

Motor Reflex MoCoFiz Blackbox

PRESTON FI+Z to MOTION CONTROL INTERFACE

The Motor Reflex **MoCoFiz Blackbox** allows the industry standard Preston FI+Z lens control system to be used in conjunction with a motion control system, without losing the simplicity that camera assistants expect. This system makes the motion control system transparent to the camera assistant, while still affording full functionality to the motion control operator. Finally, the motion control operator can return the responsibility of keeping the image focused to the camera assistant.

From the camera assistant's viewpoint, the system allows the use of a Preston FI+Z lens control for a motion control shot as if it were a live action shoot. The camera assistant avoids having to learn new equipment. Since no FI+Z functionality is sacrificed, production benefits from these time saving features:

- The preferred focus, zoom and iris controls.
- The same quiet lens motors mounted on the same lens rods.
- Quick lens changes with lens auto-calibration.
- Starting and stopping the camera from the FI+Z controls.
- Hardwire and microwave configurations.

From the motion control operator's perspective, the system allows motion control of lenses, with unprecedented new functionality.

- The FI+Z controls appear as encoders to the motion control system.
- The FI+Z servo motors appear as stepper motors to the motion control system.
- Position limits are automatically set for each lens motor.
- Maximum speed and acceleration can be set for each lens motor.
- The lens move that the camera assistant performs can be repeated exactly by the motion control system.
- Lens changes do not require any re-calibration or re-zeroing of the motion control system.
- The motion control system can display actual distance, focal length and aperture for the focus, zoom and iris channels.
- The motion control system can encode and record the FI+Z controls while the FI+Z controls drive the lens motors directly.
- The camera can be started or stopped from the motion control system.
- The FI+Z controls may be used to control any other motion control axis.
- Other motion control input devices may be used to control the FI+Z lens motors.



Offering the best of both worlds, the Motor Reflex **MoCoFiz Blackbox** gives the motion control operators everything they need for reliable motion control of lenses while also giving the camera assistants everything they expect in a high-end camera package.

System Description

The System can be viewed functionally as two separate systems. The first half takes command information from the FI+Z hand-control unit and translates it into quadrature information for the motion control system. The second half takes Step/Direction information from the motion control system and translates it into command information for the FI+Z MDR motor-driver. The two halves can be directly linked (bypassing the motion control system) with the 'MOCO/BYPASS' push-button.

Another push-button, labeled 'ZERO ALL', synchronizes absolute position information from the FI+Z with incremental position information in the motion control system. This allows the motion control operator to synchronize positions without needing the camera assistant to do anything with the hand-controls or the lens motors. Synchronization is maintained throughout the day, even when the FI+Z is disconnected, powered-down or when lenses are changed.

The 'Sync' push-button synchronizes the positions of the lens channels in the motion control system to the Preston hand-control unit. After a playback pass, this gives lens control back to the camera assistant with a push of a button. The 'Sync' light indicates when the lens motors are tracking the hand-controls.

A fourth push-button, labeled 'CAMERA RUN', parallels the camera-run function of the FI+Z, allowing either the camera assistant or the motion control operator to start or stop the camera. A 'Camera Run' light on the interface box duplicates the 'Camera' LED on the FI+Z hand-control unit.

The System consists of two independent interfaces, electrically isolated from each other: The FI+Z interface and the motion control interface. Power for the FI+Z interface comes from the battery that powers the FI+Z hand-controls. Power for the motion control interface logic comes from the motion



control system's motor connector, encoder connector, or both. The Motor Reflex **MoCoFiz Blackbox** needs no power source of its own, other than what it receives from the FI+Z and the motion control system.

The FI+Z electrical interface consists of two 5-pin Lemo connectors, both emulating the FI+Z 'command' connector (white). One communicates with the FI+Z hand-control unit (either hardwire or through a microwave receiver) and the other communicates with the FI+Z MDR motor-driver unit (also either hardwire or through the FI+Z microwave transmitter).

The motion control electrical interface consists of two pairs of connectors: male and female encoder connectors and male and female motor connectors. The male/female pair allows channels that are not used for the FI+Z to daisy chain through to other motion control peripherals. Jumpers inside the interface box select which channels are used for the FI+Z. The focus, iris and zoom encoder channels are each independently selectable, as are the focus, iris and zoom motor channels.

Specifications

FI+Z interface:

Minimum supply voltage	8 Volts DC
Maximum supply voltage	30 Volts DC
Maximum power consumption (Supplied by the FI+Z)	40 ma

Motion Control Interface:

Supply voltage	4.75 to 5.25 Volts DC
Maximum power consumption (Supplied by the motion control system)	100 milliamps
Encoder channel output current	25 milliamps (sink or source)
Maximum Encoder output rate	15,625 Hertz
Maximum Step input rate	1 Megahertz
Minimum Step pulse width	300 nanoseconds
Direction input to Step input setup time	0 nanoseconds
Direction input to Step input hold time	600 nanoseconds

Electrical Isolation, FI+Z to Motion Control 2500 VAC

Physical Size 7.5" x 8" x 3"

Weight 2 Lbs.



For more information, call Mark at (562) 425-2156