

# MCC Virtual Monitor Display Processors

## *Ideal Architecture for Rental & Staging Applications*

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### **Abstract**

A business dilemma for many rental and staging companies has always been how many items to stock in the inventory while at the same time maximizing the return on investment of capital goods. In the past, a straight forward business model was followed for monitoring needs; purchase multiple monitors, and rent them out. Each CRT monitor equaled one channel of video that could be monitored. If more channels were required, the end-user customer could either rent more monitors or rent a routing switcher, or sometimes both. With all this heavy duty rental equipment, shipping and handling costs sometimes exceeded the cost of the equipment rental itself.

Now that major CRT manufacturers have announced discontinuation of their professional monitors and multi-image display processing technology & devices have matured, the playing field is now very different. The key question is: As a rental and staging company, how many multi-viewers should you stock to meet your customer's need and at the same time maximize your ROI?

### **Introduction**

Most multi-image display processors available on the market are based around the concept of frames and cards, similar to most professional broadcast devices, such as routers and modular equipment. The "frames and cards" model certainly has its advantages if multiple flavors of cards are to be inserted into the same frame. However, this method makes it very difficult to

determine how much stock rental inventory to carry. Whether the frame you select fits 32 channels or 64 channels, it is still a single frame. For example, you have 64 channels in inventory and there are 2 customers that want to rent 32 channels each – therefore you need to stock two frames to accommodate both customers. If you have multiple customers that want to rent 8 channels each, you will need to have up to 8 frames in inventory to satisfy all your customer requirements. As a worse case scenario, if you have one customer who wants to rent all 64 channels in a single frame, and you have eight frames in inventory, you will have 7 spare frames with no cards to rent out. This is hardly a business model that allows you to maximize your ROI.

### **Maximizing ROI - Manage Channels, Not Frames**

To maximize your ROI, you should no longer limit the number of frames you keep in stock, but rather manage the number of channels you have available to rent. Let's again use 64 channels as an example; it would be ideal to either rent the channels out as 16 quad splits, 4 ea. 16 channel monitor walls, a single display with 64 inputs or any combination in between. A perfect architecture for rental and staging should be to manage the number of channels and not the frames. With this concept, you won't find yourself in a situation where you have to turn down potential business because you don't have enough frames in inventory. There is now an opportunity to make money on large systems as well as small systems.

## Open and distributed architecture

Instead of an all-in-one box approach, the MCC-8000 uses an architectural model that is suited for mission critical and dynamic environments such as broadcast and mission critical surveillance. A variety of smart modules can be mixed and matched to meet the precise requirements of any customer.

Each smart module can handle four simultaneous inputs from composite video all the way to HD-SDI, and the can handle four simultaneous inputs from composite video all the way to HD-SDI, and the output resolution can range from 800x600 to 1920x1080. Each smart module consists of its own CPU, output card, audio input module, GPI, keypad interface, power and fan.

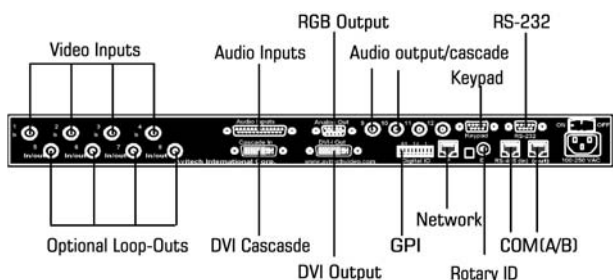


Figure 1: MCC-8000 Back Panel Diagram

## Flexibility, Scalability and reliability

There is no limitation to the number of "heads" (computer terminology for displays) that can exist in a frame. Every MCC module can work as a standalone unit or as part of a larger system. Also, there is an output card in every module and each system can grow from 4 inputs to up to 120 inputs per display and can accommodate up to 50 displays.

The following tables are examples of carrying 64 channels in inventory and how you can accommodate various customer requirements. The system can be a single 64 input channel or up to 16 quad splits.

# of input	Frames	job site	Cards used	Cards unused	displays
64	1	1	8	0	up to 4
56	1	1	7	1	up to 4
48	1	1	6	2	up to 4
40	1	1	5	3	up to 4
32	1	1	4	4	up to 4
24	1	1	3	5	up to 4
16	1	1	2	6	up to 4
8	1	1	1	7	up to 4

Example 1: Frames that can hold 64 inputs and have up to 4 outputs

# of input	Frames	job site	Cards used	Cards unused	displays
64	2	Up to 2	16	0	up to 4
56	2	Up to 2	14	2	up to 4
48	2	Up to 2	12	4	up to 4
40	2	Up to 2	10	6	up to 4
32	1	1	8	8	up to 2
24	1	1	6	10	up to 2
16	1	1	4	12	up to 2
8	1	1	2	14	up to 2

Example 2: Frames that can hold 32 inputs and have up to 2 outputs

# of input	modules Used	Remaining Channels available	# of job site	displays
64	16	0	1	Up to 16
56	14	8	Up to 3	Up to 16
48	12	16	Up to 5	Up to 16
40	10	24	Up to 7	Up to 16
32	8	32	Up to 9	Up to 16
24	6	40	Up to 11	Up to 16
16	4	48	Up to 13	Up to 16
8	2	56	Up to 15	Up to 16

Example 3: Utilizing Avitech's ODiS™ Technology

Unlike fixed installed facilities, it is easy to have off the shelf spares or sometimes even redundant systems, in the rental staging market, funding and space is always a key factor when selecting a vender. The issue of a single point of failure becomes a major concern. Previously when a CRT fails, only one image is lost, but with the single frame architecture, this can become nerve racking. How many images are you willing to lose in a single failure? The Avitech Open and Distributed integrated System (ODiS™) can put your mind to ease. Since each MCC module has its own CPU, input and output boards, every time a module is added into the system, a layer of redundancy is added.

Output resolution can range from 800x600 to 1920x1080. Each smart module consists of its own CPU, output card, audio input module, GPI, keypad interface, power and fan.

## **Summary**

With a keen focus on the return on investment, a rental & staging business has to always manage the correct mix of equipment in inventory, and to be able to serve as many customers as possible. Avitech keeps this in mind with the line of MCC-8004 multi-image display processors. The MCC-8004 line, with their above mentioned strengths is designed with flexibility, scalability and price performance that is ideally suited for and demanded by rental & staging applications.