



Battery Range Summary

The DataSafe® HX range of valve regulated lead acid batteries has been designed to offer superior solutions for the Uninterruptible Power Supply (UPS) and Information Technology markets. DataSafe HX batteries are the ideal source of power to protect vital systems and incorporates select design features that maximise reliability while ensuring superior performance and an excellent service life.

DataSafe HX batteries are designed using proven gas recombination technology that removes the need for regular water addition by controlling the evolution of hydrogen and oxygen during charging. The use of gas recombination technology for lead acid batteries has totally changed the concept of standby power. This technology provides the user with the freedom to use lead acid batteries in a wide range of applications.

Built on advanced electrochemistry and backed by over 100 years experience in battery technology and manufacture, DataSafe HX monoblocs have been specifically developed for high discharge rate applications.

Features and Benefits

- Specifically developed for UPS applications
- 6 & 12 volt monoblocs
- 23 to 780 Watts/cell sizes
(15 min. rate to 1.67Vpc at 25°C)
- High power density
- Optimum footprint and volume efficiency
- Long design life
- Proven VRLA AGM technology



Construction

- Electrochemistry optimised for high rate discharge applications
- High performance positive plate grids designed to resist corrosion, prolong active life and for efficient recharge
- Negative plates provide perfect balance with the positive plates to ensure optimum recombination efficiency
- Separators in low resistance microporous glass fibre. The electrolyte is absorbed within this material, preventing acid leakage in case of accidental damage
- Containers and lids in highly resistant polymer
- Electrolyte - high grade dilute sulphuric acid absorbed into separator material

- High integrity terminals designed for maximum conductivity
- High integrity, leak-resistant post seal design for long life
- Self regulating pressure relief valves - prevent ingress of atmospheric oxygen

Installation & Operation

- Monoblocs are designed to be installed on their base. Consult your local EnerSys® representative before installing in any other orientation
- Recommended float charge voltage: 2.25 - 2.28Vpc at 25°C
- Operating temperature range: -20°C to +50°C (20°C - 25°C recommended)
- Up to six months shelf life

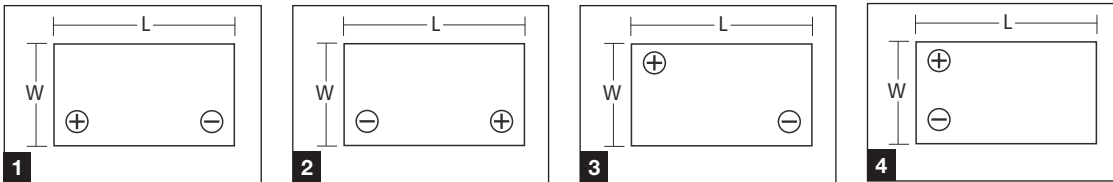
Standards

- UL listing: file numbers MH16464 for 12HX25 - 12HX150 and MH12544 for 12HX205 - 6HX800
- Classified as "Long Life" (> 10/12 years) according to Eurobat guide 2015
- Approved for shipping as non-hazardous, non-spillable - per IATA Special Provision A67 and 49 CFR
- The management system governing the manufacture of DataSafe® HX products is ISO 9001 certified

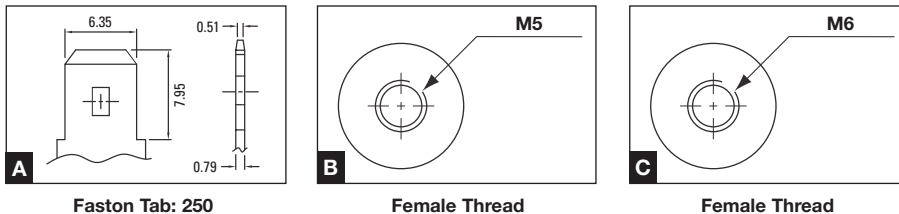
General Specifications

DataSafe® HX Battery Type	Nominal Voltage (V)	Watts/Cell (Wpc) 15min/1.67Vpc at 25°C	Nominal Capacity (Ah) C ₁₀ /1.80Vpc at 25°C	Nominal Dimensions (mm)			Typical Weight (kg)	Short Circuit Current (A)	Maximum Discharge Current (Amps-2 min rate)	Internal Resistance (mΩ)	Terminal Layout	Terminal Drawing
				Length	Width	Height						
12HX25	12	23	5.0	90	70	107	2.0	300	41	16.5	1	A
12HX35	12	36	7.0	151	65	100	2.8	500	62	13.2	4	A
6HX50	6	53	11	151	50	99	2.1	720	93	6.1	1	A
12HX50	12	53	11	152	99	99	4.1	720	93	12.2	4	A
12HX80	12	80	16	181	76	167	6.4	1000	140	8.5	2	B
12HX105	12	100	21	166	175	125	10.0	1500	171	7.1	2	B
12HX135	12	135	28	196	130	169	11.8	1800	238	5.6	1	B
12HX150	12	150	33	197	165	170	14.5	2400	277	5.0	2	C
12HX205	12	204	45	226	140	206	19.5	2775	439	4.5	1	C
12HX300	12	284	72	259	175	208	27.2	3175	503	3.9	1	C
12HX330	12	336	84	300	173	213	32.2	3700	586	3.4	1	C
12HX400	12	381	93	338	173	211	36.3	4225	670	3.0	1	C
12HX505	12	506	123	338	173	273	46.7	4510	913	2.8	1	C
12HX540	12	540	126	338	173	273	48.1	4775	961	2.6	1	C
6HX800	6	780	196	340	173	211	36.3	6200	1272	1.0	3	C

Terminal Layouts



Terminal Drawings





Battery Range Summary

As the cost of electrical energy continues to rise and as energy consumption in applications such as data centres continues to grow, energy efficiency has become a topic of growing interest and concern for the UPS industry. Furthermore, the ever-growing awareness over the impact of energy consumption on the environment has put additional pressure on decision makers to develop genuine power management strategies and to invest in eco-friendly initiatives. As a result, reducing costs and power usage through green initiatives has now become a critical target for many UPS players who have tried to respond by developing higher efficiency power management systems in order to reduce energy losses and ultimately operating costs.

EnerSys®, one of the world's largest industrial battery manufacturers and a leader in stored energy solutions, is proud to be doing its part by developing the most effective and innovative products for a wide range of applications. EnerSys' DataSafe® HX Plus range can significantly contribute to helping customers ultimately achieve their business goals in mission-critical power back-up applications. Using proven and advanced Thin Plate Pure Lead Technology (TPPL), combined with the selection of high grade, high purity materials enables EnerSys to deliver products with outstanding features and benefits and ultimately excellent value for money.

Features and Benefits

- 360, 420, 506 & 560 Watts per Cell sizes (15min/1.67Vpc/25°C)
- Specifically designed for high-rate discharge applications
- Excellent power density
- 10-12 year design life
- Low energy consumption
- Choice of UL94 HB or UL94 V-0 flame retardant ABS plastic
- Low total cost of ownership



Construction

- High performance positive plates designed for long life and efficient recharge
- Negative plates provide perfect balance with positive plates to ensure optimum recombination efficiency
- Separators in low resistance microporous glass fibre. The electrolyte is absorbed within this material, preventing acid leakage in case of accidental damage
- Electrolyte - high grade dilute sulphuric acid absorbed into separator material
- Containers and lids in strong UL94 HB ABS plastic. UL94 V-0 flame retardant ABS plastic available as an option
- High integrity dual pillar seal design to ensure leak-free operation
- Self regulating pressure relief valves - prevent ingress of atmospheric oxygen
- A strong, detachable handle, designed to provide maximum flexibility during installation, is supplied with every pallet/case

Installation & Operation

- Monoblocs are designed for installation in cabinets or on stands, close to the point of use. A separate battery room is not necessary
- It is recommended that DataSafe® HX+ monoblocs are installed on their base
- Recommended float charge voltage: 2.280Vpc at 20°C (68°F) 2.265Vpc at 25°C (77°F)
- Up to two year shelf life
- Reduced maintenance: no water addition required
- Operating temperature range: -20°C to +45°C

Standards

- Tested according to international standard IEC 60896-21 and compliant to defined requirements of IEC 60896-22
- Classified as "Long Life" (> 10/12 years) according to Eurobat guide 2015
- Approved to be shipped as non-spillable cargo in accordance with the requirements of IMDG (International Maritime code for Dangerous Goods) and ICAO (International Civil Aviation Organisation)
- The management systems governing the manufacture of DataSafe® HX+ products are ISO 9001:2008 and ISO 14001:2004 certified

General Specifications

Battery Type	Watts/Cell		Nominal Dimensions						Typical Weight		Short Circuit Current (A)	Internal Resistance (mΩ)	Terminals
	Nominal Voltage (V)	15min rate to 1.67Vpc @25°C	Length		Width		Height		kg	lbs			
			mm	in	mm	in	mm	in					
12HX360+	12	360	302	11.9	175	6.89	227	8.94	30.2	66.6	2447	4.10	M6 F
12HX420+	12	420	302	11.9	175	6.89	227	8.94	32.8	72.4	2700	3.80	M6 F
12HX505+	12	506	338	13.3	173	6.81	273	10.7	41.7	91.9	3500	3.50	M6 F
12HX560+	12	560	338	13.3	173	6.81	273	10.7	44.7	98.5	3800	3.30	M6 F

Note: add "FR" prior to "+" to the product nomenclature for flame retardant versions, eg. "12HX360FR+".

12HX360+ Constant Power Discharge Data (Watts per cell, 25°C)

Vpc	Standby Time (Minutes)						
	5	10	15	20	30	45	60
1.60	656.2	468.8	364.8	299.7	221.4	159.6	125.8
1.63	656.2	466.6	363.8	299.3	220.9	159.3	125.8
1.65	656.2	464.3	362.2	298.4	220.6	159.0	125.7
1.67	656.2	461.8	359.6	296.4	219.6	158.4	125.2
1.70	656.2	458.4	355.8	292.2	216.8	157.1	124.4

12HX420+ Constant Power Discharge Data (Watts per cell, 25°C)

Vpc	Standby Time (Minutes)						
	5	10	15	20	30	45	60
1.60	765.5	546.9	425.6	349.7	258.4	186.3	146.8
1.63	765.5	544.4	424.5	349.2	257.8	185.9	146.8
1.65	765.5	541.6	422.5	348.1	257.4	185.6	146.7
1.67	765.5	538.7	419.5	345.8	256.2	184.8	146.1
1.70	765.5	534.8	415.1	340.9	252.9	183.3	145.2

12HX505+ Constant Power Discharge Data (Watts per cell, 25°C)

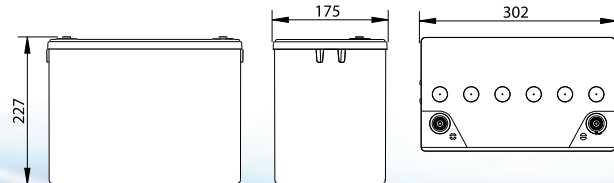
Vpc	Standby Time (Minutes)						
	5	10	15	20	30	45	60
1.60	950.3	673.9	511.2	412.1	301.2	217.8	172.7
1.63	915.4	667.0	510.9	412.0	301.2	217.8	172.7
1.65	895.6	660.0	509.8	412.1	301.2	217.8	172.7
1.67	871.7	652.9	506.0	412.1	301.2	217.8	172.7
1.70	834.7	636.0	498.5	409.5	301.2	217.8	172.7

12HX560+ Constant Power Discharge Data (Watts per cell, 25°C)

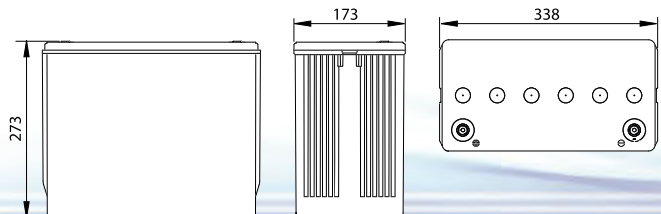
Vpc	Standby Time (Minutes)						
	5	10	15	20	30	45	60
1.60	1123	750.4	576.2	472.3	351.6	257.7	202.9
1.63	1089	739.2	571.0	469.5	350.5	257.3	202.7
1.65	1064	729.8	566.0	466.4	349.0	256.5	202.2
1.67	1037	718.9	560.0	462.5	346.9	255.4	201.5
1.70	994.8	699.8	548.8	455.0	342.7	253.0	199.8

Outline Drawings

12HX360+ & 12HX420+



12HX505+ & 12HX560+



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Subject to revisions without prior notice. E.&O.E.

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data safe[®]
HX **PLUS**

data safe[®]
HX

PERFORMANCE DATA

EnerSys[®]

Power/Full Solutions

RESERVE
POWER

Constant Current Discharge Performance Data

Discharge Currents (Amperes) to 1.60Vpc at 25°C

DataSafe HX+ Battery Type	Standby Time (Minutes)										Standby Time (Hours)									
	5	10	15	20	25	30	35	40	45	50	1	1.5	2	3	4	5	8	10	20	
12HX360FR+	389.5	267.8	204.0	165.1	138.8	119.7	105.4	94.4	85.5	78.3	67.2	47.7	37.4	26.5	20.8	17.1	11.5	9.48	4.96	
12HX420FR+	454.5	312.5	238.1	192.7	162.0	139.7	123.1	110.2	99.8	91.3	78.4	55.7	43.6	30.8	23.9	19.6	12.5	10.2	5.06	
12HX505FR+	585.1	390.4	282.5	223.7	186.3	160.3	141.0	126.2	114.3	104.6	89.6	63.6	49.5	35.0	27.0	22.2	14.9	12.3	6.70	
12HX560FR+	647.6	413.3	310.8	251.8	212.0	184.6	161.0	144.0	133.7	120.0	104.6	74.0	58.0	40.6	31.4	25.7	16.7	13.6	7.12	

DataSafe HX Battery Type	Standby Time (Minutes)										Standby Time (Hours)									
	5	10	15	20	25	30	35	40	45	50	1	1.5	2	3	4	5	8	10	20	
12HX25	25.4	15.7	11.7	9.38	7.83	6.76	6.02	5.31	4.89	4.49	3.81	2.66	2.11	1.47	1.14	0.92	0.60	0.49	0.26	
12HX35	39.8	24.6	18.3	14.7	12.3	10.6	9.40	8.31	7.65	7.03	5.97	4.17	3.30	2.30	1.77	1.45	0.93	0.76	0.41	
6HX50	62.0	38.3	28.5	22.9	19.1	16.5	14.6	12.9	11.9	10.9	9.29	6.48	5.13	3.58	2.77	2.25	1.45	1.19	0.60	
12HX50	62.0	38.3	28.5	22.9	19.1	16.5	14.6	12.9	11.9	10.9	9.29	6.48	5.13	3.58	2.77	2.25	1.45	1.19	0.60	
12HX80	88.5	54.7	40.8	32.6	27.2	23.5	20.8	18.5	17.0	15.6	13.3	9.26	7.33	5.11	3.95	3.22	2.08	1.70	0.90	
12HX105	110.6	68.3	51.0	40.8	34.0	29.4	26.1	23.1	21.3	19.5	16.6	11.6	9.16	6.39	4.94	4.02	2.65	2.19	1.22	
12HX135	149.4	92.2	68.8	55.1	46.0	39.7	35.1	31.2	28.7	26.4	22.4	15.6	12.4	8.63	6.66	5.43	3.58	2.95	1.65	
12HX150	166.0	102.5	76.5	61.2	51.1	44.1	39.0	34.6	31.9	29.3	24.9	17.4	13.7	9.59	7.45	6.03	4.08	3.41	2.00	
12HX205	246.1	153.5	113.6	90.8	76.7	65.5	57.9	51.6	46.7	42.7	36.5	25.7	19.9	13.9	10.7	8.82	5.82	4.78	2.64	
12HX300	318.9	206.0	155.8	126.5	107.2	93.4	82.9	74.6	68.0	62.5	53.9	38.6	30.2	21.3	16.5	13.5	8.81	7.18	3.72	
12HX330	372.1	240.3	181.7	147.6	125.0	108.9	96.7	87.1	79.3	72.9	62.9	45.0	35.2	24.8	19.3	15.8	10.3	8.38	4.34	
12HX400	425.2	274.6	207.7	168.7	142.9	124.5	110.5	99.5	90.7	83.4	71.9	51.4	40.3	28.4	22.0	18.0	11.8	9.58	4.96	
12HX505	585.1	390.4	282.5	223.7	186.3	160.3	141.0	126.2	114.3	104.6	89.6	63.6	49.5	35.0	27.0	22.2	14.9	12.3	6.70	
12HX540	614.9	413.9	305.9	242.9	202.6	174.4	153.4	137.2	124.3	113.7	97.4	68.7	53.4	37.3	28.7	23.5	15.4	12.6	6.61	
6HX800	832.7	581.4	450.7	369.8	314.0	273.8	243.0	218.2	198.3	181.8	156.0	114.7	91.5	63.3	48.6	39.5	25.6	20.8	11.2	

Discharge Currents (Amperes) to 1.65Vpc at 25°C

DataSafe HX+ Battery Type	Standby Time (Minutes)										Standby Time (Hours)									
	5	10	15	20	25	30	35	40	45	50	1	1.5	2	3	4	5	8	10	20	
12HX360FR+	381.4	261.5	200.8	163.3	137.4	118.5	104.5	93.6	84.8	77.8	66.9	47.5	37.4	26.5	20.7	17.1	11.5	9.48	4.96	
12HX420FR+	445.0	305.1	234.3	190.5	160.3	138.3	121.9	109.2	99.0	90.8	78.1	55.5	43.6	30.8	23.9	19.6	12.5	10.2	5.06	
12HX505FR+	546.0	378.0	282.5	223.7	186.3	160.3	141.0	126.2	114.3	104.6	89.6	63.6	49.5	35.0	27.0	22.2	14.9	12.3	6.70	
12HX560FR+	604.2	398.8	303.9	247.7	210.6	182.9	160.1	143.6	133.0	119.7	104.1	74.0	57.7	40.4	31.2	25.4	16.5	13.5	7.08	

DataSafe HX Battery Type	Standby Time (Minutes)										Standby Time (Hours)									
	5	10	15	20	25	30	35	40	45	50	1	1.5	2	3	4	5	8	10	20	
12HX25	24.7	15.4	11.6	9.30	7.77	6.71	5.94	5.28	4.86	4.46	3.79	2.65	2.09	1.46	1.13	0.92	0.59	0.49	0.26	
12HX35	38.6	24.2	18.1	14.6	12.2	10.5	9.34	8.26	7.61	6.99	5.93	4.14	3.28	2.28	1.76	1.44	0.93	0.76	0.41	
6HX50	60.0	37.6	28.2	22.6	18.9	16.3	14.5	12.8	11.8	10.9	9.23	6.45	5.10	3.55	2.75	2.24	1.45	1.18	0.60	
12HX50	60.0	37.6	28.2	22.6	18.9	16.3	14.5	12.8	11.8	10.9	9.23	6.45	5.10	3.55	2.75	2.24	1.45	1.18	0.60	
12HX80	85.8	53.7	40.3	32.3	26.9	23.4	20.6	18.4	16.9	15.5	13.2	9.21	7.28	5.07	3.92	3.20	2.07	1.69	0.90	
12HX105	107.2	67.1	50.3	40.4	33.7	29.2	25.8	22.9	21.1	19.4	16.5	11.5	9.11	6.34	4.91	4.00	2.64	2.18	1.22	
12HX135	144.7	90.6	68.0	54.6	45.5	39.4	34.9	31.0	28.5	26.2	22.3	15.5	12.3	8.56	6.61	5.40	3.56	2.94	1.65	
12HX150	160.8	100.7	75.5	60.6	50.6	43.8	38.7	34.4	31.7	29.1	24.7	17.3	13.7	9.51	7.40	6.00	4.07	3.40	2.00	
12HX205	233.9	149.1	111.2	89.4	74.8	64.7	56.9	51.1	46.3	42.3	36.2	25.5	19.8	13.8	10.6	8.74	5.76	4.74	2.63	
12HX300	316.2	206.0	155.8	126.5	107.2	93.4	82.9	74.6	68.0	62.5	53.9	38.6	30.2	21.3	16.5	13.5	8.81	7.18	3.72	
12HX330	369.1	240.3	181.7	147.6	125.0	108.9	96.7	87.1	79.3	72.9	62.9	45.0	35.2	24.8	19.3	15.8	10.3	8.38	4.34	
12HX400	421.5	274.6	207.7	168.7	142.9	124.5	110.5	99.5	90.7	83.4	71.9	51.4	40.3	28.4	22.0	18.0	11.8	9.58	4.96	
12HX505	546.0	378.0	282.5	223.7	186.3	160.3	141.0	126.2	114.3	104.6	89.6	63.6	49.5	35.0	27.0	22.2	14.9	12.3	6.70	
12HX540	575.5	400.1	304.8	242.9	202.6	174.4	153.4	137.2	124.3	113.7	97.4	68.7	53.4	37.3	28.7	23.5	15.4	12.6	6.61	
6HX800	780.0	556.8	436.0	359.9	307.0	268.4	238.0	214.8	195.5	179.4	154.2	113.7	90.9	63.0	48.3	39.3	25.4	20.7	11.1	

Discharge Currents (Amperes) to 1.67Vpc at 25°C

DataSafe HX+ Battery Type	Standby Time (Minutes)										Standby Time (Hours)									
	5	10	15	20	25	30	35	40	45	50	1	1.5	2	3	4	5	8	10	20	
12HX360FR+	378.1	258.6	198.5	161.7	136.3	117.6	103.7	92.9	84.3	77.2	66.5	47.3	37.1	26.3	20.6	17.0	11.4	9.42	4.96	
12HX420FR+	441.1	301.8	231.6	188.6	159.0	137.2	121.0	108.4	98.3	90.1	77.6	55.2	43.3	30.6	23.8	19.4	12.5	10.2	5.06	
12HX505FR+	528.7	371.5	281.4	223.7	186.3	160.3	141.0	126.2	114.3	104.6	89.6	63.6	49.5	35.0	27.0	22.2	14.9	12.3	6.70	
12HX560FR+	585.3	391.5	299.9	245.2	208.9	181.6	159.0	142.7	132.3	119.0	103.7	73.9	57.5	40.2	31.0	25.3	16.5	13.4	7.06	

DataSafe HX Battery Type	Standby Time (Minutes)										Standby Time (Hours)									
	5	10	15	20	25	30	35	40	45	50	1	1.5	2	3	4	5	8	10	20	
12HX25	24.3	15.3	11.5	9.23	7.74	6.68	5.91	5.25	4.83	4.44	3.77	2.64	2.09	1.46	1.13	0.92	0.59	0.48	0.26	
12HX35	38.0	23.9	18.0	14.4	12.1	10.5	9.31	8.21	7.57	6.95	5.91	4.13	3.26	2.28	1.76	1.43	0.93	0.76	0.41	
6HX50	59.1	37.2	28.0	22.5	18.8	16.3	14.4	12.8	11.8	10.8	9.19	6.42	5.08	3.54	2.74	2.23	1.44	1.18	0.60	
12HX50	59.1	37.2	28.0	22.5	18.8	16.3	14.4	12.8	11.8	10.8	9.19	6.42	5.08	3.54	2.74	2.23	1.44	1.18	0.60	
12HX80	84.4	53.1	39.9	32.1	26.8	23.2	20.6	18.3	16.8	15.4	13.1	9.17	7.25	5.06	3.90	3.19	2.06	1.69	0.90	
12HX105	105.5	66.4	49.9	40.1	33.5	29.0	25.7	22.8	21.0	19.3	16.4	11.5	9.07	6.33	4.90	3.98	2.63	2.18	1.22	
12HX135	142.4	89.7	67.4	54.2	45.2	39.2	34.7	30.8	28.4	26.1	22.2	15.5	12.2	8.54	6.58	5.38	3.56	2.94	1.65	
12HX150	158.2	99.6	74.9	60.2	50.4	43.5	38.6	34.2	31.5	29.0	24.6	17.2	13.6	9.49	7.38	5.98	4.06	3.39	2.00	
12HX205	228.0	146.6	109.8	88.4	74.1	64.2	56.5	50.7	45.9	42.0	36.0	25.3	19.6	13.7	10.6	8.69	5.73	4.72	2.62	
12HX300	312.1	206.0	155.8	126.5	107.2	93.4	82.9	74.6	68.0	62.5	53.9	38.6	30.2	21.3	16.5	13.5	8.81	7.18	3.72	
12HX330	364.3	240.3	181.7	147.6	125.0	108.9	96.7	87.1	79.3	72.9	62.9	45.0	35.2	24.8	19.3	15.8	10.3	8.38	4.34	
12HX400	416.2	274.6	207.7	168.7	142.9	124.5	110.5	99.5	90.7	83.4	71.9	51.4	40.3	28.4	22.0	18.0	11.8	9.58	4.96	
12HX505	528.7	371.5	281.4	223.7	186.3	160.3	141.0	126.2	114.3	104.6	89.6	63.6	49.5	35.0	27.0	22.2	14.9	12.3	6.70	
12HX540</																				

Discharge Currents (Amperes) to 1.70Vpc at 25°C

DataSafe HX+ Battery Type	Standby Time (Minutes)										Standby Time (Hours)									
	5	10	15	20	25	30	35	40	45	50	1	1.5	2	3	4	5	8	10	20	
12HX360FR+	372.9	254.7	194.6	158.0	133.6	115.8	102.2	91.6	83.2	76.4	65.8	46.9	36.8	26.1	20.5	16.9	11.3	9.38	4.86	
12HX420FR+	435.0	297.2	227.0	184.4	155.9	135.1	119.2	106.9	97.1	89.2	76.8	54.7	42.9	30.3	23.6	19.3	12.4	10.1	5.06	
12HX505FR+	501.1	359.8	275.8	223.4	186.3	160.3	141.0	126.2	114.3	104.6	89.6	63.6	49.5	35.0	27.0	22.2	14.9	12.3	6.70	
12HX560FR+	555.5	379.0	292.7	240.4	205.5	179.0	156.8	140.8	130.9	117.7	102.7	73.3	57.1	39.9	30.8	25.2	16.3	13.3	7.02	

DataSafe HX Battery Type	Standby Time (Minutes)										Standby Time (Hours)									
	5	10	15	20	25	30	35	40	45	50	1	1.5	2	3	4	5	8	10	20	
12HX25	23.7	15.2	11.3	9.05	7.60	6.59	5.83	5.24	4.76	4.36	3.73	2.61	2.04	1.45	1.12	0.91	0.59	0.48	0.26	
12HX35	36.8	23.3	17.6	14.2	11.9	10.3	9.15	8.24	7.49	6.84	5.83	4.09	3.20	2.26	1.75	1.42	0.92	0.75	0.41	
6HX50	57.3	36.3	27.4	22.1	18.5	16.0	14.2	12.8	11.7	10.7	9.09	6.36	4.97	3.51	2.72	2.22	1.43	1.16	0.60	
12HX50	57.3	36.3	27.4	22.1	18.5	16.0	14.2	12.8	11.7	10.7	9.09	6.36	4.97	3.51	2.72	2.22	1.43	1.16	0.60	
12HX80	81.8	51.9	39.1	31.5	26.4	22.9	20.3	18.3	16.6	15.2	13.0	9.09	7.11	5.02	3.88	3.16	2.05	1.67	0.89	
12HX105	102.2	64.8	48.9	39.3	33.0	28.6	25.4	22.8	20.7	19.0	16.2	11.4	8.90	6.28	4.86	3.97	2.61	2.16	1.21	
12HX135	138.0	88.4	66.1	53.0	44.5	38.6	34.2	30.8	28.0	25.7	21.9	15.4	12.0	8.46	6.55	5.36	3.53	2.92	1.64	
12HX150	153.3	97.2	73.4	59.1	49.6	42.9	38.1	34.2	31.1	28.5	24.3	17.0	13.3	9.42	7.33	6.02	4.03	3.38	1.99	
12HX205	217.1	141.8	106.6	85.9	72.2	62.5	55.2	49.6	45.0	41.2	35.4	24.9	19.3	13.5	10.5	8.56	5.66	4.68	2.60	
12HX300	303.1	204.7	155.8	126.5	107.2	93.4	82.9	74.6	68.0	62.5	53.9	38.6	30.2	21.3	16.5	13.5	8.81	7.18	3.72	
12HX330	353.6	238.8	181.7	147.5	125.0	108.9	96.7	87.1	79.3	72.9	62.9	45.0	35.2	24.8	19.3	15.8	10.3	8.38	4.34	
12HX400	404.2	272.9	207.7	168.6	142.9	124.5	110.5	99.5	90.7	83.3	71.9	51.4	40.3	28.4	22.0	18.0	11.8	9.58	4.96	
12HX505	501.1	359.8	275.8	223.4	186.3	160.3	141.0	126.2	114.3	104.6	89.6	63.6	49.5	35.0	27.0	22.2	14.9	12.3	6.70	
12HX540	529.6	381.1	294.2	239.1	201.9	174.4	153.4	137.2	124.3	113.7	97.4	68.7	53.4	37.3	28.7	23.5	15.4	12.6	6.61	
6HX800	713.0	522.0	414.0	344.0	295.0	259.0	231.0	208.0	190.0	175.0	150.0	107.0	89.0	62.1	47.7	38.8	25.2	20.5	11.0	

Discharge Currents (Amperes) to 1.75Vpc at 25°C

DataSafe HX+ Battery Type	Standby Time (Minutes)										Standby Time (Hours)									
	5	10	15	20	25	30	35	40	45	50	1	1.5	2	3	4	5	8	10	20	
12HX360FR+	355.8	247.4	189.3	153.7	129.7	112.4	99.4	89.2	81.1	74.6	64.4	46.1	36.2	25.7	20.2	16.6	11.2	9.29	4.86	
12HX420FR+	414.8	288.6	220.9	179.4	151.3	131.1	116.0	104.1	94.7	87.0	75.2	53.9	42.3	29.9	23.2	19.0	12.2	10.0	5.06	
12HX505FR+	450.8	333.8	262.5	215.3	182.6	158.9	140.8	126.2	114.3	104.6	89.6	63.6	49.5	35.0	27.0	22.2	14.9	12.3	6.70	
12HX560FR+	503.2	354.6	277.9	230.2	198.0	173.0	151.8	136.6	127.4	114.5	100.4	72.0	56.2	39.3	30.4	24.8	16.1	13.1	6.93	

DataSafe HX Battery Type	Standby Time (Minutes)										Standby Time (Hours)									
	5	10	15	20	25	30	35	40	45	50	1	1.5	2	3	4	5	8	10	20	
12HX25	22.3	14.3	10.9	8.78	7.37	6.41	5.71	5.05	4.67	4.30	3.66	2.57	2.04	1.42	1.10	0.90	0.58	0.47	0.25	
12HX35	34.9	22.4	17.0	13.8	11.5	10.0	8.89	7.91	7.31	6.73	5.73	4.02	3.19	2.23	1.72	1.41	0.91	0.74	0.40	
6HX50	54.2	34.8	26.4	21.4	18.0	15.6	13.9	12.3	11.4	10.5	8.91	6.25	4.96	3.47	2.69	2.19	1.41	1.16	0.59	
12HX50	54.2	34.8	26.4	21.4	18.0	15.6	13.9	12.3	11.4	10.5	8.91	6.25	4.96	3.47	2.69	2.19	1.41	1.16	0.59	
12HX80	77.5	49.8	37.8	30.6	25.7	22.3	19.9	17.6	16.3	15.0	12.7	8.92	7.08	4.95	3.83	3.13	2.02	1.65	0.88	
12HX105	96.8	62.2	47.2	38.2	32.1	27.9	24.8	22.0	20.3	18.7	15.9	11.2	8.85	6.19	4.79	3.91	2.58	2.13	1.19	
12HX135	130.7	84.0	63.8	51.6	43.3	37.6	33.4	29.7	27.4	25.2	21.5	15.1	12.0	8.35	6.51	5.28	3.48	2.88	1.61	
12HX150	145.2	93.3	70.8	57.3	48.1	41.8	37.2	33.0	30.5	28.0	23.9	16.7	13.3	9.28	7.24	5.86	3.98	3.32	1.96	
12HX205	199.2	132.9	101.1	82.2	69.1	60.3	53.2	47.9	43.5	39.9	34.3	24.2	18.9	13.2	10.3	8.40	5.56	4.58	2.56	
12HX300	282.7	197.0	152.3	124.7	106.1	92.8	82.5	74.5	68.0	62.5	53.9	38.6	30.2	21.3	16.5	13.5	8.81	7.18	3.72	
12HX330	329.8	229.8	177.6	145.4	123.8	108.2	96.3	86.9	79.3	72.9	62.9	45.0	35.2	24.8	19.3	15.8	10.3	8.38	4.34	
12HX400	376.9	262.7	203.0	166.2	141.5	123.7	110.1	99.3	90.6	83.4	71.9	51.4	40.3	28.4	22.0	18.0	11.8	9.58	4.96	
12HX505	450.8	333.8	262.5	215.3	182.6	158.9	140.8	126.2	114.3	104.6	89.6	63.6	49.5	35.0	27.0	22.2	14.9	12.3	6.70	
12HX540	478.6	354.7	279.3	229.2	194.5	169.3	150.2	135.1	123.0	112.9	97.2	68.7	53.4	37.3	28.7	23.5	15.4	12.6	6.61	
6HX800	635.0	478.3	384.4	322.5	278.0	245.3	219.0	198.7	181.7	167.4	144.8	108.0	86.9	60.6	46.7	38.1	24.7	20.1	10.7	

Discharge Currents (Amperes) to 1.80Vpc at 25°C

DataSafe HX+ Battery Type	Standby Time (Minutes)										Standby Time (Hours)									
	5	10	15	20	25	30	35	40	45	50	1	1.5	2	3	4	5	8	10	20	
12HX360FR+	315.5	226.6	180.2	148.0	125.1	108.6	96.0	86.1	78.2	71.9	62.3	44.9	35.5	25.3	19.8	16.3	11.0	9.14	4.85	
12HX420FR+	367.5	264.2	210.1	172.7	146.0	126.7	112.1	100.5	91.2	83.9	72.7	52.4	41.4	29.3	22.8	18.6	12.0	9.90	4.95	
12HX505FR+	394.6	300.9	241.5	201.4	172.8	151.4	134.8	121.7	111.0	102.1	88.2	63.6	49.5	35.0	27.0	22.2	14.9	12.3	6.70	
12HX560FR+	449.1	326.7	259.9	217.3	188.1	165.2	145.2	131.0	122.7	110.3	97.3	70.1	54.9	38.6	29.9	24.4	15.9	12.9	6.83	

DataSafe HX Battery Type	Standby Time (Minutes)										Standby Time (Hours)									
	5	10	15	20	25	30	35	40	45	50	1	1.5	2	3	4	5	8	10	20	
12HX25	20.8	13.5	10.3	8.39	7.20	6.16	5.50	4.87	4.52	4.17	3.55	2.50	2.00	1.40	1.07	0.88	0.57	0.47	0.25	
12HX35	32.5	21.1	16.1	13.1	11.4	9.6	8.60	7.63	7.07	6.52	5.56	3.92	3.12	2.19	1.68	1.38	0.89	0.73	0.39	
6HX50	50.5	32.9	25.1	20.4	17.3	15.0	13.0	11.9	11.0	10.1	8.65	6.09	4.86	3.41	2.64	2.15	1.39	1.13	0.57	
12HX50	50.5	32.9	25.1	20.4	17.3	15.0	13.0	11.9	11.0	10.1	8.65	6.09	4.86	3.41	2.64	2.15	1.39	1.13	0.57	
12HX80	72.2	46.9	35.9	29.2	25.0	21.4	19.0	16.9	15.7	14.5	12.4	8.71	6.94	4.87	3.70	3.08	1.98	1.62	0.86	
12HX105	90.2	58.7	44.9	36.5	31.0	26.8	24.0	21.2	19.6	18.1	15.5	10.9	8.68	6.09	4.70	3.85	2.53	2.09	1.17	
12HX135	121.8	79.2	60.6	49.2	42.0	36.1	32.0	28.6	26.5	24.5	20.9	14.7	11.7	8.22	6.30	5.19	3.42	2.82	1.58	
12HX150	135.4	88.0	67.3	54.7	47.0	40.2	35.0	31.8	29.5	27.2	23.2	16.3	13.0	9.13	7.04	5.77	3.90	3.26	1.91	
12HX205	178.5	121.9	93.8	76.8	62.6	56.8	50.5	45.4	41.3	37.9	32.7	23.2	18.1	12.7	9.90	8.14	5.41	4.47	2.52	
12HX300	255.2	183.5	143.9	118.8	101.6	89.0	79.3	71.6	65.4	60.3	52.2	37.6	29.6	20.9	16.3	13.4	8.79	7.18	3.72	
12HX330	297.7	214.2	167.9	138.6	118.6	103.8	92.5	83.6	76.4	70.3	60.9	43.9	34.5	24.4	19.0	15.6	10.3	8.38	4.34	
12HX400	340.3	244.7	191.9	158.4	135.5	118.6	105.7	95.5	87.2	80.4	69.6	50.1	39.4	27.9	21.8	17.9	11.7	9.58	4.96	
12HX505	394.6	300.9	241.5	201.4	172.8	151.4	134.8	121.7	1											

Discharge Currents (Amperes) to 1.85Vpc at 25°C

DataSafe HX+ Battery Type	Standby Time (Minutes)										Standby Time (Hours)								
	5	10	15	20	25	30	35	40	45	50	1	1.5	2	3	4	5	8	10	20
12HX360FR+	262.4	191.0	155.1	130.7	112.4	99.1	88.2	79.4	72.6	67.0	57.9	41.8	33.2	23.7	18.6	15.5	10.6	8.71	4.53
12HX420FR+	305.7	222.6	180.9	152.4	131.1	115.6	102.9	92.7	84.7	78.2	67.5	48.8	38.7	27.5	21.4	17.6	11.5	9.45	4.74
12HX505FR+	332.4	261.2	213.7	180.0	155.8	137.5	123.3	111.9	102.4	94.5	82.1	59.4	46.9	33.5	26.1	21.6	14.6	12.1	6.70
12HX560FR+	394.9	296.4	239.6	202.3	176.5	155.7	137.3	124.3	117.0	105.2	93.4	67.8	53.4	37.7	29.9	24.0	15.6	12.7	6.70

DataSafe HX Battery Type	Standby Time (Minutes)										Standby Time (Hours)								
	5	10	15	20	25	30	35	40	45	50	1	1.5	2	3	4	5	8	10	20
12HX25	19.1	12.6	9.67	7.91	6.70	5.85	5.10	4.65	4.33	4.00	3.42	2.42	1.94	1.37	1.05	0.87	0.56	0.46	0.24
12HX35	29.9	19.7	15.1	12.4	10.7	9.2	8.10	7.28	6.77	6.26	5.36	3.80	3.04	2.15	1.60	1.36	0.88	0.72	0.38
6HX50	46.5	30.6	23.5	19.3	16.5	14.2	12.6	11.3	10.5	9.7	8.34	5.90	4.73	3.34	2.50	2.12	1.36	1.11	0.56
12HX50	46.5	30.6	23.5	19.3	16.5	14.2	12.6	11.3	10.5	9.7	8.34	5.90	4.73	3.34	2.50	2.12	1.36	1.11	0.56
12HX80	66.4	43.7	33.6	27.5	23.9	20.4	18.1	16.2	15.1	13.9	11.9	8.44	6.76	4.77	3.50	3.03	1.95	1.59	0.84
12HX105	83.0	54.6	42.0	34.4	29.0	25.4	22.8	20.2	18.8	17.4	14.9	10.5	8.45	5.96	4.60	3.78	2.49	2.05	1.14
12HX135	112.1	73.7	56.8	46.4	40.0	34.4	30.0	27.3	25.4	23.5	20.1	14.2	11.4	8.05	6.10	5.11	3.36	2.77	1.54
12HX150	124.6	81.9	63.1	51.6	45.0	38.2	34.0	30.3	28.2	26.1	22.3	15.8	12.7	8.94	6.84	5.67	3.83	3.20	1.87
12HX205	156.8	109.8	85.5	70.5	57.8	52.7	47.0	42.4	38.7	35.6	30.8	22.0	17.3	12.2	9.5	7.84	5.24	4.33	2.45
12HX300	221.8	164.7	130.8	108.9	93.7	82.3	73.5	66.5	60.9	56.2	48.7	35.1	27.7	19.7	15.4	12.7	8.34	6.83	3.58
12HX330	258.8	192.0	152.6	127.1	109.3	96.0	85.7	77.6	71.0	65.5	56.8	41.0	32.3	23.0	18.0	14.8	9.72	7.97	4.18
12HX400	295.7	219.6	174.4	145.2	124.9	109.7	98.0	88.7	81.2	74.9	64.9	46.9	37.0	26.3	20.5	16.9	11.1	9.11	4.78
12HX505	332.4	261.2	213.7	180.0	155.8	137.5	123.3	111.9	102.4	94.5	82.1	59.4	46.9	33.5	26.1	21.6	14.6	12.1	6.70
12HX540	360.8	280.0	227.7	191.7	166.0	146.5	131.3	119.0	108.9	100.4	87.0	62.4	48.9	34.5	26.9	22.1	14.7	12.1	6.47
6HX800	467.8	376.4	312.9	268.3	235.0	209.8	190.0	173.0	159.2	147.5	128.8	97.9	79.6	56.3	43.6	35.7	23.3	19.0	10.1

Constant Power Discharge Performance Data

Constant Power (Watts per cell) to 1.60Vpc at 25°C

DataSafe HX+ Battery Type	Standby Time (Minutes)								Standby Time (Hours)							
	5	10	15	20	30	40	45	50	1	1.5	2	3	5	8	10	20
12HX360FR+	656.2	468.8	364.8	299.7	221.4	175.8	159.6	146.3	125.8	89.9	70.6	50.2	32.6	21.8	18.1	9.66
12HX420FR+	765.5	546.9	425.6	349.7	258.4	205.1	186.3	170.7	146.8	104.9	82.4	58.5	37.5	24.2	19.7	9.75
12HX505FR+	950.3	673.9	511.2	412.1	301.2	239.6	217.8	199.7	172.7	123.1	96.8	68.4	44.4	29.3	24.3	13.3
12HX560FR+	1123.2	750.4	576.2	472.3	351.6	277.6	257.7	232.4	202.9	145.6	113.9	80.1	50.8	33.2	27.0	14.2

DataSafe HX Battery Type	Standby Time (Minutes)								Standby Time (Hours)							
	5	10	15	20	30	40	45	50	1	1.5	2	3	5	8	10	20
12HX25	47.4	30.1	22.5	18.2	13.3	10.4	9.64	8.89	7.58	5.31	4.21	2.94	1.85	1.20	0.98	0.53
12HX35	74.2	47.1	36.0	28.4	20.7	16.4	15.1	13.9	11.9	8.31	6.59	4.60	2.90	1.87	1.53	0.82
6HX50	115.4	73.3	53.0	44.3	32.3	25.4	23.5	21.6	18.5	12.9	10.3	7.16	4.51	2.91	2.38	1.21
12HX50	115.4	73.3	53.0	44.3	32.3	25.4	23.5	21.6	18.5	12.9	10.3	7.16	4.51	2.91	2.38	1.21
12HX80	164.9	104.8	80.0	63.2	46.1	36.3	33.5	30.9	26.4	18.5	14.7	10.2	6.45	4.16	3.40	1.83
12HX105	206.2	131.0	100.0	79.0	57.6	45.4	41.9	38.7	33.0	23.1	18.3	12.8	8.06	5.31	4.38	2.47
12HX135	278.3	176.8	135.0	106.7	77.8	61.3	56.6	52.2	44.5	31.2	24.7	17.3	10.9	7.17	5.92	3.33
12HX150	309.2	196.5	150.0	118.5	86.4	68.1	62.9	58.0	49.5	34.6	27.5	19.2	12.1	8.18	6.83	4.04
12HX205	435.0	280.0	210.0	169.6	124.0	85.0	88.9	81.5	69.9	48.9	38.1	26.8	17.0	11.3	9.30	5.13
12HX300	549.7	371.6	286.4	235.8	176.1	141.7	129.4	119.1	103.2	74.3	58.6	41.4	26.6	17.4	14.2	7.42
12HX330	641.4	433.5	334.1	275.1	205.5	165.4	151.0	138.9	120.4	86.7	68.4	48.4	31.0	20.3	16.5	8.65
12HX400	733.0	495.4	381.8	314.4	234.8	189.0	172.6	158.8	137.6	99.1	78.1	55.3	35.4	23.2	18.9	9.89
12HX505	950.3	673.9	511.2	412.1	301.2	239.6	217.8	199.7	172.7	123.1	96.8	68.4	44.4	29.3	24.3	13.3
12HX540	1007.0	713.7	550.0	445.6	326.3	259.5	235.9	216.2	186.1	132.4	103.7	72.8	46.5	30.4	24.8	13.2
6HX800	1428.0	1029.0	780.0	674.0	507.0	408.6	372.8	342.9	296.0	226.9	176.8	123.3	77.4	50.3	41.0	21.8

Constant Power (Watts per cell) to 1.65Vpc at 25°C

DataSafe HX+ Battery Type	Standby Time (Minutes)								Standby Time (Hours)							
	5	10	15	20	30	40	45	50	1	1.5	2	3	5	8	10	20
12HX360FR+	656.2	464.3	362.2	298.4	220.6	175.1	159.0	145.8	125.7	89.9	70.5	50.2	32.6	21.8	18.1	9.66
12HX420FR+	765.5	541.6	422.5	348.1	257.4	204.3	185.6	170.1	146.7	104.9	82.2	58.5	37.5	24.2	19.7	9.76
12HX505FR+	895.6	660.0	509.8	412.1	301.2	239.6	217.8	199.7	172.7	123.1	96.8	68.4	44.4	29.3	24.3	13.4
12HX560FR+	1064.6	729.8	566.0	466.4	349.0	275.6	256.5	231.0	202.2	145.1	113.4	79.7	50.5	32.9	26.8	14.1

DataSafe HX Battery Type	Standby Time (Minutes)								Standby Time (Hours)							
	5	10	15	20	30	40	45	50	1	1.5	2	3	5	8	10	20
12HX25	45.9	29.6	23.0	18.0	13.2	10.4	9.58	8.84	7.54	5.28	4.19	2.92	1.84	1.19	0.97	0.53
12HX35	71.9	46.3	36.0	28.2	20.6	16.2	15.0	13.8	11.8	8.26	6.56	4.56	2.88	1.86	1.52	0.82
6HX50	111.9	72.1	53.0	43.8	32.0	25.3	23.3	21.5	18.4	12.8	10.2	7.10	4.48	2.90	2.37	1.21
12HX50	111.9	72.1	53.0	43.8	32.0	25.3	23.3	21.5	18.4	12.8	10.2	7.10	4.48	2.90	2.37	1.21
12HX80	159.8	103.0	80.0	62.6	45.8	36.1	33.3	30.7	26.2	18.4	14.6	10.1	6.41	4.14	3.38	1.83
12HX105	199.8	128.7	100.0	78.3	57.2	45.1	41.7	38.4	32.8	22.9	18.2	12.7	8.01	5.29	4.37	2.47
12HX135	269.7	173.7	135.0	105.7	77.2	60.9	56.3	51.9	44.2	31.0	24.6	17.1	10.8	7.14	5.89	3.33
12HX150	299.6	193.0	150.0	117.4	85.8	67.7	62.5	57.6	49.2	34.4	27.3	19.0	12.0	8.14	6.81	4.04
12HX205	418.0	273.0	206.0	167.1	122.0	96.9	88.1	80.8	69.4	48.6	37.8	26.6	16.9	11.2	9.20	5.13
12HX300	546.1	371.6	286.4	235.8	176.1	141.7	129.4	119.1	103.2	74.3	58.6	41.4	26.6	17.4	14.2	7.42
12HX330	637.2	433.5	334.1	275.1	205.5	165.4	151.0	138.9	120.4	86.7	68.4	48.4	31.0	20.3	16.5	8.65
12HX400	728.2	495.4	381.8	314.4	234.8	189.0	172.6	158.8	137.6	99.1	78.1	55.3	35.4	23.2	18.9	9.89
12HX505	895.6	660.0	509.8	412.1	301.2	239.6	217.8	199.7	172.7	123.1	96.8	68.4	44.4	29.3	24.3	13.4
12HX540	952.7	698.8	544.9	445.6	326.3	259.5	235.9	216.2	186.1	132.4	103.7	72.8	46.5	30.4	24.8	13.2
6HX800	1356.0	995.0	780.0	660.0	499.0	403.5	368.5	339.3	293.2	225.4	175.8	122.7	77.1	50.0	40.8	21.7

Constant Power (Watts per cell) to 1.67Vpc at 25°C

DataSafe HX+ Battery Type	Standby Time (Minutes)								Standby Time (Hours)							
	5	10	15	20	30	40	45	50	1	1.5	2	3	5	8	10	20
12HX360FR+	656.2	461.8	359.6	296.4	219.6	174.4	158.4	145.3	125.2	89.7	70.4	50.0	32.4	21.7	18.0	9.66
12HX420FR+	765.5	538.7	419.5	345.8	256.2	203.5	184.8	169.5	146.1	104.7	82.1	58.2	37.3	24.1	19.6	9.77
12HX505FR+	871.7	652.9	506.0	412.1	301.2	239.6	217.8	199.7	172.7	123.1	96.8	68.4	44.4	29.3	24.3	13.4
12HX560FR+	1037.9	718.9	560.0	462.5	346.9	274.2	255.4	229.9	201.5	144.7	113.1	79.4	50.3	32.8	26.7	14.1

DataSafe HX Battery Type	Standby Time (Minutes)								Standby Time (Hours)							
	5	10	15	20	30	40	45	50	1	1.5	2	3	5	8	10	20
12HX25	45.2	29.3	23.0	17.9	13.1	10.3	9.53	8.79	7.50	5.25	4.17	2.91	1.84	1.19	0.97	0.53
12HX35	70.8	45.8	36.0	28.0	20.5	16.2	14.9	13.8	11.7	8.22	6.53	4.56	2.87	1.86	1.52	0.82
6HX50	110.1	71.3	53.0	43.5	31.9	25.1	23.2	21.4	18.3	12.8	10.2	7.09	4.47	2.89	2.36	1.21
12HX50	110.1	71.3	53.0	43.5	31.9	25.1	23.2	21.4	18.3	12.8	10.2	7.09	4.47	2.89	2.36	1.21
12HX80	157.2	101.8	80.0	62.2	45.5	35.9	33.2	30.6	26.1	18.3	14.5	10.1	6.39	4.13	3.38	1.83
12HX105	196.5	127.3	100.0	77.7	56.9	44.9	41.5	38.2	32.6	22.8	18.1	12.7	7.98	5.28	4.36	2.47
12HX135	265.3	171.9	135.0	104.9	76.8	60.6	56.0	51.6	44.0	30.8	24.5	17.1	10.8	7.12	5.88	3.33
12HX150	294.8	191.0	150.0	116.5	85.3	67.3	62.2	57.3	48.9	34.3	27.2	19.0	12.0	8.13	6.79	4.04
12HX205	409.0	269.0	204.0	165.9	121.0	96.3	87.6	80.4	68.9	48.3	37.6	26.4	16.8	11.1	9.20	5.10
12HX300	541.5	371.6	286.4	235.8	176.1	141.7	129.4	119.1	103.2	74.3	58.6	41.4	26.6	17.4	14.2	7.42
12HX330	631.8	433.5	334.1	275.1	205.5	165.4	151.0	138.9	120.4	86.7	68.4	48.4	31.0	20.3	16.5	8.65
12HX400	722.0	495.4	381.8	314.4	234.8	189.0	172.6	158.8	137.6	99.1	78.1	55.3	35.4	23.2	18.9	9.89
12HX505	871.7	652.9	506.0	412.1	301.2	239.6	217.8	199.7	172.7	123.1	96.8	68.4	44.4	29.3	24.3	13.4
12HX540	928.5	690.8	540.3	444.1	326.3	259.5	235.9	216.2	186.1	132.4	103.7	72.8	46.5	30.4	24.8	13.2
6HX800	1320.0	977.0	780.0	652.0	494.0	399.9	365.5	336.7	291.2	224.1	174.9	122.2	76.8	49.9	40.6	21.7

Constant Power (Watts per cell) to 1.70Vpc at 25°C

DataSafe HX+ Battery Type	Standby Time (Minutes)								Standby Time (Hours)							
	5	10	15	20	30	40	45	50	1	1.5	2	3	5	8	10	20
12HX360FR+	656.2	458.4	355.8	292.2	216.8	172.7	157.1	144.3	124.4	89.2	70.1	49.7	32.3	21.6	18.0	9.48
12HX420FR+	765.5	534.8	415.1	340.9	252.9	201.5	183.3	168.4	145.2	104.1	81.8	58.0	37.1	23.9	19.5	9.78
12HX505FR+	834.7	636.0	498.5	409.5	301.2	239.6	217.8	199.7	172.7	123.1	96.8	68.4	44.4	29.3	24.3	13.4
12HX560FR+	994.8	699.8	548.8	455.0	342.7	271.0	253.0	227.6	199.8	143.6	112.4	79.0	50.0	32.6	26.6	14.0

DataSafe HX Battery Type	Standby Time (Minutes)								Standby Time (Hours)							
	5	10	15	20	30	40	45	50	1	1.5	2	3	5	8	10	20
12HX25	43.9	28.7	21.7	17.6	12.9	10.2	9.43	8.71	7.43	5.21	4.14	2.89	1.82	1.18	0.96	0.52
12HX35	68.8	44.9	34.0	27.6	20.2	16.0	14.8	13.6	11.6	8.16	6.48	4.52	2.86	1.84	1.51	0.81
6HX50	107.0	69.8	52.9	42.9	31.5	24.8	23.0	21.2	18.1	12.7	10.1	7.03	4.44	2.87	2.34	1.20
12HX50	107.0	69.8	52.9	42.9	31.5	24.8	23.0	21.2	18.1	12.7	10.1	7.03	4.44	2.87	2.34	1.20
12HX80	152.9	99.8	75.5	61.3	45.0	35.5	32.8	30.3	25.9	18.1	14.4	10.0	6.35	4.10	3.35	1.81
12HX105	191.1	124.7	94.4	76.6	56.2	44.4	41.0	37.9	32.3	22.7	18.0	12.6	7.93	5.24	4.32	2.44
12HX135	257.9	168.4	127.4	103.4	75.9	59.9	55.4	51.1	43.6	30.6	24.3	16.9	10.7	7.07	5.83	3.29
12HX150	286.6	187.1	141.6	114.9	84.3	66.6	61.5	56.8	48.5	34.0	27.0	18.8	11.9	8.06	6.74	4.00
12HX205	394.0	262.0	200.0	162.3	119.0	95.1	86.3	78.8	67.1	47.7	37.2	26.0	16.6	11.0	9.10	5.08
12HX300	530.9	369.5	286.4	235.8	176.1	141.7	129.4	119.1	103.2	74.3	58.6	41.4	26.6	17.4	14.2	7.42
12HX330	619.3	431.1	334.1	275.1	205.5	165.4	151.0	138.9	120.4	86.7	68.4	48.4	31.0	20.3	16.5	8.65
12HX400	707.8	492.7	381.8	314.4	234.8	189.0	172.6	158.8	137.6	99.1	78.1	55.3	35.4	23.2	18.9	9.89
12HX505	834.7	636.0	498.5	409.5	301.2	239.6	217.8	199.7	172.7	123.1	96.8	68.4	44.4	29.3	24.3	13.4
12HX540	890.8	673.6	532.0	438.1	325.8	259.5	235.9	216.2	186.1	132.4	103.7	72.8	46.5	30.4	24.8	13.2
6HX800	1259.0	944.0	758.0	636.0	484.0	393.1	359.6	331.5	287.1	221.5	173.1	121.1	76.2	49.5	40.3	21.5

Constant Power (Watts per cell) to 1.75Vpc at 25°C

DataSafe HX+ Battery Type	Standby Time (Minutes)								Standby Time (Hours)							
	5	10	15	20	30	40	45	50	1	1.5	2	3	5	8	10	20
12HX360FR+	636.3	450.8	350.1	287.1	212.4	169.3	154.1	141.6	122.4	88.1	69.4	49.3	32.0	21.5	17.9	9.48
12HX420FR+	741.7	525.9	408.5	334.9	247.8	197.6	179.8	165.3	142.8	102.8	81.0	57.4	36.7	23.7	19.4	9.81
12HX505FR+	772.3	596.6	479.2	397.9	297.7	239.4	217.8	199.7	172.7	123.1	96.8	68.4	44.4	29.3	24.3	13.4
12HX560FR+	916.4	661.8	525.1	438.4	332.8	264.0	247.2	222.3	195.9	141.4	110.8	78.0	49.4	32.2	26.3	13.9

DataSafe HX Battery Type	Standby Time (Minutes)								Standby Time (Hours)							
	5	10	15	20	30	40	45	50	1	1.5	2	3	5	8	10	20
12HX25	41.5	27.4	20.9	17.0	12.6	9.94	9.21	8.51	7.28	5.11	4.07	2.85	1.80	1.16	0.95	0.51
12HX35	64.9	42.9	32.7	26.6	19.6	15.6	14.4	13.3	11.4	8.00	6.37	4.46	2.82	1.82	1.49	0.80
6HX50	101.0	66.8	50.9	41.4	30.6	24.2	22.4	20.7	17.7	12.5	9.92	6.93	4.38	2.83	2.32	1.18
12HX50	101.0	66.8	50.9	41.4	30.6	24.2	22.4	20.7	17.7	12.5	9.92	6.93	4.38	2.83	2.32	1.18
12HX80	144.3	95.4	72.7	59.2	43.7	34.6	32.0	29.6	25.3	17.8	14.2	9.90	6.26	4.05	3.31	1.79
12HX105	180.4	119.3	90.8	74.0	54.6	43.2	40.1	37.0	31.7	22.2	17.7	12.4	7.83	5.17	4.27	2.41
12HX135	243.5	161.0	122.6	99.9	73.7	58.3	54.1	50.0	42.7	30.0	23.9	16.7	10.6	6.98	5.76	3.26
12HX150	270.6	178.9	136.3	111.0	81.9	64.8	60.1	55.5	47.5	33.4	26.6	18.6	11.7	7.96	6.66	3.95
12HX205	365.0	248.0	190.0	155.4	115.0	91.8	83.5	76.7	66.0	46.4	36.2	25.5	16.3	10.8	8.90	5.01
12HX300	500.6	359.2	281.7	233.2	175.0	141.4	129.2	119.0	103.2	74.3	58.6	41.4	26.6	17.4	14.2	7.42
12HX330	584.0	419.1	328.6	272.1	204.2	164.9	150.7	138.9	120.4	86.7	68.4	48.4	31.0	20.3	16.5	8.65
12HX400	667.5	479.0	375.5	311.0	233.3	188.5	172.3	158.7	137.6	99.1	78.1	55.3	35.4	23.2	18.9	9.89
12HX505	772.3	596.6	479.2	397.9	297.7	239.4	217.8	199.7	172.7	123.1	96.8	68.4	44.4	29.3	24.3	13.4
12HX540	826.4	634.4	510.8	424.2	317.4	255.3	233.0	214.4	185.4	132.4	103.7	72.8	46.5	30.4	24.8	13.2
6HX800	1141.0	877.0	713.0	603.0	463.0	377.9	346.3	319.8	277.7	215.3	168.8	118.4	74.8	48.7	39.7	21.2

Constant Power (Watts per cell) to 1.80Vpc at 25°C

DataSafe HX+ Battery Type	Standby Time (Minutes)								Standby Time (Hours)							
	5	10	15	20	30	40	45	50	1	1.5	2	3	5	8	10	20
12HX360FR+	576.6	418.8	336.3	279.0	206.9	165.1	150.0	137.8	119.4	86.3	68.3	48.6	31.5	21.2	17.7	9.47
12HX420FR+	671.7	488.2	392.1	325.5	241.3	192.7	175.0	160.8	139.3	100.7	79.7	56.6	36.2	23.3	19.1	9.65
12HX505FR+	711.7	548.2	446.3	375.5	286.1	231.5	211.7	195.3	169.5	122.7	96.8	68.4	44.4	29.3	24.3	13.4
12HX560FR+	832.3	617.2	495.9	417.2	319.7	254.6	239.3	215.2	190.5	138.2	108.6	76.7	48.7	31.8	25.9	13.7

DataSafe HX Battery Type	Standby Time (Minutes)								Standby Time (Hours)							
	5	10	15	20	30	40	45	50	1	1.5	2	3	5	8	10	20
12HX25	38.7	25.9	19.8	16.2	12.1	9.58	8.91	8.25	7.07	4.99	3.99	2.80	1.77	1.14	0.93	0.50
12HX35	60.5	40.5	31.1	25.4	18.9	15.0	13.9	12.9	11.1	7.81	6.25	4.38	2.77	1.79	1.46	0.79
6HX50	94.2	63.0	48.3	39.5	29.4	23.3	21.7	20.1	17.2	12.1	9.72	6.82	4.31	2.78	2.27	1.16
12HX50	94.2	63.0	48.3	39.5	29.4	23.3	21.7	20.1	17.2	12.1	9.72	6.82	4.31	2.78	2.27	1.16
12HX80	134.5	90.0	69.0	56.5	42.0	33.3	31.0	28.7	24.6	17.4	13.9	9.74	6.16	3.98	3.25	1.75
12HX105	168.2	112.5	86.3	70.6	52.5	41.7	38.7	35.9	30.7	21.7	17.4	12.2	7.70	5.08	4.19	2.36
12HX135	227.0	151.8	116.5	95.3	70.8	56.2	52.3	48.4	41.5	29.3	23.4	16.4	10.4	6.85	5.65	3.18
12HX150	252.2	168.7	129.4	105.9	78.7	62.5	58.1	53.8	46.1	32.5	26.0	18.3	11.6	7.82	6.53	3.86
12HX205	331.7	230.0	178.3	146.6	109.1	87.5	79.7	72.5	62.6	44.7	35.0	24.6	15.8	10.5	8.70	4.93
12HX300	457.5	339.2	269.6	224.1	169.3	137.2	125.4	115.7	100.5	72.7	57.5	40.8	26.3	17.3	14.1	7.42
12HX330	533.8	395.7	314.5	261.4	197.5	160.0	146.3	135.0	117.2	84.8	67.1	47.6	30.7	20.2	16.5	8.65
12HX400	610.0	452.2	359.4	298.8	225.7	182.9	167.2	154.3	134.0	96.9	76.7	54.4	35.1	23.1	18.8	9.89
12HX505	711.7	548.2	446.3	375.5	286.1	231.5	211.7	195.3	169.5	122.7	96.8	68.4	44.4	29.3	24.3	13.4
12HX540	762.9	584.9	476.6	400.2	303.7	245.6	224.6	207.0	179.2	128.8	101.4	71.6	46.1	30.4	24.8	13.2
6HX800	1011.2	800.2	659.5	562.3	436.6	358.4	329.3	304.7	265.4	207.1	163.0	114.9	72.9	47.6	38.8	20.8

Constant Power (Watts per cell) to 1.85Vpc at 25°C

DataSafe HX+ Battery Type	Standby Time (Minutes)									Standby Time (Hours)							
	5	10	15	20	30	40	45	50	1	1.5	2	3	5	8	10	20	
12HX360FR+	491.2	359.8	294.3	249.5	190.2	153.2	140.0	129.4	112.4	81.0	64.2	46.0	30.1	20.6	17.0	8.90	
12HX420FR+	572.2	419.4	343.2	291.0	221.8	178.7	163.3	150.9	131.1	94.5	75.0	53.3	34.3	22.4	18.4	9.34	
12HX505FR+	607.3	486.8	402.4	339.8	262.4	215.1	197.3	182.3	158.7	115.8	91.9	65.7	43.1	28.7	23.9	13.2	
12HX560FR+	745.2	567.6	462.2	392.2	303.8	243.2	229.5	206.5	183.8	134.2	105.9	75.1	47.9	31.3	25.5	13.5	

DataSafe HX Battery Type	Standby Time (Minutes)									Standby Time (Hours)							
	5	10	15	20	30	40	45	50	1	1.5	2	3	5	8	10	20	
12HX25	35.6	24.1	18.6	15.3	11.5	9.14	8.53	7.92	6.81	4.83	3.89	2.74	1.74	1.12	0.92	0.49	
12HX35	55.7	37.7	29.1	24.0	17.9	14.3	13.4	12.4	10.7	7.57	6.08	4.29	2.73	1.76	1.43	0.77	
6HX50	86.6	58.6	45.3	37.3	27.9	22.3	20.8	19.3	16.6	11.8	9.46	6.68	4.24	2.73	2.23	1.13	
12HX50	86.6	58.6	45.3	37.3	27.9	22.3	20.8	19.3	16.6	11.8	9.46	6.68	4.24	2.73	2.23	1.13	
12HX80	123.8	83.7	64.7	53.3	39.9	31.8	29.7	27.6	23.7	16.8	13.5	9.54	6.06	3.90	3.18	1.71	
12HX105	154.7	104.6	80.9	66.6	49.9	39.8	37.1	34.5	29.6	21.0	16.9	11.9	7.58	4.98	4.11	2.30	
12HX135	208.9	141.3	109.2	89.9	67.3	53.7	50.1	46.5	40.0	28.4	22.8	16.1	10.2	6.73	5.55	3.11	
12HX150	232.1	157.0	121.3	99.9	74.8	59.6	55.7	51.7	44.4	31.5	25.3	17.9	11.4	7.68	6.40	3.77	
12HX205	296.3	210.0	164.6	136.1	102.2	82.3	75.1	68.5	59.2	42.5	33.4	23.6	15.2	10.2	8.50	4.83	
12HX300	408.5	309.5	247.7	207.4	158.4	128.6	117.9	109.0	94.7	68.6	54.3	38.7	25.0	16.5	13.5	7.15	
12HX330	476.6	361.1	289.0	241.9	184.8	150.1	137.6	127.1	110.5	80.1	63.4	45.1	29.2	19.2	15.7	8.35	
12HX400	544.7	412.7	330.3	276.5	211.2	171.5	157.2	145.3	126.3	91.5	72.4	51.5	33.3	22.0	18.0	9.54	
12HX505	607.3	486.8	402.4	339.8	262.4	215.1	197.3	182.3	158.7	115.8	91.9	65.7	43.1	28.7	23.9	13.2	
12HX540	660.8	522.7	429.1	362.5	279.8	229.2	210.1	194.1	168.7	121.8	95.9	67.8	43.8	29.0	23.9	12.8	
6HX800	875.1	715.4	599.1	515.9	405.5	335.4	309.0	286.7	250.7	197.1	155.9	110.5	70.5	46.2	37.8	20.3	



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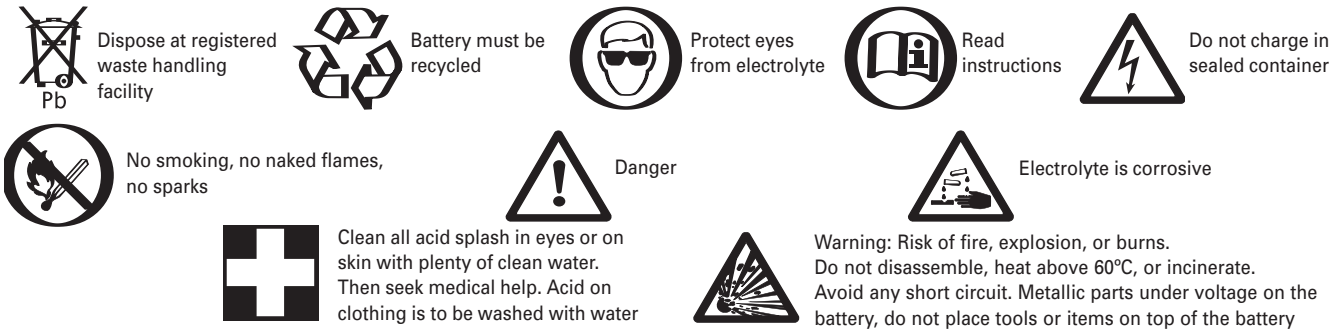
Installation, Operation
and Maintenance
Instructions



IMPORTANT

Please read this manual immediately on receipt of battery before unpacking and installing. Failure to comply with these instructions will render any warranties null and void.

CARE FOR YOUR SAFETY



Handling

DataSafe® HX+/HX batteries are supplied in a fully charged state and must be unpacked carefully to avoid very high short-circuit currents between terminals of opposite polarity. Use care when handling and moving batteries. Appropriate lifting equipment must be used.

Keep flames away

In case of accidental overcharge, a flammable gas can leak off the safety vent. Discharge any possible static electricity from clothes by touching an earth connected part.

Tools

Use tools with insulated handles. Do not place or drop metal objects on the battery. Remove rings, wristwatch and articles of clothing with metal parts that may come into contact with the battery terminals.

RECEIVING THE SHIPMENT

Carefully examine the battery shipment upon arrival for any signs of transit damage and that it agrees with the materials list or packing slip. Be very careful not to inadvertently discard any accessories contained in the packing material.

Batteries contain sulphuric acid in glass fibre separators.

Use rubber gloves when handling broken or damaged containers in case of acid leakage.

STORAGE

Store DataSafe® HX+/HX batteries in a dry, clean and preferably cool location.

Since the batteries are supplied charged, storage time is limited. In order to easily charge the batteries after prolonged storage, it is advised not to store them more than:

- 6 months at ambient temperature no warmer than 25°C
- 4 months at 30°C
- 2 months at 40°C

Give the batteries a freshening charge before the end of the recommended storage interval. A refreshing charge shall be performed using 2.26 V/cell at 25°C for 96 hours or until the charge current does not vary for a 3 hour period.

The necessity of a charge can also be determined by measuring the open circuit voltage of a stored battery. Charging is advised if the voltage drops below 2.07 V/cell.

Maximum total storage prior to installation is 2 years from the date of shipment from the factory to the customer. Freshening charges are required before the end of the storage time period or more frequently, as noted above. Failure to observe these conditions may result in greatly reduced capacity and service life.

FAILURE TO CHARGE AS NOTED VOIDS THE BATTERY'S WARRANTY.

INSTALLATION

Install in a clean and dry area. DataSafe HX+/HX batteries release minimal amounts of gas during normal operation (gas recombination efficiency ≥ 95%). They can be installed near the main equipment. Batteries must be installed in accordance with local, national and international regulations and manufacturers instructions.

■ Temperature

Avoid placing the battery in areas of high temperature or in direct sunlight. The battery will give the best performance and service life when working at a temperature between 20°C and 25°C. The maximum operating temperature range is -30°C to +45°C.

■ Ventilation

Under normal conditions gas release is very low and natural ventilation is sufficient for cooling purposes and inadvertent overcharge, enabling DataSafe HX+/HX batteries to be used safely in offices and with main equipment. However care must be taken to ensure adequate ventilation when placed in cabinets. Batteries must not be placed in sealed cabinets.

■ Security

All installation and ventilation must comply with the current local, national and international regulations.

■ Mounting

EnerSys® battery racks or cabinets are recommended for proper installation. Assemble the rack according to instructions. Place the monoblocs or cells on the rack and arrange the positive and the negative terminals for connection according to the wiring diagram. Check that all contact surfaces are clean and apply the bloc or cell connectors and the terminal screws. Tighten the screws securely. Follow the polarity to avoid short circuiting of cell groups. Finally connect the battery terminals. It is important that the battery is mounted firmly.

■ Installation of High Voltage Batteries

A battery consisting of 60 or more cells connected in series presents additional hazards and the following notes on installation should be employed.

- Limit the battery voltage by omitting inter-cell connectors to give a maximum section voltage of 120V or 60 cells.
- The omitted inter-cell connectors should be chosen such that they are in an easily accessible position. These connectors should only be fitted with the load and charger isolated and when the rest of the installation is complete.
- Never work alone on high voltage batteries.
- Always use insulated tools and wear approved high voltage insulating gloves.
- When supplied, fit the "high voltage battery" warning labels in a prominent position.

■ Torque

Tighten the nuts or bolts to the recommended levels of fastening torque indicated on the product label (if applicable). A loose connector can cause problems in charger adjustment, erratic battery performance, possible damage to the battery and/or personal injury.

CELLS IN PARALLEL STRINGS

When using constant voltage chargers, ensure that the connections between the charger and the end of each string within the battery have the same electrical resistance. Parallel strings must be limited to five strings.

CHARGING

■ Float Voltage

The float/charge voltage is 2.26 V per cell at 25°C. When the average ambient temperature deviates more than ± 5°C from the reference, it is necessary to adjust the float voltage as indicated in the following table :

Temperature	Float Voltage
0°C	2.33 to 2.36 Vpc
10°C	2.30 to 2.33 Vpc
20°C	2.27 to 2.30 Vpc
25°C (reference temperature)	2.24 to 2.27 Vpc
30°C	2.23 to 2.26 Vpc
35°C	2.21 to 2.24 Vpc

Due to the phenomena of gas recombination a difference of $\pm 2\%$ (earlier in float life $\pm 5\%$ is common) for an individual cell voltage can be observed. However the total voltage of the battery shall be within the limits stated above.

■ Charging Current

Utilising a constant voltage charger results in a charging current that is self limiting.

■ Fast Recharge

Occasionally (4 or 5 times a year) the battery may be recharged at 2.40Vpc with a current limit of 0.1C10A. Fast charging should be stopped after approximately 10 or 15 hours.

■ Ripple Current

Unacceptable levels of ripple current from the charger or the load can cause permanent damage and a reduction in service life. It is recommended to limit the continuous ripple current to 0.05C10A.

■ State of Charge

The battery state of charge can be determined approximately by measuring the open circuit voltage after the battery has been at rest for a minimum of 24 hours at 25°C.

State of charge	Voltage
100%	2.12 to 2.14 V/Cell
80%	2.09 to 2.11 V/Cell
60%	2.05 to 2.08 V/Cell
40%	2.01 to 2.04 V/Cell
20%	1.97 to 2.00 V/Cell

DISCHARGING

■ End of Discharge Voltage

The end of discharge voltage must be limited to 1.60Vpc. A protecting system shall have to be installed to prevent deep discharge.

■ Discharged Cells/Monoblocs

DataSafe® HX+/HX batteries must not be left in a discharged condition after supplying the load, but must be immediately returned to float recharge mode. Failure to observe these conditions may result in greatly reduced service life and unreliability.

■ Accidental Deep Discharge

When the battery is completely discharged, the sulphuric acid is completely absorbed and the remaining electrolyte consists only of water. At this point, the sulphation of the plates is at its maximum, considerably increasing the cell's internal resistance.

Important notice: this type of deep discharge will provoke a premature deterioration of the battery and a noticeable effect on life expectancy.

■ Effect of temperature on capacity

Correction factor of the capacity, according to temperature.

MAINTENANCE/CHECKS

DataSafe HX+/HX batteries are maintenance free, sealed, lead acid batteries and need no water addition.

Warning: The cases and lids shall be kept dry and free from dust. Cleaning must be done only with a damp cotton cloth. Do NOT use any type of oil,

solvent, detergent, petroleum-based solvent or ammonia solution to clean the battery containers or lids. These materials will cause permanent damage to the battery container and lid and will invalidate the warranty.

Check monthly that the total voltage at battery terminals is $(N \times 2.24 \text{ to } 2.27 \text{ V})$ for a temperature of 25°C (N being the number of cells in the battery).

Every 12 months, read and record the following:

- Individual cell or unit voltages (volts)
- Cell-to-cell connection resistance (ohms)
- Terminal connection resistance (ohms)
- Ambient temperature in the immediate battery environment

Keep a logbook to record values, power outages, discharge tests, etc.

An autonomy check can be carried out once or twice a year.

The above record taking is the absolute minimum to protect the warranty. This data will be required for any warranty claim made on the battery.

Temperature	Correction Factor
5°C	0.84
10°C	0.88
15°C	0.93
20°C	0.97
25°C	1.00
30°C	1.03
35°C	1.05
40°C	1.07



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