

WHAT IS Cryogenics Circuit ?

WHY (Reason to build this technology)

Did you whether encounter a situation that your electronic devices, e.g. cellphones, digital camcorders, the operating time likely to be shorten rapidly in cold winter or extreme low temperature? Can you image electronic devices shows battery low power in cryogenics circumstance, freezing temperature result electronics in runtime shorten extremely? As a rule, electronic devices can be operated with battery as 4 to 6 hours in normal environment, but why they shut down immediately at -20 degree centigrade?

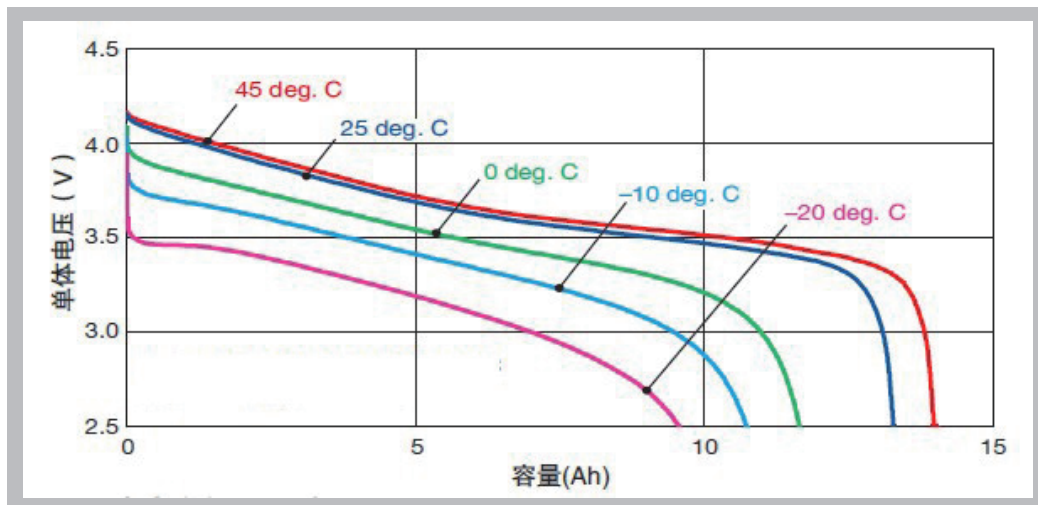


Figure 1

Specifically, the root cause is the discharge characteristic of Li-ion battery. The Figure.1 chart illustrates that different temperature zones expressed several battery discharge curves. It is obvious that battery capacity is easy prey for the extreme low temperature, for instance, a same capacity of Li-ion battery can be discharged 1200mAh at 25 degree C. but performed 900mAh only at the -20 degree C. Battery capacity performance declined about 25 % or even more.

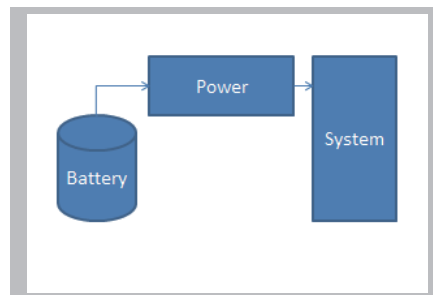
In that case, battery capacity decreased by only 25%, devices should be still operating 3 to 4 hours at the -20 degree environment at least. Why the device is turned off so quickly? The cause is that the battery in the lowest temperature environment, the voltage will be decreased instantaneous. As we all know that traditional power circuit design is not able to work well below voltage of 3.5V. Therefore, the Li-ion battery cannot well functional its capacity at the extreme low temperature.

HOW (Concept of Technology)

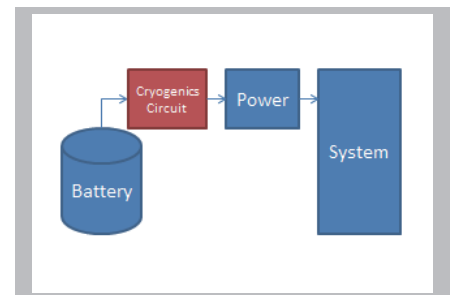
By doing the cryogenics circuit design, unitech dedicate to promise the battery supply to the power system with constant energy, to ensure the battery can express precious capacity it has whatever in any drastic environment. Devices with unitech cryogenics circuit technology may ensure their operating time when devices perform under the circumstances of low temperature.

■ Concept of Cryogenics Circuit

Traditional Circuit Design



Cryogenics Circuit Design



WHAT (Case study benefits)

PA820 @ -20 degree test	Runtime
Traditional Circuit Design	1~1.5hrs
unitech Cryogenics Circuit	4.5~5hrs

The unitech PA820 handheld terminal can be a shining example. It is obvious that PA820 runtime hours have been improved from 90 minutes to 300 minutes after acquired the unitech cryogenics circuit, total runtime ameliorated at 333%. Hence, the cryogenics circuit technology play a vital role in low battery runtime at low temperature applications. In particular, this technology will be a great boon for customers who located in high horizontal and cold weather territories.

