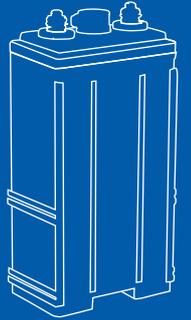




# XHP

Low maintenance  
high performance  
**batteries**



Reliability inside

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# ALCAD

ADVANCED SOLUTIONS | ENGINEERING EXCELLENCE

# Low maintenance, high performance Ni-Cd batteries

## Powerful assurance for critical applications

depend upon XHP where vital UPS, engine starting and emergency back-up duties need guaranteed power in an instant. The built-in reliability of sintered/pbe technology and alkaline electrolyte provides up to 20+ years of cost-effective trouble-free service, requiring virtually no maintenance.

## Future-proof construction

XHP's steel superstructure and tough polypropylene casing hold sintered and plastic-bonded electrodes with copious amounts of alkaline electrolyte. As none of these materials are corrosive, XHP confidently outperforms lead acid batteries by several years. On-going maintenance, unexpected downtime and replacement costs are completely eliminated with Ni-Cd. XHP batteries only require topping-up every 10 years after single rate charging.

## Predictable cost and long life

Owing to its reliability, unique electrochemistry and sturdy construction, accurately predicting your battery's life-cost is now possible. XHP can easily repay your investment within 3-6 years – well within the lifetime of your application.

## Reliable in all conditions

XHP is specified onshore for hospitals, traffic control, power generation and process control, and offshore in oil and gas exploration and other hazardous marine installations, where the implications of main power supply interruption cannot be contemplated.

Generally operating between temperatures of  $-20^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$  ( $-4^{\circ}\text{F}$  to  $+122^{\circ}\text{F}$ ), XHP batteries can tolerate extremes of  $-50^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$  ( $-58^{\circ}\text{F}$  to  $+158^{\circ}\text{F}$ ) for short periods. They can also remain in storage for many years before commissioning without affecting subsequent performance.



## Best for engines – perfect for UPS

Electrical abuses such as AC ripple, over-discharging, voltage reversal or high overcharge currents have no effect upon XHP. The battery's plate and separator format make recharging quick and efficient at either single or dual rate.

Delivery of high power within a narrow voltage window perfectly suits XHP for UPS duties. There is no risk of sudden death, and because Ni-Cd batteries do not produce corrosive fumes, they can be installed next to sensitive electronic equipment. Even when partially discharged XHP is capable of providing repeated high currents up to 20 times its nominal capacity to make short work of starting your diesel engine or gas turbine.

## Battery sizing made easy

An XHP battery can be designed to exactly match your installation criteria. With BaSics sizing software, calculations are quick and easy. Engineers are always available when you require additional expert advice.

## Original equipment or replacement

From a broad range of sizes, weights and performances available, XHP can perfectly meet your requirement for guaranteed power.

## Setting standards worldwide

XHP batteries satisfy all major electrical industry standards and are approved for operation on board ships and offshore installations.

## Alcad recycle

Alcad also recycle old batteries as part of their responsibility to safeguard the environment.

# XHP Range

# XHP



### Rapid charging characteristics

( + 20°C ± 5°C / + 68°F ± + 9°F)

XHP can be charged by all normal methods:

- Taper
- Constant current
- Constant voltage
- Pulse

The cells continue to operate satisfactorily in any state of charge. For operating conditions other than fully charged, consult Alcad.

### Capacity

The rated capacity ( $C_5$ ) of a cell is the capacity available in ampere-hours (Ah) at the 5 hour discharge rate to an end voltage of 1.00 V/cell.

### Nominal discharge voltage

The nominal discharge voltage is 1.2 V/cell.

### Constant current charging

Standard charge  $0.2 \times C_5$  amperes for 8 hours.

### Constant voltage charging

No current limit is necessary.

### With boost

Maintenance float voltage:  
1.40 ± 0.01 V

Boost voltage range:  
1.45 V ± 0.01 V

### Without boost

Float voltage:  
1.41 V ± 0.01 V

These voltages are applicable from +20°C to +25°C (+68°F to +77°F)

### Cell data

D.C. internal resistance:  
 $40 \times 1/C_5 \text{ m}\Omega$

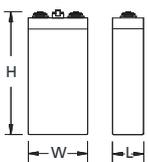
Short circuit current:  
1.8 x cell discharge current  
at 1 s to 0.65 V

# XHP

## Capacity and dimensions

XHP type	Capacity at the 5hr rate (Ah)	Length per cell		Width per cell		Overall height		Approx. weight per cell		Volume of liquid electrolyte above plates (cc)
		(mm)	L (in)	(mm)	W (in)	(mm)	H (in)	(kg)	(lb)	
XHP 11	11	46.5	1.8	86	3.4	196	7.2	1.0	2.2	66
XHP 16	16	46.5	1.8	86	3.4	276	10.9	1.5	3.5	160
XHP 21	21	46.5	1.8	86	3.4	276	10.9	1.6	3.5	160
XHP 24	24	46.5	1.8	86	3.4	276	10.9	1.7	3.8	160
XHP 28	28	61	2.4	86	3.4	276	10.9	2.0	4.4	215
XHP 36	36	86	3.4	86	3.4	276	10.9	2.7	6.0	325
XHP 45	45	86	3.4	86	3.4	276	10.9	2.9	6.4	315
XHP 52	52	86	3.4	86	3.4	276	10.9	2.9	6.4	315
XHP 60	60	86	3.4	86	3.4	306	12.1	3.4	7.5	405
XHP 70	70	86	3.4	86	3.4	306	12.1	3.5	7.5	405
XHP 80	80	86	3.4	86	3.4	306	12.1	3.5	7.5	390
XHP 90	90	78	3.1	166	6.5	339	13.4	5.8	12.8	750
XHP 100	100	78	3.1	166	6.5	339	13.4	6.1	13.5	735
XHP 115	115	78	3.1	166	6.5	339	13.4	6.3	13.9	720
XHP 130	130	87	3.4	166	6.5	339	13.4	7.0	15.4	815
XHP 150	150	103	4.1	166	6.5	339	13.4	8.2	18.1	990
XHP 170	170	117	4.6	166	6.5	339	13.4	9.7	21.6	1135
XHP 190	190	117	4.6	166	6.5	339	13.4	10.0	22.3	1115
XHP 220	220	198	7.9	166	6.5	339	13.4	14.7	32.4	2155
XHP 250	250	198	7.9	166	6.5	339	13.4	15.3	33.7	2120
XHP 280	280	198	7.9	166	6.5	339	13.4	15.8	34.6	2080
XHP 300	300	198	7.9	166	6.5	339	13.4	16.1	35.5	2060
XHP 320	320	198	7.9	166	6.5	339	13.4	16.5	36.2	2030

Alcad XHP batteries fulfil all requirements specified by IEC publication 60623. Flame retardant (F) option available. Please add 1.5% to dimensions.



### Terminals

XHP 11 - XHP 80	M10
XHP 90 - XHP 150	M12
XHP 170 - XHP 320	2 x M12



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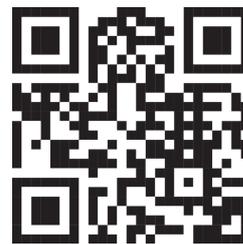
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**Reliability inside**

# ALCAD

[www.alcad.com](http://www.alcad.com)

# Single Cell Range

## Ni-Cd batteries



Reliability inside

**ALCAD**

# Alcad Single Cell Range

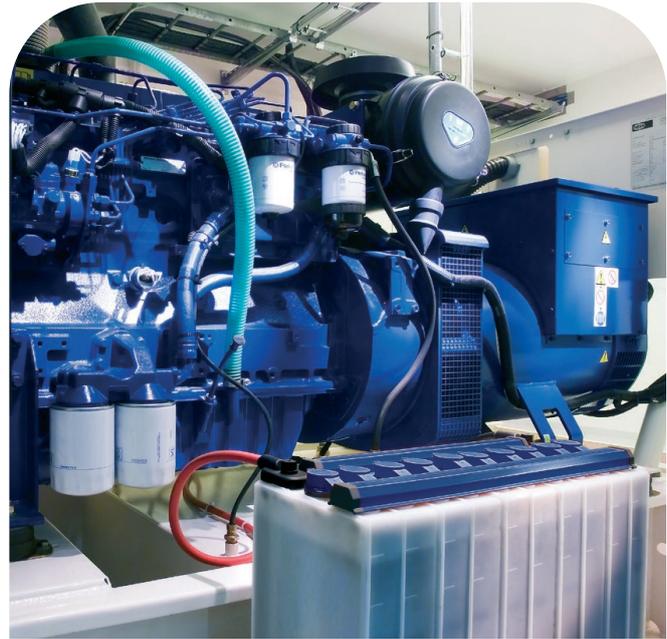
the reliability you need at the heart of your power backup system



## Versatility for industry

Alcad Single Cell nickel-cadmium (Ni-Cd) batteries offer the versatility to industry where reliable performance is crucial, even under extreme operating conditions, for example in :

- substations
- power plants
- onshore and offshore oil & gas applications
- refineries
- airports
- building infrastructure



## Reliability for backup power application

If primary power sources fail, Alcad batteries enable your backup system to provide vital systems support to keep operations moving until primary power is restored or a controlled shutdown can be performed, including for :

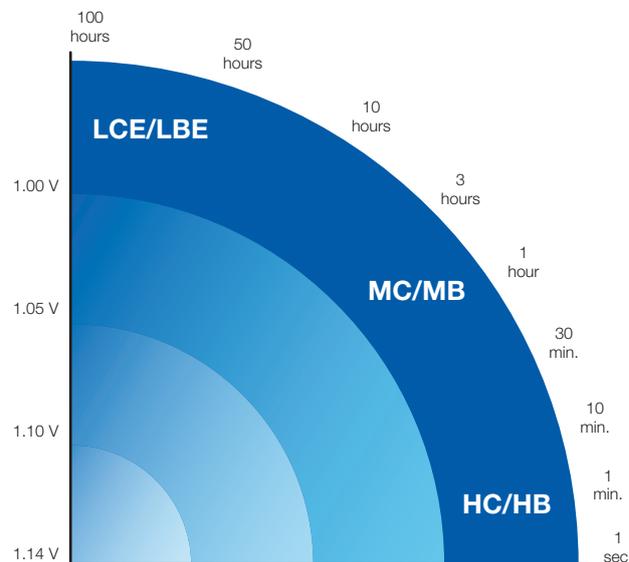
- UPS (Uninterruptible Power Supply)
- substation switchgear
- switching and transmission
- emergency and security
- industrial fire monitors and alarms
- process control
- signaling

---

## Security for starting applications

For generator starting or switching on heaters, pumps and other essential equipment in an emergency, Alcad batteries meet the specific need for high discharge, instant voltage recovery and reliable operation, even in extreme temperatures.

“  
Alcad has a Single Cell range to suit every discharge profile from 1s to 100 h  
”



## A broad range of capacity and performance

Alcad Single Cells are available in low rate discharge, medium and high performance types LCE/LBE, MC/MB, HC/HB and offer:

- simple maintenance
- 20+ years design life
- wide temperature range operation
- resistance to electrical abuse, shock and vibration
- low life cycle cost

	LCE/LBE	MC/MB	HC/HB
<b>Capacity steps</b>	58	68	47
<b>Capacity</b>	10 - 1710 Ah	9 - 1465 Ah	9 - 920 Ah
<b>Performance</b>	For low rate discharge over long periods between 1 and 100 hours	For varied loads with low and high discharge rates between 30 minutes and 3 hours	For high rate discharge over short periods less than 30 minutes
<b>Applications</b>	Power back-up applications	Power back-up applications	Power back-up and starting applications

“  
It is easy to specify the ideal battery for every stationary application, based upon required discharge time and end of discharge voltage.  
”



“  
Improved performance and more capacities allow you to select the best, cost-effective battery for your application.  
”

## Alcad Ni-Cd technology robust and reliable by design, proven in practice

### Alcad's wide range enables the best solution for your application optimised according to plate thickness

- LCE/LBE range**
  - Thickest plates
  - High energy
  - Low cost per Ampere at low rates
- MC/MB range**
  - Thinner plates
  - Medium power
  - Optimised between H and L design for mixed loads
- HC/HB range**
  - Thinnest plates
  - High power
  - Low cost per Ampere at high rates

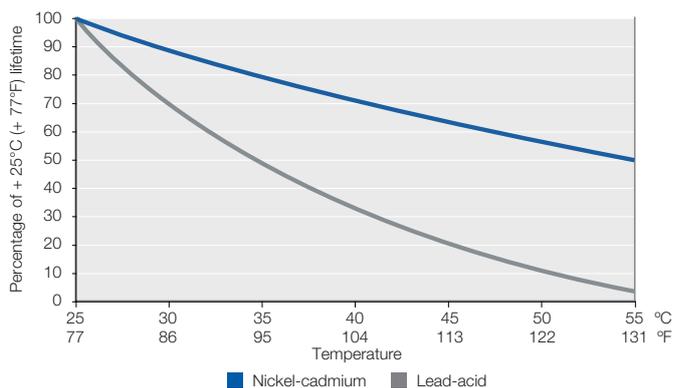
- Optimised design boosts electrical performance by up to 10% depending on discharge time.
- More capacities than previous designs enables the battery to be sized more closely to exact requirements.

### Because it's Ni-Cd, it's reliable

Alcad's robust Ni-Cd pocket plate technology is particularly well suited to the complex requirements of installations in difficult and demanding conditions, and in remote and inaccessible locations.

- Delivers performance, reliability and a long, totally predictable service life, with no risk of sudden death failure.
- Ensures a 20+ years' service life at + 25°C (+ 77°F).
- Normal operating temperature -20°C (-4°F) to +55°C (+131°F).
- Even at + 35°C (+ 95°F), service life is reduced by just 20% compared with a 50% reduction for a lead-acid battery.

Effect of temperature on lifetime



## Single Cell construction

- Steel pocket plate structure does not suffer from 'sudden death' or internal corrosion since there is no interaction between the active material and the electrolyte.
- Tough polypropylene casing ensures structural integrity throughout a long life.
- Specially designed flame arresting flip top vent ensures safe operation
- Engineered electrolyte solution delivers optimum performance without causing degradation of plate materials.
- Plenty of space is allowed for a good reserve of electrolyte.
- Special electrolyte is available for extremely low temperature applications.
- Single Cell batteries offer a long shelf life when stored under Alcad's recommended conditions and are easy to install.

### 1 Protective cover

In line with IEC 62485-2 / EN 50272-2 (safety) with IP2X level

### 2 Flame-arresting vent

Compliant with UL 1989 Section 7 - Flame arrester vent cap tests

### 3 Plate group busbar

### 4 Plate tab

### 5 Plate frame

### 6 Separating grids

### 7 Cell container

### 8 Alcad pocket plate technology

**Note:** Alcad Single Cell ranges fully comply with the requirements of the IEC 60623 standard.



“

Demands in our industry change quickly. Through their strength and reliability, Alcad batteries enable us to deliver the high level service our customers expect.

”

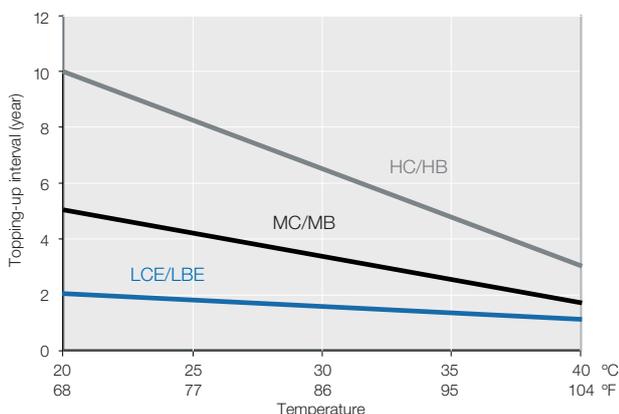


## Extending and improving battery design to meet evolving industrial needs

### Lower maintenance contributes to lower Total Cost of Ownership (TCO)

- Topping-up interval extended by up to two times in standard conditions at + 20°C (+ 68°F) and at float voltage.
- A simple annual maintenance inspection is recommended to check correct functioning of the charging system, battery and the auxiliary electronics.
- Easy maintenance built-in by design:
  - Visible electrolyte level
  - Simple bolted connector for fast installation and allowing the battery to be quickly commissioned.

#### Typical topping up intervals at recommended charge voltage



### Higher chargeability to minimise downtime

- Faster recharge time enables at least 80% recovery of capacity from fully discharged conditions in 15 hours at float voltage level.

#### Recommended charging voltage:

##### • For two level charge:

- Float level:
  - 1.42 ± 0.01 V/cell for LCE/LBE
  - 1.40 ± 0.01 V/cell for MC/MB and HC/HB

- High level:
  - 1.47 - 1.70 V/cell for LCE/LBE
  - 1.45 - 1.70 V/cell for MC/MB and HC/HB

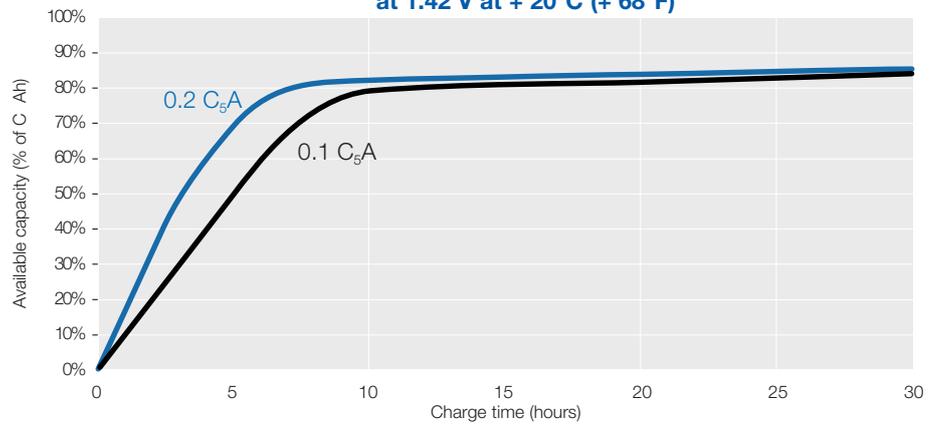
A high voltage will increase the speed and efficiency of the recharging.

##### • For single level charge:

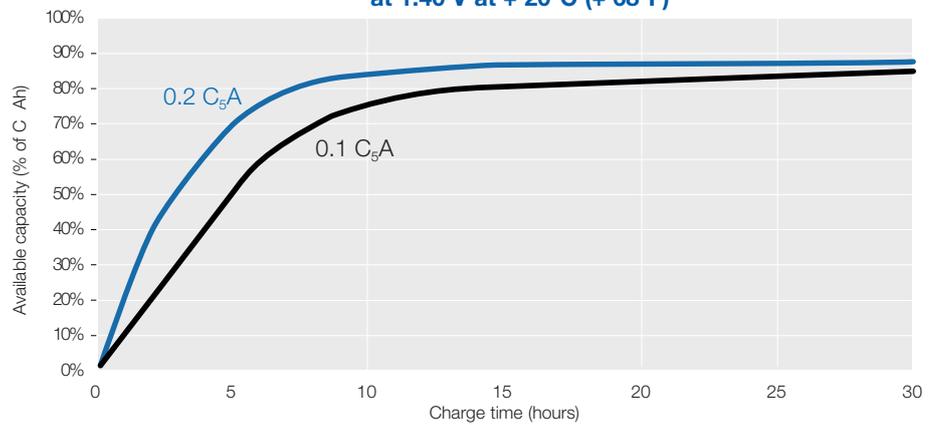
- 1.43 - 1.50 V/cell.



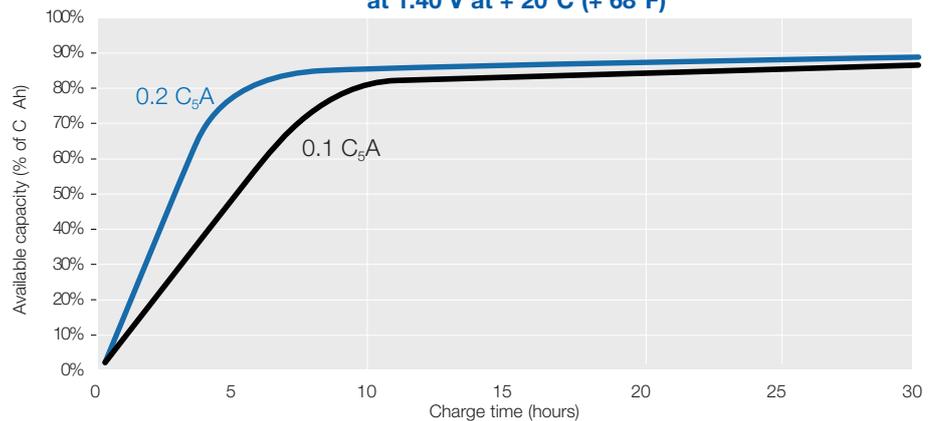
**LCE/LBE Range – Available capacity after constant voltage charge at 1.42 V at + 20°C (+ 68°F)**



**MC/MB Range – Available capacity after constant voltage charge at 1.40 V at + 20°C (+ 68°F)**



**HC/HB Range – Available capacity after constant voltage charge at 1.40 V at + 20°C (+ 68°F)**



# Alcad design and build to ensure long, trouble-free battery life

## **Alcad Single Cell batteries comply with the highest quality, safety and environmental standards**

### **Electrical characteristics:**

- Certified IEC 60623 - Secondary cells and batteries containing alkaline or other non-acid electrolytes - Vented nickel-cadmium prismatic rechargeable single cells.

### **Quality:**

- ISO 9001 and ISO 14001
- Alcad World class continuous program.

### **Safety:**

- Complies with EN 50272-2/ IEC 62485-2 - Safety requirements for secondary batteries and battery installations - Part 2: Stationary batteries

The protective covers for terminals and connectors, the insulated cables are compliant with IP2X level protection against electrical shocks according to safety standard.

- Complies with UL 1989 - Section 7: Flame arrester vent cap tests - UL standard for safety for standby batteries.

### Environment & recycling:

- Fully recyclable
- RoHS – Although batteries and accumulators are not within the scope of the RoHS directive, Alcad has taken voluntary measures to make sure that the substances forbidden by RoHS are not present in the battery, with the exception of the electro-chemical core.
- REACH – Alcad has adopted internal procedures to ensure conformity with the European REACH (Registration, Evaluation, Authorisation and Restriction of Chemical Substances) Regulation.





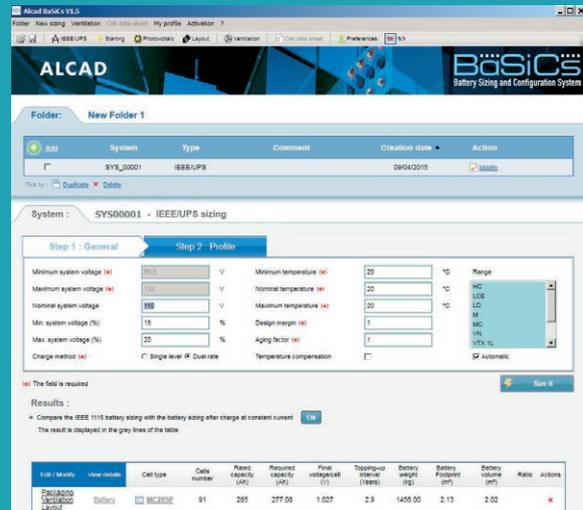
## A through-life service philosophy

Alcad's stationary battery specialists provide global expertise, with local customer service, through an expanding network of approved service stations in the Middle East, Asia, Europe and North America. You can depend on our support for the entire life of your battery, and beyond, including:

- installation, customer installation certification, commissioning and start-up
- preventive maintenance
- inspection, troubleshooting, testing and supervision
- corrective maintenance
- end of life removal, decommissioning and recycling
- training programmes for technicians and engineers



“  
Alcad's total end-to-end application support is a vital and dependable resource for our organisation.  
”

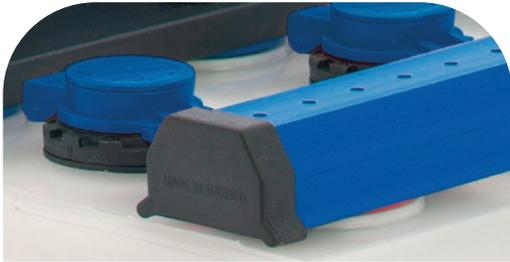


## Size your battery solution

Our fast and easy to use Battery Sizing and Configuration System (BaSiCs) software support tool for stationary applications is available for download. This will help you find the right battery and create the optimum battery layout for your backup or starting application.

Search for 'BaSiCs' on our website

# The best connection for optimum battery efficiency

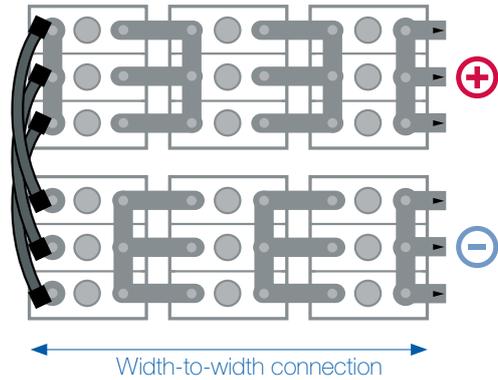
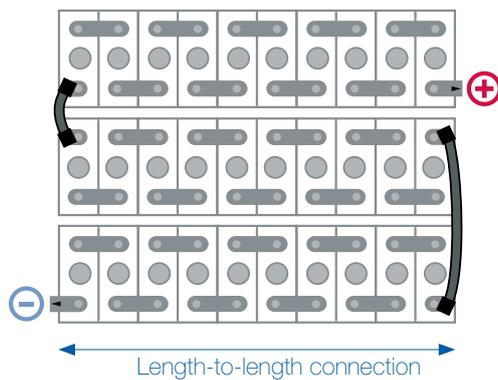


## Standard layouts

Alcad has developed a series of standard layouts in which a battery may be ordered. Whether the battery is being installed on a rack, in a cabinet or is simply freestanding, the same configuration principles can be applied.

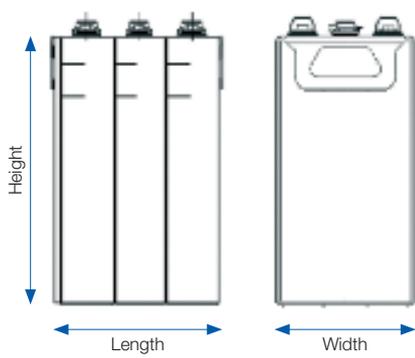
## Two ways to configure the battery

	Normal connection	Crosswise connection
<b>LCE/LBE</b>	LCE10P to LCE375P	LBE400P to LBE1710P
<b>MC/MB</b>	MC9P to MC335P	MB350P to MB1465P
<b>HC/HB</b>	HC9P to HC210P	HB218P to HB920P



The cell is turned through 90° and then connected width-to-width – "crosswise" mounted. This minimises the installation's overall length. The cell's width is used to calculate the row length.





## Dimensions

The dimensions of all available cell types are tabulated on the following pages.

### Notes:

- All the tabulated dimensions are maximum values.
- All the cell heights given in the tables include the height of the IP2X terminal cover.

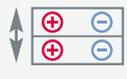
## Position of terminals

### Single cells, 1 pole bolt per pole



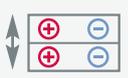
LCE10P to LCE280P  
MC9P to MC240P  
HC9P to HC155P

### Single cells, 2 pole bolts per pole



LCE10P to LCE375P  
MC250P to MC335P  
HC170P to HC210P

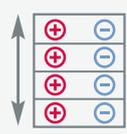
### Single cells, with 2 – 6 pole bolts per pole



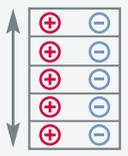
LBE400P to LBE550P  
MB350P to MB480P  
HB230P to HB305P



LBE600P to LBE830P  
MB505P to MB720P  
HB325P to HB460P



LBE890P to LBE1100P  
MB740P to MB940P  
HB510P to HB615P



LBE1150P to LBE1400P  
MB900P  
MB1000P to MB1180P  
HB640P to HB765P



LBE1450P to LBE1710P  
MB965P  
MB1220P to MB1465P  
HB490P and HB590P  
HB800P to HB920P

### Label naming information

LCE/LBE, MC/MB and HC/HB single cell ranges are respectively designated with a "-1" extension on ALCAD container labels. The "-1" extension designation refers to ALCAD single cell design for manufacturing purposes. As an example, 'LBE 750P' cell is named as 'LBE 750P-1' on the ALCAD container label.

# Single Cell Range

## LCE / LBE Range

Capacities and dimensions - **International System of units**

CONNECTION	Cell Type	Capacity	Height*		Width		Lenght per block		Approx. Weight per cell		Approx. Electrolyte volume between level marks		Approx. electrolyte per cell		Internal Resistance	Cell connection bolt per pole
			C5 Ah	mm	in	mm	in	1 cell		kg	lb	cm <sup>3</sup>	kg	lb		
								mm	in							
																mOhm
NORMAL CONNECTION	LCE 10P	10	270	10,6	121	4,8	46	1,8	1,6	3,6	145	0,24	0,77	12,0	M6	
	LCE 15P	15	270	10,6	121	4,8	46	1,8	1,7	3,7	145	0,23	0,72	8,33	M6	
	LCE 22P	22	270	10,6	121	4,8	46	1,8	1,9	4,2	145	0,21	0,67	5,45	M6	
	LCE 30P	30	270	10,6	121	4,8	46	1,8	2	4,3	145	0,19	0,58	4,17	M6	
	LCE 34P	34	270	10,6	121	4,8	70	2,8	2,6	5,7	242	0,39	1,2	3,53	M6	
	LCE 40P	40	270	10,6	121	4,8	70	2,8	3	6,6	242	0,34	1,1	3,00	M6	
	LCE 47P	47	270	10,6	121	4,8	70	2,8	3	6,6	242	0,33	1,03	2,66	M6	
	LCE 55P	55	270	10,6	121	4,8	70	2,8	3,3	7,3	242	0,3	1	2,27	M6	
	LCE 62P	62	270	10,6	121	4,8	70	2,8	3,3	7,3	242	0,3	0,9	2,02	M6	
	LCE 70P	70	350	13,8	196	7,7	72	2,8	6,1	13,4	577	0,86	2,7	2,29	M8	
	LCE 75P	75	350	13,8	196	7,7	72	2,8	6	13,1	577	0,86	2,58	2,13	M8	
	LCE 85P	85	350	13,8	196	7,7	72	2,8	6,8	15	577	0,78	2,4	1,88	M10	
	LCE 90P	90	350	13,8	196	7,7	72	2,8	6,6	14,6	577	0,78	2,27	1,78	M10	
	LCE 100P	100	350	13,8	196	7,7	72	2,8	6,8	15	577	0,78	2,1	1,60	M10	
	LCE 110P	110	350	13,8	196	7,7	72	2,8	6,6	14,6	577	0,78	2,27	1,45	M10	
	LCE 125P	125	350	13,8	196	7,7	72	2,8	7,4	16,3	577	0,7	3,2	1,28	M10	
	LCE 145P	145	350	13,8	196	7,7	72	2,8	7,2	15,9	577	0,7	1,96	1,10	M10	
	LCE 149P	149	350	13,8	196	7,7	72	2,8	7,4	16,3	577	0,68	2,1	1,07	M10	
	LCE 150P	150	350	13,8	196	7,7	97	3,8	7,2	15,9	809	0,7	3	1,07	M10	
	LCE 165P	165	350	13,8	196	7,7	97	3,8	9,8	21,6	809	1,03	3,2	0,97	M10	
	LCE 176P	176	350	13,8	196	7,7	97	3,8	9,8	21,6	809	1,04	3,2	0,91	M10	
	LCE 185P	185	350	13,8	196	7,7	97	3,8	9,6	21,2	809	1,03	2,98	0,86	M10	
	LCE 200P	200	350	13,8	196	7,7	97	3,8	10,4	22,9	809	0,96	2,9	0,80	M10	
	LCE 220P	220	350	13,8	196	7,7	97	3,8	10,2	22,5	809	0,96	2,67	0,73	M10	
	LCE 235P	235	411	16,2	196	7,7	97	3,8	11,3	24,9	809	1,22	4,12	0,70	M10	
	LCE 255P	255	411	16,2	196	7,7	97	3,8	12,3	27,1	809	1,11	3,4	0,65	M10	
	LCE 280P	280	411	16,2	196	7,7	97	3,8	12,8	28,2	809	1,11	3,64	0,59	M10	
	LCE 285P	285	411	16,2	196	7,7	97	3,8	12,3	27,1	809	1,11	3,4	0,58	M10	
	LCE 300P	300	411	16,2	196	7,7	126	5	15,9	35,1	1079	1,59	4,8	0,55	2xM10	
	LCE 330P	330	411	16,2	196	7,7	126	5	15,5	34,2	1079	1,59	5,28	0,50	2xM10	
	LCE 334P	334	411	16,2	196	7,7	126	5	15,9	35,1	1079	1,56	4,8	0,49	2xM10	
	LCE 344P	344	411	16,2	196	7,7	126	5	16,3	35,9	1079	1,43	4,4	0,48	2xM10	
	LCE 360P	360	411	16,2	196	7,7	126	5	16,4	36,2	1079	1,48	4,4	0,46	2xM10	
	LCE 375P	375	411	16,2	196	7,7	126	5	16,5	36,4	1079	1,48	4,8	0,44	2xM10	
CROSSWISE CONNECTION	LBE 400P	400	411	16,2	195	7,7	146	5,7	18	39,7	1133	1,57	4,7	0,41	2xM10	
	LBE 415P	415	411	16,2	195	7,7	146	5,7	18,3	40,3	1133	1,57	4,3	0,40	2xM10	
	LBE 425P	425	411	16,2	195	7,7	146	5,7	18,3	40,3	1133	1,53	4,7	0,39	2xM10	
	LBE 440P	440	411	16,2	195	7,7	159	6,3	19,8	43,7	1247	1,73	5,2	0,38	2xM10	
	LBE 460P	460	411	16,2	195	7,7	159	6,3	19,8	43,7	1247	1,73	4,6	0,36	2xM10	
	LBE 470P	470	411	16,2	195	7,7	159	6,3	20	44,1	1247	1,69	5,2	0,35	2xM10	
	LBE 480P	480	411	16,2	195	7,7	171	6,7	21,8	48,1	1353	1,86	5,6	0,34	2xM10	
	LBE 500P	500	411	16,2	195	7,7	171	6,7	21,8	48,1	1353	1,86	5,6	0,33	2xM10	
	LBE 510P	510	411	16,2	195	7,7	171	6,7	21,4	47,2	1353	1,86	5,2	0,32	2xM10	
	LBE 550P	550	411	16,2	195	7,7	183	7,2	23	50,7	1458	1,99	5,8	0,30	2xM10	
	LBE 570P	570	411	16,2	195	7,7	183	7,2	23,5	51,8	1458	1,95	6	0,29	2xM10	
	LBE 600P	600	411	16,2	195	7,7	206	8,1	26,7	58,9	1643	2,28	6,3	0,28	3xM10	
	LBE 620P	620	411	16,2	195	7,7	206	8,1	26,1	57,5	1643	2,21	6,8	0,27	3xM10	
	LBE 650P	650	411	16,2	195	7,7	219	8,6	28	61,7	1757	2,44	6,6	0,25	3xM10	
	LBE 700P	700	411	16,2	195	7,7	232	9,1	30	66,1	1871	2,59	6,9	0,24	3xM10	
	LBE 750P	750	411	16,2	195	7,7	244	9,6	31,3	69	1977	2,72	7,5	0,22	3xM10	
	LBE 762P	762	411	16,2	195	7,7	244	9,6	31,4	69,2	1977	2,72	8,1	0,22	3xM10	
	LBE 800P	800	411	16,2	195	7,7	256	10,1	33,4	73,6	2082	2,85	8,5	0,21	3xM10	
	LBE 830P	830	411	16,2	195	7,7	268	10,6	34,5	76,1	2187	2,99	8,7	0,20	3xM10	
	LBE 855P	855	411	16,2	195	7,7	268	10,6	35	77,2	2187	2,89	8,9	0,19	3xM10	
	LBE 890P	890	411	16,2	195	7,7	292	11,5	37,2	82	2381	3,3	9,8	0,19	4xM10	
	LBE 905P	905	411	16,2	195	7,7	292	11,5	37,8	83,3	2381	3,18	9,8	0,18	4xM10	
	LBE 925P	925	411	16,2	195	7,7	305	12	39,6	87,3	2495	3,45	9,2	0,18	4xM10	
	LBE 980P	980	411	16,2	195	7,7	317	12,5	41	90,4	2600	3,58	10,7	0,17	4xM10	
	LBE 1000P	1000	411	16,2	195	7,7	329	13	43	94,8	2706	3,72	11,1	0,17	4xM10	
	LBE 1020P	1020	411	16,2	195	7,7	329	13	42,8	94,4	2706	3,72	10,4	0,16	4xM10	
	LBE 1070P	1070	411	16,2	195	7,7	341	13,4	45	99,2	2811	3,85	11,5	0,15	4xM10	
	LBE 1100P	1100	411	16,2	195	7,7	353	13,9	46	101,4	2917	3,98	11,6	0,15	4xM10	
	LBE 1125P	1125	411	16,2	195	7,7	353	13,9	46,6	102,7	2917	3,87	11,9	0,15	4xM10	
	LBE 1150P	1150	411	16,2	195	7,7	378	14,9	48,6	107,1	3119	4,31	12,9	0,14	5xM10	
	LBE 1200P	1200	411	16,2	195	7,7	390	15,4	51,1	112,7	3224	4,45	12,1	0,14	5xM10	
	LBE 1250P	1250	411	16,2	195	7,7	402	15,8	52,6	116	3330	4,58	13,6	0,13	5xM10	
	LBE 1300P	1300	411	16,2	195	7,7	413	16,3	54,3	119,7	3426	4,69	13,6	0,13	5xM10	
	LBE 1350P	1350	411	16,2	195	7,7	426	16,8	56,6	124,8	3540	4,84	14,4	0,12	5xM10	
LBE 1400P	1400	411	16,2	195	7,7	438	17,2	57,5	126,8	3646	4,98	14,5	0,12	5xM10		
LBE 1450P	1450	411	16,2	195	7,7	463	18,2	60,2	132,7	3848	5,31	15,8	0,11	6xM10		
LBE 1500P	1500	411	16,2	195	7,7	487	19,2	64,2	141,5	4059	5,58	15,6	0,11	6xM10		
LBE 1550P	1550	411	16,2	195	7,7	499	19,6	66,2	145,9	4164	5,71	17	0,11	6xM10		
LBE 1600P	1600	411	16,2	195	7,7	511	20,1	67,4	148,6	4270	5,84	16,8	0,10	6xM10		
LBE 1660P	1660	411	16,2	195	7,7	523	20,6	69	152,1	4375	5,97	17,4	0,10	6xM10		
LBE 1690P	1690	411	16,2	195	7,7	523	20,6	69,8	153,9	4375	5,97	17,8	0,10	6xM10		
LBE 1710P	1710	411	16,2	195	7,7	523	20,6	69,8	153,9	4375	5,78	17,8	0,10	6xM10		

# Single Cell Range

## MC / MB Range

### Capacities and dimensions - International System of units

CONNECTION	Cell Type	Capacity		Height		Width		Length per block		Approx. Weight per cell		Approx. Electrolyte volume between level marks		Approx. electrolyte per cell		Internal Resistance	Cell connection bolt per pole
		C5 Ah	mm	in	mm	in	1 cell		kg	lb	cm <sup>3</sup>	kg	lb	mOhm			
							mm	in									
NORMAL CONNECTION	MC 9P	9	270	10,6	121	4,8	46	1,8	1,6	3,5	145	0,24	0,77	13,33	M6		
	MC 14P	14	270	10,6	121	4,8	46	1,8	1,7	3,7	145	0,23	0,72	8,93	M6		
	MC 22P	22	270	10,6	121	4,8	46	1,8	1,9	4,2	145	0,2	0,62	2,82	M6		
	MC 31P	31	270	10,6	121	4,8	46	1,8	2,1	4,6	145	0,18	0,53	2,00	M6		
	MC 39P	39	270	10,6	121	4,8	70	2,8	3,1	6,8	242	0,34	1,03	1,59	M6		
	MC 47P	47	270	10,6	121	4,8	70	2,8	3,3	7,3	242	0,32	0,94	1,32	M6		
	MC 50P	50	270	10,6	121	4,8	70	2,8	3,5	7,7	242	0,29	0,9	1,24	M6		
	MC 55P	55	270	10,6	121	4,8	70	2,8	3,5	7,7	242	0,29	0,84	1,13	M6		
	MC 60P	60	350	13,8	196	7,7	72	2,8	6,3	13,9	577	0,86	2,6	1,30	M8		
	MC 70P	70	350	13,8	196	7,7	72	2,8	6,3	13,9	577	0,85	2,44	1,11	M8		
	MC 80P	80	350	13,8	196	7,7	72	2,8	6,9	15,2	577	0,8	2,5	0,98	M8		
	MC 90P	90	350	13,8	196	7,7	72	2,8	6,6	14,6	577	0,8	2,14	0,87	M8		
	MC 100P	100	350	13,8	196	7,7	72	2,8	7,3	16,1	577	0,75	2,3	0,78	M10		
	MC 110P	110	350	13,8	196	7,7	72	2,8	7,2	15,9	577	0,75	2,01	0,71	M10		
	MC 115P	115	350	13,8	196	7,7	72	2,8	8,1	17,7	577	0,7	2,1	0,68	M10		
	MC 130P	130	350	13,8	196	7,7	72	2,8	7,7	17	577	0,7	1,79	0,60	M10		
	MC 140P	140	350	13,8	196	7,7	97	3,8	8,7	19,2	809	1,08	3,2	0,56	M10		
	MC 145P	145	350	13,8	196	7,7	97	3,8	9,9	21,8	809	1,08	2,9	0,54	M10		
	MC 150P	150	350	13,8	196	7,7	97	3,8	10	22	809	1,08	3,2	0,52	M10		
	MC 165P	165	350	13,8	196	7,7	97	3,8	10,3	22,7	809	1,02	2,67	0,47	M10		
	MC 170P	170	350	13,8	196	7,7	97	3,8	10,6	23,4	809	1,02	3,1	0,46	M10		
	MC 185P	185	350	13,8	196	7,7	97	3,8	10,7	23,6	809	0,97	2,45	0,42	M10		
	MC 190P	190	411	16,2	196	7,7	97	3,8	11,7	25,8	809	1,26	3,8	0,45	M10		
	MC 200P	200	411	16,2	196	7,7	97	3,8	12,4	27,3	809	1,2	3,6	0,43	M10		
	MC 215P	215	411	16,2	196	7,7	97	3,8	12,3	27,1	809	1,2	3,72	0,40	M10		
	MC 220P	220	411	16,2	196	7,7	97	3,8	12,9	28,4	809	1,13	3,3	0,39	M10		
	MC 240P	240	411	16,2	196	7,7	97	3,8	12,9	28,4	809	1,13	3,38	0,36	M10		
	MC 250P	250	411	16,2	196	7,7	126	5	16,4	36,2	1079	1,62	4,8	0,34	2xM10		
	MC 260P	260	411	16,2	196	7,7	126	5	16,4	36,2	1079	1,62	4,8	0,33	2xM10		
	MC 277P	277	411	16,2	196	7,7	126	5	16,5	36,4	1079	1,62	4,8	0,31	2xM10		
	MC 285P	285	411	16,2	196	7,7	126	5	16,2	35,7	1079	1,62	5,08	0,30	2xM10		
	MC 300P	300	411	16,2	196	7,7	126	5	17	37,5	1079	1,53	4,7	0,29	2xM10		
	MC 310P	310	411	16,2	196	7,7	126	5	16,7	36,8	1079	1,55	4,74	0,28	2xM10		
	MC 323P	323	411	16,2	196	7,7	126	5	17,5	38,6	1079	1,46	4,5	0,27	2xM10		
	MC 335P	335	411	16,2	196	7,7	126	5	17,3	38,1	1079	1,49	4,4	0,26	2xM10		
	MB 350P	350	411	16,2	195	7,7	146	5,7	19,5	43	1133	1,62	4,8	0,25	2xM10		
	MB 360P	360	350	13,8	195	7,7	183	7,2	20	44,1	1458	1,73	5	0,22	2xM10		
	MB 370P	370	411	16,2	195	7,7	159	6,3	20,5	45,2	1247	1,81	4,8	0,23	2xM10		
	MB 382P	382	411	16,2	195	7,7	159	6,3	20,5	45,2	1247	1,72	5,3	0,23	2xM10		
	MB 390P	390	411	16,2	195	7,7	171	6,7	22,1	48,7	1353	1,99	5,3	0,22	2xM10		
	MB 404P	404	411	16,2	195	7,7	171	6,7	22,3	49,2	1353	1,92	5,9	0,21	2xM10		
	MB 415P	415	411	16,2	195	7,7	183	7,2	23,7	52,2	1458	2,16	5,8	0,21	2xM10		
	MB 430P	430	350	13,8	195	7,7	232	9,1	25,5	56,2	1871	2,31	6,4	0,18	3xM10		
	MB 440P	440	411	16,2	195	7,7	183	7,2	23,5	51,8	1458	2,09	5,8	0,20	2xM10		
	MB 450P	450	411	16,2	195	7,7	183	7,2	24,3	53,6	1458	1,98	6,1	0,19	2xM10		
	MB 460P	460	411	16,2	195	7,7	183	7,2	24	52,9	1458	2,03	5,7	0,19	2xM10		
	MB 480P	480	411	16,2	195	7,7	183	7,2	24,7	54,5	1458	2,03	5,9	0,18	2xM10		
	MB 505P	505	411	16,2	195	7,7	213	8,4	27,5	60,6	1704	2,47	6,5	0,17	3xM10		
	MB 525P	525	411	16,2	195	7,7	213	8,4	27,6	60,8	1704	2,47	7,3	0,16	3xM10		
	MB 540P	540	350	13,8	195	7,7	268	10,6	31,5	69,4	2187	2,59	7,5	0,14	3xM10		
	MB 555P	555	411	16,2	195	7,7	232	9,1	30	66,1	1871	2,72	7,2	0,15	3xM10		
	MB 575P	575	411	16,2	195	7,7	232	9,1	30,3	66,8	1871	2,72	8	0,15	3xM10		
	MB 575P	575	411	16,2	195	7,7	305	12	34	75	2495	2,72	8,6	0,14	4xM10		
	MB 600P	600	411	16,2	195	7,7	244	9,6	32,1	70,8	1977	2,89	8,5	0,14	3xM10		
	MB 625P	625	411	16,2	195	7,7	268	10,6	35,5	78,3	2187	3,24	8,7	0,14	3xM10		
	MB 645P	645	411	16,2	195	7,7	268	10,6	35,4	78	2187	3,24	9,5	0,13	3xM10		
	MB 670P	670	411	16,2	195	7,7	268	10,6	35,9	79,1	2187	3,18	9,3	0,13	3xM10		
	MB 690P	690	411	16,2	195	7,7	268	10,6	37	81,6	2187	3,04	8,6	0,12	3xM10		
	MB 703P	703	411	16,2	195	7,7	268	10,6	36,5	80,5	2187	2,96	9,1	0,12	3xM10		
	MB 720P	720	411	16,2	195	7,7	268	10,6	37	81,6	2187	3,04	8,9	0,12	3xM10		
	MB 720P	720	411	16,2	195	7,7	353	13,9	40,5	89,3	2917	3,04	10	0,11	4xM10		
	MB 740P	740	411	16,2	195	7,7	305	12	40	88,2	2495	3,63	9,6	0,12	4xM10		
	MB 765P	765	411	16,2	195	7,7	305	12	40,2	88,6	2495	3,63	10,6	0,11	4xM10		
	MB 790P	790	411	16,2	195	7,7	317	12,5	42	92,6	2600	3,8	11,2	0,11	4xM10		
	MB 808P	808	411	16,2	195	7,7	329	13	44,5	98,1	2706	3,8	11,7	0,11	4xM10		
	MB 830P	830	411	16,2	195	7,7	353	13,9	47	103,6	2917	4,32	11,7	0,10	4xM10		
	MB 849P	849	411	16,2	195	7,7	341	13,4	46	101,4	2811	4,03	12,4	0,10	4xM10		
	MB 865P	865	411	16,2	195	7,7	353	13,9	47,6	104,9	2917	4,32	12,7	0,10	4xM10		
	MB 890P	890	411	16,2	195	7,7	353	13,9	47,6	104,9	2917	4,26	12,5	0,10	4xM10		
	MB 900P	900	411	16,2	195	7,7	438	17,2	50,5	111,3	3646	4,06	12,5	0,09	5xM10		
	MB 920P	920	411	16,2	195	7,7	353	13,9	49,5	109,1	2917	4,06	11,8	0,09	4xM10		
	MB 940P	940	411	16,2	195	7,7	353	13,9	48,7	107,4	2917	4,12	12	0,09	4xM10		
	MB 965P	965	411	16,2	195	7,7	373	14,7	50,5	111,3	3057	4,28	11,4	0,09	6xM10		
	MB 1000P	1000	411	16,2	195	7,7	402	15,8	53,7	118,4	3330	4,88	14,3	0,09	5xM10		
	MB 1040P	1040	411	16,2	195	7,7	438	17,2	57,5	126,8	3646	5,4	14,6	0,08	5xM10		
	MB 1080P	1080	411	16,2	195	7,7	438	17,2	58,8	129,6	3646	5,4	16,7	0,08	5xM10		
	MB 1100P	1100	411	16,2	195	7,7	438	17,2	59,3	130,7	3646	5,34	15,6	0,08	5xM10		
	MB 1150P	1150	411	16,2	195	7,7	438	17,2	60	132,3	3646	5,07	15,7	0,07	5xM10		
	MB 1180P	1180	411	16,2	195	7,7	438	17,2	60,9	134,3	3646	5,14	15	0,07	5xM10		
	MB 1220P	1220	411	16,2	195	7,7	511	20,1	67,5	148,8	4270	6,31	16,9	0,07	6xM10		
	MB 1250P	1250	411	16,2	195	7,7	499	19,6	68,5	151	4164	5,85	18	0,07	6xM10		
	MB 1270P	1270	411	16,2	195	7,7	511	20,1	69	152,1	4270	6,31	18,5	0,07	6xM10		
	MB 1320P	1320	411	16,2	195	7,7	523	20,6	71	156,5	4375	6,42	18,8	0,07	6xM10		
	MB 1390P	1390	411	16,2	195	7,7	523	20,6	72	158,7	4375	6,09	17,4	0,06	6xM10		
	MB 1440P	1440	411	16,2	195	7,7	523	20,6	73,7	162,5	4375	6,09	17,7	0,06	6xM10		
	MB 1465P	1465	411	16,2	195	7,7	523	20,6	73,7	162,5	4375	6,09	17,7	0,06	6xM10		

# Single Cell Range

## HC / HB Range

### Capacities and dimensions - International System of units

CONNECTION	Cell Type	Capacity C5 Ah	Height		Width		Length per block		Approx. Weight per cell		Approx. Electrolyte volume between level marks cm <sup>3</sup>	Approx. electrolyte per cell		Internal Resistance mOhm	Cell connection bolt per pole
			mm	in	mm	in	1 cell		kg	lb		kg	lb		
							mm	in							
NORMAL CONNECTION	HC 9P	9	270	10,6	121	4,8	46	1,8	4	145	0,23	0,73	3,33	M6	
	HC 12P	12	270	10,6	121	4,8	46	1,8	4,2	145	0,21	0,66	2,50	M6	
	HC 17P	17	270	10,6	121	4,8	46	1,8	2,1	145	0,19	0,6	1,76	M6	
	HC 21P	21	270	10,6	121	4,8	70	2,8	3	242	0,35	1,11	1,43	M6	
	HC 25P	25	270	10,6	121	4,8	70	2,8	3,2	242	0,33	1,05	1,20	M6	
	HC 29P	29	270	10,6	121	4,8	70	2,8	3,3	242	0,31	0,98	1,03	M6	
	HC 34P	34	270	10,6	121	4,8	70	2,8	3,5	242	0,29	0,92	0,88	M6	
	HC 40P	40	350	13,8	196	7,7	72	2,8	6,2	13,7	577	0,87	2,58	0,98	M8
	HC 50P	50	350	13,8	196	7,7	72	2,8	6,6	14,6	577	0,83	2,42	0,78	M8
	HC 60P	60	350	13,8	196	7,7	72	2,8	7	15,4	577	0,84	2,26	0,65	M10
	HC 70P	70	350	13,8	196	7,7	72	2,8	7,4	16,3	577	0,75	2,1	0,56	M10
	HC 80P	80	350	13,8	196	7,7	72	2,8	7,7	17	577	0,71	1,95	0,49	M10
	HC 90P	90	350	13,8	196	7,7	97	3,8	9,8	21,6	809	1,1	3,12	0,43	M10
	HC 100P	100	350	13,8	196	7,7	97	3,8	10,3	22,7	809	1,06	2,96	0,39	M10
	HC 110P	110	350	13,8	196	7,7	97	3,8	10,5	23,1	809	1,02	2,8	0,35	M10
	HC 120P	120	350	13,8	196	7,7	97	3,8	10,8	23,8	809	0,98	2,65	0,33	M10
	HC 130P	130	411	16,2	196	7,7	97	3,8	12,3	27,1	809	1,25	4,09	0,32	M10
	HC 145P	145	411	16,2	196	7,7	97	3,8	12,4	27,3	809	1,2	3,85	0,29	M10
	HC 155P	155	411	16,2	196	7,7	97	3,8	13,3	29,3	809	1,15	3,6	0,27	M10
	HC 170P	170	411	16,2	196	7,7	126	5	17	37,5	1079	1,68	5,2	0,25	2xM10
	HC 185P	185	411	16,2	196	7,7	126	5	17	37,5	1079	1,63	5,26	0,23	2xM10
	HC 190P	190	411	16,2	196	7,7	126	5	17,8	39,2	1079	1,56	4,8	0,22	2xM10
	HB 195P	195	350	13,8	195	7,7	159	6,3	17,8	39,2	1247	1,52	4,4	0,20	2xM10
	HB 205P	205	411	16,2	195	7,7	133	5,2	18	39,7	1019	1,47	4,6	0,20	2xM10
	HC 210P	210	411	16,2	196	7,7	126	5	17,2	37,9	1079	1,53	4,76	0,20	2xM10
	HB 218P	218	411	16,2	195	7,7	146	5,7	19,2	42,3	1133	1,75	5,4	0,19	2xM10
	HB 230P	230	411	16,2	195	7,7	159	6,3	20	44,1	1247	1,89	5,6	0,18	2xM10
	HB 235P	235	350	13,8	195	7,7	183	7,2	21	46,3	1458	1,76	5,7	0,17	2xM10
	HB 244P	244	411	16,2	195	7,7	159	6,3	20,5	45,2	1247	1,88	5,8	0,17	2xM10
	HB 255P	255	411	16,2	195	7,7	159	6,3	21,7	47,8	1247	1,79	5,2	0,16	2xM10
	HB 265P	265	350	13,8	195	7,7	232	9,1	25,5	56,2	1871	2,4	6,8	0,15	3xM10
	HB 270P	270	411	16,2	195	7,7	171	6,7	23,4	51,6	1353	1,98	6,1	0,16	2xM10
	HB 280P	280	411	16,2	195	7,7	183	7,2	24,8	54,7	1458	2,17	6,6	0,15	2xM10
	HB 293P	293	411	16,2	195	7,7	183	7,2	25,2	55,6	1458	2,14	6,6	0,14	2xM10
	HB 295P	295	350	13,8	195	7,7	232	9,1	27	59,5	1871	2,28	6,5	0,13	3xM10
	HB 305P	305	411	16,2	195	7,7	183	7,2	25,6	56,4	1458	2,07	6,5	0,14	2xM10
	HB 325P	325	411	16,2	195	7,7	206	8,1	28,1	61,9	1643	2,42	7,5	0,13	3xM10
	HB 334P	334	411	16,2	195	7,7	219	8,6	29,4	64,8	1757	2,66	8,2	0,13	3xM10
	HB 345P	345	411	16,2	195	7,7	232	9,1	31,3	69	1871	2,84	8,4	0,12	3xM10
	HB 355P	355	350	13,8	195	7,7	268	10,6	30,9	68,1	2187	2,63	8,6	0,11	3xM10
	HB 365P	365	411	16,2	195	7,7	232	9,1	31,5	69,4	1871	2,79	8,6	0,12	3xM10
	HB 375P	375	411	16,2	195	7,7	232	9,1	31,9	70,3	1871	2,76	8,5	0,11	3xM10
	HB 385P	385	411	16,2	195	7,7	232	9,1	32,2	71	1871	2,69	7,8	0,11	3xM10
	HB 395P	395	350	13,8	195	7,7	305	12	36	79,4	2495	3,03	8,7	0,10	4xM10
	HB 400P	400	411	16,2	195	7,7	244	9,6	33,9	74,7	1977	2,88	8,9	0,11	3xM10
HB 410P	410	411	16,2	195	7,7	256	10,1	35,1	77,4	2082	3,09	9,5	0,10	3xM10	
HB 420P	420	411	16,2	195	7,7	268	10,6	37	81,6	2187	3,26	9,8	0,10	3xM10	
HB 440P	440	411	16,2	195	7,7	268	10,6	37,4	82,5	2187	3,21	9,9	0,10	3xM10	
HB 450P	450	411	16,2	195	7,7	268	10,6	37,9	83,6	2187	3,18	9,8	0,09	3xM10	
HB 460P	460	411	16,2	195	7,7	268	10,6	38,3	84,4	2187	3,11	9,7	0,09	3xM10	
HB 470P	470	350	13,8	195	7,7	353	13,9	41,5	91,5	2917	3,51	11,4	0,08	4xM10	
HB 473P	473	350	13,8	195	7,7	305	12	40,6	89,5	2495	3,83	11,8	0,09	4xM10	
HB 484P	484	350	13,8	195	7,7	305	12	41,4	91,3	2495	3,77	11,6	0,09	4xM10	
HB 490P	490	350	13,8	195	7,7	378	14,9	44,2	97,4	3119	3,79	10,9	0,08	5xM10	
HB 510P	510	411	16,2	195	7,7	305	12	42,7	94,1	2495	3,58	10,4	0,08	4xM10	
HB 523P	523	411	16,2	195	7,7	317	12,5	43,4	95,7	2600	3,8	11,7	0,08	4xM10	
HB 537P	537	411	16,2	195	7,7	329	13	44,4	97,9	2706	4	12,3	0,08	4xM10	
HB 560P	560	411	16,2	195	7,7	353	13,9	49,2	108,5	2917	4,34	13,1	0,08	4xM10	
HB 576P	576	411	16,2	195	7,7	353	13,9	49,7	109,6	2917	4,32	13,3	0,07	4xM10	
HB 589P	589	411	16,2	195	7,7	353	13,9	50,2	110,7	2917	4,29	13,2	0,07	4xM10	
HB 590P	590	350	13,8	195	7,7	438	17,2	50,5	111,3	3646	4,39	14,3	0,07	5xM10	
HB 600P	600	411	16,2	195	7,7	353	13,9	50,6	111,6	2917	4,19	12,9	0,07	4xM10	
HB 615P	615	411	16,2	195	7,7	353	13,9	51	112,4	2917	4,15	13	0,07	4xM10	
HB 630P	630	411	16,2	195	7,7	378	14,9	52,5	115,7	3119	4,55	14	0,07	5xM10	
HB 640P	640	411	16,2	195	7,7	378	14,9	52,5	115,7	3119	4,48	13	0,07	5xM10	
HB 655P	655	411	16,2	195	7,7	390	15,4	55	121,3	3224	4,67	14,4	0,06	5xM10	
HB 670P	670	411	16,2	195	7,7	402	15,8	56,7	125	3330	4,86	15	0,06	5xM10	
HB 680P	680	411	16,2	195	7,7	414	16,3	56,7	125	3435	5,07	15,6	0,06	5xM10	
HB 690P	690	411	16,2	195	7,7	426	16,8	57,6	127	3540	5,3	16,3	0,06	5xM10	
HB 705P	705	411	16,2	195	7,7	438	17,2	60,5	133,4	3646	5,43	16,4	0,06	5xM10	
HB 725P	725	411	16,2	195	7,7	438	17,2	62,5	137,8	3646	5,36	16,5	0,06	5xM10	
HB 753P	753	411	16,2	195	7,7	438	17,2	63,5	140	3646	5,33	16,4	0,06	5xM10	
HB 765P	765	411	16,2	195	7,7	438	17,2	60	132,3	3646	5,18	16,2	0,05	5xM10	
HB 785P	785	411	16,2	195	7,7	463	18,2	64,9	143,1	3848	5,59	17,2	0,05	6xM10	
HB 800P	800	411	16,2	195	7,7	463	18,2	65,9	145,3	3848	5,52	17	0,05	6xM10	
HB 825P	825	411	16,2	195	7,7	499	19,6	68,5	151	4164	6,08	18,7	0,05	6xM10	
HB 840P	840	411	16,2	195	7,7	511	20,1	69,5	153,2	4270	6,27	19,3	0,05	6xM10	
HB 865P	865	411	16,2	195	7,7	498	19,6	68,5	151	4155	5,92	18,1	0,05	6xM10	
HB 890P	890	411	16,2	195	7,7	523	20,6	74,7	164,7	4375	6,34	19,5	0,05	6xM10	
HB 910P	910	411	16,2	195	7,7	523	20,6	75,8	167,1	4375	6,27	19,3	0,05	6xM10	
HB 920P	920	411	16,2	195	7,7	523	20,6	75,6	166,7	4375	6,22	19,2	0,05	6xM10	

# A responsible corporate citizen

Alcad is committed to protecting and preserving the environment. We are engaged in a sustained effort to use resources responsibly and to act in a way that clearly demonstrates our great respect for the planet.

Alcad LTD has set up a network of Bring Back Points (BBPS) which receive end-of-life nickel based batteries from end users free of charge. These batteries are then shipped by these BBPs to our recycling facility in Sweden or to fully permitted recycling companies, in compliance with the laws governing trans-boundary waste shipments.

The recycling efficiency of these recyclers exceeds 75% of the nickel based battery weight (a level which exceeds the mandated recycling efficiency of 65% applicable to lead-acid batteries), and recycled materials are reused as secondary raw material for industry.

This network of Bring Back Points comprises over 30 entities, and provides services in all of our major markets in Europe, North America, Asia and Africa. The list of BBPs and their contact details are available on the Alcad website.



THE ALCAD  
PLANT IN  
OSKARSHAMN,  
SWEDEN HAS ITS OWN  
IN-HOUSE RECYCLING  
FACILITY

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## Reliability inside

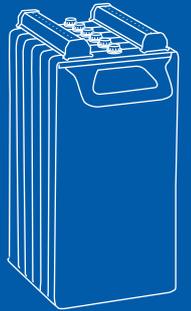
# ALCAD

[www.alcad.com](http://www.alcad.com)



# Vantex Range

Maintenance-free  
Ni-Cd **batteries**



Reliability inside

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# ALCAD

ADVANCED SOLUTIONS | ENGINEERING EXCELLENCE

# Your choice for peace of mind



## Alcad – providing you with reliable batteries

For more than 100 years, we've been working alongside our clients – companies at the forefront of their industries – to provide well-established Ni-Cd battery solutions.

Our world-class batteries offer optimum security and availability for stationary applications including power backup, engine starting and bulk energy storage.

The Alcad ethos is to strive to be the best at what we do. Our R&D teams respond pro-actively to evolving technologies and streamline our manufacturing processes, assuring customers benefit from the highest quality products.

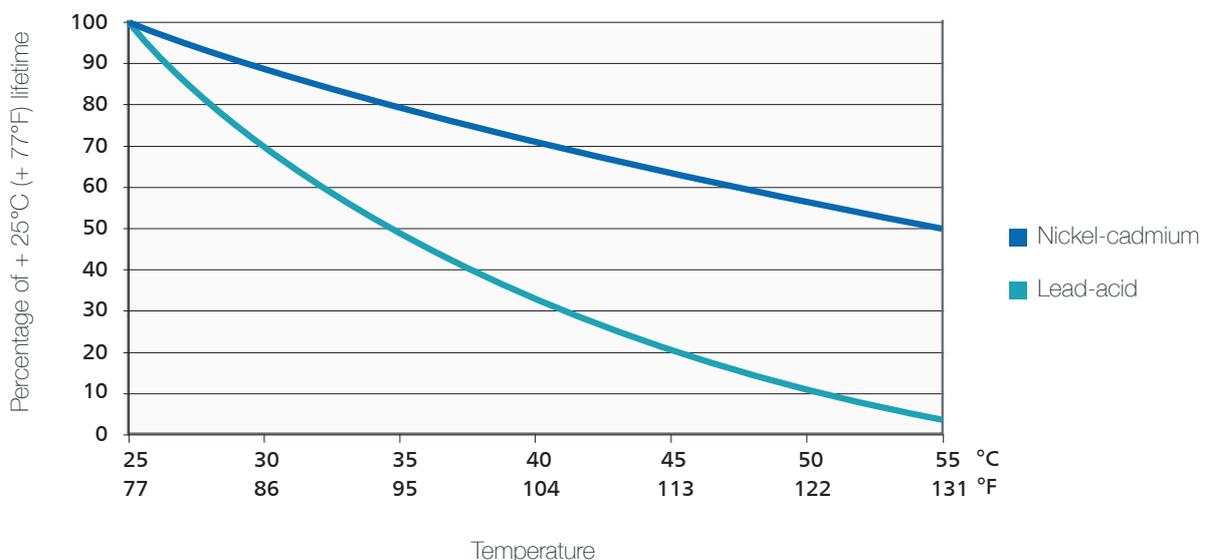
Alcad's fully integrated, worldwide service gives professional support and guidance right from your project's inception, through to supply of the batteries, installation, professional training and end of life recycling.

## Vantex gives you complete peace of mind and long life – including operation at high temperatures

Alcad's proven Ni-Cd technology has set the standard in industry for battery performance in challenging environments. Our batteries are renowned for their high performance and reliability, with clients assured of long battery life with no risk of sudden death failure.

Vantex improves on this impressive track-record by providing a service life of over 20 years at + 25°C [+ 77°F]. Even at temperatures up to + 35°C [+ 95°F], battery life drops by only 20%, as opposed to a 50% fall for a lead-acid battery.

Effect of temperature on lifetime



**Vantex**

## The 1st Ni-Cd battery operating in narrow DC voltage windows

### The maintenance-free solution for stationary applications

Alcad's most recent innovations have brought improved dependability to the world of industrial batteries. The latest Ni-Cd pocket plate technology offers maintenance-free(\*) operation, making Vantex the ideal backup power supply.

Important features include its low pressure flame-arresting vent, high electrical performance and chargeability. Vantex batteries deliver exceptional performance for optimal TCO (Total Cost of Ownership).

### The perfect fit to replace lead-acid batteries

The last Vantex generation is the perfect fit to replace lead-acid batteries thanks to its 1.39 V/cell single level charge. Its fast recharge enables 95% SOC in 8h at 1.45 V/cell for minimal downtime and optimal availability after a power failure.

Without the need for boost charge, Vantex Ni-Cd batteries can be fitted in all commonly used DC-systems. Dropping diodes or DC/DC converters are less required. Thus, the cost for the DC-system can be reduced as less components are needed.



(\*) The term maintenance-free means that no addition of water is necessary during the lifetime of the product, when following Alcad's recommended operating conditions.



# Providing optimum, maintenance-free performance

## Maintenance-free design keeps running costs down

Vantex's state-of-the-art design concept gives our customers maintenance-free batteries.

- No need to add water throughout the service life of the battery (following Alcad's recommended operating conditions – from - 20°C (- 4°F) to + 40°C (+ 104°F), at 1.39 V/cell).
- Minimal servicing is required with only preventive maintenance needed.
- Water use and gas emissions are reduced due to the high level of gas recombination of more than 95% – far beyond the requirements of IEC 62259.
- Vantex is supplied with a low pressure flame-arresting vent – one that works as a valve regulated vent.

## Fast battery charging reduces downtime

- Single or two-level charging regimes are available:
  - Single level charge**
    - $1.39 \pm 0.01$  V/cell
    - $1.42 \pm 0.01$  V/cell
  - Two level charge**
    - Float level:  $1.42 \pm 0.01$  or  $(1.39 \pm 0.01)$  V/cell
    - High level:  $1.45 \pm 0.01$  V/cell
- The fast recharge enables 95% SOC in 8h at 1.45 V/cell for maximum availability after a power failure, at + 20°C (+ 68°F).

## High efficiency optimizes battery life cost

Vantex battery solutions offer high efficiency. Installers can now select a specific battery that fits individual operational requirements, reducing primary purchase costs.

- Vantex design has high battery electrical performance whatever discharge time is needed. This is enabling to use a small battery capacity for an optimized TCO (Total Cost of Ownership).
- Bringing batteries into service is a straightforward procedure. Even after six months of storage, the battery commissioning is easy and simple. It can be performed with any commercial charger.



## Designed for critical applications

### Essential support for vital systems

When you need a power backup system you can trust, you need Vantex.

Our batteries are the essential component in power backup systems across the following industries:

- Oil and gas exploration
- Utilities
- Manufacturing and production

Losing mains power is not a problem for systems with Vantex backup. Our batteries provide a crucial power supply to deliver continuity of mission-critical loads, expedite safe shutdown processes, bridge to standby power and safeguard computer data.

Our batteries are frequently used as backup for:

- UPS
- Substation switchgear
- Process control systems
- Emergency lighting
- Fire alarms
- Security systems

### A battery you can trust in the most challenging operating conditions

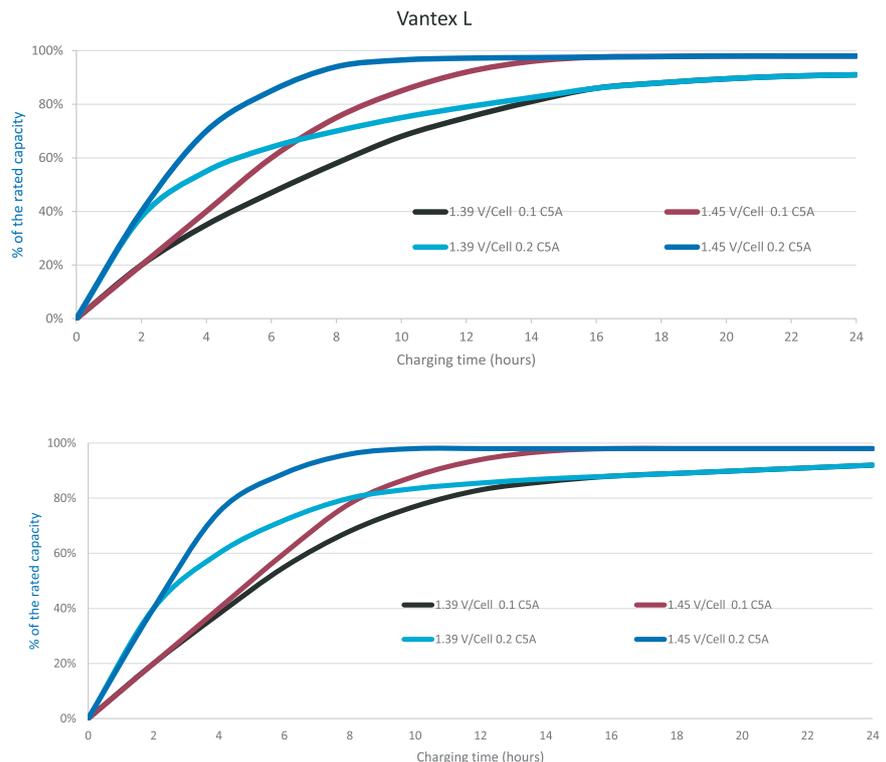
When safety is of paramount importance, Vantex batteries offer complete reliability, anytime, anywhere.

- Our unique Ni-Cd electrochemistry works in conjunction with the tried and tested Alcad pocket plate design to give you absolute peace of mind.
- Vantex batteries are an enduring option with a lifetime service of over 20 years at + 25°C (+ 77°F).
- Strong build quality cuts out the risk of sudden death failure.
- Vantex provides exceptional performance combined with a long service life in temperatures up to + 40°C (+ 104°F), and tolerates - 40°C (- 40°F) to + 70°C (+ 158°F) for short durations.

### Available capacity after constant voltage charge Available charge current 0.1 C<sub>5</sub>A or 0.2 C<sub>5</sub>A at + 20°C (+68°F)

<b>Vantex VTX1 L</b>
L type cell
15 – 1700 Ah
For low rate discharges over long periods between 1 and 100 hours

<b>Vantex VTX1 M</b>
M type cell
8 – 1330 Ah
For varied loads with low and high discharge rates, between 30 minutes and 3 hours

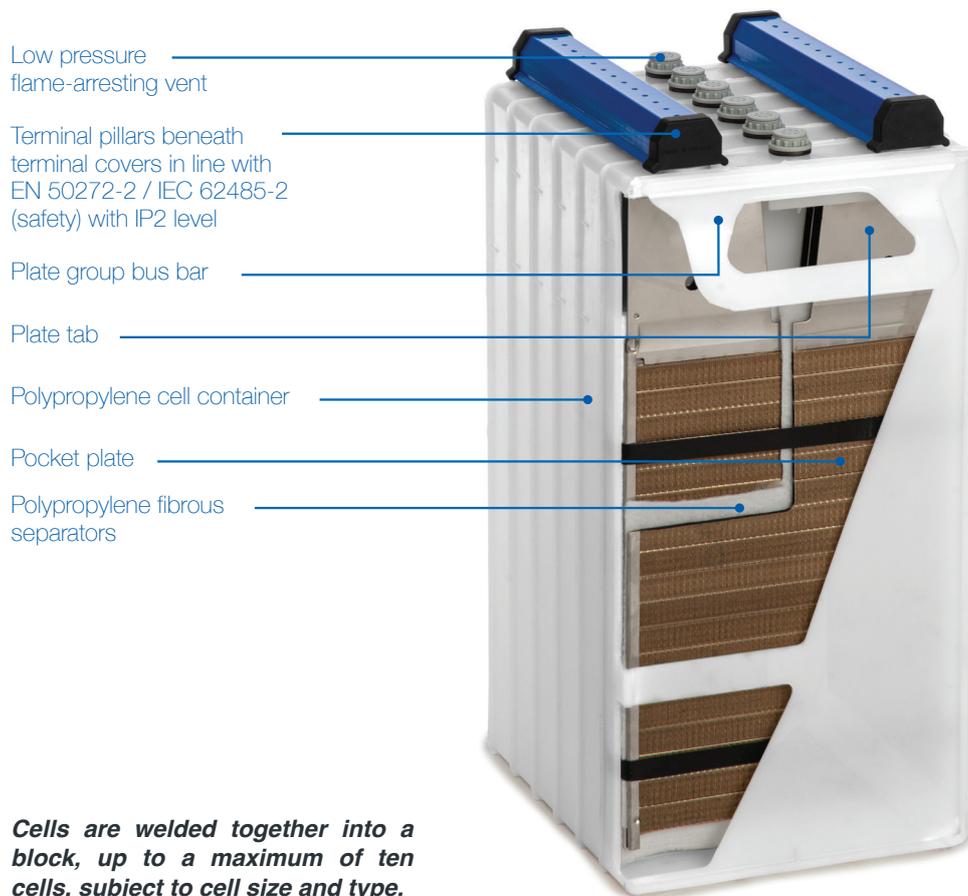


Our straightforward design promotes smooth handling, fitting and operation

- All batteries arrive filled with electrolyte and ready charged.
- The batteries have a long storage period of up to two years in normal conditions, and can be stored at elevated temperatures in certain circumstances.
- Up to ten cells can be configured into single integrated blocks connected in series.
- Adaptable block configuration allows for quick and simple installation.

“  
A simple approach:  
our modular system  
allows versatile  
block configurations  
”

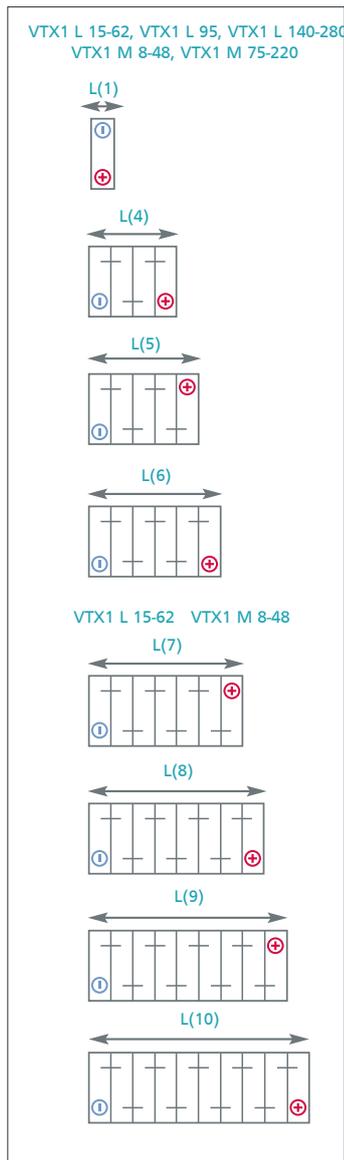
### Vantex construction features



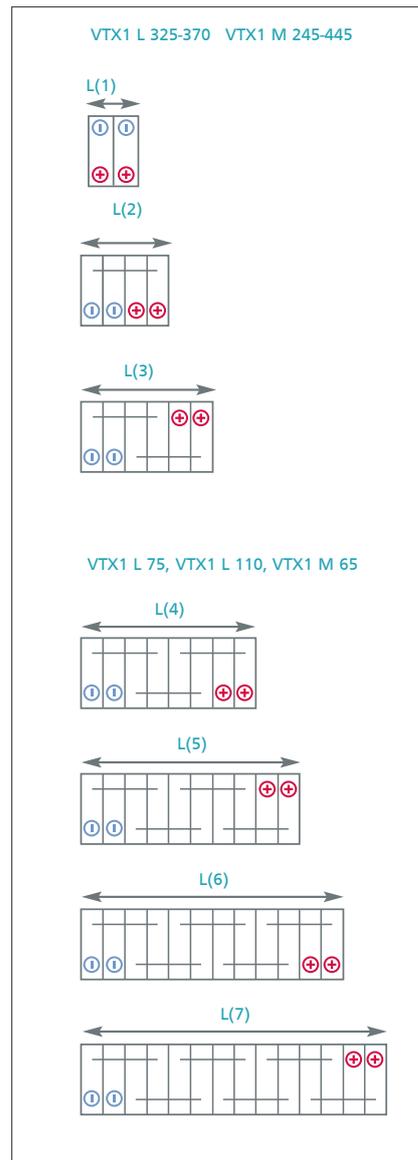


# Adaptable block configurations

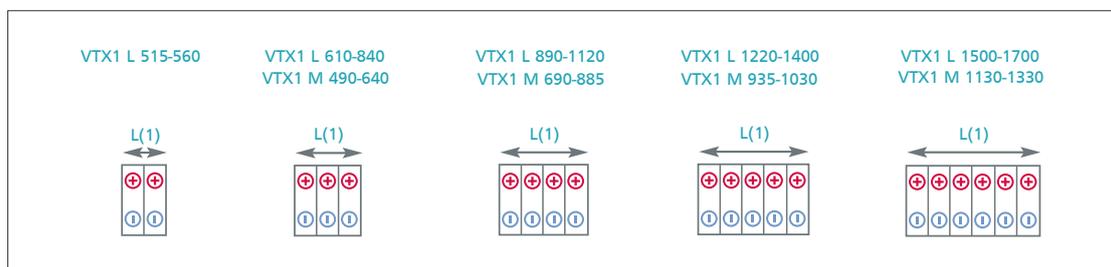
## With single pole bolts



## With double pole bolts



## With 2-6 bolts per pole, crosswise mounted on racks

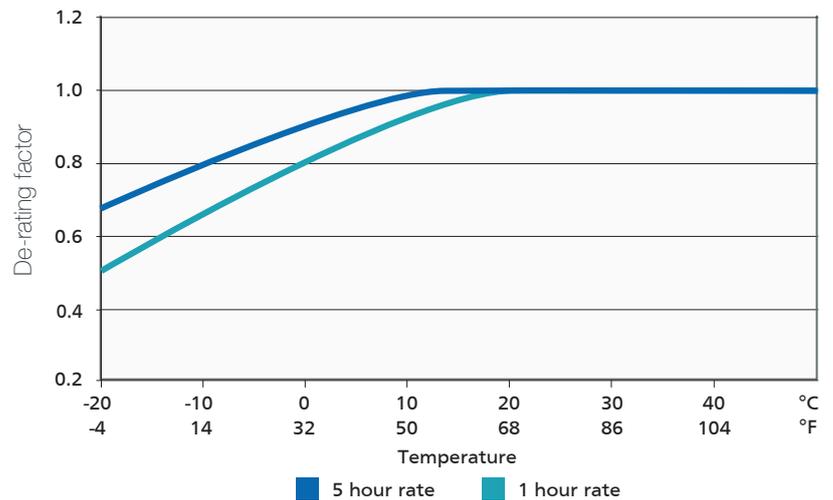


## The practical choice straightforward - usage and installation

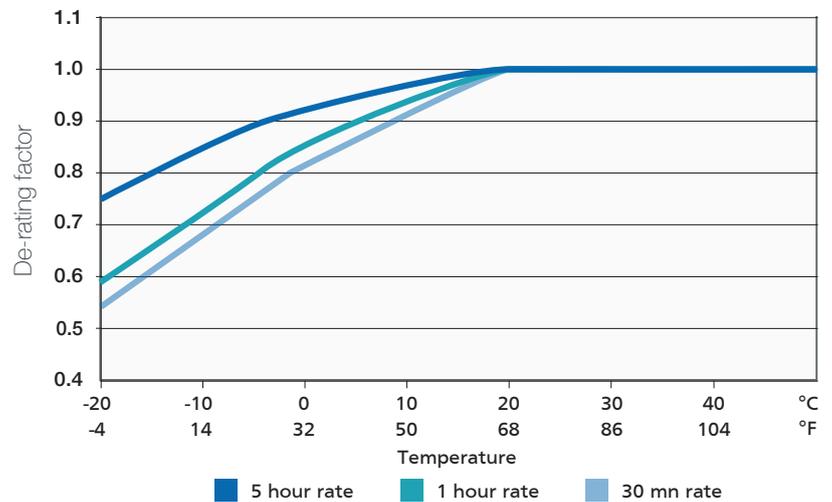
### Batteries with a wide range of specifications

- The capacity of Vantex batteries extends from 8 – 1700 Ah in a choice of two ranges.
- VTX1 L energy range, optimized for long discharge periods with a relatively low current.
- VTX1 M medium power range, especially designed for mixed loads with varying current.

Temperature de-rating factors for L type cell



Temperature de-rating factors for M type cell



## Electrical specifications

- Certified IEC 62259 (2003-10) – Secondary cells and batteries containing alkaline or other non-acid electrolytes – Nickel-cadmium prismatic secondary single cells with partial gas recombination. Vantex exceeds gas recombination requirements.
- Certified IEC 60623 (2017-01) – Secondary cells and batteries containing alkaline or other non-acid electrolytes – Vented nickel-cadmium prismatic rechargeable single cells.
- IEC testing performed by a ISO 17025 laboratory - Internationally recognized accreditation for testing and calibration laboratories

## Safety

- Complies with EN 50272-2 / IEC 62485-2 – Safety requirements for secondary batteries and battery installations – Part 2: Stationary batteries – The protective covers for terminals and connectors, the insulated cables are compliant with IP2 level protection against electrical shocks according to safety standard.

## Quality

- ISO 9001 and ISO 14001
- Alcad world class continuous programme

## Environment & Recycling

- Fully recyclable
- RoHS – Despite batteries and accumulators not being within the remit of the RoHS directive, Alcad has taken voluntary steps to ensure that the substances forbidden by RoHS are not present in the battery, except in the electro-chemical core.
- REACH – Alcad has agreed internal procedures to conform to the European REACH (Registration, Evaluation, Authorisation and Restriction of Chemical Substances) Regulation.
- Compliance with European Battery Regulation: Our batteries meet the latest European Battery Regulation standards, ensuring sustainability, safety, and high performance. This means our products are environmentally friendly, use recycled materials, and are designed for easy removal and replacement, contributing to a greener future.

“

The Vantex battery design meets the highest international quality, safety and environmental standards

”



## Tailored support for all our customers from start to finish

Customers around the globe come to Alcad for the ideal battery solution for their individual requirements.

Our experienced stationary battery experts work on everything from the initial design through to installation and commissioning.

And our after-sales support assists with maintenance, diagnostic services and end of life recycling.

Alcad also provides battery training seminars for relevant personnel as required.

As our customer base grows, we are continuing to expand our network of approved service stations in the Middle East, Asia and North America, to give the best possible service, worldwide.

## L range

### Cell dimensions and internal resistance

L type	Capacity		Height		Width		Length per block																Approx. weight per cell		Internal resistance <sup>(1)</sup>	Cell connection bolt per pole			
	C <sub>s</sub> Ah	mm	in	mm	in	1 cells		2 cells		3 cells		4 cells		5 cells		6 cells		7 cells		8 cells		9 cells		10 cells			kg	lb	mOhm
						mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm			
VTX1 L 15	15	270	10.6	123	4.8							123	4.8	153	6.0	182	7.2	212	8.3	241	9.5	271	10.6	300	11.8	1.1	2.4	12.07	M6
VTX1 L 30	30	270	10.6	123	4.8							143	5.6	178	7.0	212	8.3	247	9.7	281	11.1	316	12.4	350	13.8	1.8	4.0	6.03	M6
VTX1 L 47	47	270	10.6	123	4.8							191	7.5	238	9.4	284	11.2	331	13.0	377	14.8	424	16.7	470	18.5	2.5	5.5	3.85	M6
VTX1 L 57	57	270	10.6	123	4.8							239	9.4	298	11.7	356	14.0	415	16.3	473	18.6	532	20.9	590	23.2	3.1	6.8	3.18	M6
VTX1 L 62	62	270	10.6	123	4.8							239	9.4	298	11.7	356	14.0	415	16.3	473	18.6	532	20.9	590	23.2	3.2	7.1	2.92	M6
VTX1 L 75	75	270	10.6	123	4.8							329	13.0	410	16.1	491	19.3	572	22.5							4.3	9.5	2.41	2xM6
VTX1 L 83	83	421	16.6	195	7.7							157	6.2	193	7.6	229	9.0									4.8	10.6	2.92	M8
VTX1 L 95	95	421	16.6	195	7.7							157	6.2	193	7.6	229	9.0									4.9	10.8	2.55	M8
VTX1 L 102	102	270	10.6	123	4.8							425	16.7	530	20.9	635	25.0	740	29.1							5.7	12.6	1.77	2xM6
VTX1 L 110	110	270	10.6	123	4.8							425	16.7	530	20.9	635	25.0	740	29.1							5.7	12.6	1.65	2xM6
VTX1 L 124	124	421	16.6	195	7.7							205	8.1	253	10.0	301	11.9									6.6	14.6	1.95	M10
VTX1 L 140	140	421	16.6	195	7.7							205	8.1	253	10.0	301	11.9									6.7	14.8	1.73	M10
VTX1 L 167	167	421	16.6	195	7.7							253	10.0	313	12.3	373	14.7									8.3	18.3	1.45	M10
VTX1 L 185	185	421	16.6	195	7.7							253	10.0	313	12.3	373	14.7									8.4	18.5	1.31	M10
VTX1 L 210	210	421	16.6	195	7.7							305	12.0	378	14.9	451	17.8									9.6	21.2	1.15	M10
VTX1 L 225	225	421	16.6	195	7.7							305	12.0	378	14.9	451	17.8									9.7	21.4	1.08	M10
VTX1 L 235	235	421	16.6	195	7.7							305	12.0	378	14.9	451	17.8									9.9	21.8	1.03	M10
VTX1 L 250	250	421	16.6	195	7.7							353	13.9	438	17.2	523	20.6									11.4	25.1	0.97	M10
VTX1 L 280	280	421	16.6	195	7.7							353	13.9	438	17.2	523	20.6									11.5	25.4	0.86	2xM10
VTX1 L 294	294	421	16.6	195	7.7							229	9.0	337	13.3											14.9	32.8	0.82	2xM10
VTX1 L 325	325	421	16.6	195	7.7							229	9.0	337	13.3											15.1	33.3	0.74	2xM10
VTX1 L 350	350	421	16.6	195	7.7							253	10.0	373	14.7											16.7	36.8	0.69	2xM10
VTX1 L 375	375	421	16.6	195	7.7							253	10.0	373	14.7											16.8	37.0	0.65	2xM10
VTX1 L 420	420	421	16.6	195	7.7	146	5.7	279	11.0	412	16.2														18.3	40.3	0.58	2xM10	
VTX1 L 454	454	421	16.6	195	7.7	159	6.3	305	12.0	451	17.8														19.5	43.0	0.53	2xM10	
VTX1 L 470	470	421	16.6	195	7.7	159	6.3	305	12.0	451	17.8														19.8	43.7	0.51	2xM10	
VTX1 L 500	500	421	16.6	195	7.7	171	6.7																		21.2	46.7	0.48	2xM10	
VTX1 L 515	515	411	16.2	195	7.7	171	6.7																		21.4	47.2	0.47	2xM10	
VTX1 L 560	560	411	16.2	195	7.7	183	7.2																		23.0	50.7	0.43	2xM10	
VTX1 L 589	589	411	16.2	195	7.7	207	8.1																		26.2	57.8	0.41	3xM10	
VTX1 L 610	610	411	16.2	195	7.7	207	8.1																		26.5	58.4	0.40	3xM10	
VTX1 L 650	650	411	16.2	195	7.7	219	8.6																		28.2	62.2	0.37	3xM10	
VTX1 L 664	664	411	16.2	195	7.7	219	8.6																		28.5	62.8	0.36	3xM10	
VTX1 L 700	700	411	16.2	195	7.7	232	9.1																		29.7	65.5	0.35	3xM10	
VTX1 L 725	725	411	16.2	195	7.7	243	9.6																		31.2	68.8	0.33	3xM10	
VTX1 L 750	750	411	16.2	195	7.7	243	9.6																		31.4	69.2	0.32	3xM10	
VTX1 L 775	775	411	16.2	195	7.7	256	10.1																		32.6	71.9	0.31	3xM10	
VTX1 L 800	800	411	16.2	195	7.7	256	10.1																		32.9	72.5	0.30	3xM10	
VTX1 L 840	840	411	16.2	195	7.7	268	10.6																		34.5	76.1	0.29	3xM10	
VTX1 L 870	870	411	16.2	195	7.7	292	11.5																		37.5	82.7	0.28	4xM10	
VTX1 L 890	890	411	16.2	195	7.7	292	11.5																		38.1	84.0	0.27	4xM10	
VTX1 L 914	914	411	16.2	195	7.7	305	12.0																		39.2	86.4	0.26	4xM10	
VTX1 L 940	940	411	16.2	195	7.7	305	12.0																		39.6	87.3	0.26	4xM10	
VTX1 L 980	980	411	16.2	195	7.7	316	12.4																		41.2	90.8	0.25	4xM10	
VTX1 L 990	990	411	16.2	195	7.7	316	12.4																		41.8	92.2	0.24	4xM10	
VTX1 L 1010	1010	411	16.2	195	7.7	328	12.9																		42.2	93.0	0.24	4xM10	
VTX1 L 1030	1030	411	16.2	195	7.7	328	12.9																		42.9	94.6	0.23	4xM10	
VTX1 L 1080	1080	411	16.2	195	7.7	341	13.4																		45.3	99.9	0.22	4xM10	
VTX1 L 1120	1120	411	16.2	195	7.7	353	13.9																		46.0	101.4	0.22	4xM10	
VTX1 L 1180	1180	411	16.2	195	7.7	378	14.9																		49.5	109.1	0.21	5xM10	
VTX1 L 1220	1220	411	16.2	195	7.7	388	15.3																		51.3	113.1	0.20	5xM10	
VTX1 L 1260	1260	411	16.2	195	7.7	402	15.8																		53.3	117.5	0.19	5xM10	
VTX1 L 1300	1300	411	16.2	195	7.7	413	16.3																		54.4	119.9	0.19	5xM10	
VTX1 L 1324	1324	411	16.2	195	7.7	413	16.3																		55.7	122.8	0.18	5xM10	
VTX1 L 1350	1350	411	16.2	195	7.7	426	16.8																		57.1	125.9	0.18	5xM10	
VTX1 L 1400	1400	411	16.2	195	7.7	438	17.2																		57.5	126.8	0.17	5xM10	
VTX1 L 1460	1460	411	16.2	195	7.7	463	18.2																		61.3	135.1	0.17	6xM10	
VTX1 L 1500	1500	411	16.2	195	7.7	473	18.6																		62.8	138.4	0.16	6xM10	
VTX1 L 1540	1540	411	16.2	195	7.7	487	19.2																		64.5	142.2	0.16	6xM10	
VTX1 L 1570	1570	411	16.2	195	7.7	498	19.6																		65.0	143.3	0.15	6xM10	
VTX1 L 1600	1600	411	16.2	195	7.7	498	19.6																		65.9	145.3	0.15	6xM10	
VTX1 L 1700	1700																												

## M range

### Cell dimensions and internal resistance

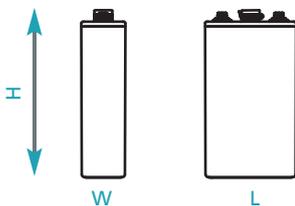
M type	Capacity C <sub>5</sub> Ah	Height		Width		Length per block												Approx. weight per cell		Internal resistance (1) mOhm	Cell connection bolt per pole								
		mm	in	mm	in	1 cells		2 cells		3 cells		4 cells		5 cells		6 cells		7 cells				8 cells		9 cells		10 cells			
						mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in			mm	in	mm	in	mm	in	mm	in
VTX1 M 8	8	270	10.6	123	4.8							123	4.8	153	6.0	182	7.2	212	8.3	241	9.5	271	10.6	300	11.8	1.1	2.4	12.50	M6
VTX1 M 16	16	270	10.6	123	4.8							123	4.8	153	6.0	182	7.2	212	8.3	241	9.5	271	10.6	300	11.8	1.5	3.3	6.25	M6
VTX1 M 24	24	270	10.6	123	4.8							143	5.6	178	7.2	212	8.3	247	9.7	281	11.1	316	12.4	350	13.8	1.8	4.0	4.17	M6
VTX1 M 32	32	270	10.6	123	4.8							191	7.5	238	9.4	284	11.2	331	13.0	377	14.8	424	16.7	470	18.5	2.5	5.5	3.13	M6
VTX1 M 40	40	270	10.6	123	4.8							239	9.4	298	11.7	356	14.0	415	16.3	473	18.6	532	20.9	590	23.2	3.3	7.2	2.50	M6
VTX1 M 48	48	270	10.6	123	4.8							239	9.4	298	11.7	356	14.0	415	16.3	473	18.6	532	20.9	590	23.2	3.3	7.3	2.08	M6
VTX1 M 65	65	270	10.6	123	4.8							377	14.8	470	18.5	563	22.2	656	25.8							5.0	11.0	1.54	2xM6
VTX1 M 75	75	421	16.6	195	7.7							157	6.2	193	7.6	229	9.0									4.9	10.8	1.52	M8
VTX1 M 89	89	270	10.6	123	4.8							473	18.6	590	23.2	707	27.8	824	32.4							6.6	14.6	1.12	2xM6
VTX1 M 96	96	270	10.6	123	4.8							473	18.6	590	23.2	707	27.8	824	32.4							6.7	14.8	1.04	2xM6
VTX1 M 100	100	421	16.6	195	7.7							187	7.4	231	9.1	274	10.8									6.3	13.9	1.14	M8
VTX1 M 114	114	421	16.6	195	7.7							229	9.0	283	11.1	337	13.3									7.5	16.4	1.00	M10
VTX1 M 125	125	421	16.6	195	7.7							229	9.0	283	11.1	337	13.3									7.6	16.8	0.91	M10
VTX1 M 140	140	421	16.6	195	7.7							253	10.0	313	12.3	373	14.7									8.2	18.1	0.81	M10
VTX1 M 150	150	421	16.6	195	7.7							253	10.0	313	12.3	373	14.7									8.4	18.5	0.76	M10
VTX1 M 170	170	421	16.6	195	7.7							305	12.0	378	14.9	451	17.8									9.9	21.8	0.67	M10
VTX1 M 175	175	421	16.6	195	7.7							305	12.0	378	14.9	451	17.8									10.2	22.5	0.65	M10
VTX1 M 195	195	421	16.6	195	7.7							353	13.9	438	17.2	523	20.6									11.5	25.4	0.58	M10
VTX1 M 209	209	421	16.6	195	7.7							353	13.9	438	17.2	523	20.6									11.7	25.9	0.55	M10
VTX1 M 220	220	421	16.6	195	7.7							353	13.9	438	17.2	523	20.6									12.0	26.5	0.52	M10
VTX1 M 238	238	421	16.6	195	7.7							229	9.0	337	13.3											14.9	32.8	0.48	2xM10
VTX1 M 245	245	421	16.6	195	7.7							229	9.0	337	13.3											15.2	33.5	0.47	2xM10
VTX1 M 263	263	421	16.6	195	7.7							241	9.5	355	14.0											15.7	34.6	0.43	2xM10
VTX1 M 270	270	421	16.6	195	7.7							241	9.5	355	14.0											16.0	35.3	0.41	2xM10
VTX1 M 285	285	421	16.6	195	7.7							253	10.0	373	14.7											16.5	36.3	0.40	2xM10
VTX1 M 295	295	421	16.6	195	7.7							253	10.0	373	14.7											16.8	37.0	0.39	2xM10
VTX1 M 310	310	421	16.6	195	7.7							279	11.0	412	16.2											17.9	39.5	0.37	2xM10
VTX1 M 320	320	421	16.6	195	7.7							279	11.0	412	16.2											18.3	40.3	0.36	2xM10
VTX1 M 332	332	421	16.6	195	7.7							305	12.0	451	17.8											19.6	43.2	0.34	2xM10
VTX1 M 345	345	421	16.6	195	7.7							305	12.0	451	17.8											19.8	43.7	0.33	2xM10
VTX1 M 358	358	421	16.6	195	7.7							329	13.0	487	19.2											21.2	46.7	0.32	2xM10
VTX1 M 370	370	421	16.6	195	7.7							329	13.0	487	19.2											21.4	47.2	0.31	2xM10
VTX1 M 382	382	421	16.6	195	7.7							353	13.9	523	20.6											22.8	50.3	0.30	2xM10
VTX1 M 395	395	421	16.6	195	7.7							353	13.9	523	20.6											23.0	50.7	0.29	2xM10
VTX1 M 420	420	421	16.6	195	7.7							353	13.9	523	20.6											23.5	51.8	0.27	2xM10
VTX1 M 434	434	421	16.6	195	7.7							353	13.9	523	20.6											23.7	52.2	0.26	2xM10
VTX1 M 445	445	421	16.6	195	7.7							353	13.9	523	20.6											24.0	52.9	0.26	2xM10
VTX1 M 461	461	411	16.2	195	7.7	206	8.1																			26.4	58.2	0.25	3xM10
VTX1 M 475	475	411	16.2	195	7.7	206	8.1																			27.0	59.5	0.24	3xM10
VTX1 M 490	490	411	16.2	195	7.7	219	8.6																			28.2	62.2	0.23	4xM10
VTX1 M 502	502	411	16.2	195	7.7	232	9.1																			29.5	65.0	0.23	4xM10
VTX1 M 517	517	411	16.2	195	7.7	232	9.1																			30.4	67.0	0.22	4xM10
VTX1 M 530	530	411	16.2	195	7.7	243	9.6																			31.0	68.3	0.22	4xM10
VTX1 M 540	540	411	16.2	195	7.7	243	9.6																			31.4	69.2	0.21	4xM10
VTX1 M 553	553	411	16.2	195	7.7	244	9.6																			31.6	69.7	0.21	4xM10
VTX1 M 569	569	411	16.2	195	7.7	244	9.6																			32.6	71.9	0.20	4xM10
VTX1 M 590	590	411	16.2	195	7.7	268	10.6																			34.5	76.1	0.19	4xM10
VTX1 M 604	604	411	16.2	195	7.7	268	10.6																			34.5	76.1	0.14	4xM10
VTX1 M 620	620	411	16.2	195	7.7	268	10.6																			34.9	76.9	0.18	4xM10
VTX1 M 630	630	411	16.2	195	7.7	268	10.6																			35.2	77.6	0.18	5xM10
VTX1 M 640	640	411	16.2	195	7.7	268	10.6																			35.5	78.3	0.18	5xM10
VTX1 M 656	656	411	16.2	195	7.7	268	10.6																			35.4	78.0	0.17	5xM10
VTX1 M 675	675	411	16.2	195	7.7	268	10.6																			36.0	79.4	0.17	5xM10
VTX1 M 690	690	411	16.2	195	7.7	305	12.0																			39.6	87.3	0.17	5xM10
VTX1 M 715	715	411	16.2	195	7.7	317	12.5																			41.6	91.7	0.16	5xM10
VTX1 M 740	740	411	16.2	195	7.7	328	12.9																			42.8	94.4	0.15	5xM10
VTX1 M 752	752	411	16.2	195	7.7	317	12.5																			44.2	97.4	0.15	5xM10
VTX1 M 772	772	411	16.2	195	7.7	329	13.0																			43.1	95.0	0.15	5xM10
VTX1 M 785	785	411	16.2	195	7.7	353	13.9																			46.0	101.4	0.15	5xM10
VTX1 M 810	810	411	16.2	195	7.7	328	12.9																			44.1	97.2	0.14	5xM10
VTX1 M 835	835																												

## Single Cell

### Cell dimensions and internal resistance

L type	Capacity	Height		Width		Length per block		Approx. weight per cell		Internal resistance <sup>(1)</sup> mOhm	Cell connection bolt per pole
	C <sub>5</sub> Ah	mm	in	mm	in	mm	in	kg	lb		
VTX1 L 15C	15	266	10.5	121	4.8	46	1.8	1.8	4.0	12.07	M6
VTX1 L 30C	30	266	10.5	121	4.8	46	1.8	2.1	4.6	6.03	M6
VTX1 L 47C	47	266	10.5	121	4.8	70	2.8	3.1	6.8	3.85	M6
VTX1 L 62C	62	266	10.5	121	4.8	70	2.8	3.5	7.7	2.92	M6
VTX1 L 75C	75	266	10.5	192	7.6	72	2.8	6.9	15.2	3.23	M8
VTX1 L 95C	95	412	16.6	192	7.6	72	2.8	7.8	17.2	2.55	M8
VTX1 L 110C	110	412	16.6	192	7.6	72	2.8	7.6	16.8	2.20	M10
VTX1 L 140C	140	412	10.6	192	7.6	72	2.8	8.8	19.4	1.73	M10
VTX1 L 185C	185	412	10.6	192	7.6	72	2.8	9.9	21.8	1.31	M10
VTX1 L 235C	235	412	16.6	192	7.6	97	3.8	11.1	24.5	1.03	M10
VTX1 L 280C	280	412	16.6	192	7.6	97	3.8	9.9	21.8	0.86	M10
VTX1 L 325C	325	412	16.6	192	7.6	126	5.0	15.6	34.4	0.74	2xM10
VTX1 L 375C	375	412	16.6	192	7.6	126	5.0	16.4	36.2	0.65	2xM10

M type	Capacity	Height		Width		Length per block		Approx. weight per cell		Internal resistance <sup>(1)</sup> mOhm	Cell connection bolt per pole
	C <sub>5</sub> Ah	mm	in	mm	in	mm	in	kg	lb		
VTX1 M 8C	8	266	10.5	121	4.8	46	1.8	1.9	4.2	12.50	M6
VTX1 M 16C	16	266	10.5	121	4.8	46	1.8	2.2	4.9	6.25	M6
VTX1 M 24C	24	266	10.5	121	4.8	46	1.8	2.5	5.5	4.17	M6
VTX1 M 32C	32	266	10.5	121	4.8	70	2.8	3.6	7.9	3.13	M6
VTX1 M 40C	40	266	10.5	121	4.8	70	2.8	3.9	8.6	2.50	M6
VTX1 M 48C	48	266	10.5	121	4.8	70	2.8	4.4	9.7	2.08	M6
VTX1 M 65C	65	412	16.2	192	7.6	72	2.8	8.0	17.6	1.75	M8
VTX1 M 75C	75	412	16.2	192	7.6	72	2.8	7.8	17.2	1.52	M8
VTX1 M 100C	100	412	16.2	192	7.6	72	2.8	8.7	19.2	1.14	M8
VTX1 M 125C	125	412	16.2	192	7.6	72	2.8	9.4	20.7	0.91	M10
VTX1 M 150C	150	412	16.2	192	7.6	72	2.8	9.9	21.8	0.76	M10
VTX1 M 170C	170	412	16.2	192	7.6	97	3.8	12.5	27.6	0.67	M10
VTX1 M 195C	195	412	16.2	192	7.6	97	3.8	13.4	29.5	0.58	M10
VTX1 M 220C	220	412	16.2	192	7.6	97	3.8	14.8	32.6	0.52	M10
VTX1 M 245C	245	412	16.2	192	7.6	126	5.0	14.4	31.7	0.47	2xM10
VTX1 M 270C	270	412	16.2	192	7.6	126	5.0	14.7	32.4	0.42	2xM10
VTX1 M 295C	295	412	16.2	192	7.6	126	5.0	15.1	33.3	0.39	2xM10



<sup>(1)</sup>Rigid connector included

The block length and weight are determined by the number of cells in the block. All tabulated dimensions are maximum values.

# A responsible corporate citizen

Alcad is committed to protecting and preserving the environment. We are engaged in a sustained effort to use resources responsibly and to act in a way that clearly demonstrates our great respect for the planet.

Alcad LTD has set up a network of Bring Back Points (BBPS) which receive end-of-life nickel based batteries from end users free of charge. These batteries are then shipped by these BBPs to our recycling facility in Sweden or to fully permitted recycling companies, in compliance with the laws governing trans-boundary waste shipments.

The recycling efficiency of these recyclers exceeds 75% of the nickel based battery weight (a level which exceeds the mandated recycling efficiency of 65% applicable to lead-acid batteries), and recycled materials are reused as secondary raw material for industry.

This network of Bring Back Points comprises over 30 entities, and provides services in all of our major markets in Europe, North America, Asia and Africa. The list of BBPs and their contact details are available on the Alcad website.



THE ALCAD  
PLANT IN  
OSKARSHAMN,  
SWEDEN HAS ITS OWN  
IN-HOUSE RECYCLING  
FACILITY

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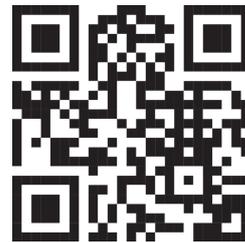
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## Reliability inside

# ALCAD

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