




PROVIDING RESISTOR AND LOAD BANK TECHNOLOGY... TO THE WORLD



X250S
Load Bank
Operation and
Service Manual

Read all instructions before using the load bank

Contents

Contents	2
1) Receiving	3
a. Load Bank	3
b. Manual	3
2) Specifications	4
a. Mechanical	4
i. Lifting	4
ii. Enclosure	4
iii. Cooling	4
b. Electrical	5
i. Control power	5
ii. Load power	5
iii. Cooling	5
3) Safety	6
a. Grounding	6
b. Power Connection	6
c. Intake and Exhaust Ports	6
d. Misuse of Product	6
e. Common Best Practices	7
4) Operation	8
a. Pre-Start Up	8
b. Start Up	8
c. Applying and Disconnecting Load	8
d. Acuvim II Power Quality Meter	9
e. Shut Down	9
5) Troubleshooting	10
a. Load bank will not turn on	10
b. Blower will not turn on	10
c. Load steps will not turn on	10
d. Over temperature fault	10
6) Maintenance	11
a. Replacing a fuse	11
i. Main Control (FC) Fuse	11
ii. Meter (FMA, FMB, FMC) Fuses	11
iii. Load Power (FLA1, FLA2, FLB1, FLB2, FLC1, FLC2) Fuses	12
b. Replacing Contactors	12
c. Replacing Resistors	12
d. Preventative Maintenance	13
7) Service Parts	14
8) Copyright	15

1) Receiving

Check the unit for obvious damage and report any exterior damage to the carrier immediately.

a. Load Bank

1x X250S Load Bank



Casters and Lifting Bar are Optional

b. Manual

1x X250S Owner's Manual



2) Specifications

a. Mechanical

i. Lifting

The X250S load bank is equipped with **fork tubes for lifting** or may be equipped with an **optional lifting bar**. **DO NOT** lift the unit by any other means; this could cause severe damage.

Optional
Lifting Bar



Fork
Channels

ii. Enclosure

1. Electro-statically applied powder coat, Blue: PPG PCUP70103.
2. Air inlet and exhaust are covered by metal screens.
3. Heat is discharged horizontally.

iii. Cooling

The X250S load bank is equipped with **ten 7 inch panel fans**.

b. Electrical

i. Control power

The unit is equipped with a **120VAC 10A plug** to supply **120VAC 60Hz** external control power.

ii. Load power

1. The unit is designed to operate at **208/240/480VAC 3-Phase** or **120/240VAC 1-Phase** load power. See the tables below for operating specifications at each voltage.

3 Phase Operation

Resolution (kW)			Capacity (kW)			Current at Capacity (Amps)		
480VAC	240VAC	208VAC	480VAC	240VAC	208VAC	480VAC	240VAC	208VAC
5	5	3.76	250	250	185	300.70	601.41	514.25

1 Phase Operation

Resolution (kW)		Capacity (kW)		Current at Capacity (Amps)	
240VAC	120VAC	240VAC	120VAC	240VAC	120VAC
2.50	0.63	125.00	31.25	521.00	260.00

2. The kW output at each step is subject to a manufacturing tolerance of $\pm 5\%$.
3. The unit is designed for continuous duty at 1.0 power factor.

iii. Cooling

1. The blowers in the unit are powered off of the auxiliary **120VAC 10A 60Hz** plug. Customer Connections
- iv. Connect the ground source to the grounding Cam Lock connector.
 - v. Connect the **de-energized** source power cables power Cam Lock connectors.

3) Safety

a. Grounding

The load bank must be firmly and electrically connected to earth ground via the grounding found on the unit. Failure to do so could allow deadly voltage to be present on the surface of the enclosure. The grounding connection provides a low resistance path to ground. This grounding protects the operator from the possibility of electrical shock.

b. Power Connection

All power connections must be connected or guarded. Failure to do so will expose the operators to shock, causing severe damage or death. Without properly guarded connections, the unit is in danger of grounding-out or shorting-out the test power source.

c. Intake and Exhaust Ports

The unit must have free-flowing air through the intake and exhaust ports to provide adequate cooling to the resistive elements. The resistive elements convert electrical energy into heat. If the unit does not have a free flowing intake and exhaust port, the heat will build up inside of the unit and cause mechanical failure, leading to an electrical short circuit, ultimately damaging the unit and test power source.

To increase the life of the resistive elements, allow the fans to run at least three minutes after the load is removed.

No ductwork is permitted on the intake or exhaust of this unit as it will cause backpressure and limit the cooling of the resistive elements.

Keep intake clear for 6 ft. and exhaust port for 20 ft. to allow full free-flowing.

d. Misuse of Product

DO NOT exceed the recommended load limit of the test power source equipment manufacturer. Damage of the test power source equipment will occur if over-powered.

e. Common Best Practices

- i. Read all instructions before using this load bank.
- ii. This load bank is hot when in use. To avoid burns, do not let bare skin touch hot surfaces. Keep combustible materials at least 6 feet (1.8 meters) from the front of the load bank and keep them away from the sides and rear.
- iii. Do not operate any load bank with a damaged cord or plug or after the load bank malfunctions or has been dropped or damaged in any manner. Discard load bank or return to authorized service facility for examination and/or repair.
- iv. Always unplug load bank when not in use.
- v. Do not run cord under carpeting. Do not cover cord with throw rugs, runners, or similar coverings.
- vi. Arrange cord away from traffic areas and where it will not be tripped over.
- vii. Connect to properly grounded outlets only.
- viii. Do not insert or allow foreign objects to enter any ventilation or exhaust opening as this may cause an electric shock or fire, or damage the heater/load bank.
- ix. To prevent a possible fire, do not block air intakes or exhaust in any manner.
- x. Do not use it in areas where gasoline, paint, or flammable liquids are used or stored.
- xi. Use this load bank only as described in this manual. Any other use not recommended by the manufacturer may cause fire, electric shock, or injury to persons.
- xii. Always plug load banks directly into a wall outlet/receptacle. Never use with a re-locatable power tap (outlet/power strip).
- xiii. This load bank includes a visual alarm to warn that parts of the load bank are getting excessively hot. If the alarm light goes on, immediately turn the load bank off and inspect for any objects on or adjacent to the load bank that may cause high temperatures. **DO NOT OPERATE THE LOADBANK WITH THE ALARM LIGHT ON.**
- xiv. **SAVE THESE INSTRUCTIONS.**

4) Operation

Please contact Mosebach Manufacturing if you are planning on operating the load bank in ambient temperatures above 46 °C.

Ambient plus heat generated by the resistive elements can cause electrical components to possibly malfunction.

a. Pre-Start Up

- i. Check housekeeping in the operational area and correct all unsafe conditions.
- ii. Failure to do this may result in debris being blown around and may cause a fire hazard.
- iii. Check the switch panel and move all switches to the OFF position.
- iv. Position the load bank so that air will flow freely into the intake and out of the exhaust port.
- v. All air intakes and exhaust ports must be clear.

b. Start Up

- i. Connect the grounding Cam Lock on the unit directly to a known earth-ground.
- ii. Connect all **de-energized** load power to Cam Lock connections on the unit.
- iii. Energize the load power source with an acceptable voltage.
- iv. Turn the MAIN on/off power switch to the ON position. The unit will only run if an acceptable voltage is supplied. The meter, green Main Power switch light, and Voltage Acceptable light will turn on when an acceptable voltage is supplied.

c. Applying and Disconnecting Load

- i. Start with the Main Power switch located in the ON position and the Master Load switch in the OFF position.
- ii. Turn the Blower switch to the ON position. Load can only be applied if the blower is on and the unit is getting adequate airflow.
- iii. “Shock” Loading
 1. Begin with the Master switch in the OFF position.
 2. Place the desired test step switches in the ON position.
 3. Place the Master switch ON to engage all selected load simultaneously.
- iv. “Step” Loading
 1. Begin with the Master switch in the ON position.

2. Place desired step switches in the ON position to apply load step by step.
- v. Disconnect individual steps by placing the step switches in the OFF position and/or disconnect all load simultaneously by placing the Master switch in the OFF position.
- vi. “Step” and “Shock” loading can be used in conjunction with one another during testing.
- vii. Repeat tests as needed.

d. Acuvim II Power Quality Meter

- i. Press the “VA” button on the front of the meter to view and cycle through the line voltage and current options.
- ii. Press the “P” button on the front of the meter to view and cycle through the Power Reading and Power Factor options.
- iii. You will find more detailed instructions on the use of your meter by visiting <https://accuenergy.com/> and creating an Accuenergy account.



e. Shut Down

- i. Ensure the Master switch and all step switches are in the OFF position.
- ii. Allow blower(s) to operate for at least three minutes (or until exhaust air is cool) before shutting them off.
This cooling period will extend the life of your load bank.
- iii. Turn the Main Power Switch to the OFF Position.
- iv. De-energize the external power source (if applicable) and the load power source.
- v. Remove the **de-energized** external power source cable.
- vi. Remove the **de-energized** load power Cam Locks from the unit (if applicable).
- vii. Remove the ground Cam Locks from the unit (if applicable).
- viii. Remove Ethernet/Data connections (if applicable).

5) Troubleshooting

a. Load bank will not turn on

- i. Make sure the Main Power switch is in the ON position.
- ii. Check the control fuses.

b. Blower will not turn on

- i. Make sure the load bank is turning on.
- ii. Check for debris preventing the fan(s) from turning.
- iii. Check the blower fuses.

c. Load steps will not turn on

- i. Make sure the load bank is turning on.
- ii. Make sure the test power source is energized.
- iii. Make sure the blower is on.
- iv. Make sure the Master switch is in the ON position.
- v. Check if the over temperature red light is on.
- vi. Check the main power fuses.
- vii. Check for resistor continuity.

d. Over temperature fault

- i. Turn off the unit and disable the source power immediately.
- ii. This is an indication that the internal cabinet temperature has exceeded 150 °F.
- iii. Make sure the cabinet is ventilated.
- iv. Make sure the temperature sensor is operating. The temperature sensor should be normally closed below 150 °F.

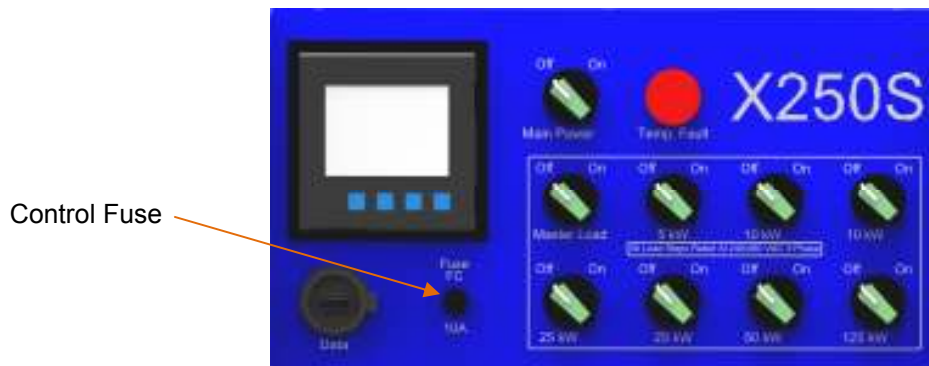
6) Maintenance

All maintenance should be conducted on a **de-energized** unit. Operator is to confirm prior to performing any maintenance.

a. Replacing a fuse

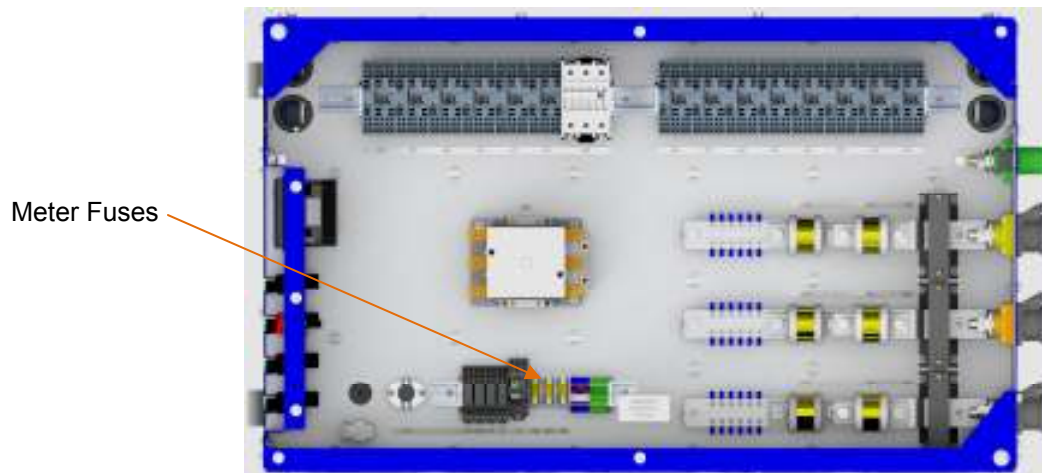
i. Main Control (FC) Fuse

This fuse is located on the front of the switch panel of the load bank and may be removed by pushing down and twisting the front of the fuse cover.



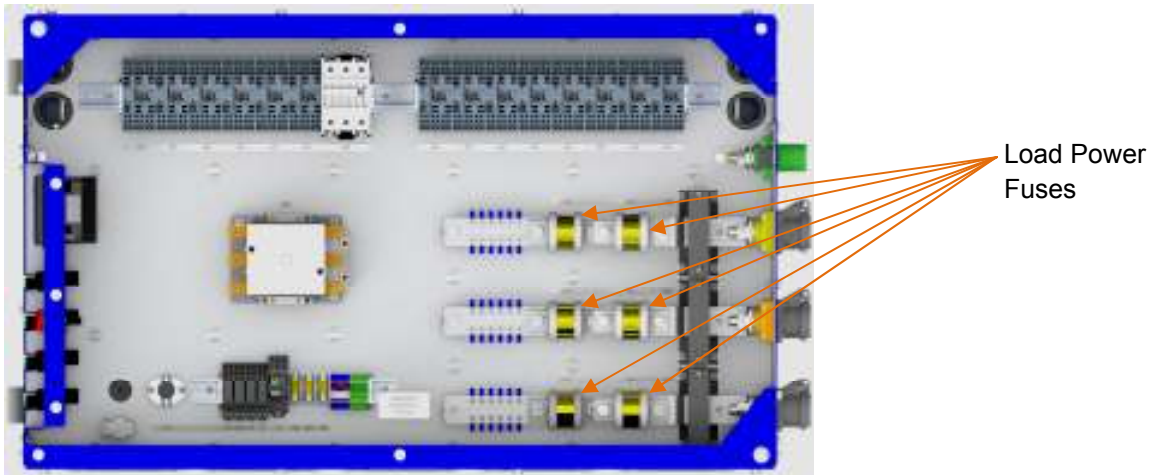
ii. Meter (FMA, FMB, FMC) Fuses

These fuses are located under the lid of the load bank. They may be accessed by removing the 6 screws on the top of the unit. The fuses can be found on the din rail located on the panel inside. To remove a fuse from the holder, pry the fuse out of the spring locked fuse holder.



iii. **Load Power (FLA1, FLA2, FLB1, FLB2, FLC1, FLC2) Fuses**

These fuses are located under the lid of the load bank. They may be accessed by removing the 6 screws on the top of the unit. The fuses can be found on the bus bars located on the panel inside. To remove a fuse, remove the screws attaching it to the bus bar.



b. **Replacing Contactors**

Contact Mosebach Manufacturing Co. if there is a contactor that needs to be replaced.

c. **Replacing Resistors**

Contact Mosebach Manufacturing Co. if there is a problem with the resistors or if a resistor needs to be replaced.

d. Preventative Maintenance

Do not use a power washer to clean off the exterior of the unit. It is high voltage electrical equipment.

Action	Frequency
Walk around the unit and inspect for: a) Obvious damage b) Loose hardware	Every use
Cold Resistance Check	Every 6 months
Air Flow Test	Every 6 months
Power Test	Every 6 months
Open Control Panel and Inspect for: a) Loose wire connections b) Visually damaged components	Every 6 months
Inspect Fans	Annually
Inspect Resistors for: a) Damage to coils b) Delamination of the mica	Annually
Contactors are opening and closing	Annually

7) Service Parts

	Part Number
Blowers	EC-9500-1434
Meter	EC-9500-2176
Green Illuminated Switch	EC-9500-1906
Red Light	EC-9500-1904
OTS Sensor	EC-9500-2182
Fuse – 10A Type AGC	EC-9500-1577
Fuse – 1A	EC-9500-0247
Fuse 450A	EC-9500-0916
Resistor Elements	RA-0055-0395-1 RA-0055-0395-2 RA-0055-0395-3 RA-0055-0395-4 RA-0055-0395-5 RA-0055-0395-6 RA-0055-0395-7 RA-0055-0395-8 RA-0055-0395-9 RA-0055-0395-10 RA-0055-0395-11 RA-0055-0395-13

8) Copyright

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“SAVE THESE INSTRUCTIONS”