POLARIT Batteries

Sealed Lead Acid (VRLA) / Lead Acid Plante Type / Nickel-Cadmium Batteries

www.becafzar.com / www.polaritbattery.com

D&P: Khandanroo-88453021-2

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www.polaritbattery.com
www.becafzar.com
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Tel : +98 21 22321005 (10 LINE)
Fax : +98 21 22321015

Factory :
No.305, main Blvd, Khorramdasht Industrial Zone
Jajroud, Tehran- Iran
Tel : +98 21 76215148-49
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بک افزار

Sealed Lead Acid (VRLA) / Lead Acid Plate Type / Nickel-Cadmium Batteries

www.polaritbattery.com

POLARIT Batteries

BEC Afzar History :

BEC Afzar is an Iranian manufacturer with more than a quarter century experience in field of production and importation of battery Chargers, inverters, UPS and battery in various capacities.
Nowadays BEC afzar is a well-known company in Iran industry especially in Power plants, High voltage substations, Oil and gas projects, our brand implies quality and trust simultaneously. This success is achieved not only because of supplying high quality products but also because of our passion and respect toward our customers and our belief in providing excellent service and high quality products according to cutting edge technologies.
Our customer list at a glance shows the trust of industry owners to BEC Afzar Company.

BEC Afzar Products:

- **Industrial battery Chargers & thyristor mode rectifiers with no limit in capacity.**
- **Industrial inverters.**
- **All types of Ni-Cd, Sealed Lead Acid batteries.**
- **Online & Line-Interactive UPS**
- **Switch Mode Rectifiers (SMR)**
- **AC & DC Distribution panels and UPS Panels**

CERTIFICATE TÜV NORD

Management system as per
EN ISO 9001 : 2000

BEC AFZAR COMPANY
No. 8, 3rd East St., Main Blvd., Khorramdasht Industrial Zone., Abali Road., Tehran, Iran

Design and Manufacturing of Charger, Inverters and Industrial UPS

ANNEX TÜV NORD

to Certificate Registration No. 44 100 095784
DIN EN ISO 9001 : 2000

BEC AFZAR COMPANY

Scope

Design and Manufacturing of Charger, Inverters and Industrial UPS

Certificate Registration No.: 44 100 095784-001

Location: **No. 3, 1st 8 Meter Alley, Banihashem St., Resalat Highway, Tehran, Iran**

End of the List

PL Series (2 volt cells)

Indication of Type

P L ---

- P — POLARIT
- L — Long Life Single Cell
- --- — Nominal Capacity (Ah)

General Features

Sealed Construction

POLARIT unique construction and sealing technique guarantees that no electrolyte leakage can occur from the terminals or case of any POLARIT battery.
This feature insures safe and efficient operation of POLARIT batteries in any position.
POLARIT batteries are classified as "Non-Sailable" and will meet all requirements of the International Air Transportation Association.

Long Service Life, Float or Cyclic

The POLARIT VRLA battery has a long life in float or cyclic service.
The expected life of float service is 15 yeas @ 25ºC

Maintenance-Free Operation

During the expected float service life of POLARIT batteries, there is no need to check the specific gravity of the electrolyte, or add water. In fact, there is no provision for these maintenance functions.

Heavy Duty Grids

The heavy duty lead calcium alloy grids in POLARIT batteries provide an extra margin of performance and service life in both float and cyclic applications, even in conditions of deep discharge

Positive plates & Negative Plates

Positive plates are made from a Lead-Calcium system.

Separators

The glass fiber separators in POLARIT VRLA batteries have high absorbability to acid. The high porosity of the separators retains adequate electrolyte for the reaction of active materials in the plates.

Safety Vents

The venting system, which operates at 1 psi to 6 psi (0.07- 0.43kg/cm2) is designed to release excess gas and keep the internal pressure within the optimum range of safety. At the same time, it protects the negative plates from contamination of oxygen in the air. Vents are 100% visually inspected during battery production.

Low Self Discharge

Because of the use of Lead Calcium grids alloy, POLARIT VRLA battery can be stored for long periods of time without recharge.

Applications:

- Communication equipment
- Power generation plants
- Telecommunication control equipment
- Alarm systems
- Emergency lighting systems
- Uninterruptible power supplies and stand-by
- Electric power systems
- power for computers
- Power station
- Medical equipment
- Nuclear power station
- Fire and security systems
- Solar powered and wind powered systems
- Control equipment
- Load leveling and storage equipment
- Stand-by electric power
- Marine equipment

PL Series (2 volt cells)

Technical Specifications

TYPE	Nominal Voltage	Capacity (Ah) at 25ºC			Dimension (mm/Kg [(±5%)])					Short Circuit Current (A)	Internal Resistant (mΩ)
		In 1Hr EV=1.60	In 5Hr EV=1.75	In 10Hr EV=1.80	L	W	H	TH	WEIGT		
PL100	2	67	95	100	170	72	206	211	6	1250	0.85
PL200	2	134	180	200	170	111	329	350	12.7	2500	0.8
PL250	2	168	225	250	170	111	329	350	14.5	3500	0.67
PL300	2	201	270	300	170	151	330	350	17.5	4000	0.55
PL350	2	230	329	350	170	150	328	350	19	4500	0.5
PL420	2	260	360	420	210	176	329	350	28	5000	0.47
PL500	2	330	450	500	240	170	330	350	28.5	6000	0.38
PL600	2	400	540	600	302	175	331	350	35	7000	0.3
PL800	2	520	720	800	410	175	330	350	50	9000	0.23
PL1000	2	660	900	1000	475	175	328	350	61.6	10700	0.19
PL1000H	2	660	900	1000	321	188	621	651	63	10700	0.19
PL1500	2	1000	1350	1500	400	350	343	375	94	14000	0.13
PL1500H	2	1000	1350	1500	321	188	621	651	100.1	14000	0.13
PL2000	2	1320	1800	2000	490	350	343	375	115	17000	0.1
PL2000H	2	1320	1800	2000	328	320	621	651	129	17000	0.1
PL3000	2	2010	2700	3000	712	350	343	375	171	20000	0.08
PL3000H	2	2010	2700	3000	474	323	621	651	212	20000	0.08

Charge and Discharge Conditions in 25ºC (77ºF)

Table 1

TYPE	Max Charge Current	Max Discharge Current
PL100	20	500
PL200	40	1000
PL250	50	1250
PL300	60	1500
PL350	70	1700
PL420	84	2100
PL500	100	2500
PL600	120	3000
PL800	160	3500
PL1000	200	4000
PL1500	300	4500
PL2000	400	5500
PL3000	600	6000

Table 2

Status	Voltage	Temperature Compensation
Floating	2.23~ 2.28 (2.25V/25ºC)	-3.0 mv/ºC
Standby	2.25~ 2.30 (2. 28V/25ºC)	-3.3 mv/ºC
Mode Cycle Use	2.40~ 2.50 (2.40V/25ºC)	-5.0 mv/ºC

Table 3

Status	Operation Temperature Range
Discharge	-20 ~ 60 º C
Charge	-10 ~ 60 º C
Storage	-20 ~ 60 º C

Temperature Efficiency

Effect of Temperature on Battery Capacity

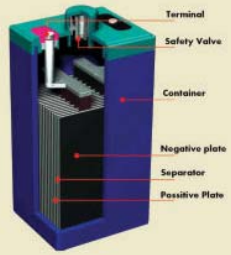
The nominal battery capacity is based on the temperature of 25 ºC. Above this temperature, the capacity increases marginally but it must be noted that the working battery should be kept within the temperature design limitations of the product. (pay attention to chart 1)

Chart 1

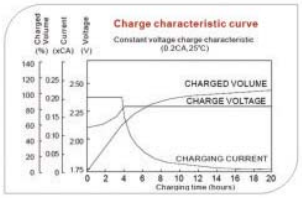
Discharge	Battery Temperature and efficacy on Capacity										
	-10ºC	-5ºC	0ºC	5ºC	10ºC	15ºC	20ºC	25ºC	30ºC	35ºC	40ºC
10 min	0.52	0.58	0.65	0.71	0.78	0.85	0.93	1	1.07	1.15	1.22
1 Hour	0.64	0.69	0.74	0.80	0.85	0.90	0.95	1	1.05	1.09	1.14
10 Hour	0.75	0.79	0.82	0.86	0.90	0.93	0.97	1	1.03	1.06	1.08

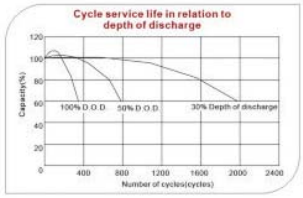
PL Series (2 volt cells)

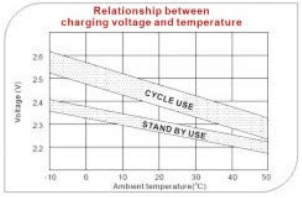
Constructions:

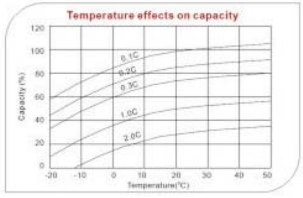


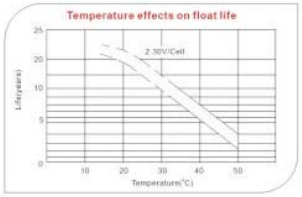
Technical Curves:











Sealed Lead Acid (VRLA) Batteries
Lead Acid Plate Type
Nickel-Cadmium Batteries

PL Series (2 volt cells)

Constant Current Discharge (Amperes) at 25°C to 1.8V/Cell:

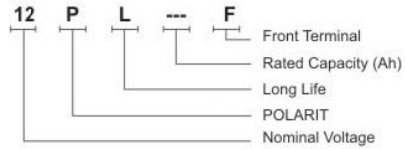
TYPE	Discharge Time							
	20 min	30 min	1 Hr	2 Hr	3 Hr	5 Hr	8 Hr	10 Hr
PL100	89.7	73.5	47.2	31.3	24.6	16.3	11	10
PL200	179.3	146.9	94.4	62.5	49.2	32.6	25	20
PL250	224.1	183.6	118	78.1	61.5	41	30	25
PL300	269	220.4	141.6	93.8	73.8	48.9	35	30
PL350	313.8	257.1	165.2	109.4	86.1	57.1	42	35
PL420	403.5	330.5	212.5	140.6	110.7	73.4	50	42
PL500	448.3	367.3	236.1	156.3	123.1	81.5	60	50
PL600	537.9	440.7	283.3	187.5	147.6	97.8	72.7	60
PL800	717.3	587.6	377.7	250	196.8	130.4	86	80
PL1000	896.6	734.5	472.1	312.5	246	163	112	100
PL1000H	896.6	734.5	472.1	312.5	246	163	112	100
PL1500	1344.9	1101.8	708.2	468.8	369	244.5	169	150
PL1500H	1344.9	1101.8	708.2	468.8	369	244.5	169	150
PL2000	1793.2	1469.1	944.2	625	492	326	217	200
PL2000H	1793.2	1469.1	944.2	625	492	326	217	200
PL3000	2689.7	2203.6	1416.4	937.5	738	489	360	300
PL3000H	2689.7	2203.6	1416.4	937.5	738	489	360	300

Constant Power Discharge (watts) at 25°C to 1.8V/Cell:

TYPE	Discharge Time							
	20 min	30 min	1 Hr	2 Hr	3 Hr	5 Hr	8 Hr	10 Hr
PL100	170	139	100	64	49	31	22	19
PL200	363	292	207	132	106	68	45.2	39
PL250	421	342	250	162.5	121	82	53	45.5
PL300	550	442	319	201	157	101	68.3	58
PL350	625	502	361	253	181	116	74.2	70
PL420	727	589	419	271	216	142	99	80
PL500	900	724	522	336	261	170	111.7	97
PL600	1018	819	602	377	303	195	128	110.8
PL800	1361	1109	803.2	514.5	408	261	180	150
PL1000	1770	1421	1009	625	519	346	227.8	195
PL1000H	1770	1421	1009	625	519	346	227.8	195
PL1500	2540	2081	1492	976	765	501	328	288
PL1500H	2540	2081	1492	976	765	501	328	288
PL2000	3401	2789	2002	1300.5	1009	668	447	369
PL2000H	3401	2789	2002	1300.5	1009	668	447	369
PL3000	5105	4180	3020	1961	1516	1012	672	552
PL3000H	5105	4180	3020	1961	1516	1012	672	552

12 PL ... F Series (12 volt front Terminals)

Indication of Type

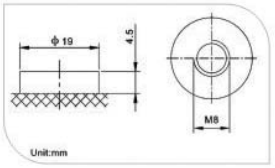


General Features

- Absorbent Glass Mat (AGM) technology for efficient gas recombination of up to 99% and freedom from electrolyte maintenance or water adding.
- Thick pasted plates with high quality Pb - Sn- Ca alloy grids for long service life
- Centralized venting system for gas ventilation
- Rope handles for handing and installation convenience
- Design life 12+ years
- Low resistance micro porous glass fiber(AGM). The electrolyte is absorbed within this material.

Applications:

- Telecommunication systems-
- Power plant
- Emergency power systems
- UPS
- Stand-by electric power



Technical Specifications :

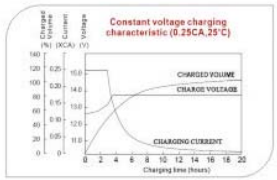
Battery Type	Nominal Voltage	Capacity (Ah 25°C)			Dimension (mm)			WEIGT (Kg)	Internal Resistant (mΩ)	Short Circuit Current (A)	Max.Discharge Current (A/5s/20°C)
		C_1 (1 Hr)	C_8 (8 Hr)	C_{10} (10 Hr)	L	W	TH				
12PL55F	12	44.3	55	57.8	277	106	222	18	6.5	1250	550
12PL75F	12	59.8	75	78.8	564	114	187	26	5.5	1500	750
12PL92F	12	74.5	92	94.5	394	110	285	32.6	4.5	1800	920
12PL105F	12	81.2	105	106	394	110	285	34.5	6	2100	1050
12PL125F	12	92.6	125	131	551	110	287	40.5	3.8	2750	1250
12PL155F	12	110.4	155	157	551	110	287	46	4.5	2680	1550
12PL180F	12	128.4	180	189	560	126	180	54	3.5	3000	1800

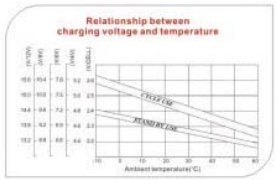
12 PL ... F Series (12 volt front Terminals)

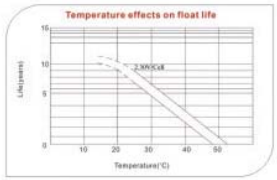
Constant Current Discharge Data (Amperes at 20°C~25°C) - (ECV=1.80V/Cell)

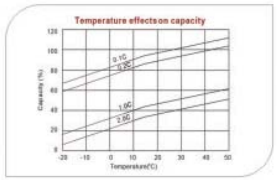
Time-Type	12PL55F	12PL75F	12PL92F	12PL105F	12PL125F	12PL155F	12PL180F
10 min	106	145.3	190.4	201	243	278	295.9
15 min	70.8	104	132.2	140	201.2	210.5	226.2
30 min	48.2	70.5	91.4	96.6	120	141	151
1 Hr	29	41	55	58.2	75	80.1	88
3 Hr	11.7	17.8	24	28	31.5	40	44
5 Hr	8	13	16.3	18.1	19.9	24	28
10 Hr	5.5	7.5	92	10.2	12.2	15.3	18

Technical Curves and installing demo:

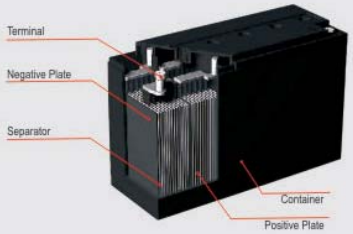




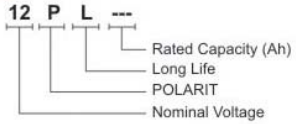




Long Life 12 PL Series (12 volt VRLA Battery)



Indication of Type



General Features

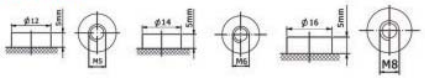
- Absorbent Glass Mat (AGM) technology for efficient gas recombination of up to 99%
- Can be mounted in any orientation.
- Computer designed lead, calcium tin alloy grid for high power density.
- Long service life, float or cyclic applications.
- Maintenance-free operation.
- Low self discharge

Applications:

- UPS
- Emergency Power Systems
- Communications Equipment
- Medical Equipment
- Control Equipment
- Security Systems
- Alarm systems
- Cable Televisions
- Power Tools

Position of terminals

terminal



Technical Specifications :

Battery Type	Nominal Voltage	Capacity (Ah 25°C)	Dimension (mm)				WEIGT (Kg)	Internal Resistant (mΩ)
			L	W	H	TH		
12PL 18	12	18	181.5	77	167.5	167.5	6	18
12PL 26	12	26	166.5	175	125	126	8	16
12PL 40	12	40	255	97	263	203	13.1	10
12PL 45	12	45	197	165	170	170	14.5	9.5
12PL 65	12	65	348	167	178	178	21	6
12PL 100	12	100	330	173	212	220	31	4.5
12PL 150	12	150	485	170	242	242	48.2	4
12PL 200	12	200	522	240	218	224	64	3.5

Long Life 12 PL Series (12 volt VRLA Battery)

Constant Current Discharge Data (Amperes at 25°C/77°F)-(ECV=1.75V/Cell)

Time-Type	12PL 18	12PL 26	12PL 40	12PL 45	12PL 65	12PL 100	12PL 150	12PL 150
10 min	59	71	68	96	114	176	275	371
15 min	30	34	47	50	79	120	190	256
30 min	22	26	39	41	65	100	158	212
1 Hr	13.4	15.0	23.2	24	37	59	93.3	124.5
3 Hr	5.2	6.7	10	10.5	16	24.1	40.9	53.2
5 Hr	3.7	4	6.8	6.9	10.2	16.5	27.5	36.5
10 Hr	2.0	2.3	3.9	4.2	6.5	10	15	20

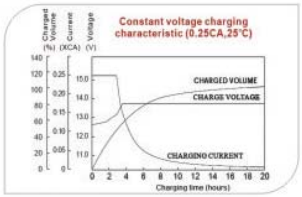
Constant Power Discharge Data (Watts per Cell at 25°C/77°F)-(ECV=1.75V/Cell)

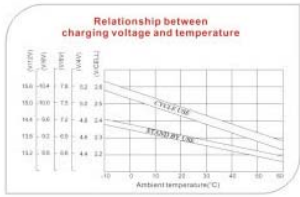
Time-Type	12PL 18	12PL 26	12PL 40	12PL 45	12PL 65	12PL 100	12PL 150	12PL 150
10 min	95	113	124	151	209	321	499	678
15 min	58	64	86	93	143	222	346	469
30 min	30	36	74	79	122	190	279	400
1 Hr	23.4	28.1	45	47	74	115	181	242
3 Hr	11.1	13.3	19.7	19.9	31.2	49.1	79	105
5 Hr	7.1	8.4	13	13.2	20.9	33	52	70.3
10 Hr	4.0	4.7	7.6	8.3	12.9	19.9	30.6	41.5

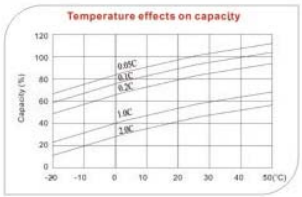
Charging Voltage

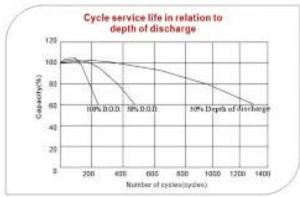
Floating	13.5~13.6 V
Equalizing	14.4 V
Standby	13.8~13.9 V

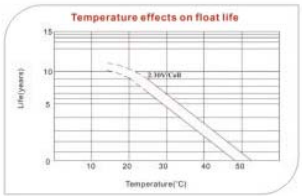
Technical Curves:

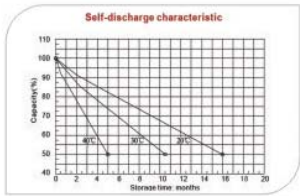












12 P Series (1 volt cells)

Indication of Type

12 P ---

- Rated Capacity (Ah)
- POLARIT
- Nominal Voltage

General Features

- Absorbent Glass Mat (AGM) technology for efficient gas recombination of up to 99%
- Can be mounted in any orientation.
- Computer designed lead, calcium tin alloy grid for high power density.
- Long service life, float or cyclic applications.
- Maintenance-free operation.
- Low self discharge

Applications:

- UPS
- Emergency Power Systems
- Communications Equipment
- Medical Equipment
- Control Equipment
- Security Systems
- Alarm systems
- Cable Televisions
- Power Tools

Contruction

- Positive plates - lead-calcium grids minimize corrosion and prolong life.
- Negative plates, balanced lead-calcium grids optimize recombination. efficiency.
- AGM separator- mechanically strong, low electrical resistance micro porous glass fiber which completely absorbs the electrolyte into its structure
- Container/cover/lid- injection-moulded made of plastics resin with UL94HB Grade and optionally with UL94VO grade, which is flame retardant.
- Terminal post-lead casting terminal or threaded copper insert alternative,
- the copper one provides maximum conductivity and with high compression grommet for long life.
- Vent valve-Allows the release of excess gases and prevents case rapture.

Charge & Discharge Conditions in 25° C/77° F

Status	Voltage	Temperature Compensation
Floating	13.5~13.6	-3.0 mv/°C
Standby Mode	13.8~14	-3.3 mv/°C
Cycle use	14.4~15	-5.0 mv/°C

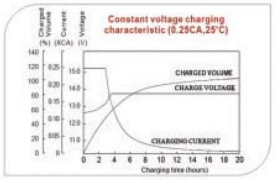
Status	Operation Temperature range
Discharge	-20~60°C
Charge	-10~60°C
Storage	-20~60°C

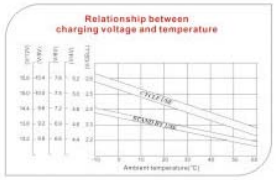
12 P Series (1 volt cells)

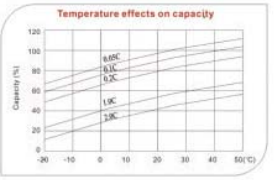
Technical Specifications :

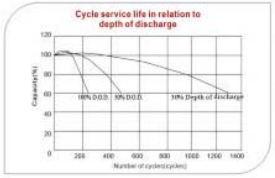
Battery Type	Nominal Voltage	Capacity (Ah/25°C)	Dimension (mm)				WEIGT (Kg)	Internal Resistant (mΩ)	Terminal Type
			L	W	H	TH			
12P 3.5	12	3.5	134	67	60.5	66.5	1.35	38	T1
12P 4.5	12	4.5	90	70	101	107	1.06	34	T1/T2
12P 7.2	12	7.2	151	65	94.5	100	2.3	23	T1/T2
12P 7.8	12	7.8	151	65	94.5	100	2.5	22	T3
12P 12	12	12	151	77	167.5	101	3.56	19	T1/T2
12P 14	12	14	151	98	95	101	4.2	18	T1/T2T
12P 15	12	15	181.5	77	167.5	167.5	4.56	17	T3
12P 18	12	18	181.5	77	167.5	167.5	5.32	16	T3/T12
12P 26	12	26	166.5	175	125	126	8	12	T3/T12
12P 33	12	33	195	130	164	180	9.3	11	T5/T6/T12
12P 35	12	35	195	130	164	180	10.5	10	T5/T6/T12
12P 40	12	40	255	97	203	203	13.1	9.5	T7
12P 45	12	45	197	165	170	170	14.5	9.5	T6/T10
12P 55	12	55	228	138	208	228	17	7	T6/T9/T14
12P 60	12	60	260	168	210	216	18.2	6.5	T6/T9/T14
12P 65	12	65	348	167	178	178	19.2	6	T6
12P 70	12	70	348	167	178	178	21	5.5	T6
12P 75	12	75	260	168	208	228	21.6	5.5	T6/T9/T14
12P 80	12	80	259	168	280	214	22.6	5	T6
12P 90	12	90	330	173	212	220	28	5	T6/T9/T14
12P 100	12	100	330	173	212	220	30	4.5	T11
12P 120	12	120	410	177	225	225	35	4	T11
12P 150	12	150	485	170	242	242	42.5	3.6	T11
12P 200	12	200	522	240	218	224	61	3.5	T11

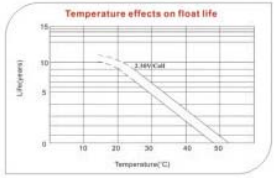
Technical Curves:

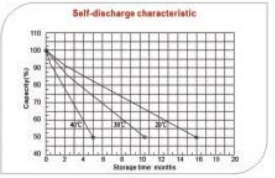






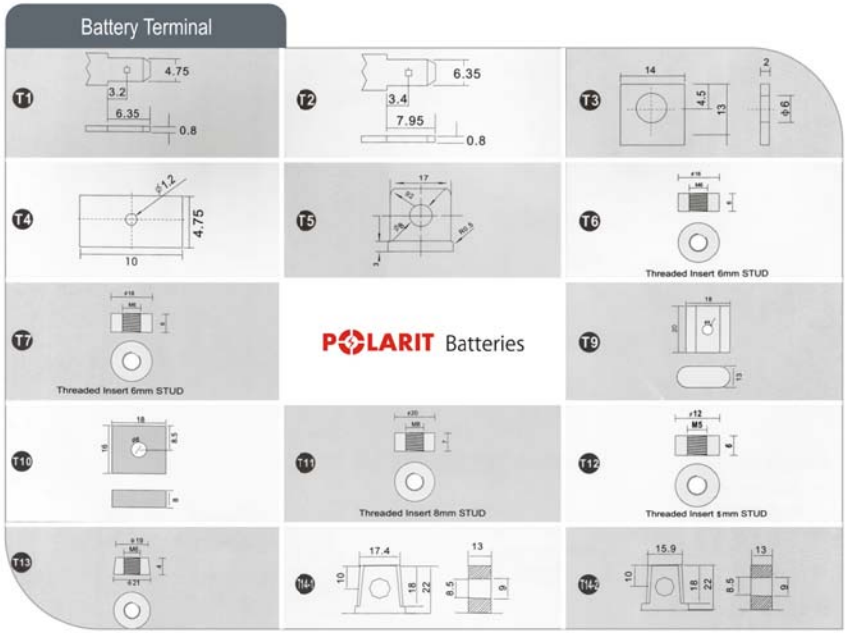






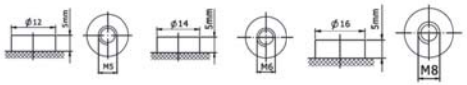
12 P Series (1 volt cells)

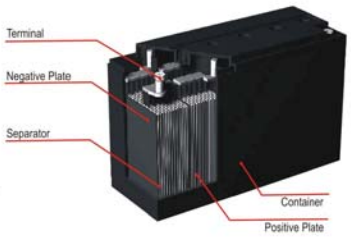
Battery Terminal



Position of terminals

terminal





POLARIT Batteries

Sealed Lead Acid (VRLA) / Lead Acid Plante Type / Nickel-Cadmium Batteries

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