

X-Option Switch Mode Power Supply for SMM Beacons

You don't need the X-Option if you only work with Lithium batteries. This option is needed if you want to work with Alkaline and Cadmium batteries for test purposes or very short term applications as well as Lithium.

The X option is a switch mode power supply unit for all SMM. With this option lower cell voltage batteries may be used as Alkaline or NC. But you have to observe the less capacity and therefore transmission time and the reduced environmental conditions.

If you use SMM without X option, you have to put in Lithium batteries, because the minimal supply voltage has to be above 10.8 V. There are 5 single batteries in series with the 500 and two rows in parallel of 5 in series each with the 2000/6000. So anyhow the single cell voltage has to be more than 2.16 V. There is another point to be mentioned, that is the varying current demand of the instrument. There are three different operational modes periodically passed through. The transmitting phase needs 0.8 A for 360 ms, the warm up phase needs 5 mA for 3 s and the stand - by phase is 700 μ A for about 100 s. For the transmission phase you need high current, so you should use a Lithium battery type which has good effectivity with high currents.

If you want to use Alkaline-Manganese Dioxide batteries, you need the X option because 5 times that cell voltage is not sufficient.

For high sensible applications in cold environment we advise to use Lithium batteries anyway. We have done lots of tests with different battery types and temperature conditions, the table gives a condensed overview.

The tests have been done with the SMM 2000 X, for SMM 500 X please halve the times. For instruments without the X option use the Lithium values only!

In general, the lifetime can be approximated by dividing the energy content of the 10 (SMM 2000/6000) or 5 (SMM 500) batteries by the mean power consumption (100 mW) of the beacon when surfaced.

Temperature	Lithium	Alkaline	NC
20 °C	150 days	60 days	30 days
0° C	150 days	50 days	28 days
-30 °C	140 days	not applicable	not applicable
Lithium battery	Silberkraft Eternacell, Lithium-SO ₂ , Size D, Capacity 10 Ah		
Alkaline battery	Philips LR20, Green Alkaline, Size D, Capacity 13.2 Ah		
NC battery	Panasonic 4000N, NC, Size D, Capacity 4 Ah		

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