

DIGITAL PHOTOGRAPHY

+ MODERN DIGITAL CAMERAS HAVE MANY ADVANTAGES OVER THE OLD FILM CAMERAS. HOWEVER, THERE ARE SOME THINGS THAT THE CLUNKY OLD FILM GRINDERS COULD DO, AT LEAST THE OLDER GENERATIONS THAT HAD THUMB CRANKS AND MANUAL FOCUS INSTEAD OF BUILT IN DRIVES AND ZIPPY MINI MOTORS. THEY MAY HAVE BEEN SLOW AND CLUNKY BUT YOU COULD STILL GET A GREAT SHOT OR TWO, AS LONG AS THE SUBJECT SAT IMMOBILE FOR A WHILE. ONE FEATURE THAT CAME STANDARD WITH FILM CAMERAS WAS A BACKUP "ZERO BATTERY" MODE.

Yes, you could still use it with a flat or absent battery. OK, you probably were stuck with one shutter speed but you could still take photos. For example, the Nikonos cameras had a manual shutter speed of 1/90 of a second that allowed you to take pictures without a battery. It was also the highest sync speed for strobe use so you could freeze movement a little more or darken the background a smidgeon.

The modern digital camera has no manual winding crank as there is no film to transport. All functions, from activating the camera to shutting it down are reliant on a battery, which is usually rather small and generally rechargeable. Have you ever woken up in a distant location unable to use your phone because its out of range or the battery is flat? Irritating isn't it, at least until you realise most calls you made or received were totally unnecessary to the function of your life. Or have you had to lug around an iPod or laptop which had become an embarrassing useless lump due to the lack of a suitable charging source? With no manual 'zero battery' options, your digital camera battery can make or break a dive or even an entire dive vacation. Let's have a look at basic battery issues and solutions.

Obviously, starting a dive with a fully charged battery is the best option. Generally speaking, a standard non-rechargeable battery will provide a long use time which tapers off then stops. A rechargeable battery usually goes hard, fast and furious with a sudden drop in voltage just before it collapses. Since they hold

their voltage right up to when they go flat, they'll help you avoid minor camera problems brought on by the voltage drop with standard non-rechargeables. Rechargeables are initially expensive but pay for themselves over time and become cheaper per use cycle (discharge and recharge) the longer you have them. A disadvantage of rechargeables is that you need a power source to 'top up' the power. So if you are out all day on a small boat and you use your camera prior to the dive, during your dive and during the surface interval you may well find yourself with a flat battery on your second dive. This is especially a problem with cheaper 'point and shoot' digital cameras with large LCD viewing screens, electric powered zoom lenses and video functions, all of which soak up energy from the relatively small batteries.

An obvious solution to this is to carry one or more spare, fully charged, replacement batteries. This goes for rechargeables and single life, non-rechargeable batteries. Considering the expense of getting to the dive site and the cost of the dive, a spare battery (like a spare memory card) is cheap insurance which over time won't be wasted. There's more sense in starting your dive with a freshly formatted empty card and a fully charged battery than assuming that the 30 shots you have left on the used card and the half charged battery will do the job. What if you're half way through your dive and you have a school of manta rays swirl around you, or a pod of dolphins visit you on the deco line, or that resident great hammerhead cruise in for a cursory look? Murphy's law states that your opportunities for good photos are inversely



Alkaline batteries are common, non-rechargeable, powerful batteries that come in many configurations and sizes. A good all round choice as a backup for your rechargeable batteries, particularly in cold weather.



Generic batteries are often far cheaper than brand name versions and indistinguishable in performance. Check that the output is the same or compatible with your camera system.

proportional to your capability to record them. So a fully charged battery and near empty card will keep those pesky mantas, dolphins and sharks at bay.

An advantage of non-rechargeables is that if you are on an extended dive trip you can switch batteries without having to worry about accessing a power point. This is usually not an issue, especially if you carry spares, but there are places and boats that lack this basic service. I've been on some liveaboards that only provide 240v or 110v power while the galley's electric stove is in use. Try living in a Samoan beach fale or camp on a national park island (some of which ban all motors, including generators) with rechargeables. You'll wish you had standard batteries then. Most dive operators use small to medium sized boats for day trips which do not allow you to recharge. OK, it sounds obvious but under these circumstances spare batteries are the answer.

If you're travelling overseas, another factor to consider for rechargeables is the power supply. Not so long ago you had to have different chargers for different power supplies. For example, Australia and New Zealand have 240 volt power supplies while the USA and some other countries have 110 volt power. Mix it

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up when plugging in and you had a fried charger which made a sad and expensive paper weight. Now, most chargers are multi-volt chargers, allowing you to charge your batteries (or any other battery operated device) with any voltage. All you need is the appropriate pin adapter to fit the power point. Rechargeables are also usually lighter in weight than non-rechargeables. The battery charger adds weight but usually the whole package is lighter than packing two dozen non-rechargeables.

So what if you have no access to a power supply? While you can use non-rechargeable batteries, this can be very expensive in the long run. Also, some cameras have batteries that are a particular shape that are hard to find as non-rechargeable, especially when you're trying to find one outside of a major city. A number of products are now available to power electronic devices from the sun or from a larger battery pack. Solio make a device that can charge from a power point, a built in battery bank or from the sun. Weighing only 156g it is a contender for the air traveller. There are other similar devices that will charge either batteries or battery powered devices.(where the battery is not removable).



Kelvin Aitken is a Melbourne-based professional photographer and diver passionate about the big blue and the big sea creatures to be found out there. He's dived from the Arctic to the extremes of the South Pacific

and if there's a new marine dive adventure to be experienced or invented, he's always the first to put up his hand. He's also dived the southeastern Australian continental shelf and photographed shark species nobody knew would be found out there. Kelvin is a BBC Wildlife Photographer of the Year marine category winner and his unique work is on www.marinethemes.com



When diving in near zero or subzero temperatures you will find that your fancy rechargeable battery will probably fail or perform poorly. Switch to an alkaline which is rated for such extreme conditions.

These range from solid solar panels, foldable/rollout solar panels, battery banks, hand crank generators and more. Which system you use depends on your wallet and equipment. Also, obviously for air travel a lightweight system is preferable, dropping battery banks from your list of options.

Unless you live in steamy Singapore or Papua New Guinea, most sensible divers head off on their vacation to destinations warmer than their home town. For the rest of us, a dive trip to anywhere



Specifically designed to force you to buy proprietary brands, modern power adaptors, such as this Nikon power adaptor, have impossible to find plugs. You may be able to find a no-name brand that has the same fitting or you may be fortunate enough to have a standard fitting such as a 3.5mm jack.

with water below 10 degrees Celsius can sap the power from your batteries much faster than normal or warm to hot locations. A standard lithium rechargeable can die after as little as 5 exposures, depending on what other work the camera has to perform, such as auto focus, LCD preview and file transfer (some cameras have two memory cards). A camera sitting around without utilising the auto-off or auto-standby mode will drain the battery under extreme cold conditions. Even when turned off, a battery left in near freezing conditions will report to work with a reduced voltage which your camera will interpret as 'flat', even though when warmed up the battery again registers as fully charged. I can tell you from personal experience, it is annoying to have a narwhal swim up to you only to find that your freshly charged battery now refuses to do anything except pout and whine. And there's little consolation in finding it to be fully charged once it is removed and warmed up a couple of degrees.

Under these extreme circumstances the best battery type to use is an alkaline battery which will work down to -20. (there are around 20 different battery types using various metal oxides and chemicals to make a vast array of batteries. See the sidebar for more information.) This can vary between brands and will also be affected by the age and quality of the battery. When buying alkalines, check the packaging for suggested operating temperatures. While such extreme cold would only be experienced by divers operating around ice, such as in Antarctica, the Arctic and similar icy destinations, the extra 'fudge factor' of alkalines are a great insurance when operating in winter temperatures in temperate zones.

Another alternative for topside use is to have the battery in your pocket with wires running to the camera. Some digital SLR

cameras have such an added extra or you can buy third party products which will have dummy batteries in the camera but the main power supply nice and warm under your coat. Not a solution for underwater use of course (unless you have an exceptionally roomy housing) but a viable alternative for those nesting penguin shots taken in Antarctica. For most digital cameras (or film cameras for that matter), you probably can find an alkaline alternative to the battery that came with your camera. Please note that recently airlines have brought in restrictions on how many of these powerful batteries can be carried in your carry on luggage.

For those of you with housed SLR housings, a way to bulk up your battery is to fit a large stack of AA or AAA batteries, arranged to provide the same voltage but with a greater capacity. For example, 6 AA batteries rigged together end to end will provide 9 volts of power but will last far longer than a single 9 volt battery. The limiting factor is how much room you have in your housing. Usually the best spaces to use as battery storage are under the camera mounting platform or on the front left of the camera, your housing design will dictate where you can have your extra batteries. Some housings are such a tight fit that you can't squeeze anything in there, others may need you to be inventive in splitting the battery pack up into two or more pieces. Electronic shops usually sell plastic battery holders of various configurations, or you can save even more space by taping the batteries together in a similar configuration. The hard part is connecting the batteries to the camera. Both Nikon and Canon have external power supply accessories which use either a power jack or battery compartment insert. Check your camera manual for accessories, or go to their manufacturers web site to find out what type of power adaptors they supply. OK, their web sites are usually less than helpful so if all else fails go to a major camera retailer, like Adorama or B&H (see side bar for links) and do a search for your camera's power



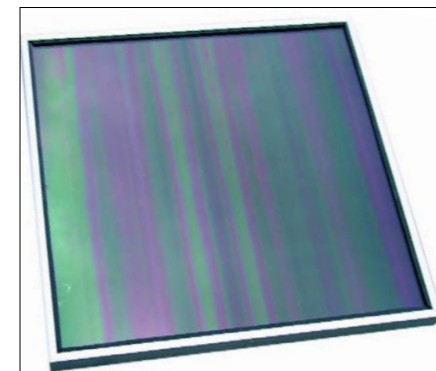
The old school Nikonos was a wonderful workhorse with the added advantage of a 'no battery' shutter setting of 1/90 second. This could also be used as a maximum sync speed when using Nikonos compatible strobes.

adaptor. If the adaptor just uses a 3.5mm jack that's easy enough to buy at your local electronic parts store. If it uses a proprietary plug then you may have to bite the bullet and buy one, then cut the cable (gasp!) to fit it to your new custom battery array.

While you're at it, you may find your housing has a tiny window or two to show you parts of your camera which are not backlit or illuminated, such as a mode dial or other non-illuminated control knob. That is all OK if you're in full sunlight – but in the gloom of a ledge or during a night dive you're fiddling blind. So while you're customising your housing you can also rig up a small AAA or even button battery with a tiny LED light. Put the battery anywhere you can and run the wires around the housing to the offending knob. Tape, glue or velcro your globe in the right spot

on the housing and you now have an illuminated dial. You can buy various types of miniature switches to turn the light on or off. This can be activated by one of the many levers that you don't use (who uses the exposure lock, anyone?) found scattered around on your housing. Or, as I did, put it behind the shutter release lever. Push the lever back to activate the switch. Or you can have a tiny spade connector in one of the wires so you can activate or deactivate the light prior to a dive to leave it on for the duration. Such a tiny light source will last a long time with modern batteries.

If you're a 'fiddler' you can come up with all sorts of creative solutions to your battery and internal illumination problems. However, no matter what you do, always check that all wiring is secured to the sides of the housing and that all battery arrays and LED lights are solidly fixed and clear of sealing surfaces. You don't want to be half way through your dive and find a battery pack rattling



Solar panels are becoming much cheaper and more advanced in design. Some are foldable or rollable to suit outdoor use where packing to a small size is important. With care they will last many years. Solid units, such as this one, are usually cheaper but bulkier.



Small, compact and versatile, the Solio is suitable for small charging jobs. A built in battery can be charged and used as a power vault by either a wall socket or by solar power. It folds up into a compact and light package.

around in your dome port and it is no use having a 'fully pimped' housing that floods on your first dive because it has wiring across an O-ring, or a battery is holding open the back of your housing. An empty housing water test should always be your first step after customising your housing or any major O-ring maintenance.

When it comes to batteries, the bottom line is that more is better. For most diving situations, a fully charged or new non-rechargeable battery at the start of your dive is the best and most sensible option. If your rechargeable battery is going flat much quicker than it should, ditch it and buy a new one. Fiddling with an old or faulty battery is not going to work. When replacing an expensive rechargeable battery, try some of the 'no name' brands – they're often made by the same manufacturer as your camera brand name battery but are half the price. Check the packaging to make sure the power output is identical to your brand name original. Under extreme cold conditions a fresh alkaline battery is the way to go. In all

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<http://www.solio.com>
<http://www.multipoweredproducts.com.au>
<http://www.multipoweredproducts.com.au/prod231.htm>
[http://en.wikipedia.org/wiki/Battery_\(electricity\)](http://en.wikipedia.org/wiki/Battery_(electricity))
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