Bron Elektronik AG
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broncolor
The Light

9011 Printed in Switzerland

broncolor FCM

A

Probe / Sonde

Bedienungsanleitung
Operating Instructions
Mode d'emploi
Istruzioni per l'uso
Manual de Instrucciones

broncolor®
FCM

Exposure meter

English

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- broncolor FCM is a lightmeter for flash and continuous light.
- broncolor FCM provides an extensive measuring range and for this reason is ideal for measurements with low lighting intensity and for high-capacity studio flashes.
- broncolor FCM is fitted with an inbuilt infrared transmitter which does away with the usual cable connection between the flash unit and the lightmeter. broncolor FCM is the only lightmeter allowing remote control of the light intensity of the broncolor pulso power packs.
- broncolor FCM measures mixed light in one measuring action. The values of flash light and continuous light may then be displayed individually.
- broncolor FCM allows the storage of two measuring values to determine the lighting contrasts of the subject.
- broncolor FCM is fitted with a connector for a probe to measure in the image plane of special cameras.

1. Measuring principle

The broncolor FCM lightmeter measures on the basis of the "light-measuring principle". The measuring cell (14) is aligned directly at/in the subject in the direction of the lens.

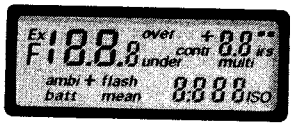
2. Probe measuring TTL

Using the measuring probe, a selective measurement may also be performed in the image plane (film plane).

3. Measuring operation

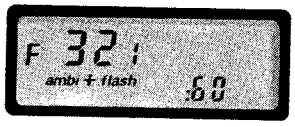
3.1 Push **"ON"** button (3).

3.2 All characters are displayed for a brief moment distributed over the display.



3.3 Hold FCM lightmeter in the direction of the camera and press the measuring button downward.

3.4 The f-number required for correct exposure is shown on the display accurate to 1/10 (see Item 9), the relevant shutter speed and the indication ***"ambi"*** for continuous light or ***"ambi"/ "flash"*** for measurements with flash. Flashes are measured only with shutter speeds of 1/500–1/8 s.



4. Exposure time setting

Press the buttons **"–"/"+"** to set the intended exposure time of : 500 (1/500 s) up to 30 s.

5. Film speed ISO°

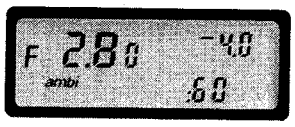
To set the film speed, press the button **"ISO"** (10) first; within approx. 3 s, the ISO film speed can be set using the buttons **"–"/"+"** (9) within the range 4000° ISO to 3° ISO and is displayed in the right lower section of the display field instead of the time setting. Approx. 3 s after the last manipulation, the display again returns to the time setting.

6. Flash and continuous light "ANALYSE"

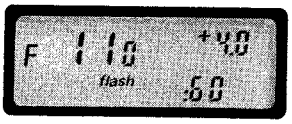
If a measurement of flash and continuous light is performed, the display shows ***"ambi"+"flash".*** Using the button **"ANALYSE"** (4), the measuring values valid for the two types of light may be shown separately. By pressing the button **"ANALYSE",** the display shows one of the two measuring values alternatingly by indicating the f-number difference as compared to the other type of light. The longest measuring time for flash = 1/8 s. For longer periods, only ***"ambi"*** is measured.

ambi+flash

ambi

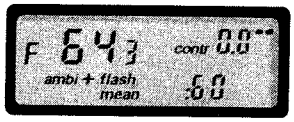


flash



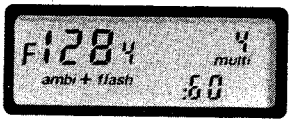
7. Storage of measuring value "MEAN" contrast measuring

A value measured may be stored by pressing the **"MEAN"** button (7). Once a measuring value is stored, a dot is shown in the upper right corner of the display field. If a second measurement is performed, this measurement can likewise be stored by pressing the **"MEAN"** button (7). This is shown by a second dot. At the same time, the mean measuring value of both measurements and the lettering ***"mean"*** is displayed. Next to the two dots in the right corner, the f-number difference between the two measurements is displayed. If both measurements are identical, this display will read 0.0. After pressing the **"MEAN"** button again, both values are deleted in the storage. The value measured last is again shown in the display. It can be stored again to compare it with a new measurement.



8. Multiflash "MULTI"

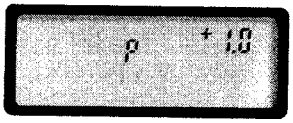
After pressing the **"MULTI"** button, a sequence of flashes of varying intensity may be measured. ***"multi"*** is displayed in the right upper corner. Each new measurement is added to the value already measured. The number next to ***"multi"*** shows in addition the number of the measurements performed so far. The resetting to zero to repeat the measurement **"MULTI"** is obtained by pressing the measuring button (1) upward or by twice pressing the **"MULTI"** button. After again pressing the **"MULTI"** button, the unit is again set for normal operation.



9. Flash energy control "POWER"

The buttons **"POWER", "–/+"** may be used for remote control of the flash energy for the broncolor pulso power packs A2/A4/2/4/8 and 404 servor.

If one measurement deviates from the intended value, the button **"POWER"** is pressed and the flash energy is remote controlled by pressing the buttons **"–/+"**. Each pressing of **"–/+"** changes the intensity of all power packs in operation by 1/10 or 1/3 aperture steps. Approx. 3 s after releasing the **"POWER"** button, the display returns to normal operations.



The power pack energy is corrected by an extended pressing in full aperture steps after short pressing in 1/10 aperture steps. With 1/3 set, the change is always performed in 1/3 apertures independent of how long the button is pressed. In this context, the 1/3 values are shown as ▪. The display shows the total of correction up to ± 9.9 or ± 9▪▪.

To convert, the button **"ON"** and the button **"–"** are pressed at the same time with the unit on. After releasing both buttons, the intended setting may be realized using the button **"–"**. In the right upper corner of the display field, the numbers 0.1 or 0.3 for 1/10 or 1/3 aperture step are shown. After approx. 3 s, the display returns to normal operations.

10. Release of measuring

The measuring action is released by pressing the measuring button (1) downward, for flash mea-

surements via the IR release or synchronous cable. The measuring action may also be released by the light pulse of a flash unit released manually. Each following flash pulse generates a new measurement. A zero resetting is not required. Only in the ***"multi"*** function must the f-number and flash counter display be reset to '0' by pressing the measuring button upward (see Item 8.) for repeat flash series.

11. Synchronization IRS

The flash is released with the FCM via IR signals from the inbuilt transmitter in connection with the infrared receivers incorporated in the broncolor pulso power packs and 404 servor. This cableless release may be arranged via two separate channels 'C1/C2' irs' so that work stations can function within one room without interfering with each other. To convert, keep the **"ON"** button pressed with the FCM on and press the **"+"** button at the same time. After releasing both keys, use the **"+"** button to select the intended IRS channel. The displays 'C1/C2' irs' are shown in the right upper corner of the display field. After approx. 3 s, the unit returns to normal operating conditions.

12. Synchronization (with cable)

All flash units without an incorporated IR receiver may be released via synchronous cable connector (5) using the measuring button (1).

13. Over/underexposure display *"under"/"over"*

Light situations outside the measuring range of the FCM cannot be registered as measurements. The display shows ***"over"*** for excessive light intensity and ***"under"*** for a light intensity too low. If, as a result of a change of the ISO° time setting the range of the display is exceeded upward or downward, the display flashes ***"over"*** or ***"under"*** as the case may be.

14. Display *"batt"*

If the power supply of the 9-volt battery diminishes, ***"batt"*** is shown in the display field. The battery should be replaced. Type: 9V, IEC LR 61 "6AM6". After ***"batt"*** is displayed, approx. 20 to 30 measurements may be performed with the same accuracy until the display no longer functions.
When replacing the battery, stored information is lost. If this replacement is done rapidly, part of the values may be retained in storage.

15. Follow-up adjustment of spead ISO°

If practice shows that the measuring results tend to under- or overexposure because the following processing step deviate from the standard, the speed of the FCM may be adapted.
With the unit on, keep the **"MULTI"** button (8) pressed until the display 0.0 is shown in the left upper corner of the display field. Following this, press the button **"–"** (9) for decreased speed or the button **"+"** (9) for increased speed. The change is always shown in steps of 0.1 f-numbers. After approx. 3 s, the unit returns to normal operating conditions.

16. Probe connection

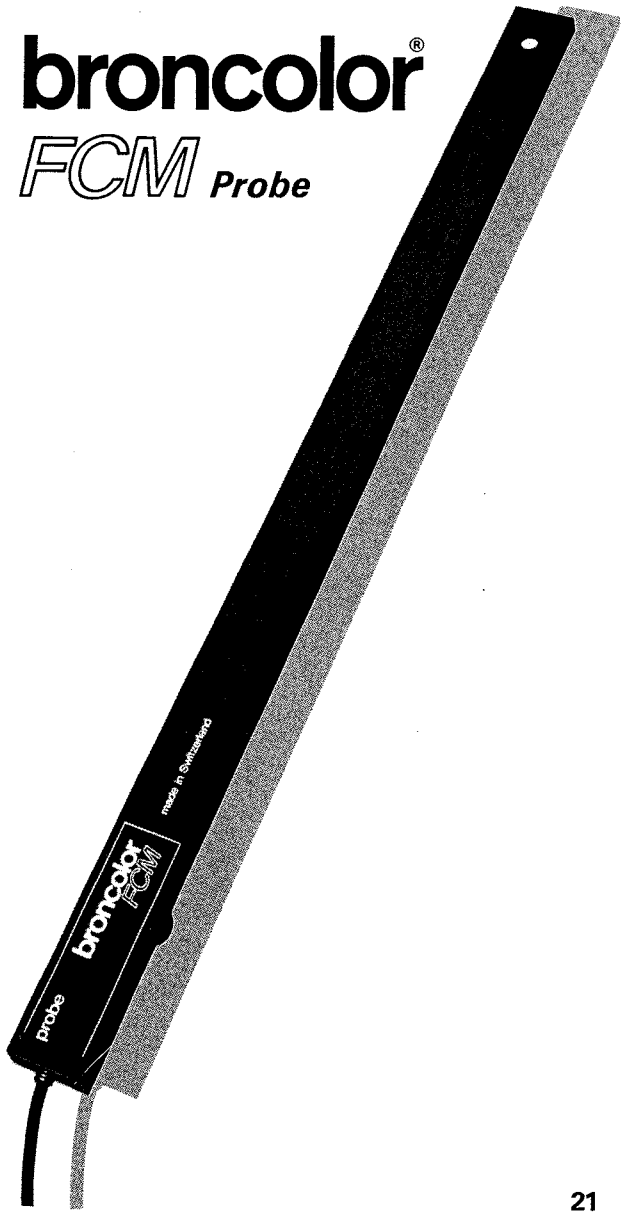
The FCM is fitted with a connection (15) for a probe. The probe allows the selective measurement in the focal plane (film plane) of large-size cameras.

17. Technical data

System	Time-integrating lightmeter
Measuring principle	Measurement of incident light (spherical dome), object measurement and measurement on the focal plane using plug-in accessory
Measuring range (at 100° ISO)	Flash and continuous $^1/_{500}$ ... $^1/_8$ s Continuous light $^1/_{500}$ ... 30 s
Measuring time	f: 1.4 to f: 180 $^9/_{10}$ in $^1/_{10}$ stop steps "light-measuring principle"
Film speed	3 to 4000° ISO
Synchronization	Infrared signal (2 channels), synchronization cable, starter photocell
Additional functions	– Multiflash measuring – Mean value and contrast measuring – Calculation of flash and continuous light proportion for mixed light – Input option for measurement value correction – Battery control
Incorporated infrared transmitter	For flash synchronization and for remote control of flash energy
Power supply	Battery 9V, type IEC LR 61, 6AM6
Display panel	Liquid crystal display
Dimensions	145×80×36 mm
Weight	200 g

broncolor®

FCM Probe



The FCM probe in conjunction with the FCM lightmeter is used for TTL (Through The Lens) measurement.
Measuring in the focal plane offers a number of important advantages over external **incident** and **reflective** metering.

Selective spot metering in the focal plane allowing total evaluation of subject brightness range.
All image brightness reductions are taken into account: Bellows extensions, filter factors (even graduated filters), light fall off due to camera movements, partial vigneting at edge of lens image circle, aperture and shutter speed tolerances.

With other external metering methods the influence of these factors will have to be calculated or approximated.

Operating Instruction

- Insert FCM measuring probe into the measuring rear wall or into the measuring cassette of the 4 × 5" camera. Appropriate measuring cassettes are available for 13 × 18, 18 × 24 and 8 × 10".
- Connect probe to FCM measuring device. The additional display ***"ext"*** is shown on the display of the FCM.
  All measurements are now performed only via the measuring cell of the probe.

One Point Measurement

Preparation

Align probe to intended point on image, for example, medium grey of Kodak grey chart. The probe is fitted with a search window. To open the window, move the slide at the side of the probe in the direction of the cable entry.

Measuring Point

- Insert FCM probe into camera meeting back or into measuring cassette.
- Stop down aperture to required setting.
- Cover focusing screen to exclude incident light.
- Switch on FCM meter with blue key **"ON"** and set film speed and shutter speed.
- With the shutter open release flash with FCM meter.
- If the aperture is set correctly, the display should show **0.0**.
- If the displays differs, correct the lighting or the power by amount shown. Displays **without** a sign mean too much light. Display with a "–" sign mean too little light.

The aperture can of course be adjusted to correct the setting.

Two Point Measurement

Preparation

The subject having been lit should be evaluated to find the darkest and lightest areas where detail is required, avoiding any specular reflection.

Measuring Point

- Perform the measuring for the brightest selected part of the image as described.
- Using the **"MEAN"** key store the displayed value.
- Repeat the above procedure for the darkest selected part of the image.
- The display will now show the required correction in terms of aperture, relating to the mean value of both measured points.
- In addition the subject brightness range in aperture values is shown in the upper right corner of the display window. This reading can now be related to the material being used and the final use to

which the original image is put. The subject brightness or contrast range which can be recorded by the original camera film, colour reversal or negative will be in the range 1:32 to 1:64 or 5–6 apertures, respectively. It should, however, be remembered that the final print process may not be capable of such a contrast and retain detail.

– To perform additional measurements first cancel the display by using the **"MEAN"** or **"RESET"** key.

Notes

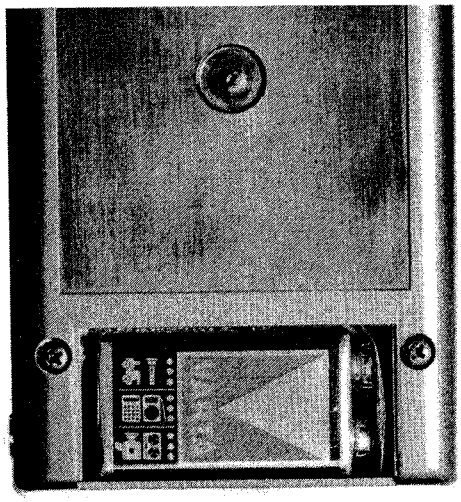
– For flash metering stop down the aperture to the intended value, close the shutter, set the exposure time of $^1/_{60}$s or longer on the FCM. The flash equipment is triggered by releasing the shutter and the measuring procedure is triggered by the flash incident on the starter photocell of the FCM.

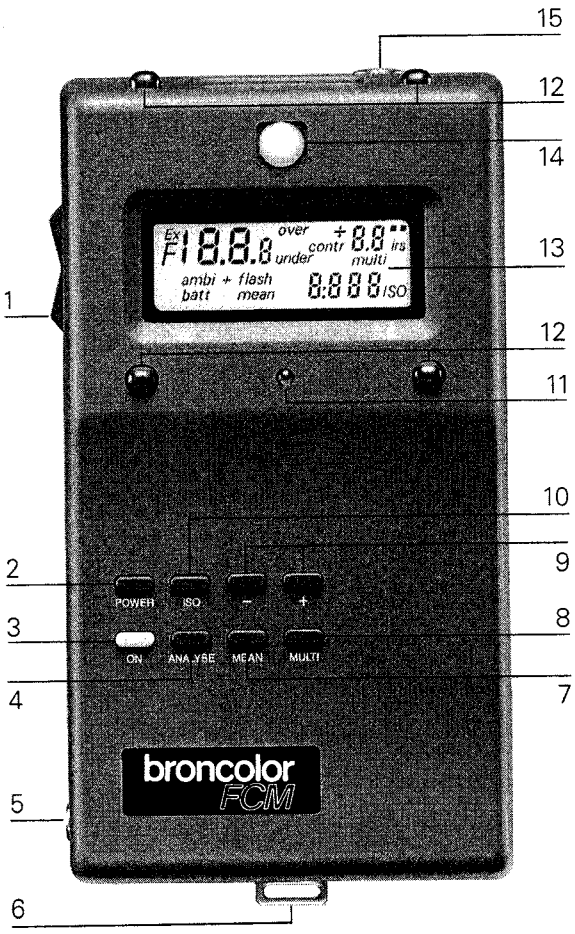
– For mixed light (flash and continuous) use the same procedure; however, it is important that the exposure time set on the FCM is equal to or longer than the desired exposure time. Mixed light measurements are possible only to a maximum of $^1/_8$s. For longer time exposures the balance must be calculated following separate measurements.

Technical data

Measuring probe with mobile measuring cell

Dimensions:	330 mm × 19,5 mm × 7 mm
Weight:	90 g
Cable length:	1400 mm
Measuring probe opening:	Ø 5 mm
Measuring probe:	Silicone diode with blue filter
Measuring range:	14 f-stops
Sensitivity:	min. 1000° ISO (= 10 MLXS)

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ANALYSE
MEAN
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