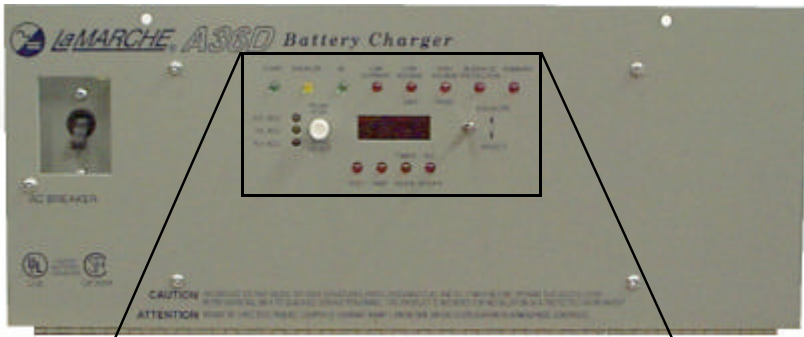


# A36D Rectifier / Power Supply



A36D Single Phase unit shown above



A36D 3 Phase unit shown above

## Single Phase / Three Phase Controlled Ferroresonant Rectifier / Power Supply For Telecommunication Power Systems

### General Description

The LaMarche Model A36D Controlled Ferroresonant Rectifier / Power Supply has many inherent advantages such as voltage regulation, high efficiency, high power factor and short circuit protection. These chargers provide separate adjustable voltages for floating or equalizing lead or nickel-cadmium cells. An equalize switch is located on the front panel of the charger for manual activation or a multi-mode electronic timer can be used for automatic activation. Steady state output voltage remains within +/- 1/2% of the setting from no load to full load and for AC input voltages within +/- 10% of the nominal input voltage. The Model A36D is internally filtered to be no greater than 32dBm ("C" message weighting) and 30 millivolts RMS for all conditions on input voltage and output load with or without batteries connected. This allows the A36D to be used as a battery eliminator.

### Design Features

- Recognized LaMarche Quality and Reliability
- Digital Metering
- Load Sharing / Paralleling
- Current Walk In
- Led Status Indicators
  - Float Voltage, Equalize Voltage, AC "ON"
  - Low Current, Low Voltage, High Voltage, Blown DC Protection, Summary
- AC Input Circuit Breaker
- One Pole DC Output Breaker / Single Phase Units
- Output Fusing / Three Phase Units
- AC Power Failure Alarm, One Form "C" Contact
- 2 Form "C" Contacts for each of the following:
  - Low DC Current
  - Low DC Voltage
  - High DC Voltage
  - Summary Alarm
  - Load Sharing
- Temperature Compensation\*
- Optional LaMarche "Intelligent Monitoring" capabilities \*

\* Available 4th quarter of 1999

**Note:** Consult factory for Ni-Cad size availability

Specifications are subject to change without notice. Please contact La Marche for current information.



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# A36D Rectifier / Power Supply

## Regulation

### Steady State

Plus or minus 1/2% of the setting from no load to full load over the specified input voltage, frequency and ambient temperature ranges.

### Dynamic Response (on battery)

Maximum voltage transient will not exceed +/-5% of initial steady-state voltage for a step change from 20% to 100% of the full rated load. Recovery to steady-state voltage regulation range does not exceed 200ms and all transient behavior disappears within 500ms.

### Audible Noise

Less than 65dBA at any point 5 feet from any vertical surface of the charger/power supply.

### Filtering

#### Voice Band Noise

Less than 22dB when tested according to REA Form 524 and less than 32 dBrn "C" on batteries rated in ampere-hours at four times the rated rectifier current. All A36D units are filtered to 32 dBrn "C" without batteries connected.

### Protection

#### Current Limit

The chargers have an inherent magnetic current limiting feature. Electronic current limiting control circuitry provides for an adjustable value of 90 to 115% of the rated output current.

#### AC Breaker

A two pole breaker, on single phase units opens both legs of the AC service to 208 and 240. Breaker opens phase side of 120 VAC service. A three pole breaker is supplied on three phase units.

#### DC Breaker / DC Fuse

A single pole output breaker is supplied as standard on single phase units. A DC Fuse is standard on three phase units.

### Metering

A switch selectable 1% combination digital volt / amp meter is supplied.

## Mean Time Between Failure

The mean time between failure (MTBF) as tested per the Bell Communications Standard TR-TSY-000332 is 225,000 hours at 50 C.

## Environmental

### Operating Temperature

0 to 50 C

### Storage Temperature

-40 to 85 C

### Humidity

0 to 95% Relative Humidity (Non-condensing)

### Cooling

Convection cooled

### Load Sharing

Load sharing terminals are provided on the alarm interface board. When connected, two (2) or more LaMarche units are forced to share the load within +/-5% for individual unit outputs greater than 10% of the rated output. 2 sets of form "C" contacts are provided to indicate when connected rectifiers are no longer sharing

## Current Walk In

Output current will gradually increase after the charger is turned on eliminating surges and overshoot.

## Temperature Compensation

5 step @ .001mv / Deg. C (available 4th quarter of 1999)

## Remote Equalize

Single wire control. Set any charger into equalize and all that are wired together also go into equalize.

## AC Power Failure Relay

Indicates when an AC Failure has occurred. 1 set of Form "C" contacts provided.

## Enclosures

Front access NEMA 1, Relay rack or floor mount. Paint is ANSI 61 Gray.

## Options

RS 485 Port for interfacing into LaMarche Intelligent Monitoring System (available 4th quarter of 1999)

## Alarm Status Panel

### Equalize Indicator

A yellow LED illuminates when the rectifier is in the "equalize" mode.

### Float Indicator

A green LED illuminates when the rectifier is in the "float" mode.

### AC "ON" Indicator

A green LED illuminates when there is sufficient AC voltage available.

### Low Current Alarm Indicator

A red LED illuminates when the rectifier output current falls below 0.5% of the rectifier rated DC output. 2 sets of form "C" contacts are also provided. The alarm also triggers the summary alarm.

### Low DC Voltage Alarm Indicator

A red LED illuminates when the rectifier output voltage has dropped below the preset adjustable low voltage point. 2 sets of form "C" contacts are also provided. The alarm also triggers the summary alarm.

### High DC Voltage Alarm Indicator

A red LED is illuminated when the rectifier output voltage has exceeded the preset adjustable high voltage point. 2 sets of form "C" contacts are also provided. The alarm also triggers the summary alarm.

### Blown DC Protection

A red LED illuminates when the rectifier DC protection has opened.

### Summary Rectifier Fail Alarm Indicator

A red LED illuminates when a failure has occurred which may disable the rectifier. The conditions which will produce a summary failure indication include: Low Current\*, Low DC Voltage, or High DC Voltage. 2 sets of form "C" contacts are also provided.

\*Low Current can be switched out of the summary failure alarm.



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# A36D Rectifier / Power Supply

## Single Phase 60 Hz Models

MODEL NUMBER	DC AMPS	AC INPUT (60Hz Single Phase)				PROTECTION				CASE NO.	APPROX. WEIGHT (LBS.)	BTU's / HOUR
		VOLTS	AMPERES			INPUT			OUTPUT			
			120	208	240	120	208	240				
A36D-15-12V-A1	15A	120	2.4	---	---	5.0	---	---	25	39	45	429
A36D-20-12V-A1	20A		3.2	---	---	7.5	---	---	30	39	50	388
A36D-25-12V-A1	25A		4.0	---	---	7.5	---	---	40	39	54	347
A36D-30-12V-A1	30A		5.0	---	---	10.0	---	---	40	33	78	674
A36D-50-12V-ABD1	50A	120/208/ 240	8.4	4.8	4.2	20.0	10.0	10.0	80	33	99	695
A36D-75-12V-ABD1	75A		12.6	7.3	6.3	30.0	15.0	15.0	100	33	110	1043
A36D-100-12V-ABD1	100A		16.8	9.7	8.4	30.0	15.0	15.0	130	4D	130	1227
A36D-150-12V-ABD1	150A		25.2	14.5	12.6	30.0	15.0	15.0	200	9D	145	3068
A36D-200-12V-ABD1	200A		33.6	19.4	16.8	40.0	20.0	20.0	250	9D	180	3272
MODEL NUMBER	DC AMPS	AC INPUT (60Hz Single Phase)				PROTECTION				CASE NO.	APPROX. WEIGHT (LBS.)	BTU's / HOUR
		VOLTS	AMPERES			INPUT			OUTPUT			
			120	208	240	120	208	240				
A36D-10-24V-A1	10A	120	3.3	---	---	5.0	---	---	15	39	50	150
A36D-12-24V-A1	12A		4.0	---	---	7.5	---	---	15	39	54	191
A36D-15-24V-A1	15A		5.0	---	---	7.5	---	---	25	39	58	241
A36D-20-24V-A1	20A		6.7	---	---	10.0	---	---	30	39	64	321
A36D-25-24V-ABD1	25A	120/208/ 240	8.4	4.8	4.2	15.0	7.5	7.5	40	33	99	402
A36D-30-24V-ABD1	30A		10.0	5.8	5.0	15.0	7.5	7.5	40	33	115	482
A36D-50-24V-ABD1	50A		16.8	9.7	8.4	30.0	15.0	15.0	80	33	130	803
A36D-75-24V-ABD1	75A		25.2	14.5	12.6	40.0	20.0	20.0	100	33E	145	1205
A36D-100-24V-ABD1	100A		33.6	19.4	16.8	40.0	20.0	20.0	130	33E	180	1606
A36D-150-24V-ABD1	150A		50.5	29.1	25.2	70.0	35.0	35.0	200	9D	280	2410
A36D-200-24V-ABD1	200A		67.0	38.8	33.6	80.0	40.0	40.0	250	9E	310	3213
MODEL NUMBER	DC AMPS	AC INPUT (60Hz Single Phase)				PROTECTION				CASE NO.	APPROX. WEIGHT (LBS.)	BTU's / HOUR
		VOLTS	AMPERES			INPUT			OUTPUT			
			120	208	240	120	208	240				
A36D-10-48V-A1	10A	120	6.7	---	---	10.0	---	---	15	39	64	312
A36D-12-48V-A1	12A		8.0	---	---	15.0	---	---	15	39	70	383
A36D-15-48V-A1	15A		10.0	---	---	15.0	---	---	25	33	110	382
A36D-20-48V-ABD1	20A	120/208/ 240	13.4	7.7	6.7	15.0	7.5	7.5	30	33	118	643
A36D-25-48V-ABD1	25A		16.8	9.7	8.4	30.0	15.0	15.0	40	33	125	803
A36D-30-48V-ABD1	30A		20.0	11.6	10.0	30.0	15.0	15.0	40	33	133	964
A36D-50-48V-ABD1	50A		33.6	19.4	16.8	50.0	25.0	25.0	80	33	180	1606
A36D-75-48V-ABD1	75A		50.4	29.1	25.2	70.0	35.0	35.0	100	9D	260	2410
A36D-100-48V-ABD1	100A		67.2	38.8	33.6	80.0	40.0	40.0	130	9E	286	3213
A36D-150-48V-BLD1	150A	208/240	---	58.2	50.4	---	70.0	70.0	200	72	528	4819
A36D-200-48V-BLD1	200A		---	77.6	67.3	---	80.0	80.0	250	72	572	6426

**Note:**

- 1) BTU's on single phase units based on 85% Efficiency.
- 2) Input Amps are at Nominal AC Input and at 100% of rated load.

**Output Voltage Chart**

Number of Cells	6L	12L	24L
DC Voltage	12	24	48
Float	12.7 to 13.8	25.4 to 27.6	50.9 to 55.2
Equalize	13.6 to 14.4	27.1 to 28.8	54.2 to 57.6



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# A36D Rectifier / Power Supply

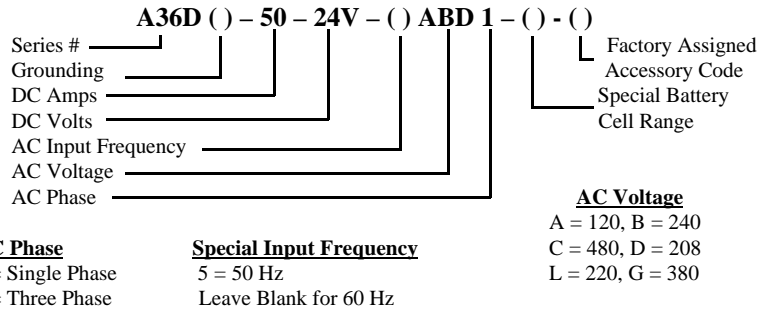
## Three Phase 60 Hz Models

MODEL NUMBER	DC AMPS	AC INPUT (60Hz Three Phase)				PROTECTION				CASE NO.	APPROX. WEIGHT (LBS.)	BTU's / HOUR
		VOLTS	AMPERES			INPUT			OUTPUT			
			208	240	480	208	240	480				
A36D-200-24V-BD3	200A	208/240	19.5	16.9	—	25	25	—	250	43	600	2514
A36D-300-24V-BD3	300A		29.3	25.4	—	35	35	—	400	43	700	3772
A36D-400-24V-BD3	400A		39.1	33.9	—	50	50	—	500	43	800	5029
A36D-200-24V-C3	200A	480	—	—	8.5	—	—	15	250	43	600	2514
A36D-300-24V-C3	300A		—	—	12.7	—	—	20	400	43	700	3772
A36D-400-24V-C3	400A		—	—	16.9	—	—	25	500	43	800	5029

MODEL NUMBER	DC AMPS	AC INPUT (60Hz Three Phase)				PROTECTION				CASE NO.	APPROX. WEIGHT (LBS.)	BTU's / HOUR
		VOLTS	AMPERES			INPUT			OUT-PUT			
			208	240	480	208	240	480				
A36D-200-48V-BD3	200A	208/240	39.1	33.9	—	50	50	—	300	43	755	5029
A36D-300-48V-BD3	300A		58.6	50.8	—	80	80	—	400	44	900	7543
A36D-400-48V-BD3	400A		78.1	67.7	—	100	100	—	500	44	1,193	10057
A36D-200-48V-C3	200A	480	—	—	16.9	—	—	25	300	43	755	5029
A36D-300-48V-C3	300A		—	—	25.4	—	—	40	400	44	900	7543
A36D-400-48V-C3	400A		—	—	33.9	—	—	50	500	44	1,193	10057

### Model Number Format



### Input Specifications

AC Voltage:



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# A36D Rectifier / Power Supply

## Single Phase 50 Hz Models

MODEL NUMBER	DC AMPS	AC INPUT (50Hz Single Phase)			PROTECTION			CASE NO.	APPROX. WEIGHT (LBS.)	BTU's / HOUR
		VOLTS	AMPERES		INPUT		OUTPUT			
			220	240	220	240				
A36D-50-12V-5BL1	50A	220/240	4.6	4.2	10.0	10.0	80	33	109	695
A36D-75-12V-5BL1	75A		6.9	6.3	15.0	15.0	100	33	121	1043
A36D-100-12V-5BL1	100A		9.2	8.4	15.0	15.0	130	4D	143	1227
A36D-150-12V-5BL1	150A		13.8	12.6	15.0	15.0	200	9D	160	3068
A36D-200-12V-5BL1	200A		18.3	16.8	20.0	20.0	250	9D	198	3272
MODEL NUMBER	DC AMPS	AC INPUT (50Hz Single Phase)			PROTECTION			CASE NO.	APPROX. WEIGHT (LBS.)	BTU's / HOUR
		VOLTS	AMPERES		INPUT		OUTPUT			
			220	240	220	240				
A36D-25-24V-5BL1	25A	220/240	4.6	4.2	7.5	7.5	40	33	109	402
A36D-30-24V-5BL1	30A		5.5	5.0	7.5	7.5	40	33	127	482
A36D-50-24V-5BL1	50A		9.2	8.4	15.0	15.0	80	33	143	803
A36D-75-24V-5BL1	75A		13.8	12.6	20.0	20.0	100	33E	160	1205
A36D-100-24V-5BL1	100A		18.3	16.8	20.0	20.0	130	33E	198	1606
A36D-150-24V-5BL1	150A		27.5	25.2	35.0	35.0	200	9D	309	2410
A36D-200-24V-5BL1	200A		36.7	33.6	40.0	40.0	250	9E	342	3213
MODEL NUMBER	DC AMPS	AC INPUT (50Hz Single Phase)			PROTECTION			CASE NO.	APPROX. WEIGHT (LBS.)	BTU's / HOUR
		VOLTS	AMPERES		INPUT		OUTPUT			
			220	240	220	240				
A36D-20-48V-5BL1	20A	220/240	7.3	6.7	7.5	7.5	30	33	130	643
A36D-25-48V-5BL1	25A		9.2	8.4	15.0	15.0	40	33	138	803
A36D-30-48V-5BL1	30A		11.0	10.1	15.0	15.0	40	33	147	964
A36D-50-48V-5BL1	50A		18.3	16.8	25.0	25.0	80	33	198	1606
A36D-75-48V-5BL1	75A		27.5	25.2	35.0	35.0	100	9D	287	2410
A36D-100-48V-5BL1	100A		36.7	33.6	40.0	40.0	130	9E	315	3213
A36D-150-48V-5BL1	150A		55	50.5	70.0	70.0	200	72	582	4819
A36D-200-48V-5BL1	200A		73.4	67.3	80.0	80.0	250	72	630	6426

## Three Phase 50 Hz Models

MODEL NUMBER	DC AMPS	AC INPUT (50Hz Three Phase)			PROTECTION			CASE NO.	APPROX. WEIGHT (LBS.)	BTU's / HOUR
		VOLTS	AMPERES		INPUT		OUTPUT			
			380		380					
A36D-200-24V-5G3	200A	380	10.7		15		250	43	661	2514
A36D-300-24V-5G3	300A		16		20		400	43	771	3772
A36D-400-24V-5G3	400A		21.4		25		500	44	881	5029
MODEL NUMBER	DC AMPS	AC INPUT (50Hz Three Phase)			PROTECTION			CASE NO.	APPROX. WEIGHT (LBS.)	BTU's / HOUR
		VOLTS	AMPERES		INPUT		OUTPUT			
			380		380					
A36D-200-48V-5G3	200A	380	21.4		25		300	43	832	5029
A36D-300-48V-5G3	300A		32.1		40		400	44	992	7543
A36D-400-48V-5G3	400A		42.8		50		500	44	1,315	10057

Note:

- 1) Case size may change on certain models in 50 Hz applications.
- 2) 50 Hz units are not UL Listed.

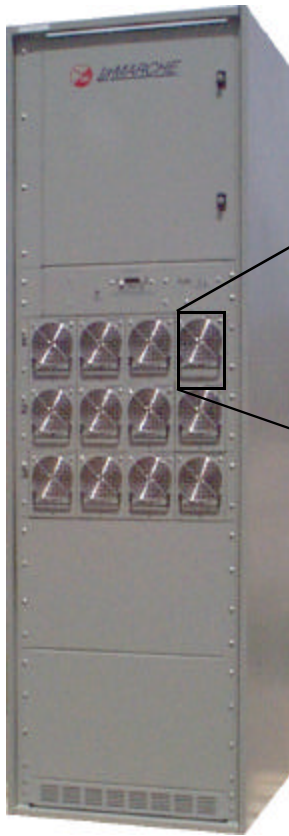


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# Other LaMarche Telecom Products

Below are other LaMarche products that are for use in the Telecommunications Industry



Modular Power System



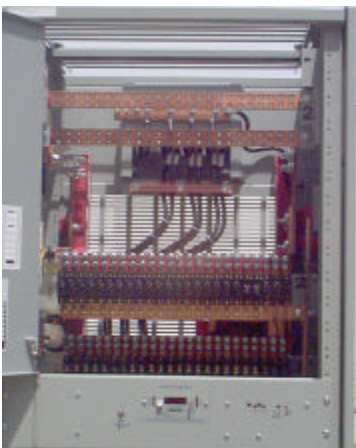
Model A86 Switchmode Rectifier



Distribution Bay



Digital Status Panel



Distribution for  
Modular Power System

Power Distribution Frame  
and 1200a Charger Bay



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