

10-1034

For utility and commercial applications

FEATURES AND BENEFITS

- Digital Controls with 4 button keypad allows for live charger setting and alarm adjustments
- Floor, wall, and relay rack mounts are available on most models
- Single-Phase 120, 208, 240, or 480VAC input
- 48VDC with 6, 12, 30, or 50 amp output
- 130VDC with 6, 12, 16, 25, 35, 50, or 75 amp output
- Easy maintenance
- Modular design of major components
- Visual indicators with time delays to prevent nuisance alarms
- Inherently Safe Design
- Safety Agency Listed to UL 1012 and CSA 107.1

TYPICAL APPLICATIONS

- Microwave systems
- Utility
 - Switchgear
 - Substations
 - Relay
- Fiber networks
- Pipe Line, oil drilling, offshore

FIVE YEAR WARRANTY



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**ARE-S Series
FLOAT
RECTIFIERS**

Controlled float rectifiers have many inherent advantages...voltage regulation, short circuit protection, low operating costs (a combination of high efficiency and high power factor), easy maintenance and high reliability.

The ARE-S Series of float rectifiers combines these inherent advantages with advanced rectifier, control and filter circuitry, and user-friendly operator interface. Designed specifically for utility and communication applications, the ARE-S Series rectifiers are easily adjusted to meet your specific operating requirements and will provide years of low maintenance service.

INPUT

Transformers are dual wound for either 120, 208, 240 volts (+10%, -12%) or 480 volts, single phase, (60 Hz +/- 3Hz). ARE-S13050 is wound for 208, 240, and 480 volts; ARE-S13075 is wound for 240 and 480 volts.

REGULATION

DC voltage is maintained within +/-0.5 % at any load from no load to full load with +10%, -12% variation (or ANSI standard ranges) in the AC input voltage while floating the rated number of cells.

Control is accomplished with a single microprocessor-control board and can operate with or without a battery.

During normal operation, the maximum output voltage transient does not exceed 6% of the initial steady-state voltage for sudden load changes between 10% and 90% of rated output. Recovery takes less than 300 milliseconds. Operation without a battery is stable under all conditions of line and load (within stated limits).

Turn-on under all conditions of line and load has a "soft-start" characteristic without overshoot.

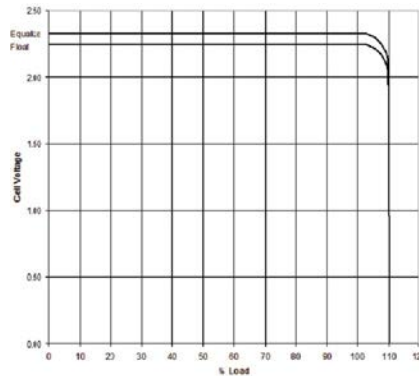
ELECTRICAL NOISE

For 48-volt models, the filtering provided produces a ripple level of less than 30 millivolts rms with electrical noise less than 22 dBnc measured on a battery with an eight-hour capacity rating of four times the rectifier current rating.

For 130-volt models, the filtering provided produces a ripple level of less than 100 millivolts rms when connected to a battery with an eight-hour capacity rating of four times the rectifier current rating.

The total dynamic response of the control circuitry permits all ARE-S rectifiers to operate as power supplies.

REGULATION CURVE

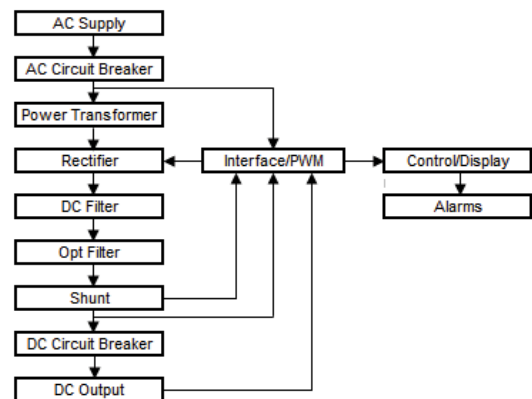


PRINCIPLES OF OPERATION

AC input voltage is applied through a circuit breaker to the power transformer. The transformer secondary feeds the rectifier unit, which consists of a full wave bridge utilizing two SCR and two silicon diodes. The SCRs, in addition to providing rectification, also serve as phase control elements. The output of the rectifier unit is filtered and then passes to the dc output terminals.

A digital voltage sensing circuit compares the output voltage to the user's preset voltage. The microprocessor takes the digital voltage error and determines the required phase shift in the SCR firing pulse. The SCR firing pulse occurs at the precise moment needed to maintain the desired dc voltage output.

The current sensing circuit develops a digital signal representation of the output current. An increase in the output current above the current limiting setting will cause the microprocessor to override the digital error voltage error and change the output voltage to limit the output current. This limits the output current to preset current limit level, typically 110 percent of rated output, even down to short-circuit on the dc output terminals.



CURRENT LIMITING CIRCUIT

The current limiting circuit is factory set at 110% of rated DC output but can be adjusted down to 50% and up to 110%.

FLOAT AND EQUALIZE VOLTAGES

Both the float and equalize voltages are user adjustable to accommodate different battery types. Float voltages are adjustable from 2.00-2.32 Volts per Cell (L.A.) and the Equalize voltage is adjustable to a maximum of 2.45 Volts per Cell (L.A.)

Float	48.0-56.4	120-141.0
EQ	Float-60.8	Float-149.0

TEMPERATURE COMPENSATION

The user-adjustable temperature compensation circuit will correct float and equalize voltages up to 2.0 mV per cell (L.A.) per C° [added for temperatures below 77°F (25° C) and subtracted for temperatures above 77°F (25°C)].

AMBIENT OPERATING TEMPERATURES

All ARE-S rectifiers will operate at 110% of rated DC output, continuously in temperatures from 32°F to 122°F (0°C to 50°C) up to an altitude of 3,000 ft (1,000 m). De-rating of 3.6°F (2°C) for every 990 ft (300 m) over 3,300 ft (1,000 m) above sea level. These units can be safely stored for up to one year at temperatures ranging from -40°F to 185°F (-40°C to 85°C).

BATTERY ELIMINATOR OPERATION (OPTIONAL)

All ARE-S rectifiers will operate as a power supply without a battery at the following ripple levels:

- 48-volt models less than 30 mV rms
- 130-volt models less than 100 mV rms

MECHANICAL FEATURES

- Door opens approximately 90° for easy access to interior
- The control board is mounted on the rear of the door for easy access
- The interface board is mounted behind the door for easy access
- Serviceable components are accessible and removable from the front
- Input and output connections are easily accessible
- Knockouts for cables are provided
- Cabinets can be relay rack, wall or floor mounted
- Cabinet has durable baked epoxy powder finish

CIRCUIT PROTECTION

- AC circuit breaker on input
- DC circuit breaker on output
- An AC power failure alarm relay provides one set of Form C contacts that operate in case of an AC failure

STANDARD EQUIPMENT

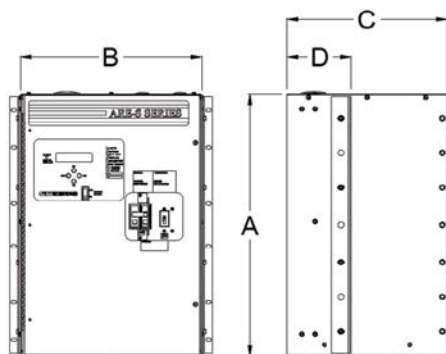
- AC circuit breaker, 10kAIC for 120/208/240V & 18kAIC for 480V
- DC circuit breaker, 50kAIC for 48 volt models and 10kAIC for 130 volt models
- High-input voltage shutdown
- Redundant high-output voltage shutdown
- Digital display, 2 line by 20 characters, shows voltage and current in normal operation at one percent accuracy
- Float and equalize settings are adjusted via keypad
- AC power failure alarm relay with one set of Form C contacts
- Rectifier failure alarm relay with one set of Form C contacts

- High Voltage Shutdown failure alarm with one set of Form C contacts
- Red and Green LEDs display status of charger.
- Individual alarm LEDs
- Low Current (No-charge) alarm
- High DC voltage alarm
- Low DC voltage alarm
- Very Low DC voltage alarm
- Ground alarm detection alarm with cutoff switch
- Alarms have adjustable time delay, 1-300 seconds
- Manual Ground Fault Voltage Meter
- Proportional Load sharing
- Equalize timer, 0 to 255 hour

OPTIONAL EQUIPMENT

- Blocking diode
- Input lightning protection device
- Alarm board with individual Form C contacts for the Summary, GND +, GND -, LVA, HVA, LCA, HBTA, EQ, and two user defined relays
- Remote temperature probe for High battery temperature alarm
- DC output transient protection (MOVs)
- Higher interrupting AC breaker: 22kAIC & 42kAIC on 120/208/240V 25kAIC & 65kAIC on 480V
- Higher interrupting 42kAIC DC breaker on 130VDC
- Export packaging
- Drip top
- Battery eliminator
- Floor Stands

TYPICAL CABINET DIMENSIONS



Cabinet	A	B	C	d
12	12.25 in 318 mm	17 in 432 mm	15 in 381 mm	6 in 152 mm
17	17.5 in 445 mm	17 in 432 mm	17 in 432 mm	6 in 152 mm
24	24.5 in 622 mm	17 in 432 mm	15 in 381 mm	6 in 152 mm
30	30 in 762 mm	20.5 in 521 mm	19 in 483 mm	11.6 in 295 mm

- 17 in (432 mm) wide cabinets can be used in 19 in (483 mm), 23 in (584 mm) or 30 in (762 mm) relay racks.
- 20.5 in (521 mm) wide cabinets can be used in 23 in (584 mm) or 30 in (762 mm) racks only.
- Rack angles mount at rear for wall mounting.
- Floor brackets are available for all models instead of relay rack mounting angles when ordered with charger.

48-volt output

Model	Input volts	AC amps	dC amps	Cabinet	recommended dC cable size AWG	Circuit breaker dC	Approx. ship. wt.	
							lbs	kgs
ARE-S04806	120/208/240	6/3.5/3	6	12	14	10	104	47
ARE-S04812	120/208/240	12/7/6	12	12	10	20	110	50
ARE-S04830	120/208/240	27/16/14	30	17	8	40	168	76
ARE-S04850	120/208/240	40/23/20	50	24	4	70	235	107

130-volt output

Model	Input volts	AC amps	dC amps	Cabinet	recommended dC cable size AWG	Circuit breaker dC	Approx. ship. wt.	
							lbs	kgs
ARE-S13006	120/208/240	14/8/7	6	12	14	10	103	47
ARE-S13012	120/208/240	25/15/13	12	17	10	20	151	65
ARE-S13012	480	6.5	12	24	10	20	181	82
ARE-S13016	120/208/240	35/20/18	16	17	10	20	170	77
ARE-S13016	480	9	16	24	10	20	200	91
ARE-S13025	120/208/240	48/28/24	25	17	8	40	220	100
ARE-S13025	480	12	25	24	8	40	250	114
ARE-S13035	120/208/240	75/43/38	35	24	8	50	306	139
ARE-S13035	480	19	35	24	8	50	306	139
ARE-S13050	208/240/480	66/57/29	50	30	4	70	404	183
ARE-S13075	240/480	80/40	75	30	4	100	468	212