

FI+Z  
Camera Plate and Power Pod Interface  
v1.0



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Fig 1. Interface Box - Output Side



Fig. 2 Interface Box – Input Side

## Table of Contents

1. General Description
2. Power Requirements
3. Power Outputs
4. Set-Up Procedure
5. Technical Data
  - a. Connector Pin-Outs
  - b. Fuse Location

1. General Description. The Power Pod Camera Plate and Interface Box adds the full camera and lens control functions of the FI+Z System to the Power Pod Classic. In addition, the Camera Plate incorporates three independent DC/DC voltage converters. Two of the converters are dedicated to camera power. They are programmed via the camera power cable to provide 2 x 12V, 24V, or 26.5V at 12A.

An independent voltage converter generates 12V 1A power for powering both Videotap and Witness cameras.

The FI+Z Hand Unit controls the Lens and Camera functions by transmitting data over the power cable for the Power Pod. The Hand Unit can be connected to the Interface Box either through a Command Cable or via the integral transceiver for wireless control.

2. Power Requirements.
  - a. Power Entry is at the Interface Box via a 3 pin XLR connector. To allow for the maximum current and voltage requirements of a Arri 435 camera, as well as for the typical voltage drop through a 50' (15.2m) cable, the power source must provide 28 –30 VDC at a load current of 20A.
3. Power Outputs
  - a. Camera Power is available from either 2 x XLR-4 connectors which provide independent 12V at 12.5A or a 4-pin Lemo receptacle which provides either 24 or 26.6 VDC at 12.5A. The voltage output is programmed via jumper connections within the mating Lemo plug. When a 24V or 26.5V power cable is plugged into the 4-pin Lemo receptacle, power is removed from the XLR-4 connectors. LED's located adjacent to the XLR and 4-pin Lemo connectors indicate which receptacles are powered.
  - b. The pair of 3-pin Lemo receptacles provides Videotap and Witness camera power. Each receptacle provides 12V at 0.5A.



Fig. 3 Camera Plate – Camera Power Side



Fig. 4 Camera Plate – Motor Side

#### 4. Set-Up Procedure

- a. Fix the Power Pod to a stable support system.
- b. Attach the Camera Plate to the Power Pod tilt arm using the pair of 8mm bolts.
- c. Secure the camera and lens to the Camera Plate.
- d. Attach the lens drive motors to the matte box support rods. Make sure that the rods are rigid and will not twist or slip. Use the Arri or Panavision Bridge brackets to prevent the matte box support rods from rotating.
- e. Engage the motor output gears with the corresponding gears on the lens. Apply only light pressure between the motor and lens.
- f. Connect the cables at the Camera Plate end:
  - i. Camera Power.
  - ii. Witness Camera Power
  - iii. Videotap Camera Power
  - iv. All lens motor drives.
  - v. Camera Control Cable
  - vi. BNC video cables
  - vii. Camera Plate Power Input (2-pin Lemo)
- g. Connect the cables between the Power Pod base and the Interface Box:
  - i. Camera Plate Power cable (2-pin Lemo)
  - ii. BNC video cables
  - iii. Pan/Tilt cable.
- h. Cable the Interface Box
  - i. 28 – 30V Power Source cable.
  - ii. Pan/Tilt from the Head
  - iii. Pan/Tilt to the wheels
  - iv. BNC video cables from the Head.
  - v. BNC video cables to the monitors.
  - vi. Command cable to FI+Z Hand Unit (when not using wireless mode).
- i. Set up the Interface Box for Wireless Operation
  - i. Set the Radio/Cable switch to Radio.
  - ii. Set the Radio Channel switch to match the Hand Unit Transmitter setting.
- j. Check the Motor Torque settings (on the MDR-2 versions only). The torque is set via the three switches located on the end face of the plate. See fig. ( 5). For normal operation, use the middle (yellow bar) setting.

- k. When power is applied to the system, the indicator LED's should be lit on the Interface Box as well as adjacent to the Camera Plate Power receptacle. Note that the Interface Box is polarity protected – if reverse polarity is applied, the power LED on the Interface Box will remain off. Press the Reset Switch on the Camera Plate to calibrate the motors. The lens drive motors will find both end stops on the lens. When the Hand Unit is connected to the Interface Box either through the cable connection or Microwave link, the lens drive motors will immediately turn to the positions corresponding to the control knob positions.
- l. The direction of motor rotation may be reversed by changing the position of the Direction switches. These switches are located directly below each of the motor receptacles.



Fig. 5 Camera Plate – motor torque switches

5. Technical Data.

a. Connector Pinouts – Interface Box

i. Power: XLR-3M

<u>Pin #</u>	<u>Description</u>
1	+28- +30VDC
2	GND
3	N/c

ii. POD: Lemo EGG2B302

<u>Pin #</u>	<u>Description</u>
1	+28 - +30 VDC
2	GND

iii. Pan/Tilt: Lemo EGG3B307

This connector is wired as a pass –through from the input side of the Interface Box to the output side.

iv. Video 1, Video 2. These BNC connectors pass through the signals from the input side of the Interface box to the output side.

v. Command: Lemo EGG1B305

<u>Pin #</u>	<u>Description</u>
1	GND
2	+28V – 30V
3	Serial Data
4	Serial Data
5	N/c

b. Connector Pinouts – Camera Plate

i. Power In: Lemo EGG2B302

<u>Pin #</u>	<u>Description</u>
1	+28 - +30 VDC
2	GND

ii. Witness Camera, Video Assist: Lemo EGG1B303

<u>Pin #</u>	<u>Description</u>
1	GND
2	N/C
3	+12V

iii. Camera (MDR-1) EGG2B308

<u>Pin #</u>	<u>Description</u>
1	+12V Camera Run In (Arri 12V cameras)
2	Camera Run – Active High
3	Zoom Reference In
4	Momentary Run – Active Low
5	Zoom Command
6	Run – Active Low
7	N/c
8	GND

iv. Camera (MDR-2) EGG2B312

<u>Pin #</u>	<u>Description</u>
1	GND
2	Camera External Control
3	<u>Run</u>
4	<u>Run</u>
5	<u>Momentary Run</u>
6	Clock Out (+5V)
7	Clock Out (+12V)
8	Camera Motor Encoder Signal
9	RS232 (A) out
10	RS232 (B) In
11	Reference Voltage Input
12	Analog Zoom Out

v. Motor Outputs: Lemo EGG1B307

<u>Pin #</u>	<u>Description</u>
1	Motor (-)
2	Motor (+)
3	Encoder Channel A
4	+5V
5	GND
6	Encoder Channel B
7	Motor I.D. sense

vi. +12V Camera power: 2 x XLR-4M

<u>Pin #</u>	<u>Description</u>
1	GND
2	N/c
3	N/C
4	+12V @ 12.5A

vii. 24V/26.5V Camera power: Lemo EGG3B304

<u>Pin #</u>	<u>Description</u>
1	GND
2	+24/+26.5V (switched)
3	GND to select 24V/26.5V
4	GND to select 26.5V



- c. Cable and Power Source Guidelines. In order to provide adequate power to operate an Arri 435 at 150 fps, the Camera Plate must output 26V at up to 12A. Excess power loss in the cables or voltage drop in the battery will prevent the DC/DC converters from providing the required power. Keep in mind that the voltage drop across a battery will increase with load current and increase further still as the battery is discharged.

The DC/DC converters in the Camera Plate require a minimum of 18V at their input terminals to operate properly, Therefore, power cables and the power source must be chosen to fulfill this requirement under all operating conditions.

The minimum recommended wire gauge for the power cable is 14 AWG. This cable has a resistance of  $0.5\Omega$  per 100 feet. Increasing the wire size to 11 AWG will cut the wire losses in half, and increase the operating distance correspondingly.

In addition to losses in the cable and battery, there will also be voltage drops across the Power Pod slip rings and riser blocks as well as through all the connectors. Because these voltage drops will depend on the condition of the equipment, the maximum lengths estimated here may not be achieved.

For 14 AWG cable:

<u>Input Power</u>	<u>Maximum Length</u>
28V	60 ft
30V	80 ft