

# The Charging Algorithms of the Program BJ415Aa1

## Status LED:

Whole main charging	=	orange
Ready/Trickle charge	=	green
Error	=	flashing red
No Algorithm	=	red
Code switch test	=	flashing green
No battery detection		

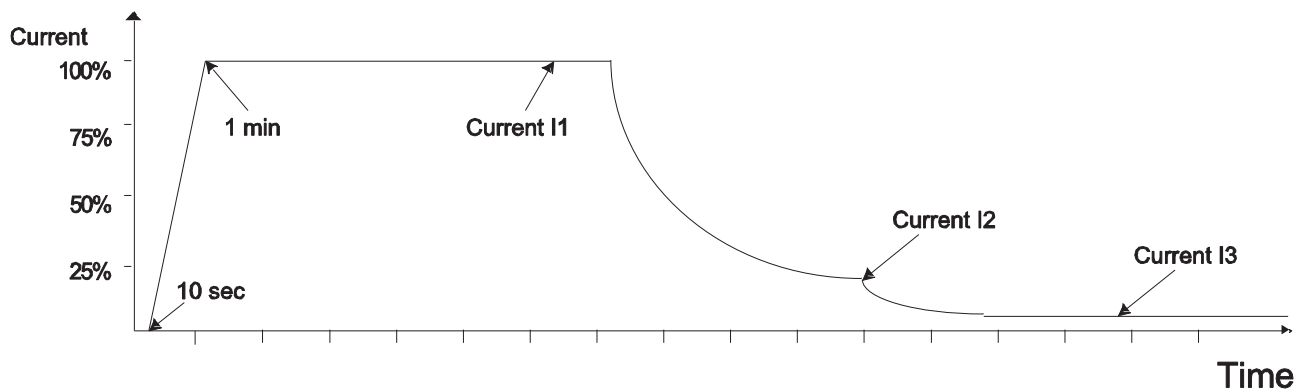
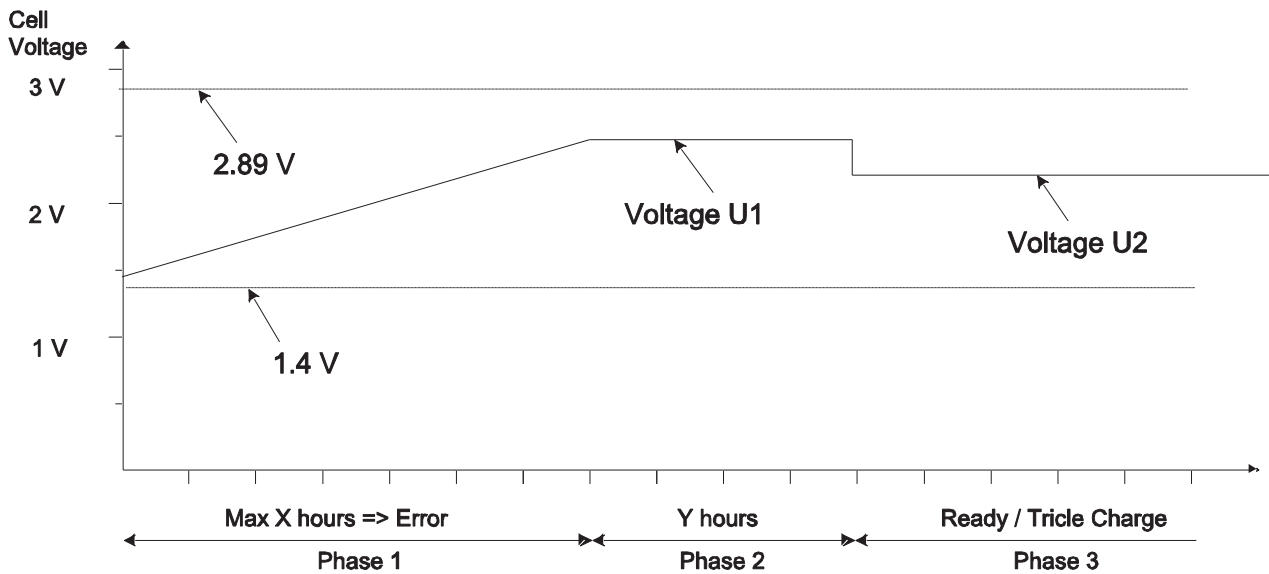
## Charging algorithms for 12V, 60A ABC 1600N:

Switch position	Battery Voltage	Battery type	Charging Current	Battery capacity	Charging curve
0	12 V	Unsealed	50 A	150 - 200 Ah	A
1	12 V	Unsealed	60 A	200 - 280 Ah	A
2	12 V	Unsealed	60 A	280 - 380 Ah	A
3	12 V	Unsealed	60 A	380 – 500 Ah	A
4	12 V	Unsealed	60 A	500 – 600 Ah	A
5	12 V	Sealed	50 A	150 – 200 Ah	B
6	12 V	Sealed	60 A	200 – 280 Ah	B
7	12 V	Sealed	60 A	280 - 380 Ah	B
8	12 V	Sealed	60 A	380 – 500 Ah	B
9	12 V	Sealed	60 A	500 - 600 Ah	B
10 = A	12 V	Sonnenschein	50 A	150 - 200 Ah	C
11 = B	12 V	Sonnenschein	60 A	200 – 280 Ah	C
12 = C	12 V	Sonnenschein	60 A	280 - 380 Ah	C
13 = D	12 V	Sonnenschein	60 A	380 – 500 Ah	C
14 = E	12 V	Sonnenschein	60 A	500 - 600 Ah	C
15 = F				No algorithm(Service)	

Din forhandler



# Unsealed Battery



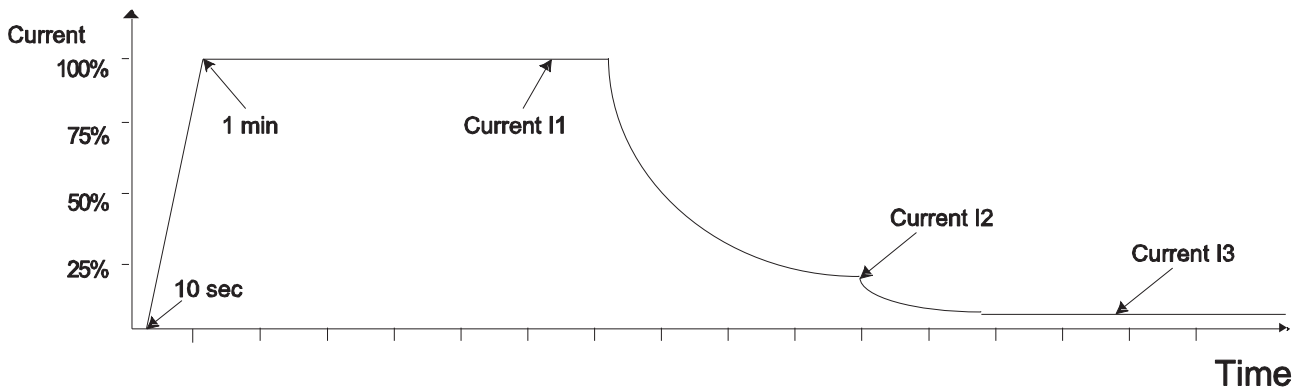
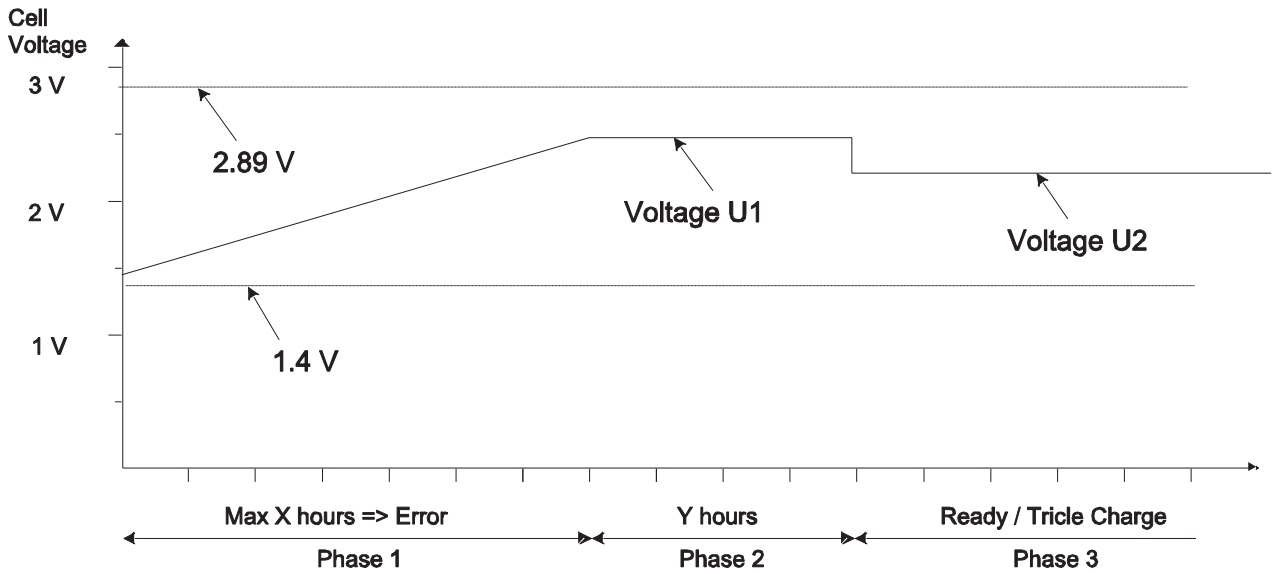
## Charging Curve A for unsealed batteries:

Switch position	Battery capacity	Voltage U1 V/Cell	Voltage U2 V/Cell	Current I1	Current I2	Current I3	Max. Time X	Max. Time Y
0	150-200 Ah	2.4	2.25	50 A	3,6 A	50 A	5	6
1	200-280 Ah	2.4	2.25	60 A	4,8 A	60 A	6	7
2	280-380 Ah	2.4	2.25	60 A	6,6 A	60 A	8	9
3	380-500 Ah	2.4	2.25	60 A	8,8 A	60 A	11	2
4	500-600 Ah	2.4	2.25	60 A	11,0 A	60 A	11	12

Din forhandler



# Sealed Battery



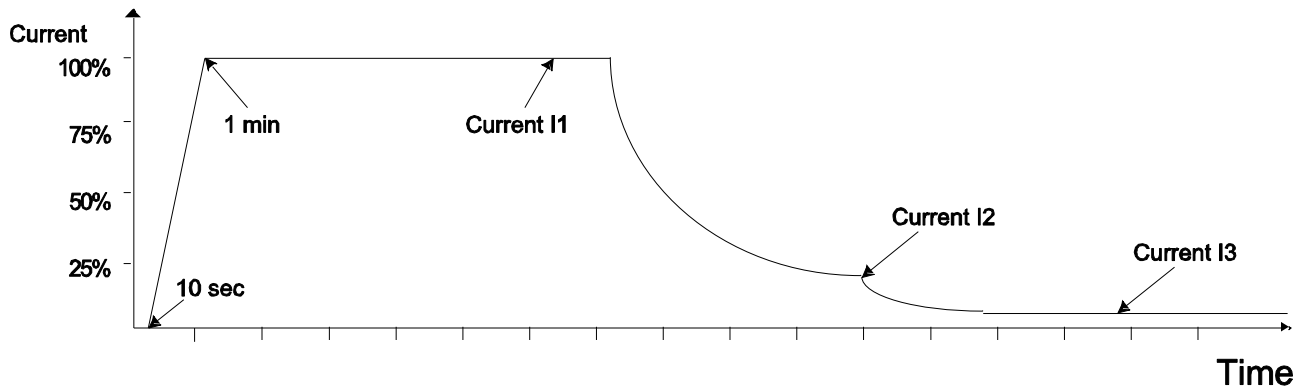
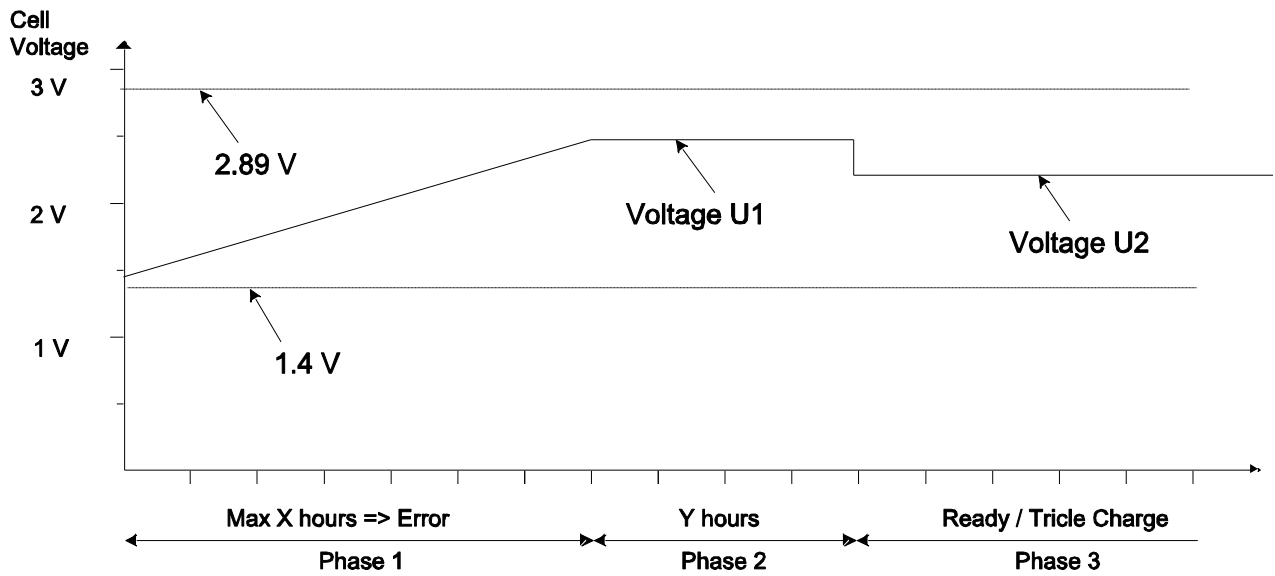
## Charging Curve B for Sealed battery:

Switch position	Battery capacity	Voltage U1 V/Cell	Voltage U2 V/Cell	Current I1	Current I2	Current I3	Max. Time X	Max. Time Y
5	150 - 200 Ah	2.35	2.27	50 A	1,8 A	50 A	5	6
6	200-280 Ah	2.35	2.27	60 A	2,4 A	60 A	6	7
7	280-380 Ah	2.35	2.27	60 A	3,4 A	60 A	8	9
8	380-500 Ah	2.35	2.27	60 A	4,4 A	60 A	11	2
9	500-600 Ah	2.35	2.27	60 A	5,6 A	60 A	11	12

Din forhandler



# Sonnenschein Battery



## Charging Curve C for Sonnenschein battery:

Switch position	Battery capacity	Voltage U1 V/Cell	Voltage U2 V/Cell	Current I1	Current I2	Current I3	Max. Time X	Max. Time Y
A = 10	150-200 Ah	2.4	2.3	50 A	1,8 A	50 A	5	6
B = 11	200-280 Ah	2.4	2.3	60 A	2,4 A	60 A	6	7
C = 12	280-380 Ah	2.4	2.3	60 A	3,4 A	60 A	8	9
D = 13	380-500 Ah	2.4	2.3	60 A	4,4 A	60 A	11	2
E = 14	500-600 Ah	2.4	2.3	60 A	5,6 A	60 A	11	12

## Other rules:

- Charging voltage is compensated depending on battery's temperature.  
 $U = V - 0.004 C * (T - 25)$   
Where:  
U = Output voltage  
V = Voltage on the table  
C = Cell number  
T = Battery's temperature in Celsius
- If battery temperature is 45 C output current decreases to 50% of nominal value. When decreased to 40 C output current is 100%.
- If battery temperature is 50 C charging momentarily turns off. When decreased to 45 C the charger starts with 50% output current.

Din forhandler



**GACELL A/S - Sletten 17 - DK 7500 Holstebro - 961 02 961**