

FI+Z Lens Control System

The FI+Z system controls the complete array of both lens and camera functions. It consists of the Hand Unit HU3, one or more Motor Drivers (for 3D), a set of Digital Motors, a Micro Force zoom control, and a variety of optional controls including wireless Focus/Iris, Zoom, and F/X units.



The **HU3** gives focus pullers not only a robust and reliable unit but one whose controls equip the focus puller to smoothly translate the changing actors' positions on set to a precise movement of the focus knob. It integrates its 30 channel 2.4GHz wireless link into a new splash-resistant housing. Weather sealed tactile switches are used throughout. The integrated microwave antenna is protected from impact. The iris slider uses a unique non contact technology to eliminate the opening required for a conventional sliding seal.

Generation 4 (G4) transceivers address the challenges brought about by the proliferation of wireless devices using the 2.4 GHz wireless band. Their new architecture results in a greatly improved ability to reject interference from other devices operating in the same band as well as out of band interference. The improvement in performance is quite significant, typically 10x or better interference rejection than previous transceivers. In addition, their lower power consumption doubles the operating time of the HU3 on battery power compared to its predecessor.

New software called "Lens Mapping" matches the focus distances of a lens to a set of five pre-printed Focus Marking Rings. These rings differ in their minimum focus distance from 9" (.35m) to 6' (2m). The on-board lens library holds data for 150 lenses. Calibration for a lens change only requires the few seconds to choose the lens from the library. The primary references for the focus puller are the distance marks on the focus rings. The set of focus rings have large, easy to read, distance marks printed on a bright fluorescent background for excellent visibility under all lighting conditions. The rings are automatically illuminated in low light conditions by a pair of white LED's.

A bright OLED display shows camera, lens, and Hand Unit set-up status. Focus settings can be displayed digitally for Cooke i-Lenses, or any lens which has been calibrated to the unit. Multiple focus marks can be displayed in a new focus display mode called "show". This mode gives an easy to interpret bargraph representation the distance set by the focus knob and any focus marks entered by the user.

The HU3 can control a stereo pair of lenses for 3D applications. "Lens Tweak" software matches the left and right lenses in focus, iris, and zoom. Optional 3D rig software can be loaded into the HU3 allowing it to control both beamsplitter and side-by-side 3D rigs.

An integrated hand grip and molded focus knob grip imparts comfortable operation. The zoom bargraph shows both the zoom lens position as well as user set end limits. End limits are set with Set/ Reset tactile switches arranged in three groups. An LED in each group indicates when limits have been set.

The HU3 allows for programming camera speed and shutter angle. Power is provided by widely available FM-50 Li-Ion batteries.

The **Motor Driver** MDR2 accepts commands from the Hand Units connected via the wireless microwave link or cable, and controls up to three digital motors as well as camera functions for both film and video cameras. In addition, it allows wireless control of both the camera frame rate and shutter angle when used in conjunction with the F/X box.



The DM1x and DM2 deliver a unique balance of power, weight, and ruggedness. Both motors have ceramic-coated magnesium housings for minimum weight and metal gears coated with diamond-like-carbon for long life under high torque conditions.

The DM-1X is a high speed and high power motor. It is specifically recommended for driving the focus ring of cinema lenses.

The DM-2 is a smaller and lighter weight motor. It is recommended for driving the zoom and iris of all lenses, and the focus for all but very stiff lenses.



4205 **DM1X**

4205A

4201 **DM2**

4201A

Both motors are available with an integral bracket (the "A" version). This bracket provides for simplified mounting and also allows the motors to be positioned very close to one another. A rosette gear securely locks the swing arm in position. The swing arm clamps to 19mm rods. Step-down bushings accommodate 15mm and 0.635" rods, p/n 4320 and p/n 4321 respectively.

Digital motors can be mounted to matte box support rods with either the integral motor mounts as described above or with separate swing-arm brackets. All of the brackets have one 15mm opening for the motor rod and one 19mm opening for a matte box rod. A step-down bushing is required for 0.625" Panavision rods or 15mm

Swing-arm Brackets are provided in two groups: short brackets for the Panavision vertical rod configuration and long brackets for Arriflex style horizontal rod configurations



4310 4334 4302
Short Brackets for Panavision
Vertical Matte Box Rods

4301 4333
Long Brackets for Horizontal
Matte Box Rods

Motor Cables are available with both straight and right angle LEMO configurations. The right angle configuration is used when minimum cable outline is most important - for example in Steadicam applications.

Camera Cables allow the Motor Driver to control both the start/stop, speed, and shutter angle function for film cameras and the VTR function for digital cameras.

Additional hand units allow camera and lens control functions to be split off from the main hand unit. Using these tools, each crew member can position him/herself wherever it is most advantageous. The **Focus/Iris** unit takes over the iris or focus function (switch selected). The **Radio Micro Force module** together with a Micro Force control splits off the zoom function, and the **F/X unit** takes over control of camera speed, shutter angle, speed ramps, and the iris function.

Typical 3 Motor System



HU3 4060
Digital Micro Force 1210
Bracket: DMF-HU3 4336
Cable DMF-HU3 4445

Digital motor DM1XA
Digital Motors DM2A (2x)
Motor Driver MDR2
Motor Cables (3x)

4205A
4201A
4102
4412

Please note: cables are required to connect the MDR2 to the three digital motors as well as the camera. Please refer to the current price listing of cables, motor brackets, motor gears, and spares.

Hand Controls, Motor Driver, and Motors

4060 Hand Unit HU3
1110 Micro Force V+F3 (control for driving analog motors+ video lenses) or
1210 Micro Force Digital2 (control for driving digital motors+ video lenses)
4015 Radio Micro Force module (used in conjunction with either p/n 4011 or 4012)
4024 Focus/iris Hand Unit
4102 MDR2 Motor Drive and 2.4GHz Microwave Transceiver
4205A DM-1X Digital Motor (with integral bracket)
4201A DM-2 Digital Motor (x2) (with integral bracket)

Motor Brackets clamp to 19mm matte box support rods. Step-down bushings are used with 15mm Arri and 0.625" Panavision rods.

4301 Arri swing-arm motor bracket
4302 Arri/Panavision short motor bracket
4333 Arri/Moviecam motor bracket
4320 Motor Bracket bushing 19/15mm (Arri)
4321 Motor Bracket bushing 19mm/.625" (Panavision)