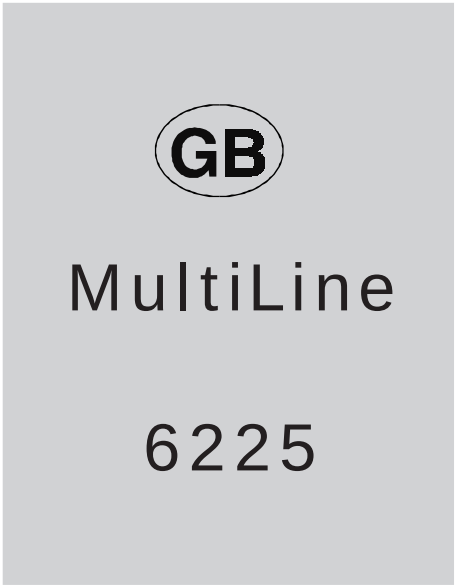

GB
MultiLine
6225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Please read prior to initial use

You have acquired a state-of-the-art, micro-processor-controlled unit in which three of the most important darkroom tools are combined into one valuable product.

- A measuring instrument, to establish the correct exposure time or the brightness range.
- An exposure time switch, to enable precise and repeatable exposure times.
- A process timer, to ensure exposed papers or films are processed for the precise time required.

To ensure that you are able to make full use of all the functions, please read the operating instructions. The operating instructions are divided into a brief and a detailed version. When first familiarizing yourself with your new MultiLine we suggest you use the detailed instructions in order to gain the appropriate background information. Once you have become familiar with the basic functions, the brief instructions will help you locate and carry out operations and key procedures quickly.

Safety instructions!

- The unit should be operated only at the voltage specified on the specification sticker located on the bottom of the unit.
- A grounded outlet must be used. Verify that the switching capacity specified on the specification sticker is sufficient for your connected enlarger.
- Do not open the unit. There are no user-serviceable parts in the unit. Contact your local distributor for information on servicing the unit.
- Place the unit on dry and level surfaces only.

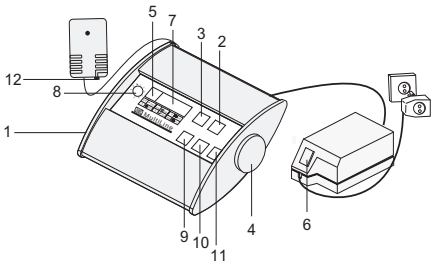
Packaging

The MultiLine retail packaging displays the „Green Spot“ which symbolizes environmental friendliness.

1. The volume of the package is well in proportion with its contents.

Please support our efforts to protect the environment and dispose of this packaging appropriately should you not wish to keep it to provide long-term protection for your unit.

Contents



Technical data 1

Voltage	230 V / 50/60 Hz or 115 V / 60 Hz (note information on specification sticker)
Power consumption	5,5 W
Switching capacity	460 W
Measuring range	0.005 - 100 lux
Log D	0.01 - 4.0 in 0.01 steps
Exposure time	0.1 - 99.9 in 0.1 sec. 100 - 999 in 1 sec.
Manual correction	(+ or -) 7 steps of 1/6 stop
Gradation	0 - 5
Timer settings	0 - 9.59 in min./sec. 10.0 - 59.5 in min./10 sec.
Process steps	9

1.1 Contents of package

1 MultiLine

1 meter probe

1 set of operating instructions

1 meter probe holder

1 sheet of diffuser material

Controls and operating elements 2

1. Housing

2. Set key, MP key

3. Calibration key (drawing to illustrate)

4. Input wheel

5. Status display

6. ON/OFF switch

7. Value display

8. Program selector switch

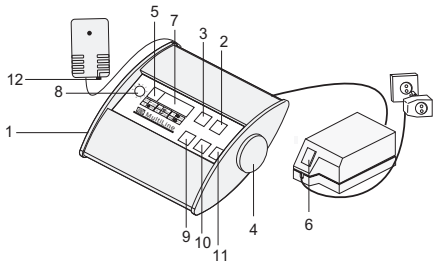
Program	Function
1	Point measurement
2	Point measurement
3	Point measurement with gradation display
4	Multi-point measurement
5	Multi-point measurement
6	log D
7	Manual time input
8	Process timer 1
9	Process timer 2
10	Process timer 3

9. Focus key, reset key

10. Measure

11. Start, stop, timer start

12. Measure key



Initial operation 3

- Unpack the unit and plug it into a grounded outlet.
- Insert the plug of the enlarger transformer into the outlet on the plug of the MultiLine (on enlargers with a separate timer plug, plug that cord into this outlet).
- Place the unit within reach of the place of work.

3.1 Preparations for point measuring operations

No special preparation is needed for point measuring operations.

3.2 Preparations for integral measuring operations

- Remove the filter from the red filter holder of your enlarger.
- Cut a piece out of the enclosed diffuser material the same size as the red filter.
- Insert the cut piece of material into the filter holder in place of the red filter.

3.2 Preparations for reflection measuring operations

- Unscrew the enlarger lens from its socket.
- Insert the meter probe holder onto the thread of the lens.
- Screw the lens with the attached meter probe holder back into the enlarger. The meter probe holder is mounted correctly when the meter probe can be inserted and the meter cell points in the direction of the baseboard.

Brief operating instructions 4

4.1 Switching on the unit

- Set ON/OFF switch (6) to ON.

4.2 Selecting a program

- Set the correct program by turning the program selector switch (8).

4.3 Focusing light

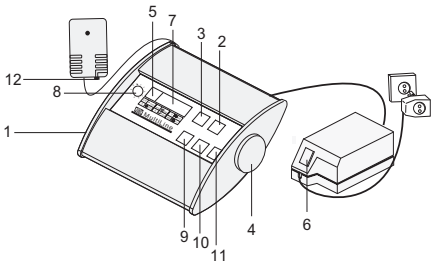
- The enlarger lamp is switched on and off by pressing the focus key (9).

4.4 Manual setting of an exposure time

- Set program 7 by turning the program selector switch (8) and set the exposure time with the input wheel (4).

4.5 Starting an exposure time

- Press the start key (11) - the exposure time will start to count down.



4.6 Calibrating program 1 - 5

4.6.1 Calibration procedure for point measurements (with/without gradation display)

- Select a program from 1 to 5 with the program selector switch (8).
- Switch on the focusing light by pressing the focus key (9).
- Press calibration key (3).
- Set the trial and error time with the input wheel (4).
- Place meter probe on the brightest area containing detail.
- Activate measuring keys (10 or 12).

4.6.2 Calibration procedure for integral measurement

- Select program 1 or 2 on the program selector switch (8).
- Switch on the focusing light by pressing the focus key (9).
- Press calibration key (3).
- Set the trial and error time with the input wheel (4).
- Place the meter probe in the middle of the picture.
- Move diffuser foil into position.
- Press measuring keys (10 or 12).

4.6.3 Calibration procedure for reflection measurement

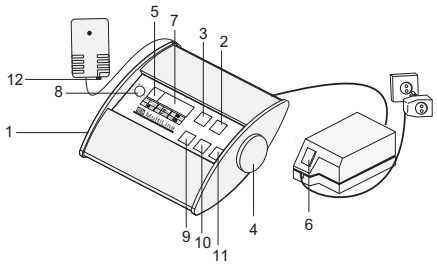
- Select program 1 or 2 on the program selector switch (8).
- Switch on the focusing light by pressing the focus key (9).
- Press calibration key (3).
- Set the trial and error time with the input wheel (4).
- Insert the meter probe in the holder.
- Press measuring keys (10 or 12).

4.6.4 Calibration procedure for multi-point measurement

- Select program 4 or 5 on the program selector switch (8).
- Switch on the focusing light by pressing the focus key (9).
- Press calibration key (3).
- Set the established time with the input wheel (4).
- Position the meter probe and activate the measuring key (10 or 12) (at a maximum of nine measuring positions).
- Press MP key (2).

4.7 Entering a known calibration value

- Select the program using the program selector switch (8).
- Press and hold the calibration key (3) and set the calibration value with the input wheel (4).



4.8 Measurement

- Select the program using the program selector switch (8).

4.8.1 Point measurement

- Place the meter cell on the brightest area containing detail.
- Activate measuring key (10 or 12).

4.8.2 Point measurement with gradation display

- Select program 3 on the program selector switch (8).
- Place the meter probe on the darkest area containing detail.
- Activate measuring key (10 or 12).
- Place the meter probe on the brightest area containing detail.
- Activate measuring key (10 or 12).
- Read required paper gradation from the status display (5).

4.8.3 Multi-Point measurement

- Select program 4 or 5 on the program selector switch (8).
- Position the meter cell.
- Activate measuring key (10 or 12).
- Repeat this procedure as often as specified during the calibration process (4.6.4).

4.8.4 Integral measurement

- Select program 1 or 2 on the program selector switch (8).
- Move the diffuser foil into position and position the meter probe in the middle of the picture.
- Activate measuring key (10 or 12).

4.8.5 Reflection measurement

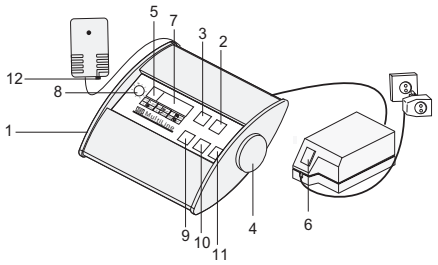
- Select program 1 or 2 on the program selector switch (8).
- Insert the meter probe in the holder.
- Activate measuring key (10 or 12).

4.9 Manual correction of a measurement in all measuring program

- Conclude measuring operation by releasing the measuring keys (10 or 12).
- Perform any corrections using the input wheel (4).

4.10 Determining the log D of a picture

- Select program 6 on the program selector switch (8).
- Position the meter cell at the brightest area.
- Activate measuring key (10 or 12).
- Position the meter cell at the darkest area.
- Activate measuring key (10 or 12).
- Read tonal range from value display (7).



4.11 Entering the process timer settings

- Select a program 8-10 on the program selector switch (8).
- Press the Reset key (9).
- Press the Set key (2).
- Enter the time for the 1st process step using the input wheel (4).
- Press the Set key (2).
- Enter the time for the 2nd process step using input wheel (4).
- Press the Set key (2). Repeat this procedure for a maximum of nine process steps.
- Press the Reset key (9) in order to move to process step „1“.

4.12 Starting the process timer

- Select program 8-10 on the program selector switch (8).
- Press the Reset key (9).
- Start the timer with the Start/Stop key (11).
- After a process step is completed, start the next process step using the Start/Stop key (11).

Detailed operating instructions 5

5.1 Turning on the unit

- The unit is switched on via the ON/OFF switch (6). A buzzer will sound and numbers and digits appear on the displays in accordance with the set program.

5.2 Selecting a program

- Set the correct program by turning the program selector switch (8).

NOTE: The program selector switch (8) will operate only when no program has been started. If necessary, press the reset key (9).

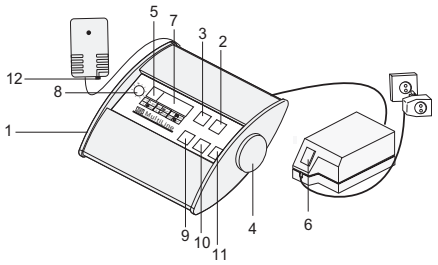
5.3 Focusing light

- When the MultiLine is switched on and the program selector switch (8) is set to a program between 1 and 7, the enlarger lamp can be switched on by pressing the focus key (9).
- To switch the focusing light off, press the focus key (9) again.

5.4 Manual setting of an exposure time

- Select program 7 for manual time input on the program selector switch (8) and turn the input wheel (4) until the desired exposure time appears on the value display (7).

Note: When you select a new program on the program selector switch (8), it will take approximately 2 seconds for the display to change.



5.5 Starting an exposure time

- The exposure time is shown on the value display (7). An exposure of this length is started by pressing the Start key (11). The exposure time runs down to zero and returns to the initially set time after the enlarger lamp has been switched off.
- The exposure operation can be repeated as often as is required by pressing the Start key (11).
- The running exposure time can be stopped temporarily by pressing the Start key (11); when the Start key (11) is pressed again, the time will continue to count down to zero and the return to the initial set time.
- If the focus key (9) is pressed while a started exposure run is in progress, the lamp will be switched off and the time setting will return to the initially set value.

5.6 Calibration of programs 1-5

Before an image can be measured, the sensitivity of the paper being used must be entered using the calibration procedure.

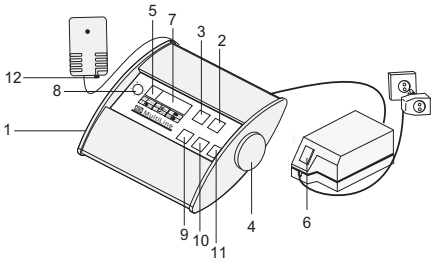
- Select the desired program on the program selector switch (8).

5.6.1 Calibration procedure for point measurement (with/without gradation display)

- Produce a correctly exposed enlargement by trial and error.
- Leave both the enlarger height, filter settings, and the lens stop unchanged and do not remove the negative from the frame.
- Turn on the focusing light by pressing the focus key (9).
- Select a program from 1 to 3 on the program selector switch (8).
- Press the calibration key (3). (0.1 appears in flashing mode in the value display (7)).
- Now manually set the time (which has been established beforehand by trial and error) using the input wheel(4).
- Place the meter probe on the baseboard and position the meter cell so that the brightest area containing detail can be measured.
- Press one of the measuring keys (10 or 12) (without moving the meter probe).
- The unit completes the measuring operation and shows the calibration value on the value display (7). Make a note of the calibration value on your paper pack, together with the measuring method (point or integral). This calibration value can be used in later sessions to recalibrate the MultiLine to this particular package of paper.

5.6.2 Calibration procedure for integral measurement

- Produce a correctly exposed enlargement by trial and error.
- Leave both the enlarger height, filter settings, and the lens stop unchanged and do not remove the negative from the frame.
- Place the meter probe roughly in the middle of the projected picture on the baseboard.
- Move the diffuser foil into position under the lens (see 3.2).
- Turn on the focusing light by pressing the focus key (9).
- Select program 1 or 2 on the program selector switch (8).
- Press the calibration key (3). (0.1 will appear in flashing mode in the value display (7)).
- Now manually set the time (established beforehand by trial and error) using the input wheel (4).
- Press one of the measuring keys (10 or 12) (without changing the measuring position).
- The unit completes the measuring operation and shows the calibration value on the value display (7). Make a note of the calibration value on your paper pack, together with the measuring method (selective or integral). This calibration value can be used in later sessions to recalibrate the MultiLine to this particular package of paper.



5.6.3 Calibration procedure for reflection measurement

- Produce a correctly exposed enlargement by trial and error.
- Leave both the enlarger height, filter settings, and the lens stop unchanged and do not remove the negative from the frame.
- Place the meter probe in the holder (see 3.3).
- Turn on the focusing light by pressing the focus key (9).
- Select program 1 or 2 on the program selector switch (8).
- Press the calibration key (3). (0.1 will appear in flashing mode in the value display (7)).
- Now manually set the time (established beforehand by trial and error) using the input wheel (4).
- Press one of the measuring keys (10 or 12).
- The unit completes the measuring operation and shows the calibration value on the value display (7). Make a note of the calibration value on your paper pack, together with the measuring method (selective or integral). This calibration value can be used in later sessions to recalibrate the MultiLine to this particular package of paper.

5.6.4 Calibration procedure for multi-point measurement

- Produce a correctly exposed enlargement by trial and error.
- Leave both the enlarger height, filter settings, and the lens stop unchanged and do not remove the negative from the frame.
- Select one of the two multi-point measuring channels, 4 or 5, using the program selector switch (8).
- Press the calibration key (3); „0.1“ will flash on the value display (7), „0“ will flash on the status display (5).
- Now manually set the exposure time (determined beforehand by trial and error) on the display, using the input wheel (4).
- Press the calibration key (3).
- Press the measuring key (10 or 12) again; a flashing „1“ will now appear in the status display (5), requesting entry of the 1st measuring point, while the measured value display shows you the old calibration value once again.
- After releasing the measuring key (10 or 12), a flashing „2“ etc. will appear on the status display (5). Any number of measurements up to a maximum of nine can be carried out. After carrying out the final measurement, the MP key (2) must be pressed to notify the unit that no further measuring points are to be expected. The calibration process is now finished. (In the event of an attempt to enter more than nine measuring points, the unit will conclude the series of measurements automatically after the ninth measurement!)

5.7 Entering a known calibration value

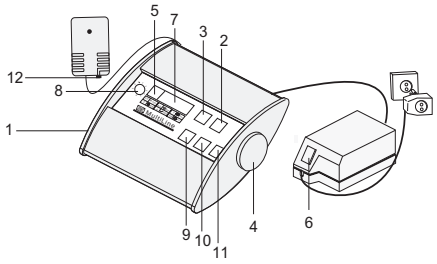
A calibration value which has been established in the course of a previous calibration procedure can be entered as follows:

- Select the desired program 1 - 5 on the program selector switch (8).
- Press and hold the calibration key (3) and turn the input wheel (4) until the desired calibration value appears on the value display (7). The new value is stored when the calibration key (3) is released.

Note: Please note that a calibration value for the point measuring method cannot be used for an integral measuring operation.

5.8 Measurement

- Select the desired program on the program selector switch (8). Note that only a calibrated measuring program can be used (see 5.6 and 5.7).



5.8.1 Point measurement

- To carry out a point measurement, place the center opening on the probe at the brightest area of the projected picture containing detail.
- Press the measuring key (10 or 12); the exposure time will appear on the value display (7). (The point measurement can also be carried out at any other area; the measuring area (density) used in the calibration procedure must also be used in the measuring operation, however.)

5.8.2 Point measurement with gradation display

Select program 3.
When two points in a picture are measured without any interruption to the measuring process resulting from turning on or off or an exposure operation, a digit from 0-5, representing the paper gradation, will appear on the status display (5). This number can be used to select an appropriate paper grade when printing black and white negatives.

- Place the meter cell for at the darkest area of the projected picture containing detail.
- Now press the measuring key (10 or 12). An exposure time appears on the display (by holding down the key, you can read off the measured exposure time from the value display (7) and in this manner find the actual darkest area containing detail). When you have found the correct point, release the key and the value will be stored.
- Place the meter cell on the brightest area of the projected picture containing detail.
- Press the measuring key (10 or 12). (By holding down the key, you can read off the measured exposure time from the value display (7) and in this manner find the actual darkest area containing detail.) When you have found the correct point, release the key and the value will be stored. After releasing the measuring key (10 or 14), the determined paper gradation will appear on the status display (5) and the exposure time on the value display (7).

5.8.3 Multi-point measurement

Multi-point measurement is basically the point measuring process repeated several times. In the course of the multi-point measuring process, however, the average log of all measured values is calculated automatically each time the measuring key is released. In principle, all the established measuring systems can be implemented with the multi-point measuring process. Please note, however, that only the measuring system you have used in the calibration process is suitable for use. (ie, skin tone, gray card, or some other specific reference point.)

- After carrying out the final measurement, press the MP key (2). The measurement process is now stopped and the value display (7) shows the exposure time.

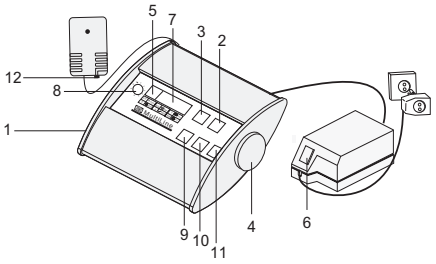
5.8.4 Integral measurement

- For the integral measurement process, place the meter cell in the center of the picture and move the diffuser into position.
- Now press the measuring key (10 or 12); an exposure time appears on the value display (7). (Multi-point measurements are pointless in the integral measurement process, as the average of the overall negative density is always measured with the aid of the diffuser.)

5.8.5 Reflection measurement

- Insert the meter probe in to the holder attached to the lens.
- Now press the measuring key (10 or 12). The exposure time is shown on the value display (7).

Note: Ensure that you use the baseboard or easel which was used during the calibration procedure. If the exposure frame is changed, the reflection characteristics will alter and the measurement will be inaccurate!



5.9 Manual correction of a measurement in all measuring programs

After completing measuring operations (release of measuring key (10 or 12), all exposure values can be corrected in steps of 1/6 stop. The measured values are corrected from -7/6 to +7/6 stops in 1/6 stop steps by turning the input wheel (4). The status display (5) shows „+“ or „-“, together with a „1“ for 1/6 stop and a „2“ for 2/6 stop, etc. Corrections can be canceled by turning the input wheel (4). The exposure time on the value display (7) is corrected immediately in accordance with the correction. The manual correction is deleted after pressing the measuring key (10 or 12) again.

Note: This function cannot be used in program „7“, Manual Time Input!

5.10 Determining the log D of a photograph

Use the program selector switch (8) to select log D measurement in program 6. The measured value display (7) shows the value „0.00“, and a flashing „0“ appears on the status display, indicating that zero balancing needs to be carried out.

- First place the meter cell on the brightest area of the projected picture.

- While pressing down and holding a measuring key (10 or 14), the measured log D value can be read on the value display (7) and in this manner the brightest areas can be found. (The displayed values are absolute values and relate to the limits of the unit's measuring range). When you have found the correct point, release the measuring key (10 or 12); this value is then stored as the reference value (measured value display is reset to 0.00). The flashing „L“ on the status display (5) indicates that log D values will be displayed when the next measurement is carried out.

- Place the meter cell on the darkest area of the projected picture.

- While pressing down on and holding a measuring key (10 or 12), the measured log D value can be read off the value display (7). When you have found the correct point, release the measuring key (10 or 12); the established brightness range in log D remains on the display until the next measurement is carried out.

Note: log D is a measured variable which is very commonly used in photography. If log D does not mean anything to you, the following information will help you to interpret the values.

0.3 log D corresponds to 1 stop step or 1 time step (doubling or halving)
0.1 log D corresponds to 1/3 stop step or 1/3 time step

5.11 Process timer

Select a timer program from 8 to 10 on the program selector switch (8). A „1“ will appear on the status display (5), while the value display (7) shows the appropriate process step time.

5.12 Setting the required process times

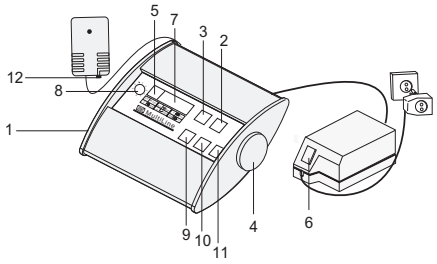
- Press the focus key (9) to move to the beginning of the process.

- By repeatedly pressing the Set key (2) you can see process steps 1-9 (flashing on the status display (5). The process time shown on the value display (7) can be altered by turning the input wheel (4).

- You can leave any process step and move directly to process step „1“ by pressing the Reset key (9).

Display	Time
0.01	1 second
9.59	9 minutes and 59 seconds
10.0	10 minutes
59.5	59 minutes and 50 seconds

Note: All data is retained after the unit is turned off.



5.13 Starting the timer

5.13.1 Starting with keys

- Press the Reset key (9) to move to process step „1“.

- To start the process step, press the key (10/11/14). The displayed time will now start to run, and the running process is visible on the display. Ten seconds prior to the end of the process step a buzzer signal will sound. After completion of the process time, the time runs up to the set value again. A „-“ sign is shown on the status display (5) and an intermittent buzzer signal sounds.

- The next process step is started by pressing the key (10/11/14).

Other functions 6

6.1 System set-up

The system set-up includes two largely automatic procedures with the following functions:

1.Basic calibration of the meter probe electronics.

This is necessary, for example, in the event of strong changes in environmental conditions such as temperature and humidity, or after the equipment has been in use for a prolonged period.

2.Automatic compensation of ambient lighting (e.g. darkroom safelights) during the exposure measurement process.

(Within a certain range, the influence of sources of interfering light can be measured and the measuring results corrected automatically).

Note: Basic calibration is carried out on all units by the manufacturer! If it can be guaranteed that no extraneous interfering light will be present during measuring operations, the system set-up is not necessary. Otherwise, both parts of the set-up (6.1.1 and 6.1.2) must always be carried out in accordance with the instructions.

6.1.1 Basic calibration (dark and zero balancing)

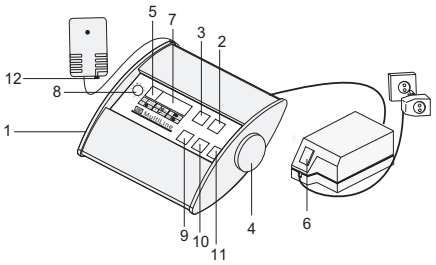
- First turn on the MultiLine and allow the unit to „warm up“ for approximately ten minutes.

- Select a program from 1 to 6 with the program selector switch (8).

- Switch off the lighting in the room, cover the meter cell with black card or cloth and switch off all possible sources of interfering light (ie, safelights).

- Press the calibration key (3) and measuring key (10) and hold. A flashing „0.0“ will appear on the value display, while the status display (5) remains dark. A short acoustic signal marks the beginning of the procedure. Keep the two keys pressed until a long acoustic signal marks the end of the automatic zero balancing procedure.

(This function can only be used when the enlarger lamp is switched off.)



6.1.2 Extraneous light compensation

- Check that 6.1.1 has been carried out.
- Switch on all sources of (interfering) light which will subsequently be in operation in your darkroom, such as laboratory equipment and darkroom lighting.
- Position the enlarger head at a medium height and place the meter cell in the center of the baseboard. (The enlarger light must be off, of course!).
- Now activate the calibration key (3) and the measuring key (10) on the MultiLine (keep pressed). „0.0“ will appear in flashing mode on the value display (7), while the status display (5) remains dark. An intermittent acoustic signal marks the beginning of the procedure. Keep the two keys pressed down until a long acoustic signal and a „0“ on the status display (5) mark the end of the automatic interfering light compensation procedure.

(This function can only be implemented when the enlarger lamp is switched off).

Note: If you wish to work without extraneous light compensation (6.1.2), carry out procedure (6.1.1) twice!

Note: Any subsequent changes in the lighting conditions will distort the measurement results. Repeat extraneous light compensation if changes occur.

General information 7

7.1 Multigrade paper

In order to get the most accurate measurement results when using multigrade filters, we recommend calibrating the program in use with multigrade filter „2“ and using filter „2“ for exposure measurement during all measuring operations. However, when Multigrade filter „2“ has been used in the calibration process, the measuring error when using filters „1“ - „3“ is generally so minimal it is considered insignificant. (Multigrade is a protected trade name of the company ILFORD PHOTO GMBH).

Terminology 8

Input wheel	Used to enter all values which are not determined by a measuring operation (e.g. process times, reproduction of calibration values).
Gradation display	Figure between 0 and 5 which is displayed after the second measurement in the program for point-measurement with gradation display (based on ILFORD Multigrade).
Integral measurement	(Average) The mean density of the negative is measured during exposure measurement either via reflection measurement (meter probe attached to lens) or a measurement carried out through a diffuser foil.
Calibration value	Value stored in the program memory for the density value stipulated in the course of the calibration process.
Log D	Abbreviation for logarithmic density. A log D change of 0.3 corresponds to one stop opening or a halving/ doubling of the exposure time.
Multi-point measurement	A single point measurement repeated several times. The accuracy of the measuring result is increased by measuring several areas containing important detail.
ON/OFF switch	Turns the unit on and off.
Manual time input	The exposure time entered via the input wheel can be called up directly via the Start key. No preceding measurement is necessary.
Manual exposure correction	May be necessary when using the integral measurement process, if a negative reveals an unusually large number of bright or dark areas. Correction is carried out in 1/6 f stop log D values.

Program selector switch	After pressing the Reset key (9), the desired timer or measuring program can be selected by using the program selector switch (8).
Process timer	The steps necessary for the development process are entered here with the required times and can subsequently be called up as often as required.
Process step	Part of a process sequence (e.g. 3 min. dye coupling developer)
Reset	Stops current function and returns system to start.
MP key	Concludes an entry (for multi-point measurement only)
SETUP	Basic setting
Sources of interfering light	All sources of light in the darkroom apart from the projection light of the enlarger (darkroom lighting, lighting of measuring equipment, etc.). Interfering light distorts measurement results, since it is incorporated into the measured values, accounting for varying percentages of these values in accordance with the brightness levels concerned.
Status display	e.g. number of measurements, process step, log D, gradation

Displays 9

9.1 Automatic switching-off of the focusing light

If no keys are operated over a period of five minutes while the enlarger lamp is turned on, the lamp will be switched off automatically.

9.2 Acoustic confirmation after completion of a measurement

Successful completion of each measurement operation is confirmed by a buzzer signal.

9.2 Indication of readings above and below the measuring range

In the event of readings above or below the permissible measuring range, an „E“ (error) will be shown on the status display (5) and „999“ or „0.1“ will be shown on the value display (7). In such cases, check whether you are working with the correct calibration and whether you have selected the correct program. If all the settings are correct, this means the meter cell is receiving too much or too little light for a correct reading.

In the case of multi-point measurements, any individual measurement which is invalid because it is above or below the measuring range is acknowledged with „E E.E“ after releasing the measuring key; the individual measurement concerned can be repeated.

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