

Tetracam MCA - Frequently Asked Questions

Q: What does MCA stand for?

A: Multiple Camera Array. Our first MCA was introduced in 1993.

Q: What is the MCA designed for?

A: The MCA is a system designed specifically for aerial photography of natural and cultivated plant canopies. The system consists of the camera unit and the post processing software.

Q: Do I need a framegrabber or any special computer hardware to use an MCA.

A: No. The application program supplied with the MCA is a Windows app.

Q: Can the MCA be used for ground truthing or closeup photography.

A: Each camera unit in an MCA consists of a sensor, a camera/processor PCBA , a bandpass filter and an objective lens. The lens centerlines are arrayed on 2" centers. The parallax (or difference in angle and field of view) of each lens limits how close the system can work. Similar to the different scenes viewed through each side of a pair of binoculars.

Q: What is the image size of the MCA?

A: The image is 1.3 mPel (million pixels) at with array dimensions of 1280 x 1024.

Q: What's is the ground resolution of the MCA?

A: Of course it varies with the altitude of the aircraft carrying the camera. For example; using 8.5mm lenses (which are normally supplied on the camera) a 1/2 meter/pixel ground resolution is achieved at 820 meters (2690') AGL.

Q: Can an MCA be used to take "regular" visible light color images?

A: Yes if the correct filters are installed in the system, you would need a red, green and blue channel to produce a natural color image.

Q: What is the spectral sensitivity range of the MCA?

A: The MCA utilizes a silicon CMOS imager behind each lens. The useful spectral sensitivity is from approximately 0.45 micron to 1.05 micron. This encompasses the visible and near-infrared spectrum but does not reach into the thermal infrared (heat signatures etc).

Q: How many channels are available?

A: The MCA is typically built in four channel and six channel versions.

Q: What filters are available?

A: The MCA uses a common 25mm diameter spectrometer filter at each position. This size is available in literally thousands of band width and center frequency combinations. A "typical" filter set might have blue, green, red and near-infrared filters.

Q: Can I change the filters?

A: Yes. The filters are field replaceable.

Q: Can I change lenses?

A: The camera is a C-mount configuration. You can change lenses but they must be changed as a set to maintain normal operation of the system. You will also need to create a new bitplane alignment file for the new lenses.

Q: What's a bitplane alignment file?

A: It's a file used by the application program supplied with the camera, PixelWrench2. It contains information needed to properly scale, rotate and translate each individual channel image when a 24bit Windows bitmap is compiled from the individual channels.

Q: Why use an MCA instead of a Tetracam ADC?

A: The MCA should be used when narrow or closely controlled bands are needed or when more than the three ADC bands are needed.

Q: How quickly can images be captured in sequence?

A: The fastest continuous capture rate is approx. 1 frame/second. In limited burst mode it's about 2 frames/second.

Q: What format are images stored in?

A: There are three (user selectable) formats;
DCM - A losslessly compressed 10 bit format.
RAW 10 - An uncompressed 10 bit format.
RAW 8 - An uncompressed 8 bit format.

Q: How are images stored in the camera?

A: On CompactFlash. Each individual channel has it's own card.

Q: How are images best stored on disk?

A: PixelWrench2 provides a means of extracting the DCM or RAW files from the camera and saving a multi-page TIF. Each TIF page contains a monochrome channel. Images from a four channel MCA would be saved to TIF files of 4 pages each.

Q: Can vegetation indexes such as NDVI be derived from the archived TIF files?

A: Yes. Again PW2 has a tool to make a 24bit Windows bitmap from any 3 pages of the archive TIF. An NDVI (or any of several other indexes) is then processed from the appropriate bitplanes of the 24 bit image.

Q: What computer interface is used?

A: USB 1.1.

Q: What kind of peripherals are needed to operate the camera?

A: The MCA requires an external power source of 5 - 12 VDC @ 1A. It can be used in a stand alone configuration, manually triggered with the trigger switch (supplied). It can also be triggered from a laptop running PixelWrench2 or SensorLink via the USB interface.

Q: What inputs and outputs are available?

A: The MCA I/O panel has;

USB 1.1

Power in (5 -12 VDC @ 1A)

Trigger in

Serial in for NMEA GPS data

Video out - switchable from NTSC to several PAL formats.

Q: How much does an MCA weigh?

A: 1.8 kg (4 channel version)

2.4 kg (6 channel version)

Weights listed do not include any external batteries etc.

Q: Who's using the MCA?

A: MCA's are in use by research organizations, public and private, worldwide.

Q: How can I find out more?

A: Tetracam has authorized resellers worldwide. Contact the reseller in your area for pricing and more information. Links to all our resellers are located on the Agricultural Multispectral page of Tetracam's corporate website. In the USA, contact Tetracam directly.