

SL. NO.	DESCRIPTION		DETAILS	
1 (a) (i) (ii)	Capacity in Ah At 27 ° C Initial Rated		80 80	
(iii)	End of Life		64	
(b)	Rated Capacity(in Ah) at minimum ambient temperature of (as per IS 15549 : 2005)		Formula : Ct = { 1+ 0.0043 (t-27) }	
(c)	Rated Capacity(in Ah) at maximum ambient temperature of (as per IS 15549 : 2005)		Formula : Ct = { 1+ 0.0043 (t-27) }	
2 (Capacity at Various Discharge Rates at 27°C			
	Period of Discharge	Ah capacities	Discharge Current (Amps)	End Cell Voltage (Volts)
3 0	10Hr 9Hr 8Hr 7Hr 6Hr 5Hr 4Hr 3Hr 2Hr 1Hr 50 min 40 min 30 min 20 min 15 min 10 min 5 min 1 min Maximum Momentary Current for 1 min upto cut off voltage of 1.6 V Expected Fault current at bus due to battery Short Circuit Current at Battery terminals	80.00 78.32 76.00 73.36 70.32 66.64 62.56 57.36 50.64 40.00 37.36 34.40 32.00 28.80 23.90 17.46 9.83 2.94	8.0 8.7 9.5 10.5 11.7 13.3 15.6 19.1 25.3 40.0 44.8 51.7 64.0 86.5 95.6 105.2 118.0 176.9	1.75 1.75 1.75 1.75 1.75 1.75 1.74 1.74 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7
5 (ii)	Time for which the battery can withstand short circuit at terminals		5 Sec	лпрэ
6	Type/No. of Negative Plates per cell		Flat pasted; 1(I) + 2(E)	
7	Type/No. of Positive Plates per cell		Flat pasted;2	
8 \$	Size of negative plates, mm		315(L) x 140(W) x 2.65 (+/- 1) (Thk) (Inter) 315(L) x 140(W) x 1.9 (+/- 1) (Thk) (End)	
9 9	Size of positive plates, mm		315(L) x 140(W) x 4.5 (+/- 1) (Thk)	
10	Type of Connection between cells		Bolted rigid copper connectors	
11	Type of Separators		Absorptive glass mat	
12	Thickness of Separators		4.2 (2 layers of 2.1 mm each)	
13 [Dimensison of 2 volts cell (LXWXH), mm		159 (+/-3) x 62 (+/-3) x 396 (+/- 5 mm)	
	Clearance between the bottom of the plates and container		5 mm	
15	Material of Container		Polypropylene Co-polymer	

10	December 1010 and a Defe		
16	8 8		
(i)			EXIDE
	between ambient temp. (-)5-14 ° C	2.27 +/- 0.02 VPC	INDUSTRIES LIMITED
	between ambient temp. 15-24 ° C	2.25 +/- 0.02 VPC	
	between ambient temp. 25-34 ° C	2.23 +/- 0.02 VPC	
	between ambient temp. 35-40 ° C	2.20 +/- 0.02 VPC	
(ii)		12	Amps (Max)
(11)		NA	Amps (wax)
(iii)			
(iv)		NA	
(v)		2.35	Volts
(vi)	Boost Charging Current	16	Amps.
(vii)	Time taken to full charge from 100%	72 Hrs (Min)	
. ,	discharge state by constant voltage	2.1 volts(ocv)	
	charging & voltage at the end of this charge	211 (010(001))	
(14111)		NA	
(viii)	Equalising Charging Current, voltage	NA NA	
17	Guaranteed efficiencies at 10 hrs rate		
	(a) Ampere-hour efficiency	90%	
	(b) Watt-hour efficiency	80%	
	(-)		
10	Allowable voltage ripple	1.5 % RMS of the charging voltage(Bulk charging)	
10	Allowable voltage lipple	0.5 % RMS of the charging voltage(Buik charging)	
		0.5 % RIVIS of the charging voltage(Float charging)	
19	Internal Resistance of each cell at		
	Fully Charged Condition	0.91	milli ohms min
20	Total Resistance of Battery ; milliohms	Depending on system layout drawing	
21	Overall Dimensions of each complete	Length 758 +/- 5, Width 450 +/- 5, Height 235 +/- 5	
21			
	module (LxWxH) in mm	(12 cell module)	
22	Weight of unpacked and complete module	92.85 +/- 5% Kgs (Single 12 cell module)	
	with electrolyte ; Kgs		
23	Material of Modules	Powder coated MS	
24	Whether explosion vents are offered	Yes, self re-sealing rubber safety valve with flame arrestor	
25	Loss of capacity due to solf discharge	< 0.5% per week of c-10 capacity	
25	Loss of capacity due to self discharge	< 0.5% per week of c-10 capacity	
26	The period for which the battery should be	If stored in Indian ambient temp of 30 deg C	
	stored after supply in charged conditions	cells will need freshning charge once	
		in every three months, however if stored	
		at higher or lower temperature freshning	
		charge to be provided as recommended.	
		shalige to be provided do recommended.	
27	Amount of Hydrogen evolved during normal	Less than 200ppm	
	normal float charging	normal float condition	
		1	
28	Recommended interval at which battery	Once annually	
	should be discharged at 10 hr discharge rate	,	
I			
	No. of charge discharge such bettery con		
29	No. of charge-discharge cycle battery can	1	
	give during its entire life		
	at 20% DOD	4000 cycles	
	at 50% DOD	1800 cycles	
	at 80% DOD	1400 cycles	
30	Expected Life of Battery in years	20 Yrs at 27 deg C in ideal float condition.	
P	•		
		IEC 60896 - 21 & 22,	
		IIS C 8704-2 1998	

		IEC 60896 - 21 & 22, JIS : C 8704-2, : 1998
31	Applicable standard	ANSI T1 330,
		GR/BAT-01/03-MARCH 2004,
		IS 15549 : 2005



1Capacity in Ah(a)At 27 ° C(i)Initial(ii)Rated(iii)Rated(iii)End of Life96	
(iii) End of Life 96	
(b) Rated Capacity(in Ah) at minimum Formula : Ct = { 1+ 0.0043 (t-27) } ambient temperature of (as per IS 15549 : 2005)	
(c) Rated Capacity(in Ah) at maximum Formula : Ct = { 1+ 0.0043 (t-27) } ambient temperature of (as per IS 15549 : 2005)	
2 Capacity at Various Discharge Rates at 27°C	
Period of Discharge Ah capacities Discharge Current (Amps)	End Cell Voltage (Volts)
10Hr 120.00 12.0 9Hr 117.48 13.1 8Hr 114.00 14.3 7Hr 110.04 15.7 6Hr 105.48 17.6 5Hr 99.96 20.0 4Hr 93.84 23.5 3Hr 86.04 28.7 2Hr 75.96 38.0 1Hr 60.00 60.0 50 min 56.04 67.3 40 min 51.60 77.5 30 min 48.00 96.0 20 min 43.20 129.7 15 min 35.84 143.4 10 min 26.20 157.8 5 min 14.75 177.0 1 min 4.40 265.3	1.75 1.75 1.75 1.75 1.75 1.75 1.74 1.74 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7
4 Expected Fault at bus due to battery 720	Amps
5 (i)Short Circuit Current at Battery terminals7205 (ii)Time for which the battery can withstand5 Secshort circuit at terminals5 Sec	Amps
6 Type/No. of Negative Plates per cell Flat pasted; 2(I) + 2(E)	
7 Type/No. of Positive Plates per cell Flat pasted;3	
8 Size of negative plates, mm 315(L) x 140(W) x 2.65 (+/- 1) (Thk) (Inter) 315(L) x 140(W) x 1.9 (+/- 1) (Thk) (End)	
9 Size of positive plates, mm 315(L) x 140(W) x 4.5 (+/- 1) (Thk)	
10 Type of Connection between cells Bolted rigid copper connectors	
11 Type of Separators Absorptive glass mat	
12 Thickness of Separators 4.2 (2 layers of 2.1 mm each)	
13 Dimensison of 2 volts cell (LXWXH), mm 159 (+/-3) x 62 (+/-3) x 396 (+/- 5 mm)	
14 Clearance between the bottom of the plates and container 5 mm	
15 Material of Container Polypropylene Co-polymer	

16 (i) (iii) (iii) (iv) (v) (vi) (vii) (viii) 17	Recommended Charging Rate Float Charging Voltage between ambient temp. (-)5-14 ° C between ambient temp. 15-24 ° C between ambient temp. 25-34 ° C between ambient temp. 35-40 ° C Float Charging Current Trickle Charging Voltage Trickle Charging Voltage Boost Charging Voltage Boost Charging Voltage Boost Charging Voltage Boost Charging Current Time taken to full charge from 100% discharge state by constant voltage charging & voltage at the end of this charge Equalising Charging Current;Voltage Guaranteed efficiencies at 10 hrs rate (a) Ampere-hour efficiency (b) Watt-hour efficiency	2.27 +/- 0.02 VPC 2.25 +/- 0.02 VPC 2.23 +/- 0.02 VPC 2.20 +/- 0.02 VPC 18 NA 2.35 24 72 Hrs (Min) 2.1 volts(ocv) NA 90% 80%	Amps (Max) Volts Amps.
18	Allowable voltage ripple	1.5 % RMS of the charging voltage(Bulk charging)0.5 % RMS of the charging voltage(Float charging)	
	Internal Resistance of each cell at Fully Charged Condition	1.34	milli ohms min
20	Total Resistance of Battery ; milliohms	Depending on no. of cells	
	Overall Dimensions of each complete module (LxWxH) in mm	Length 758 +/- 5, Width 450 +/- 5, Height 235 +/- 5 (12 cell module)	
	Weight of unpacked and complete module with electrolyte ; Kgs	118.05 +/- 5% Kgs (Single 12 cell module)	
23	Material of Modules	Powder coated MS	
24	Whether explosion vents are offered	Yes, self re-sealing rubber safety valve with flame arrestor	
25	Loss of capacity due to self discharge	< 0.5% per week of c-10 capacity	
	The period for which the battery should be stored after supply in charged conditions	If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended.	
	Amount of Hydrogen evolved during normal normal float charging	Less than 200ppm normal float condition	
	Recommended interval at which battery should be discharged at 10 hr discharge rate	Once annually	
29	No. of charge-discharge cycle battery can		
	give during its entire life at 20% DOD at 50% DOD at 80% DOD	4000 cycles 1800 cycles 1400 cycles	
30	Expected Life of Battery in years	20 Yrs at 27 deg C in ideal float condition.	
31	Applicable standard	IEC 60896 - 21 & 22, JIS : C 8704-2, : 1998 ANSI T1 330, GR/BAT-01/03-MARCH 2004, IS 15549 : 2005	



SL. NO.	DESCRIPTION		DETAILS	
1 (a) (i) (ii)	Capacity in Ah At 27 ° C Initial Rated		80 80	
(iii)	End of Life		64	
(b)	Rated Capacity(in Ah) at minimum ambient temperature of (as per IS 15549 : 2005)		Formula : Ct = { 1+ 0.0043 (t-27) }	
(c)	Rated Capacity(in Ah) at maximum ambient temperature of (as per IS 15549 : 2005)		Formula : Ct = { 1+ 0.0043 (t-27) }	
2 (Capacity at Various Discharge Rates at 27°C			
	Period of Discharge	Ah capacities	Discharge Current (Amps)	End Cell Voltage (Volts)
3 0	10Hr 9Hr 8Hr 7Hr 6Hr 5Hr 4Hr 3Hr 2Hr 1Hr 50 min 40 min 30 min 20 min 15 min 10 min 5 min 1 min Maximum Momentary Current for 1 min upto cut off voltage of 1.6 V Expected Fault current at bus due to battery Short Circuit Current at Battery terminals	80.00 78.32 76.00 73.36 70.32 66.64 62.56 57.36 50.64 40.00 37.36 34.40 32.00 28.80 23.90 17.46 9.83 2.94	8.0 8.7 9.5 10.5 11.7 13.3 15.6 19.1 25.3 40.0 44.8 51.7 64.0 86.5 95.6 105.2 118.0 176.9	1.75 1.75 1.75 1.75 1.75 1.75 1.74 1.74 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7
5 (ii)	Time for which the battery can withstand short circuit at terminals		5 Sec	лпрэ
6	Type/No. of Negative Plates per cell		Flat pasted; 1(I) + 2(E)	
7	Type/No. of Positive Plates per cell		Flat pasted;2	
8 \$	Size of negative plates, mm		315(L) x 140(W) x 2.65 (+/- 1) (Thk) (Inter) 315(L) x 140(W) x 1.9 (+/- 1) (Thk) (End)	
9 9	Size of positive plates, mm		315(L) x 140(W) x 4.5 (+/- 1) (Thk)	
10	Type of Connection between cells		Bolted rigid copper connectors	
11	Type of Separators		Absorptive glass mat	
12	Thickness of Separators		4.2 (2 layers of 2.1 mm each)	
13 [Dimensison of 2 volts cell (LXWXH), mm		159 (+/-3) x 62 (+/-3) x 396 (+/- 5 mm)	
	Clearance between the bottom of the plates and container		5 mm	
15	Material of Container		Polypropylene Co-polymer	

10	December 1010 and a Defe		
16	8 8		
(i)			EXIDE
	between ambient temp. (-)5-14 ° C	2.27 +/- 0.02 VPC	INDUSTRIES LIMITED
	between ambient temp. 15-24 ° C	2.25 +/- 0.02 VPC	
	between ambient temp. 25-34 ° C	2.23 +/- 0.02 VPC	
	between ambient temp. 35-40 ° C	2.20 +/- 0.02 VPC	
(ii)		12	Amps (Max)
(11)		NA	Amps (wax)
(iii)			
(iv)		NA	
(v)		2.35	Volts
(vi)	Boost Charging Current	16	Amps.
(vii)	Time taken to full charge from 100%	72 Hrs (Min)	
. ,	discharge state by constant voltage	2.1 volts(ocv)	
	charging & voltage at the end of this charge	211 (010(001))	
(14111)		NA	
(viii)	Equalising Charging Current, voltage	NA NA	
17	Guaranteed efficiencies at 10 hrs rate		
	(a) Ampere-hour efficiency	90%	
	(b) Watt-hour efficiency	80%	
	(-)		
10	Allowable voltage ripple	1.5 % RMS of the charging voltage(Bulk charging)	
10	Allowable voltage lipple	0.5 % RMS of the charging voltage(Buik charging)	
		0.5 % RIVIS of the charging voltage(Float charging)	
19	Internal Resistance of each cell at		
	Fully Charged Condition	0.91	milli ohms min
20	Total Resistance of Battery ; milliohms	Depending on system layout drawing	
21	Overall Dimensions of each complete	Length 758 +/- 5, Width 450 +/- 5, Height 235 +/- 5	
21			
	module (LxWxH) in mm	(12 cell module)	
22	Weight of unpacked and complete module	92.85 +/- 5% Kgs (Single 12 cell module)	
	with electrolyte ; Kgs		
23	Material of Modules	Powder coated MS	
24	Whether explosion vents are offered	Yes, self re-sealing rubber safety valve with flame arrestor	
25	Loss of capacity due to solf discharge	< 0.5% per week of c-10 capacity	
25	Loss of capacity due to self discharge	< 0.5% per week of c-10 capacity	
26	The period for which the battery should be	If stored in Indian ambient temp of 30 deg C	
	stored after supply in charged conditions	cells will need freshning charge once	
		in every three months, however if stored	
		at higher or lower temperature freshning	
		charge to be provided as recommended.	
		shalige to be provided do recommended.	
27	Amount of Hydrogen evolved during normal	Less than 200ppm	
	normal float charging	normal float condition	
28	Recommended interval at which battery	Once annually	
	should be discharged at 10 hr discharge rate	,	
I			
	No. of charge discharge such bettery con		
29	No. of charge-discharge cycle battery can		
	give during its entire life		
	at 20% DOD	4000 cycles	
	at 50% DOD	1800 cycles	
	at 80% DOD	1400 cycles	
30	Expected Life of Battery in years	20 Yrs at 27 deg C in ideal float condition.	
P	•		
		IEC 60896 - 21 & 22,	
		IIS C 8704-2 1998	

		IEC 60896 - 21 & 22, JIS : C 8704-2, : 1998
31	Applicable standard	ANSI T1 330,
		GR/BAT-01/03-MARCH 2004,
		IS 15549 : 2005



				DUSTRIES LIMITED
SL. NO.	DESCRIPTION		DETAILS	
1	Capacity in Ah			
(a)				
(i)			100	
(ii)			100	
(iii)	End of Life		80	
(b)			Formula : Ct = { 1+ 0.0043 (t-27) }	
	ambient temperature of (as per IS 15549 : 2005)			
(c)	Rated Capacity(in Ah) at maximum		Formula : Ct = { 1+ 0.0043 (t-27) }	
	ambient temperature of (as per IS 15549 : 2005)			-
2	Capacity at Various Discharge Rates at 27°C			
	Davia d of Discharge	A	Discharma Ourrent	F act O a #
	Period of Discharge	Ah capacities	Discharge Current	End Cell
			(Amps)	Voltage
				(Volts)
	4011-	400.00	40.0	4.75
	10Hr	100.00	10.0	1.75
	9Hr	97.90	10.9	1.75
	8Hr	95.00	11.9	1.75
	7Hr	91.70	13.1	1.75
	6Hr	87.90	14.7	1.75
	5Hr	83.30	16.7	1.75
	4Hr	78.20	19.6	1.74
	3Hr	71.70	23.9	1.74
	2Hr	63.30	31.7	1.7
	1Hr	50.00	50.0	1.7
	50 min	46.70	56.1	1.7
	40 min	43.00	64.6	1.7
	30 min	40.00	80.0	1.7
	20 min	36.00	108.1	1.7
	15 min	29.87	119.5	1.7
	10 min	21.83	131.5	1.7
	5 min	12.29	147.5	1.7
	1 min	3.67	221.1	1.7
	Maximum Mamantany Current for 1 min unto out off voltage			-
	Maximum Momentary Current for 1 min upto cut off voltage of 1.6 V		300	Amps
3	011.6 V			
4	Expected Fault at hus due to bottony		600	Amno
4	Expected Fault at bus due to battery		000	Amps
E (i)	Short Circuit Current at Battery terminals		600	Amos
5 (I) 5 (ii)	Time for which the battery can withstand		5 Sec	Amps
5 (II)	short circuit at terminals		0.000	
L	onon onour at terminalo			
6	Type/No. of Negative Plates per cell		Flat pasted;8	
0	Typerrie. Of Megalive Flates per cell		i iui puoliou,0	
7	Type/No. of Positive Plates per cell		Flat pasted;7	
· · · ·	Typorto. OF TOSILIVE TIALES PER CEIL		i iui puoliou, i	
Q	Size of negative plates, mm		176.5(L) x 148(W) x 1.85 (+/- 1) (Thk)	
0	orze or negative plates, min		$(10.0(E) \times 170(W) \times 1.00(T^{2} I)(11K)$	
0	Size of positive plates, mm		176.5(L) x 148(W) x 2.8 (+/- 1) (Thk)	
9			$(10.0(E) \land 170(W) \land 2.0(T)^{-1})(11K)$	
10	Type of Connection between cells		Bolted rigid copper connectors	
10				
11	Type of Separators		Absorptive glass mat	
1	i ype of Oeparators		Ausorphive glass mai	
10	Thickness of Separators		4.2 (2 layers of 2.1 mm each)	
12	THICKNESS OF SEPARATORS		T.2 (2 19/013 01 2.1 11111 Cali)	
10	Dimensison of 2 volts cell (LXWXH), mm		163.5 (+/-3) x 65.5 (+/-3) x 233.5 (+/- 5 mm)	
13			103.3 (+/- 3) X 03.3 (+/-3) X 233.3 (+/- 3 IIIIII)	
1/	Material of Container		Polypropylene Co-polymer	
14	matchar of Container			

15 Recommended Charging Rate (i) Float Charging Voltage between ambient temp. (-)5-14 ° C 2.27 +/- 0.02 VPC between ambient temp. 15-24 ° C 2.25 +/- 0.02 VPC between ambient temp. 25-34 ° C 2.23 +/- 0.02 VPC between ambient temp. 35-40 ° C 2.20 +/- 0.02 VPC (ii) Float Charging Current 15 (iii) Trickle Charging Current 15 (iv) Trickle Charging Current NA (iv) Trickle Charging Current 2.35 (vi) Boost Charging Current 20 (vii) Time taken to full charge from 100% 72 Hrs (Min) discharge state by constant voltage 2.1 volts(ocv) charging & voltage at the end of this charge NA	Amps (Max)
between ambient temp. (-)5-14 ° C2.27 +/- 0.02 VPCbetween ambient temp. 15-24 ° C2.25 +/- 0.02 VPCbetween ambient temp. 25-34 ° C2.23 +/- 0.02 VPCbetween ambient temp. 35-40 ° C2.20 +/- 0.02 VPCbetween ambient temp. 35-40 ° C2.20 +/- 0.02 VPC(iii)Float Charging Current15(iiii)Trickle Charging VoltageNA(iv)Trickle Charging CurrentNA(v)Boost Charging Current20(vi)Boost Charging Current20(vii)Time taken to full charge from 100% charging & voltage at the end of this charge charging & voltage at the end of this charge2.1 volts(ocv)(viii)Equalising Charging Current; VoltageNA	
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(ii)Float Charging Current15(iii)Trickle Charging VoltageNA(iv)Trickle Charging CurrentNA(iv)Boost Charging Current2.35(vi)Boost Charging Current20(vii)Time taken to full charge from 100%72 Hrs (Min)discharge state by constant voltage2.1 volts(ocv)charging & voltage at the end of this chargeNA(viii)Equalising Charging Current; VoltageNA	
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charging & voltage at the end of this charge(viii)Equalising Charging Current; VoltageNA	
(viii) Equalising Charging Current;Voltage NA	
16 Guaranteed efficiencies at 10 hrs rate	
(a) Ampere-hour efficiency 90%	
(b) Watt-hour efficiency 80%	
17 Allowable voltage ripple 1.5 % RMS of the charging voltage(Bulk charging	a)
0.5 % RMS of the charging voltage(Float charging	
	.9/
18 Internal Resistance of each cell at	
Fully Charged Condition 0.91	milli ohms min
19 Total Resistance of Battery ; milliohms Depending on no. of cells	
20 Resistance of inter cell connectors;milliohms Depending on no. of cells	
21 Overall Dimensions of each complete Depending on system voltage battery bank (HxWxL) in mm	
22 Overall Dimensions of each complete Length 769 +/- 5, Width 243 +/- 5, Height 247 +.	/- 5
module (LxWxH) in mm (12 cells module)	
22 Weight of upperland and complete method	
23 Weight of unpacked and complete module with electrolyte ; Kgs 82.2 +/- 5% Kgs (Single 12 cell module)	
with electrolyte, rgs (clingle 12 cell module)	
24 Material of Modules Powder coated MS	
25 Whether explosion vents are offered Yes, self re-sealing rubber safety valve with flam	ne arrestor
26 Loss of capacity due to self discharge < 0.5% per week of c-10 capacity	
20 LOSS Of capacity due to sell discharge < 0.5% per week of 0-10 capacity	
27 The period for which the battery should be If stored in Indian ambient temp of 30 deg C	
stored after supply in charged conditions cells will need freshning charge once	
in every three months, however if stored	
at higher or lower temperature freshning	
charge to be provided as recommended.	
28 Amount of Hydrogen evolved during normal Less than 200ppm	
normal float charging normal float condition	
29 Recommended interval at which battery Once annually	
should be discharged at 10 hr discharge rate	
30 No. of charge-discharge cycle battery can	
give during its entire life	
at 20% DOD 2000 cycles	
at 50% DOD 900 cycles	
at 80% DOD 700 cycles	
at 80% DOD 700 cycles	
at 80% DOD 700 cycles	
at 80% DOD 700 cycles	
at 80% DOD 700 cycles 31 Expected Life of Battery in years 10 Yrs at 27 deg C in ideal float condition. IEC 60896 - 21 & 22, JIS : C 8704-2, : 1998	
at 80% DOD 700 cycles 31 Expected Life of Battery in years 10 Yrs at 27 deg C in ideal float condition. IEC 60896 - 21 & 22, JIS : C 8704-2, : 1998 ANSI T1 330,	
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SL. NO. DESCRIPTION DETAILS (a) (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c		GENERAL TECHNICAL PARTICULARS	<u>UF31 120</u>		
Image: Capacity in Ah At 27 * C Bit Instal Rates 120 120 120 120 120 120 120 120 120 120	SL. NO.	DESCRIPTION		DETAILS	
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(iii) End of Life 96 (b) Rede Capacity(in Ah) at minimum ambient temperature of (a sport IS 1564): 2005) Formula : Ci = (1+ 0.0043 (i:27)) (c) Reted Capacity(in Ah) at maximum ambient temperature of (a sport IS 1564): 2005) Formula : Ci = (1+ 0.0043 (i:27)) 2 Capacity at Various Discharge Rates at 27*C Ah capacities Discharge Current (Amps) End cLil (Voltage (Voltage) 3 10Hr 12.0.00 12.0 1.75 9 10Hr 12.0.00 1.75 9 114.00 1.57 1.75 9 114.00 1.57 1.75 9 104.4 17.6 1.75 9 98.6 20.0 1.77 9 98.6 20.0 1.74 9 98.6 20.0 1.71 9 99.6 3.0 1.71 9 99.6 20.0 1.71 9 9.6 20.0 1.71 9 90.0 96.0 1.71 9 90.0 96.0					
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5 (i) Short Circuit Current at Battery terminals 720 Amps 5 (ii) Short Circuit Current at Battery terminals 5 Sec Amps 6 Type/No. of Negative Plates per cell Flat pasted;9 Flat pasted;8 7 Type/No. of Positive Plates per cell Flat pasted;8 8 Size of negative plates, mm 181.5(L) x 148(W) x 1.85 (+/- 1) (Thk) 9 Size of positive plates, mm 181.5(L) x 148(W) x 2.8 (+/- 1) (Thk) 10 Type of Connection between cells Bolted rigid copper connectors 11 Type of Separators Absorptive glass mat 12 Thickness of Separators 4.4 (2 layers of 2.2 mm each) 13 Dimensison of 2 volts cell (LXWXH), mm 167.0 (+/-3) x 76 (+/-3) x 236 (+/- 5 mm)	4	Expected Fault at hus due to botton		720	Amno
5 (ii) Time for which the battery can withstand short circuit at terminals 5 Sec 6 Type/No. of Negative Plates per cell Flat pasted;9 7 Type/No. of Positive Plates per cell Flat pasted;8 8 Size of negative plates, mm 181.5(L) x 148(W) x 1.85 (+/- 1) (Thk) 9 Size of positive plates, mm 181.5(L) x 148(W) x 2.8 (+/- 1) (Thk) 10 Type of Connection between cells Bolted rigid copper connectors 11 Type of Separators Absorptive glass mat 12 Thickness of Separators 4.4 (2 layers of 2.2 mm each) 13 Dimensison of 2 volts cell (LXWXH), mm 167.0 (+/-3) x 76 (+/-3) x 236 (+/- 5 mm)	4	Expected 1 aut at bus due to battery		120	Ашра
5 (ii) Time for which the battery can withstand short circuit at terminals 5 Sec 6 Type/No. of Negative Plates per cell Flat pasted;9 7 Type/No. of Positive Plates per cell Flat pasted;8 8 Size of negative plates, mm 181.5(L) x 148(W) x 1.85 (+/- 1) (Thk) 9 Size of positive plates, mm 181.5(L) x 148(W) x 2.8 (+/- 1) (Thk) 10 Type of Connection between cells Bolted rigid copper connectors 11 Type of Separators Absorptive glass mat 12 Thickness of Separators 4.4 (2 layers of 2.2 mm each) 13 Dimensison of 2 volts cell (LXWXH), mm 167.0 (+/-3) x 76 (+/-3) x 236 (+/- 5 mm)	5 (i)	Short Circuit Current at Battery terminals		720	Amps
short circuit at terminals Flat pasted;9 6 Type/No. of Negative Plates per cell Flat pasted;9 7 Type/No. of Positive Plates per cell Flat pasted;8 8 Size of negative plates, mm 181.5(L) x 148(W) x 1.85 (+/- 1) (Thk) 9 Size of positive plates, mm 181.5(L) x 148(W) x 2.8 (+/- 1) (Thk) 10 Type of Connection between cells Bolted rigid copper connectors 11 Type of Separators Absorptive glass mat 12 Thickness of Separators 4.4 (2 layers of 2.2 mm each) 13 Dimensison of 2 volts cell (LXWXH), mm 167.0 (+/-3) x 76 (+/-3) x 236 (+/- 5 mm)					,po
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8Size of negative plates, mm181.5(L) x 148(W) x 1.85 (+/- 1) (Thk)9Size of positive plates, mm181.5(L) x 148(W) x 2.8 (+/- 1) (Thk)10Type of Connection between cellsBolted rigid copper connectors11Type of SeparatorsAbsorptive glass mat12Thickness of Separators4.4 (2 layers of 2.2 mm each)13Dimensison of 2 volts cell (LXWXH), mm167.0 (+/-3) x 76 (+/-3) x 236 (+/- 5 mm)	-				
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10Type of Connection between cellsBolted rigid copper connectors11Type of SeparatorsAbsorptive glass mat12Thickness of Separators4.4 (2 layers of 2.2 mm each)13Dimensison of 2 volts cell (LXWXH), mm167.0 (+/-3) x 76 (+/-3) x 236 (+/- 5 mm)	8	Size of negative plates, mm		181.5(L) x 148(W) x 1.85 (+/- 1) (Thk)	
10Type of Connection between cellsBolted rigid copper connectors11Type of SeparatorsAbsorptive glass mat12Thickness of Separators4.4 (2 layers of 2.2 mm each)13Dimensison of 2 volts cell (LXWXH), mm167.0 (+/-3) x 76 (+/-3) x 236 (+/- 5 mm)					
11Type of SeparatorsAbsorptive glass mat12Thickness of Separators4.4 (2 layers of 2.2 mm each)13Dimensison of 2 volts cell (LXWXH), mm167.0 (+/-3) x 76 (+/-3) x 236 (+/- 5 mm)	9	Size of positive plates, mm		181.5(L) x 148(W) x 2.8 (+/- 1) (Thk)	
12 Thickness of Separators 4.4 (2 layers of 2.2 mm each) 13 Dimensison of 2 volts cell (LXWXH), mm 167.0 (+/-3) x 76 (+/-3) x 236 (+/- 5 mm)	10	Type of Connection between cells		Bolted rigid copper connectors	
12 Thickness of Separators 4.4 (2 layers of 2.2 mm each) 13 Dimensison of 2 volts cell (LXWXH), mm 167.0 (+/-3) x 76 (+/-3) x 236 (+/- 5 mm)	11	Type of Senarators		Absorptive class mat	
13 Dimensison of 2 volts cell (LXWXH), mm 167.0 (+/-3) x 76 (+/-3) x 236 (+/- 5 mm)					
	12	Thickness of Separators		4.4 (2 layers of 2.2 mm each)	
14 Material of Container Polypropylene Co-polymer	13	Dimensison of 2 volts cell (LXWXH), mm		167.0 (+/-3) x 76 (+/-3) x 236 (+/- 5 mm)	
i officiella de politica	14	Material of Container		Polypropylene Co-polymer	

EXIDE

15 (i)	between ambient temp. (-)5-14 ° C	2.27 +/- 0.02 VPC	EXIDE
	between ambient temp. 15-24 ° C between ambient temp. 25-34 ° C between ambient temp. 35-40 ° C	2.25 +/- 0.02 VPC 2.23 +/- 0.02 VPC 2.20 +/- 0.02 VPC	
(ii) (iii) (iv)	Trickle Charging Voltage	18 NA NA	Amps (Max)
(v)	Boost Charging Voltage	2.35	Volts
(vi) (vii)		24 72 Hrs (Min)	Amps.
()	discharge state by constant voltage	2.1 volts(ocv)	
(viii)	charging & voltage at the end of this charge Equalising Charging Current;Voltage	NA	
16	Guaranteed efficiencies at 10 hrs rate (a) Ampere-hour efficiency (b) Watt-hour efficiency	90% 80%	
17	Allowable voltage ripple	1.5 % RMS of the charging voltage(Bulk charging)0.5 % RMS of the charging voltage(Float charging)	
18	Internal Resistance of each cell at Fully Charged Condition	1.34	milli ohms min
19	Total Resistance of Battery ; milliohms	Depending on no. of cells	
20	Resistance of inter cell connectors;milliohms	Depending on no. of cells	
21	Overall Dimensions of each complete battery bank (HxWxL) in mm	Depending on system voltage	
22	Overall Dimensions of each complete module (LxWxH) in mm	Length 779 +/- 5, Width 245 +/- 5, Height 278.5 +/- 5 (12 cells module)	
23	Weight of unpacked and complete module with electrolyte ; Kgs	94.8 +/- 5% Kgs (Single 12 cell module)	
24	Material of Modules	Powder coated MS	
25	Whether explosion vents are offered	Yes, self re-sealing rubber safety valve with flame arrestor	
26	Loss of capacity due to self discharge	< 0.5% per week of c-10 capacity	
27	The period for which the battery should be stored after supply in charged conditions	If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended.	
28	Amount of Hydrogen evolved during normal normal float charging	Less than 200ppm normal float condition	
29	Recommended interval at which battery should be discharged at 10 hr discharge rate	Once annually	
30	No. of charge-discharge cycle battery can		
	give during its entire life at 20% DOD	2000 cycles	
	at 50% DOD	900 cycles	
	at 80% DOD	700 cycles	
31	Expected Life of Battery in years	10 Yrs at 27 deg C in ideal float condition.	
1		IEC 60896 - 21 & 22, JIS : C 8704-2, : 1998	
32	Applicable standard	ANSI T1 330, GR/BAT-01/03-MARCH 2004, IS 15549 : 2005	



SL. NO.	DESCRIPTION		DETAILS	INDUSTRIES LIMITED
1 (a) (i) (ii) (iii)	Capacity in Ah At 27 ° C Initial Rated End of Life		120 120 96	
(b)	Rated Capacity(in Ah) at minimum ambient temperature of (as per IS 15549 : 2005)		Formula : Ct = { 1+ 0.0043 (t-27) }	
(c)	Rated Capacity(in Ah) at maximum ambient temperature of (as per IS 15549 : 2005)		Formula : Ct = { 1+ 0.0043 (t-27) }	
2	Capacity at Various Discharge Rates at 27°C			
	Period of Discharge	Ah capacities	Discharge Current (Amps)	End Cell Voltage (Volts)
3	10Hr 9Hr 8Hr 7Hr 6Hr 5Hr 4Hr 3Hr 2Hr 1Hr 50 min 40 min 30 min 20 min 15 min 10 min 5 min 1 min	120.00 117.48 114.00 110.04 105.48 99.96 93.84 86.04 75.96 60.00 56.04 51.60 48.00 43.20 35.84 26.20 14.75 4.40	12.0 13.1 14.3 15.7 17.6 20.0 23.5 28.7 38.0 60.0 67.3 77.5 96.0 129.7 143.4 157.8 177.0 265.3	1.75 1.75 1.75 1.75 1.75 1.75 1.75 1.74 1.74 1.74 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7
5 (ii)	Time for which the battery can withstand short circuit at terminals		5 Sec	
6	Type/No. of Negative Plates per cell		Flat pasted; 2(I) + 2(E)	
7	Type/No. of Positive Plates per cell		Flat pasted;3	
8	Size of negative plates, mm		315(L) x 140(W) x 2.65 (+/- 1) (Thk) (Inter) 315(L) x 140(W) x 1.9 (+/- 1) (Thk) (End)	
9	Size of positive plates, mm		315(L) x 140(W) x 4.5 (+/- 1) (Thk)	
10	Type of Connection between cells		Bolted rigid copper connectors	
11	Type of Separators		Absorptive glass mat	
12	Thickness of Separators		4.2 (2 layers of 2.1 mm each)	
13	Dimensison of 2 volts cell (LXWXH), mm		159 (+/-3) x 62 (+/-3) x 396 (+/- 5 mm)	
14	Clearance between the bottom of the plates and container		5 mm	
15	Material of Container		Polypropylene Co-polymer	

16 (i) (ii) (iii) (iv) (v) (vi) (vii) (viii) 17	Float Charging Voltage between ambient temp. (-)5-14 ° C between ambient temp. 15-24 ° C between ambient temp. 25-34 ° C between ambient temp. 35-40 ° C Float Charging Current Trickle Charging Voltage Trickle Charging Voltage	2.27 +/- 0.02 VPC 2.25 +/- 0.02 VPC 2.23 +/- 0.02 VPC 2.20 +/- 0.02 VPC 18 NA NA 2.35 24 72 Hrs (Min) 2.1 volts(ocv) NA 90% 80%	Amps (Max) Volts Amps.
18	Allowable voltage ripple	1.5 % RMS of the charging voltage(Bulk charging) 0.5 % RMS of the charging voltage(Float charging)	
19	Internal Resistance of each cell at Fully Charged Condition	1.34	milli ohms min
20	Total Resistance of Battery ; milliohms	Depending on no. of cells	
21	Overall Dimensions of each complete module (LxWxH) in mm	Length 758 +/- 5, Width 450 +/- 5, Height 235 +/- 5 (12 cell module)	
22	Weight of unpacked and complete module with electrolyte ; Kgs	118.05 +/- 5% Kgs (Single 12 cell module)	
23	Material of Modules	Powder coated MS	
24	Whether explosion vents are offered	Yes, self re-sealing rubber safety valve with flame arrestor	
25	Loss of capacity due to self discharge	< 0.5% per week of c-10 capacity	
	The period for which the battery should be stored after supply in charged conditions	If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended.	
	Amount of Hydrogen evolved during normal normal float charging	Less than 200ppm normal float condition	
28	Recommended interval at which battery should be discharged at 10 hr discharge rate	Once annually	
29	No. of charge-discharge cycle battery can		
	give during its entire life at 20% DOD at 50% DOD at 80% DOD	4000 cycles 1800 cycles 1400 cycles	
30	Expected Life of Battery in years	20 Yrs at 27 deg C in ideal float condition.	
31	Applicable standard	IEC 60896 - 21 & 22, JIS : C 8704-2, : 1998 ANSI T1 330, GR/BAT-01/03-MARCH 2004, IS 15549 : 2005	

L. NO.	DESCRIPTION		DETAILS	TRIES LIMITED
1	Capacity in Ah			
(a)	At 27 ° C			
(i)	Initial		125	
(ii)	Rated		125	
(iii)	End of Life		100	
()				
(b)	Rated Capacity(in Ah) at minimum		Formula = { 1+ 0.0043 (27-t) }	
. ,	ambient temperature of (as per IS 15549 : 2005)			
(c)	Rated Capacity(in Ah) at maximum		Formula = { 1+ 0.0043 (27-t) }	
	ambient temperature of (as per IS 15549 : 2005)			
2 C	Capacity at Various Discharge Rates at 27°C			
	Period of Discharge	Ah capacities	Discharge Current	End Cel
			(Amps)	Voltage
				(Volts)
	10Hr	125.00	12.5	1.75
	9Hr	122.38	13.6	1.75
	8Hr	118.75	14.8	1.75
	7Hr	114.63	16.4	1.75
	6Hr	109.88	18.3	1.75
	5Hr	104.13	20.8	1.75
	4Hr	97.75	24.4	1.74
	3Hr	89.63	29.9	1.74
	2Hr	79.13	39.6	1.74
	1Hr	62.50	62.5	1.7
	50 min	58.38	70.1	1.7
	40 min	53.75	80.7	1.7
	30 min	50.00	100.0	1.7
	20 min	45.00	135.1	1.7
	15 min	37.34	149.4	1.7
	10 min	27.29	164.4	1.7
	5 min	15.36	184.4	1.7
	1 min	4.59	276.4	1.7
		B		
Ν	Naximum Momentary Current for 1 min upto cut off voltage		375	Amos
3 о	of 1.6 V		575	Amps
4 E	Expected Fault at bus due to battery		750	Amps
5 (i) S	Short Circuit Current at Battery terminals		750	Amps
5 (ii) T	ime for which the battery can withstand		5 Sec	-
	short circuit at terminals			
6 T	ype/No. of Negative Plates per cell		Flat pasted; 2(I) + 2(E)	
7 7	ype/No. of Positive Plates per cell		Flat pasted;3	
'	yperno. OF FUSILIVE FIALES PER CEII		ו ומו אמטובע,ט	
00	Size of negative plates, mm		315(L) x 140(W) x 2.65 (+/- 1) (Thk) (Inter)	
05	bize or negative plates, min			
			315(L) x 140(W) x 1.9 (+/- 1) (Thk) (End)	
٥٩	Size of positive plates, mm		315(L) x 140(W) x 4.5 (+/- 1) (Thk)	
Ű				
10 T	ype of Connection between cells		Bolted rigid copper connectors	
11 1	ype of Separators		Absorptive glass mat	
12 T	hickness of Separators		4.2 (2 layers of 2.1 mm each)	
13 D	Dimensison of 2 volts cell (LXWXH), mm		159 (+/-3) x 62 (+/-3) x 396 (+/- 5 mm)	
	Clearance between the bottom			
c	of the plates and container		5 mm	
	Aaterial of Container		Polypropylene Co-polymer	

16 (i)	0 0		EXIDE
(1)	between ambient temp. (-)5-14 ° C	2.27 +/- 0.02 VPC	INDUSTRIES LIMITED
	between ambient temp. 15-24 ° C	2.25 +/- 0.02 VPC	
	between ambient temp. 25-34 ° C	2.23 +/- 0.02 VPC	
	between ambient temp. 35-40 ° C	2.20 +/- 0.02 VPC	
(ii)	Float Charging Current	18.75	Amps (Max)
(iii)		NA	• • • •
(iv)		NA	
(v)		2.35	Volts
(vi)	Boost Charging Current	25	Amps.
(vii)	Time taken to full charge from 100%	72 Hrs (Min)	
	discharge state by constant voltage	2.1 volts(ocv)	
	charging & voltage at the end of this charge		
(viii)	Equalising Charging Current;Voltage	NA	
17	Guaranteed efficiencies at 10 hrs rate		
	(a) Ampere-hour efficiency	90%	
	(b) Watt-hour efficiency	80%	
18	Allowable voltage ripple	1.5 % RMS of the charging voltage(Bulk charging)	
		0.5 % RMS of the charging voltage(Float charging)	
19	Internal Resistance of each cell at		
	Fully Charged Condition	1.34	milli ohms
20	Total Resistance of Battery ; milliohms	Depending on pollof collo	
20	Total Resistance of Battery , minionins	Depending on no. of cells	
01	Quarall Dimensions of each complete	Longth 759 1/ 5 Width 450 1/ 5 Unight 225 1/ 5	
	Overall Dimensions of each complete	Length 758 +/- 5, Width 450 +/- 5, Height 235 +/- 5	
	module (LxWxH) in mm	(12 cell module)	
	Weight of an end of the state and the		
	Weight of unpacked and complete module with electrolyte ; Kgs	118.05 +/- 5% Kgs (Single 12 cell module)	
23	Material of Modules	Powder coated MS	
24	Whether explosion vents are offered	Yes, self re-sealing rubber safety valve with flame arrow	estor
25	Loss of capacity due to self discharge	< 0.5% per week of c-10 capacity	
	The second data with the better sheet black		
	The period for which the battery should be	If stored in Indian ambient temp of 30 deg C	
	stored after supply in charged conditions	cells will need freshning charge once in every three months, however if stored	
		at higher or lower temperature freshning charge to be provided as recommended.	
		charge to be provided as recommended.	
	Amount of the location of the second states of	Less then 200mm	
	Amount of Hydrogen evolved during normal	Less than 200ppm	
	normal float charging	normal float condition	
28	Recommended interval at which battery	Once annually	
	should be discharged at 10 hr discharge rate		
29	No. of charge-discharge cycle battery can		
	give during its entire life		
	at 20% DOD	4000 cycles	
	at 50% DOD	1800 cycles	
	at 80% DOD	1400 cycles	
30	Expected Life of Battery in years	20 Yrs at 27 deg C in ideal float condition.	
		· · · ·	
		IEC 60896 - 21 & 22,	
• ·		JIS : C 8704-2, : 1998	
31	Applicable standard	ANSI T1 330, GR/BAT-01/03-MARCH 2004,	
		IS 15549 : 2005	



SL. NO.	DESCRIPTION		DETAILS	
1	Capacity in Ah		[
(a)	At 27 ° C			
(i)	Initial		165	
(ii)	Rated		165	
(iii)	End of Life		132	
(b)	Rated Capacity(in Ah) at minimum		Formula : Ct = { 1+ 0.0043 (t-27) }	
(-)	ambient temperature of (as per IS 15549 : 2005)			
(c)	Rated Capacity(in Ah) at maximum ambient temperature of (as per IS 15549 : 2005)		Formula : Ct = { 1+ 0.0043 (t-27) }	
20	Capacity at Various Discharge Rates at 27°C			
	Period of Discharge	Ah capacities	Discharge Current (Amps)	End Cell Voltage (Volts)
	10Hr	165.00	16.5	1.75
	9Hr	161.54	17.9	1.75
	8Hr	156.75	19.6	1.75
	7Hr	151.31	21.6	1.75
	6Hr	145.04	24.2	1.75
	5Hr	137.45	27.5	1.75
	4Hr	129.03	32.3	1.74
	3Hr	118.31	39.4	1.74
	2Hr	104.45	52.2	1.7
	1Hr	82.50	82.5	1.7
	50 min	77.06	92.5	1.7
	40 min	70.95	106.5	1.7
	30 min	66.00	132.0	1.7
	20 min	59.40	178.4	1.7
	15 min	49.29	197.1	1.7
	10 min	36.02	217.0	1.7
	5 min	20.28	243.4	1.7
	1 min	6.06	364.8	1.7
	Maximum Momentary Current for 1 min upto cut off voltage of 1.6 V		495	Amps
4 E	Expected Fault at bus due to battery		990	Amps
5 (i) S	Short Circuit Current at Battery terminals		990	Amps
	Time for which the battery can withstand		5 Sec	r -
	short circuit at terminals			
e T	Tupo/No. of Nogotivo Plotos por coll		Flat pasted, $3(I) + 2(E)$	
01	Type/No. of Negative Plates per cell		r iai pasicu, $S(I) \neq Z(L)$	
7 7	Type/No. of Positive Plates per cell		Flat pasted 4	
8 8	Size of negative plates, mm		315(L) x 140(W) x 2.65 (+/- 1) (Thk) (Inter) 315(L) x 140(W) x 1.9 (+/- 1) (Thk) (End)	
9 5	Size of positive plates, mm		315(L) x 140(W) x 4.5 (+/- 1) (Thk)	
10 T	Type of Connection between cells		Bolted rigid copper connectors	
11 T	Type of Separators		Absorptive glass mat	
12 T	Thickness of Separators		4.2 (2 layers of 2.1 mm each)	
13 [Dimensison of 2 volts cell (LXWXH), mm		167(+/-3) x 87(+/-3) x 394 (+/- 5 mm)	
	Clearance between the bottom of the plates and container		5 mm	
13	Material of Container		Polypropylene Co-polymer	

(i) Float Charging Voltage Image: Constraint of the problem of th	4.0			
between ambient temp, 15-24 ° C 2.27 + 0.02 VPC between ambient temp, 15-24 ° C 2.23 + 0.02 VPC composition 2.35 composition	16	Recommended Charging Rate		EVIDE
between ambient temp, 25-34 ° C 2.25 + - 0.02 VPC 0 Detween ambient temp, 25-34 ° C 2.23 + - 0.02 VPC 0 Float Charging Current 2.47 S Amp 0 Trickle Charging Current NA Volte 0 Boot Charging Current 2.33 Wolte Amp 0 Boot Charging Current 2.3 Wolte Amp 0 Boot Charging Current 2.3 Wolte Amp 0 Boot Charging Current 2.3 Wolte Amp 0 Boot Charging Current Voltage NA Voltage 10 Jouranteed efficiencies at 10 Ins rate 90% 80% 11 Quaranteed efficiencies 90% 80% 1.5 % RMS of the charging voltage[Float charging] 12 Internal Resistance of Battery ; millichms Depending on no. of cells 90% 1.5 % KMS of the charging voltage[Float charging] 21 Overall Dimensions of each complete Length .58 + 5. Width 415 + - 5(wolt base member], Width 455 + -5 (wolt base membe	(1)			EXIDE
between ambient temp, 25-49 ° C 2.23 + 0.02 VPC (ii) Ploat Charging Current 24.75 (iii) Trickle Charging Voltage NA (iv) Boost Charging Voltage NA (iv) Boost Charging Voltage NA (iv) Boost Charging Voltage 2.33 (iv) Boost Charging Voltage 2.33 (iv) Boost Charging Voltage 2.33 (viii) Boost Charging Voltage 2.3 (viii) Current Voltage NA (viii) Current Voltage NA (viii) Current Voltage NA 17 Current Model Michaet M				INDUSTRIES LIMITED
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25 Loss of capacity due to self discharge < 0.5% per week of c-10 capacity	23	Material of Modules	Powder coated MS	
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30 Expected Life of Battery in years 20 Yrs at 27 deg C in ideal float condition.		at 80% DOD		
30 Expected Life of Battery in years 20 Yrs at 27 deg C in ideal float condition.	0.0			
	30	Expected Life of Battery in years	20 Yrs at 27 deg C in ideal float condition.	
IEC 60896 - 21 & 22,				
JIS : C 8704-2, : 1998			JIS : C 8704-2, : 1998	
31 Applicable standard ANSI T1 330,	31	Applicable standard	ANSI T1 330,	
GR/BAT-01/03-MARCH 2004,				
IS 15549 : 2005				



SL. M	NO.	DESCRIPTION		DETAILS	
	1	Capacity in Ah			
	(a)	At 27 ° C		000	
	(i)	Initial		200	
	(ii)	Rated		200	
	(iii)	End of Life		160	
	(b)	Rated Capacity(in Ah) at minimum		Formula : Ct = { 1+ 0.0043 (t-27) }	
	(U)	ambient temperature of (as per IS 15549 : 2005)		1 Official 2 Of = { 1+ 0.0043 (127) }	
	(c)	Rated Capacity(in Ah) at maximum		Formula : Ct = { 1+ 0.0043 (t-27) }	
	(-)	ambient temperature of (as per IS 15549 : 2005)			
	2	Capacity at Various Discharge Rates at 27°C			
		Period of Discharge	Ah capacities	Discharge Current	End Cell
				(Amps)	Voltage
					(Volts)
		10Hr	200.00	20.0	1.75
		9Hr	195.80	21.8	1.75
		8Hr	190.00	23.8	1.75
		7Hr	183.40	26.2	1.75
		6Hr	175.80	29.3	1.75
		5Hr	166.60	33.3	1.75
		4Hr	156.40	39.1	1.74
		3Hr	143.40	47.8	1.74
		2Hr	126.60	63.3	1.7
		1Hr	100.00	100.0	1.7
		50 min	93.40	112.1	1.7
		40 min	86.00	129.1	1.7
		30 min	80.00	160.0	1.7
		20 min	72.00	216.2	1.7
		15 min	59.74	239.0	1.7
		10 min	43.66	263.0	1.7
		5 min	24.58	295.1	1.7
		1 min	7.34	442.2	1.7
		Maximum Momentary Current for 1 min upto cut off voltage			
		of 1.6 V		600	Amps
	Ũ				
	4	Expected Fault at bus due to battery		1200	Amps
	5 (i)	Short Circuit Current at Battery terminals		1200	Amps
		Time for which the battery can withstand		5 Sec	·
	. ,	short circuit at terminals			
	6	Type/No. of Negative Plates per cell		Flat pasted, 4(I) + 2(E)	
	_				
	7	Type/No. of Positive Plates per cell		Flat pasted 5	
	-				
	8	Size of negative plates, mm		315(L) x 140(W) x 2.65 (+/- 1) (Thk) (Inter)	
				315(L) x 140(W) x 1.9 (+/- 1) (Thk) (End)	
	-				
	9	Size of positive plates, mm		315(L) x 140(W) x 4.5 (+/- 1) (Thk)	
	10	Type of Connection between cells		Bolted rigid copper connectors	
	10	Type of Connection between cens		Bolied rigid copper connectors	
	11	Type of Separators		Absorptive glass mat	
		Type of Separators		Absolptive glass mat	
	40	Thickness of Separators		4.2 (2 layers of 2.1 mm each)	
	12				
	12				
				167(+/-3) x 87(+/-3) x 394 (+/- 5 mm)	
		Dimensison of 2 volts cell (LXWXH), mm		167(+/-3) x 87(+/-3) x 394 (+/- 5 mm)	
	13			167(+/-3) x 87(+/-3) x 394 (+/- 5 mm)	
	13	Dimensison of 2 volts cell (LXWXH), mm		167(+/-3) x 87(+/-3) x 394 (+/- 5 mm) 5 mm	
	13	Dimensison of 2 volts cell (LXWXH), mm Clearance between the bottom			

16	Recommended Charging Rate		
(i)	Float Charging Voltage		
(1)	between ambient temp. (-)5-14 ° C	2.27 +/- 0.02 VPC	R EVIDE
	between ambient temp. (-)5-14 °C	2.27 +/- 0.02 VPC	INDUSTRIES LIMITED
	•		
	between ambient temp. 25-34 ° C	2.23 +/- 0.02 VPC	
	between ambient temp. 35-40 ° C	2.20 +/- 0.02 VPC	
(ii)	Float Charging Current	30	Amps (Max
(iii)	Trickle Charging Voltage	NA	
(iv)	Trickle Charging Current	NA	
(v)	Boost Charging Voltage	2.35	Volts
(vi)	Boost Charging Current	40	Amps.
(vii)	Time taken to full charge from 100%	72 Hrs (Min)	
	discharge state by constant voltage	2.1 volts(ocv)	
	charging & voltage at the end of this charge		
(viii)	Equalising Charging Current; Voltage	NA	
` '			
17	Guaranteed efficiencies at 10 hrs rate		
	(a) Ampere-hour efficiency	90%	
	(b) Watt-hour efficiency	80%	
		0070	
10		1.5.9/ DMS of the charging voltage/Bulk charging)	
10	Allowable voltage ripple	1.5 % RMS of the charging voltage(Bulk charging) 0.5 % RMS of the charging voltage(Float charging)	
		0.5 % RIVIS of the charging voltage(Float charging)	
40			
	Internal Resistance of each cell at Fully Charged Condition	0.99	milli ohms
		0.99	
20	Tatal Desistance of Pattery ; millighme	Depending on no. of cells	
20	Total Resistance of Battery ; milliohms	Depending on ho. of cells	
21	Overall Dimensions of each complete	Length 588 +/- 5, Width 415 +/- 5(w/o base member	r),
	module with Top Cover(LxWxH) in mm	Width 452 +/-5 (with base member), Height 210 +/-	5;
		(6 cells module);	
22	Weight of unpacked and complete module	83.1 +/- 5% Kgs (Single 6 cell module)	
	with electrolyte ; Kgs		
23	Material of Modules	Powder coated MS	
24	Whether explosion vents are offered	Yes, self re-sealing rubber safety valve with flame ar	restor
05			
25	Loss of capacity due to self discharge	< 0.5% per week of c-10 capacity	
26	The period for which the battery should be	If stored in Indian ambient temp of 30 deg C	
	stored after supply in charged conditions	cells will need freshning charge once	
		in every three months, however if stored	
ļ		at higher or lower temperature freshning	
		charge to be provided as recommended.	
		onarge to be provided as recommended.	
27	Amount of Hydrogen evolved during normal	Less than 200ppm	
	normal float charging	normal float condition	
28	Recommended interval at which battery	Once annually	
	should be discharged at 10 hr discharge rate		
29	No. of charge-discharge cycle battery can		
	give during its entire life		
	at 20% DOD	4000 cycles	
	at 50% DOD	1800 cycles	
	at 80% DOD	1400 cycles	
30	Expected Life of Battery in years	20 Yrs at 27 deg C in ideal float condition.	
30	Expected Life of Battery in years		
		IEC 60896 - 21 & 22.	

		IEC 60896 - 21 & 22,
		JIS : C 8704-2, : 1998
31	Applicable standard	ANSI T1 330,
		GR/BAT-01/03-MARCH 2004,
		IS 15549 : 2005



NO.				INDUSTRIES LIMITED
	DESCRIPTION		DETAILS	
1	Capacity in Ah			
(a)	At 27 ° C			
(i)	Initial		250	
(ii)	Rated		250	
(iii)	End of Life		200	
()				
(b)	Rated Capacity(in Ah) at minimum		Formula : Ct = { 1+ 0.0043 (t-27) }	
(-)	ambient temperature of (as per IS 15549 : 2005)			
(c)	Rated Capacity(in Ah) at maximum		Formula : Ct = { 1+ 0.0043 (t-27) }	
	ambient temperature of (as per IS 15549: 2005)			
2 (Capacity at Various Discharge Rates at 27°C			
	Period of Discharge	Ah capacities	Discharge Current	End Cell
			(Amps)	Voltage
				(Volts)
	10Hr	250.00	25.0	1.75
	9Hr	244.75	27.2	1.75
	8Hr	237.50	29.7	1.75
	7Hr	229.25	32.8	1.75
	6Hr	219.75	36.6	1.75
	5Hr	208.25	41.7	1.75
	4Hr	195.50	48.9	1.74
	3Hr	179.25	59.8	1.74
	2Hr	158.25	79.1	1.7
	1Hr	125.00	125.0	1.7
	50 min	116.75	140.2	1.7
	40 min	107.50	161.4	1.7
	30 min	100.00	200.0	1.7
	20 min	90.00	270.3	1.7
	15 min	74.68	298.7	1.7
	10 min	54.58	328.8	1.7
	5 min	30.73	368.8	1.7
	1 min	9.18	552.7	1.7
	Maximum Momentary Current for 1 min upto cut off voltage			
	Maximum Momentary Current for Trinin upto cut on voltage		750	•
	of 1.6 V		750	Amps
			750	Amps
			750	Amps
3 (750 1500	Amps
3 (of 1.6 V			
3 d 4 l	of 1.6 V			
3 (4 5 (i) 5	of 1.6 V Expected Fault at bus due to battery		1500	Amps
3 (4 5 (i) (5 (ii) -	of 1.6 V Expected Fault at bus due to battery Short Circuit Current at Battery terminals		1500	Amps
3 (4 5 (i) 5 5 (ii)	of 1.6 V Expected Fault at bus due to battery Short Circuit Current at Battery terminals Time for which the battery can withstand short circuit at terminals		1500 1500 5 Sec	Amps
3 (4 5 (i) 5 5 (ii)	of 1.6 V Expected Fault at bus due to battery Short Circuit Current at Battery terminals Time for which the battery can withstand		1500	Amps
3 (4 5 (i) 5 5 (ii) -	of 1.6 V Expected Fault at bus due to battery Short Circuit Current at Battery terminals Time for which the battery can withstand short circuit at terminals		1500 1500 5 Sec	Amps
3 (4 5 (i) 5 5 (ii) 6 7	of 1.6 V Expected Fault at bus due to battery Short Circuit Current at Battery terminals Time for which the battery can withstand short circuit at terminals Type/No. of Negative Plates per cell		1500 1500 5 Sec Flat pasted; 7	Amps
3 (4 5 (i) 5 5 (ii) 7 - 7 - 8 5	of 1.6 V Expected Fault at bus due to battery Short Circuit Current at Battery terminals Time for which the battery can withstand short circuit at terminals Type/No. of Negative Plates per cell Type/No. of Positive Plates per cell		1500 1500 5 Sec Flat pasted; 7 Flat pasted; 6	Amps
3 (4 5 (i) (5 (ii) 6 - 7 - 8 (9 (of 1.6 V Expected Fault at bus due to battery Short Circuit Current at Battery terminals Time for which the battery can withstand short circuit at terminals Type/No. of Negative Plates per cell Type/No. of Positive Plates per cell Size of negative plates, mm Size of positive plates, mm		1500 1500 5 Sec Flat pasted; 7 Flat pasted; 6 315(L) x 140(W) x 2.65 (+/- 1) (Thk) 315(L) x 140(W) x 4.5 (+/- 1) (Thk)	Amps
3 (4 5 (i) 5 5 (ii) 7 - 8 9 9 9 10 -	of 1.6 V Expected Fault at bus due to battery Short Circuit Current at Battery terminals Time for which the battery can withstand short circuit at terminals Type/No. of Negative Plates per cell Type/No. of Positive Plates per cell Size of negative plates, mm Size of positive plates, mm Type of Connection between cells		1500 1500 5 Sec Flat pasted; 7 Flat pasted; 6 315(L) x 140(W) x 2.65 (+/- 1) (Thk) 315(L) x 140(W) x 4.5 (+/- 1) (Thk) Bolted rigid copper connectors	Amps
3 (4 5 (i) 5 5 (ii) 7 - 8 9 9 9 10 - 11 -	of 1.6 V Expected Fault at bus due to battery Short Circuit Current at Battery terminals Time for which the battery can withstand short circuit at terminals Type/No. of Negative Plates per cell Type/No. of Positive Plates per cell Size of negative plates, mm Size of positive plates, mm Type of Connection between cells Type of Separators		1500 1500 5 Sec Flat pasted; 7 Flat pasted; 6 315(L) x 140(W) x 2.65 (+/- 1) (Thk) 315(L) x 140(W) x 4.5 (+/- 1) (Thk) Bolted rigid copper connectors Absorptive glass mat	Amps
3 (4 5 (i) 5 5 (ii) 7 - 8 (9 (10 - 11 - 12 -	of 1.6 V Expected Fault at bus due to battery Short Circuit Current at Battery terminals Time for which the battery can withstand short circuit at terminals Type/No. of Negative Plates per cell Type/No. of Positive Plates per cell Size of negative plates, mm Size of positive plates, mm Type of Connection between cells Type of Separators Thickness of Separators		1500 1500 5 Sec Flat pasted; 7 Flat pasted; 6 315(L) x 140(W) x 2.65 (+/- 1) (Thk) 315(L) x 140(W) x 4.5 (+/- 1) (Thk) Bolted rigid copper connectors Absorptive glass mat 4.2 (2 layers of 2.1 mm each)	Amps Amps
3 (4 5 (i) 5 5 (ii) 7 - 8 9 9 9 10 - 11 - 12 - 13	of 1.6 V Expected Fault at bus due to battery Short Circuit Current at Battery terminals Time for which the battery can withstand short circuit at terminals Type/No. of Negative Plates per cell Type/No. of Positive Plates per cell Size of negative plates, mm Size of negative plates, mm Type of Connection between cells Type of Separators Thickness of Separators Dimensison of 2 volts cell (LXWXH), mm		1500 1500 5 Sec Flat pasted; 7 Flat pasted; 6 315(L) x 140(W) x 2.65 (+/- 1) (Thk) 315(L) x 140(W) x 4.5 (+/- 1) (Thk) Bolted rigid copper connectors Absorptive glass mat	Amps Amps
3 (4 5 (i) 5 5 (ii) 7 - 8 9 9 9 10 - 11 - 12 - 13 13	of 1.6 V Expected Fault at bus due to battery Short Circuit Current at Battery terminals Time for which the battery can withstand short circuit at terminals Type/No. of Negative Plates per cell Type/No. of Positive Plates per cell Size of negative plates, mm Size of positive plates, mm Type of Connection between cells Type of Separators Thickness of Separators Dimensison of 2 volts cell (LXWXH), mm Clearance between the bottom		1500 1500 5 Sec Flat pasted; 7 Flat pasted; 6 315(L) x 140(W) x 2.65 (+/- 1) (Thk) 315(L) x 140(W) x 4.5 (+/- 1) (Thk) Bolted rigid copper connectors Absorptive glass mat 4.2 (2 layers of 2.1 mm each) 167 (+/-3) mm x 126 (+/-3) mm x 394 (+/-	Amps Amps
3 (4 5 (i) 5 5 (ii) 7 - 8 (9 (10 - 11 - 12 - 13 14 (of 1.6 V Expected Fault at bus due to battery Short Circuit Current at Battery terminals Time for which the battery can withstand short circuit at terminals Type/No. of Negative Plates per cell Type/No. of Positive Plates per cell Size of negative plates, mm Size of negative plates, mm Type of Connection between cells Type of Separators Thickness of Separators Dimensison of 2 volts cell (LXWXH), mm		1500 1500 5 Sec Flat pasted; 7 Flat pasted; 6 315(L) x 140(W) x 2.65 (+/- 1) (Thk) 315(L) x 140(W) x 4.5 (+/- 1) (Thk) Bolted rigid copper connectors Absorptive glass mat 4.2 (2 layers of 2.1 mm each)	Amps Amps

	Recommended Charging Rate	
16 (i)	Recommended Charging Rate Float Charging Voltage	EXIDE
(i)		INDUCTOR IN THE INTER
	between ambient temp. (-)5-14 ° C	2.27 +/- 0.02 VPC
	between ambient temp. 15-24 ° C	2.25 +/- 0.02 VPC
	between ambient temp. 25-34 ° C	2.23 +/- 0.02 VPC
	between ambient temp. 35-40 ° C	2.20 +/- 0.02 VPC
(ii)	Float Charging Current	37.5 Amps (Max)
(iii)	Trickle Charging Voltage	NA
(iv)	Trickle Charging Current	NA
(v)	Boost Charging Voltage	2.35 Volts
(vi)	Boost Charging Current	50 Amps.
	Time taken to full charge from 100%	72 Hrs (Min)
	discharge state by constant voltage	2.1 volts(ocv)
	charging & voltage at the end of this charge	
(viii)	Equalising Charging Current;Voltage	NA
`, ´		
17	Guaranteed efficiencies at 10 hrs rate	
	(a) Ampere-hour efficiency	90%
	•••••	
	(b) Watt-hour efficiency	80%
18	Allowable voltage ripple	1.5 % RMS of the charging voltage(Bulk charging)
	5 11	0.5 % RMS of the charging voltage (Float charging)
	Internal Resistance of each cell at	
	Fully Charged Condition	0.86 milli ohms min
20	Total Resistance of Battery ; milliohms	Depending on no. of cells
-	·····,, ·····,,	
	Overall Dimensions of each complete	Length 588 +/- 5, Width 460 +/- 5, Height 288 +/- 5
	module (LxWxH) in mm	(6 cell module)
221		
~~	Weight of unpacked and complete module	100 +/- 5% Kgs (Single 6 cell module)
	Weight of unpacked and complete module with electrolyte ; Kgs	100 +/- 5% Kgs (Single 6 cell module)
	with electrolyte ; Kgs	
		100 +/- 5% Kgs (Single 6 cell module) Powder coated MS
23	with electrolyte ; Kgs Material of Modules	Powder coated MS
23	with electrolyte ; Kgs	
23	with electrolyte ; Kgs Material of Modules	Powder coated MS
23 24 25	with electrolyte ; Kgs Material of Modules Whether explosion vents are offered Loss of capacity due to self discharge	Powder coated MS Yes, self re-sealing rubber safety valve with flame arrestor < 0.5% per week of c-10 capacity
23 24 25 26	with electrolyte ; Kgs Material of Modules Whether explosion vents are offered Loss of capacity due to self discharge The period for which the battery should be	Powder coated MS Yes, self re-sealing rubber safety valve with flame arrestor < 0.5% per week of c-10 capacity If stored in Indian ambient temp of 30 deg C
23 24 25 26	with electrolyte ; Kgs Material of Modules Whether explosion vents are offered Loss of capacity due to self discharge	Powder coated MS Yes, self re-sealing rubber safety valve with flame arrestor < 0.5% per week of c-10 capacity
23 24 25 26	with electrolyte ; Kgs Material of Modules Whether explosion vents are offered Loss of capacity due to self discharge The period for which the battery should be	Powder coated MS Yes, self re-sealing rubber safety valve with flame arrestor < 0.5% per week of c-10 capacity If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored
23 24 25 26	with electrolyte ; Kgs Material of Modules Whether explosion vents are offered Loss of capacity due to self discharge The period for which the battery should be	Powder coated MS Yes, self re-sealing rubber safety valve with flame arrestor < 0.5% per week of c-10 capacity If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored
23 24 25 26	with electrolyte ; Kgs Material of Modules Whether explosion vents are offered Loss of capacity due to self discharge The period for which the battery should be	Powder coated MS Yes, self re-sealing rubber safety valve with flame arrestor < 0.5% per week of c-10 capacity
23 24 25 26	with electrolyte ; Kgs Material of Modules Whether explosion vents are offered Loss of capacity due to self discharge The period for which the battery should be	Powder coated MS Yes, self re-sealing rubber safety valve with flame arrestor < 0.5% per week of c-10 capacity If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning
23 24 25 26	with electrolyte ; Kgs Material of Modules Whether explosion vents are offered Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions	Powder coated MS Yes, self re-sealing rubber safety valve with flame arrestor < 0.5% per week of c-10 capacity If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended.
23 24 25 26 -	with electrolyte ; Kgs Material of Modules Whether explosion vents are offered Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions Amount of Hydrogen evolved during normal	Powder coated MS Yes, self re-sealing rubber safety valve with flame arrestor < 0.5% per week of c-10 capacity
23 24 25 26 -	with electrolyte ; Kgs Material of Modules Whether explosion vents are offered Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions	Powder coated MS Yes, self re-sealing rubber safety valve with flame arrestor < 0.5% per week of c-10 capacity If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended.
23 24 25 26 - 3 27	with electrolyte ; Kgs Material of Modules Whether explosion vents are offered Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging	Powder coated MS Yes, self re-sealing rubber safety valve with flame arrestor < 0.5% per week of c-10 capacity
23 24 25 26 - 5 27 28	with electrolyte ; Kgs Material of Modules Whether explosion vents are offered Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery	Powder coated MS Yes, self re-sealing rubber safety valve with flame arrestor < 0.5% per week of c-10 capacity
23 24 25 26 - 5 27 28	with electrolyte ; Kgs Material of Modules Whether explosion vents are offered Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging	Powder coated MS Yes, self re-sealing rubber safety valve with flame arrestor < 0.5% per week of c-10 capacity
23 24 25 26 27 28 28	with electrolyte ; Kgs Material of Modules Whether explosion vents are offered Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate	Powder coated MS Yes, self re-sealing rubber safety valve with flame arrestor < 0.5% per week of c-10 capacity
23 24 25 26 27 28 28 29	with electrolyte ; Kgs Material of Modules Whether explosion vents are offered Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate No. of charge-discharge cycle battery can	Powder coated MS Yes, self re-sealing rubber safety valve with flame arrestor < 0.5% per week of c-10 capacity
23 24 25 26 27 28 28 29	with electrolyte ; Kgs Material of Modules Whether explosion vents are offered Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate No. of charge-discharge cycle battery can give during its entire life	Powder coated MS Yes, self re-sealing rubber safety valve with flame arrestor < 0.5% per week of c-10 capacity
23 24 25 26 27 28 28 29	with electrolyte ; Kgs Material of Modules Whether explosion vents are offered Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate No. of charge-discharge cycle battery can give during its entire life at 20% DOD	Powder coated MS Yes, self re-sealing rubber safety valve with flame arrestor < 0.5% per week of c-10 capacity
23 24 25 26 27 28 28 29	with electrolyte ; Kgs Material of Modules Whether explosion vents are offered Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate No. of charge-discharge cycle battery can give during its entire life at 20% DOD at 50% DOD	Powder coated MS Yes, self re-sealing rubber safety valve with flame arrestor < 0.5% per week of c-10 capacity
23 24 25 26 27 28 28 29	with electrolyte ; Kgs Material of Modules Whether explosion vents are offered Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate No. of charge-discharge cycle battery can give during its entire life at 20% DOD	Powder coated MS Yes, self re-sealing rubber safety valve with flame arrestor < 0.5% per week of c-10 capacity
23 24 25 26 ; 27 , 28 28 29	with electrolyte ; Kgs Material of Modules Whether explosion vents are offered Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate No. of charge-discharge cycle battery can give during its entire life at 20% DOD at 50% DOD	Powder coated MS Yes, self re-sealing rubber safety valve with flame arrestor < 0.5% per week of c-10 capacity

		IEC 60896 - 21 & 22,
		JIS : C 8704-2, : 1998
31 App	blicable standard	ANSI T1 330,
		GR/BAT-01/03-MARCH 2004,
		IS 15549 : 2005



SL. NO.	DESCRIPTION		DETAILS	
1 (a) (i)	Capacity in Ah At 27 ° C Initial		300	
(i) (ii) (iii)	Rated End of Life		300 240	
(b)	Rated Capacity(in Ah) at minimum ambient temperature of (as per IS 15549 : 2005)		Formula : Ct = C27/{ 1 + 0.0043(27-t)}	
(c)	Rated Capacity(in Ah) at maximum ambient temperature of (as per IS 15549 : 2005)		Formula : Ct = C27/{ 1 + 0.0043(27-t)}	
2	Capacity at Various Discharge Rates at 27°C			
	Period of Discharge	Ah capacities	Discharge Current (Amps)	End Cell Voltage (Volts)
	10Hr 9Hr 8Hr 7Hr 6Hr 5Hr 4Hr 3Hr 2Hr 1Hr 50 min 40 min 30 min 20 min 15 min 10 min 5 min 1 min	300.00 293.70 285.00 275.10 263.70 249.90 234.60 215.10 189.90 150.00 140.10 129.00 120.00 120.00 108.00 89.61 65.49 36.87 11.01	30.0 32.6 35.6 39.3 44.0 50.0 58.7 71.7 95.0 150.0 168.2 193.7 240.0 324.3 358.4 394.5 442.6 663.3	1.75 1.75 1.75 1.75 1.75 1.75 1.75 1.74 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7
	Maximum Momentary Current for 1 min upto cut off voltage of 1.6 V		900	Amps
4	Expected Fault at bus due to battery		1800	Amps
5 (ii)	Short Circuit Current at Battery terminals Time for which the battery can withstand short circuit at terminals		1800 5 Sec	Amps
6	Type/No. of Negative Plates per cell		Flat pasted; 9	
7	Type/No. of Positive Plates per cell		Flat pasted; 8	
8	Size of negative plates, mm		315(L) x 140(W) x 2.65 (+/- 1) (Thk)	
9	Size of positive plates, mm		315(L) x 140(W) x 4.5 (+/- 1) (Thk)	
10 ⁻	Type of Connection between cells		Bolted rigid copper connectors	
11 .	Type of Separators		Absorptive glass mat	
12	Thickness of Separators		4.2 (2 layers of 2.1 mm each)	
13	Dimensison of 2 volts cell (LXWXH), mm		167 (+/-3) mm x 126 (+/-3) mm x 394 (+/- 5) mm	
14	4 Clearance between the bottom of the plates and container		5 mm	
15	Material of Container		Polypropylene Co-polymer	

0 Proof Undging Voltage 2.27 + 0.00 VPC Image: Construction of the construp of the construction of the construction of the constru	16 (i)	Recommended Charging Rate		
between ambient temp; 15:24 * C 2.25 +/- 0.02 VPC (i) F. Foat Charging Current 2.23 +/- 0.02 VPC (ii) Tricke Charging Vollage NA (iii) Tricke Charging Vollage NA (iii) Boost Charging Vollage Amps. (iii) Tricke Charging Vollage Amps. (iii) Boost Charging Vollage 2.35 (iii) Tricke Charging Current NA (iii) Tricke Charging Current SO (iii) Tricke State by consistint voltage Amps. (iii) Ture taken oblige at the oid of thic charge SO% (iii) Quaranted difficancies at 10 him raite SO% (iii) Markende Charging Vollage NA 110 Quaranted difficancies at 10 him raite SO% (ii) Markende Viscopien Bo% (iii) Desentance of each cell at Equiption 0.5 % RMS of the charging vollage/Buk charging) 12 Values at the oid of thic charge Co werall Dimensions of each complete Length 588 +/ 5, Width 450 +/- 6, Height 288 +/- 5 20 Vand	(i)	Float Charging Voltage		
between anotes temp. 1:-24 * C 2.35 * -10.02 V/C c) between anotes temp. 3:-40 * C 2.35 * -10.02 V/C c) Float Charging Current 2.35 * -10.02 V/C c) Float Charging Current 45 c) Track Charging Current 53 c) Boost Charging Current 72 c) Boost Charging Current Volago NA c) True taken to full charge from 100% 2.35 c) Depending on no. of cells 90% c) Boost Charging Current Volago 80% 15 Kitowable voltage ripple 1.5 % RMS of the charging voltage(Fluid charging) 16 Attowable voltage ripple 1.5 % RMS of the charging voltage(Fluid charging) 20 Variation for the charging voltage (Fluid charge on 0.5 % RMS of the charging voltage (Fluid charge on 0.5 % RMS of the charging voltage (Fluid charge on 0.5 % RMS of the charging voltage (Fluid charge on 0.5 % RMS of the charging voltage (Fluid				
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(iii) Tracke Charging Voltage NA (iv) Bosc Charging Current NA (iv) Bosc Charging Current 2.35 (viv) True taken to full charging Current 2.35 (viv) True taken to full charging Current 2.1 (viv) True taken to full charging Current 2.1 (viv) Equaling Charging Current 2.1 (viv) True taken to full charging voltage file 30% (viv) Equalization Control 30% (viv) Equalization Control 30% (viv) Matcher equalization Control 0.72 (viv) Equalin Control		between ambient temp. 35-40 ° C	2.20 +/- 0.02 VPC	
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30 Expected Life of Battery in years 20 Yrs at 27 deg C in ideal float condition.				
IEC 60896 - 21 & 22,			1400 696165	
	30	Expected Life of Battery in years	20 Yrs at 27 deg C in ideal float condition.	
JIS : C 8704-2, : 1998				

		IEC 60896 - 21 & 22,
		JIS : C 8704-2, : 1998
	Applicable standard	ANSI T1 330,
		GR/BAT-01/03-MARCH 2004,
31		IS 15549 : 2005



				INDUSTRIES LIMITED
L. NO.	DESCRIPTION		DETAILS	
1	Capacity in Ah			
ı (a)				
(a) (i)			360	
(i) (ii)			360	
			288	
(iii)	End of Life		200	
(h)	Rated Capacity(in Ah) at minimum		Formula : Ct = { 1+ 0.0043 (t-27) }	
(b)			$1 \text{ offitula} : \text{ Of } = \{1 \neq 0.0043 (1-27)\}$	
	ambient temperature of (as per IS 15549 : 2005)			
(0)	Poted Consoitu(in Ab) at maximum		Eormula: C_{t} (4, 0.0042 (t.27))	
(c)	Rated Capacity(in Ah) at maximum ambient temperature of (as per IS 15549 : 2005)		Formula : Ct = { 1+ 0.0043 (t-27) }	
2	Capacity at Various Discharge Rates at 27°C			
2	Capacity at Valious Discharge Males at 27 C			
	Period of Discharge	Ah capacities	Discharge Current	End Cel
	i onoù er zhoenni ge	, cupaciaco	(Amps)	Voltage
			(/	(Volts)
				(10110)
	10Hr	360.00	36.0	1.75
	9Hr	352.44	39.2	1.75
	8Hr	342.00	42.8	1.75
	7Hr	330.12	47.2	1.75
	6Hr	316.44	52.7	1.75
	5Hr	299.88	60.0	1.75
	4Hr	281.52	70.4	1.74
	3Hr	258.12	86.0	1.74
	2Hr	227.88	113.9	1.7
	1Hr	180.00	180.0	1.7
	50 min	168.12	201.8	1.7
	40 min	154.80	232.4	1.7
	30 min	144.00	232.4 288.0	1.7
			389.2	
	20 min 15 min	129.60 107.53	430.1	1.7 1.7
	10 min	78.59	430.1	1.7
	5 min	44.24	531.1	1.7
	1 min	13.21	795.9	1.7
		10.21	100.0	
	Maximum Momentary Current for 1 min upto cut off voltage		1000	
	of 1.6 V		1080	Amps
4	Expected Fault at bus due to battery		2160	Amps
	Short Circuit Current at Battery terminals		2160	Amps
5 (ii)	Time for which the battery can withstand		5 Sec	
	short circuit at terminals			
6	Type/No. of Negative Plates per cell		Flat pasted; 10	
7	Type/No. of Positive Plates per cell		Flat pasted; 9	
8	Size of negative plates, mm		315(L) x 140(W) x 2.65 (+/- 1) (Thk)	
9	Size of positive plates, mm		315(L) x 140(W) x 4.5 (+/- 1) (Thk)	
10	Type of Connection between cells		Bolted rigid copper connectors	
11	Type of Separators		Absorptive glass mat	
12	Thickness of Separators		4.5 (2 layers of 2.25 mm each)	
13	Dimensison of 2 volts cell (LXWXH), mm		167 (+/-3) mm x 172 (+/-3) mm x 378 (+/- 5) mm	
14	Clearance between the bottom of the plates and container		5 mm	
			1	
	Material of Container		Polypropylene Co-polymer	

16 (i)	5 5		
(i)			EXID
	between ambient temp. (-)5-14 ° C	2.27 +/- 0.02 VPC	
	between ambient temp. 15-24 ° C	2.25 +/- 0.02 VPC	
	between ambient temp. 25-34 ° C	2.23 +/- 0.02 VPC	
	between ambient temp. 35-40 ° C	2.20 +/- 0.02 VPC	
(ii)	Float Charging Current	54	Amps (Ma
(iii)		NA	1 - (
(iv)		NA	
			Valta
(v)		2.35	Volts
(vi)		72	Amps.
(vii)		72 Hrs (Min)	
	discharge state by constant voltage	2.1 volts(ocv)	
	charging & voltage at the end of this charge		
(viii)	Equalising Charging Current; Voltage	NA	
()			
17	Guaranteed efficiencies at 10 hrs rate		
17		000/	
	(a) Ampere-hour efficiency	90%	
	(b) Watt-hour efficiency	80%	
10			
18	Allowable voltage ripple	1.5 % RMS of the charging voltage(Bulk charging)	
		0.5 % RMS of the charging voltage(Float charging)	
19	Internal Resistance of each cell at Fully Charged Condition	0.48	milli ohms
		0.10	
20	Total Resistance of Battery ; milliohms	Depending on no. of cells	
20			
21	Overall Dimensions of each complete	Length 619 +/- 5, Width 445 +/- 5, Height 388 +/- 5	
	module (LxWxH) in mm	(6 cell module)	
22	Weight of uppeaked and complete module	147 + 50 Kas (Single 6 coll module)	
22	Weight of unpacked and complete module with electrolyte ; Kgs	147 +/- 5% Kgs (Single 6 cell module)	
23	Material of Modules	Powder coated MS	
24	Whether explosion vents are offered	Yes, self re-sealing rubber safety valve with flame arresto	or
25	Loss of capacity due to self discharge	< 0.5% per week of c-10 capacity	
26	The period for which the battery should be	If stored in Indian ambient temp of 30 deg C	
20			
	stored after supply in charged conditions	cells will need freshning charge once	
		in every three months, however if stored	
		at higher or lower temperature freshning	
		charge to be provided as recommended.	
27	Amount of Hydrogen evolved during normal	Less than 200ppm	
21			
	normal float charging	normal float condition	
-	L		
28	Recommended interval at which battery	Once annually	
	should be discharged at 10 hr discharge rate		
29	No. of charge-discharge cycle battery can		
	give during its entire life		
	at 20% DOD	4000 cycles	
	at 50% DOD	1800 cycles	
	at 80% DOD	1400 cycles	
30	Expected Life of Battery in years	20 Yrs at 27 deg C in ideal float condition.	
		IEC 60896 - 21 & 22,	

IEC 60896 - 21 & 22, JIS : C 8704-2, : 1998 ANSI T1 330,	
	JIS : C 8704-2, : 1998



SL. NO.	DESCRIPTION		DETAILS	
1 (a) (i) (ii) (iii)	Capacity in Ah At 27 ° C Initial Rated End of Life		400 400 320	
(b)			Formula : Ct = { 1+ 0.0043 (t-27) }	
(c)	ambient temperature of (as per IS 15549 : 2005)		Formula : Ct = { 1+ 0.0043 (t-27) }	
2	Capacity at Various Discharge Rates at 27°C <i>Period of Discharge</i>	Ah capacities	Discharge Current (Amps)	End Cell Voltage (Volts)
3 4 5 (i)	10Hr 9Hr 8Hr 7Hr 6Hr 5Hr 4Hr 3Hr 2Hr 1Hr 50 min 40 min 30 min 20 min 15 min 10 min 5 min 1 min	400.00 391.60 380.00 366.80 351.60 333.20 312.80 286.80 253.20 200.00 186.80 172.00 160.00 144.00 119.48 87.32 49.16 14.68	40.0 43.5 47.5 52.4 58.6 66.6 78.2 95.6 126.6 200.0 224.2 258.3 320.0 432.4 477.9 526.0 590.2 884.3 1200 2400 2400	1.75 1.75 1.75 1.75 1.75 1.75 1.75 1.74 1.74 1.74 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7
	Time for which the battery can withstand short circuit at terminals		5 Sec	
6	Type/No. of Negative Plates per cell		Flat pasted; 11	
7	Type/No. of Positive Plates per cell		Flat pasted; 10	
8	Size of negative plates, mm		315(L) x 140(W) x 2.65 (+/- 1) (Thk)	
9	Size of positive plates, mm		315(L) x 140(W) x 4.5 (+/- 1) (Thk)	
			Bolted rigid copper connectors	
	Type of Separators			
			Absorptive glass mat	
12	Thickness of Separators		4.5 (2 layers of 2.25 mm each)	

13	Dimensison of 2 volts cell (LXWXH), mm	167 (+/-3) mm x 172 (+/-3) mm x 378 (+/- 5) mm
	Clearance between the bottom of the plates and container	5 mm
15	Material of Container	Polypropylene Co-polymer

16	Recommended Charging Rate		
(i)	Float Charging Voltage		
	between ambient temp. (-)5-14 ° C	2.27 +/- 0.02 VPC	EXIDE
	between ambient temp. 15-24 ° C	2.25 +/- 0.02 VPC	INDUSTRIES LIMITED
	between ambient temp. 25-34 ° C	2.23 +/- 0.02 VPC	
	between ambient temp. 35-40 ° C	2.20 +/- 0.02 VPC	
(ii)	Float Charging Current	60	Amps (Max)
	Trickle Charging Voltage	NA	Anps (Max)
(iii)			
(iv)	Trickle Charging Current	NA	
(v)	Boost Charging Voltage	2.35	Volts
(vi)	Boost Charging Current	80	Amps.
(vii) T	ime taken to full charge from 100%	72 Hrs (Min)	
di	scharge state by constant voltage	2.1 volts(ocv)	
ch	narging & voltage at the end of this charge		
(∨iii)	Equalising Charging Current; Voltage	NA	
× /			
17 Gi	uaranteed efficiencies at 10 hrs rate		
	a) Ampere-hour efficiency	90%	
(1	b) Watt-hour efficiency	80%	
18 All	lowable voltage ripple	1.5 % RMS of the charging voltage(Bul	0,00
		0.5 % RMS of the charging voltage(Float	at charging)
40 lat			
	ternal Resistance of each cell at	0.42	milli ohms min
гu	Illy Charged Condition	0.42	
20 To	otal Resistance of Battery ; milliohms	Depending on no. of cells	
2010			
21 ()	verall Dimensions of each complete	Length 619 +/- 5, Width 445 +/- 5, Heig	bt 388 +/- 5
		(6 cell module)	11 300 +/- 3
IIIC	odule (LxWxH) in mm		
00.144			
	eight of unpacked and complete module	156.3 +/- 5% Kgs (Single 6 cell module)
wit	th electrolyte ; Kgs		
23 Ma	aterial of Modules	Powder coated MS	
0.4 \\\/			with flame a superior
24 00	hether explosion vents are offered	Yes, self re-sealing rubber safety valve	with flame arrestor
25 1 0	ess of capacity due to self discharge	< 0.5% per week of c-10 capacity	
25 L0	iss of capacity due to sell discharge	< 0.5% per week of c-10 capacity	
	a period for which the better chould be	If stars d in Indian ambient terms of 20 d	o.a. C
	ne period for which the battery should be	If stored in Indian ambient temp of 30 d	eg C
Sto	ored after supply in charged conditions	cells will need freshning charge once	
		in every three months, however if store	
		at higher or lower temperature freshni	ng
		charge to be provided as recommended	d.
27 An	nount of Hydrogen evolved during normal	Less than 200ppm	
	rmal float charging	normal float condition	
28 P.	ecommended interval at which battery	Once annually	
	ould be discharged at 10 hr discharge rate	Chec annually	
311		I	
29 No	o. of charge-discharge cycle battery can		
	ve during its entire life		
3	at 20% DOD	4000 cycles	
I I	at 50% DOD	1800 cycles	
	at 80% DOD	1400 cycles	
I I	pected Life of Battery in years	20 Yrs at 27 deg C in ideal float condition	

31 Applicable standard	IEC 60896 - 21 & 22, JIS : C 8704-2, : 1998 ANSI T1 330, GR/BAT-01/03-MARCH 2004, IS 15549 : 2005;
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100 hr 100 hr 100 hr 100 hr 100 hr 175 hr 8 hr 97.90 10.9 1.75 hr 1.77 hr	L. NO.	DESCRIPTION		DETAILS	
(i) Initial 100 (ii) Rated 100 (iii) End of Life 80 (i) Rated Capacity(in Ah) at minimum ambient temperature of (as por IS 15549 : 2005) Formula : Cl = (1 + 0.0043 (h27)) 2 Capacity at Various Discharge Rates at 27°C Formula : Cl = (1 + 0.0043 (h27)) 2 Capacity at Various Discharge Rates at 27°C Interview of (as por IS 15549 : 2005) 2 Capacity at Various Discharge Rates at 27°C Interview of (as por IS 15549 : 2005) Formula : Cl = (1 + 0.0043 (h27)) 2 Capacity at Various Discharge Rates at 27°C Interview of (as por IS 15549 : 2005) Formula : Cl = (1 + 0.0043 (h27)) 2 Capacity at Various Discharge Rates at 27°C Interview of (as por IS 15549 : 2005) Formula : Cl = (1 + 0.0043 (h27)) 4 Period of Discharge Mates at 27°C Interview of (as por IS 15549 : 2005) End C 3 10Hr 100.00 10.0 1.77 9 Sife of 2003 Sife of 2003 Sife of 2003 1.72 3 10Hr 100.00 10.0 1.77 1.77 4 Sife of 2003 Sife of	1	Capacity in Ah			
(i) Initial 100 (ii) Rated Capacity(in Ah) at minimum ambient temperature of (as port IS 15549 : 2005) Formula: Ct = (1 + 0.0045 (h:27)) (i) Rated Capacity(in Ah) at minimum ambient temperature of (as port IS 15549 : 2005) Formula: Ct = (1 + 0.0045 (h:27)) 2 Capacity at Various Discharge Rates at 27°C Formula: Ct = (1 + 0.0045 (h:27)) 2 Capacity at Various Discharge Rates at 27°C Ah capacities Discharge Current (Anpps) End C Vote (Amps) 2 Period of Discharge BiHr 97.60 10.00 1.77 1.77 9Hr 97.60 10.9 1.77 1.77 8Hr 71.70 13.1 1.72 9Hr 87.60 1.73 1.77 9Hr 95.00 1.9.9 1.77 9Hr 95.00 1.9.9 1.77 9Hr 95.00 1.9.9 1.77 9Hr 95.00 1.9.9 1.77 9Hr 95.00 1.7.9 1.77 9Hr 95.00 1.7.7 1.77 9Hr 95.00	(a)				
(ii) (iii) Rated End of Life 100 80 (b) Rated Capacity(in At) at minimum ambient temperature of (as per IS 15649 : 2005) Formula : Ci = (1+ 0.0043 (+27)) (c) Rated Capacity(in At) at maximum ambient temperature of (as per IS 15649 : 2005) Formula : Ci = (1+ 0.0043 (+27)) 2 Capacity at Various Discharge Rates at 27°C Period of Discharge Mates at 27°C Period 0 10.0 10.3 1.77 2 0.91 10.0 10.0 1.77 1.77 1.77 9Hr 97.00 10.05 1.77 1.77 1.77 1.77 9Hr 97.00 10.00 10.0 1.77 1.77 1.77 9Hr 97.00 10.0 1.77 1.77 1.77 1.77 9Hr 10.00 0.00 <				100	
(ii) End of Life 80 (ii) Rated Capacity(in Ah) at minimum ambient temperature of (as per IS 15549 : 2005) Formula: CL = (1 + 0.0043 (k-27)) (iii) Rated Capacity(in Ah) at maximum ambient temperature of (a sper IS 15549 : 2005) Formula: CL = (1 + 0.0043 (k-27)) 2 Capacity at Various Discharge Ah capacities Discharge Current (Amps) Formula: CL = (1 + 0.0043 (k-27)) 2 Capacity at Various Discharge Ah capacities Discharge Current (Amps) Formula: CL = (1 + 0.0043 (k-27)) 2 Capacity at Various Discharge Ah capacities Discharge Current (Amps) Formula: CL = (1 + 0.0043 (k-27)) 2 Capacity at Various Discharge Ah capacities Discharge Current (Amps) Formula: CL = (1 + 0.0043 (k-27)) 3 10Hr 100.00 10.0 1.77 4 Period of Discharge Ah capacities Discharge Current (Amps) End C (Volta) (Volta) 10Hr 100.00 10.0 1.77 1.77 1.77 5 Hrit 97.90 14.7 1.77 6 Hrit 50.00 1.77 1.77					
No. Rated Capacity(in Ah) at minimum ambient temperature of (as per IS 15549 : 2005) Formula: C1= (1 + 0.0043 (s.27)) Compositie temperature of (as per IS 15549 : 2005) Formula: C1= (1 + 0.0043 (s.27)) Period of Discharge Rates at 27*C Period of Discharge Rates at 27*C Period of Discharge Period of Discharge Current (Amps) End Capacity(in Ah) at maximum (Amps) End Capacity(in Ah) a	(11)				
ambient temperature of (as per IS 15549 : 2005) Formula : Ct = (1 + 0.0043 (t-27)) Tormula : Ct = (1 + 0.0043 (t-27)) Formula : Ct = (1 + 0.0043 (t-27)) Capacity at Various Discharge Rates at 27°C Discharge Current (Annps) End C Formula : Ct = (1 + 0.0043 (t-27)) 2 Capacity at Various Discharge Rates at 27°C Discharge Current (Annps) End C For Out Outgoet (Annps) End C For Outgoet (Annps) Capacity at Various Discharge Varients (Annps) Discharge Current (Annps) Colspan="2">End C For Ct For Ct For Outgoet (Annps) Outgoet (Particle Particle Part Particle Part Particle Particle Particle Particle Particle Part	(111)	End of Life		80	
ambient temperature of (as per IS 15549 : 2005) Formula : Ct= (1+0.0043 (t-27)) Capacity at Various Discharge Rates at 27°C Discharge Current (Anpps) End C Formula : Ct= (1+0.0043 (t-27)) 2 Capacity at Various Discharge Rates at 27°C Discharge Current (Anpps) End C For Ct	(b)	Rated Capacity(in Ah) at minimum		Formula : Ct = { 1+ 0.0043 (t-27) }	
ambient temperature of (as per IS 1564 9: 2005) 2 Capacity at Various Discharge Rates at 27°C Discharge Current (Amps) Find C Voltage (Volta (Voltage) 10Hr 100.00 10.0 1.75 9Hr 97.80 10.9 1.75 8Hr 95.00 11.9 1.77 8Hr 95.00 11.9 1.77 6Hr 87.90 12.3 1.77 6Hr 87.90 13.1 1.77 5Hr 83.30 16.7 1.77 3Hr 77.0 13.1 1.77 4Hr 71.70 23.9 1.77 3Hr 71.70 23.9 1.77 1Hr 50.00 50.0 1.7 20 min 46.70 56.1 1.7 30 min 40.00 80.0 17.7 11Hr 50.00 108.1 1.7 20 min 36.00 108.1 1.7 30 min 29.87 119.5 1.7 5 (i) Time fo	. ,				
ambient temperature of (as per IS 15649: 2005) 2 Capacity at Various Discharge Rates at 27°C Discharge Current (Amps) Find C Voltage (Volta (Voltage) 10Hr 100.00 10.0 1.75 10Hr 97.80 10.9 1.75 8Hr 95.00 11.9 1.77 8Hr 95.00 11.9 1.77 6Hr 87.90 13.1 1.77 6Hr 87.90 14.7 1.77 10Hr 10.00 10.7 1.74 6Hr 83.30 16.7 1.77 11Hr 78.20 13.8 1.77 11Hr 50.00 50.0 1.7 10Hr 10.00 64.6 1.7 11Hr 50.00 10.8 1.7 20 min 46.70 56.1 1.7 11Hr 50.00 10.8 1.7 20 min 29.87 119.5 1.7 10 min 21.83 131.5 1.7 20 min	(\mathbf{c})	Pated Capacity(in Ab) at maximum		Formula: $(1 + 0.0043 + 27)$	
2 Capacity at Various Discharge Ah capacities Discharge (Amps) End C 10Hr 100.00 10.0 1.7 9Hr 97.00 10.9 1.7 9Hr 97.00 10.9 1.7 7Hr 91.00 13.1 1.7 7Hr 91.70 13.1 1.7 6Hr 83.00 14.7 1.7 9Hr 97.00 13.1 1.7 9Hr 97.00 13.1 1.7 9Hr 83.00 14.7 1.7 9Hr 7.00 13.1 1.7 4Hr 7.20 19.6 1.7 3Hr 71.70 2.3.9 1.7 9Hr 96.00 10.8.1 1.7 10min 46.70 56.1 1.7 30 min 42.00 60.0 1.7 10 min 29.87 119.5 1.7 10 min 21.83 131.5 1.7 10 min 21.9 14	(0)			$10111011 = \{1+0.0045(1-27)\}$	
Image: Construct of the second seco	2 Ca				
Image: Construct of the second seco					
100 hr 100 hr 100 hr 100 hr 100 hr 175 hr 9Hr 97.90 10.9 1.75 hr 1.77 hr		Period of Discharge	Ah capacities		
10Hr 100.00 10.0 1.77 9Hr 97.90 10.9 1.73 9Hr 95.00 11.9 1.75 9Hr 95.00 11.9 1.75 9Hr 97.00 13.1 1.76 9Hr 97.00 13.1 1.76 9Hr 87.90 14.7 1.77 9Hr 87.90 14.7 1.77 9Hr 87.90 14.7 1.77 9Hr 78.20 19.6 1.77 4Hr 78.20 19.6 1.77 3Hr 71.70 23.9 1.74 2Hr 63.00 56.0 1.7 30 min 40.00 80.0 1.7 30 min 40.00 80.0 1.7 30 min 29.87 119.5 1.7 10 min 21.83 131.5 1.7 10 min 21.83 131.5 1.7 4 Expected Fault at bus due to battery 600				(Amps)	Voltag
9Hr 97.90 10.9 1.7 8Hr 95.00 11.9 1.7 9Hr 95.00 13.1 1.7 9Hr 97.90 13.1 1.7 9Hr 87.90 14.7 1.7 9Hr 87.90 14.7 1.7 9Hr 87.90 14.7 1.7 9Hr 87.90 14.7 1.7 9Hr 78.20 19.6 1.7 177 3Hr 71.7 1.7 2Hr 63.30 31.7 1.7 2Hr 50.00 50.0 1.7 30 min 46.70 56.1 1.7 30 min 40.00 80.0 1.7 30 min 29.87 119.5 1.7 10 min 21.83 131.5 1.7 10 min 21.83 131.5 1.7 10 min 21.83 131.5 1.7 10 min 3.67 221.1 1.7 <tr< td=""><td></td><td></td><td></td><td></td><td>(Volts</td></tr<>					(Volts
9Hr 97.90 10.9 1.7 8Hr 95.00 11.9 1.7 7Hr 95.00 13.1 1.7 9Hr 87.90 14.47 1.7 9Hr 87.90 14.7 1.7 9Hr 87.90 14.7 1.7 9Hr 87.90 14.7 1.7 9Hr 87.90 19.6 1.7 9Hr 78.20 19.6 1.7 9Hr 63.30 31.7 1.7 2Hr 63.00 30.17 1.7 10min 46.70 56.1 1.7 30 min 40.00 80.0 1.7 30 min 40.00 80.0 1.7 30 min 21.83 131.5 1.7 10 min 5.00 Amps 4<		10Hr	100.00	10.0	1 75
8Hr 95.00 11.9 1.7 7Hr 91.70 13.1 1.75 8Hr 87.90 14.7 1.7 5Hr 83.30 16.7 1.7 3Hr 71.70 23.9 1.7 3Hr 71.70 23.9 1.7 2Hr 63.30 31.7 1.7 1Hr 50.00 50.0 1.7 1Hr 50.00 50.0 1.7 30 min 46.70 56.1 1.7 40 min 43.00 64.6 1.7 30 min 40.00 80.0 1.7 15 min 29.87 119.5 1.7 10 min 21.83 131.5 1.7 3 of 1.6 V 3.67 221.1 1.7 4 Expected Fault at bus due to battery 600 Amps 5 (i) Short Circuit Current at Battery terminals 600 Amps 5 (ii) Time for which the battery can withstand stort wit at terminals 5 Seec 5 Seec					
7Hr 91.70 13.1 1.77 6Hr 87.90 14.7 1.75 9Hr 83.30 16.7 1.77 4Hr 78.20 19.6 1.77 3Hr 71.70 23.9 1.77 2Hr 63.30 31.7 1.77 2Hr 63.30 31.7 1.77 3Hr 71.70 23.9 1.77 2Hr 63.30 31.7 1.7 30 min 46.70 56.1 1.7 30 min 40.00 80.0 1.7 30 min 40.00 80.0 1.7 10 min 21.83 131.5 1.7 10 min 21.83 131.5 1.7 4 Expected Fault at bus due to battery 600 Amps 3 of 1.6 V 300 Amps 5 5 4 Expected Fault at bus due to battery 600 Amps 5 (i) Short Circuit Current at Battery terminals 5 5 5					
6Hr 87.90 14.7 1.75 5Hr 83.30 16.7 1.74 3Hr 71.70 23.9 1.77 1Hr 50.00 50.0 1.7 1Hr 50.00 50.0 1.7 30 min 46.00 64.6 1.7 30 min 40.00 80.0 1.7 15 min 29.87 119.5 1.7 10 min 21.83 131.5 1.7 10 min 21.83 131.5 1.7 3 of 1.6 V 300 Amps 4 Expected Fault at bus due to battery 600 Amps 5 (ii) Short Circuit Current for 1 min upto cut off voltage 5 Sec 600 7 Type/N					
6 Fhr 83.30 16.7 1.75 4 Hr 78.20 19.6 1.74 3 Hr 71.70 23.9 1.74 2 Hr 63.30 31.7 1.7 2 Hr 63.30 31.7 1.7 1 Hr 50.00 50.0 1.7 40 min 46.70 56.1 1.7 40 min 40.00 80.0 11.7 30 min 40.00 80.0 17.7 20 min 36.00 108.1 1.7 10 min 29.87 119.5 1.7 10 min 21.83 131.5 1.7 10 min 21.83 131.5 1.7 3 of 1.6 V 300 Amps Amps 4 Expected Fault at bus due to battery 600 Amps 5 (i) Short Circuit at terminals 5 Sec Amps 600 Type/No. of Negative Plates per cell Flat pasted; 2(l) + 2(E) Type/No. of Positive Plates per cell Flat pasted; 3					
4Hr 78.20 19.6 1.74 3Hr 71.70 23.9 1.74 2Hr 63.30 31.7 1.7 1Hr 50.00 50.0 1.7 30 min 46.70 56.1 1.7 40 min 43.00 64.6 1.7 30 min 40.00 80.0 1.7 20 min 36.00 108.1 1.7 15 min 29.87 119.5 1.7 10 min 21.83 131.5 1.7 10 min 21.83 131.5 1.7 10 min 21.83 131.5 1.7 1 for min 21.83 131.5 1.7 3 of 1.6 V 367 221.1 1.7 3 of 1.6 V 300 Amps 4 Expected Fault at bus due to battery 600 Amps 5 (i) Short Circuit Current at Battery terminals 5 Sec 4mps 5 (ii) Time for which the battery can withstand short circuit at terminals 5 Sec 4mps 6 Type/No. of Positive Plates per cell Flat pasted;3 </td <td></td> <td></td> <td>87.90</td> <td></td> <td>1.75</td>			87.90		1.75
3Hr 71.70 23.9 1.7 2Hr 63.30 31.7 1.7 1Hr 50.00 50.0 1.7 50 min 46.70 56.1 1.7 40 min 43.00 64.6 1.7 30 min 40.00 80.0 1.7 20 min 36.00 108.1 1.7 15 min 29.87 119.5 1.7 10 min 21.83 131.5 1.7 10 min 21.83 131.5 1.7 1 min 22.11 1.7 3 of 1.6 V 3.67 221.1 1.7 4 Expected Fault at bus due to battery 600 Amps 5 (i) Short Circuit Current at Battery terminals 600 Amps 5 (ii) Type/No. of Negative Plates per cell Flat pasted; 2(l) + 2(E) Amps 7 Type/No. of Positive Plates per cell Flat pasted; 3 315(L) x 140(W) x 2.65 (+/-1) (Thk) (Inter) 9 Size of positive plates, mm 315(L) x 140(W) x 4.5 (+/-1) (Thk) (End) 315(L) x 140(W) x 4.5 (+/-1) (Thk) (End)		5Hr	83.30	16.7	1.75
3Hr 71.70 23.9 1.7 2Hr 63.30 31.7 1.7 1Hr 50.00 50.0 1.7 50 min 46.70 56.1 1.7 40 min 43.00 64.6 1.7 30 min 40.00 80.0 1.7 20 min 36.00 108.1 1.7 15 min 29.87 119.5 1.7 10 min 21.83 131.5 1.7 1 min 21.83 131.5 1.7 1 min 22.9 147.5 1.7 3 of 1.6 V 3.67 221.1 1.7 4 Expected Fault at bus due to battery 600 Amps 5 (i) Short Circuit Current at Battery terminals 5 600 Amps 5 (ii) Type/No. of Negative Plates per cell Flat pasted; 2(l) + 2(E) Amps 7 Type/No. of Positive Plates per cell Flat pasted; 3 315(L) x 140(W) x 2.65 (+/-1) (Thk) (Inter) 3 Size of positive plates, mm 315(L) x 140(W) x 4.5 (+/-1) (Thk) (End) 9 Size of positive plates, mm 315(L) x 140(W) x 4.5 (+/-1) (Thk)		4Hr	78.20	19.6	1.74
2Hr 63.30 31.7 1.7 1Hr 50.00 50.0 1.7 50 min 46.70 56.1 1.7 40 min 43.00 64.6 1.7 30 min 40.00 80.0 1.7 20 min 36.00 108.1 1.7 20 min 20.00 108.1 1.7 15 min 29.87 119.5 1.7 10 min 21.83 131.5 1.7 10 min 21.83 131.5 1.7 3 of 1.6 V 3.67 221.1 1.7 4 Expected Fault at bus due to battery 600 Amps 5 (i) Short Circuit Current tor 1 min upto cut off voltage short circuit at terminals 5 Sec Amps 5 (ii) Short Circuit Current at Battery terminals 600 Amps 5 (iii) Short Circuit Current at Battery terminals 5 Sec Amps 6 Type/No. of Negative Plates per cell Flat pasted; 2(1) + 2(E) Type/No. of Positive Plates per cell Flat pasted; 3 8 Size of negative plates, mm 315(L) x 140(W) x 1.9 (+/-1) (Thk) (Inter) 315(L)					
1Hr 50.00 50.0 1.7 30 min 46.70 56.1 1.7 40 min 43.00 64.6 1.7 30 min 40.00 80.0 1.7 30 min 40.00 80.0 1.7 30 min 20 min 36.00 108.1 1.7 15 min 29.87 119.5 1.7 10 min 21.83 131.5 1.7 10 min 21.83 131.5 1.7 10 min 21.83 131.5 1.7 1 min 3.67 221.1 1.7 3 of 1.6 V 3.67 221.1 1.7 4 Expected Fault at bus due to battery 600 Amps 5 (i) Short Circuit Current at Battery terminals 600 Amps 5 (ii) Time for which the battery can withstand short circuit at terminals 5 Sec 4 6 Type/No. of Negative Plates per cell Flat pasted; 2(1) + 2(E) 7 7 Type/No. of Positive Plates per cell Si2c of negative plates, mm 315(L) x 140(W) x 2.65 (+/- 1) (Thk) (Inter) 9 <					
50 min 46.70 56.1 1.7 40 min 43.00 64.6 1.7 30 min 40.00 80.0 1.7 20 min 36.00 108.1 1.7 20 min 36.00 108.1 1.7 15 min 29.87 119.5 1.7 10 min 21.83 131.5 1.7 5 min 12.29 147.5 1.7 3 of 1.6 V 3.67 221.1 1.7 3 of 1.6 V 300 Amps 4 Expected Fault at bus due to battery 600 Amps 5 (i) Short Circuit Current at Battery terminals 600 Amps 5 (ii) Time for which the battery can withstand short circuit at terminals 5 Sec 6 Type/No. of Negative Plates per cell Flat pasted; 2(l) + 2(E) Amps 7 Type/No. of Positive Plates per cell Flat pasted; 3 315(L) × 140(W) × 2.65 (+/-1) (Thk) (Inter) 8 Size of negative plates, mm 315(L) × 140(W) × 4.5 (+/-1) (Thk) 4 4 9 Size of positive plates, mm 315(L) × 140(W) × 4.5 (+/-1) (Thk)					
40 min 43.00 64.6 1.7 30 min 40.00 80.0 1.7 20 min 36.00 108.1 1.7 15 min 29.87 119.5 1.7 10 min 21.83 131.5 1.7 5 min 12.29 147.5 1.7 1 min 3.67 221.1 1.7 5 (i) Short Circuit Current for 1 min upto cut off voltage of 1.6 V 300 Amps 4 Expected Fault at bus due to battery 600 Amps 5 (ii) Short Circuit Current at Battery terminals of 5 Sec 600 Amps 5 (ii) Time for which the battery can withstand short circuit at terminals 5 Sec 4 6 Type/No. of Negative Plates per cell Flat pasted; 2(1) + 2(E) 7 7 Type/No. of Positive Plates per cell Flat pasted; 3 315(L) x 140(W) x 1.9 (+/-1) (Thk) (Inter) 315(L) x 140(W) x 1.9 (+/-1) (Thk) (Lend) 9 Size of positive plates, mm<					
30 min 40.00 80.0 1.7 20 min 36.00 108.1 1.7 15 min 29.87 119.5 1.7 10 min 21.83 131.5 1.7 10 min 21.83 131.5 1.7 10 min 21.83 131.5 1.7 1 min 3.67 221.1 1.7 3 of 1.6 V 300 Amps 4 Expected Fault at bus due to battery 600 Amps 5 (i) Short Circuit Current at Battery terminals 600 Amps 5 (ii) Time for which the battery can withstand short circuit at terminals 5 Sec Sec 6 Type/No. of Negative Plates per cell Flat pasted; 2(1) + 2(E) Flat pasted; 3 8 Size of negative plates, mm 315(L) x 140(W) x 2.55 (+/- 1) (Thk) (Inter) 315(L) x 140(W) x 1.9 (+/- 1) (Thk)					
20 min 36.00 108.1 1.7 15 min 29.87 119.5 1.7 10 min 21.83 131.5 1.7 1 min 12.29 147.5 1.7 1 min 3.67 221.1 1.7 3 of 1.6 V 300 Amps 4 Expected Fault at bus due to battery 600 Amps 5 (i) Short Circuit Current at Battery terminals 600 Amps 5 (ii) Time for which the battery can withstand short circuit at terminals 5 Sec Amps 6 Type/No. of Negative Plates per cell Flat pasted; 2(1) + 2(E) Flat pasted; 3 8 Size of negative plates, mm 315(L) x 140(W) x 2.65 (+/-1) (Thk) (Inter) 315(L) x 140(W) x 1.9 (+/-1) (Thk) 4.10(Hiter) 315(L) x 140(W) x 4.5 (+/-1) (Thk) 9 Size of positive plates, mm 315(L) x 140(W) x 4.5 (+/-1) (Thk) 5.10(Hiter) 315(L) x 140(W) x 4.5 (+/-1) (Thk)					
15 min 29.87 119.5 1.7 10 min 21.83 131.5 1.7 5 min 12.29 147.5 1.7 1 min 3.67 221.1 1.7 Maximum Momentary Current for 1 min upto cut off voltage 300 Amps 3 of 1.6 V 300 Amps 4 Expected Fault at bus due to battery 600 Amps 5 (ii) Short Circuit Current at Battery terminals 600 Amps 5 (iii) Short Circuit at terminals 5 Sec Amps 6 Type/No. of Negative Plates per cell Flat pasted; 2(l) + 2(E) Flat pasted; 3 8 Size of negative plates, mm 315(L) x 140(W) x 2.65 (+/- 1) (Thk) (Inter) 315(L) x 140(W) x 4.5 (+/- 1) (Thk) (End) 315(L) x 140(W) x 4.5 (+/- 1) (Thk) 9 Size of positive plates, mm 315(L) x 140(W) x 4.5 (+/- 1) (Thk) 410(W) x 4.5 (+/- 1) (Thk)		30 min	40.00	80.0	1.7
10 min 21.83 131.5 1.7 5 min 12.29 147.5 1.7 1 min 3.67 221.1 1.7 1 min 3.67 221.1 1.7 3 of 1.6 V 300 Amps 4 Expected Fault at bus due to battery 600 Amps 5 (i) Short Circuit Current at Battery terminals 600 Amps 5 (ii) Time for which the battery can withstand short circuit at terminals 5 Sec Amps 6 Type/No. of Negative Plates per cell Flat pasted; 2(l) + 2(E) Flat pasted;3 8 Size of negative plates, mm 315(L) x 140(W) x 2.65 (+/- 1) (Thk) (Inter) 315(L) x 140(W) x 1.9 (+/- 1) (Thk) (End) 315(L) x 140(W) x 4.5 (+/- 1) (Thk)		20 min	36.00	108.1	1.7
10 min 21.83 131.5 1.7 5 min 12.29 147.5 1.7 1 min 3.67 221.1 1.7 3 Maximum Momentary Current for 1 min upto cut off voltage of 1.6 V 300 Amps 4 Expected Fault at bus due to battery 600 Amps 5 (i) Short Circuit Current at Battery terminals 5 (ii) 600 Amps 5 (iii) Short Circuit at terminals 5 Sec Amps 6 Type/No. of Negative Plates per cell Flat pasted; 2(l) + 2(E) Maximum Sector 1.1 (Thk) (Inter) 315(L) x 140(W) x 2.65 (+/-1) (Thk) (Inter) 315(L) x 140(W) x 1.9 (+/-1) (Thk) (End) 9 Size of positive plates, mm 315(L) x 140(W) x 4.5 (+/-1) (Thk) 15(L) x 140(W) x 4.5 (+/-1) (Thk)		15 min	29.87	119.5	1.7
5 min 12.29 147.5 1.7 1 min 3.67 221.1 1.7 3 of 1.6 V 300 Amps 4 Expected Fault at bus due to battery 600 Amps 5 (i) Short Circuit Current at Battery terminals 600 Amps 5 (ii) Time for which the battery can withstand short circuit at terminals 600 Amps 6 Type/No. of Negative Plates per cell Flat pasted; 2(I) + 2(E) Flat pasted; 3 8 Size of negative plates, mm 315(L) x 140(W) x 2.65 (+/- 1) (Thk) (Inter) 315(L) x 140(W) x 4.5 (+/- 1) (Thk) 410(W) x 4.5 (+/- 1) (Thk)					
1 min 3.67 221.1 1.7 3 Maximum Momentary Current for 1 min upto cut off voltage of 1.6 V 300 Amps 4 Expected Fault at bus due to battery 600 Amps 5 (i) Short Circuit Current at Battery terminals 5 (ii) 600 Amps 6 Type/No. of Negative Plates per cell Flat pasted; 2(l) + 2(E) Flat pasted;3 8 Size of negative plates, mm 315(L) x 140(W) x 2.65 (+/- 1) (Thk) (Inter) 315(L) x 140(W) x 4.5 (+/- 1) (Thk) 415(L) x 140(W) x 4.5 (+/- 1) (Thk)					
3 Maximum Momentary Current for 1 min upto cut off voltage 300 Amps 3 of 1.6 V 300 Amps 4 Expected Fault at bus due to battery 600 Amps 5 (ii) Short Circuit Current at Battery terminals 600 Amps 5 (iii) Time for which the battery can withstand short circuit at terminals 600 Amps 6 Type/No. of Negative Plates per cell Flat pasted; 2(l) + 2(E) Flat pasted; 3 7 Type/No. of Positive Plates per cell Flat pasted; 3 315(L) x 140(W) x 2.65 (+/- 1) (Thk) (Inter) 315(L) x 140(W) x 1.9 (+/- 1) (Thk) (End) 9 Size of positive plates, mm 315(L) x 140(W) x 4.5 (+/- 1) (Thk) 315(L) x 140(W) x 4.5 (+/- 1) (Thk)					
3 of 1.6 V 300 Amps 4 Expected Fault at bus due to battery 600 Amps 5 (ii) Short Circuit Current at Battery terminals 600 Amps 5 (iii) Time for which the battery can withstand short circuit at terminals 600 Amps 6 Type/No. of Negative Plates per cell Flat pasted; 2(l) + 2(E) Flat pasted; 3 8 Size of negative plates, mm 315(L) x 140(W) x 2.65 (+/- 1) (Thk) (Inter) 315(L) x 140(W) x 1.9 (+/- 1) (Thk) (End) 9 Size of positive plates, mm 315(L) x 140(W) x 4.5 (+/- 1) (Thk)		1 11111	5.07	221.1	1.7
3 bit 1.6 V 600 Amps 4 Expected Fault at bus due to battery 600 Amps 5 (i) Short Circuit Current at Battery terminals 600 Amps 5 (ii) Time for which the battery can withstand short circuit at terminals 600 Amps 6 Type/No. of Negative Plates per cell Flat pasted; 2(l) + 2(E) Flat pasted; 3 7 Type/No. of Positive Plates per cell Flat pasted; 3 315(L) x 140(W) x 2.65 (+/- 1) (Thk) (Inter) 315(L) x 140(W) x 1.9 (+/- 1) (Thk) (End) 9 Size of positive plates, mm 315(L) x 140(W) x 4.5 (+/- 1) (Thk) 4				300	Amps
5 (i) Short Circuit Current at Battery terminals 600 Amps 5 (ii) Time for which the battery can withstand short circuit at terminals 600 5 Sec 6 Type/No. of Negative Plates per cell Flat pasted; 2(l) + 2(E) Flat pasted; 3 7 Type/No. of Positive Plates per cell Flat pasted; 3 Size of negative plates, mm 315(L) x 140(W) x 2.65 (+/- 1) (Thk) (Inter) 315(L) x 140(W) x 1.9 (+/- 1) (Thk) (End) 9 Size of positive plates, mm 315(L) x 140(W) x 4.5 (+/- 1) (Thk) 10	3 of	1.6 V			/ inpo
5 (i) Short Circuit Current at Battery terminals 600 Amps 5 (ii) Time for which the battery can withstand short circuit at terminals 600 5 Sec 6 Type/No. of Negative Plates per cell Flat pasted; 2(l) + 2(E) Flat pasted; 3 7 Type/No. of Positive Plates per cell Flat pasted; 3 Size of negative plates, mm 315(L) x 140(W) x 2.65 (+/- 1) (Thk) (Inter) 315(L) x 140(W) x 1.9 (+/- 1) (Thk) (End) 9 Size of positive plates, mm 315(L) x 140(W) x 4.5 (+/- 1) (Thk) 10					
5 (ii) Time for which the battery can withstand short circuit at terminals 5 Sec 6 Type/No. of Negative Plates per cell Flat pasted; 2(l) + 2(E) 7 Type/No. of Positive Plates per cell Flat pasted; 3 8 Size of negative plates, mm 315(L) x 140(W) x 2.65 (+/- 1) (Thk) (Inter) 315(L) x 140(W) x 1.9 (+/- 1) (Thk) (End) 9 Size of positive plates, mm 315(L) x 140(W) x 4.5 (+/- 1) (Thk)	4 Ex	xpected Fault at bus due to battery		600	Amps
5 (ii) Time for which the battery can withstand short circuit at terminals 5 Sec 6 Type/No. of Negative Plates per cell Flat pasted; 2(l) + 2(E) 7 Type/No. of Positive Plates per cell Flat pasted; 3 8 Size of negative plates, mm 315(L) x 140(W) x 2.65 (+/- 1) (Thk) (Inter) 315(L) x 140(W) x 1.9 (+/- 1) (Thk) (End) 9 Size of positive plates, mm 315(L) x 140(W) x 4.5 (+/- 1) (Thk)	5 (i) Sh	hort Circuit Current at Battery terminals		600	Amps
short circuit at terminals 6 Type/No. of Negative Plates per cell 7 Type/No. of Positive Plates per cell 8 Size of negative plates, mm 9 Size of positive plates, mm 315(L) x 140(W) x 2.65 (+/- 1) (Thk) (Inter) 315(L) x 140(W) x 1.9 (+/- 1) (Thk) (End) 315(L) x 140(W) x 4.5 (+/- 1) (Thk)	• • • •			5 Sec	
7 Type/No. of Positive Plates per cellFlat pasted;38 Size of negative plates, mm $315(L) \times 140(W) \times 2.65 (+/-1) (Thk) (Inter)$ $315(L) \times 140(W) \times 1.9 (+/-1) (Thk) (End)$ 9 Size of positive plates, mm $315(L) \times 140(W) \times 4.5 (+/-1) (Thk)$					
7 Type/No. of Positive Plates per cellFlat pasted;38 Size of negative plates, mm $315(L) \times 140(W) \times 2.65 (+/-1) (Thk) (Inter)$ $315(L) \times 140(W) \times 1.9 (+/-1) (Thk) (End)$ 9 Size of positive plates, mm $315(L) \times 140(W) \times 4.5 (+/-1) (Thk)$					
8 Size of negative plates, mm 315(L) x 140(W) x 2.65 (+/- 1) (Thk) (Inter) 315(L) x 140(W) x 1.9 (+/- 1) (Thk) (End) 9 Size of positive plates, mm 315(L) x 140(W) x 4.5 (+/- 1) (Thk)	6 Ту	ype/No. of Negative Plates per cell		Flat pasted; 2(I) + 2(E)	
9 Size of positive plates, mm 315(L) x 140(W) x 1.9 (+/- 1) (Thk) (End) 315(L) x 140(W) x 4.5 (+/- 1) (Thk)	7 Ту	ype/No. of Positive Plates per cell		Flat pasted;3	
9 Size of positive plates, mm 315(L) x 140(W) x 1.9 (+/- 1) (Thk) (End) 315(L) x 140(W) x 4.5 (+/- 1) (Thk)	8 Siz	ze of negative plates, mm		315(L) x 140(W) x 2.65 (+/- 1) (Thk) (Inter)	
10 Type of Connection between colle	9 Siz	ze of positive plates, mm		315(L) x 140(W) x 4.5 (+/- 1) (Thk)	
IDELIVE OF JOHECHOLDERWEED CERS	10 Ty	ype of Connection between cells		Bolted rigid copper connectors	

10	Type of Connection between cells	Boited rigid copper connectors
11	Type of Separators	Absorptive glass mat
12	Thickness of Separators	4.2 (2 layers of 2.1 mm each)
13	Dimensison of 2 volts cell (LXWXH), mm	159 (+/-3) x 62 (+/-3) x 396 (+/- 5 mm)
14	Clearance between the bottom of the plates and container	5 mm
15	Material of Container	Polypropylene Co-polymer

1			
16 (i)	Recommended Charging Rate		
(i)	Float Charging Voltage		VIDE
	between ambient temp. (-)5-14 ° C	2.27 +/- 0.02 VPC	
	between ambient temp. 15-24 ° C	2.25 +/- 0.02 VPC	SIRIES LIMIIED
	between ambient temp. 25-34 ° C	2.23 +/- 0.02 VPC	
	between ambient temp. 35-40 ° C	2.20 +/- 0.02 VPC	
(ii)	Float Charging Current	15	Amps (Max)
(iii)	Trickle Charging Voltage	NA	
(iv)	Trickle Charging Current	NA	
(v)	Boost Charging Voltage	2.35	Volts
(vi)	Boost Charging Current	20	Amps.
	Time taken to full charge from 100%	72 Hrs (Min)	Amps.
· · ·	discharge state by constant voltage	2.1 volts(ocv)	
		2.1 VOIIS(00V)	
	charging & voltage at the end of this charge	NIA	
(viii)	Equalising Charging Current;Voltage	NA	
17 0	Guaranteed efficiencies at 10 hrs rate		
		90%	
	(a) Ampere-hour efficiency		
	(b) Watt-hour efficiency	80%	
18 A	Allowable voltage ripple	1.5 % RMS of the charging voltage(Bulk charging)	
		0.5 % RMS of the charging voltage(Float charging)	
	nternal Resistance of each cell at		
ŀ	Fully Charged Condition	0.91	milli ohms mir
20 T	Fotal Resistance of Battery ; milliohms	Depending on no. of cells	
	Overall Dimensions of each complete	Length 758 +/- 5, Width 450 +/- 5, Height 235 +/- 5	
n	nodule (LxWxH) in mm	(12 cell module)	
22 V	Neight of unpacked and complete module	119.05 μ / E ⁹ / Kap (Single 12 coll module)	
		118.05 +/- 5% Kgs (Single 12 cell module)	
W	vith electrolyte ; Kgs		
23 N	Material of Modules	Powder coated MS	
25		r uwder coaled wis	
24 V	Whether explosion vents are offered	Yes, self re-sealing rubber safety valve with flame arrestor	
25 L	loss of capacity due to self discharge	< 0.5% per week of c-10 capacity	
0 6 T	The period for which the better chould be	If stored in Indian ambient terms of 20 days	
	The period for which the battery should be	If stored in Indian ambient temp of 30 deg C	
S	stored after supply in charged conditions	cells will need freshning charge once	
		in every three months, however if stored	
		at higher or lower temperature freshning	
		charge to be provided as recommended.	
~ ~ ^	mount of Ludrogon avaluad during a series	Loss than 200nnm	
	Amount of Hydrogen evolved during normal	Less than 200ppm	
n	normal float charging	normal float condition	
		Once enruelly	
	Recommended interval at which battery	Once annually	
S	should be discharged at 10 hr discharge rate		
29 N	No. of charge-discharge cycle battery can		
	give during its entire life		
Ĭ	at 20% DOD	4000 cycles	
	at 50% DOD	1800 cvcles	

give during its entit	at 20% DOD	4000 cycles	
	at 50% DOD at 80% DOD	1800 cycles 1400 cycles	
30 Expected Life of B	attery in years	20 Yrs at 27 deg C in ideal float condition.	
• •			
		IEC 60896 - 21 & 22, JIS : C 8704-2, : 1998	
31 Applicable standar	t t t t t t t t t t t t t t t t t t t	IEC 60896 - 21 & 22, JIS : C 8704-2, : 1998 ANSI T1 330, GR/BAT-01/03-MARCH 2004,	



SL. NO.	DESCRIPTION		DETAILS	
1 (a) (i) (ii)	Capacity in Ah At 27 ° C Initial Rated		200 200	
(ii)	End of Life		160	
(b)	Rated Capacity(in Ah) at minimum ambient temperature of (as per IS 15549 : 2005)		Formula : Ct = { 1+ 0.0043 (t-27) }	
(c)	Rated Capacity(in Ah) at maximum ambient temperature of (as per IS 15549 : 2005)		Formula : Ct = { 1+ 0.0043 (t-27) }	
2	Capacity at Various Discharge Rates at 27°C			
	Period of Discharge	Ah capacities	Discharge Current (Amps)	End Cell Voltage (Volts)
	10Hr 9Hr 8Hr 7Hr 6Hr 5Hr 4Hr 3Hr 2Hr 1Hr 50 min 40 min 30 min 20 min 15 min 10 min 5 min	200.00 195.80 190.00 183.40 175.80 166.60 156.40 143.40 126.60 100.00 93.40 86.00 80.00 72.00 59.74 43.66 24.58	20.0 21.8 23.8 26.2 29.3 33.3 39.1 47.8 63.3 100.0 112.1 129.1 160.0 216.2 239.0 263.0 295.1	1.75 1.75 1.75 1.75 1.75 1.75 1.75 1.74 1.74 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7
	1 min	7.34	442.2	1.7
	Maximum Momentary Current for 1 min upto cut off voltage of 1.6 V		600	Amps
4	Expected Fault at bus due to battery		1200	Amps
	Short Circuit Current at Battery terminals Time for which the battery can withstand short circuit at terminals		1200 5 Sec	Amps
6	Type/No. of Negative Plates per cell		Flat pasted, 4(I) + 2(E)	
	Type/No. of Positive Plates per cell		Flat pasted 5	
8	Size of negative plates, mm		315(L) x 140(W) x 2.65 (+/- 1) (Thk) (Inter) 315(L) x 140(W) x 1.9 (+/- 1) (Thk) (End)	
9	Size of positive plates, mm		315(L) x 140(W) x 4.5 (+/- 1) (Thk)	
10	10 Type of Connection between cells		Bolted rigid copper connectors	
11	Type of Separators		Absorptive glass mat	
12	Thickness of Separators		4.2 (2 layers of 2.1 mm each)	
13	3 Dimensison of 2 volts cell (LXWXH), mm		167(+/-3) x 87(+/-3) x 394 (+/- 5 mm)	
14	Clearance between the bottom of the plates and container		5 mm	
15	Material of Container		Polypropylene Co-polymer	

16	Recommended Charging Rate		
(i)	Float Charging Voltage		
. /	between ambient temp. (-)5-14 ° C	2.27 +/- 0.02 VPC	MEXIDE
	between ambient temp. 15-24 ° C	2.25 +/- 0.02 VPC	INDUSTRIES LIMITED
	•		
	between ambient temp. 25-34 ° C	2.23 +/- 0.02 VPC	
	between ambient temp. 35-40 ° C	2.20 +/- 0.02 VPC	
(ii)	Float Charging Current	30	Amps (Max)
(iii)	Trickle Charging Voltage	NA	
(iv)	Trickle Charging Current	NA	
			Valta
(v)	Boost Charging Voltage	2.35	Volts
(vi)	Boost Charging Current	40	Amps.
(vii)	Time taken to full charge from 100%	72 Hrs (Min)	
	discharge state by constant voltage	2.1 volts(ocv)	
	charging & voltage at the end of this charge		
(viii)	Equalising Charging Current;Voltage	NA	
(viii)	Equalising Charging Current, Voltage	NA NA	
47			
17	Guaranteed efficiencies at 10 hrs rate		
	(a) Ampere-hour efficiency	90%	
	(b) Watt-hour efficiency	80%	
18	Allowable voltage ripple	1.5 % RMS of the charging voltage(Bulk charging)	
	0 11	0.5 % RMS of the charging voltage(Float charging)	
19	Internal Resistance of each cell at		
	Fully Charged Condition	0.99	milli ohms m
20	Total Resistance of Battery ; milliohms	Depending on no. of cells	
	Overall Dimensions of each complete	Length 588 +/- 5, Width 415 +/- 5(w/o base member	
	module with Top Cover(LxWxH) in mm	Width 452 +/-5 (with base member), Height 210 +/- 5	5;
		(6 cells module);	
22	Weight of unpacked and complete module	83.1 +/- 5% Kgs (Single 6 cell module)	
	with electrolyte ; Kgs		
	with electrolyte, https		
23	Material of Modules	Powder coated MS	
24	Whether explosion vents are offered	Yes, self re-sealing rubber safety valve with flame arr	estor
25	Loss of capacity due to self discharge	< 0.5% per week of c-10 capacity	
	The period for which the battery should be	If stored in Indian ambient temp of 30 deg C	
	stored after supply in charged conditions	cells will need freshning charge once	
		in every three months, however if stored	
		at higher or lower temperature freshning	
		charge to be provided as recommended.	
27	Amount of Hydrogen evolved during normal	Less than 200ppm	
	normal float charging	normal float condition	
~~~	De server en de dústement et ochiste hetteme		
	Recommended interval at which battery	Once annually	
	should be discharged at 10 hr discharge rate		
20	No of charge discharge such better usen		
	No. of charge-discharge cycle battery can give during its entire life		
		4000 cyclos	
	at 20% DOD	4000 cycles	
	at 50% DOD	1800 cycles	
	at 80% DOD	1400 cycles	
30	Expected Life of Battery in years	20 Yrs at 27 deg C in ideal float condition.	
		IEC 60896 - 21 & 22,	

		IEC 60896 - 21 & 22,
		JIS : C 8704-2, : 1998
31	Applicable standard	ANSI T1 330,
		GR/BAT-01/03-MARCH 2004,
		IS 15549 : 2005



SL. NO.	DESCRIPTION		DETAILS	
1	Capacity in Ah			
(a)				
(i)	) Initial		240	
(ii)	) Rated End of Life		240 192	
(iii)			192	
(b)	Rated Capacity(in Ah) at minimum ambient temperature of ( as per IS 15549 : 2005)		Formula : Ct = { 1+ 0.0043 (t-27) }	
(c)	Rated Capacity(in Ah) at maximum ambient temperature of ( as per IS 15549 : 2005)		Formula : Ct = { 1+ 0.0043 (t-27) }	
2	2 Capacity at Various Discharge Rates at 27°C			
	Period of Discharge	Ah capacities	Discharge Current (Amps)	End Cell Voltage (Volts )
	10Hr	240.00	24.0	4 75
	9Hr	<b>240.00</b> 234.96	<b>24.0</b> 26.1	1.75 1.75
	8Hr	228.00	28.5	1.75
	7Hr	220.08	31.4	1.75
	6Hr	210.96	35.2	1.75
	5Hr	199.92	40.0	1.75
	4Hr	187.68	46.9	1.74
	3Hr	172.08	57.4	1.74
	2Hr	151.92	76.0	1.7
	1Hr	120.00	120.0	1.7
	50 min	112.08	134.5	1.7
	40 min	103.20	155.0	1.7
	30 min 20 min	96.00 86.40	192.0 259.5	1.7 1.7
	15 min	71.69	259.5	1.7
	10 min	52.39	315.6	1.7
	5 min	29.50	354.1	1.7
	1 min	8.81	530.6	1.7
	Maximum Momentary Current for 1 min upto cut off voltage 3 of 1.6 V		720	Amps
4	Expected Fault at bus due to battery		1440	Amps
	) Short Circuit Current at Battery terminals ) Time for which the battery can withstand short circuit at terminals		1440 5 Sec	Amps
6	5 Type/No. of Negative Plates per cell		Flat pasted; 7	
7	7 Type/No. of Positive Plates per cell		Flat pasted; 6	
8	B Size of negative plates, mm		315(L) x 140(W) x 2.65 (+/- 1) (Thk)	
g	Size of positive plates, mm		315(L) x 140(W) x 4.5 (+/- 1) (Thk)	
10	Type of Connection between cells		Bolted rigid copper connectors	
11	I Type of Separators		Absorptive glass mat	
12	2 Thickness of Separators		4.2 (2 layers of 2.1 mm each)	
13	B Dimensison of 2 volts cell (LXWXH), mm		167 (+/-3) mm x 126 (+/-3) mm x 394 (+/- 5) mm	

	Clearance between the bottom of the plates and container	5 mm
15	Material of Container	Polypropylene Co-polymer

(1)	Recommended Charging Rate		A EVINE
(i)	Float Charging Voltage		
	between ambient temp. (-)5-14 ° C	2.27 +/- 0.02 VPC	
	between ambient temp. 15-24 ° C	2.25 +/- 0.02 VPC	
	between ambient temp. 25-34 ° C	2.23 +/- 0.02 VPC	
	between ambient temp. 35-40 ° C	2.20 +/- 0.02 VPC	
(ii)	Float Charging Current	36	Amps (Max)
(iii)	Trickle Charging Voltage	NA	
(iv)	Trickle Charging Current	NA	
(v)	Boost Charging Voltage	2.35	Volts
(vi)	Boost Charging Current	48	Amps.
	Time taken to full charge from 100%	72 Hrs (Min)	
` '	lischarge state by constant voltage	2.1 volts(ocv)	
	harging & voltage at the end of this charge	2.1 (000)	
(viii)	Equalising Charging Current;Voltage	NA	
(viii)	Equalising Charging Current, voltage		
	uaranteed efficiencies at 10 hrs rate		
(	(a) Ampere-hour efficiency	90%	
(	(b) Watt-hour efficiency	80%	
18 AI	llowable voltage ripple	1.5 % RMS of the charging voltage(Bulk charging) 0.5 % RMS of the charging voltage(Float charging)	
	ternal Resistance of each cell at ully Charged Condition	0.86	milli ohms r
20 To	otal Resistance of Battery ; milliohms	Depending on no. of cells	
21 ()	verall Dimensions of each complete	Length 588 +/- 5, Width 460 +/- 5, Height 288 +/- 5	
	odule (LxWxH) in mm	( 6 cell module) ( 6 cell module)	
	eight of unpacked and complete module	100 +/- 5% Kgs (Single 6 cell module)	
	/eight of unpacked and complete module ith electrolyte ; Kgs	100 +/- 5% Kgs (Single 6 cell module)	
wi		100 +/- 5% Kgs (Single 6 cell module) Powder coated MS	
wi 23 Mi	ith electrolyte ; Kgs		r
wi 23 Ma 24 W	ith electrolyte ; Kgs laterial of Modules	Powder coated MS	r
wi 23 Mi 24 W 25 Lc	ith electrolyte ; Kgs laterial of Modules /hether explosion vents are offered oss of capacity due to self discharge	Powder coated MS Yes, self re-sealing rubber safety valve with flame arrestor < 0.5% per week of c-10 capacity	r
wi 23 M 24 W 25 Lo 26 Th	ith electrolyte ; Kgs laterial of Modules /hether explosion vents are offered oss of capacity due to self discharge he period for which the battery should be	Powder coated MS Yes, self re-sealing rubber safety valve with flame arrestor < 0.5% per week of c-10 capacity If stored in Indian ambient temp of 30 deg C	r
wi 23 M 24 W 25 Lo 26 Th	ith electrolyte ; Kgs laterial of Modules /hether explosion vents are offered oss of capacity due to self discharge	Powder coated MS Yes, self re-sealing rubber safety valve with flame arrestor < 0.5% per week of c-10 capacity If stored in Indian ambient temp of 30 deg C cells will need freshning charge once	r
wi 23 M 24 W 25 Lc 26 Th	ith electrolyte ; Kgs laterial of Modules /hether explosion vents are offered oss of capacity due to self discharge he period for which the battery should be	Powder coated MS Yes, self re-sealing rubber safety valve with flame arrestor < 0.5% per week of c-10 capacity If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored	r
wi 23 M 24 W 25 Lc 26 Th	ith electrolyte ; Kgs laterial of Modules /hether explosion vents are offered oss of capacity due to self discharge he period for which the battery should be	Powder coated MS Yes, self re-sealing rubber safety valve with flame arrestor < 0.5% per week of c-10 capacity If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning	r
wi 23 M 24 W 25 Lo 26 Th	ith electrolyte ; Kgs laterial of Modules /hether explosion vents are offered oss of capacity due to self discharge he period for which the battery should be	Powder coated MS Yes, self re-sealing rubber safety valve with flame arrestor < 0.5% per week of c-10 capacity If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored	r
wi 23 Mi 24 W 25 Lc 26 Tr st	ith electrolyte ; Kgs laterial of Modules /hether explosion vents are offered oss of capacity due to self discharge he period for which the battery should be cored after supply in charged conditions	Powder coated MS Yes, self re-sealing rubber safety valve with flame arrestor < 0.5% per week of c-10 capacity If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended.	r
23 M 24 W 25 Lc 26 Th st	ith electrolyte ; Kgs laterial of Modules /hether explosion vents are offered oss of capacity due to self discharge he period for which the battery should be cored after supply in charged conditions	Powder coated MS Yes, self re-sealing rubber safety valve with flame arrestor < 0.5% per week of c-10 capacity If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended. Less than 200ppm	r
23 M 24 W 25 Lc 26 Th st	ith electrolyte ; Kgs laterial of Modules /hether explosion vents are offered oss of capacity due to self discharge he period for which the battery should be cored after supply in charged conditions	Powder coated MS Yes, self re-sealing rubber safety valve with flame arrestor < 0.5% per week of c-10 capacity If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended.	r
23 Mi 24 W 25 Lc 26 Th sto 27 Ar nc	ith electrolyte ; Kgs laterial of Modules /hether explosion vents are offered oss of capacity due to self discharge he period for which the battery should be cored after supply in charged conditions	Powder coated MS         Yes, self re-sealing rubber safety valve with flame arrestor         < 0.5% per week of c-10 capacity	r
23 Mi 24 W 25 Lo 26 Th sto 27 Ar no 28 Re	ith electrolyte ; Kgs laterial of Modules /hether explosion vents are offered oss of capacity due to self discharge he period for which the battery should be cored after supply in charged conditions	Powder coated MS Yes, self re-sealing rubber safety valve with flame arrestor < 0.5% per week of c-10 capacity If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended. Less than 200ppm	r
23 Mi 24 W 25 Lc 26 Th sto 27 Ar nc 28 Re sh	ith electrolyte ; Kgs laterial of Modules /hether explosion vents are offered oss of capacity due to self discharge he period for which the battery should be sored after supply in charged conditions mount of Hydrogen evolved during normal ormal float charging ecommended interval at which battery hould be discharged at 10 hr discharge rate	Powder coated MS         Yes, self re-sealing rubber safety valve with flame arrestor         < 0.5% per week of c-10 capacity	r
23 Mi 24 W 25 Lo 26 Th sto 27 Ar no 28 Re sh	ith electrolyte ; Kgs laterial of Modules /hether explosion vents are offered oss of capacity due to self discharge he period for which the battery should be cored after supply in charged conditions mount of Hydrogen evolved during normal ormal float charging ecommended interval at which battery hould be discharged at 10 hr discharge rate	Powder coated MS         Yes, self re-sealing rubber safety valve with flame arrestor         < 0.5% per week of c-10 capacity	r
23 Mi 24 W 25 Lc 26 Th sto 27 Ar nc 28 Re sh	ith electrolyte ; Kgs laterial of Modules /hether explosion vents are offered oss of capacity due to self discharge he period for which the battery should be sored after supply in charged conditions mount of Hydrogen evolved during normal ormal float charging ecommended interval at which battery hould be discharged at 10 hr discharge rate	Powder coated MS         Yes, self re-sealing rubber safety valve with flame arrestor         < 0.5% per week of c-10 capacity	r
23 Mi 24 W 25 Lc 26 Th sto 27 Ar nc 28 Re sh	ith electrolyte ; Kgs laterial of Modules //hether explosion vents are offered oss of capacity due to self discharge he period for which the battery should be ored after supply in charged conditions mount of Hydrogen evolved during normal ormal float charging ecommended interval at which battery hould be discharged at 10 hr discharge rate o. of charge-discharge cycle battery can ve during its entire life	Powder coated MS         Yes, self re-sealing rubber safety valve with flame arrestor         < 0.5% per week of c-10 capacity	r
23 Mi 24 W 25 Lc 26 Th sto 27 Ar nc 28 Re sh	ith electrolyte ; Kgs laterial of Modules /hether explosion vents are offered oss of capacity due to self discharge he period for which the battery should be ored after supply in charged conditions mount of Hydrogen evolved during normal ormal float charging ecommended interval at which battery hould be discharged at 10 hr discharge rate o. of charge-discharge cycle battery can ve during its entire life at 20% DOD	Powder coated MS         Yes, self re-sealing rubber safety valve with flame arrestor         < 0.5% per week of c-10 capacity	r
23 Mi 24 W 25 Lo 26 Th sto 27 Ar no 28 Re sh 29 No giv	ith electrolyte ; Kgs laterial of Modules /hether explosion vents are offered oss of capacity due to self discharge he period for which the battery should be ored after supply in charged conditions mount of Hydrogen evolved during normal ormal float charging ecommended interval at which battery hould be discharged at 10 hr discharge rate o. of charge-discharge cycle battery can ve during its entire life at 20% DOD at 50% DOD	Powder coated MS         Yes, self re-sealing rubber safety valve with flame arrestor         < 0.5% per week of c-10 capacity	r

		IEC 60896 - 21 & 22,
		JIS : C 8704-2, : 1998
31 Applicable stand	dard	ANSI T1 330,
		GR/BAT-01/03-MARCH 2004,
		IS 15549 : 2005



SL. NO.	DESCRIPTION		DETAILS	
1	Capacity in Ah		Г	
(a)	At 27 ° C			
(i)	Initial		300	
(ii)	Rated		300	
(iii)	End of Life		240	
(b)	Rated Capacity(in Ah) at minimum		Formula : Ct = C27/{ 1 + 0.0043(27-t)}	
(6)	ambient temperature of ( as per IS 15549 : 2005)		10111011 = 0.217(1+0.00+3(21-0))	
(c)	Rated Capacity(in Ah) at maximum		Formula : Ct = C27/{ 1 + 0.0043(27-t)}	
	ambient temperature of ( as per IS 15549 : 2005)			
20	Capacity at Various Discharge Rates at 27°C			
	Period of Discharge	Ah capacities	Discharge Current	End Cell
	_	-	(Amps)	Voltage
				(Volts)
	10Hr	300.00	30.0	1 75
	9Hr	293.70	32.6	1.75 1.75
	8Hr	285.00	35.6	1.75
	7Hr	275.10	39.3	1.75
	6Hr	263.70	44.0	1.75
	5Hr	249.90	50.0	1.75
1 1	4Hr	234.60	58.7	1.74
	3Hr	215.10	71.7	1.74
	2Hr	189.90	95.0	1.7
	1Hr	150.00	150.0	1.7
	50 min	140.10	168.2	1.7
	40 min	129.00	193.7	1.7
	30 min	120.00	240.0	1.7
	20 min	108.00	324.3	1.7
	15 min	89.61	358.4	1.7
	10 min	65.49	394.5	1.7
	5 min	36.87	442.6	1.7
	1 min	11.01	663.3	1.7
	Maximum Momentary Current for 1 min upto cut off voltage		900	Amps
30	of 1.6 V			1.2
	Functional Facult at hum due to hottom.		4000	<b>A</b>
4 1	Expected Fault at bus due to battery		1800	Amps
5 (i)	Short Circuit Current at Battery terminals		1800	Amps
	Time for which the battery can withstand		5 Sec	Amps
	short circuit at terminals		3 360	
LI				
6	Type/No. of Negative Plates per cell		Flat pasted; 9	
	Type/Ne. of Positive Plates per cell		Elat pastod: 8	
	Type/No. of Positive Plates per cell		Flat pasted; 8	
8 5	Size of negative plates, mm		315(L) x 140(W) x 2.65 (+/- 1) (Thk)	
9 9	Size of positive plates, mm		315(L) x 140(W) x 4.5 (+/- 1) (Thk)	
10	Type of Connection between cells		Bolted rigid copper connectors	
11	Type of Separators		Absorptive glass mat	
12	Thickness of Separators		4.2 (2 layers of 2.1 mm each)	
13 [	Dimensison of 2 volts cell (LXWXH), mm		167 (+/-3) mm x 126 (+/-3) mm x 394 (+/- 5) mm	
	Clearance between the bottom			
	of the plates and container		5 mm	
15	Material of Container		Polypropylene Co-polymer	
10				

0       Proof Undging Voltage       2.27 + 0.00 VPC       Image: Construction of the construp of the construction of the construction of the constru	16 (i)	Recommended Charging Rate		
between ambient temp; 15:24 * C         2.25 +/- 0.02 VPC           (i)         F. Foat Charging Current         2.23 +/- 0.02 VPC           (ii)         Tricke Charging Vollage         NA           (iii)         Tricke Charging Vollage         NA           (iii)         Boost Charging Vollage         Amps.           (iii)         Tricke Charging Vollage         Amps.           (iii)         Boost Charging Vollage         2.35           (iii)         Tricke Charging Current         NA           (iii)         Tricke Charging Current         SO           (iii)         Tricke Moltage at the of thic charge         SO           (iii)         Current editions at 10 hors rate         SO           (iii)         Quality of Unigge Current (Vollage         NA           (iii)         Quality of Unigge Current (Vollage         NA           (iii)         Quality of Unigge Current (Vollage         NA           (iii)         Quality of Unigge Current (Vollage         SO           (iii)         Quality of Unigge Curent (Vo	(i)	Float Charging Voltage		
between anotes temp. 1:-24 * C         2.35 * -10.02 V/C           c)         between anotes temp. 3:-40 * C         2.35 * -10.02 V/C           c)         Float Charging Current         2.35 * -10.02 V/C           c)         Float Charging Current         45           c)         Track Charging Current         53           c)         Boost Charging Current         72           c)         Boost Charging Current Volago         NA           c)         True taken to full charge from 100%         2.35           c)         Depending on no. of cells         90%           c)         Boost Charging Current Volago         80%           15         Kitowable voltage ripple         1.5 % RMS of the charging voltage(Fluid charging)           16         Attowable voltage ripple         1.5 % RMS of the charging voltage(Fluid charging)           20         Variation for the charging voltage (Fluid charging)         90%           21         Outstowed contion         0.72         milli ohms n           22				
iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii				INDUSTRIES LIMITED
(i)     Float Charging Current     45     Amps (Max)       (ii)     Track Charging Voltage     NA       (iii)     Track Charging Current     NA       (iv)     Boost Charging Voltage     0       (iv)     Boost Charging Voltage     0       (iv)     Track Charging Voltage     0       (iv)     Boost Charging Voltage     0       (iv)     Track Charging Voltage     0		between ambient temp. 25-34 ° C	2.23 +/- 0.02 VPC	
(iii)     Tracke Charging Voltage     NA       (iv)     Bosc Charging Current     NA       (iv)     Bosc Charging Current     2.35       (viv)     True taken to full charging Current     2.35       (viv)     True taken to full charging Current     2.1       (viv)     True taken to full charging Current     2.1       (viv)     Equaling Charging Current     2.1       (viv)     True taken to full charging voltage file     30%       (viv)     Equalization Control     30%       (viv)     Equalization Control     30%       (viv)     Matcher equalization Control     0.72       (viv)     Equalin Control		between ambient temp. 35-40 ° C	2.20 +/- 0.02 VPC	
(iii)     Tracke Charging Voltage     NA       (iv)     Bosc Charging Current     NA       (iv)     Bosc Charging Current     2.35       (viv)     True taken to full charging Current     2.35       (viv)     True taken to full charging Current     2.1       (viv)     True taken to full charging Current     2.1       (viv)     Equaling Charging Current     2.1       (viv)     True taken to full charging voltage file     30%       (viv)     Equalization Control     30%       (viv)     Equalization Control     30%       (viv)     Matcher equalization Control     0.72       (viv)     Equalin Control	(ii)	Float Charging Current	45	Amps (Max
(iv)     Tridle Charging Current     NA       (iv)     Boost Charging Voltage Boost Charging Voltage (iv)     2.35     Volts       (iv)     Threa taken for full charge from 100% discharge state by containt voltage (iv)     2.35     Volts       (iv)     Threa taken for full charge from 100% discharge state by containt voltage (iv)     NA     2.35     Volts       (iv)     Threa taken for full charge from 100% discharge state by containt voltage (iv)     NA     NA       17     Guarantee difficiences at 10 his rate (iv) Ampere-hour efficiency     90%, 80%     90%, 80%       18     Allowable voltage ripple     1.5 % RMS of the charging voltage(Bluk charging) 0.5 % RMS of the charging voltage(Float charging)       19     Internal Resistance of each cell at Fully Charged Condition     0.72     milli ohms in 0.72       20     Total Resistance of Battery ; milliohms     Depending on no. of cells       21     Overall Dimensions of each complete module with Uterfund Carge (LWWH) in min     125 +/- 5% Kgs (Single 5 cell module)       22     Weight of unpacked and complete module with electroly : Kgs     Powder coated MS       23     Modules on visits are offered     Yes, self re-sealing rubber safety valve with flame arrestor       24     Whether explosion vertis are offered     Yes, self re-sealing rubber safety valve with flame arrestor       25     Loss of capacity due to self discharge     c.05% per week of c-10			NA	• • •
(v)     Boost Charging Voltage Boost Charging Current (vi)     2.35     Volta 60       (vii)     The taken to full charge from 100% discharge state by constant voltage (charging & voltage the end of this charge (charging & voltage the end of this charge (charging & voltage at D hrs rate (charge hour efficiency (b) Wath-hour efficiency (c) Wath-				
(iv)     Boot Charging Current     60     Amps.       (iv)     Time taken foil charge from 100%.     72 His (Min)     2.1 vols(ocv)       (iv)     Equalising Charging Current Voltage     NA       17     Guaranteed efficiencies at 10 his rate (a) Amper-hour efficiency (b) Wat-hour efficiency     90%.       18     Allowable voltage ribe efficiencies at 10 his rate (a) Amper-hour efficiency     90%.       18     Allowable voltage ribple     1.5 % RMS of the charging voltage(Buk charging) (b) Wat-hour efficiency     0.72       19     Internal Resistance of each cell at Fully Charged Condition     0.72     milli ohms r       20     Total Resistance of each complete module without Terminal Cap (LXWH) in mn     Depending on no. of cells       21     Weight of unpacked and complete module with electrolyce : Kgs     125 +/- 5% Kgs (Single 6 cell module)       22     Viel of unpacked and complete module with electrolyce : Kgs     125 +/- 5% Kgs (Single 6 cell module)       23     Material of Modules     Powder coated MS       24     Whether explosion vents are offered     Yes, self re-sealing rubber safety valve with flame arrestor       25     Loss of capacity due to self discharge     0.5% per week of c-10 capacity       26     The paind for which the battery should be stored after supply in charged conditions     If stored in Indian ambient tomp of 30 dog C cells with electrolyce : Kgs       28     No. of ch				Volte
(iii) The taken to full charge from 100% discharge table y constant voltage charging & voltage if the end of this charge charging & voltage if the end of this charge charging & voltage if the end of this charge (ii) Equation (Charging Current Voltage (iii) Equation (Charging Current Voltage (iii) (iiii) (iiii) (iii) (iii) (iii) (iii) (iii) (iii) (iii) (iii) (iii) (				
discharge state by constant voltage charging & Voltage at the end of this charge Equalising Charging Current Voltage       2.1 volts(cor)         17       Guaranteed efficiencies at 0 his charge (a) Amper-hour efficiency       90%         18       Allowable voltage it here and this charge (b) Watt-hour efficiency       90%         18       Allowable voltage itpple       1.5 %, RMS of the charging voltage(Eult charging) 0.5 % RMS of the charging voltage(Float charging)         19       Internal Resistance of each cell at Fully Charged Condition       0.72       milliohms r         20       Total Resistance of Battery ; milliohms       Depending on no. of cells         21       Overall Dimensions of each complete module without Terminal Cap (LXWH) in mm       125 +/. 5% Kgs (Single 6 cell module)         22       Weight of unpacked and complete module with electroby: it Kgs       Powder coated MS         23       Material of Modules       Powder coated MS         24       Whether explosion vents are offered       Yes, self re-sealing rubber safety valve with flame arrestor         25       Loss of capacity due to self discharge       c.0.5% per week of c-10 capacity         28       The period for which the battery should be stored after supply in charged conditions       Less than 200ppm normal float charging or to water theorem of the discharge rule         28       Amount of Hydrogen evolved during normal normal float charging at 50% DOD at 50% DDD				Amps.
(v)     https://withing.it is voltage is the end of this charge Equalising.Charging Current:Voltage     NA       17     Guaranteed efficiencies at 10 hrs rate (a) Ampere-hour efficiency (b) Watt-hour efficiency (c) Watter explosion vents are offered (c) Whether explosion vents are offered (c) S% per weak of c-10 capacity (c) S% per weak of c-10 capacity (c) S% efficience efficiency (c) S% per weak of c-10 capacity (c) S% efficience efficiency (c) S% per weak of c-10 capacity (c) S% efficience efficiency (c) S% per weak of c-10 capacity (c) S% per	(VII)			
Vitil     Lequalising Charging Current; Voltage     NA       17     Guaranteed efficiencies at 10 hrs rate (a) Ampere-hour efficiency     90% 80%       18     Allowable voltage ripple     1.5 % RMS of the charging voltage(Bluk charging) 0.5 % RMS of the charging voltage(Float charging)       19     Internal Resistance of each cell at Fully Charged Condition     0.72       20     Total Resistance of each cell at Fully Charged Condition     0.72       21     Overall Dimensions of each complete module without Terminal Cap (LsWxH) in mm     Ceptending on no. of cells       22     Weight of unpacked and complete module     125 4/-5% Kgs (Single 6 cell module)       23     Material of Modules     Powder coated MS       24     Whether explosion vents are offered     Yes; self re-sealing rubber safety valve with flame arrestor cells with ned freshing charge one cells with read freshing charge o			2.1 VOIts(ocv)	
17       Cuaranteed efficiency (a) Ampere-hour efficiency (b) Watt-hour efficiency (c)				
(a) Ampere-hour efficiency     90% 80%       (b) Watt-hour efficiency     90% 80%       18     Allowable voltage ripple     1.5 % RMS of the charging voltage(Float charging) 0.5 % RMS of the charging voltage(Float charging)       19     Internal Resistance of each cell at Fully Charged Condition     0.72     milli ohms r       20     Total Resistance of Battery ; milliohms     Depending on no. of cells       21     Overall Dimensions of each complete module without Terminal Cap (LxWxH) in mm     Length 588 +/- 5, Width 460 +/- 5, Height 288 +/- 5       21     Overall Dimensions of each complete module without Terminal Cap (LxWxH) in mm     125 +/- 5% Kgs (Single 6 cell module)       22     Material of Modules     Powder coated MS       24     Whether explosion vents are offered     Yes, self re-sealing rubber safety valve with flame arrestor       25     Loss of capacity due to self discharge     c 0.5% per week of c-10 capacity       26     The period for which the battery should be stored after supply in charged conditions     If stored in fundian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended.       27     Amount of Hydrogen evolved during normal normal float charging on the discharge rate     Unce annually       28     Recommended interval at which battery whould be discharge of the discharge rate     at 20% DOD at 80% DOD       29     No of charge	(viii)	Equalising Charging Current; Voltage	NA	
(b) Watt-hour efficiency     80%       18     Allowable voltage ripple     1.5 % RMS of the charging voltage(Euk charging)       19     Internal Resistance of each cell at Fully Charged Condition     0.72       19     Total Resistance of Battery ; milliohms     Depending on no. of cells       20     Total Resistance of Battery ; milliohms     Depending on no. of cells       21     Overall Dimensions of each complete module without Terminal Cap (LxWxH) in mm     25 # 5% Kgs (Single 6 cell module)       22     Weight of unpacked and complete module with electrolyte ; Kgs     125 +/- 5% Kgs (Single 6 cell module)       24     Whether explosion vents are offered     Yes, self re-sealing rubber safety valve with flame arrestor       25     Loss of capacity due to self discharge     < 0.5% per week of c-10 capacity	17			
18       Allowable voltage ripple       1.5 % RMS of the charging voltage(Buik charging)         19       Internal Resistance of sach cell at Fully Charged Condition       0.72       milli ohms n         20       Total Resistance of Battery ; milliohms       Depending on no. of cells         21       Overall Dimensions of each complete module       Length 588 +/- 5, Width 460 +/- 5, Height 288 +/- 5 (6 cell module)         22       Weight of unpacked and complete module       125 +/- 5% Kgs (Single 6 cell module)         23       Material of Modules       Powder coated MS         24       Whether explosion vents are offered       Yes, self re-sealing rubber safety valve with flame arrestor         25       Loss of capacity due to self discharge       c 0.5% per week of c-10 capacity         26       The period for which the battery should be soft after supply in charged conditions       period safety valve with flame arrestor         26       Loss of capacity due to self discharge       c 0.5% per week of c-10 capacity         27       Amount of Hydrogen evolved during normal normal float conditions       Less than 200ppm normal float condition         28       Recommended interval at which battery at the discharge rate       200 crycles         29       No. of charge-discharge orde battery can at 80% DDD at 80% DD at 80% DD at 80% DD       1400 crycles         30       Expected Life of Battery in year		(a) Ampere-hour efficiency	90%	
0.5 % RMS of the charging voltagie(Float charging)         19       Internal Resistance of each cell at Fully Charged Condition       0.72       milli ohms r         20       Total Resistance of Battery ; milliohms       Depending on no. of cells         21       Overall Dimensions of each complete module without Terminal Cap (LXWXH) in mm       Length 588 +/- 5, Width 460 +/- 5, Height 288 +/- 5 (6 cell module)         22       Weight of unpacked and complete module with electrolyte ; Kgs       Powder coated MS         23       Material of Modules       Powder coated MS         24       Whether explosion vents are offered       Yes, self re-sealing rubber safety valve with flame arrestor         25       Loss of capacity due to self discharge       < 0.5% per week of c-10 capacity		(b) Watt-hour efficiency	80%	
19       Internal Resistance of each cell at Fully Charged Condition       0.72       milli ohms r         20       Total Resistance of Battery ; milliohms       Depending on no. of cells         21       Overall Dimensions of each complete module without Terminal Cap (LxWxH) in mm       Length 588 +/- 5, Width 460 +/- 5, Height 288 +/- 5 (6 cell module)         22       Weight of unpacked and complete module with electrolyte ; Kgs       125 +/- 5% Kgs (Single 6 cell module)         23       Material of Modules       Powder coated MS         24       Whether explosion vents are offered       Yes, self re-sealing rubber safety valve with flame arrestor         25       Loss of capacity due to self discharge       -0.5% per week of c-10 capacity         26       The period for which the battery should be stored after supply in charged conditions       If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in avery three months, however if stored at higher or lower temperature freshning charge to be provided as recommended.         27       Amount of Hydrogen evolved during normal normal float condition       Less than 200ppm normal float condition         28       Recommended interval at which battery should be discharged evole battery can give during its entire life at 50% DOD at 80% DOD       4000 cycles 1800 cycles 1800 cycles         30       Expected Life of Battery in years       20 Yrs at 27 deg C in ideal float condition.	18	Allowable voltage ripple		
Fully Charged Condition       0.72       milli ohms r         20       Total Resistance of Battery ; milliohms       Depending on no. of cells         21       Overall Dimensions of each complete module without Terminal Cap (LxWxH) in mm       Length 588 +/- 5, Width 460 +/- 5, Height 288 +/- 5 ( 6 cell module)         22       Weight of unpacked and complete module without Terminal Cap (LxWxH) in mm       125 +/- 5% Kgs (Single 6 cell module)         23       Material of Modules       Powder coated MS         24       Whether explosion vents are offered       Yes, self re-sealing rubber safety valve with flame arrestor         25       Loss of capacity due to self discharge       < 0.5% per week of c-10 capacity				
Fully Charged Condition       0.72       milli ohms n         20       Total Resistance of Battery ; milliohms       Depending on no. of cells         21       Overall Dimensions of each complete module without Terminal Cap (LxWxH) in mm       Length 588 +/- 5, Width 460 +/- 5, Height 288 +/- 5 (6 cell module)         22       Weight of unpacked and complete module without Terminal Cap (LxWxH) in mm       125 +/- 5% Kgs (Single 6 cell module)         23       Material of Modules       Powder coated MS         24       Whether explosion vents are offered       Yes, self re-sealing rubber safety valve with flame arrestor         25       Loss of capacity due to self discharge       < 0.5% per week of c-10 capacity	10	Internal Resistance of each cell at		
20       Total Resistance of Battery ; milliohms       Depending on no. of cells         21       Overall Dimensions of each complete module without Terminal Cap (LxWxH) in mm       Length 588 +/- 5, Width 460 +/- 5, Height 288 +/- 5 (6 cell module)         22       Weight of unpacked and complete module with electrolyte ; Kgs       125 +/- 5% Kgs (Single 6 cell module)         23       Material of Modules       Powder coated MS         24       Whether explosion vents are offered       Yes, self re-sealing rubber safety valve with flame arrestor         25       Loss of capacity due to self discharge       < 0.5% per week of c-10 capacity			0.72	milli ohms n
21       Overall Dimensions of each complete module without Terminal Cap (LxWxH) in mm       Length 588 +/- 5, Width 460 +/- 5, Height 288 +/- 5         22       Weight of unpacked and complete module with electrolyte ; Kgs       125 +/- 5% Kgs (Single 6 cell module)         23       Material of Modules       Powder coated MS         24       Whether explosion vents are offered       Yes, self re-sealing rubber safety valve with flame arrestor         25       Loss of capacity due to self discharge       < 0.5% per week of c-10 capacity			0.72	
21       Overall Dimensions of each complete module module without Terminal Cap (LxWxH) in mm       Length 588 +/- 5, Width 460 +/- 5, Height 288 +/- 5         22       Weight of unpacked and complete module with electrolyte ; Kgs       125 +/- 5% Kgs (Single 6 cell module)         23       Material of Modules       Powder coated MS         24       Whether explosion vents are offered       Yes, self re-sealing rubber safety valve with flame arrestor         25       Loss of capacity due to self discharge       < 0.5% per week of c-10 capacity	20	Total Resistance of Battery - milliohms	Depending on no. of cells	
module without Terminal Cap (LxWxH) in mm       (6 čell module)         22       Weight of unpacked and complete module with electrolyte ; Kgs       125 +/- 5% Kgs (Single 6 cell module)         23       Material of Modules       Powder coated MS         24       Whether explosion vents are offered       Yes, self re-sealing rubber safety valve with flame arrestor         25       Loss of capacity due to self discharge       < 0.5% per week of c-10 capacity	20			
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22       Weight of unpacked and complete module with electrolyte ; Kgs       125 +/- 5% Kgs (Single 6 cell module)         23       Material of Modules       Powder coated MS         24       Whether explosion vents are offered       Yes, self re-sealing rubber safety valve with flame arrestor         25       Loss of capacity due to self discharge       < 0.5% per week of c-10 capacity				
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with electrolyte ; Kgs     Powder coated MS       23     Material of Modules     Powder coated MS       24     Whether explosion vents are offered     Yes, self re-sealing rubber safety valve with flame arrestor       25     Loss of capacity due to self discharge     < 0.5% per week of c-10 capacity	~~			
23 Material of Modules       Powder coated MS         24 Whether explosion vents are offered       Yes, self re-sealing rubber safety valve with flame arrestor         25 Loss of capacity due to self discharge       < 0.5% per week of c-10 capacity			125 +/- 5% Kgs (Single 6 cell module)	
24       Whether explosion vents are offered       Yes, self re-sealing rubber safety valve with flame arrestor         25       Loss of capacity due to self discharge       < 0.5% per week of c-10 capacity		with electrolyte ; Kgs		
25       Loss of capacity due to self discharge       < 0.5% per week of c-10 capacity         26       The period for which the battery should be stored after supply in charged conditions       If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended.         27       Amount of Hydrogen evolved during normal normal float charging       Less than 200ppm normal float condition         28       Recommended interval at which battery should be discharge at 10 hr discharge rate       Once annually         29       No. of charge-discharge cycle battery can give during its entire life       at 20% DOD at 80% DOD 1400 cycles 1800 cy	23	Material of Modules	Powder coated MS	
26       The period for which the battery should be stored after supply in charged conditions       If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended.         27       Amount of Hydrogen evolved during normal normal float charging       Less than 200ppm normal float condition         28       Recommended interval at which battery should be discharge dat 10 hr discharge rate       Once annually         29       No. of charge-discharge cycle battery can give during its entire life       at 20% DOD at 50% DOD 1800 cycles         30       Expected Life of Battery in years       20 Yrs at 27 deg C in ideal float condition.	24	Whether explosion vents are offered	Yes, self re-sealing rubber safety valve with flame arresto	or
26       The period for which the battery should be stored after supply in charged conditions       If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended.         27       Amount of Hydrogen evolved during normal normal float charging       Less than 200ppm normal float condition         28       Recommended interval at which battery should be discharge rate       Once annually         29       No. of charge-discharge cycle battery can give during its entire life       at 20% DOD at 50% DOD at 50% DOD 1800 cycles         30       Expected Life of Battery in years       20 Yrs at 27 deg C in ideal float condition.				
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in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended.         27       Amount of Hydrogen evolved during normal normal float charging         28       Recommended interval at which battery should be discharge at 10 hr discharge rate         29       No. of charge-discharge cycle battery can give during its entire life         at 20% DOD at 50% DOD at 50% DOD 14000 cycles         30       Expected Life of Battery in years         20       Yrs at 27 deg C in ideal float condition.				
27       Amount of Hydrogen evolved during normal normal float charging       Less than 200ppm normal float condition         28       Recommended interval at which battery should be discharged at 10 hr discharge rate       Once annually         29       No. of charge-discharge cycle battery can give during its entire life at 20% DOD at 80% DOD 1800 cycles at 80% DOD 1400 cycles       200 cycles 1800 cycles 1400 cycle				
27       Amount of Hydrogen evolved during normal normal float charging       Less than 200ppm normal float condition         28       Recommended interval at which battery should be discharged at 10 hr discharge rate       Once annually         29       No. of charge-discharge cycle battery can give during its entire life at 20% DOD at 50% DOD at 50% DOD 1800 cycles 1400 cycles       4000 cycles 1800 cycles 1400 cycles 1800 cycles 1800 cycles 1400 cycles 1400 cycles         30       Expected Life of Battery in years       20 Yrs at 27 deg C in ideal float condition.				
27     Amount of Hydrogen evolved during normal normal float charging     Less than 200ppm normal float condition       28     Recommended interval at which battery should be discharged at 10 hr discharge rate     Once annually       29     No. of charge-discharge cycle battery can give during its entire life at 20% DOD at 50% DOD at 50% DOD 1800 cycles     4000 cycles 1800 cycles 1400 cycles       30     Expected Life of Battery in years     20 Yrs at 27 deg C in ideal float condition.				
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28       Recommended interval at which battery should be discharged at 10 hr discharge rate       Once annually         29       No. of charge-discharge cycle battery can give during its entire life at 20% DOD at 50% DOD at 50% DOD 1800 cycles       4000 cycles 1800 cycles         30       Expected Life of Battery in years       20 Yrs at 27 deg C in ideal float condition.				
should be discharged at 10 hr discharge rate         29       No. of charge-discharge cycle battery can give during its entire life         at 20% DOD at 50% DOD at 80% DOD       4000 cycles 1800 cycles         30       Expected Life of Battery in years         20       Yrs at 27 deg C in ideal float condition.		normai tioat charging	normal float condition	
should be discharged at 10 hr discharge rate         29       No. of charge-discharge cycle battery can give during its entire life         at 20% DOD at 50% DOD at 50% DOD at 80% DOD       4000 cycles         30       Expected Life of Battery in years       20 Yrs at 27 deg C in ideal float condition.         IEC 60896 - 21 & 22,	~~			
29       No. of charge-discharge cycle battery can give during its entire life       4000 cycles         at 20% DOD at 50% DOD at 50% DOD       4000 cycles         30       Expected Life of Battery in years       20 Yrs at 27 deg C in ideal float condition.				
give during its entire life at 20% DOD at 50% DOD at 50% DOD at 80% DOD 30 Expected Life of Battery in years IEC 60896 - 21 & 22,				
at 20% DOD       4000 cycles         at 50% DOD       1800 cycles         at 80% DOD       1400 cycles         30 Expected Life of Battery in years       20 Yrs at 27 deg C in ideal float condition.				
at 50% DOD       1800 cycles         at 80% DOD       1400 cycles         30 Expected Life of Battery in years       20 Yrs at 27 deg C in ideal float condition.         IEC 60896 - 21 & 22,		5 · · · · ·	1000 cv/clos	
at 80% DOD 1400 cycles 30 Expected Life of Battery in years 20 Yrs at 27 deg C in ideal float condition. IEC 60896 - 21 & 22,				
30 Expected Life of Battery in years 20 Yrs at 27 deg C in ideal float condition.				
IEC 60896 - 21 & 22,			1400 696165	
	30	Expected Life of Battery in years	20 Yrs at 27 deg C in ideal float condition.	
JIS : C 8704-2, : 1998				

		IEC 60896 - 21 & 22,
		JIS : C 8704-2, : 1998
	Applicable standard	ANSI T1 330,
		GR/BAT-01/03-MARCH 2004,
31		IS 15549 : 2005

**NEPST / UPST 320** 



End Cell Voltage (Volts )
1.75
1.75
1.75
1.75
1.75
1.75
1.74
1.74
1.7
1.7
1.7
1.7
1.7
1.7
1.7
1.7
1.7 1.7
1.7
Amps
Amps
Amps

	Recommended Charging Rate		
(i)			EXIDE
	between ambient temp. (-)5-14 ° C	2.27 +/- 0.02 VPC	INDUSTRIES LIMITED
	between ambient temp. 15-24 ° C	2.25 +/- 0.02 VPC	
	between ambient temp. 25-34 ° C	2.23 +/- 0.02 VPC	
	between ambient temp. 35-40 ° C	2.20 +/- 0.02 VPC	
(ii)	Float Charging Current	48	Amps (Max)
(iii)	Trickle Charging Voltage	NA	
(iv)		NA	
(v)		2.35	Volts
(vi)	Boost Charging Current	64	Amps.
(vii)		72 Hrs (Min)	
(,	discharge state by constant voltage	2.1 volts(ocv)	
	charging & voltage at the end of this charge	2.1 (000)	
(viii)		NA	
()			
17	Guaranteed efficiencies at 10 hrs rate		
	(a) Ampere-hour efficiency	90%	
	(b) Watt-hour efficiency	80%	
18	Allowable voltage ripple	1.5 % RMS of the charging voltage(Bulk charging)	
		0.5 % RMS of the charging voltage(Float charging)	
10	Internet Desistance of each cell of		
	Internal Resistance of each cell at Fully Charged Condition	0.72	milli ohms n
		0.12	
20	Total Resistance of Battery ; milliohms	Depending on no. of cells	
21	Overall Dimensions of each complete	Length 588 +/- 5, Width 460 +/- 5, Height 288 +/- 5	
	module without Terminal Cap (LxWxH) in mm	( 6 cell module)	
22	Weight of unpacked and complete module	125 +/- 5% Kgs (Single 6 cell module)	
	with electrolyte ; Kgs		
23	Material of Modules	Powder coated MS	
24	Whether explosion vents are offered	Yes, self re-sealing rubber safety valve with flame arrestor	
25	Loss of capacity due to self discharge	< 0.5% per week of c-10 capacity	
25			
25 26	Loss of capacity due to self discharge	< 0.5% per week of c-10 capacity	
25 26	Loss of capacity due to self discharge The period for which the battery should be	< 0.5% per week of c-10 capacity If stored in Indian ambient temp of 30 deg C	
25 26	Loss of capacity due to self discharge The period for which the battery should be	< 0.5% per week of c-10 capacity If stored in Indian ambient temp of 30 deg C cells will need freshning charge once	
25 26	Loss of capacity due to self discharge The period for which the battery should be	< 0.5% per week of c-10 capacity If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored	
25 26	Loss of capacity due to self discharge The period for which the battery should be	< 0.5% per week of c-10 capacity If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning	
25 26	Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions	< 0.5% per week of c-10 capacity If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended.	
25 26 27	Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions Amount of Hydrogen evolved during normal	< 0.5% per week of c-10 capacity If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended. Less than 200ppm	
25 26 27	Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions	< 0.5% per week of c-10 capacity If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended.	
25 26 27	Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions Amount of Hydrogen evolved during normal	< 0.5% per week of c-10 capacity If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended. Less than 200ppm normal float condition	
25 26 27 28	Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging	< 0.5% per week of c-10 capacity If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended. Less than 200ppm	
25 26 27 28	Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery	< 0.5% per week of c-10 capacity If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended. Less than 200ppm normal float condition	
25 26 27 28 29	Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate	< 0.5% per week of c-10 capacity If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended. Less than 200ppm normal float condition	
25 26 27 28 29	Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate No. of charge-discharge cycle battery can	< 0.5% per week of c-10 capacity If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended. Less than 200ppm normal float condition	
25 26 27 28 29	Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate No. of charge-discharge cycle battery can give during its entire life	< 0.5% per week of c-10 capacity If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended. Less than 200ppm normal float condition Once annually	
25 26 27 28 29	Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate No. of charge-discharge cycle battery can give during its entire life at 20% DOD	< 0.5% per week of c-10 capacity If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended. Less than 200ppm normal float condition Once annually 4000 cycles	
25 26 27 28 29	Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate No. of charge-discharge cycle battery can give during its entire life at 20% DOD at 50% DOD at 80% DOD	<ul> <li>&lt; 0.5% per week of c-10 capacity</li> <li>If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended.</li> <li>Less than 200ppm normal float condition</li> <li>Once annually</li> <li>4000 cycles 1800 cycles 1800 cycles 1400 cycles</li> </ul>	
25 26 27 28 29	Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate No. of charge-discharge cycle battery can give during its entire life at 20% DOD at 50% DOD	<ul> <li>&lt; 0.5% per week of c-10 capacity</li> <li>If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended.</li> <li>Less than 200ppm normal float condition</li> <li>Once annually</li> <li>4000 cycles 1800 cycles</li> </ul>	
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25 26 27 28 29	Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate No. of charge-discharge cycle battery can give during its entire life at 20% DOD at 50% DOD at 80% DOD	<ul> <li>&lt; 0.5% per week of c-10 capacity</li> <li>If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended.</li> <li>Less than 200ppm normal float condition</li> <li>Once annually</li> <li>4000 cycles 1800 cycles 1400 cycles</li> <li>20 Yrs at 27 deg C in ideal float condition.</li> </ul>	
25 26 27 28 29 30	Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate No. of charge-discharge cycle battery can give during its entire life at 20% DOD at 50% DOD at 80% DOD Expected Life of Battery in years	<ul> <li>&lt; 0.5% per week of c-10 capacity</li> <li>If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended.</li> <li>Less than 200ppm normal float condition</li> <li>Once annually</li> <li>4000 cycles 1800 cycles 1400 cycles</li> <li>20 Yrs at 27 deg C in ideal float condition.</li> </ul>	
25 26 27 28 29 30	Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate No. of charge-discharge cycle battery can give during its entire life at 20% DOD at 50% DOD at 80% DOD	<ul> <li>&lt; 0.5% per week of c-10 capacity</li> <li>If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended.</li> <li>Less than 200ppm normal float condition</li> <li>Once annually</li> <li>4000 cycles 1800 cycles 1400 cycles</li> <li>20 Yrs at 27 deg C in ideal float condition.</li> <li>IEC 60896 - 21 &amp; 22, JIS : C 8704-2, : 1998</li> </ul>	



SL. NO.	DESCRIPTION		DETAILS	
1	Capacity in Ah			
(a)	At 27 ° C		200	
(i) (ii) (iii)	Initial		380	
(11)	Rated		380	
(iii)	End of Life		304	
(b)	Rated Capacity(in Ah) at minimum		Formula : Ct = { 1+ 0.0043 (t-27) }	
(0)	ambient temperature of ( as per IS 15549 : 2005)			
<i>(</i> )				
(c)	Rated Capacity(in Ah) at maximum ambient temperature of ( as per IS 15549 : 2005)		Formula : Ct = { 1+ 0.0043 (t-27) }	
2	Capacity at Various Discharge Rates at 27°C	1		
	Period of Discharge	Ah capacities	Discharge Current (Amps)	End Cell Voltage (Volts )
	10Hr	380.00	38.0	1.75
	9Hr	372.02	41.3	1.75
	8Hr	361.00	45.1	1.75
	7Hr	348.46	49.8	1.75
	6Hr	334.02	55.7	1.75
	5Hr	316.54	63.3	1.75
	4Hr	297.16	74.3	1.74
	3Hr	272.46	90.8	1.74
	2Hr	240.54	120.3	1.7
	1Hr	190.00	190.0	1.7
	50 min	177.46	213.0	1.7
	40 min	163.40	245.3	1.7
	30 min	152.00	304.0	1.7
	20 min	136.80	410.8	1.7
	15 min	113.51	454.0	
				1.7
	10 min	82.95	499.7	1.7
	5 min 1 min	46.70	560.6	1.7 1.7
	1 11111	13.95	840.1	1.7
	Maximum Momentary Current for 1 min upto cut off voltage		1140	Amps
3	of 1.6 V		1140	Anpo
4	Expected Fault at bus due to battery		2280	Amps
5 (i)	Short Circuit Current at Battery terminals		2280	Amps
	Time for which the battery can withstand short circuit at terminals		5 Sec	Amps
6	Type/No. of Negative Plates per cell		Flat pasted; 11	
7	Type/No. of Positive Plates per cell		Flat pasted; 10	
8	Size of negative plates, mm		315(L) x 140(W) x 2.65 (+/- 1) (Thk)	
9	Size of positive plates, mm		315(L) x 140(W) x 4.5 (+/- 1) (Thk)	
10	Type of Connection between cells		Bolted rigid copper connectors	
11	Type of Separators		Absorptive glass mat	
12	Thickness of Separators		4.5 (2 layers of 2.25 mm each)	

13	Dimensison of 2 volts cell (LXWXH), mm	167 (+/-3) mm x 172 (+/-3) mm x 378 (+/- 5) mm
	Clearance between the bottom of the plates and container	5 mm
15	Material of Container	Polypropylene Co-polymer

		• • • • • • • • • • • • • • • • • • •	
16 (i)	Recommended Charging Rate		
(i)	Float Charging Voltage		
	between ambient temp. (-)5-14 ° C	2.27 +/- 0.02 VPC	<b>EXIDE</b>
	between ambient temp. 15-24 ° C	2.25 +/- 0.02 VPC	INDUSTRIES ETMITED
	between ambient temp. 25-34 ° C	2.23 +/- 0.02 VPC	
<i>(</i> 1)	between ambient temp. 35-40 ° C	2.20 +/- 0.02 VPC	
(ii)	Float Charging Current	57	Amps (Max)
(iii)	Trickle Charging Voltage	NA	
(iv)	Trickle Charging Current	NA	
(v)	Boost Charging Voltage	2.35	Volts
(vi)	Boost Charging Current	76	Amps.
	ne taken to full charge from 100%	72 Hrs (Min)	
	charge state by constant voltage	2.1 volts(ocv)	
	rging & voltage at the end of this charge		
(viii)	Equalising Charging Current;Voltage	NA	
17 Gua	ranteed efficiencies at 10 hrs rate		
	Ampere-hour efficiency	90%	
	Watt-hour efficiency	80%	
(0)	wateriour emolency	0070	
18 Allov	wable voltage ripple	1.5 % RMS of the charging voltage(Bulk	<b>C C</b> /
		0.5 % RMS of the charging voltage(Floa	it charging)
	rnal Resistance of each cell at	0.40	
Fully	/ Charged Condition	0.42	milli ohms min
20 Tota	al Resistance of Battery ; milliohms	Depending on no. of cells	
21 0.00	rall Dimensions of each complete	Length 619 +/- 5, Width 445 +/- 5, Heigł	at 200 1/ 5
	lule (LxWxH) in mm	( 6 cell module)	11 300 +/- 3
mou			
22 Wai	ght of unpacked and complete module	156.3 +/- 5% Kgs (Single 6 cell module)	
	electrolyte ; Kgs		
vvitii	electrolyte ; rgs		
23 Mate	erial of Modules	Powder coated MS	
	other evolution vents are offered	Vac colf to cooling tubber cofety volue	with flome errector
24 vvne	ether explosion vents are offered	Yes, self re-sealing rubber safety valve	with name arrestor
25 Loss	s of capacity due to self discharge	< 0.5% per week of c-10 capacity	
	period for which the battery should be	If stored in Indian ambient temp of 30 de	eg C
store	ed after supply in charged conditions	cells will need freshning charge once	
		in every three months, however if store	
		at higher or lower temperature freshnin	
		charge to be provided as recommended	
27 Amo	ount of Hydrogen evolved during normal	Less than 200ppm	
	nal float charging	normal float condition	
28 Rec	ommended interval at which battery	Once annually	
	uld be discharged at 10 hr discharge rate		
	of chore discharge such better and		
	of charge-discharge cycle battery can during its entire life		
give	at 20% DOD	4000 cycles	
	at 50% DOD	1800 cycles	
	at 80% DOD	1400 cycles	
20 540	ected Life of Battery in years	20 Yrs at 27 deg C in ideal float conditio	-

31 Applicable standard	IEC 60896 - 21 & 22, JIS : C 8704-2, : 1998 ANSI T1 330, GR/BAT-01/03-MARCH 2004, IS 15549 : 2005;
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## GENERAL TECHNICAL PARTICULARS UPST / NEPST 400



NO.	DESCRIPTION		DETAILS	
1	Capacity in Ah			
(a)	At 27 ° C			
(i)	Initial		400	
(ii)	Rated		400	
(iii)	End of Life		320	
()				
(b)	Rated Capacity(in Ah) at minimum		Formula : Ct = { 1+ 0.0043 (t-27) }	
(~)	ambient temperature of ( as per IS 15549 : 2005)			
(c)	Rated Capacity(in Ah) at maximum		Formula : Ct = { 1+ 0.0043 (t-27) }	
(0)	ambient temperature of ( as per IS 15549 : 2005)			
2 (	Capacity at Various Discharge Rates at 27°C			T
2	Sapacity at valious Discharge Mates at 27 C			
	Period of Discharge	Ah capacities	Discharge Current	End Cel
	Fendu of Discharge	An capacities		
			(Amps)	Voltage
				(Volts)
		100.00		
	10Hr	400.00	40.0	1.75
	9Hr	391.60	43.5	1.75
	8Hr	380.00	47.5	1.75
	7Hr	366.80	52.4	1.75
	6Hr	351.60	58.6	1.75
	5Hr	333.20	66.6	1.75
	4Hr	312.80	78.2	1.74
	3Hr	286.80	95.6	1.74
	2Hr		126.6	1.74
		253.20 200.00		
	1Hr		200.0	1.7
	50 min	186.80	224.2	1.7
	40 min	172.00	258.3	1.7
	30 min	160.00	320.0	1.7
	20 min	144.00	432.4	1.7
	15 min	119.48	477.9	1.7
	10 min	87.32	526.0	1.7
	5 min	49.16	590.2	1.7
	1 min	14.68	884.3	1.7
Ν	Maximum Momentary Current for 1 min upto cut off voltage		1200	Amps
	narinani momonary o'anoni ion i mini apto o'at on vonago		1200	
	of 1.6 V			,po
				,po
				,pc
3 0	of 1.6 V		2400	
3 0			2400	Amps
3 c 4 e	of 1.6 V Expected Fault at bus due to battery			Amps
3 c 4 E 5 (i) S	of 1.6 V Expected Fault at bus due to battery Short Circuit Current at Battery terminals		2400	
3 c 4 E 5 (i) S 5 (ii) T	of 1.6 V Expected Fault at bus due to battery Short Circuit Current at Battery terminals Fime for which the battery can withstand			Amps
3 c 4 E 5 (i) S 5 (ii) T	of 1.6 V Expected Fault at bus due to battery Short Circuit Current at Battery terminals		2400	Amps
3 c 4 E 5 (i) S 5 (ii) 1	of 1.6 V Expected Fault at bus due to battery Short Circuit Current at Battery terminals Fime for which the battery can withstand		2400	Amps
3 c 4 E 5 (i) S 5 (ii) 1	of 1.6 V Expected Fault at bus due to battery Short Circuit Current at Battery terminals Fime for which the battery can withstand short circuit at terminals		2400 5 Sec	Amps
3 d 4 E 5 (i) S 5 (ii) T 6 T	of 1.6 V Expected Fault at bus due to battery Short Circuit Current at Battery terminals Fime for which the battery can withstand short circuit at terminals		2400 5 Sec	Amps
3 d 4 E 5 (i) S 5 (ii) T 6 T	of 1.6 V Expected Fault at bus due to battery Short Circuit Current at Battery terminals Fime for which the battery can withstand short circuit at terminals Fype/No. of Negative Plates per cell		2400 5 Sec Flat pasted; 11	Amps
3 c 4 e 5 (i) s 5 (ii) 1 6 1 7 1	of 1.6 V Expected Fault at bus due to battery Short Circuit Current at Battery terminals Fime for which the battery can withstand short circuit at terminals Fype/No. of Negative Plates per cell		2400 5 Sec Flat pasted; 11	Amps
3 c 4 E 5 (i) S 5 (ii) 7 6 7 7 7 8 S	of 1.6 V Expected Fault at bus due to battery Short Circuit Current at Battery terminals Fime for which the battery can withstand short circuit at terminals Fype/No. of Negative Plates per cell Fype/No. of Positive Plates per cell		2400 5 Sec Flat pasted; 11 Flat pasted; 10	Amps
3 c 4 e 5 (i) 5 5 (ii) 1 6 1 7 1 8 s 9 s	of 1.6 V Expected Fault at bus due to battery Short Circuit Current at Battery terminals Time for which the battery can withstand short circuit at terminals Type/No. of Negative Plates per cell Type/No. of Positive Plates per cell Size of negative plates, mm Size of positive plates, mm		2400 5 Sec Flat pasted; 11 Flat pasted; 10 315(L) x 140(W) x 2.65 (+/- 1) (Thk) 315(L) x 140(W) x 4.5 (+/- 1) (Thk)	Amps
3 c 4 e 5 (i) 5 5 (ii) 1 6 1 7 1 8 s 9 s	of 1.6 V Expected Fault at bus due to battery Short Circuit Current at Battery terminals Fime for which the battery can withstand short circuit at terminals Fype/No. of Negative Plates per cell Fype/No. of Positive Plates per cell Size of negative plates, mm		2400 5 Sec Flat pasted; 11 Flat pasted; 10 315(L) x 140(W) x 2.65 (+/- 1) (Thk)	Amps
3 c 4 e 5 (i) s 5 (ii) 1 6 1 7 1 8 s 9 s 10 1	of 1.6 V Expected Fault at bus due to battery Short Circuit Current at Battery terminals Time for which the battery can withstand short circuit at terminals Type/No. of Negative Plates per cell Type/No. of Positive Plates per cell Size of negative plates, mm Size of positive plates, mm		2400 5 Sec Flat pasted; 11 Flat pasted; 10 315(L) x 140(W) x 2.65 (+/- 1) (Thk) 315(L) x 140(W) x 4.5 (+/- 1) (Thk)	Amps
3 c 4 e 5 (i) s 5 (ii) 1 7 1 8 s 9 s 10 1 11 1	Expected Fault at bus due to battery Short Circuit Current at Battery terminals Time for which the battery can withstand short circuit at terminals Type/No. of Negative Plates per cell Type/No. of Positive Plates, per cell Size of negative plates, mm Size of positive plates, mm Type of Connection between cells		2400 5 Sec Flat pasted; 11 Flat pasted; 10 315(L) x 140(W) x 2.65 (+/- 1) (Thk) 315(L) x 140(W) x 4.5 (+/- 1) (Thk) Bolted rigid copper connectors	Amps
3 c 4 e 5 (i) 5 5 (ii) 7 7 1 8 5 9 5 10 7 11 7 11 7	of 1.6 V Expected Fault at bus due to battery Short Circuit Current at Battery terminals Fime for which the battery can withstand short circuit at terminals Fype/No. of Negative Plates per cell Fype/No. of Positive Plates per cell Size of negative plates, mm Size of positive plates, mm Fype of Connection between cells Fype of Separators Fhickness of Separators		2400 5 Sec Flat pasted; 11 Flat pasted; 10 315(L) x 140(W) x 2.65 (+/- 1) (Thk) 315(L) x 140(W) x 4.5 (+/- 1) (Thk) Bolted rigid copper connectors Absorptive glass mat 4.5 (2 layers of 2.25 mm each)	Amps
3 c 4 e 5 (i) 1 6 1 7 1 8 s 9 s 10 1 11 1 12 1 13 c	Expected Fault at bus due to battery Expected Fault at bus due to battery Short Circuit Current at Battery terminals Time for which the battery can withstand short circuit at terminals Fype/No. of Negative Plates per cell Type/No. of Positive Plates per cell Size of negative plates, mm Size of positive plates, mm Type of Connection between cells Type of Separators Thickness of Separators Dimensison of 2 volts cell (LXWXH), mm		2400 5 Sec Flat pasted; 11 Flat pasted; 10 315(L) x 140(W) x 2.65 (+/- 1) (Thk) 315(L) x 140(W) x 4.5 (+/- 1) (Thk) Bolted rigid copper connectors Absorptive glass mat	Amps
3 c 4 e 5 (i) s 5 (ii) 1 6 1 7 1 8 s 9 s 10 1 11 1 12 1 13 c 14 c	<ul> <li>bf 1.6 V</li> <li>Expected Fault at bus due to battery</li> <li>Short Circuit Current at Battery terminals</li> <li>Fime for which the battery can withstand short circuit at terminals</li> <li>Fype/No. of Negative Plates per cell</li> <li>Fype/No. of Positive Plates per cell</li> <li>Size of negative plates, mm</li> <li>Size of positive plates, mm</li> <li>Fype of Connection between cells</li> <li>Fype of Separators</li> <li>Fhickness of Separators</li> <li>Dimensison of 2 volts cell (LXWXH), mm</li> <li>Clearance between the bottom</li> </ul>		2400 5 Sec Flat pasted; 11 Flat pasted; 10 315(L) x 140(W) x 2.65 (+/- 1) (Thk) 315(L) x 140(W) x 4.5 (+/- 1) (Thk) Bolted rigid copper connectors Absorptive glass mat 4.5 (2 layers of 2.25 mm each) 167 (+/-3) mm x 172 (+/-3) mm x 378 (+/- 5) mm	Amps
3 c 4 e 5 (i) s 5 (ii) 1 6 1 7 1 8 s 9 s 10 1 11 1 12 1 13 c 14 c	Expected Fault at bus due to battery Expected Fault at bus due to battery Short Circuit Current at Battery terminals Time for which the battery can withstand short circuit at terminals Fype/No. of Negative Plates per cell Type/No. of Positive Plates per cell Size of negative plates, mm Size of positive plates, mm Type of Connection between cells Type of Separators Thickness of Separators Dimensison of 2 volts cell (LXWXH), mm		2400 5 Sec Flat pasted; 11 Flat pasted; 10 315(L) x 140(W) x 2.65 (+/- 1) (Thk) 315(L) x 140(W) x 4.5 (+/- 1) (Thk) Bolted rigid copper connectors Absorptive glass mat 4.5 (2 layers of 2.25 mm each)	Amps
3 c 4 e 5 (i) s 5 (ii) 1 6 1 7 1 8 s 9 s 10 1 11 1 12 1 13 c 14 c	<ul> <li>bf 1.6 V</li> <li>Expected Fault at bus due to battery</li> <li>Short Circuit Current at Battery terminals</li> <li>Fime for which the battery can withstand short circuit at terminals</li> <li>Fype/No. of Negative Plates per cell</li> <li>Fype/No. of Positive Plates per cell</li> <li>Size of negative plates, mm</li> <li>Size of positive plates, mm</li> <li>Fype of Connection between cells</li> <li>Fype of Separators</li> <li>Fhickness of Separators</li> <li>Dimensison of 2 volts cell (LXWXH), mm</li> <li>Clearance between the bottom</li> </ul>		2400 5 Sec Flat pasted; 11 Flat pasted; 10 315(L) x 140(W) x 2.65 (+/- 1) (Thk) 315(L) x 140(W) x 4.5 (+/- 1) (Thk) Bolted rigid copper connectors Absorptive glass mat 4.5 (2 layers of 2.25 mm each) 167 (+/-3) mm x 172 (+/-3) mm x 378 (+/- 5) mm	Amps

16 (i)			
(i)	Recommended Charging Rate		
	Float Charging Voltage		. FVIDE
	between ambient temp. (-)5-14 ° C	2.27 +/- 0.02 VPC	
	between ambient temp. 15-24 ° C	2.25 +/- 0.02 VPC	INDUSTRIES CIRITED
	between ambient temp. 25-34 ° C	2.23 +/- 0.02 VPC	
	between ambient temp. 35-40 ° C	2.20 +/- 0.02 VPC	
(ii)	Float Charging Current	60	Amps (Max)
(iii)	Trickle Charging Voltage	NA	1 ( )
(iv)	Trickle Charging Current	NA	
(v)	Boost Charging Voltage	2.35	Volts
	Boost Charging Current	80	
(vi)			Amps.
(VII)	Time taken to full charge from 100%	72 Hrs (Min)	
	discharge state by constant voltage	2.1 volts(ocv)	
	charging & voltage at the end of this charge		
(viii)	Equalising Charging Current;Voltage	NA	
17	Guaranteed efficiencies at 10 hrs rate		
	(a) Ampere-hour efficiency	90%	
	(b) Watt-hour efficiency	80%	
40	Allewskie velkees ringis	4 5 % DMC of the charging weltons (Dully cha	
18	Allowable voltage ripple	1.5 % RMS of the charging voltage(Bulk cha	
		0.5 % RMS of the charging voltage(Float cha	arging)
	Internal Resistance of each cell at		
	Fully Charged Condition	0.42	milli ohms min
20	Total Resistance of Battery ; milliohms	Depending on no. of cells	
			- / -
	Overall Dimensions of each complete	Length 619 +/- 5, Width 445 +/- 5, Height 38	8 +/- 5
1	module (LxWxH) in mm	( 6 cell module)	
22	Weight of unpacked and complete module	156.3 +/- 5% Kgs (Single 6 cell module)	
	with electrolyte ; Kgs		
23	Material of Modules	Powder coated MS	
24	Whether explosion vents are offered	Yes, self re-sealing rubber safety valve with	flame arrestor
05	Loss of capacity due to self discharge	< 0.5% per week of c-10 capacity	
25			
26	The period for which the battery should be	If stored in Indian ambient temp of 30 deg C	
26	The period for which the battery should be stored after supply in charged conditions	cells will need freshning charge once	
26			
26		cells will need freshning charge once	
26		cells will need freshning charge once in every three months, however if stored	
26		cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning	
26	stored after supply in charged conditions	cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended.	
26	stored after supply in charged conditions Amount of Hydrogen evolved during normal	cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended. Less than 200ppm	
26	stored after supply in charged conditions	cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended.	
26	stored after supply in charged conditions Amount of Hydrogen evolved during normal	cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended. Less than 200ppm	
26 27 28	stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery	cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended. Less than 200ppm	
26 27 28	stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging	cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended. Less than 200ppm normal float condition	
26 27 28	stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate	cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended. Less than 200ppm normal float condition	
26 27 28 29	stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate No. of charge-discharge cycle battery can	cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended. Less than 200ppm normal float condition	
26 · 27 / 28   29	stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate No. of charge-discharge cycle battery can give during its entire life	cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended. Less than 200ppm normal float condition Once annually	
26 · 27 / 28   29	stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate No. of charge-discharge cycle battery can give during its entire life at 20% DOD	cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended. Less than 200ppm normal float condition Once annually 4000 cycles	
26 27 28 29	stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate No. of charge-discharge cycle battery can give during its entire life at 20% DOD at 50% DOD	cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended. Less than 200ppm normal float condition Once annually 4000 cycles 1800 cycles	
26 27 28 29	stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate No. of charge-discharge cycle battery can give during its entire life at 20% DOD	cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended. Less than 200ppm normal float condition Once annually 4000 cycles	
26 27 28 29	stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate No. of charge-discharge cycle battery can give during its entire life at 20% DOD at 50% DOD at 80% DOD	cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended. Less than 200ppm normal float condition Once annually 4000 cycles 1800 cycles 1400 cycles	
26 - 27 - 28 - 29 -	stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate No. of charge-discharge cycle battery can give during its entire life at 20% DOD at 50% DOD	cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended. Less than 200ppm normal float condition Once annually 4000 cycles 1800 cycles	
26 27 28 28	stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate No. of charge-discharge cycle battery can give during its entire life at 20% DOD at 50% DOD at 80% DOD	cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended. Less than 200ppm normal float condition Once annually 4000 cycles 1800 cycles 1400 cycles 20 Yrs at 27 deg C in ideal float condition.	
26 27 28 28	stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate No. of charge-discharge cycle battery can give during its entire life at 20% DOD at 50% DOD at 80% DOD	cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended. Less than 200ppm normal float condition Once annually 4000 cycles 1800 cycles 1400 cycles 20 Yrs at 27 deg C in ideal float condition.	
26 27 28 29	stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate No. of charge-discharge cycle battery can give during its entire life at 20% DOD at 50% DOD at 80% DOD	cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended. Less than 200ppm normal float condition Once annually 4000 cycles 1800 cycles 1400 cycles 20 Yrs at 27 deg C in ideal float condition.	
26 27 28 29 30	Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate No. of charge-discharge cycle battery can give during its entire life at 20% DOD at 50% DOD at 50% DOD at 80% DOD	cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended. Less than 200ppm normal float condition Once annually 4000 cycles 1800 cycles 1400 cycles 20 Yrs at 27 deg C in ideal float condition.	
26 - 27 - 28 - 29 - 30 -	stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate No. of charge-discharge cycle battery can give during its entire life at 20% DOD at 50% DOD at 80% DOD	cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended. Less than 200ppm normal float condition Once annually 4000 cycles 1800 cycles 1400 cycles 20 Yrs at 27 deg C in ideal float condition. IEC 60896 - 21 & 22, JIS : C 8704-2, : 1998 ANSI T1 330, GR/BAT-01/03-MARCH 2004,	
26 27 28 29 30	Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate No. of charge-discharge cycle battery can give during its entire life at 20% DOD at 50% DOD at 50% DOD at 80% DOD	cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended. Less than 200ppm normal float condition Once annually 4000 cycles 1800 cycles 1400 cycles 20 Yrs at 27 deg C in ideal float condition.	



				USTRIES LIMITED
SL. NO.	DESCRIPTION		DETAILS	
1	Capacity in Ah			
(a)				
(i)			100	
(ii)			100	
(iii)			80	
()				
(b)	Rated Capacity(in Ah) at minimum		Formula : Ct = { 1+ 0.0043 (t-27) }	
(0)	ambient temperature of ( as per IS 15549 : 2005)			
	Rated Capacity(in Ah) at maximum			
(c)	ambient temperature of ( as per IS 15549 : 2005)		Formula : Ct = { 1+ 0.0043 (t-27) }	
2	Capacity at Various Discharge Rates at 27°C			1
2	Capacity at various discharge Rates at 27 C			
	Period of Discharge	Ah capacities	Discharge Current	End Cell
	Feriod of Discharge	An capacities		
			(Amps)	Voltage
				(Volts)
	10Hr	100.00	10.0	1.75
	9Hr	97.90	10.9	1.75
	8Hr	95.00	11.9	1.75
	7Hr	91.70	13.1	1.75
	6Hr	87.90	14.7	1.75
	5Hr	83.30	16.7	1.75
	4Hr	78.20	19.6	1.74
	3Hr	71.70	23.9	1.74
	2Hr	63.30	31.7	1.7
	1Hr	50.00	50.0	1.7
	50 min	46.70	56.1	1.7
	40 min	43.00	64.6	1.7
	30 min	40.00	80.0	1.7
	20 min			1.7
		36.00	108.1	
	15 min	29.87	119.5	1.7
	10 min	21.83	131.5	1.7
	5 min	12.29	147.5	1.7
	1 min	3.67	221.1	1.7
				-
	Maximum Momentary Current for 1 min upto cut off voltage		300	Amps
3	of 1.6 V			
4	Expected Fault at bus due to battery		600	Amps
	Short Circuit Current at Battery terminals		600	Amps
5 (ii)	Time for which the battery can withstand		5 Sec	
	short circuit at terminals			
6	Type/No. of Negative Plates per cell/ Material		Flat pasted;8, Lead Calcium Tin Alloy Grid	
7	Type/No. of Positive Plates per cell		Flat pasted;7, Lead Calcium Tin Alloy Grid	
8	Size of negative plates, mm		176.5(L) x 148(W) x 1.85 (+/- 1) (Thk)	
9	Size of positive plates, mm		176.5(L) x 148(W) x 2.8 (+/- 1) (Thk)	
10	Type of Connection between cells		Bolted rigid copper connectors	
11	Type of Separators		Absorptive glass mat	
12	Thickness of Separators		4.2 (2 layers of 2.1 mm each)	
12	Dimensison of 2 volts cell (LXWXH), mm		163.5 (+/-3) x 65.5 (+/-3) x 233.5 (	
14	Material of Container		Polypropylene Co-polymer	

15 (i) (ii) (iii) (iv) (v) (vi) (vii) (vii) (viii) 16	Float Charging Voltage between ambient temp. (-)5-14 ° C between ambient temp. 15-24 ° C between ambient temp. 25-34 ° C between ambient temp. 35-40 ° C Float Charging Current Trickle Charging Voltage Trickle Charging Voltage Boost Charging Voltage charging & voltage at the end of this charge	2.27 +/- 0.02 VPC 2.25 +/- 0.02 VPC 2.23 +/- 0.02 VPC 2.20 +/- 0.02 VPC 15 NA NA 2.35 20 72 Hrs (Min) 2.1 volts(ocv) NA 90% 80%	Amps (Max) Volts Amps.
17	Allowable voltage ripple	<ul><li>1.5 % RMS of the charging voltage(Bulk charging)</li><li>0.5 % RMS of the charging voltage(Float charging)</li></ul>	
18	Internal Resistance of each cell at Fully Charged Condition	0.91	milli ohms min
19	Total Resistance of Battery ; milliohms	Depending on no. of cells	
	Resistance of inter cell connectors;milliohms	Depending on no. of cells	
21	Overall Dimensions of each complete battery bank ( HxWxL) in mm	Depending on system voltage	
22	Overall Dimensions of each complete module (LxWxH) in mm	Length 769 +/- 5, Width 243 +/- 5, Height 247 +/- 5 ( 12 cells module)	
23	Weight of unpacked and complete module with electrolyte ; Kgs	82.2 +/- 5% Kgs (Single 12 cell module)	
24	Material of Modules	Powder coated MS	
25	Whether explosion vents are offered	Yes, self re-sealing rubber safety valve with flame arrestor	
	Loss of capacity due to self discharge	< 0.5% per week of c-10 capacity	
	The period for which the battery should be stored after supply in charged conditions	If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended.	
28	Amount of Hydrogen evolved during normal normal float charging	Less than 200ppm normal float condition	
29	Recommended interval at which battery should be discharged at 10 hr discharge rate	Once annually	
30	No. of charge-discharge cycle battery can give during its entire life at 20% DOD at 50% DOD at 80% DOD	2000 cycles 900 cycles 700 cycles	
31	Expected Life of Battery in years	10 Yrs at 27 deg C in ideal float condition.	
32	Applicable standard	IEC 60896 - 21 & 22, JIS : C 8704-2, : 1998 ANSI T1 330, GR/BAT-01/03-MARCH 2004, IS 15549 : 2005	



SL. NO.	DESCRIPTION		DETAILS	
1	Capacity in Ah		Г	
(a)				
(i)			165	
(ii)	Rated		165	
(iii)	End of Life		132	
<i>a</i> >				
(b)			Formula : Ct = { 1+ 0.0043 (t-27) }	
	ambient temperature of ( as per IS 15549 : 2005)			
(c)	Rated Capacity(in Ah) at maximum		Formula : Ct = { 1+ 0.0043 (t-27) }	
(0)	ambient temperature of ( as per IS 15549 : 2005)			
2	Capacity at Various Discharge Rates at 27°C			
	Period of Discharge	Ah capacities	Discharge Current	End Cell
			(Amps)	Voltage
				(Volts)
	10Hr	165.00	16.5	1.75
	9Hr	161.54	17.9	1.75
	8Hr	156.75	19.6	1.75
	7Hr	151.31	21.6	1.75
	6Hr	145.04	24.2	1.75
	5Hr	137.45	27.5	1.75
	4Hr	129.03	32.3	1.74
	3Hr	118.31	39.4	1.74
	2Hr	104.45	52.2	1.7
	1Hr	82.50	82.5	1.7
	50 min	77.06	92.5	1.7
	40 min	70.95	106.5	1.7
	30 min	66.00	132.0	1.7
	20 min	59.40	178.4	1.7
	15 min	49.29	197.1	1.7
	10 min	36.02	217.0	1.7
	5 min 1 min	20.28 6.06	243.4 364.8	1.7 1.7
	1 11111	0.00	504.0	1.7
	Maximum Momentary Current for 1 min upto cut off voltage			1.
	of 1.6 V		495	Amps
Ũ				
4	Expected Fault at bus due to battery		990	Amps
5 (i)	Short Circuit Current at Battery terminals		990	Amps
5 (ii)	Time for which the battery can withstand		5 Sec	
. ,	short circuit at terminals			
6	Type/No. of Negative Plates per cell / Material		Flat pasted, 3(I) + 2(E), Lead Calcium Tin Alloy Grid	
7				
. /	Type/No. of Positive Plates per cell / Material			
	Type/No. of Positive Plates per cell / Material		Flat pasted ,4, Lead Calcium Tin Alloy Grid	
			Flat pasted ,4, Lead Calcium Tin Alloy Grid	
	Type/No. of Positive Plates per cell / Material Size of negative plates, mm		Flat pasted ,4, Lead Calcium Tin Alloy Grid 315(L) x 140(W) x 2.65 (+/- 1) (Thk) (Inter)	
			Flat pasted ,4, Lead Calcium Tin Alloy Grid	
8	Size of negative plates, mm		Flat pasted ,4, Lead Calcium Tin Alloy Grid 315(L) x 140(W) x 2.65 (+/- 1) (Thk) (Inter) 315(L) x 140(W) x 1.9 (+/- 1) (Thk) (End)	
8			Flat pasted ,4, Lead Calcium Tin Alloy Grid 315(L) x 140(W) x 2.65 (+/- 1) (Thk) (Inter)	
8 9	Size of negative plates, mm Size of positive plates, mm		Flat pasted ,4, Lead Calcium Tin Alloy Grid 315(L) x 140(W) x 2.65 (+/- 1) (Thk) (Inter) 315(L) x 140(W) x 1.9 (+/- 1) (Thk) (End) 315(L) x 140(W) x 4.5 (+/- 1) (Thk)	
8 9	Size of negative plates, mm		Flat pasted ,4, Lead Calcium Tin Alloy Grid 315(L) x 140(W) x 2.65 (+/- 1) (Thk) (Inter) 315(L) x 140(W) x 1.9 (+/- 1) (Thk) (End)	
8 9 10	Size of negative plates, mm Size of positive plates, mm		Flat pasted ,4, Lead Calcium Tin Alloy Grid 315(L) x 140(W) x 2.65 (+/- 1) (Thk) (Inter) 315(L) x 140(W) x 1.9 (+/- 1) (Thk) (End) 315(L) x 140(W) x 4.5 (+/- 1) (Thk)	
8 9 10	Size of negative plates, mm Size of positive plates, mm Type of Connection between cells		Flat pasted ,4, Lead Calcium Tin Alloy Grid 315(L) x 140(W) x 2.65 (+/- 1) (Thk) (Inter) 315(L) x 140(W) x 1.9 (+/- 1) (Thk) (End) 315(L) x 140(W) x 4.5 (+/- 1) (Thk) Bolted rigid copper connectors Absorptive glass mat	
8 9 10 11	Size of negative plates, mm Size of positive plates, mm Type of Connection between cells		Flat pasted ,4, Lead Calcium Tin Alloy Grid 315(L) x 140(W) x 2.65 (+/- 1) (Thk) (Inter) 315(L) x 140(W) x 1.9 (+/- 1) (Thk) (End) 315(L) x 140(W) x 4.5 (+/- 1) (Thk) Bolted rigid copper connectors	
8 9 10 11 12	Size of negative plates, mm Size of positive plates, mm Type of Connection between cells Type of Separators Thickness of Separators		Flat pasted ,4, Lead Calcium Tin Alloy Grid $315(L) \times 140(W) \times 2.65 (+/- 1) (Thk) (Inter)$ $315(L) \times 140(W) \times 1.9 (+/- 1) (Thk) (End)$ $315(L) \times 140(W) \times 4.5 (+/- 1) (Thk)$ Bolted rigid copper connectors Absorptive glass mat 4.2 (2 layers of 2.1 mm each)	
8 9 10 11 12	Size of negative plates, mm Size of positive plates, mm Type of Connection between cells Type of Separators		Flat pasted ,4, Lead Calcium Tin Alloy Grid 315(L) x 140(W) x 2.65 (+/- 1) (Thk) (Inter) 315(L) x 140(W) x 1.9 (+/- 1) (Thk) (End) 315(L) x 140(W) x 4.5 (+/- 1) (Thk) Bolted rigid copper connectors Absorptive glass mat	
8 9 10 11 12 13	Size of negative plates, mm Size of positive plates, mm Type of Connection between cells Type of Separators Thickness of Separators Dimensison of 2 volts cell (LXWXH), mm		Flat pasted ,4, Lead Calcium Tin Alloy Grid $315(L) \times 140(W) \times 2.65 (+/- 1) (Thk) (Inter)$ $315(L) \times 140(W) \times 1.9 (+/- 1) (Thk) (End)$ $315(L) \times 140(W) \times 4.5 (+/- 1) (Thk)$ Bolted rigid copper connectors Absorptive glass mat 4.2 (2 layers of 2.1 mm each)	
8 9 10 11 12 13	Size of negative plates, mm Size of positive plates, mm Type of Connection between cells Type of Separators Thickness of Separators Dimensison of 2 volts cell (LXWXH), mm Clearance between the bottom		Flat pasted ,4, Lead Calcium Tin Alloy Grid 315(L) x 140(W) x 2.65 (+/- 1) (Thk) (Inter) 315(L) x 140(W) x 1.9 (+/- 1) (Thk) (End) 315(L) x 140(W) x 4.5 (+/- 1) (Thk) Bolted rigid copper connectors Absorptive glass mat 4.2 (2 layers of 2.1 mm each) 167(+/-3) x 87(+/-3) x 394 (+/- 5 mm)	
8 9 10 11 12 13	Size of negative plates, mm Size of positive plates, mm Type of Connection between cells Type of Separators Thickness of Separators Dimensison of 2 volts cell (LXWXH), mm		Flat pasted ,4, Lead Calcium Tin Alloy Grid $315(L) \times 140(W) \times 2.65 (+/- 1) (Thk) (Inter)$ $315(L) \times 140(W) \times 1.9 (+/- 1) (Thk) (End)$ $315(L) \times 140(W) \times 4.5 (+/- 1) (Thk)$ Bolted rigid copper connectors Absorptive glass mat 4.2 (2 layers of 2.1 mm each)	
8 9 10 11 12 13 14	Size of negative plates, mm Size of positive plates, mm Type of Connection between cells Type of Separators Thickness of Separators Dimensison of 2 volts cell (LXWXH), mm Clearance between the bottom		Flat pasted ,4, Lead Calcium Tin Alloy Grid 315(L) x 140(W) x 2.65 (+/- 1) (Thk) (Inter) 315(L) x 140(W) x 1.9 (+/- 1) (Thk) (End) 315(L) x 140(W) x 4.5 (+/- 1) (Thk) Bolted rigid copper connectors Absorptive glass mat 4.2 (2 layers of 2.1 mm each) 167(+/-3) x 87(+/-3) x 394 (+/- 5 mm)	

16	Design of the location of the	
(i)		
	between ambient temp. (-)5-14 ° C	2.27 +/- 0.02 VPC
	between ambient temp. 15-24 ° C	2.25 +/- 0.02 VPC
	between ambient temp. 25-34 ° C	2.23 +/- 0.02 VPC
	between ambient temp. 35-40 ° C	2.20 +/- 0.02 VPC
(ii)	Float Charging Current	24.75 Amps (Ma
(iii)	Trickle Charging Voltage	NA
(iv)	Trickle Charging Current	NA
(v)		2.35 Volts
(vi)		33 Amps.
	Time taken to full charge from 100%	72 Hrs (Min)
(*")	discharge state by constant voltage	2.1 volts(ocv)
	charging & voltage at the end of this charge	2.1 1003(000)
(viii)		NA
(****)	Equalising Onlarging Ourrent, voltage	
17	Guaranteed efficiencies at 10 hrs rate	
	(a) Ampere-hour efficiency	90%
	(b) Watt-hour efficiency	80%
	(b) waa nodi emolency	0078
18	Allowable voltage ripple	1.5 % RMS of the charging voltage(Bulk charging)
		0.5 % RMS of the charging voltage(Float charging)
19	Internal Resistance of each cell at	
	(Fully Charged Condition	1.28 milli ohms
20	Total Resistance of Battery ; milliohms	Depending on no. of cells
21	Overall Dimensions of each complete	Length 588 +/- 5, Width 415 +/- 5(w/o base member),
	module with Top Cover( LxWxH) in mm	Width 452 +/-5 (with base member), Height 210 +/- 5;
		( 6 cells module);
22	Weight of unpacked and complete module	75.0 +/- 5% Kgs (Single 6 cell module)
22	with electrolyte ; Kgs	
23	Material of Modules	Powder coated MS
0.4		
24	Whether explosion vents are offered	Yes, self re-sealing rubber safety valve with flame arrestor
	Whether explosion vents are offered Loss of capacity due to self discharge	Yes, self re-sealing rubber safety valve with flame arrestor < 0.5% per week of c-10 capacity
25	Loss of capacity due to self discharge	< 0.5% per week of c-10 capacity
25	Loss of capacity due to self discharge The period for which the battery should be	< 0.5% per week of c-10 capacity If stored in Indian ambient temp of 30 deg C
25	Loss of capacity due to self discharge	< 0.5% per week of c-10 capacity
25	Loss of capacity due to self discharge The period for which the battery should be	< 0.5% per week of c-10 capacity If stored in Indian ambient temp of 30 deg C
25	Loss of capacity due to self discharge The period for which the battery should be	< 0.5% per week of c-10 capacity If stored in Indian ambient temp of 30 deg C cells will need freshning charge once
25	Loss of capacity due to self discharge The period for which the battery should be	< 0.5% per week of c-10 capacity If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored
25	Loss of capacity due to self discharge The period for which the battery should be	< 0.5% per week of c-10 capacity If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning
25 26	Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions	< 0.5% per week of c-10 capacity If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended.
25 26 27	Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions Amount of Hydrogen evolved during normal	< 0.5% per week of c-10 capacity If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended. Less than 200ppm
25 26 27	Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions	< 0.5% per week of c-10 capacity If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended.
25 26 27	Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging	<ul> <li>&lt; 0.5% per week of c-10 capacity</li> <li>If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended.</li> <li>Less than 200ppm normal float condition</li> </ul>
25 26 27 28	Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions Amount of Hydrogen evolved during normal	< 0.5% per week of c-10 capacity If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended. Less than 200ppm
25 26 27 28	Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate	<ul> <li>&lt; 0.5% per week of c-10 capacity</li> <li>If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended.</li> <li>Less than 200ppm normal float condition</li> </ul>
25 26 27 28	Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate	<ul> <li>&lt; 0.5% per week of c-10 capacity</li> <li>If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended.</li> <li>Less than 200ppm normal float condition</li> </ul>
25 26 27 28	Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate No. of charge-discharge cycle battery can give during its entire life	<ul> <li>&lt; 0.5% per week of c-10 capacity</li> <li>If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended.</li> <li>Less than 200ppm normal float condition</li> <li>Once annually</li> </ul>
25 26 27 28	Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate No. of charge-discharge cycle battery can give during its entire life at 20% DOD	<ul> <li>&lt; 0.5% per week of c-10 capacity</li> <li>If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended.</li> <li>Less than 200ppm normal float condition</li> <li>Once annually</li> <li>4000 cycles</li> </ul>
25 26 27 28	Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate No. of charge-discharge cycle battery can give during its entire life at 20% DOD at 50% DOD	<ul> <li>&lt; 0.5% per week of c-10 capacity</li> <li>If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended.</li> <li>Less than 200ppm normal float condition</li> <li>Once annually</li> <li>4000 cycles 1800 cycles</li> </ul>
25 26 27 28	Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate No. of charge-discharge cycle battery can give during its entire life at 20% DOD	<ul> <li>&lt; 0.5% per week of c-10 capacity</li> <li>If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended.</li> <li>Less than 200ppm normal float condition</li> <li>Once annually</li> <li>4000 cycles</li> </ul>
25 26 27 28 29	Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate No. of charge-discharge cycle battery can give during its entire life at 20% DOD at 50% DOD	<ul> <li>&lt; 0.5% per week of c-10 capacity</li> <li>If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended.</li> <li>Less than 200ppm normal float condition</li> <li>Once annually</li> <li>4000 cycles 1800 cycles</li> </ul>
25 26 27 28 29	Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate No. of charge-discharge cycle battery can give during its entire life at 20% DOD at 50% DOD at 80% DOD	<ul> <li>&lt; 0.5% per week of c-10 capacity</li> <li>If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended.</li> <li>Less than 200ppm normal float condition</li> <li>Once annually</li> <li>4000 cycles 1800 cycles 1400 cycles</li> </ul>
25 26 27 28 29	Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate No. of charge-discharge cycle battery can give during its entire life at 20% DOD at 50% DOD at 80% DOD	<ul> <li>&lt; 0.5% per week of c-10 capacity</li> <li>If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended.</li> <li>Less than 200ppm normal float condition</li> <li>Once annually</li> <li>4000 cycles 1800 cycles 1400 cycles</li> </ul>
25 26 27 28 29	Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate No. of charge-discharge cycle battery can give during its entire life at 20% DOD at 50% DOD at 80% DOD	<ul> <li>&lt; 0.5% per week of c-10 capacity</li> <li>If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended.</li> <li>Less than 200ppm normal float condition</li> <li>Once annually</li> <li>4000 cycles 1800 cycles</li> <li>1400 cycles</li> <li>20 Yrs at 27 deg C in ideal float condition.</li> </ul>
25 26 27 28 29 30	Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate No. of charge-discharge cycle battery can give during its entire life at 20% DOD at 50% DOD at 80% DOD	<ul> <li>&lt; 0.5% per week of c-10 capacity</li> <li>If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended.</li> <li>Less than 200ppm normal float condition</li> <li>Once annually</li> <li>4000 cycles 1800 cycles 1800 cycles 20 Yrs at 27 deg C in ideal float condition.</li> <li>IEC 60896 - 21 &amp; 22,</li> </ul>
25 26 27 28 29 30	Loss of capacity due to self discharge The period for which the battery should be stored after supply in charged conditions Amount of Hydrogen evolved during normal normal float charging Recommended interval at which battery should be discharged at 10 hr discharge rate No. of charge-discharge cycle battery can give during its entire life at 20% DOD at 50% DOD at 80% DOD Expected Life of Battery in years	<ul> <li>&lt; 0.5% per week of c-10 capacity</li> <li>If stored in Indian ambient temp of 30 deg C cells will need freshning charge once in every three months, however if stored at higher or lower temperature freshning charge to be provided as recommended.</li> <li>Less than 200ppm normal float condition</li> <li>Once annually</li> <li>4000 cycles         <ul> <li>1800 cycles</li> <li>1400 cycles</li> <li>20 Yrs at 27 deg C in ideal float condition.</li> </ul> </li> <li>IEC 60896 - 21 &amp; 22, JIS : C 8704-2, : 1998</li> </ul>