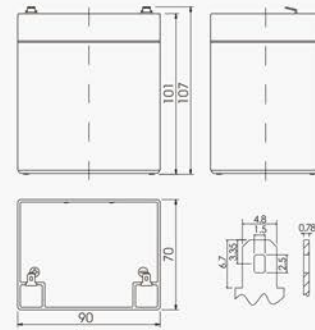


6-FM-4.5

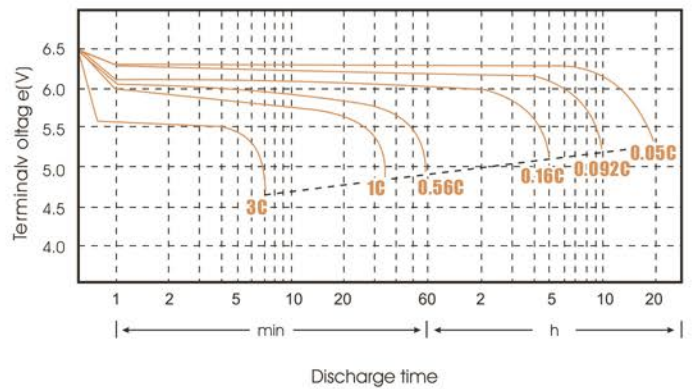
MAKELSAN®
Uninterruptible Power Supplies



Specifications

Nominal Voltage		12V
Rated Capacity(20 hour rate)		4.5Ah
Dimensions	Total Height (with terminals)	4.17inches(106mm)
	Height	4.01inches(102mm)
	Length	3.54inches(90mm)
	Width	2.76inches(70mm)
Weight		Approx. 3.3 pound(1.5kg)

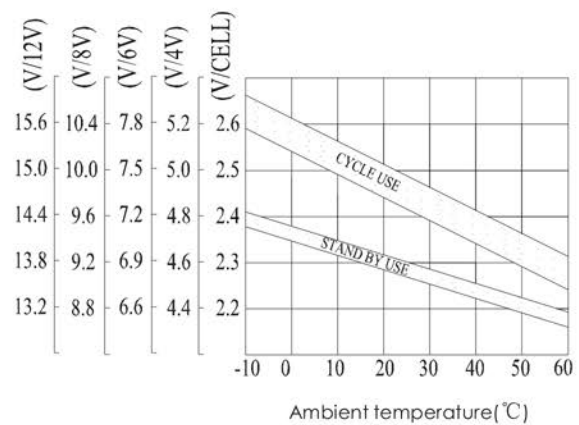
Discharge Curves 77°F(25°C)



Characteristics

Capacity 77°F(25°C)	20 hour rate (0.225A)	4.5Ah
	10 hour rate (0.42A)	4.2Ah
	5 hour rate (0.72A)	3.6Ah
	1 hour rate (2.7A)	2.7Ah
	15 minute Rate (7.9 A)	2.0Ah
Internal Resistance	Full charged Battery 77°F(25°C)	34mΩ
Capacity affected by Temperature (20 hour rate)	104°F(40°C)	102%
	77°F(25°C)	100%
	32°F(0°C)	85%
	5°F(-15°C)	65%
Self-Discharge 77°F(20°C)	Capacity after 3 month storage	91%
	Capacity after 6 month storage	81%
	Capacity after 12 month storage	60%
Max. Discharge Current 77°F(25°C)	67A(5S)	
Terminal	F1/F2	
Charge (Constant Voltage)	Cycle	Initial Charging Current less than 1.35A Voltage 14.4~14.7V/77°F(25°C)
	Float	Voltage 13.5~13.8V/77°F(25°C)

Relationship between charge voltage and temperature

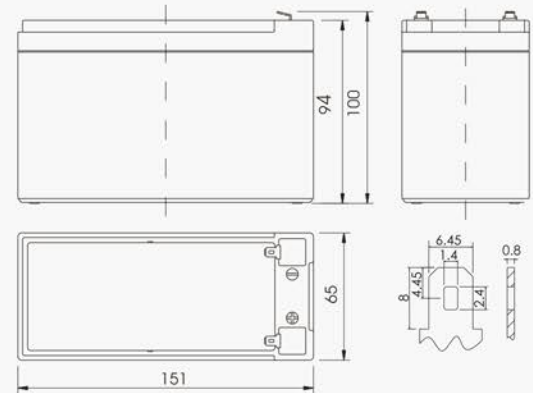


Constant Power Discharge (WATTS @25°C)

F.V/Time	5 M in	10 M in	15 M in	30 M in	60 M in	2 H	3 H	4 H	5 H	10 H	20 H
9.6	191	122	99	55.4	34.3	19.6	13.8	11.0	9.3	51.1	2.74
9.9	187	119	96	54.1	33.4	19.0	13.6	11.0	9.3	50.7	2.73
10.2	178	114	93	53.1	32.5	18.7	13.5	10.9	9.2	50.4	2.72
10.5	171	110	89	52.6	31.8	18.5	13.4	10.8	9.1	5.04	2.71
10.8	161	109	85	51.1	30.8	18.0	13.2	10.5	9.1	4.92	2.66

6-FM-7

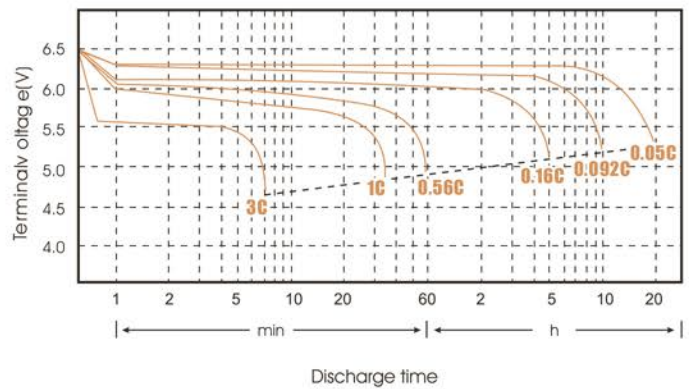
MAKELSAN®
Uninterruptible Power Supplies



Specifications

Nominal Voltage		12V
Rated Capacity(20 hour rate)		7.0Ah
Dimensions	Total Height (with terminals)	3.86inches(98mm)
	Height	3.70inches(94mm)
	Length	5.94inches(151mm)
	Width	2.56inches(65mm)
Weight		Approx.4.64pound(2.11 kg)

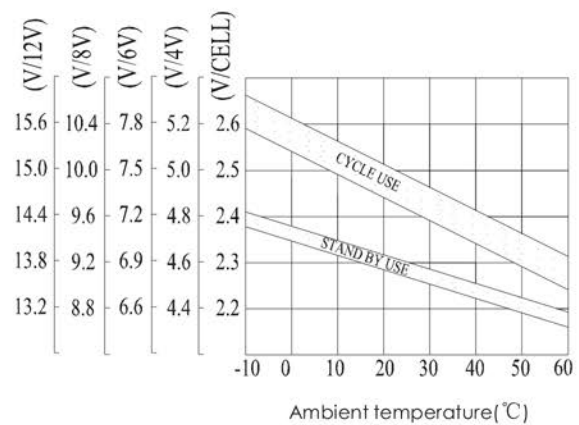
Discharge Curves 77°F(25°C)



Characteristics

Capacity 77°F(25°C)	20 hour rate (0.35A)	7.0Ah
	10 hour rate (0.65A)	6.5Ah
	5 hour rate (1.12A)	5.6Ah
	1 hour rate (4.2A)	4.2Ah
	15 minute Rate (12.3A)	3.1Ah
Internal Resistance	Full charged Battery 77°F(25°C)	23mΩ
Capacity affected by Temperature (20 hour rate)	104°F(40°C)	102%
	77°F(25°C)	100%
	32°F(0°C)	85%
	5°F(-15°C)	65%
Self-Discharge 77°F(20°C)	Capacity after 3 month storage	91%
	Capacity after 6 month storage	81%
	Capacity after 12 month storage	60%
Max. Discharge Current 77°F(25°C)	105A(5S)	
Terminal	F1, F2	
Charge (Constant Voltage)	Cycle	Initial Charging Current less than 2.1A Voltage 14.4~14.7V/7°F(25°C)
	Float	Voltage 13.5~13.8V/77°F(25°C)

Relationship between charge voltage and temperature

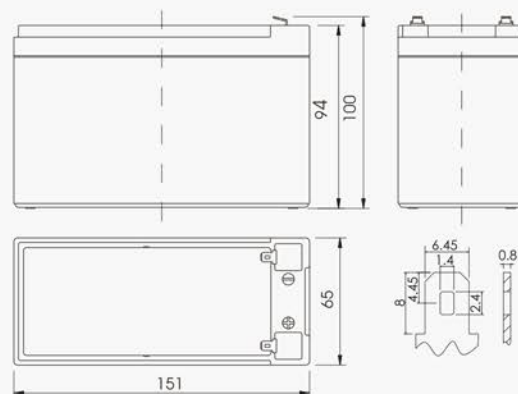


Constant Power Discharge (WATTS @25°C)

F.V/Time	5 Min	10 Min	15 Min	30 Min	60 Min	2 H	3 H	4 H	5 H	10 H	20 H
9.6	297	190	154	86.2	53.3	30.5	21.4	17.2	14.5	79.5	4.26
9.9	290	185	149	84.2	52.0	29.5	21.2	17.0	14.5	78.9	4.24
10.2	277	177	144	82.6	50.6	29.1	21.0	16.9	14.4	78.3	4.23
10.5	266	171	139	81.9	49.4	28.8	20.9	16.7	14.2	78.3	4.21
10.8	250	169	132	79.6	47.9	28.0	20.6	16.3	14.1	7.66	4.14

6-FM-9

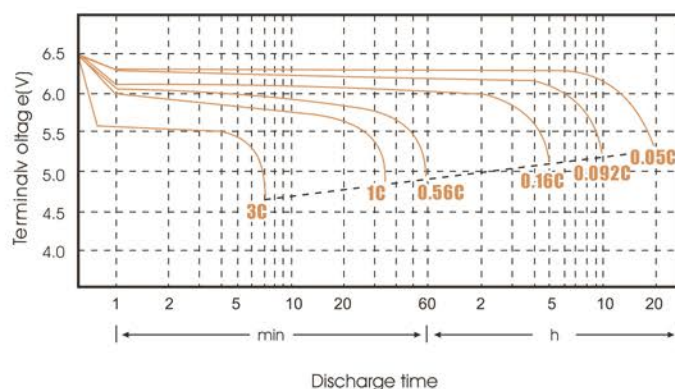
MAKELSAN®
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Specifications

Nominal Voltage		12V
Rated Capacity(20 hour rate)		9Ah
Dimensions	Total Height (with terminals)	3.86inches(98mm)
	Height	3.70inches(94mm)
	Length	5.94inches(151mm)
	Width	2.56inches(65mm)
Weight		Approx. 5.61 pound(2.55kg)

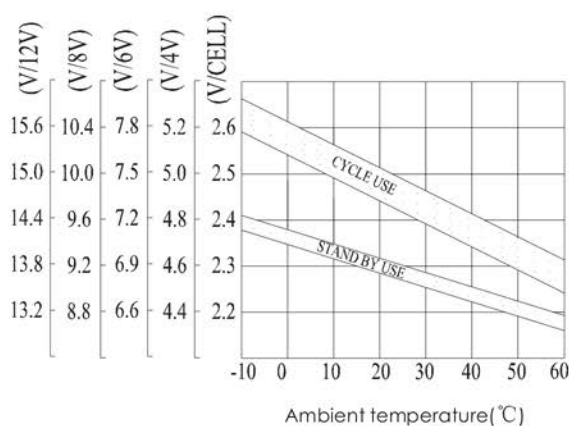
Discharge Curves 77°F(25°C)



Characteristics

Capacity 77°F(25°C)	20 hour rate (450mA)	9.0Ah
	10 hour rate (840mA)	8.4Ah
	5 hour rate (1.44A)	7.2Ah
	1 hour rate (5.4A)	5.4Ah
	15 minute Rate (15.6 A)	3.9 Ah
Internal Resistance	Full charged Battery 77°F(25°C)	20mΩ
Capacity affected by Temperature (20 hour rate)	104°F(40°C)	102%
	77°F(25°C)	100%
	32°F(0°C)	85%
	5°F(-15°C)	65%
Self-Discharge 77°F(20°C)	Capacity after 3 month storage	91%
	Capacity after 6 month storage	81%
	Capacity after 12 month storage	60%
Max. Discharge Current 77°F(25°C)	135A(5S)	
Terminal	F2	
Charge (Constant Voltage)	Cycle	Initial Charging Current less than 2.7A Voltage 14.4~14.7V/77°F(25°C)
	Float	Voltage 13.5~13.8V/77°F(25°C)

Relationship between charge voltage and temperature

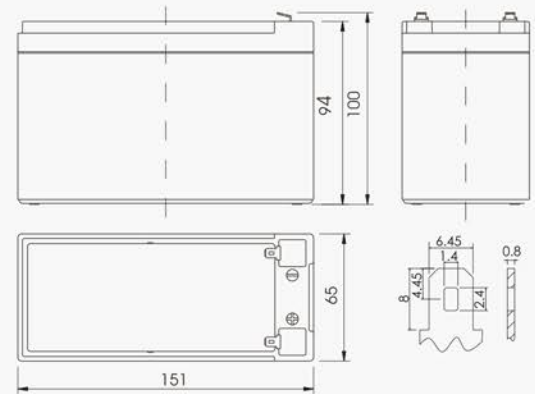


Constant Power Discharge (WATTS @25°C)

F.V/Time	5 M in	10 M in	15 M in	30 M in	60 M in	2 H	3 H	4 H	5 H	10 H	20 H
9.6	382	245	198	110.8	68.5	39.2	27.5	22.1	18.7	102.3	5.48
9.9	373	238	191	108.2	66.9	37.9	27.2	21.9	18.6	101.5	5.46
10.2	357	228	185	106.2	65.1	37.4	26.9	21.7	18.5	100.7	5.44
10.5	342	219	178	105.3	63.6	37.0	26.8	21.5	18.3	100.7	5.42
10.8	322	218	169	102.3	61.6	36.0	26.5	21.0	18.1	98.5	5.33

6-FM-10

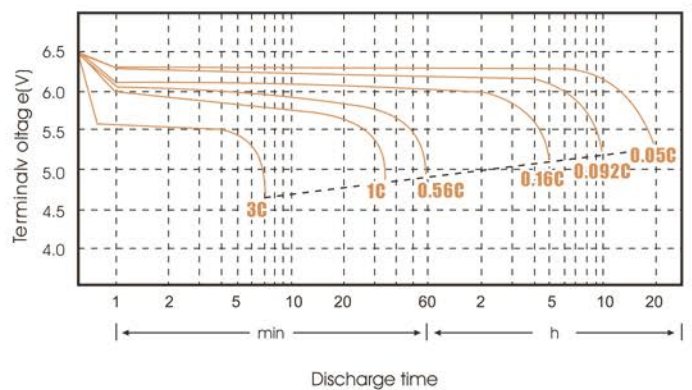
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Specifications

Nominal Voltage		12V
Rated Capacity(20 hour rate)		10Ah
Dimensions	Total Height (with terminals)	3.86inches(98mm)
	Height	3.70inches(94mm)
	Length	5.94inches(151mm)
	Width	2.56inches(65mm)
Weight		Approx. 5.98 pound(2.72kg)

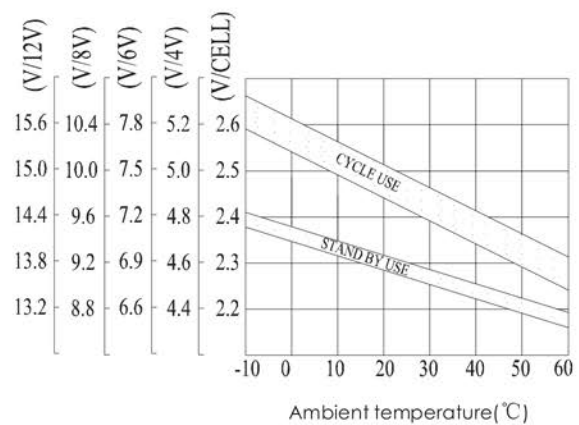
Discharge Curves 77°F(25°C)



Characteristics

Capacity 77°F(25°C)	20 hour rate (500mA)	10Ah
	10 hour rate (840mA)	8.4Ah
	5 hour rate (1.44A)	7.2Ah
	1 hour rate (5.4A)	5.4Ah
	15 minute Rate (15.6 A)	3.9 Ah
Internal Resistance	Full charged Battery 77°F(25°C)	20mΩ
Capacity affected by Temperature (20 hour rate)	104°F(40°C)	102%
	77°F(25°C)	100%
	32°F(0°C)	85%
	5°F(-15°C)	65%
Self-Discharge 77°F(20°C)	Capacity after 3 month storage	91%
	Capacity after 6 month storage	81%
	Capacity after 12 month storage	60%
Max. Discharge Current 77°F(25°C)	135A(5S)	
Terminal	F2	
Charge (Constant Voltage)	Cycle	Initial Charging Current less than 2.7A Voltage 14.4~14.7V/77°F(25°C)
	Float	Voltage 13.5~13.8V/77°F(25°C)

Relationship between charge voltage and temperature

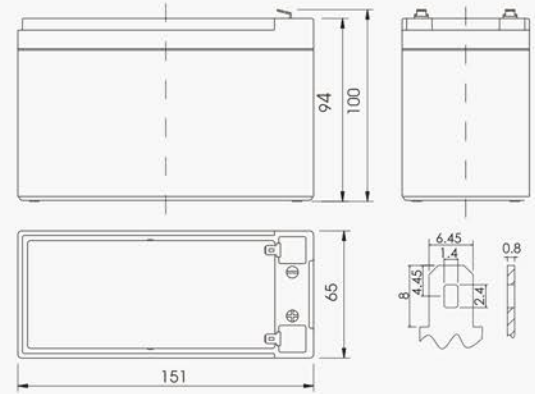


Constant Power Discharge (WATTS @25°C)

F.V/Time	5 M in	10 M in	15 M in	30 M in	60 M in	2 H	3 H	4 H	5 H	10 H	20 H
9.6	424	272	220	123.1	76.2	43.6	30.6	24.5	20.7	113.6	6.09
9.9	415	264	213	120.2	74.3	42.1	30.3	24.3	20.7	112.8	6.06
10.2	396	253	206	118.0	72.3	41.6	29.9	24.1	20.6	111.9	6.04
10.5	380	244	198	117.0	70.6	41.1	29.8	23.9	20.3	111.9	6.02
10.8	358	242	188	113.7	68.4	40.0	29.4	23.3	20.1	10.94	5.92

6-FM-12

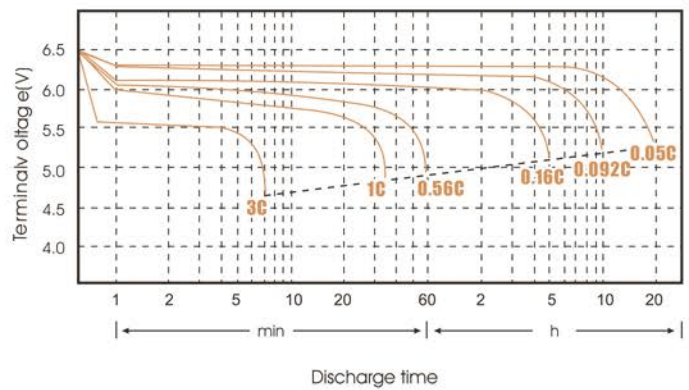
MAKELSAN®
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Specifications

Nominal Voltage		12V
Rated Capacity(20 hour rate)		12Ah
Dimensions	Total Height (with terminals)	3.86inches(98mm)
	Height	3.70inches(94mm)
	Length	5.94inches(151mm)
	Width	3.86inches(98mm)
Weight		Approx. 8.16pound(3.71kg)

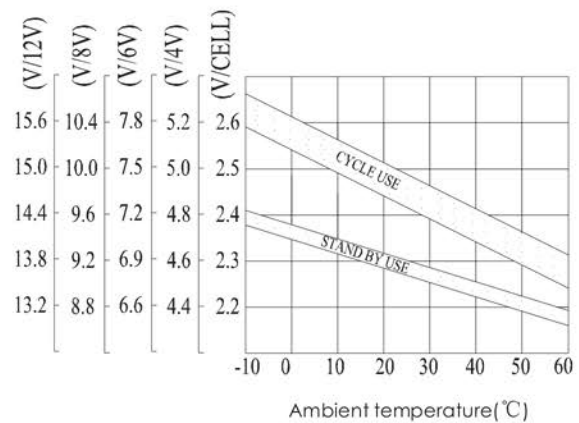
Discharge Curves 77°F(25°C)



Characteristics

Capacity 77°F(25°C)	20 hour rate (600mA)	12.0Ah
	10 hour rate (1.12A)	11.2Ah
	5 hour rate (1.92A)	9.6Ah
	1 hour rate (7.2A)	7.2Ah
	15 minute Rate (21.1A)	5.3Ah
Internal Resistance	Full charged Battery 77°F(25°C)	19mΩ
Capacity affected by Temperature (20 hour rate)	104°F(40°C)	102%
	77°F(25°C)	100%
	32°F(0°C)	85%
	5°F(-15°C)	65%
Self-Discharge 77°F(20°C)	Capacity after 3 month storage	91%
	Capacity after 6 month storage	81%
	Capacity after 12 month storage	60%
Max. Discharge Current 77°F(25°C)	180A(5S)	
Terminal	F2	
Charge (Constant Voltage)	Cycle	Initial Charging Current less than 3.6A Voltage 14.4~14.7V/77°F(25°C)
	Float	Voltage 13.5~13.8V/77°F(25°C)

Relationship between charge voltage and temperature

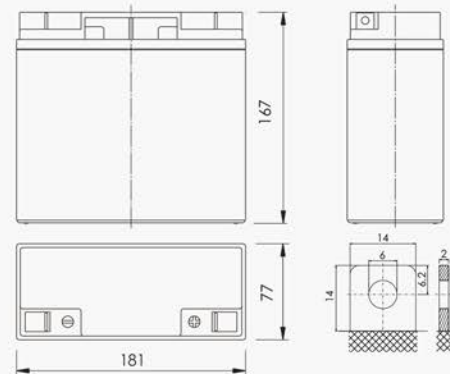


Constant Power Discharge (WATTS @25°C)

F.V/Time	5 M in	10 M in	15 M in	30 M in	60 M in	2 H	3 H	4 H	5 H	10 H	20 H
9.6	509	326	264	147.7	91.4	52.3	36.7	29.4	24.9	136.3	7.30
9.9	498	317	255	144.3	89.2	50.5	36.3	29.2	24.8	135.3	7.28
10.2	475	304	247	141.6	86.8	49.9	35.9	28.9	24.7	134.3	7.25
10.5	456	292	238	140.4	84.8	49.3	35.8	28.7	24.4	134.3	7.22
10.8	429	290	226	136.4	82.1	47.9	35.3	28.0	24.1	13.13	7.10

6-FM-17

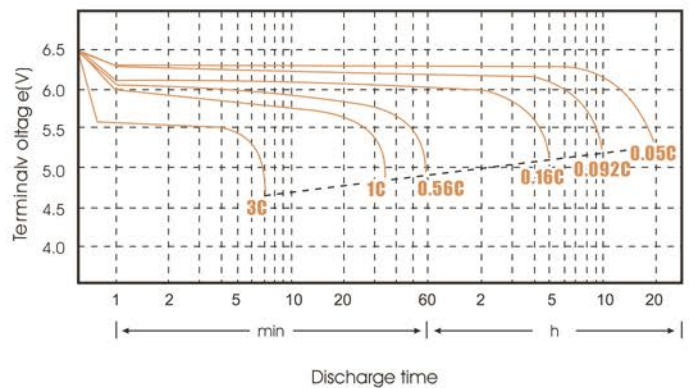
MAKELSAN®
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Specifications

Nominal Voltage		12V
Rated Capacity(20 hour rate)		17Ah
Dimensions	Total Height (with terminals)	6.57inches (167mm)
	Height	6.57inches (167mm)
	Length	7.13inches (181mm)
	Width	3.03inches (77mm)
Weight		Approx. 11.77pound (5.35kg)

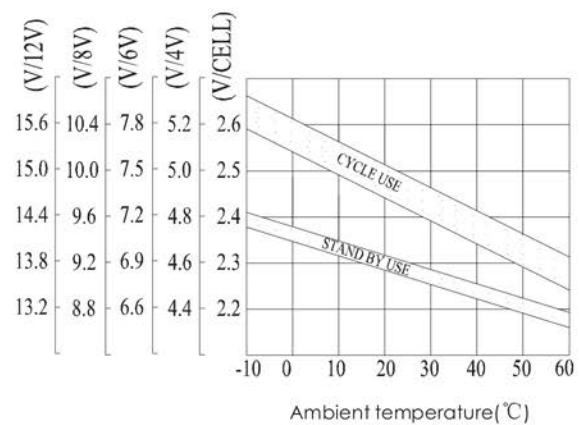
Discharge Curves 77°F(25°C)



Characteristics

Capacity 77°F(25°C)	20 hour rate (0.85A)	17Ah
	10 hour rate (1.58A)	15.8Ah
	5 hour rate (2.72A)	13.6Ah
	1 hour rate (10.2A)	10.2Ah
	15 minute Rate (29.92A)	7.5Ah
Internal Resistance	Full charged Battery 77°F(25°C)	15mΩ
Capacity affected by Temperature (20 hour rate)	104°F(40°C)	102%
	77°F(25°C)	100%
	32°F(0°C)	85%
	5°F(-15°C)	65%
Self-Discharge 77°F(20°C)	Capacity after 3 month storage	91%
	Capacity after 6 month storage	81%
	Capacity after 12 month storage	60%
Max. Discharge Current 77°F(25°C)	255A(5S)	
Terminal	B1/M4	
Charge (Constant Voltage)	Cycle	Initial Charging Current less than 5.1A Voltage 14.4~14.7V/77°F(25°C)
	Float	Voltage 13.5~13.8V/77°F(25°C)

Relationship between charge voltage and temperature

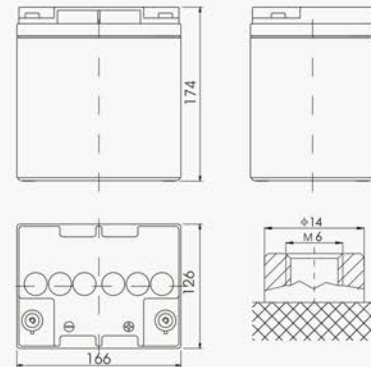


Constant Power Discharge (WATTS @25°C)

F.V/Time	5 M in	10 M in	15 M in	30 M in	60 M in	2 H	3 H	4 H	5 H	10 H	20 H
9.6	722	462	375	209.3	129.5	74.1	51.9	41.7	35.3	193.2	10.34
9.9	705	449	361	204.4	126.4	71.6	51.4	41.4	35.2	191.7	10.31
10.2	674	431	350	200.7	122.9	70.7	50.9	41.0	34.9	190.2	10.27
10.5	646	414	337	198.9	120.1	69.9	50.7	40.6	34.6	190.2	10.23
10.8	608	411	320	193.2	116.3	67.9	50.0	39.6	34.2	18.60	10.06

6-FM-24

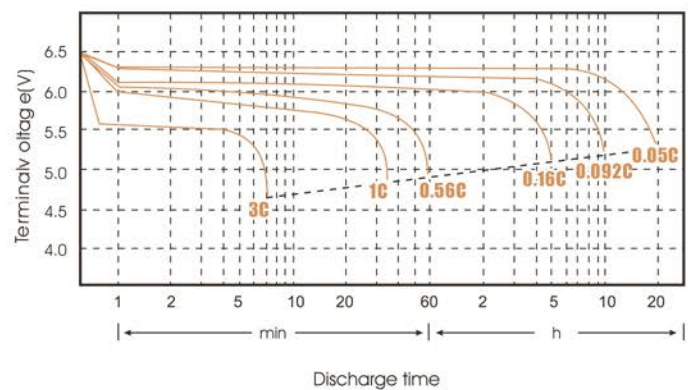
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Specifications

Nominal Voltage		12V
Rated Capacity(20 hour rate)		24Ah
Dimensions	Total Height (with terminals)	6.85inches(174mm)
	Height	6.85inches(174mm)
	Length	6.54inches(166mm)
	Width	4.96inches(126mm)
Weight		Approx. 18.81pound(8.55kg)

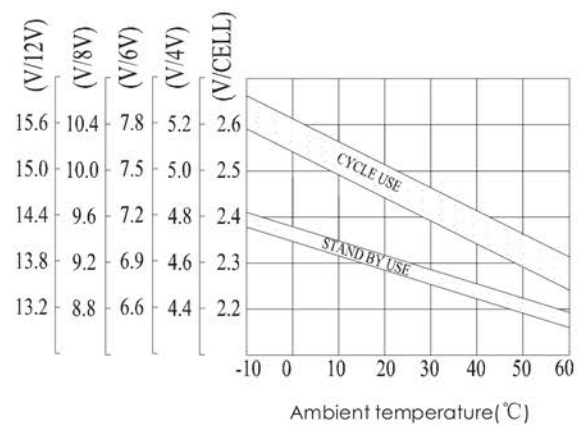
Discharge Curves 77°F(25°C)



Characteristics

Capacity 77°F(25°C)	20 hour rate (1.2A) 10 hour rate (2.23A) 5 hour rate (3.84A) 1 hour rate (14.4A)	24Ah 22.3Ah 19.2Ah 14.4Ah
	15 minute Rate (42.2 A)	10.55Ah
Internal Resistance	Full charged Battery 77°F(25°C)	12mΩ
Capacity affected by Temperature (20 hour rate)	104°F(40°C)	102%
	77°F(25°C)	100%
	32°F(0°C)	85%
	5°F(-15°C)	65%
Self-Discharge 77°F(20°C)	Capacity after 3 month storage	91%
	Capacity after 6 month storage	81%
	Capacity after 12 month storage	60%
Max. Discharge Current 77°F(25°C)	360A(5S)	
Terminal	M1	
Charge (Constant Voltage)	Cycle	Initial Charging Current less than 7.2A Voltage 14.4~14.7V/77°F(25°C)
	Float	Voltage 13.5~13.8V/77°F(25°C)

Relationship between charge voltage and temperature

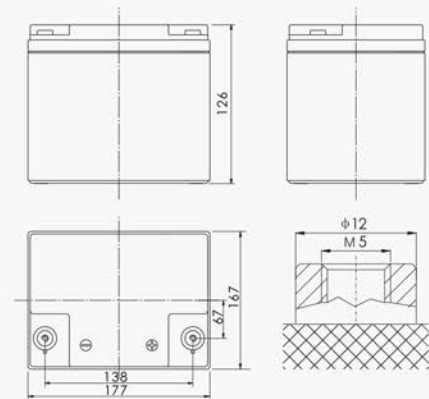


Constant Power Discharge (WATTS @25°C)

F.V/Time	5 M in	10 M in	15 M in	30 M in	60 M in	2 H	3 H	4 H	5 H	10 H	20 H
9.6	1019	653	529	295.5	182.8	104.6	73.3	58.9	49.8	272.7	14.60
9.9	995	635	510	288.5	178.4	101.1	72.6	58.4	49.7	270.6	14.55
10.2	951	608	494	283.3	173.6	99.9	71.8	57.9	49.3	268.5	14.50
10.5	911	585	476	280.8	169.5	98.6	71.6	57.4	48.8	26.86	14.45
10.8	859	580	451	272.8	164.3	95.9	70.6	56.0	48.3	26.26	14.20

6-FM-26

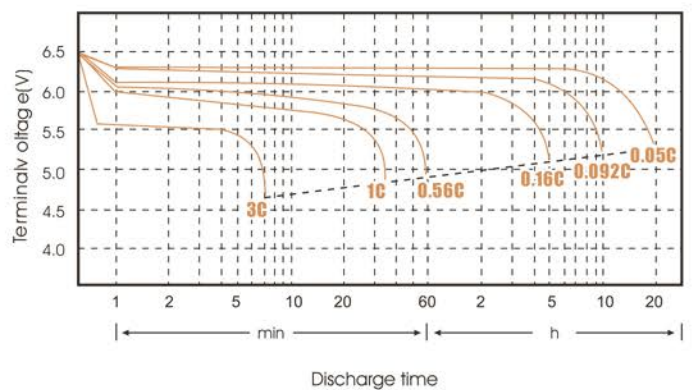
MAKELSAN®
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Specifications

Nominal Voltage		12V
Rated Capacity(20 hour rate)		26Ah
Dimensions	Total Height (with terminals)	4.96inches(126mm)
	Height	4.96inches(126mm)
	Length	6.97inches(177mm)
	Width	6.58inches(167mm)
Weight		Approx. 18.48pound(8.4kg)

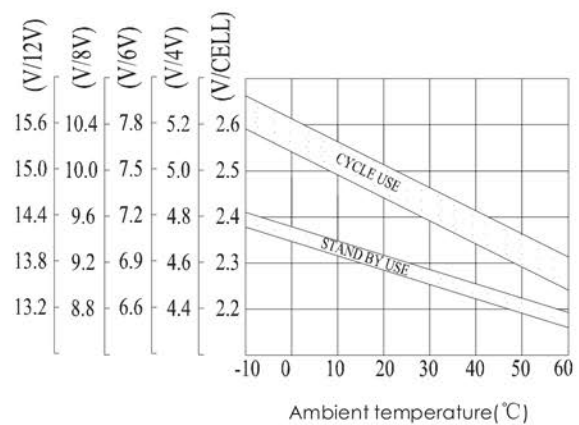
Discharge Curves 77°F(25°C)



Characteristics

Capacity 77°F(25°C)	20 hour rate (1.30A)	26.0Ah
	10 hour rate (2.41A)	24.1Ah
	5 hour rate (4.16A)	20.8Ah
	1 hour rate (15.6A)	15.6Ah
	15 minute Rate (45.72A)	11.43Ah
Internal Resistance	Full charged Battery 77°F(25°C)	10mΩ
Capacity affected by Temperature (20 hour rate)	104°F(40°C)	102%
	77°F(25°C)	100%
	32°F(0°C)	85%
	5°F(-15°C)	65%
Self-Discharge 77°F(20°C)	Capacity after 3 month storage	91%
	Capacity after 6 month storage	81%
	Capacity after 12 month storage	60%
Max. Discharge Current 77°F(25°C)	390A(5S)	
Terminal	B1	
Charge (Constant Voltage)	Cycle	Initial Charging Current less than 7.8A Voltage 14.4~14.7V/77°F(25°C)
	Float	Voltage 13.5~13.8V/77°F(25°C)

Relationship between charge voltage and temperature

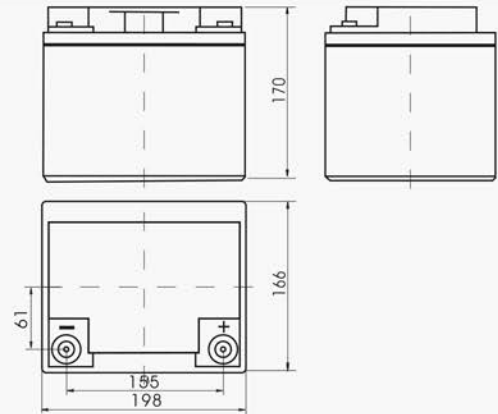


Constant Power Discharge (WATTS @25°C)

F.V/Time	5 M in	10 M in	15 M in	30 M in	60 M in	2 H	3 H	4 H	5 H	10 H	20 H
9.6	1104	707	573	320.1	198.0	113.3	79.4	63.8	53.9	295.4	15.82
9.9	1078	687	553	312.6	193.3	109.5	78.7	63.3	53.8	293.2	15.76
10.2	1030	659	536	306.9	188.0	108.2	77.8	62.7	53.4	290.9	15.71
10.5	987	633	515	304.2	183.7	106.8	77.5	62.1	52.9	291.0	15.65
10.8	930	629	489	295.5	177.9	103.9	76.4	60.6	52.3	284.5	15.39

6-FM-38

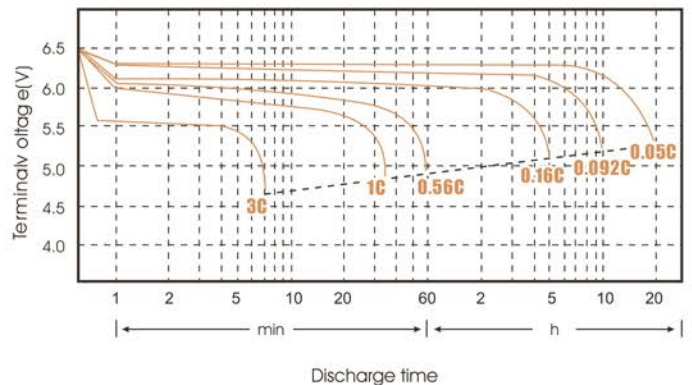
MAKELSAN®
Uninterruptible Power Supplies



Specifications

Nominal Voltage		12V
Rated Capacity(20 hour rate)		38Ah
Dimensions	Total Height (with terminals)	6.70inches (170mm)
	Height	6.70inches (170mm)
	Length	7.80inches (198mm)
	Width	6.54inches (166mm)
Weight		Approx. 26.62 pound(12.1kg)

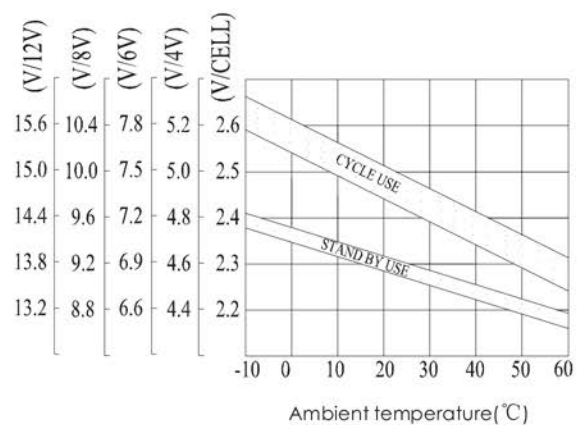
Discharge Curves 77°F(25°C)



Characteristics

Capacity 77°F(25°C)	20 hour rate (1.90A)	38.0Ah
	10 hour rate (3.42A)	34.2Ah
	5 hour rate (6.08A)	30.4Ah
	1 hour rate (22.8A)	22.8Ah
	15 minute Rate (62.7A)	15.7Ah
Internal Resistance	Full charged Battery 77°F(25°C)	8mΩ
Capacity affected by Temperature (20 hour rate)	104°F(40°C)	102%
	77°F(25°C)	100%
	32°F(0°C)	85%
	5°F(-15°C)	65%
Self-Discharge 77°F(20°C)	Capacity after 3 month storage	91%
	Capacity after 6 month storage	81%
	Capacity after 12 month storage	60%
Max. Discharge Current 77°F(25°C)	380A(5S)	
Terminal	M1	
Charge (Constant Voltage)	Cycle	Initial Charging Current less than 11.4A Voltage 14.4~14.7V/77°F(25°C)
	Float	Voltage 13.5~13.8V/77°F(25°C)

Relationship between charge voltage and temperature

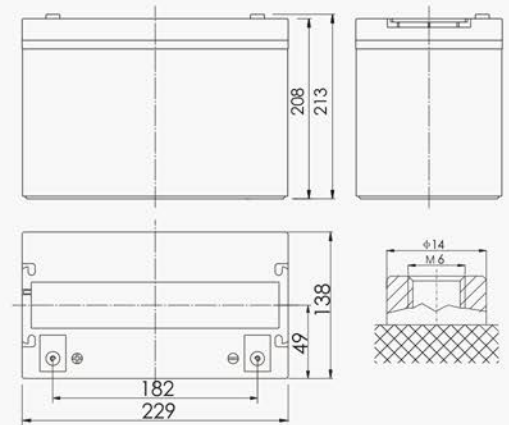


Constant Power Discharge (WATTS @25°C)

Cut off voltage v/cell	1M	5M	10M	15M	30M	45M	1h	2h	3h	5h	8h	10h	12h	24h
1.60V	226	198	143	113	70.2	52.7	44.6	25.3	18.0	12.1	8.00	6.76	5.79	2.92
1.65V	220	189	139	110	69.7	52.3	43.2	24.5	17.8	11.9	7.94	6.70	5.70	2.90
1.67V	218	186	137	108	68.8	51.3	42.6	24.4	17.7	11.8	7.86	6.62	5.64	2.87
1.70V	216	184	135	106	67.6	50.4	41.9	24.2	17.5	11.6	7.75	6.56	5.57	2.81
1.75V	196	171	127	102	67.4	49.6	41.6	24.0	17.4	11.5	7.68	6.50	5.42	2.76
1.80V	179	151	117	94.1	64.1	47.8	40.9	23.6	17.0	11.3	7.42	6.28	5.32	2.68
1.85V	143	121	96.9	82.7	58.3	45.4	38.0	22.7	16.5	10.7	7.21	6.00	5.12	2.60

6-FM-50

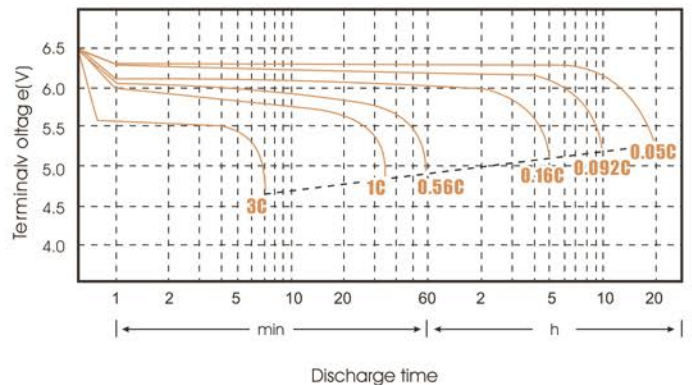
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Specifications

Nominal Voltage		12V
Rated Capacity(20 hour rate)		50Ah
Dimensions	Total Height (with terminals)	8.39inches (213mm)
	Height	8.19inches (208mm)
	Length	9.02inches (229mm)
	Width	5.43inches (138mm)
Weight		Approx. 34.76pound(15.8kg)

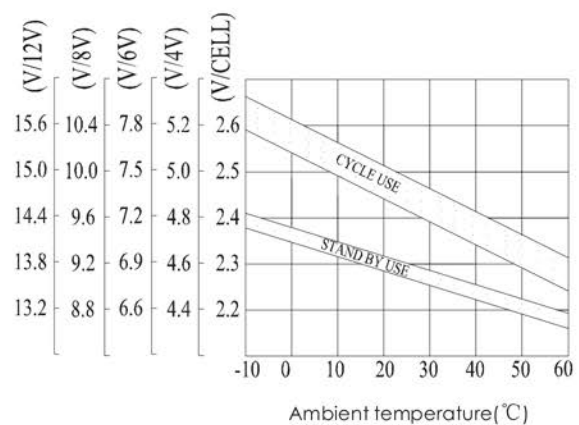
Discharge Curves 77°F(25°C)



Characteristics

Capacity 77°F(25°C)	20 hour rate (2.5A)	50Ah
	10 hour rate (4.6A)	46Ah
	5 hour rate (8.0A)	40Ah
	1 hour rate (30A)	30Ah
	15 minute Rate (87.2A)	21.8Ah
Internal Resistance	Full charged Battery 77°F(25°C)	8.3mΩ
Capacity affected by Temperature (20 hour rate)	104°F(40°C)	102%
	77°F(25°C)	100%
	32°F(0°C)	85%
	5°F(-15°C)	65%
Self-Discharge 77°F(20°C)	Capacity after 3 month storage	91%
	Capacity after 6 month storage	81%
	Capacity after 12 month storage	60%
Max. Discharge Current 77°F(25°C)	500A(5S)	
Terminal	M1	
Charge (Constant Voltage)	Cycle	Initial Charging Current less than 15A Voltage 14.4~14.7V/77°F(25°C)
	Float	Voltage 13.5~13.8V/77°F(25°C)

Relationship between charge voltage and temperature

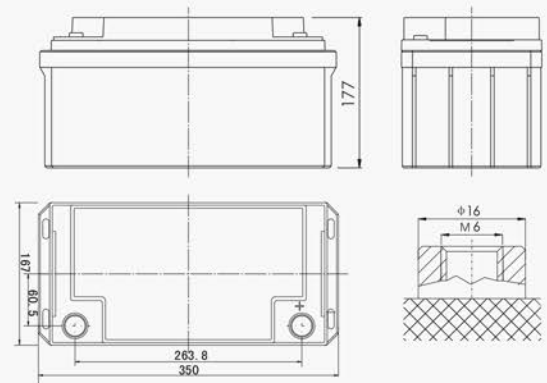


Constant Power Discharge (WATTS @25°C)

Cut off voltage v/cell	1M	5M	10M	15M	30M	45M	1h	2h	3h	5h	8h	10h	12h	24h
1.60V	318	297	223	173	103	79.8	64.5	38.4	27.2	17.6	10.9	9.1	7.92	4.15
1.65V	310	281	210	165	101	78.6	63.0	37.6	26.6	17.3	10.9	9.1	7.92	4.15
1.67V	307	273	204	160	101	77.9	62.2	37.2	26.4	17.1	10.9	9.1	7.92	4.15
1.70V	302	264	199	157	100	77.0	61.5	36.9	26.1	17.0	10.9	9.1	7.92	4.15
1.75V	276	244	187	151	98	75.3	60.2	35.8	25.5	16.8	10.8	9.0	7.85	4.15
1.80V	248	232	174	144	97	73.3	58.6	34.8	24.9	16.6	10.7	8.9	7.61	4.07
1.85V	201	179	144	121	78	66.9	56.4	33.7	24.2	15.5	10.6	8.4	7.29	3.84

6-FM-65

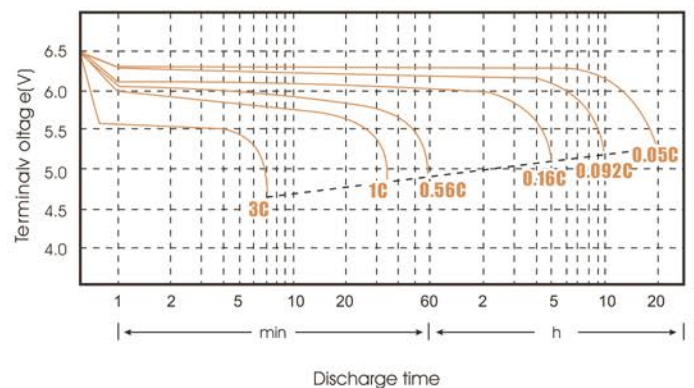
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Uninterruptible Power Supplies



Specifications

Nominal Voltage		12V
Rated Capacity(20 hour rate)		65Ah
Dimensions	Total Height (with terminals)	6.97inches (177mm)
	Height	6.97inches (177mm)
	Length	13.8inches (350mm)
	Width	6.57inches (167mm)
Weight		Approx. 42.24pound(19.2kg)

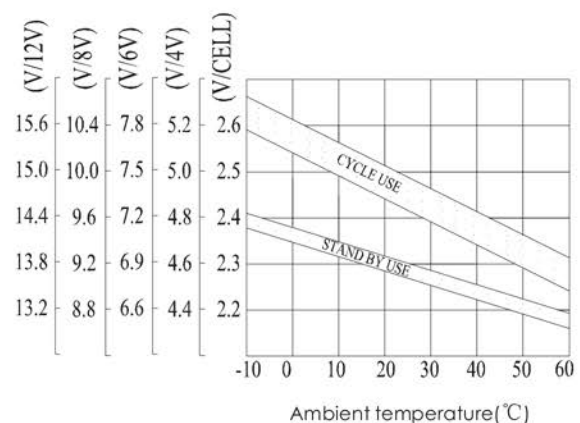
Discharge Curves 77°F(25°C)



Characteristics

Capacity 77°F(25°C)	20 hour rate (3.25A)	65Ah
	10 hour rate (6.10A)	61Ah
	5 hour rate (10.4A)	52Ah
	1 hour rate (39.0A)	39Ah
	15 minute Rate (107A)	26.8Ah
Internal Resistance	Full charged Battery 77°F(25°C)	7.5mΩ
Capacity affected by Temperature (20 hour rate)	104°F(40°C)	102%
	77°F(25°C)	100%
	32°F(0°C)	85%
	5°F(-15°C)	65%
Self-Discharge 77°F(20°C)	Capacity after 3 month storage	91%
	Capacity after 6 month storage	81%
	Capacity after 12 month storage	60%
Max. Discharge Current 77°F(25°C)	650A(5S)	
Terminal	M2/B5/B11	
Charge (Constant Voltage)	Cycle	Initial Charging Current less than 19.5A Voltage 14.4~14.7V/77°F(25°C)
	Float	Voltage 13.5~13.8V/77°F(25°C)

Relationship between charge voltage and temperature

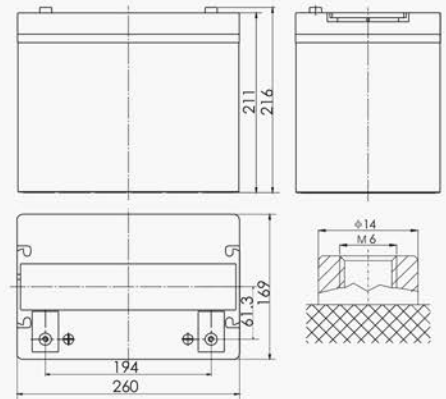


Constant Power Discharge (WATTS @25°C)

Cut off voltage v/cell	1M	5M	10M	15M	30M	45M	1h	2h	3h	5h	8h	10h	12h	24h
1.60V	408	359	254	194	127	95.2	77.2	45.3	31.8	20.9	14.2	11.8	10.2	5.35
1.65V	399	343	251	192	124	94.3	76.4	44.7	31.5	20.7	14.1	11.6	10.1	5.33
1.67V	395	341	250	190	123	92.9	75.6	44.2	31.4	20.6	14	11.5	10.0	5.31
1.70V	389	328	246	187	121	91.5	75.0	43.6	31.2	20.3	13.9	11.3	9.94	5.29
1.75V	355	305	230	182	111	90.0	74.8	43.1	30.8	20.1	13.8	11.2	9.88	5.27
1.80V	321	273	214	170	104	89.0	74.4	42.4	30.1	20	13.5	11.0	9.65	5.25
1.85V	257	219	177	149	96.0	82.1	69.2	41.4	29.7	19.1	13.0	10.9	9.42	4.95

6-FM-80

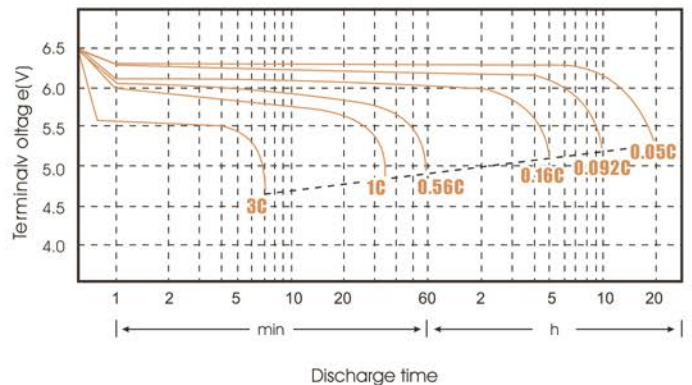
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Specifications

Nominal Voltage		12V
Rated Capacity(20 hour rate)		80Ah
Dimensions	Total Height (with terminals)	8.51inches (216mm)
	Height	8.31inches (211mm)
	Length	10.24inches(260mm)
	Width	6.65inches (169mm)
Weight		Approx. 46.64pound(21.2kg)

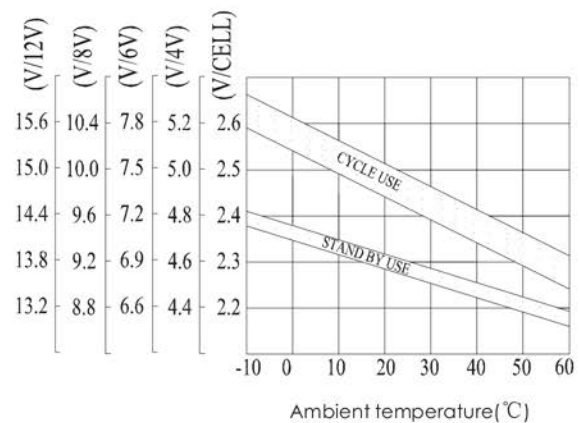
Discharge Curves 77°F(25°C)



Characteristics

Capacity 77°F(25°C)	20 hour rate (3.75A)	80Ah
	10 hour rate (6.8A)	68Ah
	5 hour rate (12A)	60Ah
	1 hour rate (45A)	45Ah
	15 minute Rate (122A)	30.5Ah
Internal Resistance	Full charged Battery 77°F(25°C)	7mΩ
Capacity affected by Temperature (20 hour rate)	104°F(40°C)	102%
	77°F(25°C)	100%
	32°F(0°C)	85%
	5°F(-15°C)	65%
Self-Discharge 77°F(20°C)	Capacity after 3 month storage	91%
	Capacity after 6 month storage	81%
	Capacity after 12 month storage	60%
Max. Discharge Current 77°F(25°C)	675A(5S)	
Terminal	M1	
Charge (Constant Voltage)	Cycle	Initial Charging Current less than 22.5A Voltage 14.4~14.7V/77°F(25°C)
	Float	Voltage 13.5~13.8V/77°F(25°C)

Relationship between charge voltage and temperature

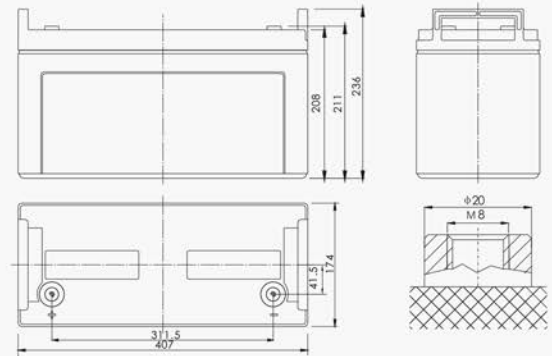


Constant Power Discharge (WATTS @25°C)

Cut off voltage v/cell	1M	5M	10M	15M	30M	45M	1h	2h	3h	5h	8h	10h	12h	24h
1.60V	471	414	293	224	147	110	89.1	52.3	36.7	24.1	16.4	13.6	11.8	6.17
1.65V	460	396	290	222	143	109	88.2	51.6	36.3	23.9	16.3	13.4	11.7	6.15
1.67V	456	393	288	219	142	107	87.0	51.0	36.2	23.8	16.2	13.3	11.5	6.13
1.70V	449	378	284	216	140	106	86.5	50.3	36.0	23.4	16.0	13.0	11.5	6.10
1.75V	410	352	265	210	128	104	86.3	49.7	35.5	23.2	15.9	12.9	11.5	6.08
1.80V	370	315	247	196	120	103	85.8	48.9	34.7	23.1	15.6	12.7	11.1	6.06
1.85V	297	255	204	172	111	94.7	79.8	47.8	34.3	22.0	15.0	12.6	10.9	5.71

6-FM-100A

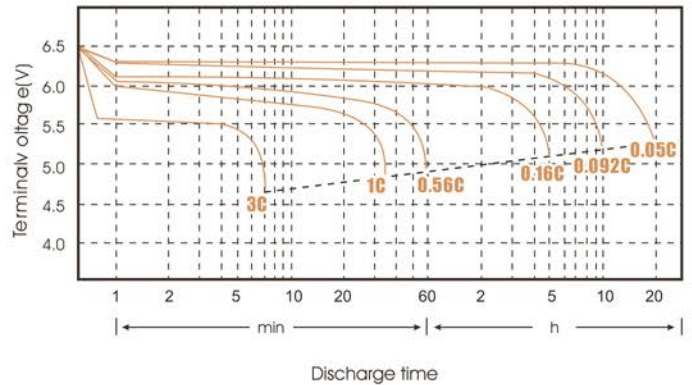
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Specifications

Nominal Voltage		12V
Rated Capacity(20 hour rate)		100Ah
Dimensions	Total Height (with terminals)	9.29inches (236mm)
	Height	8.19inches (208mm)
	Length	16.02inches (407mm)
	Width	6.85inches (174mm)
Weight		Approx. 66.22pound(30.1kg)

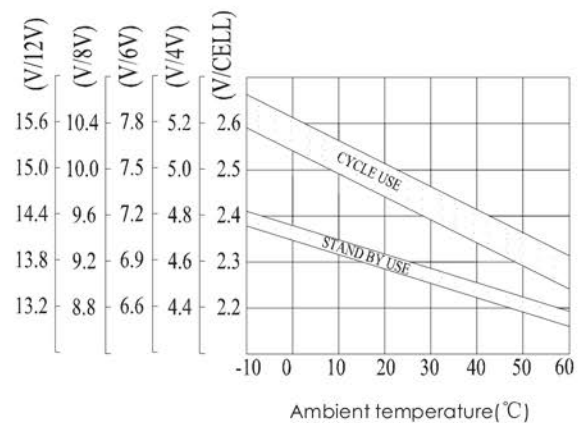
Discharge Curves 77°F(25°C)



Characteristics

Capacity 77°F(25°C)	20 hour rate (5.0A) 10 hour rate (9.2A) 5 hour rate (16.0A) 1 hour rate (60.0A)	100Ah 92Ah 80Ah 60Ah
	15 minute Rate(164A)	41Ah
Internal Resistance	Full charged Battery 77°F(25°C)	4.5mΩ
Capacity affected by Temperature (20 hour rate)	104°F(40°C)	102%
	77°F(25°C)	100%
	32°F(0°C)	85%
	5°F(-15°C)	65%
Self-Discharge 77°F(20°C)	Capacity after 3 month storage	91%
	Capacity after 6 month storage	81%
	Capacity after 12 month storage	60%
Max. Discharge Current 77°F(25°C)	800A(5S)	
Terminal		M3
Charge (Constant Voltage)	Cycle	Initial Charging Current less than 30A Voltage 14.4~14.7V/77°F(25°C)
	Float	Voltage 13.5~13.8V/77°F(25°C)

Relationship between charge voltage and temperature

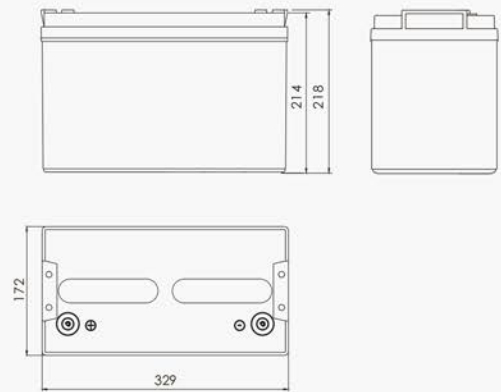


Constant Power Discharge (WATTS @25°C)

Cut off voltage v/cell	1M	5M	10M	15M	30M	45M	1h	2h	3h	5h	8h	10h	12h	24h
1.60V	625	571	394	307	191	148	119	70.0	49.1	32.4	22.9	18.3	15.7	8.11
1.65V	617	542	389	304	185	146	115	69.1	49	32.2	22.8	18.2	15.6	8.1
1.67V	610	540	386	302	173	144	114	68.8	48.6	31.9	22.7	18.2	15.5	8.09
1.70V	602	506	379	291	162	142	111	68.4	47.7	31.6	22.3	18.1	15.4	8.07
1.75V	541	461	346	274	156	141	108	67.9	46.4	31.0	21.7	18.0	15.3	8.06
1.80V	496	423	330	264	151	138	107	66.6	46.1	30.5	21.4	17.7	15.2	8.04
1.85V	398	339	273	231	141	127	104	64.2	45.0	29.5	20.1	16.9	14.4	7.62

6-FM-100G

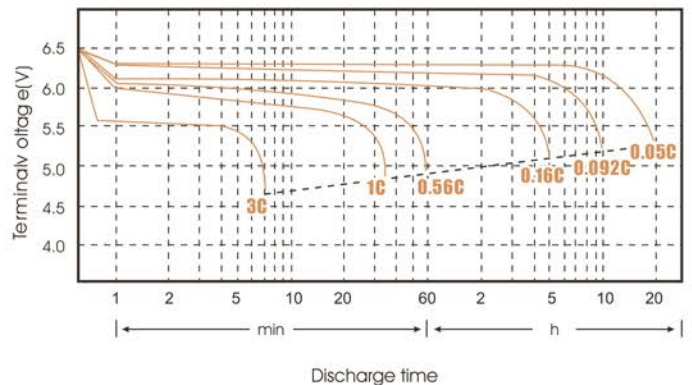
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Specifications

Nominal Voltage	12V	
Rated Capacity(10 hour rate)	100Ah	
Dimensions	Total Height (with terminals)	8.63inches (219mm)
	Height	8.43inches (214mm)
	Length	13.0inches (331mm)
	Width	6.89inches (175mm)
Weight	Approx. 61.6pound(28kg)	

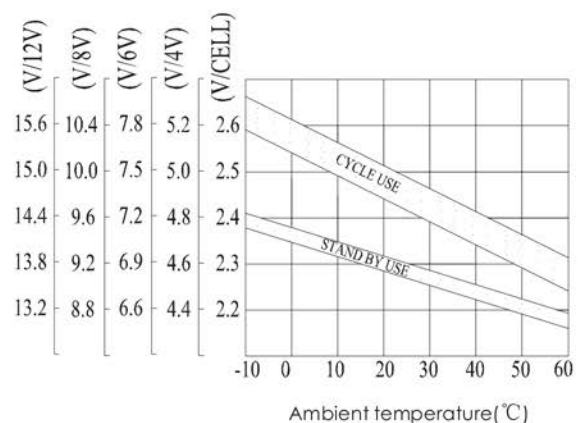
Discharge Curves 77°F(25°C)



Characteristics

Capacity 77°F(25°C)	10 hour rate (10.0A) 5 hour rate (17.0A) 1 hour rate (60.0A)	100Ah 85Ah 60Ah
	15 minute Rate(165A)	41.25Ah
Internal Resistance	Full charged Battery 77°F(25°C)	4.5mΩ
Capacity affected by Temperature (20 hour rate)	104°F(40°C)	102%
	77°F(25°C)	100%
	32°F(0°C)	85%
	5°F(-15°C)	65%
Self-Discharge 77°F(20°C)	Capacity after 3 month storage	91%
	Capacity after 6 month storage	81%
	Capacity after 12 month storage	60%
Max. Discharge Current 77°F(25°C)	800A(5S)	
Terminal	M2	
Charge (Constant Voltage)	Cycle	Initial Charging Current less than 30A Voltage 14.4~14.7V/77°F(25°C)
	Float	Voltage 13.5~13.8V/77°F(25°C)

Relationship between charge voltage and temperature

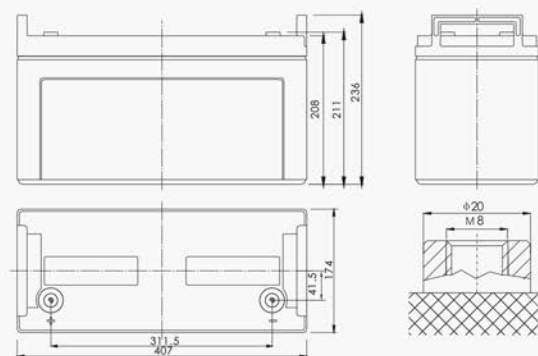


Constant Power Discharge (WATTS @25°C)

Cut off voltage v/cell	1M	5M	10M	15M	30M	45M	1h	2h	3h	5h	8h	10h	12h	24h
1.60V	625	571	394	307	191	148	119	70.0	49.1	32.4	22.9	18.3	15.7	8.11
1.65V	617	542	389	304	185	146	115	69.1	49	32.2	22.8	18.2	15.6	8.1
1.67V	610	540	386	302	173	144	114	68.8	48.6	31.9	22.7	18.2	15.5	8.09
1.70V	602	506	379	291	162	142	111	68.4	47.7	31.6	22.3	18.1	15.4	8.07
1.75V	541	461	346	274	156	141	108	67.9	46.4	31.0	21.7	18.0	15.3	8.06
1.80V	496	423	330	264	151	138	107	66.6	46.1	30.5	21.4	17.7	15.2	8.04
1.85V	398	339	273	231	141	127	104	64.2	45.0	29.5	20.1	16.9	14.4	7.62

6-FM-120A

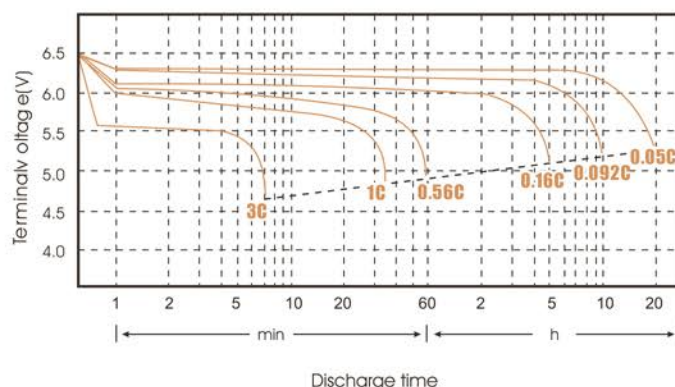
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Specifications

Nominal Voltage		12V
Rated Capacity(20 hour rate)		120Ah
Dimensions	Total Height (with terminals)	9.29inches (236mm)
	Height	8.19inches (208mm)
	Length	16.02inches (407mm)
	Width	6.85inches (174mm)
Weight		Approx. 77pound(35kg)

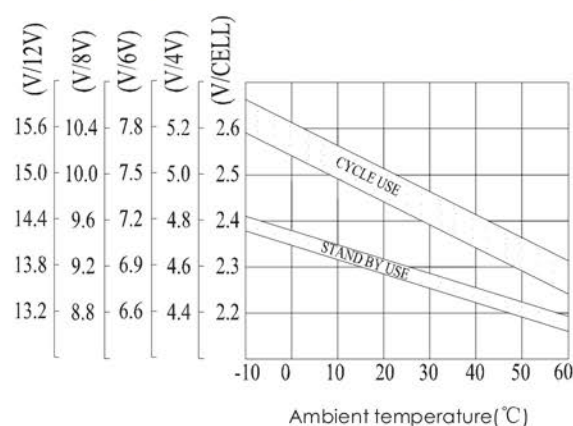
Discharge Curves 77°F(25°C)



Characteristics

Capacity 77°F(25°C)	20 hour rate (5.0A) 10 hour rate (9.2A) 5 hour rate (16.0A) 1 hour rate (60.0A)	100Ah 92Ah 80Ah 60Ah
	15 minute Rate(164A)	41Ah
Internal Resistance	Full charged Battery 77°F(25°C)	4.5mΩ
Capacity affected by Temperature (20 hour rate)	104°F(40°C)	102%
	77°F(25°C)	100%
	32°F(0°C)	85%
	5°F(-15°C)	65%
Self-Discharge 77°F(20°C)	Capacity after 3 month storage	91%
	Capacity after 6 month storage	81%
	Capacity after 12 month storage	60%
Max. Discharge Current 77°F(25°C)	800A(5S)	
Terminal	M3	
Charge (Constant Voltage)	Cycle	Initial Charging Current less than 30A Voltage 14.4~14.7V/77°F(25°C)
	Float	Voltage 13.5~13.8V/77°F(25°C)

Relationship between charge voltage and temperature

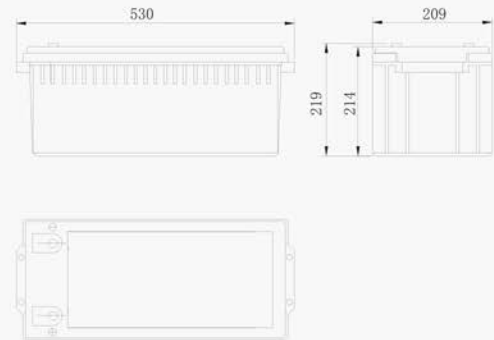


Constant Power Discharge (WATTS @25°C)

Cut off voltage v/cell	1M	5M	10M	15M	30M	45M	1h	2h	3h	5h	8h	10h	12h	24h
1.60V	750	685	473	368	229	178	143	84.0	58.9	38.9	27.5	22.0	18.8	9.73
1.65V	740	650	467	365	222	175	138	82.9	58.8	38.6	27.4	21.8	18.7	9.72
1.67V	732	648	463	362	208	173	137	82.6	58.3	38.3	27.2	21.8	18.6	9.71
1.70V	722	607	455	349	194	170	133	82.1	57.2	37.9	26.8	21.7	18.5	9.68
1.75V	649	553	415	329	187	169	130	81.5	55.7	37.2	26.0	21.6	18.4	9.67
1.80V	595	508	396	317	181	166	128	79.9	55.3	36.6	25.7	21.2	18.3	9.65
1.85V	477	407	328	277	169	152	125	77.0	54.0	35.4	24.1	20.3	17.3	9.14

6-FM-150A

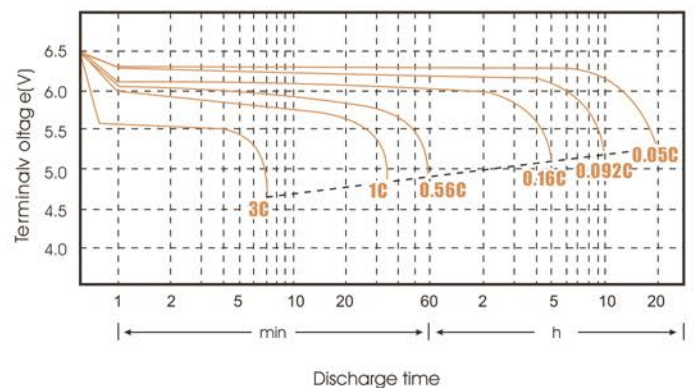
MAKELSAN®
Uninterruptible Power Supplies



Specifications

Nominal Voltage		12V
Rated Capacity(20 hour rate)		150Ah
Dimensions	Total Height (with terminals)	8.62inches (219mm)
	Height	8.43inches (214mm)
	Length	20.87inches(530mm)
	Width	8.23inches (209mm)
Weight		Approx. 105.6Pound (48 kg)

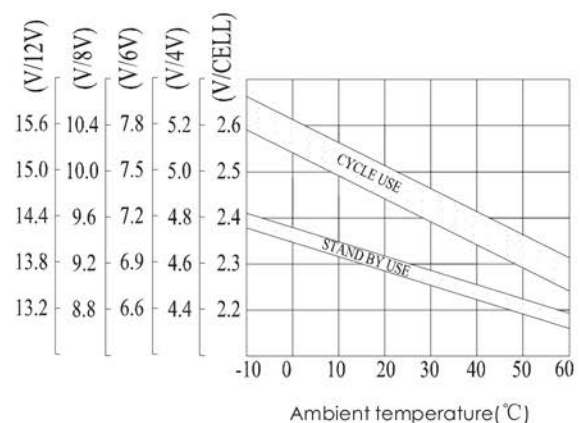
Discharge Curves 77°F(25°C)



Characteristics

Capacity 77°F(25°C)	20 hour rate (7.5A)	150Ah
	10 hour rate (13.8A)	138Ah
	5 hour rate (24.0A)	120Ah
	1 hour rate (90.0A)	90Ah
	15 minute Rate (246A)	61.5Ah
Internal Resistance	Full charged Battery 77°F(25°C)	3.0mΩ
Capacity affected by Temperature (20 hour rate)	104°F(40°C)	102%
	77°F(25°C)	100%
	32°F(0°C)	85%
	5°F(-15°C)	65%
Self-Discharge 77°F(20°C)	Capacity after 3 monthstorage	91%
	Capacity after 6 monthstorage	81%
	Capacity after 12 monthstorage	60%
Max. Discharge Current 77°F(25°C)	1000A(5S)	
Terminal	M5	
Charge (Constant Voltage)	Cycle	Initial Charging Current less than 45A Voltage 14.4~14.7V/77°F(25°C)
	Float	Voltage 13.5~13.8V/77°F(25°C)

Relationship between charge voltage and temperature

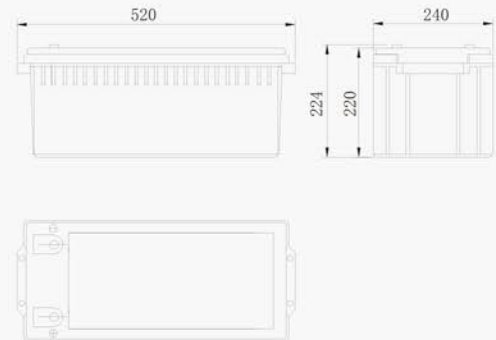


Constant Power Discharge (WATTS @25°C)

Cut off voltage v/cell	1M	5M	10M	15M	30M	45M	1h	2h	3h	5h	8h	10h	12h	24h
1.60V	843	821	583	454	286	219	178	106	73.7	48.6	33.5	27.8	23.7	12.2
1.65V	821	804	576	451	282	217	175	104	72.0	48.1	33.4	27.6	23.6	12.1
1.67V	811	801	571	450	276	213	172	103	71.3	47.8	33.3	27.5	23.5	12.0
1.70V	801	757	560	441	247	210	168	102	70.4	47.1	33.1	27.2	23.3	11.9
1.75V	731	691	519	411	234	208	162	101	69.6	46.5	32.5	27.0	23.1	11.8
1.80V	660	626	487	391	214	205	159	100	68.7	45.2	32.1	26.5	22.9	11.6
1.85V	530	501	404	342	208	188	148	95.5	67.8	44.0	29.9	25.2	21.4	11.4

6-FM-200

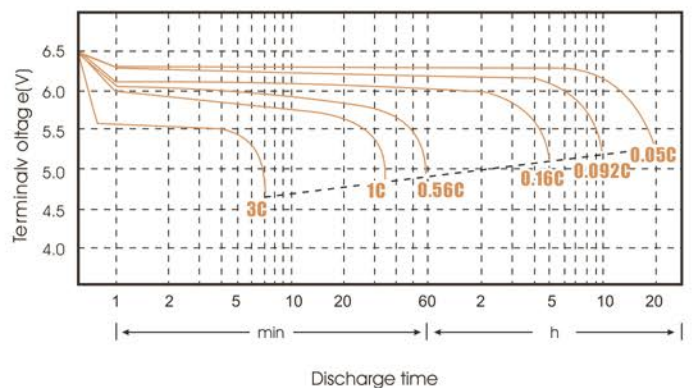
MAKELSAN®
Uninterruptible Power Supplies



Specifications

Nominal Voltage		12V
Rated Capacity(20 hour rate)		200Ah
Dimensions	Total Height (with terminals)	8.82inches (224mm)
	Height	8.66inches (220mm)
	Length	20.47inches(520mm)
	Width	9.45inches (240mm)
Weight		Approx. 127.6Pound (58kg)

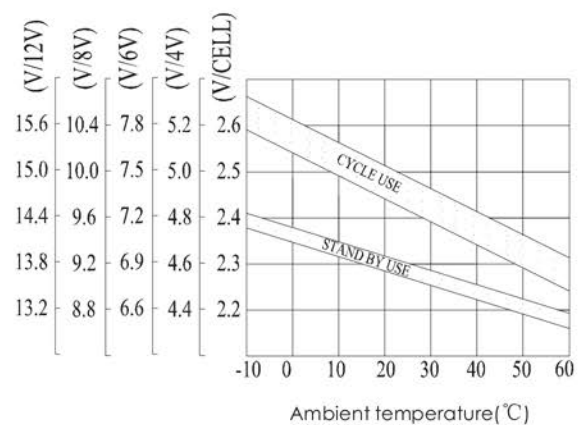
Discharge Curves 77°F(25°C)



Characteristics

Capacity 77°F(25°C)	20 hour rate (10.0A)	200Ah
	10 hour rate (18.4A)	184Ah
	5 hour rate (32.0A)	160Ah
	1 hour rate (120.0A)	120Ah
	15 minute Rate (328A)	82.0Ah
Internal Resistance	Full charged Battery 77°F(25°C)	3.0mΩ
Capacity affected by Temperature (20 hour rate)	104°F(40°C)	102%
	77°F(25°C)	100%
	32°F(0°C)	85%
	5°F(-15°C)	65%
Self-Discharge 77°F(20°C)	Capacity after 3 month storage	91%
	Capacity after 6 month storage	81%
	Capacity after 12 month storage	60%
Max. Discharge Current 77°F(25°C)	1333A(5S)	
Terminal	M3	
Charge (Constant Voltage)	Cycle	Initial Charging Current less than 60A Voltage 14.4~14.7V/77°F(25°C)
	Float	Voltage 13.5~13.8V/77°F(25°C)

Relationship between charge voltage and temperature



Constant Power Discharge (WATTS @25°C)

Cut off voltage v/cell	1M	5M	10M	15M	30M	45M	1h	2h	3h	5h	8h	10h	12h	24h
1.60V	1124	985	697	545	349	263	231	138	95.8	63.2	43.5	37.3	30.8	15.8
1.65V	1096	965	691	541	343	260	228	136	94.6	63.0	43.3	36.8	30.6	15.6
1.67V	1082	961	685	540	338	256	223	135	94.0	62.8	43.2	36.2	30.5	15.5
1.70V	1068	908	672	529	331	252	219	134	93.2	62.6	43.0	36.0	30.3	15.4
1.75V	976	836	629	499	296	250	216	133	92.8	62.0	42.5	35.1	30.0	15.3
1.80V	881	751	584	469	281	246	211	130	92.1	61.4	41.7	34.4	29.8	15.1
1.85V	707	601	485	410	257	226	207	124	89.3	57.2	38.9	32.8	27.8	14.8