





## Primary application

- DC power and standby power for operate equipment of power system and nuclear power station;
- Standby power supply for various communication and signal systems;
- Solar energy, wind energy, hydroelectric generation power storage and wind & solar hybrid project;
- Standby power supply for shipping;
- Standby power supply for petrochemical industry;
- Standby power supply for UPS, medical facilities and emergency lighting and so on;
- High voltage big power UPS;
- Situation with high safety and reliability.

## Structure features of Shoto 3/6-GFX series new type acid-proof stationary battery

### ➤ Plate:

Positive plate adopts tubular type plate which can effectively prevent active substance falling, positive plate frame is made of complex alloy, the alloy crystal particle is tiny and dense, the corrosion-resisting performance is good and service life is long. The negative plate adopts pasted plate, grid adopts radiated structure, which enhances utilization ratio of active substance and discharge capability of strong current; moreover, the charge reception capability is strong.

### ➤ Battery case:

Adopt AS transparent case with corrosion prevention, high strength and beautiful appearance, the internal structure and state of battery can be directly observed via transparent case.

### ➤ Separator:

The combined spacer plate of multi-hole corrugated plastic plate and micro-bore rubber separator has bigger electrolyte storage space, which enhances dispersion speed of electrolyte, greatly reduces internal resistance of battery and prevents dendrite short circuit after deep discharge.

➤ **Terminal sealing:**

The built-in copper-core lead-based terminal post has strong current carrying capacity and corrosion resistance. The unique terminal post sealing structure can effectively eliminate the stress which is generated due to plate extension, leakage is avoided, sealing reliability of terminal post is ensured and service life of battery is greatly increased.

➤ **Acid resistant bolt:**

Adopt special funnel-shaped acid resistant bolt which can filter acid fume and prevent flame, the density and temperature of electrolyte can be measured directly, use is safe and maintenance is convenient.

## Standard

IEC60896-11 DIN40737-3

BS EN 61427-2002

GB/T13337.1

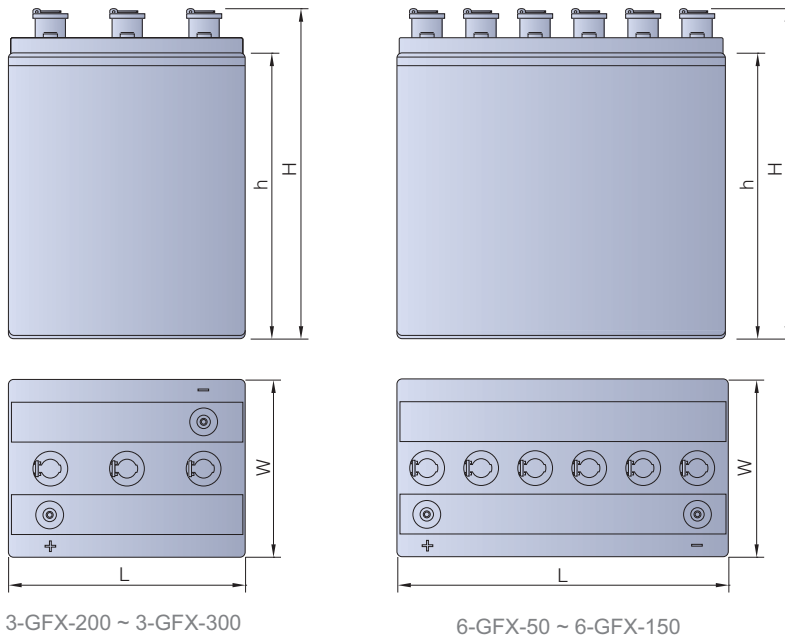
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## Features of application performance:

- **Designed service life of 18 years**
- **Water supplement cycle 0.25-1 year (normal)**
- **1-2 year (choose water content recombination valve)**
- **High cycle service life**
- **Better temperature resistance performance**
- **Excellent deep cycle performance**
- **Superior low current discharge performance**
- **Better charge reception capability**
- **Better safety performance and reliability**
- **Modular and personified installation design**
- **Performance price ratio is high and yearly operating cost is low**
- **Eco-friendly, cycle application**

## Environmental requirement:

- Temperature: available for -20~50 (-4~122F), relative humidity 90%; the ambient temperature for batteries in the same pack shall be unified; ambient temperature is recommended for 20~25 (68~77F), storage temperature is 0~20 (32~68F); general storage period is 3~6 months, if it's exceeded, battery shall be charged. If the ex-works battery with acid addition charge exceeds 3~6 months, it shall be charged.
- Sea level height can't exceed 4000m (if 4000m is exceeded, it shall be specified in order);
- The operating environment shall be kept from ignition source, dry, clean and ventilated without radial ray, ultra-red radiation, organic solvent and corrosive gas, and it shall be kept out of the sun and ultraviolet ray level can't exceed level 2.
- Avoided being buried by sand, rained and watered; lightning stroke, small animal and electric shock shall be prevented, and insulation resistance 2 ;
- The acid density of GFX flooded battery shall be regulated when it's used, and the installation ground shall be provided with functions of acid etching protection, water prevention and water discharge.
- If battery is installed in high and cold area, anti-freezing measures shall be taken.



### Table of product specification and main parameters

Type	Rated Voltage (V)	Rated Capacity (Ah)	Dimension (mm)				Weight (Kg)		
			Length L	Width W	Height h	Total height H	Without electrolyte	With electrolyte	Acid weight
6-GFX-50	12	50	272	205	331.5	383	25.5	37.0	11.5
6-GFX-100	12	100	272	205	331.5	383	39.0	48.0	9.0
6-GFX-150	12	150	380	205	331.5	383	54.0	68.0	14.0
3-GFX-200	6	200	272	205	331.5	383	35.0	45.5	10.5
3-GFX-250	6	250	380	205	331.5	383	45.0	59.0	14.0
3-GFX-300	6	300	380	205	331.5	383	51.0	65.0	14.0

**Note:** Output terminal is the M8 screw hole.

### List of product internal resistance, short-circuit current, packing and transportation data

Model	Internal resistance (mΩ)	Short-circuit current (A)	Battery number Cell/case	Whole case weight(Kg)		20' Cabinet case number	20' Cabinet battery number
				Battery without electrolyte	Battery with electrolyte		
6-GFX-50	17.3	694	8	235.0	327.0	36	288
6-GFX-100	10.5	1143	8	343.0	415.0	36	288
6-GFX-150	7.1	1690	8	471.0	583.0	30	240
3-GFX-200	2.4	2500	8	311.0	395.0	36	288
3-GFX-250	2.1	2857	8	399.0	511.0	30	240
3-GFX-300	1.8	3333	8	447.0	559.0	30	240

**Note:** The packing and transportation data in the Table is only for reference, and specific requirements shall be specified in the contract.

### Constant current discharge table

unit: A

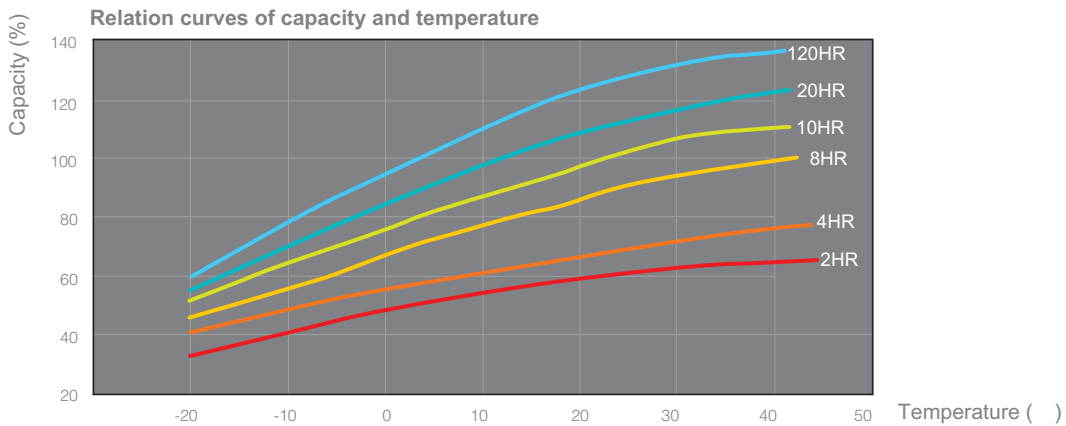
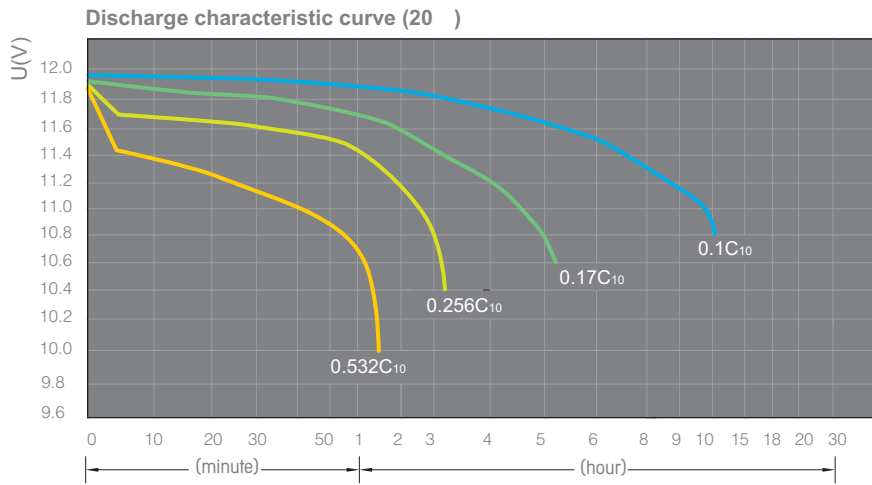
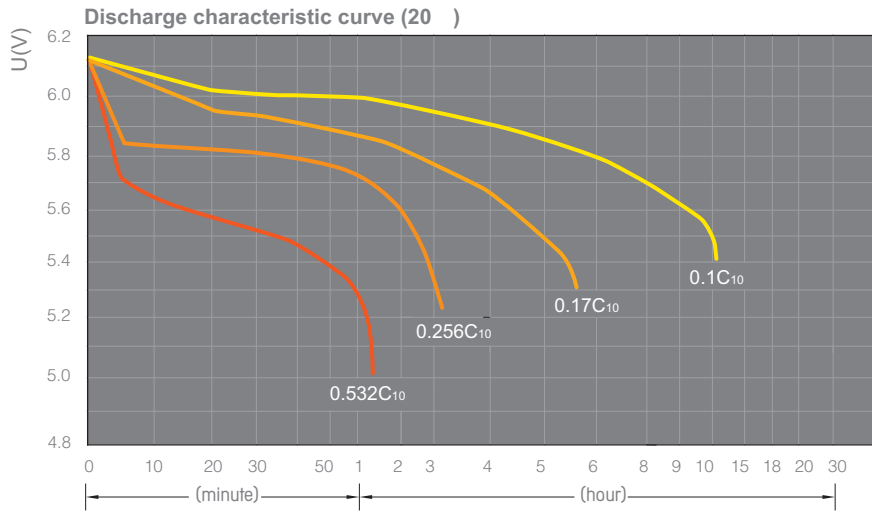
Model and specification del	Final voltage (V/unit)	Discharge time (min)					Discharge time (h)											
		5	10	15	30	45	1	1.5	2	3	4	5	8	10	20	100	120	
6-GFX-50	1.90	28	26	23	21	19	18	13	12	10	8	7	6	5	2.37	0.59	0.49	
	1.85	31	31	30	25	20	20	15	14	11	9	8	6	5	2.60	0.62	0.52	
	1.80	41	40	40	32	25	24	17	16	12	10	9	8	6	2.73	0.64	0.53	
	1.75	50	48	46	36	28	26	19	17	13	11	10	9	6	2.84	0.66	0.55	
6-GFX-100	1.90	56	51	46	42	35	33	26	24	19	16	14	11	9	4.75	1.18	0.98	
	1.85	62	61	59	49	40	39	30	27	21	18	16	12	10	5.22	1.24	1.04	
	1.80	82	80	79	64	49	47	33	31	24	20	17	13	11	5.48	1.28	1.07	
	1.75	101	96	92	71	56	51	37	33	25	21	18	14	11	5.70	1.32	1.10	
6-GFX-150	1.90	84	77	69	63	53	50	39	36	29	24	21	17	14	7.12	1.77	1.48	
	1.85	93	92	89	74	60	59	45	41	32	27	24	17	15	7.83	1.86	1.56	
	1.80	123	120	119	96	74	71	50	47	36	30	26	18	16	8.22	1.93	1.61	
	1.75	152	144	138	107	84	77	56	50	38	32	27	19	17	8.55	1.98	1.65	
3-GFX-200	1.90	112	102	93	84	70	69	52	48	39	33	29	21	18	9.83	2.45	2.05	
	1.85	124	123	118	99	81	77	60	54	43	36	31	22	19	10.81	2.58	2.16	
	1.80	165	161	158	128	98	93	67	62	49	41	35	25	20	11.35	2.67	2.23	
	1.75	198	193	184	141	112	102	75	66	50	42	36	26	21	11.80	2.73	2.29	
3-GFX-250	1.90	140	128	116	105	88	86	65	60	49	41	36	26	23	12.29	3.06	2.56	
	1.85	155	154	148	124	101	96	75	68	54	45	39	28	24	13.51	3.23	2.70	
	1.80	206	201	198	160	123	116	84	78	61	51	44	31	25	14.19	3.34	2.79	
	1.75	248	241	230	176	140	128	94	83	63	52	45	32	26	14.76	3.42	2.86	
3-GFX-300	1.90	168	153	140	126	105	104	78	72	59	50	44	32	27	14.75	3.66	3.08	
	1.85	186	185	177	149	122	116	90	81	65	54	47	33	29	16.25	3.86	3.25	
	1.80	248	242	237	192	147	140	101	93	74	62	53	38	32	17.03	3.99	3.36	
	1.75	297	290	276	212	168	153	113	99	76	63	54	39	33	17.71	4.09	3.44	

### Constant power discharge table

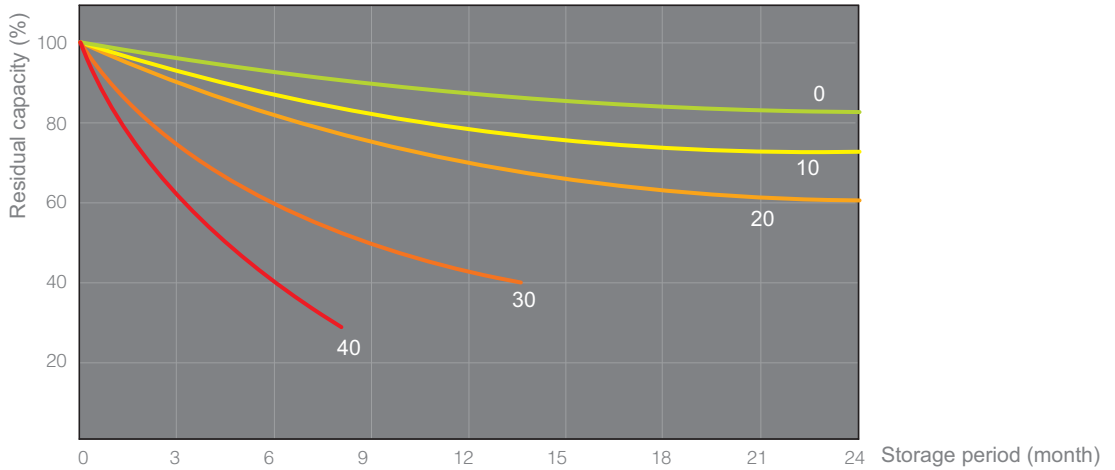
unit: W

Model and specification del	Final voltage (V/unit)	Discharge time (min)					Discharge time (h)											
		5	10	15	30	45	1	1.5	2	3	4	5	8	10	20	100	120	
6-GFX-50	1.90	56.00	52.00	46.00	42.00	38.00	36.00	26.00	24.00	20.00	16.00	14.00	12.00	10.00	4.74	1.18	0.98	
	1.85	61.38	61.38	59.40	49.50	39.60	39.60	29.70	27.72	21.78	17.82	15.84	11.88	9.90	5.15	1.23	1.03	
	1.80	80.36	78.40	78.40	62.72	49.00	47.04	33.32	31.36	23.52	19.60	17.64	15.68	11.76	5.35	1.25	1.04	
	1.75	96.50	92.64	88.78	69.48	54.04	50.18	36.67	32.81	25.09	21.23	19.30	17.37	11.58	5.48	1.27	1.06	
6-GFX-100	1.90	112.0	102.0	92.00	84.00	70.00	70.00	52.00	48.00	38.00	32.00	28.00	22.00	18.00	9.50	2.36	1.96	
	1.85	122.8	120.8	116.8	97.02	79.20	77.22	59.40	53.46	41.58	35.64	31.68	23.76	19.80	10.34	2.46	2.06	
	1.80	160.7	156.8	154.8	125.4	96.04	92.12	64.68	60.76	47.04	39.20	33.32	25.48	21.56	10.74	2.51	2.10	
	1.75	194.9	185.3	177.6	137.0	108.1	98.43	71.41	63.69	48.25	40.53	34.74	27.02	21.23	11.00	2.55	2.12	
6-GFX-150	1.90	168.0	154.0	138.0	126.0	106.0	106.0	78.00	72.00	58.00	48.00	42.00	34.00	28.00	14.24	3.54	2.96	
	1.85	184.1	182.2	176.2	146.5	118.8	116.8	89.10	81.18	63.36	53.46	47.52	33.66	29.70	15.50	3.68	3.09	
	1.80	241.1	235.2	233.2	188.2	145.0	139.2	98.00	92.12	70.56	58.80	50.96	35.28	31.36	16.11	3.78	3.16	
	1.75	293.4	277.9	266.3	206.5	162.1	148.6	108.1	96.50	73.34	61.76	52.11	36.67	32.81	16.50	3.82	3.18	
3-GFX-200	1.90	224.0	204.0	186.0	168.0	140.0	138.0	104.0	96.00	78.00	66.00	58.00	42.00	36.00	19.66	4.90	4.10	
	1.85	245.5	243.5	233.6	196.0	160.4	152.5	118.8	106.9	85.14	71.28	61.38	43.56	37.62	21.40	5.11	4.28	
	1.80	323.4	315.6	309.7	250.9	192.1	182.3	131.3	121.5	96.04	80.36	68.60	49.00	39.20	22.25	5.23	4.37	
	1.75	382.1	372.5	355.1	272.1	216.2	196.9	144.8	127.4	96.50	81.06	69.48	50.18	40.53	22.77	5.27	4.42	
3-GFX-250	1.90	280.0	256.0	232.0	210.0	176.0	172.0	130.0	120.0	98.00	82.00	72.00	52.00	46.00	24.58	6.12	5.12	
	1.85	306.9	304.9	293.0	245.5	200.0	190.1	148.5	134.6	106.9	89.10	77.22	55.44	47.52	26.75	6.40	5.35	
	1.80	403.8	394.0	388.1	313.6	241.1	227.4	164.6	152.9	119.6	99.96	86.24	60.76	49.00	27.81	6.55	5.47	
	1.75	478.6	465.1	443.9	339.7	270.2	247.0	181.4	160.2	121.6	100.4	86.85	61.76	50.18	28.49	6.60	5.52	
3-GFX-300	1.90	336.0	306.0	280.0	252.0	210.0	208.0	156.0	144.0	118.0	100.0	88.00	64.00	54.00	29.50	7.32	6.16	
	1.85	368.3	366.3	350.5	295.0	241.6	229.7	178.2	160.4	128.7	106.9	93.06	65.34	57.42	32.18	7.64	6.44	
	1.80	486.1	474.3	464.5	376.3	288.1	274.4	198.0	182.3	145.0	121.5	103.9	74.48	62.72	33.38	7.82	6.59	
	1.75	573.2	559.7	532.7	409.2	324.2	295.3	218.1	191.1	146.7	121.6	104.2	75.27	63.69	34.18	7.89	6.64	

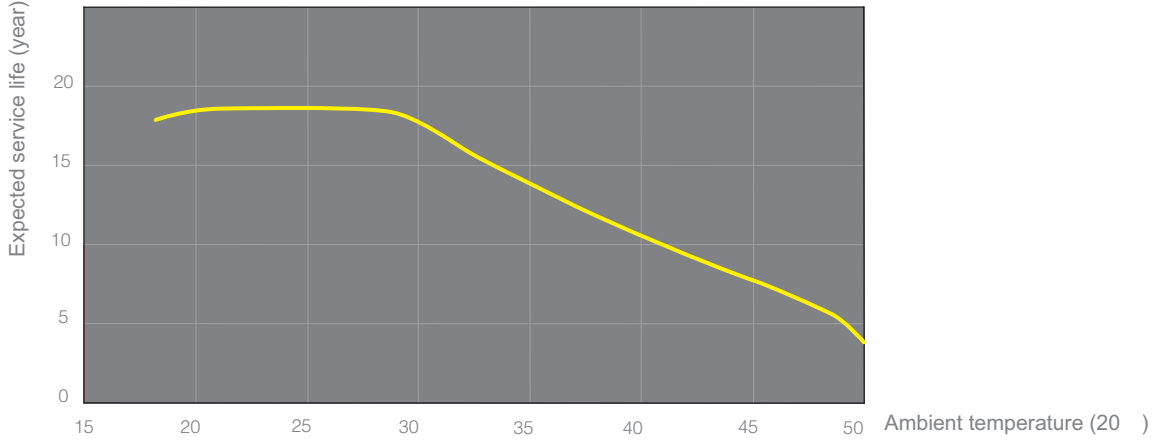
### Performance curve of 3/6-GFX series new type acid-proof stationary battery



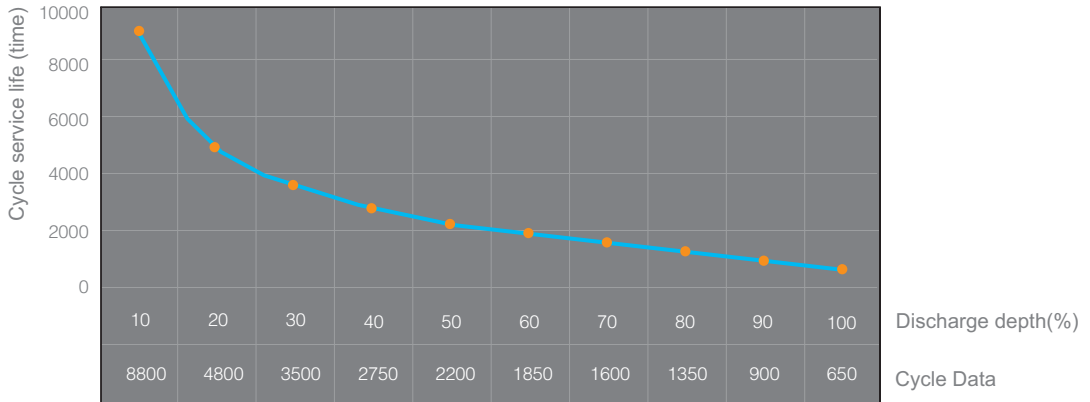
**Self-discharge characteristic curve**



**Relation curves of temperature and service life**



**Relation curve between discharge depth and cycle service life**



**Remark:** a) test circumstances: 20-30 °C, relative humidity is 50~80percent;  
 b) charge mode: charge quantity is equal to 105~115percent of discharge quantity  
 c) residual capacity is 80 percent C<sub>10</sub>

all data and specifications are subject to change without notice.

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