

A LOOK AT THE AMIRA

ALL PHOTOS BY AHMED HASHIM AND GRAPHICS BY MARK LANGTON

The new AMIRA camera from ARRI has been eagerly awaited and was the subject of a recent GTC workshop at the National Film and Television School. Prior to that, GTC member Mark Langton, ably assisted by Ahmed Hashim, had the opportunity to 'road test' a pre-production model of the AMIRA, shooting a 'making of' video in Covent Garden. ARRI had set up a test shoot involving four Directors UK members, who would each shoot for an hour on a full production model AMIRA and make a short film for a screening that night. In hot pursuit was Mark documenting their every move and close behind him Ahmed capturing the action in stills. It was a busy day but a great opportunity to try the camera out for real... and here are Mark's conclusions.

The missing link?

In May this year, ARRI began shipping ALEXA's little sister AMIRA to an eager but cautious crowd: eager because it might provide the missing link in today's shooting demands, but apprehensive because of factors like cost, high data rates and integration with existing workflows.

Cost is a deciding factor for owner/operators and rental houses alike because no one wants to invest in yet another camera when they don't know how long it will be relevant in today's fast-evolving production landscape. Another consideration is fitting in with existing workflows: if a production has invested heavily in, say SxS solid state media, which can cost over £1,000 for a single 128GB card, they will be reluctant to plough more money into another new format. In addition, owner/operators may have already built up a collection of excellent lenses and therefore be reluctant to spend out more money because a new camera has a different lens mount and sensor size. High data rates are a prickly issue too, with broadcasters reluctant to expend unnecessary budget on storage.

These are some of the obstacles in front of ARRI as they venture into the unfamiliar waters of TV production. They are already undoubted heavyweights in the feature film, advertising and TV drama arenas, but is their expertise and reputation enough to secure them a place at the head of the TV table?

Bringing cinema to the small screen

Some manufacturers have been accused of rushing cameras to market too quickly without ironing out the quirks and shortcomings, but you'll be pleased to know ARRI doesn't do things by halves. I believe that if we were still exclusively using 2/3" sensors for TV acquisition,

ARRI wouldn't have shown much interest, but the landscape changed a few years ago, mostly for the betterment of creativity, when aspects of cinema production began to seep into mainstream TV production. And that's when ARRI sat up and took notice.

To understand where we currently are on the camera map, we need to rewind to 2009 and the launch of the Canon 5D Mark II, which many consider the prime catalyst that sparked interest in affordable, large-sensor video images.

Before that we had spinning ground glass adaptors like the P & S Technik Pro35, which fitted onto a 2/3" broadcast camera, but these only worked with a set of expensive PL (positive lock) mount primes, so you were looking at a hire cost of £450 a day for adaptor and lenses alone. The 5D Mark II on the other hand used very high-quality stills lenses which, although still pricey by consumer standards, were a fraction of the cost of professional broadcast lenses. And therein lies the secret of the 5D's unintentional success as a video camera (even though Canon didn't know it at the time). We were in the middle of an economic recession and all of a sudden there appeared this amazing-looking, cinematic video image from a DSLR that cost around £1,600. Canon showed it could be done and it was enough to fire the imagination of both cameramen and manufacturers alike.

Now let's be clear: the Canon 5D Mark II's video quality was far from acceptable when it comes to broadcast standards due to its low chroma sampling, line skipping, excessive moire and rolling shutter artefacts but, despite that, it created a beautiful, flattering image that just wasn't possible with a regular broadcast camera: the combination of a large, flat Bayer sensor and pristine glass created wonderful contrast, tonal range and depth of field, never before seen on a camera this cheap. Here was a way to achieve that sought-after 'film look' but with relatively inexpensive stills lenses and off-the-shelf Compact Flash cards. To cash-strapped creatives riding the economic downturn this proved too tempting to ignore, and so the revolution started.

By 2010, everyone seemed to be shooting with a 5D, mainly for corporate promos, music videos and short dramas (myself included). Then, in 2011, Sony unveiled their PMW-F3 and NEX-FS100 Super 35mm sensor cameras. In 2012, Nikon responded with their D800 full-frame DSLR but this was overshadowed in the same year by Canon's new secret weapon, the C300.

The C300, with its Super 35mm sensor, was an important milestone because, unlike most of the other offerings, it finally achieved the magic combination of 50Mb/s data rate and 4:2:2 chroma sampling – the minimum spec for HD broadcast. Understandably, it was an instant success and was soon approved by the BBC and other broadcasters for mainstream programme acquisition.

Most of these cameras shared a few common characteristics: they used existing, affordable DSLR lenses and non-proprietary media. They were compact and handheld in design, which meant that if you wanted to use them like a shoulder camera you had to use a clunky, poorly balanced 'rig'. None possessed a good electronic viewfinder (EVF) capable of providing an image sharp enough for critical focus, so that was another extra that needed to be

rented or purchased. And then there were all the other optional extras like battery plate, high resolution monitor, possibly a shotgun mic and audio pre-amp – all with their own cables. In short, it was all a bit of a mess! The resulting images were great but the amount of unnecessary 'faff' involved was counter-productive. Canon's C300 went some way towards solving the 'spaghetti' problem but it was still an awkward, wrist-punishing lump of a camera... and still no proper viewfinder!

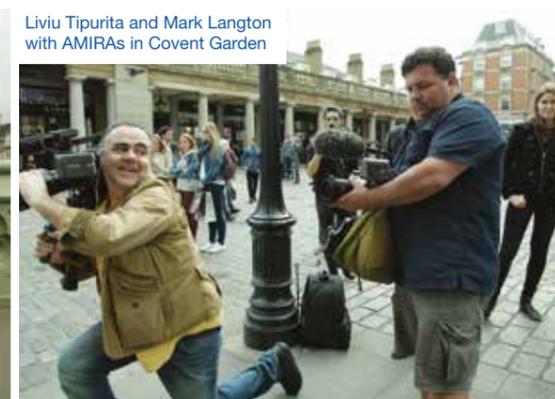
What the camera manufacturers didn't seem to acknowledge at the time was that these cameras were proving popular *despite* their physical design rather than *because* of it: DSLRs were small and fiddly and a nightmare to focus accurately, while the FS100 (and FS700) looked like they had been thrown together from a box of spare parts (sorry Sony... but they did). Even as I'm writing this we are still at an unusual juncture in television production whereby it is common practice to shoot interviews and 'pretties' with a C300 but use a shoulder-mounted camera like Sony's PMW-F800 for fast-moving or unpredictable actuality-type scenarios – and that means taking two complete camera kits out on a job, which is a far from efficient way to work.



Cost is a deciding factor for rental houses and owner/operators alike because no one wants to invest in yet another camera when they don't know how long it will be relevant.



Tristan Anderson from Directors UK and on guitar Lewis Floyd Henry



Livi Tipurita and Mark Langton with AMIRAs in Covent Garden



The first ARRI camera designed for single-user operation: here with optional handgrip and Fujinon Alura 30-80mm PL zoom lens



The flip-out LCD comes in handy when shooting from the hip



Milan Krsljanin from ARRI



The AMIRA handles exactly as a camera should and, since it is designed to work with a whole range of different lenses, the ability to slide the dovetailed shoulder pad and top handle is a welcome and well-engineered feature that allows the user to achieve perfect balance.

So, given all this information, the clues are there for camera manufacturers to solve this nonsense once and for all. What is really needed is a camera that is shoulder-mounted and nicely balanced, has proper audio, can record to affordable media, can use 35mm and B4 broadcast lenses, has a proper EVF, uses existing professional batteries, is robust for day-to-day use and doesn't have wires hanging everywhere.

Welcome the AMIRA

Well, that's exactly what the AMIRA is! A cameraman (or woman's) camera. A single-operator, on-the-shoulder, no-nonsense, go-anywhere, weather-resistant, ready-to-use camera, just like the good ol' days! Except it has a larger Super 35mm sensor that perfectly matches all cinematic PL mount lenses but can also be used via an adaptor with Canon EOS stills lenses if your budget has been squeezed. Another adaptor allows the use of B4 broadcast lenses for PSC/ENG-style shooting. It's as if they've actually stopped and asked us what we really want in a camera!

Admittedly the F5 and F55 are similar beasts and are capable of truly stunning video but, by Sony's own admission, they are 'modular' in design, meaning that you start with the basic, square body and then buy the bits you need to build them up: shoulder pad, top handle, viewfinder, tripod plate mount, 15mm bars mount etc., so not truly 'off the shelf'. ARRI is hoping the AMIRA, with its simple, rugged design and ready-to-shoot approach, will appeal to working professionals who just want the camera to work as soon as it's out of the bag and switched on.

Of course, we shouldn't overlook the impressive colour reproduction and latitude AMIRA is capable of, thanks to sharing the same sensor as the mighty ALEXA (although some of the functionality like RAW recording has been removed so as to not usurp its big sister): the important stuff like smooth skin tone gradation and pristine colour separation are all there.

'But it's not 4K...'

We're professional cameramen, not indie film-makers; we don't fall for all that 4K hype. We know that good images

start with good glass and good quality pixels. But to get the full picture I did put this point to ARRI's Milan Krsljanin: "It's not about how many pixels you have, it's about the quality of the pixels. No, we don't have a 4K sensor in the AMIRA; we have the same sensor as the ALEXA, and that is technically 3.4K, but it has amazing latitude, sensitivity and colorimetry. The proof of the pudding is on the screen. Just look at all those features shot with ALEXA and released in IMAX (*Gravity*, *Skyfall*, *Ironman 3*, *Avengers Assembled*)." Fair point. I have yet to meet anyone who thought *Gravity* in the IMAX format was lacking in resolution!

Test day

I was fortunate enough to get my paws on a pre-production AMIRA in June, but this also meant being thrown in at the deep end with no instruction manual and under 10 minutes to familiarise myself with the camera. Then I was off in PSC mode, documenting members of Directors UK while they each in turn created a one-minute film on another, slightly newer, AMIRA around the streets of Covent Garden in London.

This was in fact a perfect test of the camera's usability or, more accurately, to see how 'Betacam-like' the AMIRA was, because if a professional camera can handle like a Betacam it will have instant appeal and a minimal learning curve for seasoned camera-folk who don't have time to learn a whole new system because they're too busy trying to earn a living.

Well, I'll be honest, there is still a learning curve with the AMIRA but it's a small one. It's easier to master than, say, the C300 and probably on a par with the transition from a Digibeta DVW790 to XDCAM PMW-F800, but with a menu that is far, far simpler than a Sony camera (or Panasonic for that matter).

In use, the AMIRA handles exactly as a camera should and, since it is designed to work with a whole range of different lenses, the ability to slide the dovetailed shoulder pad and top handle is a welcome and well-engineered feature that allows the user to achieve perfect balance whatever the size and weight of the lens (and battery).

The OLED viewfinder is excellent. It contains a very sharp, precise colour screen (which can be switched to black and white) and has options like customisable peaking, zebra, false colour, markers, information overlays etc., but – most importantly – it is good enough for critical focus and exposure.

On the side of the viewfinder is a flip-out LCD screen, which actually proved very handy for on-the-hip type shots, but its main purpose is to replicate the menus so that you can make changes without taking the camera off your shoulder. It can also double as a director's monitor for quick reference. The fact that it works while the EVF is on is handy because it gives the operator the option of two screens. One can, for example, be displaying a clean image while the other shows any of the focus-assist modes or other information that might be of use. A waveform scope or histogram would be nice too but this isn't currently offered; neither are colour bars but I'm reliably informed these are on the 'to do' list.

The body and EVF alone weigh 4.1kg, which actually isn't too bad when you compare it to Panasonic's HDX900, weighing in at approximately 5kg. A lot of that weight is due to the all-metal body: all the important parts are encased in a weatherproof shell with generous air vents either end. The buttons and knobs are big and bold and many of these are backlit, which is a tremendously handy feature. A 'lock' button ensures you don't accidentally change any settings.

A 15mm bar mount is integrated into the body for attaching a matte box and follow focus. If your lens doesn't have a hand grip or you don't want to add moose bars to your 15mm rails, the AMIRA has a heavyweight rosette mount for attaching a single-handed grip arm.

The shoulder pad and top handle both have a generous amount of sliding adjustment (the handle can even be removed altogether if required) and the EVF has a very solid articulated mount – even more sturdy than the 2/3" cameras we are used to.

There are two aerials at the rear, the exact function of which has yet to be announced but they are likely to be for bluetooth audio transmission and wifi control, among other things.

Future proof

Another concern is how long a camera will remain relevant in today's fast-changing environment. More than ever before, there is a real danger the camera you buy today will be out of date in 18 months' time because it doesn't support the latest codec or bitrate. Again I put this to Milan: "We have thought about this very carefully and consequently we have built the ALEXA and AMIRA around very open, programmable architecture. Instead of using the cheaper ASIC chips that are commonly found [in other cameras] we use FPGA chips. These are reprogrammed at the base level meaning that new features, major firmware and software upgrades will be possible in the future. We expect our cameras to serve well, last a long time – both physically and technology-wise – and to provide a solid and reliable return on investment."

Sensor

The sensor is a CMOS type and, as such, you would normally expect to see noticeable 'skew', but for some reason I couldn't get the image to bend or distort, even with sharp whip pans. Naturally I quizzed Milan about this too: "ALEXA and AMIRA do not suffer from skew and other rolling shutter artefacts because of the way we read out the data from the sensor. Our readout and processing is designed in such a way that we don't need 'global shutter'. No complaints thus far!"

Lenses for the AMIRA

A major feature of the AMIRA is its compatibility with multiple lens formats. Not surprisingly, true 35mm cine lenses will give the best results, and the good news is that there are some very desirable new 35mm zooms now available. Of particular interest are the PL-mount, ENG-style cine zooms from Canon and Fujinon, all of which incorporate a familiar hand grip with zoom rocker.

A B4 mount is available in two guises: a quick-release adaptor that fits into the PL mount on the camera and a complete lens turret that is fitted semi-permanently to the camera itself to streamline the all-B4 lens workflow. Both are optically identical and work by stretching the 2/3" image to cover the 35mm sensor with its 3168 x 1772 pixels; the image is then resized to a more uniform 1920 x 1080 pixels. The glass in the adaptor is so good there is no visible distortion or aberration, although some light loss (around 1 to 2 stops) occurs. The downside is: don't expect to get much change from £3,000 for either of these adaptor options.

The AMIRA is able to supply power to the lens zoom servo via a standard 12-pin lomo socket but auto-iris functionality is not currently supported.

A Canon EOS lens mount is soon to be announced and this will allow the use of more cost-effective DSLR lenses. The delay is not due to manufacturing the optics but to getting the electronic protocols in the Canon lenses to work effectively, particularly the iris control, since there is no external iris ring on EOS lenses.



Fujinon Cabrio 19-90mm

ARRI B4 to PL optical lens adaptor

Canon 17-120mm cine zoom

f-stops and T-stops

Now that we're dipping our toes in cinema territory, it's a good thing to know the difference between f-stops and T-stops.

F-stops are used on stills lenses and broadcast lenses to denote the aperture setting, i.e. to tell us how much light is passing through the lens and onto the sensor. F-stops are not consistent between lenses. They are derived by dividing the focal length by the 'effective' diameter of the aperture (not necessarily the physical diameter). For example, a 50mm lens with an effective aperture opening of 25mm would give us f2. This means that although a bunch of different lenses may all be rated at f2.8, for example, they will all exhibit different light efficiency characteristics.

Cine lenses use the **T-stop** identification to indicate light 'transmission' and this is consistent across all lenses that use the T-stop rating system. It's a measure of the actual light reaching the sensor.

The fact that the ALEXA has been used on many effects-heavy feature films involving compositing and motion-tracking is testament to that. If the geometry of the shots is not consistent it causes major nightmares for effects artists.

Media

The AMIRA, in line with a few other recently announced cameras and recorders, writes video, audio and metadata to the new Cfast 2.0 memory cards. Unlike SxS and P2, Cfast is an open format and has already been embraced by manufacturers like Sandisk, Lexar and ADATA. As demand increases, prices are likely to drop.

Cfast 2.0 cards have a typical write speed of around 350MB/s and a read speed of 450MB/s (that's MegaBytes, not MegaBits, and to save you getting your calculator out: 450MB/s is equal to 3600Mb/s). At the moment, a 120GB Cfast 2.0 card will set you back around £700 plus VAT but by the time this issue of Zerb goes to press that price should have already dropped significantly.

Looks

In-camera 'looks' are nothing new but they have come a long way from the 'Hi Sat' or 'Filmlike' options we were once offered. AMIRA, like many other new-generation video cameras, now employs a much more complex logarithmic gamma curve, or 'Log' that takes full advantage of the sensor's dynamic range and colorimetry. The result is the ability to grade shots in camera, whether you just want more latitude or completely to change the style and atmosphere of the recorded video – handy if there's no chance of your rushes seeing a colour grade. AMIRA has the ability to import or export complex looks so you can unleash your creativity whatever the budget (for more on 'Looks and LUTS' see opposite page).

Slo-mo

I regularly get asked about shooting slow-motion sequences and, until now, there were very few cost-effective, broadcast-quality options around. It's welcome news then that AMIRA can shoot up to 200fps, full resolution in all the 10-bit ProRes 4:2:2 codecs. It can also shoot up to 200fps in the 12-bit ProRes 4:4:4:4 codec but there are some limitations due to the write speed of the cards currently available. I envisage the performance of these will increase exponentially in line with Moore's law though – the Darwinism of all things binary. And anyway, since when was 10-bit 4:2:2 at 200fps not enough?

Director Tristan Anderson
guitarist Lewis Floyd Henry
on the AMIRA shoot day



Auntie knows best

It is no secret that freelance TV cameramen look to the BBC when deciding which camera format to invest in. This was arguably the driving force behind the take-up of Sony's DigiBeta and DVCAM, Panasonic's DVC Pro EX and more recently Canon's XF format.

XDCAM 422 HD has enjoyed modest popularity with the SxS variant but not so much with the optical disc version, which is surprising as it is the closest replacement we currently have to affordable, archivable tape. This just goes to prove that predicting the next popular format is not an easy task. Whether or not the BBC embraces the AMIRA will, I believe, have a dramatic effect on its overall success in TV production.



Liviu Tipurita from Directors UK

Model options

The AMIRA comes in three flavours: AMIRA (base model), AMIRA Advanced and AMIRA Premium. Unlike the ALEXA, whose models have significant physical differences, there is only one AMIRA. The options are purely software functions that you choose to pay for so, if you don't need those features, you can save some pennies. Prices have yet to be confirmed for the UK as they are so far only published in Euros but they come in at 25,980, 28,980 and 32,980 Euros, respectively (excluding VAT).

All models will record full HD 1920 x 1080 at frame rates from 0.75fps to 100fps progressive and also 1080 50i for compatibility. All can record to a Rec.709 colour space. Standard codecs are ProRes 422 LT (approx 100Mb/s) and ProRes 422 (approx 150Mb/s).

The second-level model (AMIRA Advanced) adds frame rates of up to 200fps, Rec.709 and Log-C colour space, the ability to import 'looks' for in-camera grading, as well as extended paint parameter menus, Bluetooth audio monitoring and auto-tracking white balance (which, in my opinion, is a terrible feature – I don't know of any professional who uses ATW but there you go). The daddy of the bunch, AMIRA Premium, adds a ProRes 12-bit 4:4:4:4 codec and 2K option plus the import of custom-made 3D LUTs.

ARRI offers a flexible licence set-up whereby you can buy the base model and just 'rent' features like 200fps and 2K on a weekly basis as and when your clients want them, or you can permanently upgrade your model.

In my opinion, the middle option (AMIRA Advanced) seems the best value as it already has the most sought-after features

LOOKS and LUTS

LUTs, or Look Up Tables, are something you will be seeing more and more in the near future so here are the basics.

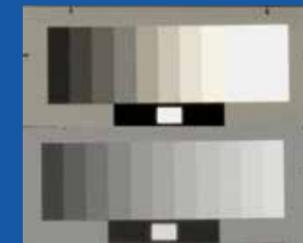
Firstly we need to know about Rec.709 – the standard 'look' of broadcast TV, with its deep contrast and rich colours. Rec.709 (an abbreviation of the not-so-catchy ITU-R Recommendation BT.709) is more than just a look; it's a complete set of guidelines encompassing the frame size, frame rate, aspect ratio, colour space etc. of HD television as we currently know it, in order for us to have consistency throughout the workflow, from camera to edit suite to playout and, more importantly, to the consumer's TV at home. Rec.709 has been around since 1990 – a time when video cameras were not as capable as they are now. It gives an exposure range of around 6 stops, which is obviously a bit limiting – especially when we've been talking about a camera with 14 stops of range.

In recent years, we've seen names like Gamma Curve, HyperGamma, CineGamma and Logarithmic Gamma Curve (or Log as it's commonly known) appear in the camera menu. These all attempt to achieve a similar goal of expanding the dynamic range of the image to give more visible detail in the shadows and more tolerance in the highlights. Some do a better job than others and the more recent Log curves are the preferred choice. Sony have S-log, Canon use C-log, while ARRI offers Log-C. They all employ very clever mathematics to leverage as much detail as possible across the entire dynamic range of the sensor. The resulting image, while containing impressive latitude, will look flat and washed out. In order to visualise how the final, graded image will look when put into the Rec.709 environment with its limited 6 stops of latitude, a 'viewing LUT' setting can be applied



Top: A Rec.709 image, exposed to average the scene and retain some shadow detail, but at the expense of clipped highlights.

Bottom: The same image, same exposure but with a Log gamma curve applied.

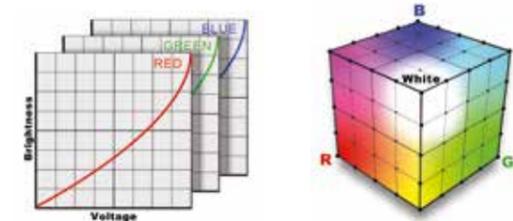


If we take a closer look at the greyscale chart we can see just how much highlight information has been lost from the Rec.709 image (top). That data is gone and cannot be fixed in post. The Log gamma image (bottom), although washed-out, has captured much more information in both highlights and shadows. This is much more useful to the editor or colourist.

to the monitor or even a camera's LCD screen or EVF for the benefit of the director and DoP.

LUTs can also be used to represent how scenes will look on a cinema projector or how a particular grade will affect them. This means you can carry on shooting in Log mode, with all that extra detail but the director won't keep saying "Why is it all washed out? Can you make it more moody?" Of course, video destined for TV will eventually have to be conformed to Rec.709 so some of that dynamic range will get lost, but at least the editor or colourist will have the opportunity to choose which detail is retained.

There are two types of LUT:



- 1D LUT – simplistic, with basic adjustment of the red, green and blue channels.
- 3D LUT – based on a three-dimensional colour cube, providing far greater options for giving the image a complete, graded look.

Usually a LUT will exist as a piece of meta data next to the video rushes to instruct the edit suite or grading suite on how the video was recorded and how it should be displayed in order to look right. LUTs can also be imported into a camera to bake a specific colour-grade effect to the video as it's being recorded. If the file is specific only to that camera, it then becomes known as a 'Look' rather than a LUT.

You don't need to have the camera with you to create your own LUTs either. ARRI's free, downloadable 'Amira Color Tool' allows you to use a PC or Mac to create precise 3D LUTs (and 'looks') which you can then import via the AMIRA's USB2 port or even email to colleagues.

A good example of a LUT turned into a 'look' in current use is Sony's excellent S-log2 when used in conjunction with the XDCAM or XAVC codec in their F5 and F55 cameras – not quite as wide and flat as a full-on cinema log curve but more colour is retained and therefore the rushes often require little or no grading. Let's hope the AMIRA will offer us something just as good, if not better than this!

Tech specs at a glance

Sensor: Super 35mm ARRI ALEV III, 3.4k Bayer mosaic array CMOS
 Base sensitivity: 800 ISO
 Sensitivity range: 160 to 3200 ISO
 Dynamic range: >14 stops
 Electronic shutter
 Integral IR and UV optical filters
 Three built-in optical ND filters: 0.6, 1.2 and 2.1 (that's ¼ or 2 stops, 1/16 or 4 stops and 1/128 or 7 stops respectively)

Connectors

2 x HDSi outputs: both 1.5G and 3G, uncompressed with embedded audio and metadata
 1 x genlock in
 1 x timecode in/out
 Ethernet
 USB 2.0
 WiFi capable (for future features)
 12v out via 4-pin lemo, Hirose, D-tab and 24v out R/S

Audio

1 x 5 pin XLR audio input (mic, line, 48v)
 2 x 3 pin XLR audio inputs (mic, line, AES 3)
 1 x 3.5mm headphone out
 Bluetooth audio out (optional)

Recording codecs

10 bit codecs: ProRes 422 LT, ProRes 422, ProRes 422 HQ
 12 bit codec: ProRes 4444
 Frame size: HD 1920 x 1080 as standard, 2K 2048 x 1152 (optional)
 Progressive scan or interlaced
 Colour space: Rec.709, ARRI Log-C (optional)
 (DNxHD is in the pipeline as a possible upgrade)
 Weight: 4.1kg (body and viewfinder)
 Size: L 31cm, W 14cm, H 15cm
 Power: 12v to 36v input. Draw about 50W in record mode.
 Battery performance is on a par with 2/3 inch broadcast cameras

installed. Extras like 2K and 12-bit 4:4:4 are almost ALEXA territory and I can't see much demand for them in day-to-day TV production, but you can always upgrade if things change.

A few of you wily types may be wondering why there's no mention of AMIRA supporting Apple's new über codec, ProRes XQ, a 12-bit 4:4:4 heavyweight with a data rate around 500Mb/s, even though big sister ALEXA already has it in the XT and Classic models. Again, it's probably a bit overkill for broadcast at this time but I suspect it will be made available if there is enough demand for it.

With all this talk of super-high data rates, there is one small but stubborn obstacle to deal with at present. Since solid state acquisition has now been embraced by broadcasters, including the Beeb, there now exists the rather inverted problem of storage cost – specifically, post-production houses charging per gigabyte (GB) for storing and hosting digital rushes. In reaction to this, many production departments are now requesting rushes with a maximum data rate of 50Mb/s to keep costs down. I know it doesn't make much sense, and in time the situation will equalise, but for now this is a potential thorn in AMIRA's side.

ARRI has been aware of this for some time. It would mean adding a heavily compressed codec to get the data rate down and with that comes compromises in picture quality. The jury is still out on this one but licensing another codec is not beyond the realms of possibility in the near future.

Summary

The AMIRA is an interesting camera and it's obvious a lot of thought has gone into its design. It's certainly not an ALEXA repackaged for the TV market. Yes, it shares the same sensor and therefore has the same colorimetry and 14 stops of dynamic range, but that's where the similarity ends and, let's be honest, it certainly hasn't inherited ALEXA'S good looks. But, vanity aside, AMIRA is built from the ground up, which is probably why a few of the features on my pre-production model were not yet active (like wifi control) but I'm confident that, as new features are released via a simple software update, the camera's overall usability and potential will continue to grow.

It is squarely aimed at single-user operation and has been built to live to a ripe old age. This is a true 'pick-up-and-shoot' camera, which seasoned camera operators will feel comfortable with and, although its main habitat will be documentary production, I can see low- to mid-budget TV dramas gravitating toward it because of its simplicity and agility.

The new generation of ENG-style 35mm cine zooms complement this type of camera perfectly, but if you're not ready to fork out a minimum of £22,000 + VAT just yet, you can still use your EOS stills or B4 broadcast lenses.

Cfast 2.0 cards are already coming down in price week by week so this could prove to be the media of choice very soon.

The ability to switch in 200fps on the fly with absolutely no compromise on picture quality is great. The picture quality in general is outstanding and there are enough parameters to play with if you want to grade the image in camera (although this is an area where you do need to read the manual to avoid seriously compromising your rushes).

If the current demand for a 50Mb/s data rate codec can be met, ARRI will be able to maximise the appeal of this camera.

I would have preferred AMIRA to be a little lighter but once you see what this camera can do and take into account its future-resistant upgradability the weight issue seems to pale.

Overall, this is a deceptively powerful camera that addresses the demand for a larger 35mm sensor and brings the correct ergonomics back into professional camerawork. ARRI is not trying to steal the very bottom of the production chain occupied by sub-broadcast DSLRs and corporate-level video cameras; it has mid- and high-end television in its sights, and AMIRA could very possibly earn them a seat at the top table.

Fact File

Mark Langton began his television career in 1993, firstly as a video tape editor then as a studio and PSC cameraman. He taught himself lighting and cinematography through reading books, studying films and pestering other cameramen. He is now an established DoP/lighting cameraman with many documentary and prime time programme credits under his belt, including *Tomorrow's World*, *Bang Goes The Theory*, *Horizon* and *Top Gear*. He also makes an occasional short film here and there.

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See more about the ARRI Amira at:
www.arri.com/camera/amira

