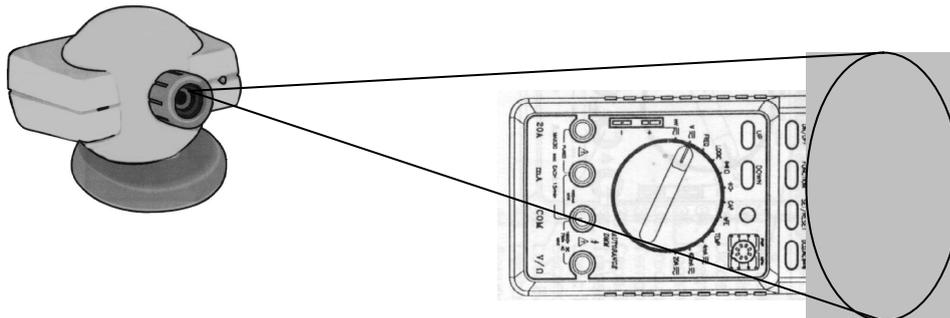
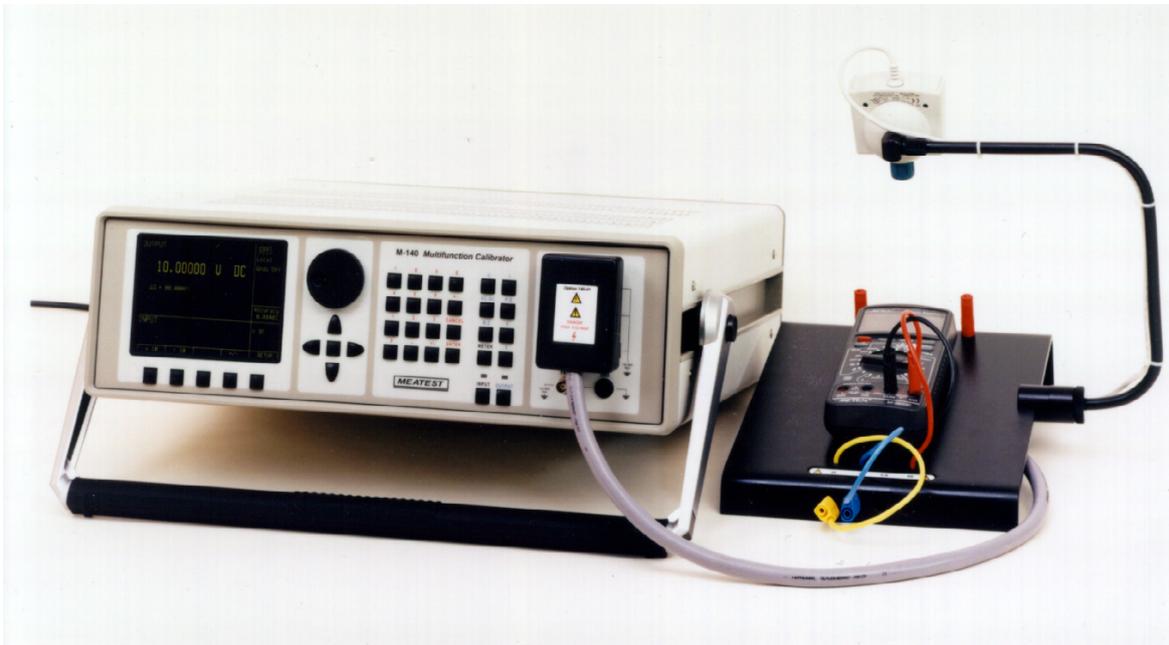


## CamOcr - Camera module



- Digital processing of displayed value
- Display of tested multimeter on PC screen
- Automatic calibration of multimeters without interface
- USB port for camera connection
- Option for Caliber software

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# Specification

## System requirements

- Control unit (Windows based PC)
- Operation system MS Windows XP / Vista / 7
- Caliber software
- CamOcr module (holder for fixing the camera module, shield cover, camera)
- Instruments with test cables

Module „CamOcr“ is designed for scanning of seven-segment display with the digital camera. The module assembly incorporates a camera with the rotary holder retaining the camera attached to the pedestal, enabling the camera to be turned in several directions, setting in that way the optimal light conditions.

The software processes the image information, transferring it into the digital ASCII code. The digits differentiation features a high reliability of the transfer even under worsen light conditions.

The module requires no auxiliary lightning, however, under poor light conditions, an image evaluation may last longer.

The screenshot shows the Caliber software interface. At the top, a window titled "Procedure 'c:\program files\meatest\caliber\m3800.pro'" is open. The interface includes a "Connection scheme" panel on the left, a central area with "Source & Standard: M142 COM1" and "UUT: M3800 Camera Manual", and a digital display showing "-18.05". Below the display is a "Readings" list with seven entries, all showing "-18.05". At the bottom, a table displays measurement results for various functions.

Function	Range	Standard	UUT	Deviation	%spec	Allowed	Uncertainty	Symbol
VDC-2W	200 mV	-180.0 mV	-180.6 mV	-620 uV	-62	1003 uV	65 uV	ok
VDC-2W	2 V	0.200 V	0.200 V	-0.00 mV	0	2.00 mV	0.58 mV	ok
VDC-2W	2 V	1.800 V	1.803 V	2.80 mV	28	10.01 mV	0.64 mV	ok
VDC-2W	2 V	-1.800 V	-1.803 V	-2.90 mV	-29	10.01 mV	0.61 mV	ok
VDC-2W	20 V	2.00 V	2.00 V	0.0 mV	0	20.0 mV	5.8 mV	ok
VDC-2W	20 V	10.00 V	10.03 V	31.0 mV	52	60.2 mV	6.1 mV	ok
VDC-2W	20 V	18.00 V	18.05 V	53.0 mV	53	100.3 mV	6.6 mV	ok
VDC-2W	20 V	-2.00 V	-2.00 V	0.0 mV	0	20.0 mV	5.8 mV	ok
VDC-2W	20 V	-18 V						

Camera module “CamOcr” is an option of program Caliber. Caliber is software for automated calibrations of measuring instruments. With the camera-scanning module, it features entirely automatic calibration of digital instruments, which have no possibility to be connected to the computer. During the calibration process, the program proceeds similarly as if having been connected to the computer. The camera-scanned image is digitally processed and transferred into digital information. The program is determined for seven-segment display. A set of measurements in each check point is done, then being statistically evaluated and deviation and uncertainty of measurement is stated. This solution benefits from a significant reducing of work quantity for calibration as well as from better repetition and objectivity of measuring. The system entirely eliminates influence of the operator on the uncertainty calibration.

The screenshot shows the Caliber software interface. At the top, a window titled "Procedure 'c:\program files\meatest\caliber\m3800.pro'" is open. The interface includes a "Connection scheme" panel on the left, a central area with "Source & Standard: M142 COM1" and "UUT: M3800 Camera Manual", and a digital display showing "20.1". Below the display is a "Readings" list with six entries, all showing "20.1". At the bottom, a table displays measurement results for various functions.

Function	Range	Standard	UUT	Deviation	%spec	Allowed	Uncertainty	Symbol
VDC-2W	200 mV	-180.0 mV	-180.6 mV	-620 uV	-62	1003 uV	65 uV	ok
VDC-2W	2 V	0.200 V	0.200 V	-0.00 mV	0	2.00 mV	0.58 mV	ok
VDC-2W	2 V	1.800 V	1.803 V	2.80 mV	28	10.01 mV	0.64 mV	ok
VDC-2W	2 V	-1.800 V	-1.803 V	-2.90 mV	-29	10.01 mV	0.61 mV	ok
VDC-2W	20 V	2.00 V	2.00 V	0.0 mV	0	20.0 mV	5.8 mV	ok
VDC-2W	20 V	10.00 V	10.03 V	31.0 mV	52	60.2 mV	6.1 mV	ok
VDC-2W	20 V	18.00 V	18.05 V	53.0 mV	53	100.3 mV	6.6 mV	ok
VDC-2W	20 V	-2.00 V	-2.00 V	0.0 mV	0	20.0 mV	5.8 mV	ok
VDC-2W	20 V	-18 V						

The program is suitable for the checking of measuring instruments because it enables an elaboration of multiple measurements, calculation of the value dispersion as well as measurement uncertainty.