

# HDFM-1



HIGH DEFINITION CAMERA FOCUS METER

INSTRUCTION MANUAL

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HDFM-1  
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## DESCRIPTION:

The HDFM-1 is a handheld camera focus meter you can use to set the maximum focus of any TVI, CVI High Definition cameras and any analog cameras without the need for a monitor or the subjective nature of "eyeballing" the camera's image on a small screen. Trying to see the maximum focus point of a High Definition image on a small test monitor in full sun light is all but impossible and leads to many cameras being set to less than the maximum focus point. This meter works by measuring the amount of information in the video frame as it varies with the focus adjustment. As you adjust the camera focus to make a sharper image, the information in the scene increases and so does the numeric reading on the meter. To get the maximum focus on any camera the installer connects the meter to the output of the camera and adjusts the focus ring on the camera for a maximum reading on the meter to get the maximum High Definition advantage from every camera you install. All scenes will have a different number because the information in the scene is different, but the maximum reading on the meter will always be the maximum focus point for the camera. The two line LCD displays the focus reading with a 36 point Bar Graph for course adjustment and a numeric display for the fine adjustment.

This meter will also identify the video format and number of lines of definition of any TVI, CVI or analog video signal. When connected to a video signal it first identifies the format and Lines of definition of the video signal and briefly displays that information on the LCD display, then it goes into focus mode so you can set the maximum focus on the camera. The ability to measure the video format and lines of definition can help you identify and verify any unfamiliar camera you come across in your work. With the multi-format cameras and DVRs available today it is easy to identify the output they are set to which could save you a lot of time troubleshooting miss-matched video formats on the job. It will measure the format of video signals like HD-TVI, HD-CVI, AHD, CVBS, YPbPr, RGB, and any composite analog video signal.

The HDFM-1 has a comfort grip hand-held case made of flame retardant ABS plastic with a flame rating of 94-5VA. A battery compartment door allows easy access to the 9-Volt battery that powers the device. The meter comes with an impact resistant rubber boot to protect it during daily use. This meter uses a "battery check" system to monitor the battery condition and the LCD display lets you know when it is time to change the battery. The LCD has a backlight feature so you can use the meter in total darkness if needed. Just push and hold the power ON button and the display will backlight for easy reading in the dark.

## METER OPERATION:

When the meter is powered up it first checks the condition of the battery and if the battery is below 6 Volts (Affectively Dead) it will give you a display indicating "REPLACE BATTERY" and you need to change out the battery for a good one.



If the battery is low but useable the unit will display "LOW BATTERY" for 2 seconds then and continue on to the measurement process.



If there is no video connected to the unit or the camera is disconnected from the unit during test the display will read “INPUT VIDEO FOCUS MAX #” indicating the video camera needs to be connected to the unit. If video is connected to the use at power up you will not see this display



When a video camera is connected to the unit it will test for the Video Format and display one of the following displays indicating the video format being input.



After the video format is displayed the unit will go into Focus mode and display “FOCUS (a number)” with a moving bar graph on the second line of the display. The bar graph and the numeric display represents the focus measurement. Use the bar graph to make the course adjustment of the focus ring on the camera the larger the bar graph extends to the left of the display the better the focus of the camera. Then use the numeric display for fine tuning of the focus ring on the camera. If there is movement in the scene you will see a small amount of change in the display, this is caused by the information in the display changing and so the focus number will change slightly.



If the meter is being used with video un-terminated you may see this display appear asking you to terminate the video input. If you see this display put a 75 Ohm termination on the unused BNC connector to continue the focus process.



## INPUT SIGNALS AND CONNECTORS:

This meter is equipped with two BNC female input connectors so you can loop the camera signal through the meter and into a test monitor or focus the camera with it connected to the actual DVR at the end of the cable. Loop through is not required to focus the camera but it is the best practice to do so. When using the unit to focus with only one cable input and no loop through, it is best to put a 75 Ohm Termination on the remaining un-used BNC connector, this prevents video reflections that can interfere with the maximum focus adjustment.

This Focus Meter will measure camera signals from all types of analog cameras and is most useful when used on the HD type analog cameras like HD-TVI, HD-CVI, and AHD cameras. The BNC type connectors are used to input the HD and CVBS (base-band composite) video signals. It can also be used to input YPbPr, and RGB signals by connecting to the "Y" or "G" channel that has the sync signal on it. Only the channel that has the sync signal on it should be connected for proper operation. The RGB signal format is measured using one of the three channels, the Chroma/Sync channel normally the "G" or Green with Sync or any channel can be measured as long as it has the synchronization signal on it.

**DISPLAY FORMAT:**

When the HDFM-1 meter measures and displays the following formats.

HDTV		EDTV		SDTV	
1080i	(SMPTE 274M)	480p	(ITU-R BT.1358)	NTSC	(SMPTE 170M)
1080p	(SMPTE 274M)	576p	(ITU-R BT.1358)	PAL	(ITU-R BT.470)
1080PsF	(SMPTE RP 211)			480i	(SMPTE 267M)
720p	(SMPTE 296M)			576i	(ITU-R BT.601)

\* 1080PsF is a Progressive Segmented Frame video signal and reads as 1080i. See the note on last page.

**DISPLAY FOCUS:**

When the unit is in Focus mode the display will react to changes in the camera focus both numerically and on the bar graph display. The meter is measuring information in the scene and will react to changes in the focus ring and also changes in the image or content of information in the scene. If you have set the maximum focus on the camera and you put your hand up in front of the camera you will see the numbers and bar graph go down in focus. This is caused by the loss of information caused by the change of (in focus) information. When focusing the camera be sure to stay outside of the image of the camera when setting maximum focus.

**CARE AND MAINTENANCE:**

No routine maintenance or test procedures are required other than battery replacement. Attempts at field repair or adjustment will void the warranty.

The HDFM-1 is a precision measuring instrument and should be treated accordingly. While it can withstand ordinary every day indoor use, it should not be left outside in the rain or otherwise mistreated. It is not waterproof. The battery should be removed if it is placed into storage to prevent leakage of corrosive fluids from batteries as they discharge and age.

Replace batteries at least once a year even if ordinary use does not discharge the battery because old batteries may leak and cause corrosion damage. If the HDFM-1 fails to operate even after battery replacement, or does not read a known video signal correctly, call the factory for a Return Authorization Number and return it to the factory for repair.

## **BATTERIES:**

A battery compartment door allows easy access to the 9 Volt battery that powers the device. One alkaline 9 Volt "transistor" battery is used. If the unit will not power up the battery must be replaced by a fresh 9 Volt battery.

The battery is located in the case with access provided by a sliding plastic cover plate that has an arrow printed on it. Slide in the direction of the arrow to open. When replacing the cover, place it flat into the grooves so that both ends engage when closing.



## **ENCLOSURE:**

The comfort grip hand-held case is made of flame retardant ABS plastic with a flame rating of 94-5VA. The meter comes with an impact resistant rubber boot to protect it during daily use.

## **AUXILIARY EQUIPMENT:**

The MC1, MC2, and MC3 are Protective Carry Cases to house and protect the HDFM-1 and your other test meters while being transported. These are very rugged water resistant ABS cases with foam-lined interiors suitable for transporting this meter and other test equipment. You can order these carry cases as an option.

\* 1080PsF is a high definition video format that has 1080 lines of vertical resolution using a Progressive Segmented Frame. The frame is sub-divided into two fields. One field is for the odd numbered lines and the other is for the even numbered lines. This format appears like an interlaced 1080i signal and this meter reads it as 1080i.