A32

UNINTERRUPTIBLE POWER SYSTEM

(UPS)

ECN/DATE

CPN112692

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IMPORTANT SAFETY INSTRUCTIONS
FOR THE
LA MARCHE POWER CONVERSION EQUIPMENT
SAVE THESE INSTRUCTIONS

This manual contains important safety and operating instructions for the La Marche Power Conversion Equipment.

Before using this equipment, read all instructions and cautionary markings on (1) unit, (2) battery, and (3) product using the battery.

CAUTION: To reduce risk of injury and/or damage to the batteries, use only the type of batteries specified on the charger.

Do not expose equipment to rain or snow.
Do not operate equipment if it has received a sharp blow, been dropped, or otherwise damaged in any way; take it to a qualified serviceman.
Do not disassemble this unit; take it to a qualified serviceman when service or repair is required. Incorrect re-assembly may result in a risk of electric shock or fire.

To reduce risk of electric shock, disconnect this unit from the AC supply, or batteries and loads before attempting any maintenance or cleaning. Turning off controls will not reduce this risk.

WARNING – THERE IS A RISK OF EXPLOSIVE GASSES AND WORKING IN THE VICINITY OF A BATTERY IS DANGEROUS. SOME BATTERIES GENERATE EXPLOSIVE GASES DURING NORMAL BATTERY OPERATION. FOR THIS REASON, IT IS OF UTMOST IMPORTANCE THAT EACH TIME BEFORE USING THIS UNIT, YOU READ THIS MANUAL AND FOLLOW THE INSTRUCTIONS EXACTLY.

To reduce risk of battery explosion, follow these instructions and those published by the battery manufacturer and manufacturer of any equipment you intend to use in the vicinity of the battery.

Review cautionary marking on all products.

PERSONAL PRECAUTIONS:

1. Someone should be within range of your voice or close enough to come to your aid when you work near a battery.
2. Have plenty of fresh water and soap nearby in case the battery electrolyte contacts skin, clothing, or eyes.
3. Wear complete eye protection and clothing protection. Avoid touching eyes while working near a battery.
4. If the battery electrolyte contacts skin or clothing, wash immediately with soap and water. If the electrolyte enters the eye, immediately flood the eye with running cold water for at least ten (10) minutes and get medical attention immediately.
5. Never smoke or allow a spark or flame in vicinity of a battery.
6. Be extra cautious, DO NOT drop metal onto a battery. It might spark or short-circuit the battery or cause an explosion.
7. Remove personal metal items such as rings, bracelets, necklaces, and watches when working with a battery. A battery can produce a short-circuit current high enough to weld these items causing severe burns.
8. NEVER charge a frozen battery.

PREPARING TO CHARGE

1. If it is necessary to remove the battery connections, always remove grounded terminal from the battery first. Make sure all loads are disconnected and unit is off, so as not to cause an arc.
2. Be sure the area around the battery is well ventilated while the battery is being charged.
3. When cleaning battery terminals, be careful to keep corrosion from coming in contact with eyes.
4. Study all the battery manufacturer's specific precautions such as removing or not removing cell caps while charging, recommended rates of charge, and maintenance procedures.

UNIT LOCATION

- Never place this unit directly above the standard flooded battery. Gases from the battery will corrode and damage equipment. A sealed maintenance free or valve regulated lead acid (VRLA) may be placed below this equipment.
- Never allow the battery electrolyte to drip on this unit when reading the specific gravity or filling the battery.
- Do not operate this unit in a closed-in area or restrict ventilation in any way.
- Do not set any battery on top of this unit.

DC CONNEC PRECAUTIONS

Connect and disconnect DC output cables only after setting all of this unit's switches to off position and removing AC input supply.

GROUNDING INSTRUCTIONS

This battery charger should be connected to a grounded, metal, permanent wiring system; or an equipment grounding conductor should be run with circuit conductors and connected to equipment-grounding terminal or lead on battery charger. Connections to battery should comply with all local codes and ordinances.

CAUTION: DO NOT PULL ON OUTPUT CABLES WHEN DISCONNECTING CHARGER FROM BATTERY.

RECEIVING INSTRUCTIONS

CAUTION: To ensure safe installation and operation, the information given in the instruction manual should be read and understood before installing or using the equipment.

Unpacking and Inspection: Examine the shipping crate upon arrival. If there is obvious damage, describe on the receiving documents. Within a few days after delivery, the equipment should be uncrated and carefully inspected for hidden damages. When removing packaging material, be careful not to discard any equipment, parts, or manuals. If any damage is detected you should:

1. File a claim with the carrier within five (5) days.
2. Send a copy of the claim to La Marche Mfg. Co.
3. Call La Marche Mfg. For a RETURN MATERIAL AUTHORIZATION NUMBER.

Failure to properly file a claim for shipping damages, or provide a copy of the claim to La Marche Mfg., may void warranty service for any physical damages reported for repair.

HANDLING

WARNING: Equipment can be very heavy, and top-heavy. Use adequate manpower or equipment for handling. Until the equipment is securely mounted, care must be used to prevent the equipment from being accidentally tipped over.

NOMENCLATURE PLATES

Each piece of La Marche Mfg. Equipment shipped is identified by part number on the nomenclature plate.

ADJUSTMENTS

All equipment is shipped from the factory fully checked and adjusted. Do not make any adjustments unless the equipment has been powered-up and the settings have been determined to be incorrect.

SPARE PARTS

To minimize downtime during installation or normal service, it is advisable to purchase spare fuses, circuit boards and other recommended components. Please refer to the list of recommended spare parts and their La Marche Mfg. Part numbers included with the instruction manual. It is recommended that spare fuses be ordered for all systems.

To order spare parts, please contact La Marche Mfg. (847)-299-1188 during business hours and ask for the Parts Department.

1.0 GENERAL

The LaMarche model A32 is a relay rack mounted transistorized Uninterruptible Power System designed to continuously power critical AC loads. It consists of a power supply/battery charger (A36D) a transistorized, sine wave, DC to AC inverter (A31), a transfer switch (included as part of the A31), a ground charge bar (GCB) and a DC battery source (customer supplied). Up to two battery trays are included with many systems. To complete the UPS, a bypass AC line needs to be provided. Under normal operation, the Prime Source (inverter or bypass line) will power the load(s). In case of a failure of the Prime Source, the loads will be automatically transferred to the Alternate Source.

The battery charger/power supply supplies power to the DC to AC inverter and also maintains the charge on the DC battery source. It is regulated and current limited and has electronic circuitry for monitoring low DC voltage, high Dc voltage and low current conditions. Alarm contacts for these conditions are also provided.

The transistorized DC to AC inverter converts the DC power to AC power. The input power comes from either the battery charger/power supply or the battery power source. The DC power from either source is switched by transistors (IGBT's) with an all solid state circuit and a ferroresonant output transformer to produce a sine wave output with less than 5% harmonic distortion while providing input to output isolation, output regulation, current limiting and filtering. The inverter has protection circuits that will shut it off in case of low or high voltage at its input terminals.

Two modes of operation are available:

A32P PRIME SYSTEMS (ON LINE)

The A32 UPS is the prime source of power to the load. Transfers to the bypass source only occur if the inverter or battery charger fail. The battery charger/power supply must be capable of powering the full load current of the inverter and the recharge current of the battery simultaneously.

A32S STANDBY SYSTEMS (OFF LINE)

The A32 UPS is running but the AC load is being powered by the AC bypass source. Transfer of load power, to the inverter, occurs anytime the bypass fails. The battery charger/power supply must be capable of powering the idle current of the inverter and the recharge current of the battery simultaneously.

2.0 OUTPUT RATINGS

2.1 OUTPUT VOLTAGE

The Model A32 generates a sinusoidal output voltage (120 volts into AC loads of up to a .8 lagging power factor with approximately 5% total harmonic distortion (THD). The output is rated for continuous use over the rated temperature and input ranges.

2.2 OUTPUT CURRENT

Measured at rated output. (See Table 1)

2.3 REGULATION

Steady state AC output voltage of the inverter remains within +/- 5% of nominal for AC output loads from no load to rated output.

2.4 CURRENT LIMIT

Fixed at approximately 150 % of rated output. The ferroresonant transformer is designed to current limit under AC overload conditions.

2.5 OUTPUT FREQUENCY

The output frequency is quartz crystal controlled to +/- .05% of the rated value and line synchronization circuitry is provided. When the line synchronization is connected the phase displacement between the inverter output and the bypass line input are no greater than 5 electrical degrees when synchronization is established. The capture range for input synchronization signal is +/- 3 cycles of the nominal output frequency.

2.6 EFFICIENCY

System efficiency is greater than 60% (total conversion efficiency from AC input to AC output with battery fully charged) measured at rated output load and nominal input voltage.

2.7 POWER FACTOR

The model A32 is capable of powering loads with power factors of .8 lagging.

2.8 CREST FACTOR

Unit will remain within rated output voltage and current specifications with load current crest factors of up to 2.8.

2.9 BACKUP TIME (SEE TABLE 1)

The A32 system is designed to operate with an external battery with amp-hour capacity sufficient to provide up to 24 hours of backup power to the critical load.

2.10 RECHARGE TIME (SEE TABLE 1)

After a power loss, the fully discharged battery will be recharged fully in 24 hours.

3.0 INPUT RATINGS

3.1 INPUT VOLTAGE

(A) AC INPUT VOLTAGE

The model A32 will operate within specifications over a range of 108 to 132 VAC AC input voltage.

(B) DC INPUT VOLTAGE

Battery should be specified by number and type of cells. Standard ratings are for lead types with ranges of 1.75 - 2.33 volts/cell.

3.2 INPUT CURRENTS

See Table 1 for input current ratings and battery values at nominal input conditions.

4.0 TYPICAL ELECTRICAL SPECIFICATIONS

See Table 1 for input and output characteristics.

5.0 FEATURES

5.1 INPUT PROTECTION

AC (A36D) and DC (A31) input circuit breakers are provided.

5.2 OUTPUT PROTECTION

(a) CIRCUIT BREAKER
AC (A31) and DC (A36D) output circuit breakers are provided.

(b) CURRENT LIMITING
Fixed current limit at approximately 150% of rated load, under nominal input conditions.

5.3 LOW-DC VOLTAGE SHUTDOWN

A circuit is provided for load protection which causes the unit to shut down when its DC battery voltage drops below a preset value. Adjustments are provided for low voltage shutdown at approximately 1.75 volts/cell (lead) and 1.05 volts/cell (nickel cadmium) from the factory.

5.4 HIGH-DC VOLTAGE SHUTDOWN

A circuit is provided for load protection which causes the unit to shut down when its DC battery voltage rises above a preset value. Adjustments are provided for high voltage shutdown at approximately 2.65 volts/cell (lead) and 1.67 volts/cell (nickel cadmium) from the factory.

5.5 METERS

A combination digital DC voltmeter and ammeter is supplied on the A36D. Analog AC voltmeter and ammeter are provided on the A31 Inverters 750VA and larger.

5.6 TRANSFER SWITCHES

(a) 15ms Electronic Static Switch (provided on 500VA and 750VA)

An electronic load transfer switch can be provided with approximately 15 ms. transfer time to switch the load from the inverter stage to the bypass source. Load voltage is sensed and power is transferred to the AC bypass source when the voltage is out of the specified value for longer than 15 ms.. This transfer point is adjustable by potentiometer. Retransfer is automatic after a time delay when both AC sources are available.

(b) 1ms Electronic Static Switch (provided on 1KVA and larger)

A microprocessor based electronic load transfer switch with approximately 1 ms transfer time is available. This switch has no moving parts or contacts. The microprocessor senses the load voltage continuously and initiates a transfer to AC bypass power source when it is out of specified values for longer than 1~~.5~~ ms.. Retransfer occurs only after the prime source has been within specifications and phase locked with the bypass source for a time delay period.

A Status Display Panel consisting of Five (5) LED indicator lights and two (2) switches is provided on the front of the unit.

☼ PHASE LOCK	⏩ Indicates when the Prime and Alternate sources are in synchronization
☼ UTILITY AVAILABLE	⏩ Indicates the Alternate source is connected and operating within its proper range
☼ INVERTER AVAILABLE	⏩ Indicates the Inverter is operating within its proper range
☼ LOAD ON PREFERRED SOURCE	⏩ Indicates the AC load is operating on the Prime source
☼ LOAD ON ALTERNATE SOURCE	⏩ Indicates the AC load is operating on the Secondary source
▶ AUTO/MANUAL SWITCH	⏩ Allows for an Automatic or Manual Transfer
▶ TEST TRANSFER PUSHBUTTON	⏩ Allows an active check of the Static Switch operation

6.0 ENVIRONMENTAL RATINGS

6.1 OPERATING AMBIENT TEMPERATURE RANGE

0-50 degrees C (32-122 degrees F)

6.2 STORAGE TEMPERATURE RANGE

-20 degrees C to +60 degrees C (-2 degrees F to +140 degrees F)

6.3 HUMIDITY

This unit is capable of operating in an ambient relative humidity range of 0-95% (non-condensing).

6.4 SHOCK

The unit in its shipping container, withstands shock developed when one edge of the container is dropped six (6) inches while the opposite edge is resting on the ground, or if it is dropped two (2) inches on any surface no physical damage or degradation of the electrical performance will occur.

6.5 VIBRATION

The unit in its shipping container, withstands vibration encountered in shipping without physical damage or degradation of the electrical performance.

6.6 ALTITUDE

This unit is capable of operation at altitudes to 3300 feet at an ambient temperature of +50 degrees C (122 degrees F) and 10,000 feet at ambient of +40 degrees C.

6.7 HEAT DISSIPATION

	BTU/HR		BTU/HR
A31-500-48V-A6-24L	445	A36D-10-48V-A1-24L	312
A31-750-48V-A6-24L	595	A36D-15-48V-A1-24L	382
A31-1K-48V-A6-24L	602	A36D-20-48V-A1-24L	643
A31-1.5K-48V-A6-24L	616	A36D-25-48V-A1-24L	803
A31-2K-48V-A6-24L	917	A36D-30-48V-A1-24L	964
A31-3K-48V-A6-24L	1375	A36D-50-48V-A1-24L	1606
A31-4K-48V-A6-24L	1546	A36D-75-48V-A1-24L	2410
A31-5K-48V-A6-24L	1860	A36D-100-48V-A1-24L	3213

6.8 VENTILATION REQUIREMENTS

The unit should be mounted so that ventilating openings are not blocked and air entering the cabinet does not exceed +50 degrees C (122 degrees F). There should be at least 6 " of free space around the enclosure.

6.9 AUDIBLE NOISE

Audible noise is not greater than 65 DBA measured at 5 feet from any surface on the unit enclosure.

TABLE 1

System Model Number	KVA	AC Output		Battery Charger U.L. 1481 Listed			Inverter U.L. 1481 Listed			Approx System Weight	No. of Battery Trays	*Backup Time Range in Hrs	Approx. Battery Amp Hrs.
		Volts	Amps	Model Number	AC Input		Model Number	DC Input Amps					
					Volts	Amps		N. L.	F. L.				
"Prime" UPS System 24Hr Recharge													
A32P-500-48VBC-A6-2-24	0.5	120	4.17	A36D-15-48V-A1-24L	120	10.0	A31-500-48V-A6-24L	2.5	15.0	355	1	0.25 - 2	40
A32P-500-48VBC-A6-8-24	0.5	120	4.17	A36D-20-48V-ABD1-24L	120/208/240	13.4/7.7/6.7	A31-500-48V-A6-24L	2.5	15.0	363	1	4 - 8	72 - 125
A32P-500-48VBC-A6-24-24	0.5	120	4.17	A36D-30-48V-ABD1-24L	120/208/240	20.0/11.6/10.0	A31-500-48V-A6-24L	2.5	15.0	328	-	24	312
A32P-750-48VBC-A6-4-24	0.75	120	6.25	A36D-25-48V-ABD1-24L	120/208/240	16.8/9.7/8.4	A31-750-48V-A6-24L	3.5	22.0	375	1	0.25 - 4	40 - 105
A32P-750-48VBC-A6-8-24	0.75	120	6.25	A36D-30-48V-ABD1-24L	120/208/240	20.0/11.6/10.0	A31-750-48V-A6-24L	3.5	22.0	428	2	8	210
A32P-750-48VBC-A6-24-24	0.75	120	6.25	A36D-50-48V-ABD1-24L	120/208/240	33.6/19.4/16.8	A31-750-48V-A6-24L	3.5	22.0	380	-	24	520
A32P-1K-48VBC-A6-4-24	1	120	8.33	A36D-30-48V-ABD1-24L	120/208/240	20.0/11.6/10.0	A31-1K-48V-A6-24L	5.0	28.0	408	1	0.25 - 4	40 - 125
A32P-1K-48VBC-A6-8-24	1	120	8.33	A36D-50-48V-ABD1-24L	120/208/240	33.6/19.4/16.8	A31-1K-48V-A6-24L	5.0	28.0	500	2	8	300
A32P-1K-48VBC-A6-24-24	1	120	8.33	A36D-75-48V-ABD1-24L	120/208/240	50.4/29.1/25.2	A31-1K-48V-A6-24L	5.0	28.0	485	-	24	615
A32P-1.5K-48VBC-A6-2-24	1.5	120	12.5	A36D-50-48V-ABD1-24L	120/208/240	33.6/19.4/16.8	A31-1.5K-48V-A6-24L	7.0	40.0	470	1	0.25 - 2	40 - 105
A32P-1.5K-48VBC-A6-8-24	1.5	120	12.5	A36D-50-48V-ABD1-24L	120/208/240	33.6/19.4/16.8	A31-1.5K-48V-A6-24L	7.0	40.0	515	2	4 - 8	208 - 310
A32P-1.5K-48VBC-A6-24-24	1.5	120	12.5	A36D-100-48V-ABD1-24L	120/208/240	67.2/38.8/33.6	A31-1.5K-48V-A6-24L	7.0	40.0	526	-	24	896
A32P-2K-48VBC-A6-0.5-24	2	120	16.67	A36D-50-48V-ABD1-24L	120/208/240	33.6/19.4/16.8	A31-2K-48V-A6-24L	10.0	54.0	525	1	0.25 - 0.5	40 - 72
A32P-2K-48VBC-A6-2-24	2	120	16.67	A36D-75-48V-ABD1-24L	120/208/240	50.4/29.1/25.2	A31-2K-48V-A6-24L	10.0	54.0	605	1	2	155
A32P-2K-48VBC-A6-4-24	2	120	16.67	A36D-75-48V-ABD1-24L	120/208/240	50.4/29.1/25.2	A31-2K-48V-A6-24L	10.0	54.0	650	2	4	250
A32P-2K-48VBC-A6-8-24	2	120	16.67	A36D-75-48V-ABD1-24L	120/208/240	50.4/29.1/25.2	A31-2K-48V-A6-24L	10.0	54.0	555	-	8	432
A32P-2K-48VBC-A6-24-24	2	120	16.67	A36D-100-48V-ABD1-24L	120/208/240	67.2/38.8/33.6	A31-2K-48V-A6-24L	10.0	54.0	581	-	24	1096
A32P-3K-48VBC-A6-0.5-24	3	120	25.0	A36D-100-48V-ABD1-24L	120/208/240	67.2/38.8/33.6	A31-3K-48V-A6-24L	13.0	81.0	726	1	0.25 - 0.5	40 - 72
A32P-3K-48VBC-A6-2-24	3	120	25.0	A36D-100-48V-ABD1-24L	120/208/240	67.2/38.8/33.6	A31-3K-48V-A6-24L	13.0	81.0	771	2	2	208
A32P-3K-48VBC-A6-8-24	3	120	25.0	A36D-100-48V-ABD1-24L	120/208/240	67.2/38.8/33.6	A31-3K-48V-A6-24L	13.0	81.0	676	-	4 - 8	432 - 696
A32P-3K-48VBC-A6-24-24	3	120	25.0	A36D-100-48V-ABD1-24L(X2)	120/208/240	67.2/38.8/33.6	A31-3K-48V-A6-24L	13.0	81.0	967	-	24	1800
A32P-4K-48VBC-A6-0.5-24	4	120	33.3	A36D-100-48V-ABD1-24L	120/208/240	67.2/38.8/33.6	A31-4K-48V-A6-24L	15.0	106.0	766	1	0.25 - 0.5	72 - 90
A32P-4K-48VBC-A6-2-24	4	120	33.3	A36D-100-48V-ABD1-24L	120/208/240	67.2/38.8/33.6	A31-4K-48V-A6-24L	15.0	106.0	811	2	2	310
A32P-4K-48VBC-A6-8-24	4	120	33.3	A36D-75-48V-ABD1-24L(X2)	120/208/240	50.4/29.1/25.2	A31-4K-48V-A6-24L	15.0	106.0	950	-	4 - 8	520 - 896
A32P-4K-48VBC-A6-24-24	4	120	33.3	A36D-100-48V-ABD1-24L(X2)	120/208/240	67.2/38.8/33.6	A31-4K-48V-A6-24L	15.0	106.0	1007	-	24	2400
A32P-5K-48VBC-A6-0.5-24	5	120	41.67	A36D-75-48V-ABD1-24L(X2)	120/208/240	50.4/29.1/25.2	A31-5K-48V-A6-24L	16.0	132.0	1025	1	0.25 - 0.5	72 - 125
A32P-5K-48VBC-A6-4-24	5	120	41.67	A36D-75-48V-ABD1-24L(X2)	120/208/240	50.4/29.1/25.2	A31-5K-48V-A6-24L	16.0	132.0	980	-	2 - 4	432 - 608
A32P-5K-48VBC-A6-8-24	5	120	41.67	A36D-100-48V-ABD1-24L(X2)	120/208/240	67.2/38.8/33.6	A31-5K-48V-A6-24L	16.0	132.0	1037	-	8	1096

Note: Backup time - range indicates the range of backup times that the systems can be used for. Example: A32P-500-48VBC-A6-8-24 can be used for applications of 4 Hrs - 8 Hrs.

(X2) = Two chargers per system.

TABLE 2

UPS System Model Number	KVA	AC Output		Battery Charger U.L. 1481 Listed			Inverter U.L. 1481 Listed			Approx System Weight	No. of Battery Trays	* Backup Time Range in Hours	Approx. Battery Amp Hrs.
		Volts	Amps	Model Number	AC Input		Model Number	DC Input Amps					
					Volts	Amps		N. L.	F. L.				
"Standby" UPS System 24Hr Recharge													
A32S-500-48VBC-A6-8-24	0.5	120	4.17	A36D-10-48V-A1-24L	120	6.7	A31-500-48V-A6-24L	2.5	15.0	309	1	0.25 - 8	40 - 125
A32S-500-48VBC-A6-24-24	0.5	120	4.17	A36D-20-48V-ABD1-24L	120/208/240	13.4/7.7/6.7	A31-500-48V-A6-24L	2.5	15.0	313	-	24	312
A32S-750-48VBC-A6-4-24	0.75	120	6.25	A36D-10-48V-A1-24L	120	6.7	A31-750-48V-A6-24L	3.5	22.0	314	1	0.25 - 4	40 - 104
A32S-750-48VBC-A6-8-24	0.75	120	6.25	A36D-15-48V-A1-24L	120	10	A31-750-48V-A6-24L	3.5	22.0	405	2	8	210
A32S-750-48VBC-A6-24-24	0.75	120	6.25	A36D-30-48V-ABD1-24L	120/208/240	20.0/11.6/10.0	A31-750-48V-A6-24L	3.5	22.0	333	-	24	520
A32S-1K-48VBC-A6-4-24	1	120	8.33	A36D-10-48V-A1-24L	120	6.7	A31-1K-48V-A6-24L	5.0	28.0	339	1	0.25 - 4	40 - 125
A32S-1K-48VBC-A6-8-24	1	120	8.33	A36D-15-48V-A1-24L	120	10	A31-1K-48V-A6-24L	5.0	28.0	430	2	8	250
A32S-1K-48VBC-A6-24-24	1	120	8.33	A36D-50-48V-ABD1-24L	120/208/240	33.6/19.4/16.8	A31-1K-48V-A6-24L	5.0	28.0	405	-	24	608
A32S-1.5K-48VBC-A6-2-24	1.5	120	12.5	A36D-10-48V-A1-24L	120	6.7	A31-1.5K-48V-A6-24L	7.0	40.0	354	1	0.25 - 2	40 - 104
A32S-1.5K-48VBC-A6-4-24	1.5	120	12.5	A36D-15-48V-A1-24L	120	10.0	A31-1.5K-48V-A6-24L	7.0	40.0	445	2	4	208
A32S-1.5K-48VBC-A6-8-24	1.5	120	12.5	A36D-25-48V-ABD1-24L	120/208/240	16.8/9.7/8.4	A31-1.5K-48V-A6-24L	7.0	40.0	460	2	8	310
A32S-1.5K-48VBC-A6-24-24	1.5	120	12.5	A36D-50-48V-ABD1-24L	120/208/240	33.6/19.4/16.8	A31-1.5K-48V-A6-24L	7.0	40.0	420	-	24	896
A32S-2K-48VBC-A6-0.5-24	2	120	16.67	A36D-10-48V-A1-24L	120	6.7	A31-2K-48V-A6-24L	10.0	54.0	409	1	0.25 - 0.5	40 - 72
A32S-2K-48VBC-A6-2-24	2	120	16.67	A36D-15-48V-A1-24L	120	10.0	A31-2K-48V-A6-24L	10.0	54.0	455	1	2	155
A32S-2K-48VBC-A6-4-24	2	120	16.67	A36D-20-48V-ABD1-24L	120/208/240	13.4/7.7/6.7	A31-2K-48V-A6-24L	10.0	54.0	508	2	4	250
A32S-2K-48VBC-A6-8-24	2	120	16.67	A36D-30-48V-ABD1-24L	120/208/240	20.0/11.6/10.0	A31-2K-48V-A6-24L	10.0	54.0	428	-	8	432
A32S-2K-48VBC-A6-24-24	2	120	16.67	A36D-75-48V-ABD1-24L	120/208/240	50.4/29.1/25.2	A31-2K-48V-A6-24L	10.0	54.0	555	-	24	1096
A32S-3K-48VBC-A6-0.5-24	3	120	25.0	A36D-15-48V-A1-24L	120	10.0	A31-3K-48V-A6-24L	13.0	81.0	550	1	0.25 - 0.5	40 - 72
A32S-3K-48VBC-A6-2-24	3	120	25.0	A36D-20-48V-ABD1-24L	120/208/240	13.4/7.7/6.7	A31-3K-48V-A6-24L	13.0	81.0	603	2	2	208
A32S-3K-48VBC-A6-4-24	3	120	25.0	A36D-30-48V-ABD1-24L	120/208/240	20.0/11.6/10.0	A31-3K-48V-A6-24L	13.0	81.0	523	-	4	432
A32S-3K-48VBC-A6-8-24	3	120	25.0	A36D-50-48V-ABD1-24L	120/208/240	33.6/19.4/16.8	A31-3K-48V-A6-24L	13.0	81.0	570	-	8	696
A32S-3K-48VBC-A6-24-24	3	120	25.0	A36D-100-48V-ABD1-24L	120/208/240	67.2/38.8/36.6	A31-3K-48V-A6-24L	13.0	81.0	676	-	24	1800
A32S-4K-48VBC-A6-0.5-24	4	120	33.3	A36D-20-48V-ABD1-24L	120/208/240	13.4/7.7/6.7	A31-4K-48V-A6-24L	15.0	106.0	598	1	0.25 - 0.5	72 - 90
A32S-4K-48VBC-A6-2-24	4	120	33.3	A36D-25-48V-ABD1-24L	120/208/240	16.8/9.7/8.4	A31-4K-48V-A6-24L	15.0	106.0	650	2	2	310
A32S-4K-48VBC-A6-4-24	4	120	33.3	A36D-30-48V-ABD1-24L	120/208/240	20.0/11.6/10.0	A31-4K-48V-A6-24L	15.0	106.0	563	-	4	520
A32S-4K-48VBC-A6-8-24	4	120	33.3	A36D-50-48V-ABD1-24L	120/208/240	33.6/19.4/16.8	A31-4K-48V-A6-24L	15.0	106.0	610	-	8	896
A32S-4K-48VBC-A6-24-24	4	120	33.3	A36D-75-48V-ABD1-24L(X2)	120/208/240	50.4/29.1/25.2	A31-4K-48V-A6-24L	15.0	106.0	950	-	24	2400
A32S-5K-48VBC-A6-0.5-24	5	120	41.67	A36D-20-48V-ABD1-24L	120/208/240	13.4/7.7/6.7	A31-5K-48V-A6-24L	16.0	132.0	628	1	0.25 - 0.5	72 - 125
A32S-5K-48VBC-A6-2-24	5	120	41.67	A36D-30-48V-ABD1-24L	120/208/240	20.0/11.6/10.0	A31-5K-48V-A6-24L	16.0	132.0	593	-	2	432
A32S-5K-48VBC-A6-4-24	5	120	41.67	A36D-50-48V-ABD1-24L	120/208/240	33.6/19.4/16.8	A31-5K-48V-A6-24L	16.0	132.0	640	-	4	608
A32S-5K-48VBC-A6-8-24	5	120	41.67	A36D-75-48V-ABD1-24L	120/208/240	50.4/29.1/25.2	A31-5K-48V-A6-24L	16.0	132.0	720	-	8	1096
A32S-5K-48VBC-A6-24-24	5	120	41.67	A36D-75-48V-ABD1-24L(X2)	120/208/240	50.4/29.1/25.2	A31-5K-48V-A6-24L	16.0	132.0	980	-	24	3000

Note: Backup time - range indicates the range of backup times that the systems can be used for. Example: A32S-500-48VBC-A6-8-24 can be used for applications ranging from 15 min - 8 Hrs.

(X2) = Two chargers per system.

General Maintenance Procedure

Yearly

1. Blow out rectifier/inverter with a low-pressure air hose.
2. Make sure all connections are tight.
3. Perform a visual check on all internal components.
4. Check front panel meters and alarms for accuracy.

4th Year

REPEAT ABOVE WITH THE ADDITION OF:

1. Check relay contacts for pitting or corrosion.
2. Check capacitors for leakage.

7th Year

REPEAT ALL, WITH THE ADDITION OF:

1. Filter, resonating capacitors and control relays should be replaced.

10th Year

REPEAT ALL WITH THE ADDITION OF: (except replacing capacitors and control relays, they should be replaced every 7 years)

1. Check magnetics, components and wiring for signs of excessive heat.

MANUFACTURER'S WARRANTY

All La Marche Manufacturing Co. equipment has been thoroughly tested and found to be in proper operating condition upon shipment from the factory and is warranted to be free from any defect in workmanship and material that may develop within one year from date of purchase. In addition to the standard one (1) year warranty, La Marche warrants it's magnetics and power diodes on a parts replacement basis only for four (4) more years under normal use.

Any part or parts of the equipment (except fuses, d.c. connectors and other wear-related items) that prove defective within a one (1) year period shall be replaced without charge providing such defect, in our opinion, is due to faulty material or workmanship and not caused by tampering, abuse, misapplication or improper installation. Magnetics and power diodes are warranted for five (5) years after date of purchase. During the last four (4) years of this five (5) year warranty period, the warranty covers parts replacement only, and no labor or other services are provided by La Marche, nor is La Marche obligated to reimburse the owner or any other person for work performed.

Should a piece of equipment require major component replacement or repair during the first year of the warranty period, these can be handled in one of two ways:

1. The equipment can be returned to the La Marche factory to have the inspections, parts replacements and testing performed by factory personnel. Should it be necessary to return a piece of equipment or parts to the factory, the customer or sales representative must obtain authorization from the factory. If upon inspection at the factory, the defect was due to faulty material or workmanship, all repairs will be made at no cost to the customer during the first year. Transportation charges or duties shall be borne by purchaser.

2. If the purchaser elects not to return the equipment to the factory and wishes a factory service representative to make adjustments and/or repairs at the equipment location, La Marche's field service labor rates will apply. A purchase order to cover the labor and transportation cost is required prior to the deployment of the service representative.

In accepting delivery of the equipment, the purchaser assumes full responsibility for proper installation, installation adjustments and service arrangements. Should minor adjustments be required, the local La Marche sales representative should be contacted to provide this service only.

All sales are final. Only standard LaMarche units will be considered for return. A 25% restocking fee is charged when return is factory authorized. Special units are not returnable.

In no event shall La Marche Manufacturing Co. have any liability for consequential damages, or loss, damage or expense directly or indirectly arising from the use of the products, or any inability to use them either separately or in combination with other equipment or materials, or from any other cause. In addition, any alterations of equipment made by anyone other than La Marche Manufacturing Co. renders this warranty null and void.

La Marche Manufacturing Co. reserves the right to make revisions in current production of equipment, and assumes no obligation to incorporate these revisions in earlier models.

The failure of La Marche Manufacturing Co. to object to provisions contained in customers' purchase orders or other communications shall not be deemed a waiver of the terms or conditions hereof, nor acceptance of such provisions.

The above warranty is exclusive, supersedes and is in lieu of all other warranties, expressed or implied, including any implied warranty of merchantability or fitness. No person, agent or dealer is authorized to give any warranties on behalf of the Manufacturer, nor to assume for the Manufacturer any other liability in connection with any of its products unless made in writing and signed by an official of the manufacturer.