AV-MC-REDONE 4K Pro Marine Case

REDONE on mountplate, with drive and battery.

Designed for the most discriminating underwater cinematographer, the AV-MC-REDONE4K is a rugged, reliable, high quality Marine Case for the REDONE™ Digital Cinema Camera. Utilizing a 12 megapixel CMOS sensor and groundbreaking raw compression, the REDONE provides 20 times the resolution of standard television and 4 to 6 times that of even high definition television.

Similar to Digital SLR technology, the REDONE™ is challenging traditional film-based feature film and highend nature/documentary production, with a price less than $20,000 compared to $50K to $120K for the comparable Panasonic and Sony video cameras. A further advantage is the capability to use Canon and Nikon still lenses with exceptional quality for $700-$2000 compared to $25,000 for comparable quality lenses for HD cameras. Yet for underwater work, AquaVideo has created a housing that displaces just over 50 pounds, as opposed to the 80-120 pound size for broadcast HD cameras or film motion picture cameras. In fact, the housing is not much larger or more expensive than those for midrange prosumer camcorders like the Sony Z1, Panasonic HVX200, etc..

This is the first system that provides true 35mm motion picture film quality in an affordable underwater system. Suitable for wet weather, water sports, and underwater video applications to depths of 70 meters/225 feet, (Greater Depths optional.) The AV-MC-REDONE 4K housing combined with the REDONE's unique shape and RAW paradigm make it extremely compact and relatively easy to set up and use. Designed to accommodate large wide angle PL mount cinema lenses, or popular SLR lenses it provides an extreme wide angle of view – for dramatically clearer, more colorful underwater pictures. The dome port optical system corrects for distortions and aberrations that would otherwise occur. Optional Macro ports are also available. RAW recording means very few controls are necessary. Standard controls are Power; start/stop; White balance/user buttons; & simple focus, iris, and zoom controls. Precision adjustable gear controls for manual focus/iris/zoom are available ($1895 each) but many users will find that electronic control of Canon EF/EF-S SLR lenses using the Birger EOS mount ($1285 www.birger.com), combined with our electronic controller ($1799) provides maximum flexibility as well as top quality modern optics - at reasonable prices. You have precision electronic contol of focus and iris from the remote box that can mount anywhere on the housing for ease of use by the operator; slightly away from the housing to be operated by another diver; or even remotely from the surface with an extension cable. It allows rapid switching of different lenses, from short wides to midsize or extreme telephoto/macro lenses without the need to readjust gears. Our controller also allows switching on of Image stabilization on IS capable lenses - a great advantage for macro.

X-ring in groove showing 8 point sealing.

The housing is constructed of CNC machined 6061 and Mic6 aluminum. A slide in mount plate holds the REDONE™ camera, battery pack, hard drive and LCD monitor. One of the most important features of the AV-MC-REDONE is the use of patented X-ring seal technology. The X-ring provides double sealing for extremely high reliability. The clear back plate allows the user to clearly see the seals to easily verify that the seal has been made - before entering the water. It also allows easy viewing of the LCD monitor. The camera data display can be seen as well. Optional external cases for the RED LCD or EVF which allows mounting anywhere on the housing.

Compact, 12 megapixel 4K underwater digital cinema system

- X-ring double main seals for high reliability. • Clear 1" acrylic backplate for full visibility of main seals, LCD, controls, etc.
- Interchangeable ports: High resolution dome port optics. 6" and 8" acrylic domes, 8" glass dome with AntiReflective coatings, macro ports, etc.
- Heavy wall 6061 aluminum or PVC main body. Pressure resistant and hydrodynamic cylindrical design. Rugged corrosion resistant material.
- Stainless steel closure clamps provide quick and easy camera installation and removal, with safety locking feature, to prevent accidental opening.
- U/W controller for **Birger Canon EF lens mount,** mounts anywhere for easy access. $1799. iris; focus; trigger; image stabil.,lens init. **Programmable for Optional** custom functions. **Easily transferred to future housings/camera.**
- **Optional SuperNova 250w or 350 w lights available.**
- **Optional External LCD Case with setup and user set controls for RED LCD $1499. RED ProLCD $2299.00**
- **Optional 4.5" External EVF housing with add'l camera setup controls and RED EVF cable. $2299.**

AquaVideo™ AV-MC-REDONE

• For:	REDONE™ Digital Cinema camera
• Weight:	32 lbs.
• Length:	Approx. 22 inches depending on preferred lens.
• Nominal Diameter:	9" inches - machined flats reduce
• Displacement:	54 pounds (This is the total weight of the system with camera, battery, lens, housing and ballast weight for underwater use.)
• Depth Capability:	70 Meters/220 feet. Greater depths are available/optional
• Standard Controls:	Power; Trigger; White Balance/User; Man focus and iris. Additional normal controls for rear user buttons, LCD controls, etc. $125 each. Custom gearing for cine lenses $3500-$5000.

Price: $ 8299.00 Aluminum Body $6299 PVC Body. A port (below) is required.

Simple flat acrylic front plate/port $299
Acrylic frontplate with 6" Acrylic Dome $599; Aluminum frontplate with 8" Acrylic dome $1100
Aluminum frontplate with 8" AR coated Glass dome $2399
Aluminum Macro Port front with flat Acrylic $800; with flat Glass (100mm AR coated) $975.
.5" Port Extender $250; 1" Port Extender $350; 2" housing/port extender $600.

AquaVideo Birger Mount control system: Focus/Iris/IS/Init, etc. $1799

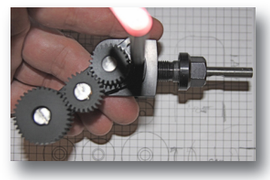
SuperNova 250 or 350: Professional quality underwater lighting system
includes SuperNova lamphead, Battery, Charger & mount arm. Battery cannister can be mounted to diver or bottom of housing, with u/w mateable cable to lamphead.
SuperNova Lamphead 2.3" Dia. 4.8"L 3400K (5800 with supplied 80B filter)
SN250 50 to 250 watt 24Volt **$1699**. SN350 350 watt - 36Volt **$1999**

Some Notable AquaVideo Owners:

- NASA (Space Shuttle Recovery Operations)
- U.S. Navy Seals
- U.S. Coast Guard
- Naval Air Development Center
- Naval Surface Warfare Center
- Woods Hole Oceanographic (VX1000)
- British Broadcasting Corp. (VX1000)
- WPBT2 PBS - Miami (Panas. EZ1)
- U.S. Army/Aberdeen Proving Grounds
- U.S. Air Force - Edwards AFB
- National Oceanic & Atmospheric Ass.
- National Marine Sanctuaries Program
- U.S. Olympic Committee (U\W remote control cameras for the Olympic Training Center Pool)
- General Electric
- OEM Manufacturer for MC10, MC11, MC12 Panasonic® Marine Case
- OEM Manufacturer for UW-MC1 3 Chip) Panasonic Marine Case
- Peter Hughes Diving
- Miami Seaquarium
- NBC6-TV Miami (Hi8 & Betacam)
- Hubbard Broadcasting
- SeaWorld of Florida
- Lockheed - Missiles & Space Division
- Universities: (Partial Listing)
- Univ. of Alaska
- Univ. of NC- Wilmington
- Univ. of Calif.-Berkeley
- Univ. of Calgary
- Univ. of New Brunswick
- Univ. of Miss. • Univ. Puerto Rico
- Univ. of Texas • Univ. of Hawaii
- Univ. of Florida • Indiana University
- Canada Dept. of Environment
- Dept. of Agriculture & Fisheries-Scotland
- California Dept of Fish and Game
- Metro Dade Fire Department
- Hialeah Fire Department

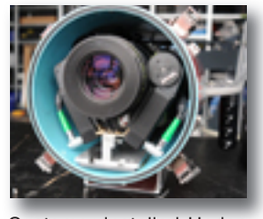
REDONE Lenses, Cine Gears, Motors, and the Birger/Canon EOS smart mount:

We can make the housing work with virtually any lens but things can get complicated. A few have been set up with regular cine-style gearing (about $1895 per gear) and one with Heden lens motors, but most of the 25 or so housings we have delivered were set up with fairly simple friction controls for use with either extreme wide angle PL lenses like the Arri 8r, 12mm or 14mm, or the RED 18-50; or an SLR lens like the Nikon 14mm because most were ultimately intending to use the Birger Engineering electronic mount for using Canon EOS EF and EF-S lenses on the RED camera - which greatly simplifies things. I have been using a version of the regular Birger EOS mount that they sell to scientific and industrial users since January, 2008 and I and an early customer have had a prototype RED version since July 2008. After a number of delays, the production versions have begun shipping and - so it is finally a viable solution - particularly with our newly released AquaVideo Underwater Birger mount controller..



Adjustable Sealed cine gear

The idea of the Birger mount is that Canon EF lenses don't have a manual iris ring so you have to have something that mimics the camera to control the iris and once you have that you can also control focus, get the metadata from the lens, etc. The better Canon still lenses are very high quality - optically very similar to the extremely expensive cine lenses. The Canon EF-S 10-22mm lens or the Tokina 11-16mm f2.8 are a perfect match for the RED and underwater. Due to manufacturing volume the 10-22 is about $700 and the tokina about $500 - rather than $20K or more for a PL mount superwide. So besides providing relatively low cost, high quality optics the Birger mount allows easy access in the housing to focus and adjust iris without the need for gears and knobs (that would have to be positioned way forward on the housing and also set up for each individual lens). And the BIG deal is it works with any of the lenses - you could go from a short wide angle to a very long 180 macro without having to worry about shifting gears around. This is kind of a big problem with PL cine lenses in that the ones we want to use normally, i.e. the 8, 10, 12, or 14mm, are much different in length and gear position than the "normal" 20 to 100mm lenses which are designed to be the same length and gear positions for easy changing.



Customer installed Heden Lens Motor system on early prototype housing.

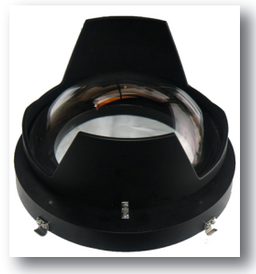
Further for your topside RED use the Birger mount fixes one of the main issues with using still lenses for cine-style shooting. Cine lenses have very long focus "throw" i.e. the amount of turn to go from close focus to infinity will be 300 degrees or more where a still lens can be as little as 90 degrees so it is hard to be smooth and precise. With the Birger the electronic focus is "mapped" to a much larger and smoother turn of the encoder knob and in addition it basically is a follow focus unit as well. For topside use the Birger mount can be controlled via the Impero follow focus knob for true cine style precision follow focus. Although we will have an underwater case for the Impero for certain focusing applications, you normally will still want the AquaVideo controller to simplify iris control, lens initialization, Image stabilization, etc and for most users underwater focusing via the AquaVideo controller will work just as well. For your topside shooting you can get Canon lenses that are as good or better optically as the RED zooms for about $2-3K. I suggest the EF-S 17-55mm f/2.8 IS USM at $989 (or the 24-70 2.8L. I like the 17-55 because it has image stabilization which also works on the Birger mount) for your midrange and for tele stuff the EF 70-200mm f/2.8L IS USM $1699 which also has image stabilization.

It doesn't mean that we can't use PL mount lenses - the purchaser of the first REDONE housing invested $30K in the Arri 8R for some special projects and we have set that housing up with geared control for them. Several other housings have been set up for the 8R, the Arri 10mm T2.1 andthe old 12mm Arri Zeiss T2.1 with simple friction controls for iris and focus since you basically just preset the focus to one distance for a lens that wide.

We expect most people going forward to use Birger Canon EOS mount, but it is pretty easy to add some simple friction controls that allow use of the RED 18-50; the old Arri 12mm t2.1 which is available almost everywhere, or something like the Arri 8R which although very expensive (about 30K) might be the ultimate underwater lens. So we typically provide two of the simple friction controls and seals and three positions at the top of the housing which cover the vast majority of lenses as well as providing the ability to adjust the zoom on the RED 18-50 or a Canon 10-22mm or Tokina 11-16mm SLR lens.

Originally we were going to have special housing knobs for controlling the birger mount iris and focus, but since Birger have switched from their own knob to the Viewfactor impero, that has changed a bit. We could use the Impero knob or knobs but since it is fairly expensive and if using a single knob it requires pressing a button to switch from iris to focus, we have decided to create our own circuit board setup to control focus and iris as well as some dedicated buttons for certain functions to control the mount with commands specific to making things simpler underwater. This is an external waterproof box with a short cable into the housing that houses the circuit board and 8 to 11 switches to send various commands to the birger mount. This works similar to most electronic housings like the Amphibico, Light and Motion, etc. where you have switches for focus near/focus far; iris up/down, lens initialization, image stabilization on, record start/stop, etc.

Port system: The first twenty-five AquaVideo RED housings used the older thread style Aquatica interchangeable port system, as it was a much larger hole than any of the bayonet types and allows use of the larger cine lenses like the Arri 8r or 12mm. (The Arri 10mm t2.1 is still too large and requires the glass dome frontplate mentioned below.) However, a recently published “report” on RED housings stated that since these ports were no longer made by Aquatica that they thought there would be a problem getting quick replacements in the future



8” Glass Dome Frontplate Show how 8” dome is almost as large as entire front of housing. Dome slightly offset vertically to match lens height.

To us, this showed a lack of awareness of how small the market for highend professional underwater housings is - that is for cameras like the Varicams, HDCams, Arri 35mm film, etc. (I’m not talking about prosumer cameras - the Sony Z1 and the like). The number of these highend housings is very small and it is highly unlikely that any other manufacturer, be it Hydroflex, Pace, Amphibico, or GATES has a large number of ports for those housings on hand. They may make certain PARTs for the ports in quantities of 10 or 25 since the setup time is one of the largest costs - but I doubt if it is much more and they probably aren’t all assembled with the actual domes because even in small quantities they may not have enough demand to ever use all of the parts. When we decided to use the Aquatica ports we purchased a supply of over 75 ports from the company that had bought out the remaining Nikon inventory. In addition, the Aquatica domes we used were from the Aquatica SLR housing that was one of the most popular ever made. (in its day Nikon actually took over distribution) so even if we run out and don’t make more ourselves (which we would probably do given how many we have sold). Aquatica still will replace the domes i.e. removing the actual dome (which is still made) from the metal piece and exchanging it for a new one - at a very low cost.

We believe that using these Aquatica ports was a big benefit for our customers because it meant they could get ports for a fifth ($249 for a 6”) to one third ($429 for an 8”) of the price of the Gates acrylic dome ($1100) even though the actual dome is virtually identical (may even be from the same supplier). Not to mention that many of our customers have been able to buy them much cheaper as there are hundreds of them still out in shops or with end users around the world. But it seems that “no good deed goes unpunished” and now that there are some alternatives in the market we have to acknowledge that, right or wrong, the perception is key. Therefore, in our new REDONE MarkII housing and the upcoming EPIC housing we will use our own ports as we have for close to twenty years - as Gates does - and at prices closer to that Gates price. The upside is that previously you got the frontplate with 6” dome with the Aquatica port mount no matter what, even if you actually wanted the glass dome. Now we have lowered the base price and you can choose which port you want initially.

We offer 6” and 8” acrylic domes; a series of flat plates and extended macro ports; as well as the 8” anti-reflective coated glass dome option we have been making since last fall (price is $2399) and which we believe is the finest underwater optic available for use with the REDONE. The standard inset of the camera provides a good working distance for most wide angle lenses and the shorter macro lenses. We also offer a series of spacers and extensions to accommodate virtually any lens - whether PL mount primes and zooms, or SLR lenses.

The glass dome setup has always been a completely separate frontplate because it wasn't much (if any) more expensive to do the entire frontplate rather than making a flange to fit the regular interchangeable frontplate - and it is much more solid and stiffer, which is important with a glass dome. The new acrylic domes and macro ports will be a similar concept because the thing to realize about the AquaVideo REDONE housing is that it is a much smaller frontal profile. It is an 8”ID 9” OD tube so about the same size as just the Gates ports. In other words, we don’t need a bayonet system because the basically the front of the housing IS the bayonet. Since the mount, housing front, and lens height are the same the ports are compatible between Mark1 and Mark2 housings.

Housing setup: The camera mounts on a slide-in mounting plate that holds camera, Red battery plate (supplied by customer or extra through us - $199), Holder for RED drive and LCD monitor if you are using it internally. Using the LCD at the back of the housing only adds about an inch or less so we are including that capability on all of them, even if you go with the external mounted LCD option.

Housings have typical AquaVideo style "wings" (about 2.5" wide and a foot long) which provides mounting for the handles (upward or downward) and adjustable forward and back by six inches or so. The wings also have numerous tapped holes (kind of a "cheeseplate) for mounting lights, meters, LCD and other accessories). The aluminum version wings have a nice cutout for a handgrip for getting the housing in and out of the water. There is an aluminum channel on the bottom which serves as a base and tripod mount, as well as holding a weight which can be slid forward and aft to adjust balance.

Depth rating: is dependent on the front and back plates and will be the same for either PVC or Aluminum housing depending on the front and back plates. The standard aluminum front plate/1" acrylic backplate version is rated to 225ft. The housing itself would be capable of greater depths so if necessary we just need to evaluate the endplate/port options.

As far as **extensive camera control**, since we are shooting raw it isn't all that necessary** (see below) and much better if done through the USB remote port - and that capability will be offered as soon as RED implements it. There is also extensive menu control through the viewfinder control knobs and if necessary would be much easier to implement through a viewfinder housing than through the regular housing and the joystick.
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People investigating RED underwater wonder why we don't have more extensive camera controls. Bottom line is they aren't necessary because they don't do anything to your recorded image. Here is an explanation I posted to a questioin on REDUSER:

"Another question, I'm a little confused by the references in this thread regarding using the "new paradigm" of shooting RAW (e.g. white balance is not an option - assuming grading will be done later?) and therefore no control for WB is needed. WHAT??? I've have reviewed some of the RAW RED footage (which looks like really stepped down footage) compared to the CC footage, and the color looks great. Will this be a common practice for U/W with RED as well?"

You can set white balance but it doesn't affect your recording AT ALL, it only affects the output at the time, it doesn't change the recorded data, so it makes no difference whatsoever if you set the white balance (or gain, or gamma, ISO, etc.) or not.

Here's why. (This is for illustrative purposes only - technically it may be a little different) Single chip sensors use what is called a Bayer filter - microscopic Red, Green, and Blue filters over the pixels on the sensor. For example in a group of four pixels you would have two pixels covered by green filters, one covered by red, and one covered by blue. The pixels themselves are only reacting to the BRIGHTNESS of the signal, it is only by knowing the pattern of the filters that you can interpolate and reconstruct the color of the image. In a normal single chip video camera the data would be immediately processed, so whatever white balance you selected (and whatever gamma, colorimetry, saturation, highlight rolloff, etc. that the designers selected (traditionally this is where the "art" of the engineering came in and why people might like the Ikegami, or Sony, or whatever "look") alters those ratios and it is turned into a color signal and then recorded. Once you convert it to RGB and record it, you are very limited with the amount of change you can make without creating noise or other artifacts.

The "RAW" paradigm says "we don't need to process this data right now - let's just store the RAW BRIGHTNESS data and if we wait, we can make major adjustments later without messing things up". You do all of those calculations after the fact and basically you are only playing with the "look" - you always have the raw data - even when you want to output an NTSC or DV or HDCAM or whatever signal you only basically create a copy. In other words you can always go back to exactly what the sensor “saw” before it has any processing done to it - hence the term “RAW”.

As far as the white balance setting, it only tells the camera to do a quick "debayer" to show a color signal on the LCD/Viewfinder or on the live camera output - but the harddrive or CF card is still just recording the RAW BRIGHTNESS data. It also records the white balance number as METADATA - i.e. just a text code similar to when you look at your digital still photos and if you hit the INFO button it tells you that you shot at F3.5, 1/125 of a second, on Feb 25 at 1:25 PM. But again, that just allows you to set your software to default to that setting when it comes up on your computer screen.

Bottom line is that even though we may give you a white balance control on the housing - IT HAS NO EFFECT WHATSOEVER ON YOUR RECORDING.

The same is true of other things that you might normally set on on your HDCAM, VARICAM, Z1, HVX200, EX1, HV30, etc. where you have picture profiles so you can choose settings for GAIN, colorimetry, "filmlook" GAMMA, white balance, knee setting (highlight rolloff), saturation, black stretch, etc. NONE OF THOSE THINGS AFFECT YOUR RED "RAW" RECORDING - all of that is done in post processing (REDALERT, REDCINE, FINAL CUT, SCRATCH, ETC.) It does mean that your footage kind of looks like crap on the computer until you do at least some processing in your post production software.

Besides the fact that people that are good with color processing can really make your footage look great, it also means your footage can actually get better looking over time as guys like Graeme Nattress and all the other software gurus figure out improved algorithms for debayering, noise processing, etc.. In other words, footage that we shot September, 2007 - even if it was color graded by a top colorist and it looks great now - could actually get better looking, in terms of noise, sharpness, or color separation, later this year if RED or someone else comes up with a better debayering algorithm.

Comparison with Gates “DeepRED” housing.

None of this is meant to denigrate Gates or their DeepRED housing. The DeepRED it exhibits extensive design and machine work and is worth $25K its price in terms of the design and machining time required. However, my basic criticism is that the configuration of the REDONE did not require that style of housing and is almost perfectly suited to our normal cylindrical style. (Although we also have made a number of rectangular style housings for HDCAM, Varicam, Betacams, etc.)

First, DeepRED is the usual Gates "boxish" style housing. That style had a real advantage for cameras like the Sony HVR-Z1, EX1 and Canon XH-A1 where you had a handle, microphone and other things sticking up and out that meant you could make a substantially smaller housing with a rectangular shape than the smallest circle that would fit all of those things in, which was a very bulky 10.75 inch diameter with lots of wasted space. This is not true of the REDONE because it is almost perfectly shaped to fit a cylinder. The top is round, and the sides protrude out so the sides (and the connectors) fit into the curve.

Consequently we can fit the REDONE into a 9" diameter cylinder, and we have about the same volume/displacement (54 lbs.) as the Deep RED with the camera, REDDrive, battery **PLUS the RED LCD** at the back of the housing - which the Deep RED does not allow. All for a price of about $9000 for a fully functional housing with dome port. I doubt if you can get much smaller than what we have achieved with our cylinder. Note: displacement is the actual volume of the unit measured in the weight of the water it “displaces” therefore how much it has to weigh to be neutral in the water. If the total weight of the system is greater than the displacement it will be negative in the water and require bouyancy tubes to make it neutral. If the weight is less than displacement it will require weights to be neutral. It is typically much easier to add weights (which can also allow better for/aft or side to side trimming of the housing, than to add bouyancy. Our aluminum is typically about 3-4 lbs. positive and the PVC is about 13 lbs positive when fully loaded.

The other big problem with the DeepRED approach is that **you greatly increase the frontal area** and therefore a lot more drag pushing it through the water. (BTW these same volume/drag issues apply to the element technica housing that was posted a little while ago on another thread - it appears to be a significantly larger tube, quite possibly the 10.75 inch diameter since that is the standard 10" pipe size - our 9" is a special size tube.)

The only real advantage of placing the drive and battery on top is this: Quote from Gates: "It also allows access to the rear control panel. Our design team has worked out details to access all salient rear buttons and joystick –the latter being a clever and challenging one indeed." We can hit the buttons pretty easily (several of which you can have programmed with your preset functions anyway), but the rotary joystick is certainly tricky and tougher for us because it would require a long shaft actuator from the back, or gears and multiple controls from the top to be able to turn and push. But first, consider that the need to use these functions is fairly limited. Remember that most of the things we did with video cameras - white balance, iso, gain, color shift, gamma, knee, black stretch, etc. DO NOTHING TO THE RECORDING ON THE REDONE because we record the RAW sensor data. All of that stuff only affects what it looks like on the live LCD. And then that stuff gets set in post in REDCINE and again does not affect the recorded data - only the exported data - be it quicktime, PRORES, DPX or whatever. So setting or changing underwater does nothing. But you can do many of them underwater with the direct switches or the presets.

Second most of the things you need the knob for like shutter angle, variespeed ramp, time code or naming adjustments, etc. would be pretty rare to need to be set underwater. We decided not to even attempt to incorporate the joystick knob control because we have good alternatives:

One: we have always anticipated that RED would make a handheld remote/ccu like the ones that have been available on virtually every broadcast camera. (As a bit of history here's a partial list of broadcast cameras we have housed: Sony BVP-3, BVP-30, DCX-M3, DXC-3000, BVW300, BVW400, BVW600, DVW700, F900. Panasonic RECAM, AJD310 D3, DVCPRO AJD200 and 700 AWE600, AWE800, Varicam. Ikegami DNW7, DNS-201, Hitachi HV-C10 HV-C20, etc.) ALL of these have small handheld remotes that handle all of these functions and are much easier to integrate into he housing - either internally or in a small external box. Presumably RED will make one of these or at least provide remote access through the RS232 so we can make our own controller similar to what we have done for the Birger EOS mount - depending on the actual implementation by RED our current circuit could possibly do this.

Second, even without a CCU and if you need more functions than available via presets, there is another method that provides the same capability as the rotary knob on the camera and is much easier to implement and use. Although it requires some additional expenditure it is a fraction of the difference between the price of our housing and the price of the Gates housing. It provides substantial additional capability to the setup besides just the rotary functions control, and it does not require any addition to the housing size so can be retrofitted to our existing housings. This would be through the RED EVF which is relatively easy to house and provides the menu functions through a rotary dial which is much easier to implement than the joystick. I believe Gates may have chosen the DeepRED design path before any of us realized those functions would be on the RED EVF. A RED EVF housing with that type of control is about $2500 but even combined with the $2950 plus the $13 K total cost of the AquaVideo RED housing with similar lens gearing to the gates housing - you would be at about $18,500 as opposed to

$26K+ for the DeepRED. With Birger or friction lens control you could be at closer to $14K for the AquaVideo housing, RED EVF and EVF housing with control. And of course either way you would also then own a RED EVF for all of your RED shooting. (And still have use of the RED LCD at the back of the housing, which can be handy also!

Underwater lights: Any professional system will require lights for most ocean subjects to get the best quality. We have made special versions of our SuperNova 250 and SuperNova 350 lights that we have sold with basically the same lamphead for over 20 years. The special version for our RED housing utilizesPVC battery cannisters for the lightest possible weight to allow using the lights without creating a very negatively bouyant system.

The SuperNova **250 provides approximately 7000 lumens** per lamphead! With burn times of about 25 minutes. And the SuperNova **350 provides approximately 9800 lumens** per lamphead! Again ith burn times of about 25 minutes. It uses an extremely small lamphead approximately 2 3/8" diameter and 5 inches long. The bulbs are tungsten-halogen so provide instant on/off and the most pure light source. Although they are 3400 tungsten color temperature they can be easily filtered to 5800 daylight or more with simple screw on filters or gel material and still provide about half of those lumens for daylight output equivalent to 75 and 100 watt HID/HMI lights.