High Rate Front Terminal

345 – 827 WPC

APPLICATIONS

- UNINTERRUPTIBLE POWER SUPPLY (UPS) SYSTEMS
- COMMUNICATIONS
- DATA CENTERS
- ALTERNATIVE ENERGY
- UTILITY

High Rate Front Terminal (HR-F) Valve Regulated Lead Acid batteries feature advanced plate design, and proven battery construction technology offering superior service life, exceptionally low self discharge rates, high cycling capabilities and low float charge current characteristics.

HR-F Batteries utilize a highly efficient recombination technology to provide superior overall battery performance and are engineered for high rate short duration constant power discharges in a front terminal configuration providing a higher energy density with ease of maintenance.

HR-F Batteries are manufactured in compliance with NEBS, GR, IEC, UL, ISO, and CE quality and performance standards.

HR-F Batteries offer ease of service, shorter inter block connections, lower internal resistance and utilize equal or less floor space than conventional top terminal batteries.

FEATURES

- 10-Year Design Life
- Initial capacity at 100%
- 6 month of storage at 77°F (25°C) capacity > 86%
- Low pressure one-way flame arresting valve(s) UL1989
- Absorbent Glass Mat (AGM) technology (HR), Recombination efficiency of 99.9%
- Flame Retardant ABS Cover and Container, UL94 V-0, LOI>28%
- Copper alloy insert terminals for ease of installation and maximum current carrying capabilities
- High reliability case to cover seal
- UL Recognized Component
- Classified as Nonspillable UN 2800 (no air, ground, or sea transportation restrictions)
- Monoblock 6v & 12v construction
- Low-Calcium-Tin grid alloy

Pb

Recycling Services

Energy Storage Technologies, Inc. – 16192 Costal Highway – Lewes, DE 19958 Tel: 888–362–0083 www.energystoragetech.com
 EDS–HRF–S–100405

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INDUSTRY COMPLIANCE

- UL Recognized Component 924, for use in or width listed UL1778, UL1989 and UL924 systems
- UL Certified Vertical Flame Test Rating 94V-0
- NEBS Version 4, Level 3
- Telcordia GR-1089-CORE, Issue 4
- Telcordia GR-63-CORE, Issue 4
- IEC 60896-21/-22
- ISO9001:2000, 14001
- OHSAS18000

SEISMIC

- NEBS Earthquake Risk Seismic Zone 4 Compliant
- Exceeds 1997 UBC Zone 4 seismic requirements for at or below grade installations
- Exceeds 2007 IBC requirements for 125% g level

TRANSPORTATION

- Classified as Nonspillable UN 2800 and meet the Nonspillable criteria listed in DOT-CFR Title 49, 171-189 (d) (3) (i) and (ii) and exempt from CFR 49, Subchapter C requirements
- Meets transportation conditions of IMDG exemption 238, IATA/ICAO Special Provision A67 (Not Restricted)

SPECIFICATIONS

Float Charging Voltage	Equalize /Cycle or Freshening at Installation Charging Voltage
2.25Vpc to 2.27Vpc @ 77°F (25°C)	2.35Vpc to 2.40Vpc @ 77°F (25°C)
See Operations and Maintenance Manual for specific guidelines and recharge times	

Charging Temperature Compensation	-2 mV/cell/°F > 77°F (-3.6 mV/cell /°C > 25°C)
	+2 mV/cell/°F < 77°F (+3.6 mV/cell/°C < 25°C)

Maximum AC Ripple (Charger)	Maximum Charge Current
0.5% RMS, 1.5% peak-to-peak for float charge voltage for best results	C_5 Rate Amps (5 hour rate @ 1.75vpc)

Electrolyte	Self Discharge Rate
Absorbed 1.300 s.g. H_2SO_4	<2% per month at 77°F (25°C)

Relief Valve	Self Resealing; Operates at 2 to 3 psi and is complete with integral flame arrestor

Terminal Type	M6-M, M6-F, M8-M, M8-F
Torque (M6) / (M8)	Retorque
90 in-lbs (10 Nm) / 110in-lbs (12.4 Nm)	78 in-lbs (8 Nm) / 90 in-lbs (10 Nm)

Operating Temperature Range	
Nominal	Discharge
+74°F (24°C) to 80°F (27°C)	-40ºF (-40ºC) to +140ºF (60ºC)
Charge	Storage Temperature Range
-20ºF (-28ºC) to +122ºF (50ºC)	-4ºF (-20ºC) to +104ºF (40ºC)

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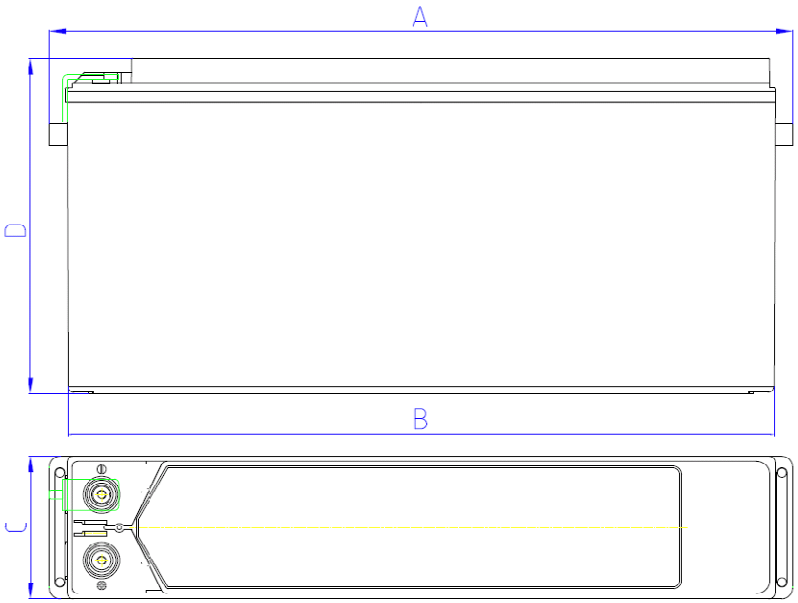

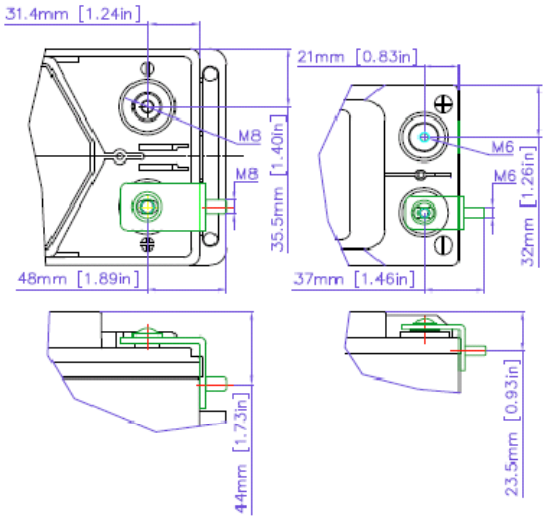

HR12-725F & HR12-800F

HR12-350F - HR12-650F

PHYSICAL PROPERTIES - DIMENSIONS

Model No.	V	WPC @ 15min 1.67vpc	Ah @ 20 hr 1.75vpc	Length (A)		Length Base (B)		Width (C)		Total Height (D)		Weight		Term. Type
				in	mm	in	mm	in	mm	in	mm	lbs.	kg	
HR12-350F	12	345	110	20.00	508	20.00	508	4.33	110	9.29	236	72	33	M6-F
HR12-400F	12	411	131	21.70	552	21.70	552	4.33	110	9.41	239	80	36	M6-F
HR12-450F	12	443	141	21.70	552	21.70	552	4.33	110	9.41	239	90	41	M6-F
HR12-490F	12	593	157	21.70	552	21.70	552	4.33	110	11.30	288	100	45	M6-F
HR12-530F	12	526	168	21.70	552	21.70	552	4.33	110	11.30	288	108	49	M6-F
HR12-600F	12	591	185	22.40	560	20.70	526	4.90	125	12.40	316	118	54	M6-M
HR12-650F	12	660	195	22.40	560	20.70	526	4.90	125	12.40	316	132	60	M6-M
HR12-725F	12	727	235	26.50	672	25.80	655	5.20	132	12.40	316	145	66	M8-M
HR12-800F	12	827	260	26.50	672	25.80	655	5.20	132	12.40	316	163	74	M8-M

Constant Power Discharge in Watts per Cell at 77°F (25°C)

Model No.	Runtime to 1.67vpc								Runtime to 1.75vpc			
	5min	10min	15min	20min	30min	45min	60min	90min	1.5hr	2hr	3hr	4hr
HR12-350F	624	457	345	278	213	164	129	91	89	71	51	43
HR12-400F	743	544	411	330	253	196	154	108	106	85	61	51
HR12-450F	802	588	443	357	274	211	166	117	115	91	66	55
HR12-490F	891	653	493	396	304	235	185	130	128	102	74	61
HR12-530F	951	696	526	422	324	250	197	138	136	108	79	65
HR12-600F	1,070	784	591	476	365	282	222	156	153	122	89	73
HR12-650F	1,130	871	656	530	406	313	247	174	170	136	99	81
HR12-725F	1,141	931	727	601	461	333	262	185	174	142.4	100.2	78.2
HR12-800F	1,287	1,063	829	686	526	381	300	210	199	156.7	110.3	86.1

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UC battery cabinets and **UCS** multiple battery cabinet systems are specifically designed for extended runtime battery applications and large UPS installations up to 1.0MW for 15 minutes.

UC/UCS cabinets and cabinet systems are designed to accommodate the Energy Storage HR-F high rate batteries.

UC battery cabinets are available in both size and colors to match your UPS system manufacturer cabinets. UC battery cabinets can be equipped with an optional circuit breaker for either external or internal disconnect access, fusing, optional levelers, casters and or hinged doors.

EnergyStorage Technologies
Recycling Services

At Energy Storage Technologies, we believe that we are all impacted by the potential environmental consequences of global climate change, and we realize that a commitment to going green means more than green energy storage, energy efficiency or reducing our carbon footprint. For EST and our clients, it means reducing the cost of doing business by making energy management, sustainable development and a advanced recycling services a critical part of our business plans. We recognize the potential of clean technology and making decisions that are both socially responsible and commercially sound. EST is committed to a sustainable future and to improving the social, environmental and economic well being of the clients and communities we serve.

Authorized Representative