

Some questions and answers

Homing

Homing is only relevant to the **XM** models. **VR** models have absolute shaft encoders so do not need to home.

Can we set the home to be somewhere else? If so, should we just ignore the flashing red LED? The red flashing LED indicates the actual position is not where it expects with respect to the position pot when under DMX control. This is for indication only and can be ignored when not using DMX. We are going to review the action of the red LED so it follows an offset home in other modes, but for now ignore the red LED. Home can be freely set anywhere, though under DMX control it defines the middle point.

Even with the home set to pointing straight away from the base, the red LED flashes occasionally. Is this a problem? No, it may be detecting a non-linearity in the position pot or the pot is not aligned to the same spot the home is set to. The LCD menu shows the pot value and the position.

Free-D user bits

We see the user-defined bits have a 0x2 and 0x0 in them right now - do they serve any useful purpose? User byte 1 is indicating the status of auto focus and genlock. Other functions can be added if required.

Bit 7 0

Bit 6 0

Bit 5 0

Bit 4 0

Bit 3 0

Bit 2 0

Bit 1 Auto focus (0=off, 1=on). Valence 2

Bit 0 Genlock status (0=free run, 1=genlock present). Valence 1

Predictive Move Smoothing

Is there any way to disable PMS (Predictive Move Smoothing) if we want direct control of the camera? We have the ramping turned down right now which achieves most of what we want, but I thought I would check. No. PMS is a fundamental control loop. The ramp knob only affects the rate of change of the joystick. There are acceleration/deceleration limiters in the servo to mitigate damage, but they are set hard by default. The Free-D input reacts differently to the joystick and there are some parameters we can change to get it to react how you want.

Mechanical Backlash

There is a note indicating that there is some backlash in the pan and tilt gears. Does this affect the accuracy of the FreeD output stream, or are you just indicating that when you request a particular pan and tilt you may not get it exactly, but the FreeD feedback will reflect where you actually end up? In the **Camball4 XM** the metadata is generated from the motor shaft. Any backlash in the drive train will manifest itself as a visual position difference when arriving from the left or the right. This offset is most noticeable in pan as tilt uses a preloaded worm drive. The backlash amount can be determined by driving the camera to an optical target from the left, note the position, then drive it to the same optical target from the right, note the position value. Subtract one from the other and you will have the total backlash. The metadata will always output raw data to enable you to work with clean data.

The **Camball4 VR** has absolute shaft encoders so there is no backlash compensation required to the metadata.

Auto Focus & MOD

Auto-focus is able to focus closer than we can with manually the focus wheel - is this a zeroing or centering problem with the focus wheel? We currently set the close focus limit to 30cm from the focus wheel on the MFC. We can change this but the downside is that for a greater focus range you lose some focus resolution from the focus wheel. However in Free-D control mode we can set the focus near limit to 1cm because Free-D has a higher resolution than the focus wheel. We'll do this in the next update – it's currently the same as the focus wheel.

Iris – Resolution & Operation

Should we have it set to 18 step iris or 255? It should always be set to 255.

If you anticipate working in very bright conditions you might need an ND filter. We offer 2 types of ND filter.

Type 1 replaces the clear front port with an 0.6 ND port
Type 2 (pictured) is a continuously variable ND filter which fits inside the housing and is controlled from the ND function in the RCP.

Being 2 polarizing filters, there are other advantages of this addition, particularly in bright reflective conditions. Having an ND allows you to fix the Iris nearer to its best aperture F5.6 – F8 and keep the picture quality in bright conditions. At F28 there is a noticeable fall-off in quality.



When we set auto iris, and then dial the iris knob to adjust the iris from there, how do we get back to normal auto iris that does not have any adjustment on it? When you deselect 'Auto Iris' it sets other parameters to zero so you are absolutely in manual with the gain set to 0dB.

It seems like auto iris overrides shutter - is that correct? Yes.

Remote Camera Panel

RCP vs MFC - if both are connected, how do the iris controls interact with each other? Is it wrong to use the MFC if the RCP has already been used? So far it seems like you can do everything with the MFC and might not need an RCP at all. Am I missing some functionality on the camball3 that is only accessible from the RCP, or is its primary function to allow separation of iris, shutter, and painting so that a different operator can handle that? Vision engineers always want to control the camera picture and iris and are best suited to matching the pictures from all the cameras, so they use an RCP. There are some functions only

available on the RCP and not on the MFC. Black Paint, for example. The RCP is considered the 'master' control and the values in the MFC will update when changed from the RCP. The opposite is not the case. If the MFC iris is changed the RCP does not update. The iris control is available to the MFC operator as a fall-back. If the vision engineer is doing something else, which they often are during rehearsals, the MFC operator can at least get an exposure to continue working.

Remote Relay

What is remote-relay-out on menu? It's still called this after many years and is just that. A remote relay that can be added to the system to switch things on and off. Recently we only use this to switch the lens heaters on and off. These are an option, fitted inside the Camball to clear fogging in hot/cold conditions.

Roll Axis

Is there any roll functionality in the Camball3? We can fit a roll axis if you need but it's not standard. Currently it isn't calibrated – just speed and direction. We can look into this if you need it.

Zero Tilt

Is there a calibrated "zero tilt" value available in any of the outputs that would let us know when the camera tilt such that the optical axis is perpendicular to the pan axis? There is no calibrated tilt zero position but we could add this. We would need to calibrate this for each camera due to the non-linearity of the potentiometer sensors and variance in rotational mounting position – it's not a big issue. Do you have an acceptable accuracy?

Axis Intersection

Does the tilt axis intersect the pan axis? Yes. The pan and tilt axes are designed to intersect. The only separation would be inaccuracies in the build and/or machining tolerances. We can calculate a tilt axis position from the centre of the base if you need.