			
5	Prewet and Activate	No. 1 Activator 1021/4200	15	Forward	None: No change in appearance should be observed.
6	No Rinse				
7	Prewet and Preplate	Nickel Acid 2080/5600	10	Forward	Light gray and milky to matte deposit.
8	Rinse	Clean Tap Water			
9	Prewet and Plate	Copper 2050/5250	3 to 12	Forward	Clean copper colored and matte deposit

1. Attach the leads to the power pack; turn the main power on, and then the power to the output leads must be turned on.

2. The black lead is then attached to the work piece (part) that you are plating. The red lead is attached to the tool that you will be working with.



3. Set the polarity to “Forward” and adjust the voltage to 10 volts for the first step.

4. Saturate the anode with Electroclean solution and move the anode on the part. The Ammeter should indicate passage of current, and the ampere-hour meter will begin counting.

5. Rinse the part, change the polarity of the power pack to “Reverse” and adjust your voltage to 8 then use the Etch solution on the anode to prewet the part, then attach the anode to the power pack and move the anode on the part. The Ammeter should indicate passage of current, and the ampere-hour meter will begin counting.

6. Rinse the part, change the polarity of the power pack to ”Forward” and adjust your voltage to 15 and use the Activating solution on the anode to prewet the part, then attach the anode to the power pack and move the anode on the part. The Ammeter should indicate passage of current, and the ampere-hour meter will begin counting.

7. **Do Not** rinse the part, adjust your voltage to 10 and use the Preplate solution on the anode to prewet the part then attach the anode to the power pack and move the anode on the part. The Ammeter should indicate passage of current, and the ampere-hour meter will begin counting.

8. Rinse the part, adjust your voltage to 3-12 and use the Plating solution on the anode to prewet the part, then attach the anode and move the anode on the part. The Ammeter should indicate passage of current, and the ampere-hour meter will begin counting.

9. When the computed "Amp-Hours" are passed on the meter remove the anode from the part push the off switch on the Power Pack and rinse the part.

Additional Features

We will now cover some of the additional features of the advanced power pack. The next section will show you how to do the following functions:

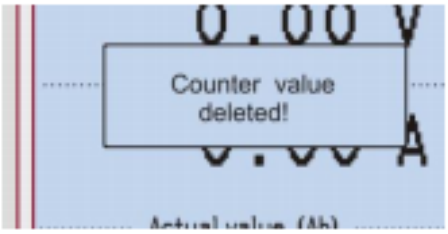
1. Zeroing (resetting the Amp-Hr meter to zero)
2. Presetting the Amp-Hr
3. The Setting Function
4. Configuration of the Amp-Hr meter
5. Menu Point Direction
6. Menu Point Set point
7. Menu Point Reset now
8. Menu Point Alarm Time
9. Configuration of Overload Detection

1. Zeroing (resetting the Amp-Hr meter to zero)

Press the OFF key. **To the output leads but leave the main power on.**

Press the **A/H RESET** key 

to reset the counter.

A short message is displayed: 

The Ah counter display shows "0.0000"

During the process the actual AH count is displayed in the bottom line.

2. Presetting the Amp-HR. Meter

Picture: Example

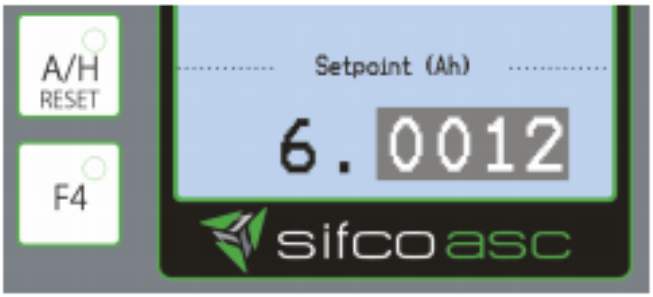
To preset the AH counter, press the **F4** key 

The left decimal is marked:

Use the keys  to set the desired value on the left of the decimal point.

Confirm your setting with ENTER. 

The right decimals are marked:



Use the keys  to set the desired value on the right of the decimal point.

Confirm your setting with ENTER 

When the preset value is reached the Power Pack will turn off the Amp-Hr Meter

The preset value is stored, and the Ah counter display shows "0.0000" again.

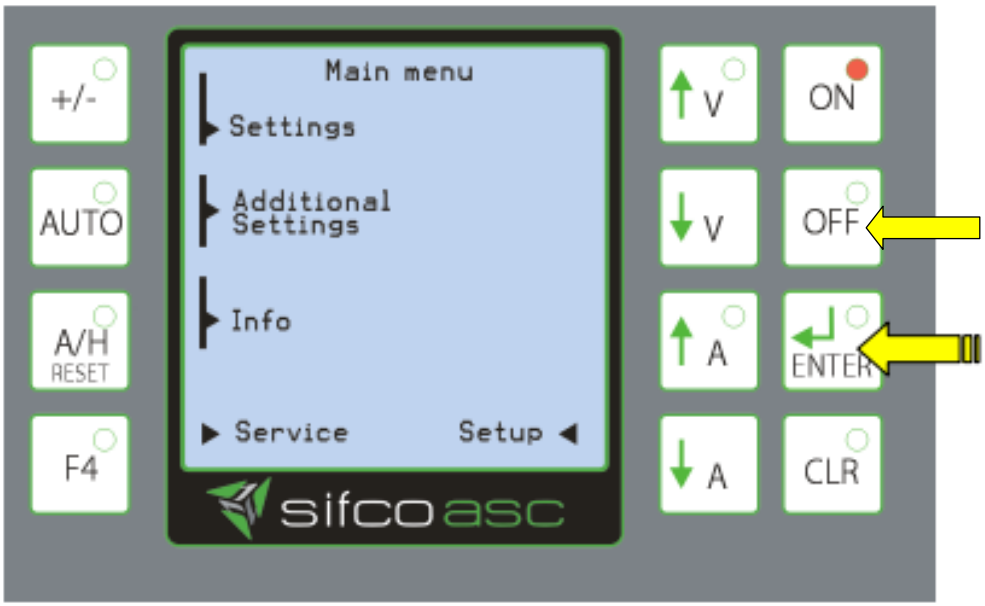
The red LED in **A/H RESET** key is off.

If you want to **disable the preset counter** set the preset value to zero!

Entering and Exiting the Main Menu

Open the main menu by pressing the **Off button and the Enter button**

The display shows:

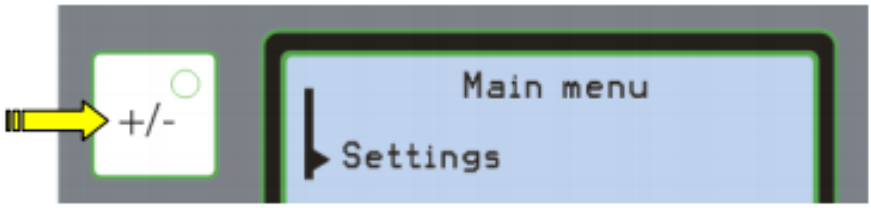


Select the desired menu point by pressing the corresponding key.

(Press CLR-key to come back to the main menu screen.)

3. The SETTINGS functions

If you are in the main menu as shown above, press the +/- key



The SETTINGS menu is the menu for the most important process settings:

A. · Preset counter
B. · Pole changer
C. · Overload detection
D. · RS485 BUS settings / manual – auto setting

The RS485 BUS Setting is only used if you have Remote Control unit part number 60000110 or 60000130. Follow the directions in the remote control manual for using this function.

The display shows the standard function menu:

Select the desired sub item of the menu point by pressing the corresponding key.

(Press CLR-key to come back to the main menu screen).

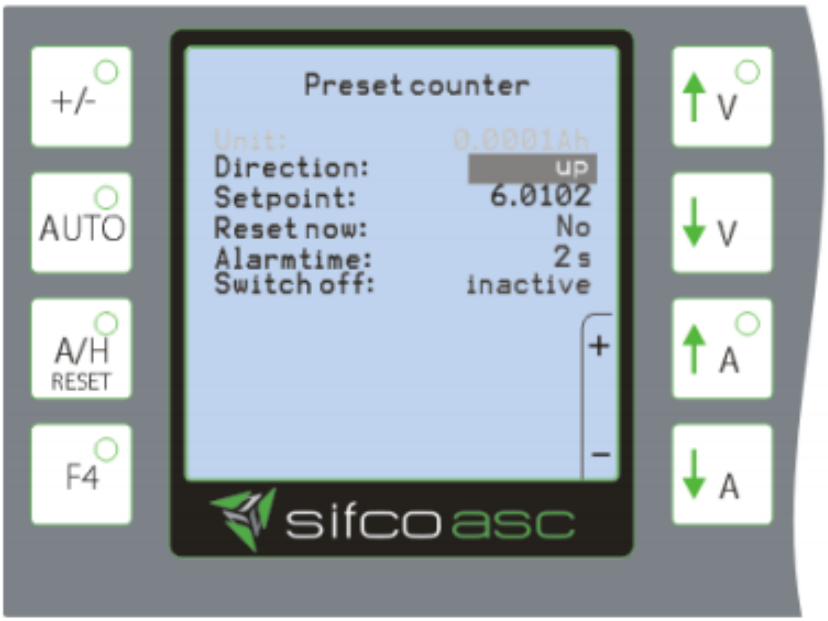
To enter the preset counter you must press the

4. (A) Configuration of the Amp-Hr Meter

In the preset counter menu, five items are available:

- Direction: shows the direction of the Amp-Hr meter
- Setpoint: shows the desired preset value of the Amp-Hr meter
- Reset now: No: current value will be kept
  Yes: current value will be deleted
- Alarmtime: shows the selected alarm time
- Switch off: shows the switching functions of the connected DC power supply (inactive, Blocking, OnRelay)

The display shows:



Switch off – **Inactive**: AH's return to ZERO, but the current continues with no AH readings until AH Reset is pushed again.

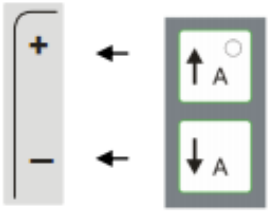
Blocking: Power pack shuts off when preset AH's are met.

OnRelay: switching the DC power supply off by using the Extern-ON function.

5. Menu point "direction"

Set the counting direction of the preset **Amp-Hr Meter counter**

- up: counter counts from zero to preset value (incremental)
- down: counter counts from preset value downwards to zero (decremental)

Use the keys 

to select UP or DOWN

Direction:	up
Setpoint:	0.0000
Reset now:	No
Alarmtime:	5 s
Switch off:	inactive

Confirm the setting with ENTER. 

The cursor will jump to the "Setpoint" line.

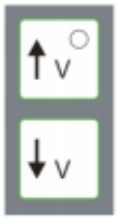
6. Menu point "setpoint"

Use the keys 

to set the desired value on the left of the decimal point.

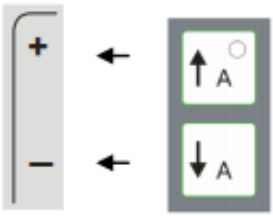
Set the Amp-Hr Meter counter at a preset value based upon the calculations of the pending plating application.

Select the desired item of the menu point “preset counter” by using the arrow keys.



The desired function is marked (see above)

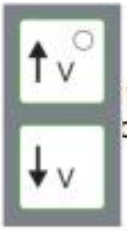
Select now the desired setting by using the Up / Down keys



Setpoint: 6.0000

Confirm the setting with ENTER.

Use the keys



to set the desired value on the right of the decimal point.

Setpoint: 6.0000

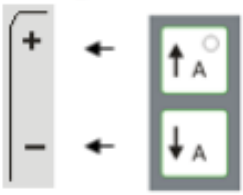
Confirm the setting with ENTER.

7. Menu point "Reset now"

In this menu point, you can reset the actual ampere hours of the preset counter.

Select "NO" to keep the actual count.
Select "YES" to set the value to zero.

Please note that the same function is also available via key **A/H RESET**.

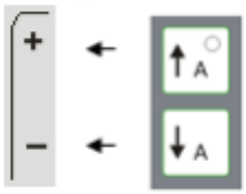
Use the keys  to select YES or NO

Confirm the setting with ENTER. 

8. Menu point "Alarm time"

In this menu point the alarm duration of the acoustic alarm - which is started if the preset counter has reached the final value - can be set.

Possible settings: 0 (alarm disabled) to 999 seconds.

Use the keys  to set the value

Short pressing on the key changes the value by one digit.

Constant pressing causes continuous change of the value.

Confirm the setting with ENTER. 

(Press CLR-key to come back to the main menu screen). 

(B) Polechanger

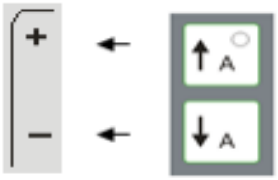
The Polechanger can be used to change the reverse alarm time. Use the  to increase or decrease the reverse alarm.

If your power pack is overloading (shutting off) it may be because your overload detection is set too low. The following shows you how to reconfigure your overload detection of your power pack.

9.(C) Configuration of the Overload detection

Settings:

The voltage drop threshold can be set from 1% to 99%.

Use the keys 

to set the value

The recommended value is 20-40%.

Confirm the setting with ENTER. 

Function:

If a direct short occurs between the anode and the part:

The display shows:

"OVERLOAD"

and a short "beep" is heard.

The DC output is shut off.

The LED in OFF key is flashing.

The LED in CLR key is flashing.

Press CLR key for alarm reset.

Press the ON key to restart the DC power supply.

Care and Cleaning

The frequency of cleaning your power pack will depend on the environment in which you will be working.

After each use take a damp rag and wipe down the unit and leads to remove any solution. Just use water to clean the unit.

Additionally, we recommend every 6 months doing the following:

- Perform preventative maintenance at regular intervals (every 6 months is suggested).
- Check that the fans are functioning and noise free.
- Check fans and blow away dirt with compressed air.
- Clean contact surfaces of the DC connections.
- Check for loose connections or loose screws.

All cleaning should be done with the unit disconnected. With proper care and maintenance your power pack should last you many years.

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We're on the Web!

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www.sifcoasc.com