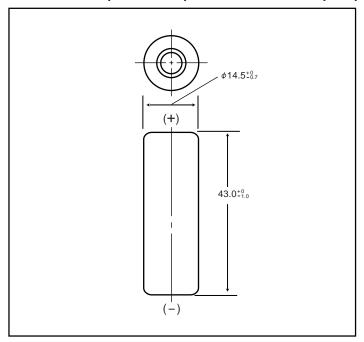
HHR120AA Cylindrical 4/5AA size (HR 15/43)

Dimensions (with Tube)

(mm)



Specifications

	mm	inch
Diameter	14.5+0/-0.7	0.57+0/-0.03
Height	43.0+0/-1.0	1.69+0/-0.04
Approximate	Grams	Ounces
Weight	23	0.81

Nominal Voltage		1.2V		
Discharge Capacity*		Average**	1220 mAh	
		Rated (Min.)	1150 mAh	
		impedance rged state.	10m()	
Charge Standard		120mA (0.1lt) x 16hrs.		
	90	Rapid	1200mA (1lt) x 1.2 hrs.	
		Standard	°C	°F
gu	Charge	Standard	0°C to 45°C	32°F to 113°F
t ţ		Rapid	0°C to 40°C	32°F to 104°F
bie	Dis	charge	-10°C to 65°C	14°F to 149°F
Ambient Temperature		< 1 year	-20°C to 35°C	-4°F to 95°F
<u> </u>	Storage	< 3 months	-20°C to 45°C	-4°F to 113°F
		< 1 month	-20°C to 55°C	-4°F to 131°F

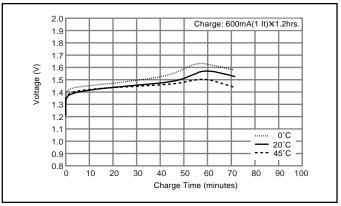
- * After charging at 0.1lt for 16 hours, discharging at 0.2lt.
- ** For reference only.

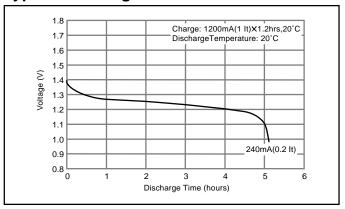
Battery performance and cycle life are strongly affected by how they are used. In order to maximize battery safety, please consult Panasonic when determining charge / discharge specs, warning label contents and unit design.

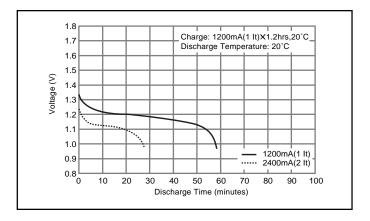
Note: [It] was previously expressed as [C]. [It] is an IEC standard expression for the amount of charge or discharge current and is expressed as: It(A) = Cn (Ah)/1h.

- [It] is the reference test current in ampres
- [Cn] is the rated capacity of the cell or battery in Ampere-hours. n = the time base [hours] for which the rated capacity is declared

Typical Charge Characteristics



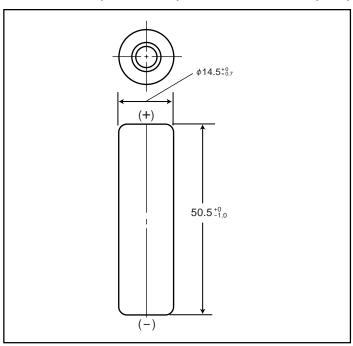




HHR150AA Cylindrical AA size (HR 15/51)

Dimensions (with Tube)

(mm)



Specifications

	mm	inch
Diameter	14.5+0/-0.7	0.57+0/-0.03
Height	50.0+0/-1.0	1.97+0/-0.06
Approximate	Grams	Ounces
Weight	26	0.92

Nominal Voltage		1.2V		
Discharge Capacity*		Average**	1580 mAh	
		Rated (Min.)	1500 mAh	
Approx. Internal impedance at 1000Hz at charged state.		20mΩ		
Charge Standard		150mA (0.1lt) x 16hrs.		
	90	Rapid	1500mA (1lt) x 1.2 hrs.	
		Standard	°C	°F
gs.	Charge	Standard	0°C to 45°C	32°F to 113°F
i i		Rapid 0°C to 40°	0°C to 40°C	32°F to 104°F
Ambient Temperature	Dis	charge	-10°C to 65°C	14°F to 149°F
Am		< 1 year	-20°C to 35°C	-4°F to 95°F
₽	Storage	< 3 months	-20°C to 45°C	-4°F to 113°F
		< 1 month	-20°C to 55°C	-4°F to 131°F

- * After charging at 0.1lt for 16 hours, discharging at 0.2lt.
- ** For reference only.

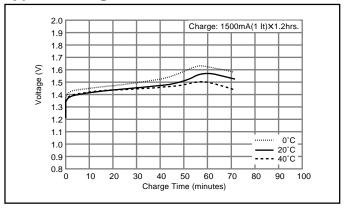
Battery performance and cycle life are strongly affected by how they are used. In order to maximize battery safety, please consult Panasonic when determining charge / discharge specs, warning label contents and unit design.

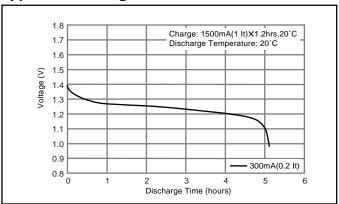
Note: [It] was previously expressed as [C]. [It] is an IEC standard expression for the amount of charge or discharge current and is expressed as:

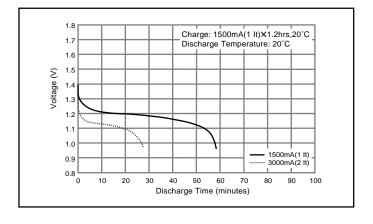
It(A) = Cn (Ah)/1h.

- [It] is the reference test current in ampres
- [Cn] is the rated capacity of the cell or battery in Ampere-hours. n = the time base [hours] for which the rated capacity is declared

Typical Charge Characteristics



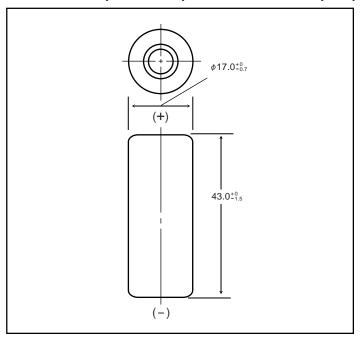




HHR200A Cylindrical 4/5A size (HR 17/43)

Dimensions (with Tube)

(mm)



Specifications

	mm	inch
Diameter	17.0+0/-0.7	0.67+0/-0.03
Height	43.0+0/-1.5	1.69+0/-0.06
Approximate	Grams	Ounces
Weight	32	1.13

Nominal Voltage		1.2V		
Discharge Capacity*		Average**	2040 mAh	
		Rated (Min.)	2000 mAh	
Approx. Internal impedance at 1000Hz at charged state.		20mΩ		
Charge Standard		200mA (0.1lt) x 16hrs.		
	90	Rapid	2000mA (1lt) x 1.2 hrs.	
		Standard	°C	°F
ø	Charge	Standard	0°C to 45°C	32°F to 113°F
별		Rapid	0°C to 40°C	32°F to 104°F
bie	Dis	charge	-10°C to 65°C	14°F to 149°F
Ambient Temperature		< 1 year	-20°C to 35°C	-4°F to 95°F
P P	Storage	< 3 months	-20°C to 45°C	-4°F to 113°F
		< 1 month	-20°C to 55°C	-4°F to 131°F

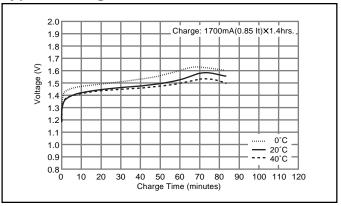
- * After charging at 0.1lt for 16 hours, discharging at 0.2lt.
- ** For reference only.

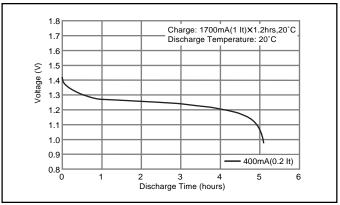
Battery performance and cycle life are strongly affected by how they are used. In order to maximize battery safety, please consult Panasonic when determining charge / discharge specs, warning label contents and unit design.

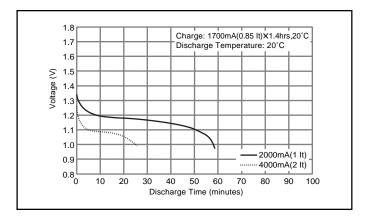
Note: [It] was previously expressed as [C]. [It] is an IEC standard expression for the amount of charge or discharge current and is expressed as: It(A) = Cn (Ah)/1h.

- [It] is the reference test current in ampres
- [Cn] is the rated capacity of the cell or battery in Ampere-hours. n = the time base [hours] for which the rated capacity is declared

Typical Charge Characteristics



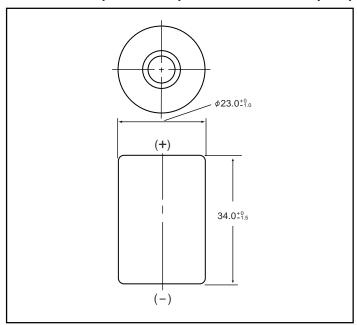




HHR200SCP Cylindrical 4/5SC size (HR 23/34)

Dimensions (with Tube)

(mm)



Specifications

	mm	inch
Diameter	23.0+0/-0.1	0.91+0/-0.04
Height	34.0+0/-1.5	1.34+0/-0.06
Approximate	Grams	Ounces
Weight	42	1.48

Nominal Voltage		1.2V		
Discharge Capacity*		Average**	2100 mAh	
		Rated (Min.)	1900 mAh	
Approx. Internal impedance at 1000Hz at charged state.		5mΩ		
Charge Standard		200mA (0.1lt) x 16hrs.		
	90	Rapid	2000mA (1It) x 1.2 hrs.	
		Standard	°C	°F
rt ure	Charge	Standard	0°C to 45°C	32°F to 113°F
ien		Rapid	0°C to 40°C	32°F to 104°F
m be	Dis	charge	-10°C to 65°C	14°F to 149°F
Ambient Temperature	Ctoroso	< 2 years	-20°C to 35°C	-4°F to 95°F
	Storage	< 6 months	-20°C to 45°C	-4°F to 113°F

- * After charging at 0.1lt for 16 hours, discharging at 0.2lt.
- ** For reference only.

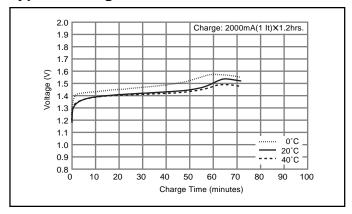
Battery performance and cycle life are strongly affected by how they are used. In order to maximize battery safety, please consult Panasonic when determining charge / discharge specs, warning label contents and unit design.

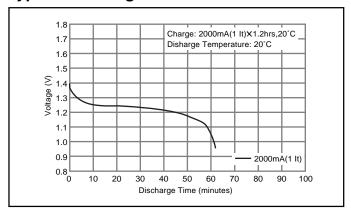
Note: [It] was previously expressed as [C]. [It] is an IEC standard expression for the amount of charge or discharge current and is expressed as: It(A) = Cn (Ah)/1h.

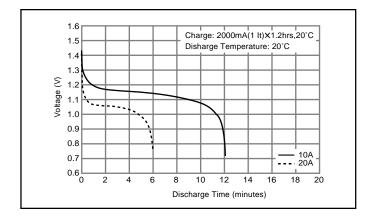
- [It] is the reference test current in ampres
- [Cn] is the rated capacity of the cell or battery in Ampere-hours.

 n = the time base [hours] for which the rated capacity is declared

Typical Charge Characteristics



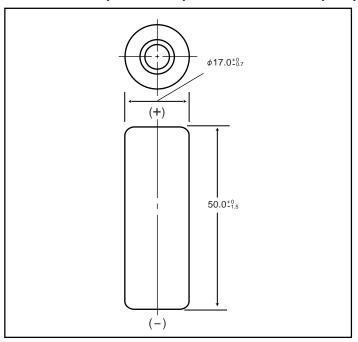




HHR210A Cylindrical A size (HR 17/50)

Dimensions (with Tube)

(mm)



Specifications

	mm	inch
Diameter	17.0+0/-0.7	0.67+0/-0.03
Height	50.0+0/-1.5	1.97+0/-0.06
Approximate	Grams	Ounces
Weight	38	1.34

Nominal Voltage		1.2V		
Discharge Capacity*		Average**	2200 mAh	
		Rated (Min.)	2100 mAh	
Approx. Internal impedance at 1000Hz at charged state.		20mΩ		
Charge Standard		210mA (0.1lt) x 16hrs.		
	90	Rapid	2100mA (1lt) x 1.2 hrs.	
		0111	°C	°F
gy .	Charge	Standard	0°C to 45°C	32°F to 113°F
별		Rapid	0°C to 40°C	32°F to 104°F
bie	Dis	charge	-10°C to 65°C	14°F to 149°F
Ambient Temperature		< 1 year	-20°C to 35°C	-4°F to 95°F
P P	Storage	< 3 months	-20°C to 45°C	-4°F to 113°F
		< 1 month	-20°C to 55°C	-4°F to 131°F

- * After charging at 0.1lt for 16 hours, discharging at 0.2lt.
- ** For reference only.

Battery performance and cycle life are strongly affected by how they are used. In order to maximize battery safety, please consult Panasonic when determining charge / discharge specs, warning label contents and unit design.

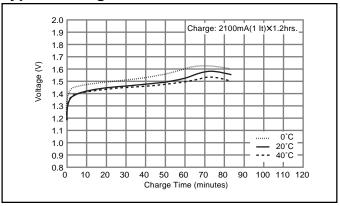
Note: [It] was previously expressed as [C]. [It] is an IEC standard expression for the amount of charge or discharge current and is expressed as:

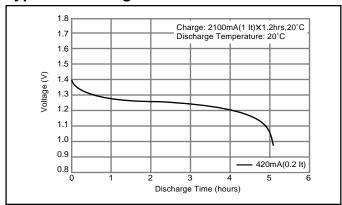
It(A) = Cn (Ah)/1h.

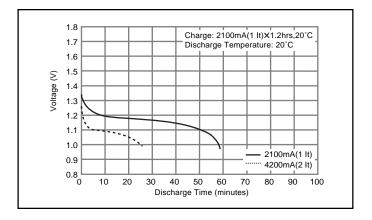
- [It] is the reference test current in ampres
- [Cn] is the rated capacity of the cell or battery in Ampere-hours.

 n = the time base [hours] for which the rated capacity is declared

Typical Charge Characteristics



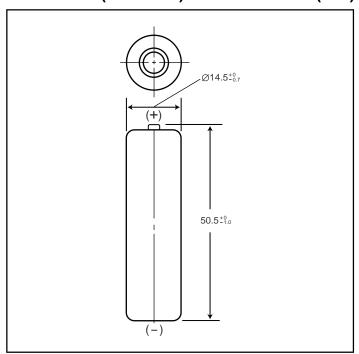




HHR210AA/B Cylindrical AA size (HR 15/51)

Dimensions (with Tube)

(mm)



Specifications

	mm	inch
Diameter	14.5 +0/-0.7	0.57 +0/-0.3
Height	50.5 +0/-1.0	1.99 +0/-0.5
Approximate	Grams	Ounces
Weight	29	1.02

Nominal Voltage		1.2V		
Discharge Capacity*		Average**	2080mAh	
		Rated (Min.)	2000mAh	
Approx. internal Impedance at 1000Hz at charged state.		25m Ω		
Charge Standard		Standard	200mA (0.1lt) x 16 hrs.	
	Charge Rapid		1200mA (1lt) x 2 hrs.	
		Standard	°C	°F
ب ا	Charge		0°C to 45°C	32°F to 113°F
ent		Rapid	0°C to 40°C	32°F to 113°F
Ambient Temperature	Disch	narge	-10°C to 65°C	14°F to 149°F
Ar		< 1 year	-20°C to 35°C	-4°F to 95°F
-	Storage	< 3 months	-20°C to 45°C	-4°F to 113°F
		< 1 month	-20°C to 55°C	-4°F to 131°F

^{*} After charging at 0.1lt for 16 hours, discharging at 0.2lt.

Battery performance and cycle life are strongly affected by how they are used. In order to maximize battery safety, please consult Panasonic when determining charge / discharge specs, warning label contents and unit design.

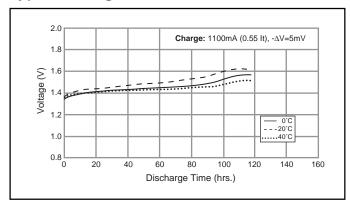
Note:

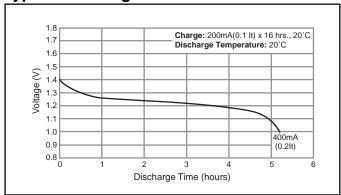
[It] was previously expressed as [C]. [It] is an IEC standard expression for the amount of charge or discharge current and is expressed as: $It(A) = Cn \ (Ah)/1h$

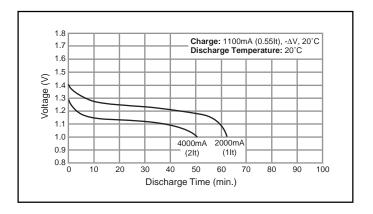
- * [It] is the reference test current in ampres
- * [Cn] is the rated capacity of the cell or battery in Ampere-hours.

 n = the time base [hours] for which the rated capacity is declared

Typical Charge Characteristics





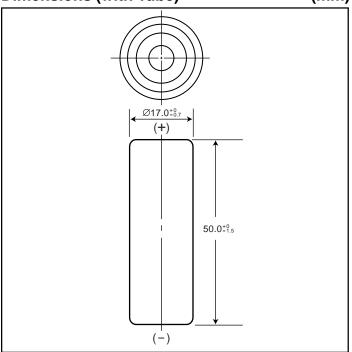


^{**} For reference only.

HHR210AH Cylindrical A size (HR 17/50)

Dimensions (with Tube)





Specifications

	mm	inch
Diameter	17.0+0/-0.7	0.67+0/-0.03
Height	50.0+0/-1.5	1.97+0/-0.06
Approximate	Grams	Ounces
Weight	38	1.34

Nominal Voltage		1.2V		
Discharge Capacity ¹		Average ²	2050mAh	
		Rated (Min.)	1900mAh	
	Approx. internal Impedance at 1000Hz at charged state.		0mΩ	
Charge		210mA (0.1	It) x 16 hrs.	
)	Charge Rapid		-	
		Standard	°C	°F
	Charge	Standard	-10°C to 60°C	14°F to 140°F
it ure		Rapid	-	-
bier erat	Discl	narge	-10°C to 60°C	14°F to 140°F
Ambient Temperature		< 1 year	-20°C to 35°C	-4°F to 95°F
Te	Storage	< 3 months	-20°C to 45°C	-4°F to 113°F
	Storage	< 1 month	-20°C to 55°C	-4°F to 131°F
		< 1 week	-20°C to 60°C	-4°F to 140°F

- After charging at 0.1lt for 16 hours, discharging at 0.2lt.
- ² For reference only.

Battery performance and cycle life are strongly affected by how they are used. In order to maximize battery safety, please consult Panasonic when determining charge / discharge specs, warning label contents and unit design.

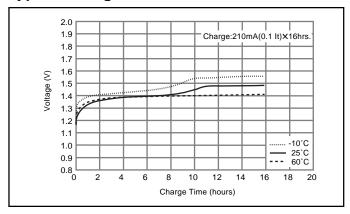
Note: [It] was previously expressed as [C]. [It] is an IEC standard expression for the amount of charge or discharge current and is expressed as:

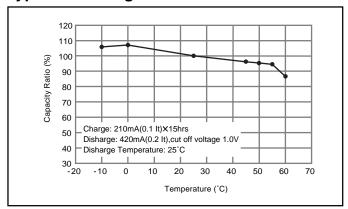
It(A) = Cn (Ah)/1h.

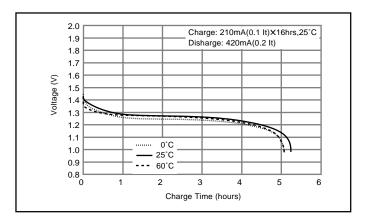
- [It] is the reference test current in ampres
- [Cn] is the rated capacity of the cell or battery in Ampere-hours.

 n = the time base [hours] for which the rated capacity is declared

Typical Charge Characteristics



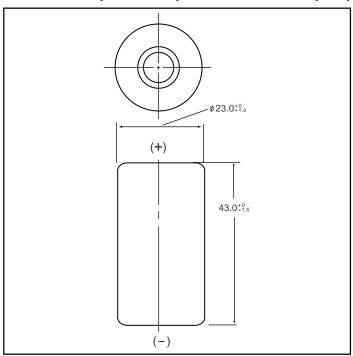




HHR250SCH Cylindrical SC size (HR 23/43)

Dimensions (with Tube)

(mm)



Specifications

	mm	inch
Diameter	23.0+0/-1.0	0.91+0/-0.04
Height	43.0+0/-1.5	1.69+0/-0.06
Approximate	Grams	Ounces
Weight	55	1.94

Nominal Voltage			1.2V	
Discharge Average ²		2650 mAh		
Capacity ¹ Rated (Min.)		2500	mAh	
	ox. Internal 00Hz at cha			nΩ
Standard		250mA	x 16hrs.	
CI	harge	Rapid ³	1250mA	x 2.4 hrs.4
Low Rate		125mA x 32 hrs. 83mA x 48 hrs.		
	Charge	Standard	°C -10°C to 60°C	°F 14°F to 140°F
Ambient Temperature	Onlarge	Rapid	-10°C to 45°C	14°F to 113°F
ien ratı	Dis	charge	-10°C to 60°C	14°F to 140°F
nb pe		< 1 year	-20°C to 35°C	-4°F to 95°F
em A	Storage < 6 months	< 6 months	-20°C to 45°C	-4°F to 113°F
Ĕ	Otorage	< 1 month	-20°C to 55°C	-4°F to 131°F
		< 1 week	-20°C to 65°C	-4°F to 149°F

- $\stackrel{1}{\circ}$ After charging at 0.1lt for 16 hours, discharging at 0.2lt.
- ² For reference only.
- Need specially designed control system Control System:

dT/dt cut-off; 1 to 2°C/min

 $-\triangle V$ cut-off; $-\triangle V$ per cell = 5 to 10 mV

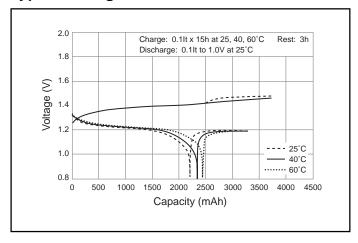
T-control; T=65°C

Rapid charger timer; 2.4h (at 1.25a)

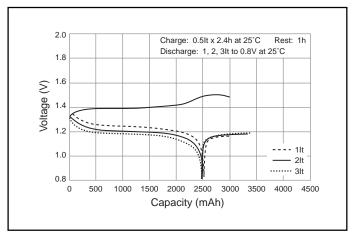
Trickle timer; within 2h 4 With control system

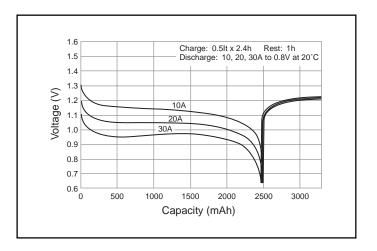
Battery performance and cycle life are strongly affected by how they are used. In order to maximize battery safety, please consult Panasonic when determining charge / discharge specs, warning label contents and unit design.

Typical Charge Characteristics



Typical Discharge Characteristics





[It] was previously expressed as [C]. [It] is an IEC standard expression for the amount of charge or discharge current and is expressed as: lt(A) = Cn (Ah)/1h

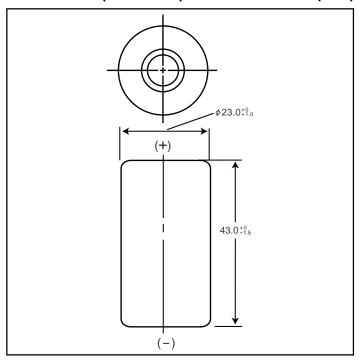
- * [It] is the reference test current in ampres
- * [Cn] is the rated capacity of the cell or battery in Ampere-hours. n = the time base [hours] for which the rated capacity is declared



HHR260SCP Cylindrical SC size (HR 23/43)

Dimensions (with Tube)

(mm)



Specifications

	mm	inch
Diameter	23.0+0/-1.0	0.91+0/-0.04
Height	43.0+0/-1.5	1.69+0/-0.06
Approximate	Grams	Ounces
Weight	55	1.94

Nominal Voltage		1.2V		
Discharge Average ²		2600 mAh		
Cap	Capacity ¹ Rated (Min.)		2450	mAh
		impedance	5mΩ	
at 100	00Hz at cha	rged state.	311	122
CI	Charge Standard		260mA x 16hrs.	
Ci	large	Rapid	2600mA x 1.2 hrs.	
		Standard	°C	°F
อ	Charge	Stariuaru	0°C to 45°C	32°F to 113°F
atn		Rapid	10°C to 40°C	50°F to 104°F
bio	Dis	charge	-10°C to 65°C	14°F to 149°F
Ambient Temperature		< 1 year	-20°C to 35°C	-4°F to 95°F
e	Storage	< 3 months	-20°C to 45°C	-4°F to 113°F
		< 1 month	-20°C to 55°C	-4°F to 131°F

¹ After charging at 0.1lt for 16 hours, discharging at 0.2lt.

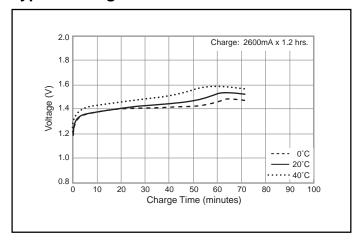
Battery performance and cycle life are strongly affected by how they are used. In order to maximize battery safety, please consult Panasonic when determining charge / discharge specs, warning label contents and unit design.

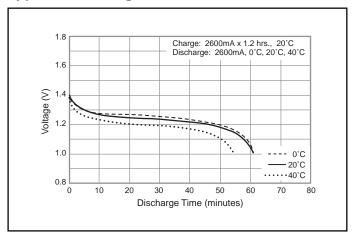
Note: [It] was previously expressed as [C]. [It] is an IEC standard expression for the amount of charge or discharge current and is expressed as: It(A) = Cn (Ah)/1h

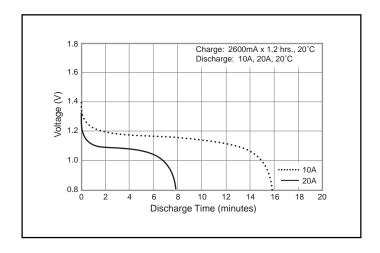
- * [It] is the reference test current in ampres
- * [Cn] is the rated capacity of the cell or battery in Ampere-hours.

 n = the time base [hours] for which the rated capacity is declared

Typical Charge Characteristics





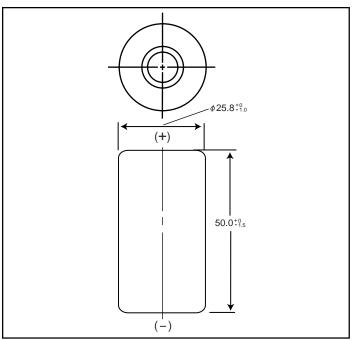


² For reference only.

HHR300CH Cylindrical C size (HR 26/50) for backup use

Dimensions (with Tube)

(mm)



Specifications

	mm	inch
Diameter	25.8+0/-1.0	1.02+0/-0.04
Height	50.0+0/-1.5	1.97+0/-0.06
Approximate	Grams	Ounces
Weight	80	2.82

Nominal Voltage		1.2V			
Discharge Average ² Capacity ¹ Rated (Min.)		3300 mAh			
		Rated (Min.)	3100 mAh		
Approx. Internal impedance at 1000Hz at charged state.		5mΩ			
Charge Standard Rapid³ Low Rate		300mA (0.1	1 lt) x 16hrs.		
		1500mA (1lt) x 2.4 hrs.4			
		155mA x 32 hrs. 100mA x 48 hrs.			
		Standard	°C	°F	
	Chargo	Standard	0°C to 45°C	32°F to 113°F	
t ure	Charge	Rapid	10°C to 40°C	32°F to 104°F	
ien ratı		Low Rate	-10°C to 45°C	14°F to 149°F	
Ambient Temperature	Discharge		-10°C to 65°C	14°F to 113°F	
A Ten	ু <u>২</u> < 1 year		-20°C to 35°C	-4°F to 95°F	
•	Storage	< 3 months	-20°C to 35°C	-4°F to 95°F	
		< 1 month	-20°C to 55°C	-4°F to 131°F	

- ¹ After charging at 0.1lt for 16 hours, discharging at 0.2lt.
- 2 For reference only.
- ³ Need specially designed control system

Control System:

dT/dt cut-off; 1 to 2°C/min

- \triangle V cut-off; - \triangle V per cell = 5 to 10 mV

T-control; T=65°C

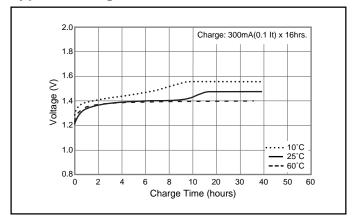
Rapid charger timer; 2.4h (at 1.25a)

Trickle timer; within 2h

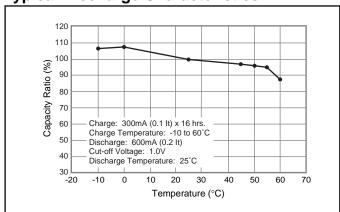
⁴ With control system

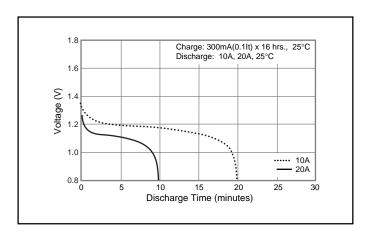
Battery performance and cycle life are strongly affected by how they are used. In order to maximize battery safety, please consult Panasonic when determining charge / discharge specs, warning label contents and unit design.

Typical Charge Characteristics



Typical Discharge Characteristics





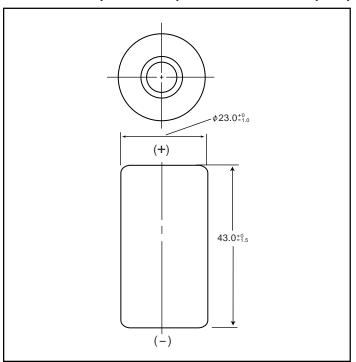
Note: [It] was previously expressed as [C]. [It] is an IEC standard expression for the amount of charge or discharge current and is expressed as: It(A) = Cn (Ah)/1h.

- [It] is the reference test current in ampres
- [Cn] is the rated capacity of the cell or battery in Ampere-hours. n = the time base [hours] for which the rated capacity is declared

HHR300SCP Cylindrical SC size (HR 23/43)

Dimensions (with Tube)

(mm)



Specifications

	mm	inch
Diameter	23.0+0/-0.1	0.91+0/-0.04
Height	43.0+0/-1.5	1.69+0/-0.06
Approximate	Grams	Ounces
Weight	57	2.01

Nominal Voltage		1.2V		
Discharge Capacity*		Average**	3050 mAh	
		Rated (Min.)	2800 mAh	
Approx. Internal impedance at 1000Hz at charged state.		4mΩ		
Charge Standard		300mA (0.1lt) x 16hrs.		
	g-	Rapid	3000mA (1It) x 1.2 hrs.	
_		Standard	°C	°F
ıt ure	Charge	Standard	0°C to 45°C	32°F to 113°F
ien		Rapid	0°C to 40°C	32°F to 104°F
m adu	면 한 Discharge		-10°C to 65°C	14°F to 149°F
Ambient Temperature	Ctorogo	< 2 years	-20°C to 35°C	-4°F to 95°F
'	⊢ Storage	< 6 months	-20°C to 45°C	-4°F to 113°F

- * After charging at 0.1lt for 16 hours, discharging at 0.2lt.
- ** For reference only.

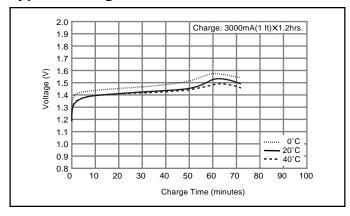
Battery performance and cycle life are strongly affected by how they are used. In order to maximize battery safety, please consult Panasonic when determining charge / discharge specs, warning label contents and unit design.

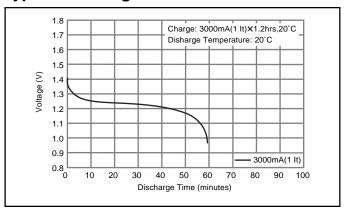
Note: [It] was previously expressed as [C]. [It] is an IEC standard expression for the amount of charge or discharge current and is expressed as: It(A) = Cn (Ah)/1h.

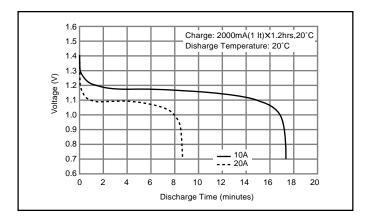
- [It] is the reference test current in ampres
- [Cn] is the rated capacity of the cell or battery in Ampere-hours.

 n = the time base [hours] for which the rated capacity is declared

Typical Charge Characteristics



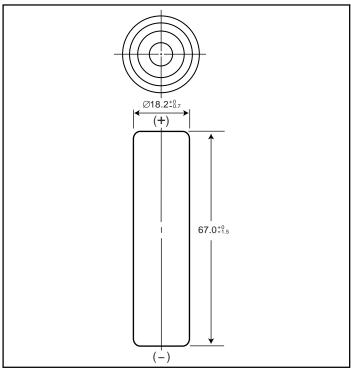




HHR330APH Cylindrical L-Fat A size (HR 18/67)

Dimensions (with Tube)

(mm)



Specifications

	mm	inch
Diameter	18.2+0/-0.7	0.72+0/-0.03
Height	67.0+0/-1.5	2.64+0/-0.06
Approximate	Grams	Ounces
Weight	60	2.12

·				
Nominal Voltage		1.2V		
Discharge Average ²		3300 mAh		
Cap	Capacity ¹ Rated (Min.)		3200	mAh
Appro	x. Internal	impedance	5.5mΩ	
at 100	00Hz at cha	rged state.	5.5	11177
		Standard	330mA	x 16hrs.
CI	harge	Rapid ³	1650mA	x 2.4 hrs.4
Low Rate		165mA x 32 hrs.		
		LOW Rate	110mA x 48 hrs.	
		Standard	°C	°F
•	Charge	Standard	-10°C to 60°C	14°F to 140°F
ıt ure		Rapid	-10°C to 45°C	14°F to 113°F
ien rat	Dis	charge	-10°C to 60°C	14°F to 140°F
ոն pe		< 1 year	-20°C to 35°C	-4°F to 95°F
Ambient Temperature	Storage	< 6 months	-20°C to 45°C	-4°F to 113°F
<u> </u>	Otorage	< 1 month	-20°C to 55°C	-4°F to 131°F
		< 1 week	-20°C to 65°C	-4°F to 149°F

- After charging at 0.1lt for 16 hours, discharging at 0.2lt.
- ² For reference only.
- Need specially designed control system

Control System:

dT/dt cut-off; 1 to 2°C/min

 $-\triangle V$ cut-off; $-\triangle V$ per cell = 5 to 10 mV

T-control; T=65°C

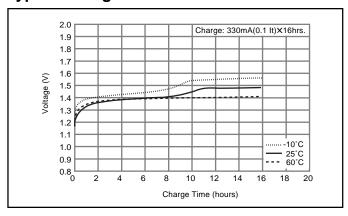
Rapid charger timer; 2.4h (at 1.25a)

Trickle timer; within 2h

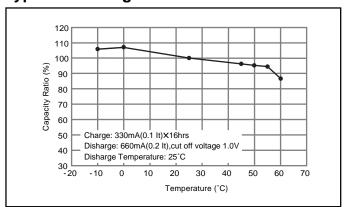
⁴ With control system

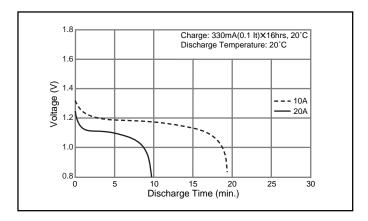
Battery performance and cycle life are strongly affected by how they are used. In order to maximize battery safety, please consult Panasonic when determining charge / discharge specs, warning label contents and unit design.

Typical Charge Characteristics



Typical Discharge Characteristics





Note: [It] was previously expressed as [C]. [It] is an IEC standard expression for the amount of charge or discharge current and is expressed as: It(A) = Cn (Ah)/1h.

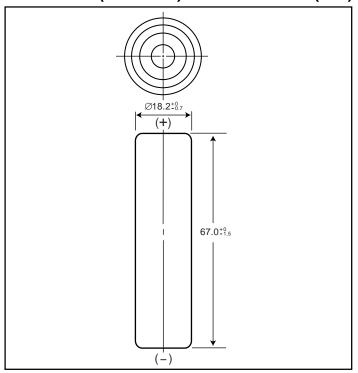
- [It] is the reference test current in ampres
- [Cn] is the rated capacity of the cell or battery in Ampere-hours. n = the time base [hours] for which the rated capacity is declared



HHR370AH Cylindrical L-Fat A size (HR 18/67)

Dimensions (with Tube)

(mm)



Specifications

	mm	inch
Diameter	18.2+0/-0.7	0.72+0/-0.03
Height	67.0+0/-1.5	2.64+0/-0.06
Approximate	Grams	Ounces
Weight	60	2.12

Nominal Voltage			1.2V		
Discharge		Average ²	3700 mAh		
Cap	acity ¹	Rated (Min.)	3500 mAh		
Approx. Internal impedance at 1000Hz at charged state.		20mΩ			
Standard		370mA	x 16hrs.		
CI	narge	Rapid ³	1750mA	x 2.4 hrs.4	
Low Rate		185mA x 32 hrs. 123mA x 48 hrs.			
		Standard	°C	°F	
4	Charge		-10°C to 60°C	14°F to 140°F	
re ure		Rapid	-10°C to 45°C	14°F to 113°F	
ien ratı	Dis	charge	-10°C to 60°C	14°F to 140°F	
nb pe		< 1 year	-20°C to 35°C	-4°F to 95°F	
Ambient Temperature	Storage	< 6 months	-20°C to 45°C	-4°F to 113°F	
	Otorage	< 1 month	-20°C to 55°C	-4°F to 131°F	
		< 1 week	-20°C to 65°C	-4°F to 149°F	

- After charging at 0.1lt for 16 hours, discharging at 0.2lt.
- ² For reference only.
- Need specially designed control system

Control System:

dT/dt cut-off; 1 to 2°C/min

 $-\triangle V$ cut-off; $-\triangle V$ per cell = 5 to 10 mV

T-control; T=65°C

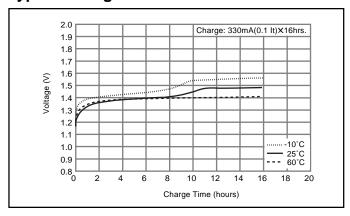
Rapid charger timer; 2.4h (at 1.25a)

Trickle timer; within 2h

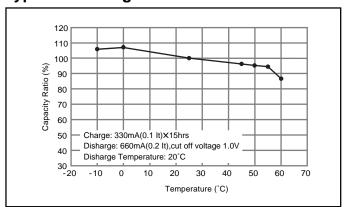
⁴ With control system

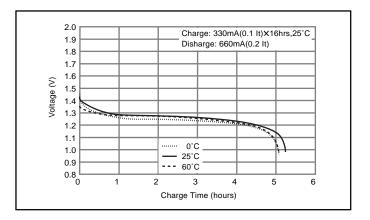
Battery performance and cycle life are strongly affected by how they are used. In order to maximize battery safety, please consult Panasonic when determining charge / discharge specs, warning label contents and unit design.

Typical Charge Characteristics



Typical Discharge Characteristics





Note: [It] was previously expressed as [C]. [It] is an IEC standard expression for the amount of charge or discharge current and is expressed as: It(A) = Cn (Ah)/1h.

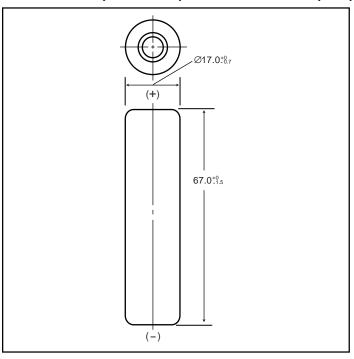
- [It] is the reference test current in ampres
- [Cn] is the rated capacity of the cell or battery in Ampere-hours. n = the time base [hours] for which the rated capacity is declared



HHR380A Cylindrical L-A size (HR 17/67)

Dimensions (with Tube)

(mm)



Specifications

	mm	inch
Diameter	17.0+0/-0.7	0.67+0/-0.03
Height	67.0+0/-1.5	2.64+0/-0.06
Approximate	Grams	Ounces
Weight	53	1.87

Nominal Voltage		1.2V		
Discharge		Average**	3800 mAh	
Сар	acity*	Rated (Min.)	3700 mAh	
Approx. Internal impedance at 1000Hz at charged state.		25mΩ		
Charge Standard		370mA (0.1	IIt) x 16hrs.	
	Rapid***		2000mA dT/dt	
		Standard	°C	°F
စ	Charge	Standard	0°C to 45°C	32°F to 113°F
t I		Rapid	0°C to 40°C	32°F to 104°F
Ambient Temperature	Dis	charge	-10°C to 65°C	14°F to 149°F
Am		< 1 year	-20°C to 35°C	-4°F to 95°F
₽	Storage	< 3 months	-20°C to 45°C	-4°F to 113°F
		< 1 month	-20°C to 55°C	-4°F to 131°F

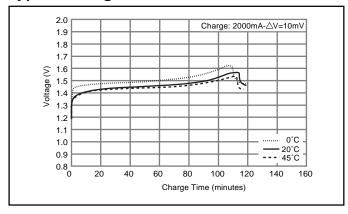
- * After charging at 0.1lt for 16 hours, discharging at 0.2lt.
- ** For reference only.
- *** For rapid charge: use dT/dt charge termination method. Refer to the Nickel Metal Hydride "Charge Methods" section for further details. Battery performance and cycle life are strongly affected by how they are used. In order to maximize battery safety, please consult Panasonic when determining charge / discharge specs, warning label contents and unit design.

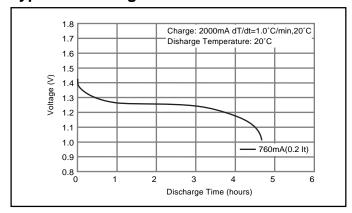
Note: [It] was previously expressed as [C]. [It] is an IEC standard expression for the amount of charge or discharge current and is expressed as: It(A) = Cn (Ah)/1h.

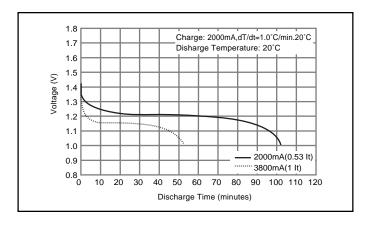
- [It] is the reference test current in ampres
- [Cn] is the rated capacity of the cell or battery in Ampere-hours.

 n = the time base [hours] for which the rated capacity is declared

Typical Charge Characteristics



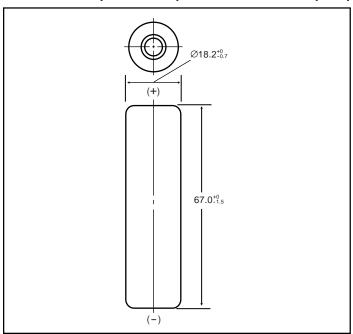




HHR450A Cylindrical L-fat A size (HR 18/67)

Dimensions (with Tube)

(mm)



Specifications

	mm	inch
Diameter	18.2+0/-0.7	0.72+0/-0.03
Height	67.0+0/-1.5	2.64+0/-0.06
Approximate	Grams	Ounces
Weight	60	2.12

Nominal Voltage		1.2V		
Discharge Average**		Average**	4500 mAh	
Сар	acity*	Rated (Min.)	4200	mAh
Approx. Internal impedance at 1000Hz at charged state.		25mΩ		
Charge Standard		420mA (0.1lt) x 16hrs.		
	g-	Rapid***	2000mA dT/dt	
		Standard	°C	°F
ė	Charge	Staridard	0°C to 45°C	32°F to 113°F
별		Rapid	0°C to 40°C	32°F to 104°F
Ambient Temperature	Dis	charge	-10°C to 65°C	14°F to 149°F
Am		< 1 year	-20°C to 35°C	-4°F to 95°F
₽	Storage	< 3 months	-20°C to 45°C	-4°F to 113°F
		< 1 month	-20°C to 55°C	-4°F to 131°F

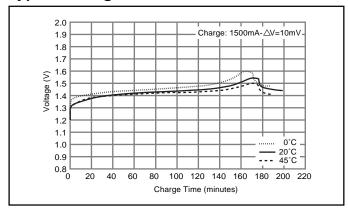
- * After charging at 0.1lt for 16 hours, discharging at 0.2lt.
- ** For reference only.
- *** For rapid charge: use dT/dt charge termination method. Refer to the Nickel Metal Hydride "Charge Methods" section for further details. Battery performance and cycle life are strongly affected by how they are used. In order to maximize battery safety, please consult Panasonic when determining charge / discharge specs, warning label contents and unit design.

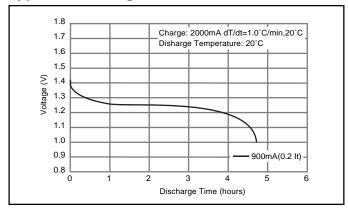
Note: [It] was previously expressed as [C]. [It] is an IEC standard expression for the amount of charge or discharge current and is expressed as: It(A) = Cn (Ah)/1h.

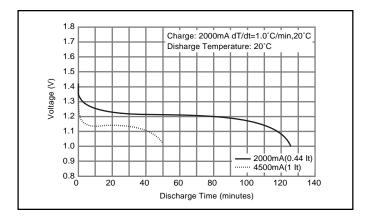
- [It] is the reference test current in ampres
- [Cn] is the rated capacity of the cell or battery in Ampere-hours.

 n = the time base [hours] for which the rated capacity is declared

Typical Charge Characteristics



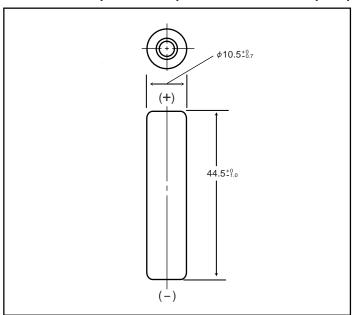




HHR60AAAH Cylindrical AAA size (HR 11/45)

Dimensions (with Tube)

(mm)



Specifications

	mm	inch
Diameter	10.5 +0/-0.7	0.41 +0/-0.03
Height	44.5 +0/-1.0	1.75 +0/-0.04
Approximate	Grams	Ounces
Weight	13	0.46

Nominal Voltage		1.2V		
Disc	harge	Average ²	550 mAh	
Cap	acity ¹	Rated (Min.)	500	mAh
	Approx. Internal impedance at 1000Hz at charged state.		35mΩ	
		Standard	50mA >	c 16hrs.
CI	narge	Rapid ³	250mA x	2.4 hrs.4
	3	Low Rate	25mA x 32 hrs.	
		LOW Rate	17mA x 48 hrs.	
		Standard	°C	°F
4	Charge	Standard	-10°C to 60°C	14°F to 140°F
# P		Rapid	-10°C to 45°C	14°F to 113°F
ien	Dis	charge	-10°C to 60°C	14°F to 140°F
Ambient Temperature		< 1 year	-20°C to 35°C	-4°F to 95°F
e A	Storage	< 6 months	-20°C to 45°C	-4°F to 113°F
-	O.O. age	< 1 month	-20°C to 55°C	-4°F to 131°F
		< 1 week	-20°C to 65°C	-4°F to 149°F

- After charging at 0.1lt for 16 hours, discharging at 0.2lt.
- For reference only.
- Need specially designed control system Control System:

dT/dt cut-off; 1 to 2°C/min

-△V cut-off; -△V per cell = 5 to 10 mV

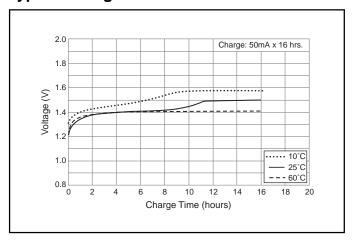
T-control; T=65°C

Rapid charger timer; 2.4h (at 1.25a)

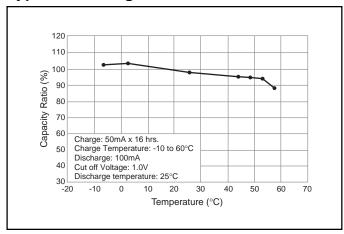
Trickle timer; within 2h

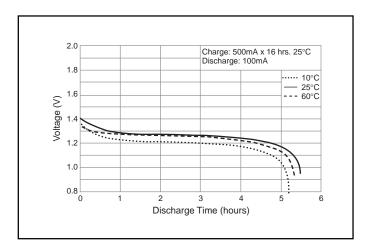
Battery performance and cycle life are strongly affected by how they are used. In order to maximize battery safety, please consult Panasonic when determining charge / discharge specs, warning label contents and unit design

Typical Charge Characteristics



Typical Discharge Characteristics





Note: [It] was previously expressed as [C]. [It] is an IEC standard expression for the amount of charge or discharge current and is expressed as: It(A) = Cn (Ah)/1h

- * [It] is the reference test current in ampres
- * [Cn] is the rated capacity of the cell or battery in Ampere-hours. n = the time base [hours] for which the rated capacity is declared

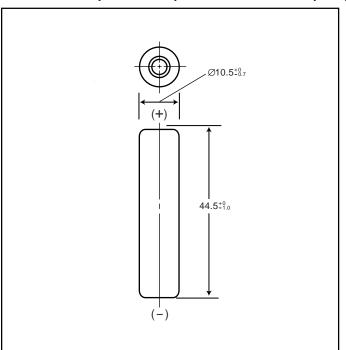


⁴ With control system

HHR70AAAJ Cylindrical HR AAA size (HR 11/45)

Dimensions (with Tube)

(mm)



Specifications

	mm	inch
Diameter	10.5+0/-0.7	0.41+0/-0.03
Height	44.5+0/-1.0	1.75+0/-0.04
Approximate	Grams	Ounces
Weight	13	0.46

Nominal Voltage		1.2V		
Discharge Capacity*		Average**	720 mAh	
		Rated (Min.)	700 mAh	
Approx. Internal impedance at 1000Hz at charged state.		30mΩ		
CI	Charge Standard Rapid		70mA (0.1lt) x 16hrs.	
0.			650mA (1lt) x 1.2 hrs.	
		Standard	°C	°F
ري	Charge	Standard	0°C to 45°C	32°F to 113°F
t ţ		Rapid	0°C to 40°C	32°F to 104°F
Ambient Temperature	Dis	charge	-10°C to 65°C	14°F to 149°F
Am		< 1 year	-20°C to 35°C	-4°F to 95°F
<u>P</u>	Storage	< 3 months	-20°C to 45°C	-4°F to 113°F
		< 1 month	-20°C to 55°C	-4°F to 131°F

- * After charging at 0.1lt for 16 hours, discharging at 0.2lt.
- ** For reference only.

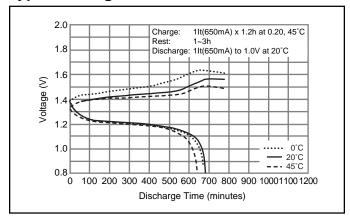
Battery performance and cycle life are strongly affected by how they are used. In order to maximize battery safety, please consult Panasonic when determining charge / discharge specs, warning label contents and unit design.

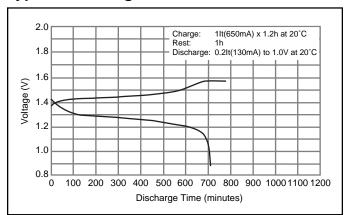
Note: [It] was previously expressed as [C]. [It] is an IEC standard expression for the amount of charge or discharge current and is expressed as: lt(A) = Cn (Ah)/1h.

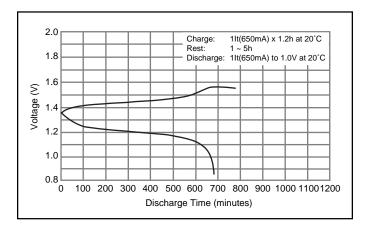
- [It] is the reference test current in ampres
- [Cn] is the rated capacity of the cell or battery in Ampere-hours.

 n = the time base [hours] for which the rated capacity is declared

Typical Charge Characteristics



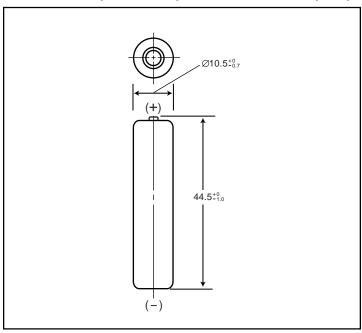




HHR75AAA/B Cylindrical AAA size (HR 11/45)

Dimensions (with Tube)

(mm)



Specifications

	mm	inch
Diameter	10.5+0/-0.7	0.41+0/-0.03
Height	44.5+0/-1.0	1.75+0/-0.04
Approximate	Grams	Ounces
Weight	12	0.42

Nominal Voltage		1.2V		
Discharge Capacity*		Average**	730 mAh	
		Rated (Min.)	700 mAh	
Approx. Internal impedance at 1000Hz at charged state.		35mΩ		
Charge Standard		70mA x 16hrs.		
	90	Rapid	450mA x 1.7 hrs.	
		Standard	°C	°F
ø	Charge	Standard	0°C to 45°C	32°F to 113°F
별		Rapid	0°C to 40°C	32°F to 104°F
bie	Dis	charge	-10°C to 65°C	14°F to 149°F
Ambient Temperature		< 1 year	-20°C to 35°C	-4°F to 95°F
	Storage	< 3 months	-20°C to 45°C	-4°F to 113°F
		< 1 month	-20°C to 55°C	-4°F to 131°F

^{*} After charging at 0.1lt for 16 hours, discharging at 0.2lt.

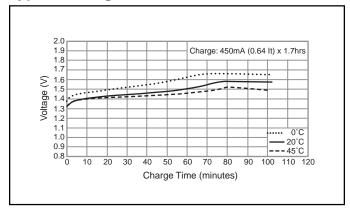
Battery performance and cycle life are strongly affected by how they are used. In order to maximize battery safety, please consult Panasonic when determining charge / discharge specs, warning label contents and unit design.

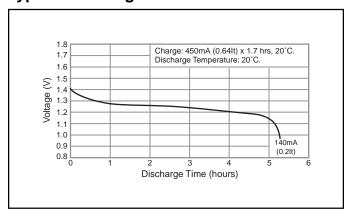
Note: [It] was previously expressed as [C]. [It] is an IEC standard expression for the amount of charge or discharge current and is expressed as:

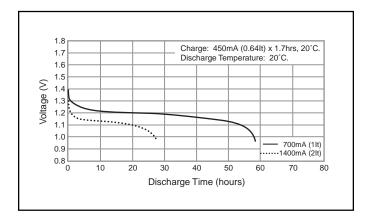
It(A) = Cn (Ah)/1h.

- [It] is the reference test current in ampres
- [Cn] is the rated capacity of the cell or battery in Ampere-hours. n = the time base [hours] for which the rated capacity is declared

Typical Charge Characteristics





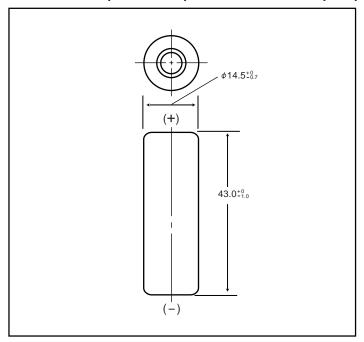


^{**} For reference only.

HHR120AA Cylindrical 4/5AA size (HR 15/43)

Dimensions (with Tube)

(mm)



Specifications

	mm	inch
Diameter	14.5+0/-0.7	0.57+0/-0.03
Height	43.0+0/-1.0	1.69+0/-0.04
Approximate	Grams	Ounces
Weight	23	0.81

Nominal Voltage		1.2V		
Discharge Capacity*		Average**	1220 mAh	
		Rated (Min.)	1150 mAh	
		impedance rged state.	10m()	
Charge Standard		120mA (0.1lt) x 16hrs.		
	90	Rapid	1200mA (1lt) x 1.2 hrs.	
		Standard	°C	°F
gu	Charge	Standard	0°C to 45°C	32°F to 113°F
t ţ		Rapid	0°C to 40°C	32°F to 104°F
bie	Dis	charge	-10°C to 65°C	14°F to 149°F
Ambient Temperature		< 1 year	-20°C to 35°C	-4°F to 95°F
<u> </u>	Storage	< 3 months	-20°C to 45°C	-4°F to 113°F
		< 1 month	-20°C to 55°C	-4°F to 131°F

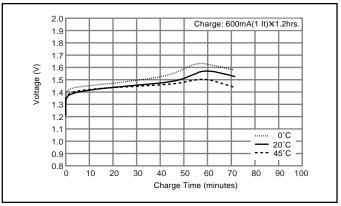
- * After charging at 0.1lt for 16 hours, discharging at 0.2lt.
- ** For reference only.

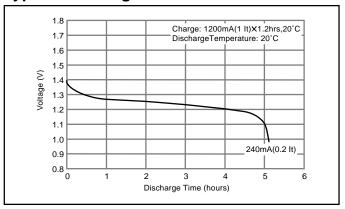
Battery performance and cycle life are strongly affected by how they are used. In order to maximize battery safety, please consult Panasonic when determining charge / discharge specs, warning label contents and unit design.

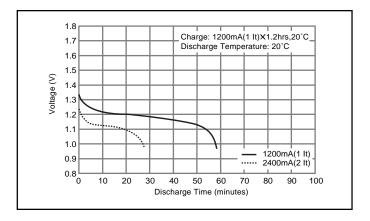
Note: [It] was previously expressed as [C]. [It] is an IEC standard expression for the amount of charge or discharge current and is expressed as: It(A) = Cn (Ah)/1h.

- [It] is the reference test current in ampres
- [Cn] is the rated capacity of the cell or battery in Ampere-hours. n = the time base [hours] for which the rated capacity is declared

Typical Charge Characteristics



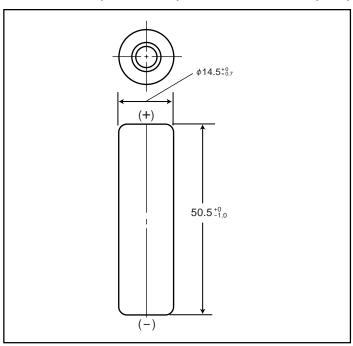




HHR150AA Cylindrical AA size (HR 15/51)

Dimensions (with Tube)

(mm)



Specifications

	mm	inch
Diameter	14.5+0/-0.7	0.57+0/-0.03
Height	50.0+0/-1.0	1.97+0/-0.06
Approximate	Grams	Ounces
Weight	26	0.92

Nominal Voltage		1.2V		
Discharge Capacity*		Average**	1580 mAh	
		Rated (Min.)	1500 mAh	
Approx. Internal impedance at 1000Hz at charged state.		20mΩ		
Charge Standard		150mA (0.1lt) x 16hrs.		
	90	Rapid	1500mA (1lt) x 1.2 hrs.	
		Standard	°C	°F
gs.	Charge	Standard	0°C to 45°C	32°F to 113°F
i i		Rapid 0°C to 40°	0°C to 40°C	32°F to 104°F
Ambient Temperature	Dis	charge	-10°C to 65°C	14°F to 149°F
Am		< 1 year	-20°C to 35°C	-4°F to 95°F
₽	Storage	< 3 months	-20°C to 45°C	-4°F to 113°F
		< 1 month	-20°C to 55°C	-4°F to 131°F

- * After charging at 0.1lt for 16 hours, discharging at 0.2lt.
- ** For reference only.

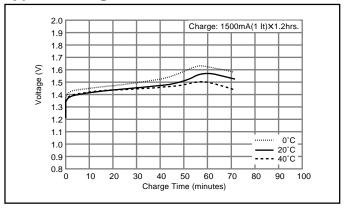
Battery performance and cycle life are strongly affected by how they are used. In order to maximize battery safety, please consult Panasonic when determining charge / discharge specs, warning label contents and unit design.

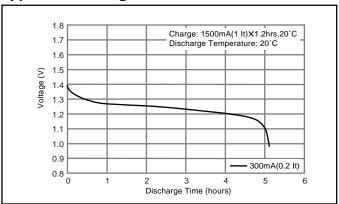
Note: [It] was previously expressed as [C]. [It] is an IEC standard expression for the amount of charge or discharge current and is expressed as:

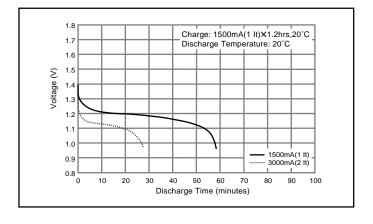
It(A) = Cn (Ah)/1h.

- [It] is the reference test current in ampres
- [Cn] is the rated capacity of the cell or battery in Ampere-hours. n = the time base [hours] for which the rated capacity is declared

Typical Charge Characteristics



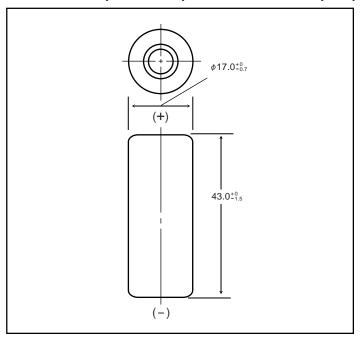




HHR200A Cylindrical 4/5A size (HR 17/43)

Dimensions (with Tube)

(mm)



Specifications

	mm	inch
Diameter	17.0+0/-0.7	0.67+0/-0.03
Height	43.0+0/-1.5	1.69+0/-0.06
Approximate	Grams	Ounces
Weight	32	1.13

Nominal Voltage		1.2V		
Discharge Capacity*		Average**	2040 mAh	
		Rated (Min.)	2000 mAh	
Approx. Internal impedance at 1000Hz at charged state.		20mΩ		
Charge Standard		200mA (0.1lt) x 16hrs.		
	90	Rapid	2000mA (1lt) x 1.2 hrs.	
		Standard	°C	°F
ø	Charge	Standard	0°C to 45°C	32°F to 113°F
별		Rapid	0°C to 40°C	32°F to 104°F
bie	Dis	charge	-10°C to 65°C	14°F to 149°F
Ambient Temperature		< 1 year	-20°C to 35°C	-4°F to 95°F
P P	Storage	< 3 months	-20°C to 45°C	-4°F to 113°F
		< 1 month	-20°C to 55°C	-4°F to 131°F

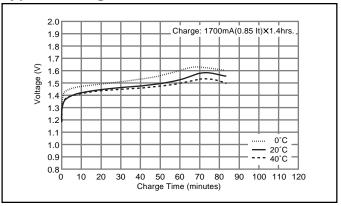
- * After charging at 0.1lt for 16 hours, discharging at 0.2lt.
- ** For reference only.

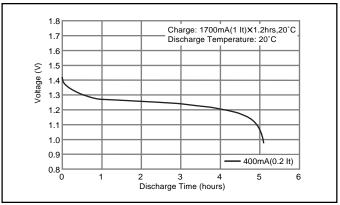
Battery performance and cycle life are strongly affected by how they are used. In order to maximize battery safety, please consult Panasonic when determining charge / discharge specs, warning label contents and unit design.

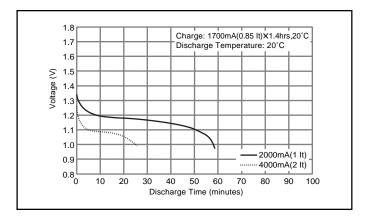
Note: [It] was previously expressed as [C]. [It] is an IEC standard expression for the amount of charge or discharge current and is expressed as: It(A) = Cn (Ah)/1h.

- [It] is the reference test current in ampres
- [Cn] is the rated capacity of the cell or battery in Ampere-hours. n = the time base [hours] for which the rated capacity is declared

Typical Charge Characteristics



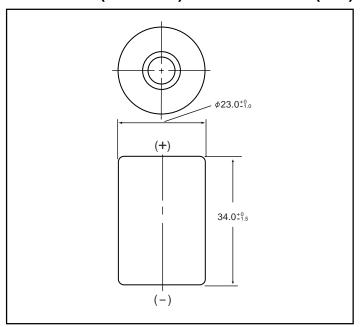




(mm)

HHR200SCP Cylindrical 4/5SC size (HR 23/34)

Dimensions (with Tube)



Specifications

	mm	inch
Diameter	23.0+0/-0.1	0.91+0/-0.04
Height	34.0+0/-1.5	1.34+0/-0.06
Approximate	Grams	Ounces
Weight	42	1.48

	Nominal V	oltage	1.2V	
Discharge Capacity*		Average**	2100 mAh	
		Rated (Min.)	1900 mAh	
Approx. Internal impedance at 1000Hz at charged state.		5mΩ		
Charge Standard		200mA (0.1lt) x 16hrs.		
	g-	Rapid	2000mA (1It) x 1.2 hrs.	
		Standard	°C	°F
rt ure	Charge	Standard	0°C to 45°C	32°F to 113°F
ien		Rapid	0°C to 40°C	32°F to 104°F
m bedr	Dis	charge	-10°C to 65°C	14°F to 149°F
Ambient Temperature	Storogo	< 2 years	-20°C to 35°C	-4°F to 95°F
	Storage	< 6 months	-20°C to 45°C	-4°F to 113°F

- * After charging at 0.1lt for 16 hours, discharging at 0.2lt.
- ** For reference only.

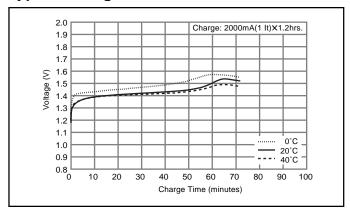
Battery performance and cycle life are strongly affected by how they are used. In order to maximize battery safety, please consult Panasonic when determining charge / discharge specs, warning label contents and unit design.

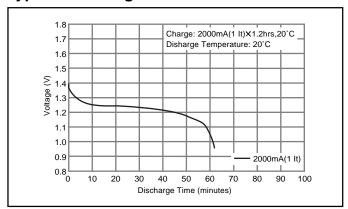
Note: [It] was previously expressed as [C]. [It] is an IEC standard expression for the amount of charge or discharge current and is expressed as: It(A) = Cn (Ah)/1h.

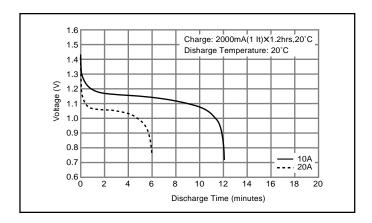
- [It] is the reference test current in ampres
- [Cn] is the rated capacity of the cell or battery in Ampere-hours.

 n = the time base [hours] for which the rated capacity is declared

Typical Charge Characteristics



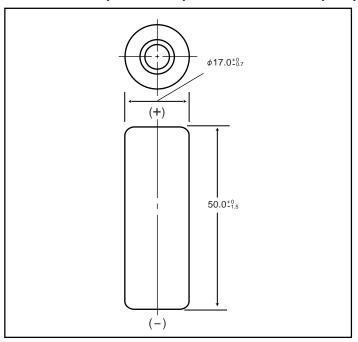




HHR210A Cylindrical A size (HR 17/50)

Dimensions (with Tube)

(mm)



Specifications

	mm	inch
Diameter	17.0+0/-0.7	0.67+0/-0.03
Height	50.0+0/-1.5	1.97+0/-0.06
Approximate	Grams	Ounces
Weight	38	1.34

Nominal Voltage		1.2V		
Discharge Capacity*		Average**	2200 mAh	
		Rated (Min.)	2100 mAh	
Approx. Internal impedance at 1000Hz at charged state.		20mΩ		
Charge Standard		210mA (0.1lt) x 16hrs.		
	90	Rapid	2100mA (1lt) x 1.2 hrs.	
		0111	°C	°F
gy .	Charge	Standard	0°C to 45°C	32°F to 113°F
별		Rapid	0°C to 40°C	32°F to 104°F
bie	Dis	charge	-10°C to 65°C	14°F to 149°F
Ambient Temperature		< 1 year	-20°C to 35°C	-4°F to 95°F
P P	Storage	< 3 months	-20°C to 45°C	-4°F to 113°F
		< 1 month	-20°C to 55°C	-4°F to 131°F

- * After charging at 0.1lt for 16 hours, discharging at 0.2lt.
- ** For reference only.

Battery performance and cycle life are strongly affected by how they are used. In order to maximize battery safety, please consult Panasonic when determining charge / discharge specs, warning label contents and unit design.

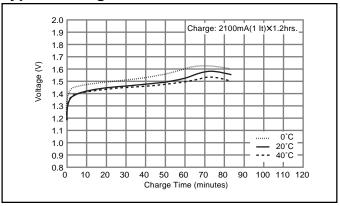
Note: [It] was previously expressed as [C]. [It] is an IEC standard expression for the amount of charge or discharge current and is expressed as:

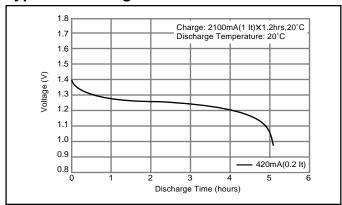
It(A) = Cn (Ah)/1h.

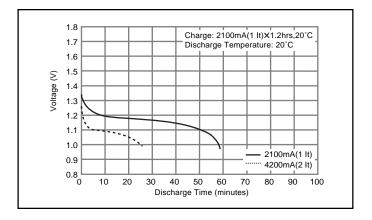
- [It] is the reference test current in ampres
- [Cn] is the rated capacity of the cell or battery in Ampere-hours.

 n = the time base [hours] for which the rated capacity is declared

Typical Charge Characteristics



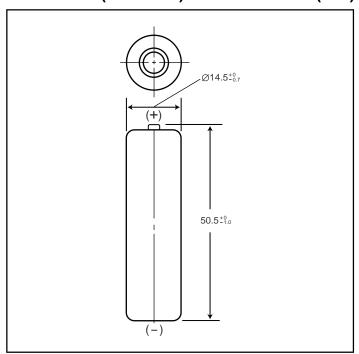




HHR210AA/B Cylindrical AA size (HR 15/51)

Dimensions (with Tube)

(mm)



Specifications

	mm	inch
Diameter	14.5 +0/-0.7	0.57 +0/-0.3
Height	50.5 +0/-1.0	1.99 +0/-0.5
Approximate	Grams	Ounces
Weight	29	1.02

Nominal Voltage		1.2V		
Discharge Capacity*		Average**	2080mAh	
		Rated (Min.)	2000mAh	
Approx. internal Impedance at 1000Hz at charged state.		25m Ω		
Charge Standard		Standard	200mA (0.1lt) x 16 hrs.	
	Charge Rapid		1200mA (1lt) x 2 hrs.	
		Standard	°C	°F
ب ا	Charge		0°C to 45°C	32°F to 113°F
ent		Rapid	0°C to 40°C	32°F to 113°F
Ambient Temperature	Disch	narge	-10°C to 65°C	14°F to 149°F
Ar		< 1 year	-20°C to 35°C	-4°F to 95°F
-	Storage	< 3 months	-20°C to 45°C	-4°F to 113°F
		< 1 month	-20°C to 55°C	-4°F to 131°F

^{*} After charging at 0.1lt for 16 hours, discharging at 0.2lt.

Battery performance and cycle life are strongly affected by how they are used. In order to maximize battery safety, please consult Panasonic when determining charge / discharge specs, warning label contents and unit design.

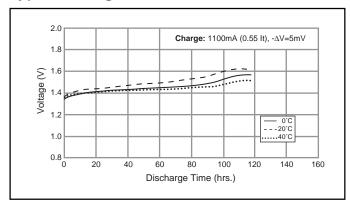
Note:

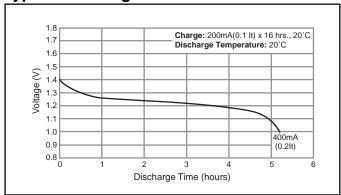
[It] was previously expressed as [C]. [It] is an IEC standard expression for the amount of charge or discharge current and is expressed as: $It(A) = Cn \ (Ah)/1h$

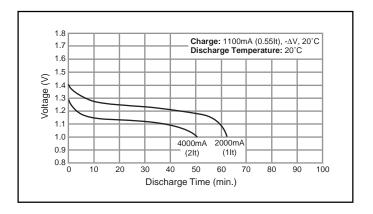
- * [It] is the reference test current in ampres
- * [Cn] is the rated capacity of the cell or battery in Ampere-hours.

 n = the time base [hours] for which the rated capacity is declared

Typical Charge Characteristics





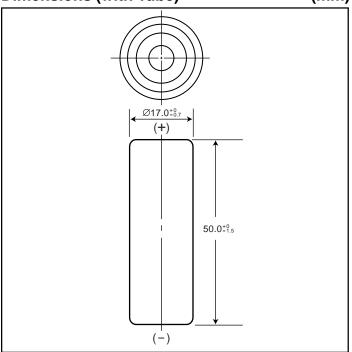


^{**} For reference only.

HHR210AH Cylindrical A size (HR 17/50)

Dimensions (with Tube)





Specifications

	mm	inch
Diameter	17.0+0/-0.7	0.67+0/-0.03
Height	50.0+0/-1.5	1.97+0/-0.06
Approximate	Grams	Ounces
Weight	38	1.34

Nominal Voltage		1.2V		
Discharge Capacity ¹		Average ²	2050mAh	
		Rated (Min.)	1900mAh	
Approx. internal Impedance at 1000Hz at charged state.		20mΩ		
Charge Standard		210mA (0.1	It) x 16 hrs.	
)	ilaige	Rapid	-	
		Standard	°C	°F
	Charge	Standard	-10°C to 60°C	14°F to 140°F
it ure		Rapid	-	-
bier erat	Discl	narge	-10°C to 60°C	14°F to 140°F
Ambient Temperature		< 1 year	-20°C to 35°C	-4°F to 95°F
Te	Storage	< 3 months	-20°C to 45°C	-4°F to 113°F
	Storage	< 1 month	-20°C to 55°C	-4°F to 131°F
		< 1 week	-20°C to 60°C	-4°F to 140°F

- After charging at 0.1lt for 16 hours, discharging at 0.2lt.
- ² For reference only.

Battery performance and cycle life are strongly affected by how they are used. In order to maximize battery safety, please consult Panasonic when determining charge / discharge specs, warning label contents and unit design.

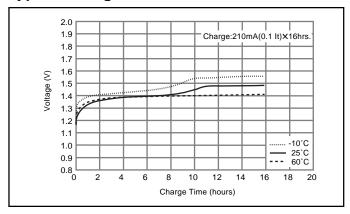
Note: [It] was previously expressed as [C]. [It] is an IEC standard expression for the amount of charge or discharge current and is expressed as:

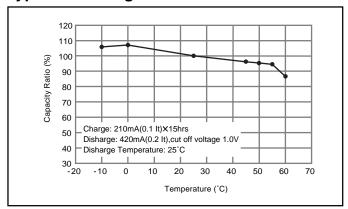
It(A) = Cn (Ah)/1h.

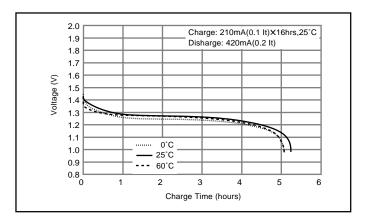
- [It] is the reference test current in ampres
- [Cn] is the rated capacity of the cell or battery in Ampere-hours.

 n = the time base [hours] for which the rated capacity is declared

Typical Charge Characteristics



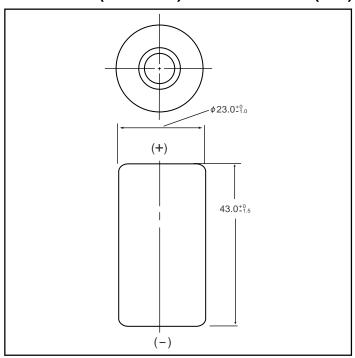




HHR250SCH Cylindrical SC size (HR 23/43)

Dimensions (with Tube)

(mm)



Specifications

	mm	inch
Diameter	23.0+0/-1.0	0.91+0/-0.04
Height	43.0+0/-1.5	1.69+0/-0.06
Approximate	Grams	Ounces
Weight	55	1.94

Nominal Voltage			1.2V	
Discharge Average ²		2650 mAh		
Capacity ¹ Rated (Min.)		2500	mAh	
Approx. Internal impedance at 1000Hz at charged state.		$5 \text{m}\Omega$		
Standard		250mA	x 16hrs.	
CI	narge	Rapid ³	1250mA	x 2.4 hrs.4
		Low Rate	125mA x 32 hrs.	
		LOW Rate	83mA x 48 hrs.	
		Standard	°C	°F
4	Charge	Staridard	-10°C to 60°C	14°F to 140°F
# n		Rapid	-10°C to 45°C	14°F to 113°F
ien	Dis	charge	-10°C to 60°C	14°F to 140°F
nb pe		< 1 year	-20°C to 35°C	-4°F to 95°F
Ambient Temperature	Storage < 6 month	< 6 months	-20°C to 45°C	-4°F to 113°F
-	Olo. age	< 1 month	-20°C to 55°C	-4°F to 131°F
	< 1 week	-20°C to 65°C	-4°F to 149°F	

- $\stackrel{1}{\circ}$ After charging at 0.1lt for 16 hours, discharging at 0.2lt.
- ² For reference only.
- Need specially designed control system Control System:

dT/dt cut-off; 1 to 2°C/min

 $-\triangle V$ cut-off; $-\triangle V$ per cell = 5 to 10 mV

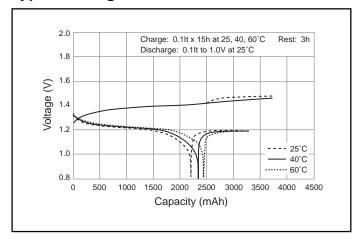
T-control; T=65°C

Rapid charger timer; 2.4h (at 1.25a)

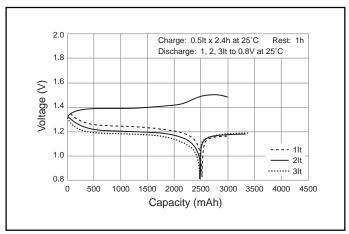
Trickle timer; within 2h 4 With control system

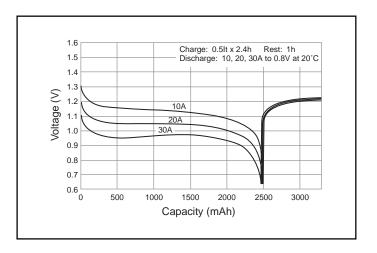
Battery performance and cycle life are strongly affected by how they are used. In order to maximize battery safety, please consult Panasonic when determining charge / discharge specs, warning label contents and unit design.

Typical Charge Characteristics



Typical Discharge Characteristics





e: [It] was previously expressed as [C]. [It] is an IEC standard expression for the amount of charge or discharge current and is expressed as: It(A) = Cn (Ah)/1h

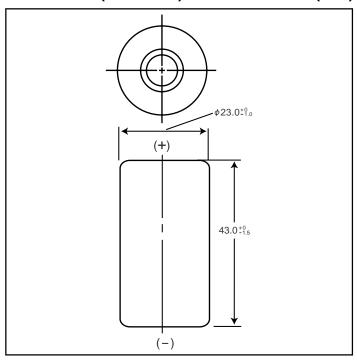
- * [It] is the reference test current in ampres
- * [Cn] is the rated capacity of the cell or battery in Ampere-hours. n = the time base [hours] for which the rated capacity is declared



HHR260SCP Cylindrical SC size (HR 23/43)

Dimensions (with Tube)

(mm)



Specifications

	mm	inch
Diameter	23.0+0/-1.0	0.91+0/-0.04
Height	43.0+0/-1.5	1.69+0/-0.06
Approximate	Grams	Ounces
Weight	55	1.94

Nominal Voltage		1.2V		
Discharge Average ²		2600 mAh		
Cap	Capacity ¹ Rated (Min.)		2450	mAh
		impedance	5mΩ	
at 100	00Hz at cha	rged state.	311	122
CI	Charge Standard		260mA x 16hrs.	
Ci	large	Rapid	2600mA x 1.2 hrs.	
		Standard	°C	°F
อ	Charge	Stariuaru	0°C to 45°C	32°F to 113°F
atn		Rapid	10°C to 40°C	50°F to 104°F
bio	Dis	charge	-10°C to 65°C	14°F to 149°F
Ambient Temperature		< 1 year	-20°C to 35°C	-4°F to 95°F
e	Storage	< 3 months	-20°C to 45°C	-4°F to 113°F
		< 1 month	-20°C to 55°C	-4°F to 131°F

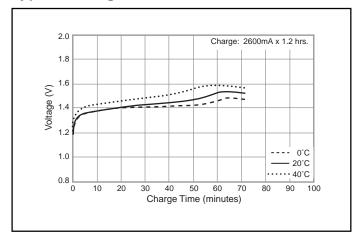
¹ After charging at 0.1lt for 16 hours, discharging at 0.2lt.

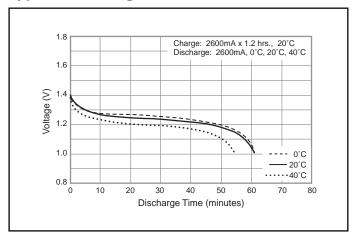
Battery performance and cycle life are strongly affected by how they are used. In order to maximize battery safety, please consult Panasonic when determining charge / discharge specs, warning label contents and unit design.

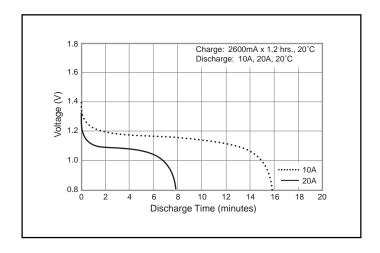
Note: [It] was previously expressed as [C]. [It] is an IEC standard expression for the amount of charge or discharge current and is expressed as: It(A) = Cn (Ah)/1h

- * [It] is the reference test current in ampres
- * [Cn] is the rated capacity of the cell or battery in Ampere-hours.
- n = the time base [hours] for which the rated capacity is declared

Typical Charge Characteristics





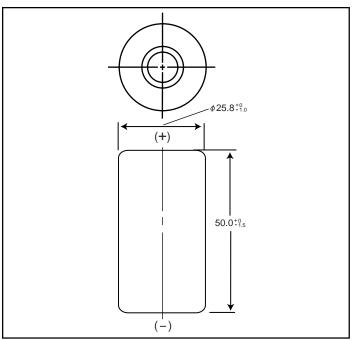


² For reference only.

HHR300CH Cylindrical C size (HR 26/50) for backup use

Dimensions (with Tube)

(mm)



Specifications

	mm	inch
Diameter	25.8+0/-1.0	1.02+0/-0.04
Height	50.0+0/-1.5	1.97+0/-0.06
Approximate	Grams	Ounces
Weight	80	2.82

Nominal Voltage		1.2V			
Discharge Average ² Capacity ¹ Rated (Min.)		3300 mAh			
		Rated (Min.)	3100	mAh	
Approx. Internal impedance at 1000Hz at charged state.		5mΩ			
Charge Standard Charge Rapid ³ Low Rate		300mA (0.1	1 lt) x 16hrs.		
		1500mA (1lt) x 2.4 hrs.4			
		155mA x 32 hrs. 100mA x 48 hrs.			
		Standard	°C	°F	
	Chargo	Standard	0°C to 45°C	32°F to 113°F	
t ure	Charge	Rapid	10°C to 40°C	32°F to 104°F	
ien ratı		Low Rate	-10°C to 45°C	14°F to 149°F	
Ambient Temperature	Discharge		-10°C to 65°C	14°F to 113°F	
A Ten	적 년 < 1 year		-20°C to 35°C	-4°F to 95°F	
•	Storage	< 3 months	-20°C to 35°C	-4°F to 95°F	
		< 1 month	-20°C to 55°C	-4°F to 131°F	

- ¹ After charging at 0.1lt for 16 hours, discharging at 0.2lt.
- 2 For reference only.
- ³ Need specially designed control system

Control System:

dT/dt cut-off; 1 to 2°C/min

- \triangle V cut-off; - \triangle V per cell = 5 to 10 mV

T-control; T=65°C

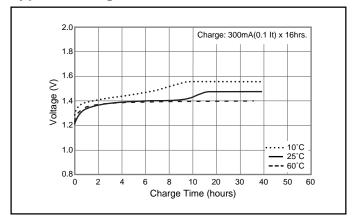
Rapid charger timer; 2.4h (at 1.25a)

Trickle timer; within 2h

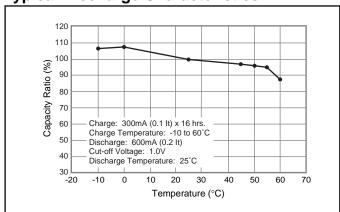
⁴ With control system

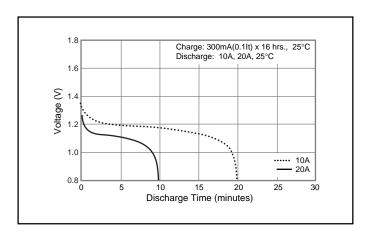
Battery performance and cycle life are strongly affected by how they are used. In order to maximize battery safety, please consult Panasonic when determining charge / discharge specs, warning label contents and unit design.

Typical Charge Characteristics



Typical Discharge Characteristics





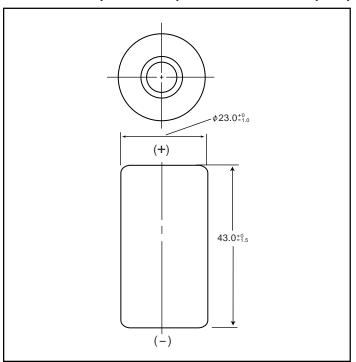
Note: [It] was previously expressed as [C]. [It] is an IEC standard expression for the amount of charge or discharge current and is expressed as: It(A) = Cn (Ah)/1h.

- [It] is the reference test current in ampres
- [Cn] is the rated capacity of the cell or battery in Ampere-hours. n = the time base [hours] for which the rated capacity is declared

HHR300SCP Cylindrical SC size (HR 23/43)

Dimensions (with Tube)

(mm)



Specifications

	mm	inch
Diameter	23.0+0/-0.1	0.91+0/-0.04
Height	43.0+0/-1.5	1.69+0/-0.06
Approximate	Grams	Ounces
Weight	57	2.01

Nominal Voltage		1.2V		
Discharge Capacity*		Average**	3050 mAh	
		Rated (Min.)	2800 mAh	
Approx. Internal impedance at 1000Hz at charged state.		4mΩ		
Charge Standard		300mA (0.1lt) x 16hrs.		
	g-	Rapid	3000mA (1It) x 1.2 hrs.	
_		Standard	°C	°F
ıt ure	Charge	Standard	0°C to 45°C	32°F to 113°F
ien		Rapid	0°C to 40°C	32°F to 104°F
m adu	요 한 Discharge		-10°C to 65°C	14°F to 149°F
Ambient Temperature	Ctorogo	< 2 years	-20°C to 35°C	-4°F to 95°F
'	⊢ Storage	< 6 months	-20°C to 45°C	-4°F to 113°F

- * After charging at 0.1lt for 16 hours, discharging at 0.2lt.
- ** For reference only.

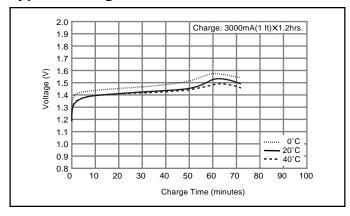
Battery performance and cycle life are strongly affected by how they are used. In order to maximize battery safety, please consult Panasonic when determining charge / discharge specs, warning label contents and unit design.

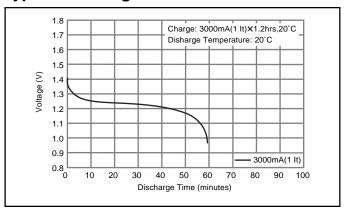
Note: [It] was previously expressed as [C]. [It] is an IEC standard expression for the amount of charge or discharge current and is expressed as: It(A) = Cn (Ah)/1h.

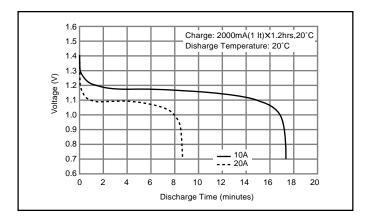
- [It] is the reference test current in ampres
- [Cn] is the rated capacity of the cell or battery in Ampere-hours.

 n = the time base [hours] for which the rated capacity is declared

Typical Charge Characteristics



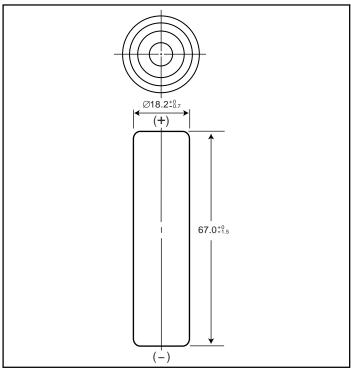




HHR330APH Cylindrical L-Fat A size (HR 18/67)

Dimensions (with Tube)

(mm)



Specifications

	mm	inch
Diameter	18.2+0/-0.7	0.72+0/-0.03
Height	67.0+0/-1.5	2.64+0/-0.06
Approximate	Grams	Ounces
Weight	60	2.12

	Nominal Voltage		1.2V	
Discharge Average ²		3300 mAh		
Cap	acity ¹	Rated (Min.)	in.) 3200 mAh	
Appro	x. Internal	impedance	5.5mΩ	
at 100	00Hz at cha	rged state.	5.5	11177
		Standard	330mA	x 16hrs.
CI	harge	Rapid ³	1650mA	x 2.4 hrs.4
Low Rate		165mA x 32 hrs.		
		LOW Rate	110mA x 48 hrs.	
		Standard	°C	°F
•	Charge	Standard	-10°C to 60°C	14°F to 140°F
ıt ure		Rapid	-10°C to 45°C	14°F to 113°F
ien rat	Dis	charge	-10°C to 60°C	14°F to 140°F
Ambient Temperature		< 1 year	-20°C to 35°C	-4°F to 95°F
₹ E Storogo	Storage	< 6 months	-20°C to 45°C	-4°F to 113°F
<u> </u>	Otorage	< 1 month	-20°C to 55°C	-4°F to 131°F
		< 1 week	-20°C to 65°C	-4°F to 149°F

- After charging at 0.1lt for 16 hours, discharging at 0.2lt.
- ² For reference only.
- Need specially designed control system

Control System:

dT/dt cut-off; 1 to 2°C/min

 $-\triangle V$ cut-off; $-\triangle V$ per cell = 5 to 10 mV

T-control; T=65°C

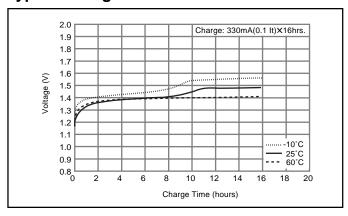
Rapid charger timer; 2.4h (at 1.25a)

Trickle timer; within 2h

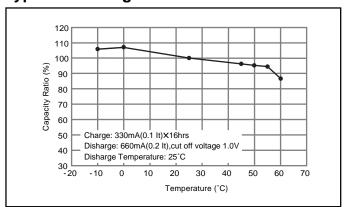
⁴ With control system

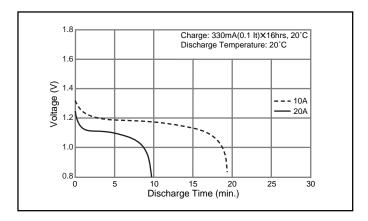
Battery performance and cycle life are strongly affected by how they are used. In order to maximize battery safety, please consult Panasonic when determining charge / discharge specs, warning label contents and unit design.

Typical Charge Characteristics



Typical Discharge Characteristics





Note: [It] was previously expressed as [C]. [It] is an IEC standard expression for the amount of charge or discharge current and is expressed as: It(A) = Cn (Ah)/1h.

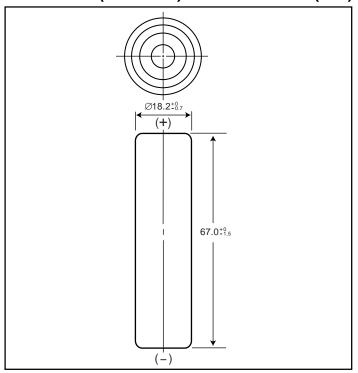
- [It] is the reference test current in ampres
- [Cn] is the rated capacity of the cell or battery in Ampere-hours. n = the time base [hours] for which the rated capacity is declared



HHR370AH Cylindrical L-Fat A size (HR 18/67)

Dimensions (with Tube)

(mm)



Specifications

	mm	inch
Diameter	18.2+0/-0.7	0.72+0/-0.03
Height	67.0+0/-1.5	2.64+0/-0.06
Approximate	Grams	Ounces
Weight	60	2.12

Nominal Voltage			1.2V	
Discharge		Average ²	3700 mAh	
Cap	acity ¹	Rated (Min.)	3500 mAh	
Approx. Internal impedance at 1000Hz at charged state.		20mΩ		
Standard		370mA	x 16hrs.	
CI	narge	Rapid ³	1750mA	x 2.4 hrs.4
Low Rate		Low Rate	185mA x 32 hrs. 123mA x 48 hrs.	
		Ctondord	°C	°F
4	Charge	Standard	-10°C to 60°C	14°F to 140°F
re ure		Rapid	-10°C to 45°C	14°F to 113°F
ien ratı	Dis	charge	-10°C to 60°C	14°F to 140°F
Ambient Cemperature Charge Storage		< 1 year	-20°C to 35°C	-4°F to 95°F
	Storage	< 6 months	-20°C to 45°C	-4°F to 113°F
	Otorage	< 1 month	-20°C to 55°C	-4°F to 131°F
		< 1 week	-20°C to 65°C	-4°F to 149°F

- After charging at 0.1lt for 16 hours, discharging at 0.2lt.
- ² For reference only.
- Need specially designed control system

Control System:

dT/dt cut-off; 1 to 2°C/min

 $-\triangle V$ cut-off; $-\triangle V$ per cell = 5 to 10 mV

T-control; T=65°C

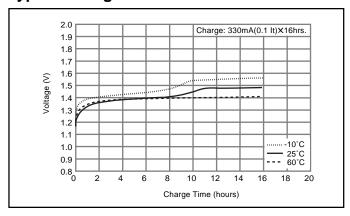
Rapid charger timer; 2.4h (at 1.25a)

Trickle timer; within 2h

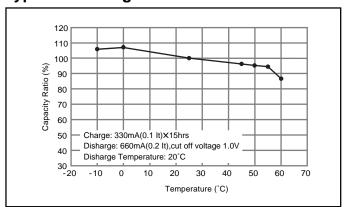
⁴ With control system

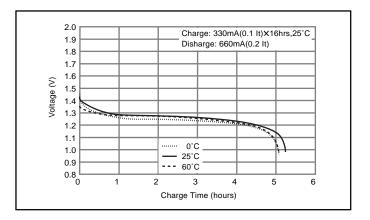
Battery performance and cycle life are strongly affected by how they are used. In order to maximize battery safety, please consult Panasonic when determining charge / discharge specs, warning label contents and unit design.

Typical Charge Characteristics



Typical Discharge Characteristics





Note: [It] was previously expressed as [C]. [It] is an IEC standard expression for the amount of charge or discharge current and is expressed as: It(A) = Cn (Ah)/1h.

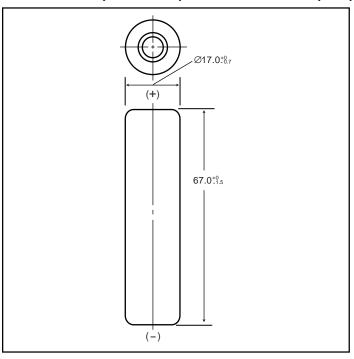
- [It] is the reference test current in ampres
- [Cn] is the rated capacity of the cell or battery in Ampere-hours. n = the time base [hours] for which the rated capacity is declared



HHR380A Cylindrical L-A size (HR 17/67)

Dimensions (with Tube)

(mm)



Specifications

	mm	inch
Diameter	17.0+0/-0.7	0.67+0/-0.03
Height	67.0+0/-1.5	2.64+0/-0.06
Approximate	Grams	Ounces
Weight	53	1.87

Nominal Voltage		1.2V		
Discharge Capacity*		Average**	3800 mAh	
		Rated (Min.)	3700 mAh	
Approx. Internal impedance at 1000Hz at charged state.		25mΩ		
Charge Standard Rapid***		370mA (0.1	IIt) x 16hrs.	
		Rapid***	2000mA dT/dt	
		Standard	°C	°F
စ	Charge		0°C to 45°C	32°F to 113°F
t I		Rapid	0°C to 40°C	32°F to 104°F
lbie oera	Dis	charge	-10°C to 65°C	14°F to 149°F
Ambient Temperature		< 1 year	-20°C to 35°C	-4°F to 95°F
	Storage	< 3 months	-20°C to 45°C	-4°F to 113°F
		< 1 month	-20°C to 55°C	-4°F to 131°F

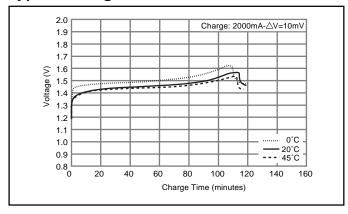
- * After charging at 0.1lt for 16 hours, discharging at 0.2lt.
- ** For reference only.
- *** For rapid charge: use dT/dt charge termination method. Refer to the Nickel Metal Hydride "Charge Methods" section for further details. Battery performance and cycle life are strongly affected by how they are used. In order to maximize battery safety, please consult Panasonic when determining charge / discharge specs, warning label contents and unit design.

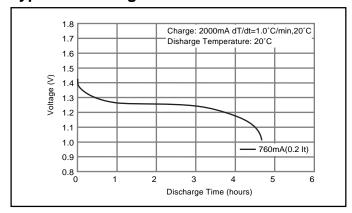
Note: [It] was previously expressed as [C]. [It] is an IEC standard expression for the amount of charge or discharge current and is expressed as: It(A) = Cn (Ah)/1h.

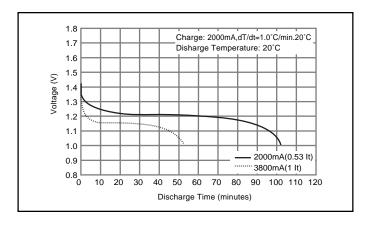
- [It] is the reference test current in ampres
- [Cn] is the rated capacity of the cell or battery in Ampere-hours.

 n = the time base [hours] for which the rated capacity is declared

Typical Charge Characteristics



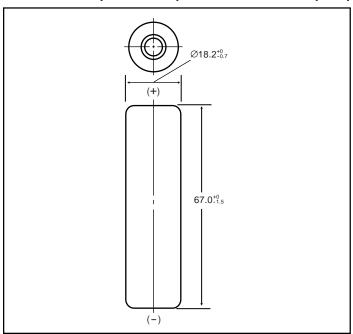




HHR450A Cylindrical L-fat A size (HR 18/67)

Dimensions (with Tube)

(mm)



Specifications

	mm	inch
Diameter	18.2+0/-0.7	0.72+0/-0.03
Height	67.0+0/-1.5	2.64+0/-0.06
Approximate	Grams	Ounces
Weight	60	2.12

Nominal Voltage		1.2V		
Discharge		Average**	4500 mAh	
Сар	acity*	Rated (Min.)	4200	mAh
Approx. Internal impedance at 1000Hz at charged state.		25mΩ		
Charge Standard Rapid***		420mA (0.1lt) x 16hrs.		
		Rapid***	2000mA dT/dt	
		Standard	°C	°F
ė	Charge	Staridard	0°C to 45°C	32°F to 113°F
별		Rapid	0°C to 40°C	32°F to 104°F
bie	Dis	charge	-10°C to 65°C	14°F to 149°F
Ambient Temperature		< 1 year	-20°C to 35°C	-4°F to 95°F
	Storage	< 3 months	-20°C to 45°C	-4°F to 113°F
		< 1 month	-20°C to 55°C	-4°F to 131°F

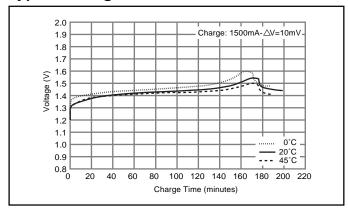
- * After charging at 0.1lt for 16 hours, discharging at 0.2lt.
- ** For reference only.
- *** For rapid charge: use dT/dt charge termination method. Refer to the Nickel Metal Hydride "Charge Methods" section for further details. Battery performance and cycle life are strongly affected by how they are used. In order to maximize battery safety, please consult Panasonic when determining charge / discharge specs, warning label contents and unit design.

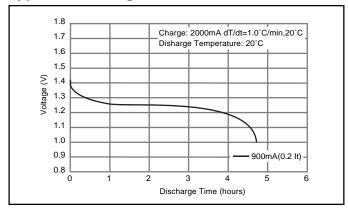
Note: [It] was previously expressed as [C]. [It] is an IEC standard expression for the amount of charge or discharge current and is expressed as: It(A) = Cn (Ah)/1h.

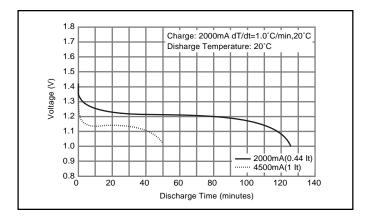
- [It] is the reference test current in ampres
- [Cn] is the rated capacity of the cell or battery in Ampere-hours.

 n = the time base [hours] for which the rated capacity is declared

Typical Charge Characteristics



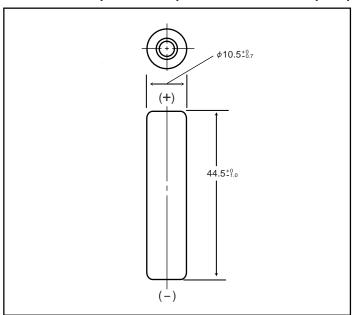




HHR60AAAH Cylindrical AAA size (HR 11/45)

Dimensions (with Tube)

(mm)



Specifications

	mm	inch
Diameter	10.5 +0/-0.7	0.41 +0/-0.03
Height	44.5 +0/-1.0	1.75 +0/-0.04
Approximate	Grams	Ounces
Weight	13	0.46

Nominal Voltage		1.2V		
Disc	harge	Average ²	550 mAh	
Cap	acity ¹	Rated (Min.)	500	mAh
Approx. Internal impedance at 1000Hz at charged state.		35mΩ		
		Standard	50mA >	c 16hrs.
CI	narge	Rapid ³	250mA x	2.4 hrs.4
	3	Low Rate	25mA x 32 hrs.	
		LOW Rate	17mA x 48 hrs.	
		Standard	°C	°F
4	Charge	Standard	-10°C to 60°C	14°F to 140°F
# P		Rapid	-10°C to 45°C	14°F to 113°F
ien	Dis	charge	-10°C to 60°C	14°F to 140°F
Ambient Temperature		< 1 year	-20°C to 35°C	-4°F to 95°F
A M	Storage	< 6 months	-20°C to 45°C	-4°F to 113°F
-	O.O. age	< 1 month	-20°C to 55°C	-4°F to 131°F
		< 1 week	-20°C to 65°C	-4°F to 149°F

- After charging at 0.1lt for 16 hours, discharging at 0.2lt.
- For reference only.
- Need specially designed control system Control System:

dT/dt cut-off; 1 to 2°C/min

-△V cut-off; -△V per cell = 5 to 10 mV

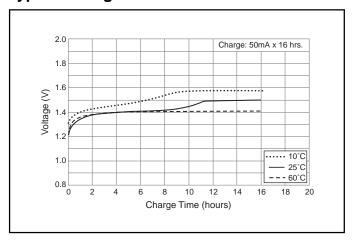
T-control; T=65°C

Rapid charger timer; 2.4h (at 1.25a)

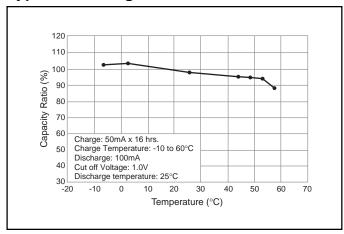
Trickle timer; within 2h

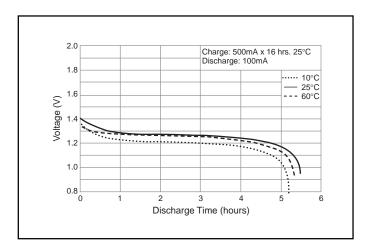
Battery performance and cycle life are strongly affected by how they are used. In order to maximize battery safety, please consult Panasonic when determining charge / discharge specs, warning label contents and unit design

Typical Charge Characteristics



Typical Discharge Characteristics





Note: [It] was previously expressed as [C]. [It] is an IEC standard expression for the amount of charge or discharge current and is expressed as: It(A) = Cn (Ah)/1h

- * [It] is the reference test current in ampres
- * [Cn] is the rated capacity of the cell or battery in Ampere-hours. n = the time base [hours] for which the rated capacity is declared

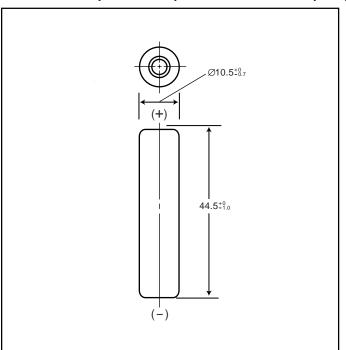


⁴ With control system

HHR70AAAJ Cylindrical HR AAA size (HR 11/45)

Dimensions (with Tube)

(mm)



Specifications

	mm	inch
Diameter	10.5+0/-0.7	0.41+0/-0.03
Height	44.5+0/-1.0	1.75+0/-0.04
Approximate	Grams	Ounces
Weight	13	0.46

Nominal Voltage		1.2V		
Discharge Capacity*		Average**	720 mAh	
		Rated (Min.)	700 mAh	
Approx. Internal impedance at 1000Hz at charged state.		30mΩ		
CI	Charge Standard Rapid		70mA (0.1lt) x 16hrs.	
0.			650mA (1lt) x 1.2 hrs.	
		Standard	°C	°F
ري	Charge	Standard	0°C to 45°C	32°F to 113°F
t ţ		Rapid	0°C to 40°C	32°F to 104°F
Ambient Temperature	Dis	charge	-10°C to 65°C	14°F to 149°F
Am		< 1 year	-20°C to 35°C	-4°F to 95°F
<u>P</u>	Storage	< 3 months	-20°C to 45°C	-4°F to 113°F
		< 1 month	-20°C to 55°C	-4°F to 131°F

- * After charging at 0.1lt for 16 hours, discharging at 0.2lt.
- ** For reference only.

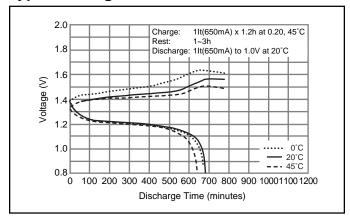
Battery performance and cycle life are strongly affected by how they are used. In order to maximize battery safety, please consult Panasonic when determining charge / discharge specs, warning label contents and unit design.

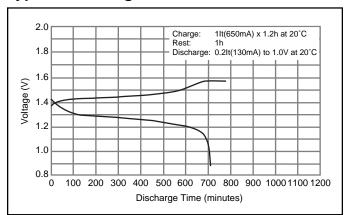
Note: [It] was previously expressed as [C]. [It] is an IEC standard expression for the amount of charge or discharge current and is expressed as: lt(A) = Cn (Ah)/1h.

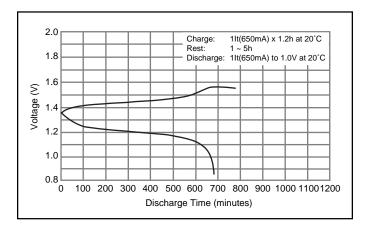
- [It] is the reference test current in ampres
- [Cn] is the rated capacity of the cell or battery in Ampere-hours.

 n = the time base [hours] for which the rated capacity is declared

Typical Charge Characteristics



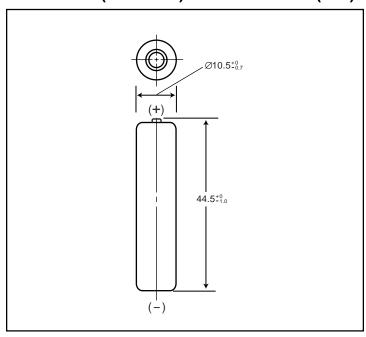




HHR75AAA/B Cylindrical AAA size (HR 11/45)

Dimensions (with Tube)

(mm)



Specifications

	mm	inch
Diameter	10.5+0/-0.7	0.41+0/-0.03
Height	44.5+0/-1.0	1.75+0/-0.04
Approximate	Grams	Ounces
Weight	12	0.42

Nominal Voltage		1.2V		
Nominal Voltage		1.20		
Discharge Capacity*		Average**	730 mAh	
		Rated (Min.)	700 mAh	
Approx. Internal impedance at 1000Hz at charged state.		35mΩ		
Charge Standard		Standard	70mA x 16hrs.	
	3	Rapid	450mA x 1.7 hrs.	
		Standard	°C	°F
ø	Charge	Standard	0°C to 45°C	32°F to 113°F
별		Rapid	0°C to 40°C	32°F to 104°F
bie	Dis	charge	-10°C to 65°C	14°F to 149°F
Ambient Temperature		< 1 year	-20°C to 35°C	-4°F to 95°F
	Storage	< 3 months	-20°C to 45°C	-4°F to 113°F
		< 1 month	-20°C to 55°C	-4°F to 131°F

- * After charging at 0.1lt for 16 hours, discharging at 0.2lt.
- ** For reference only.

Battery performance and cycle life are strongly affected by how they are used. In order to maximize battery safety, please consult Panasonic when determining charge / discharge specs, warning label contents and unit design.

Note: [It] was previously expressed as [C]. [It] is an IEC standard expression for the amount of charge or discharge current and is expressed as: It(A) = Cn (Ah)/1h.

- [It] is the reference test current in ampres
- [Cn] is the rated capacity of the cell or battery in Ampere-hours. n = the time base [hours] for which the rated capacity is declared

Typical Charge Characteristics

