PAINT CHECKER FMG-30
User manual

1. Description of the instrument

Paint Checker FMG-30 is used to determine color intensity i.e. it enables measurement of the intensity difference between a sample under examination and a specimen. The measurement's output shows two colors most closely related to the sample under examination in reference to a selected color palette and the percentage of the components of the RGB color space. The vertical construction of the instrument enables measurement of very small area.

Figure 1. Paint Checker general view

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2. Measurement method

The color sensor and two electroluminescent diodes create a system based on a 45°/0° geometry. The sample's surface is illuminated at 45 degrees. The sensor is placed at 0 degrees perpendicularly to the sample's surface. The sample's color is mapped out using dE2000, which describes the numerical difference between the sample's surface color and reference. The dE2000 color-difference formula is based on the CIELAB color space.

3. General information

Model	FMG-30
Illuminating system	45°/0°
Light source	White LED
Sample's minimum size	32mm x 20mm
Power supply	Bateria 2xAA
Dimensions	128mm x 79mm x 25mm
Weight with batteries	162 g
Weight without batteries	116 g
Work conditions	10°C to 40°C
Storage conditions	-30°C to 55°C

4. Contents

- Manual
- Guarantee
- Batteries

5. Available color palettes

The FMG-30 meter enables measurement of a sample against the following color palettes: Ral Classic, Ral Effect, Ral Design, Sikkens 5051, NCS, Pantone, PPG The Voice of Color PPG Chromatic and Caparol 3D System-PLUS.

6. Initial settings of the instrument

When turned on for the first time the instrument operates on the Ral Classic color palette. The instrument automatically turns off after 3 minutes of not being used. When turned on, the instrument operates on the previously used color palette and language.

7. Description of the instrument

Figure 2. Front panel

Figure 3. Back panel

1. Menu navigation button – scrolling up;
2. Turn-on/off button; menu option confirmation;
3. Menu navigation button – scrolling down;
4. LED display that shows:
   a) color closest to the sample under examination,
   b) color second closest to the sample under examination,
   c) percentage of the colour space components RGB
   d) currently selected color palette,
   e) battery charge indicator;
5. Color sensor;
6. Battery shutdown.

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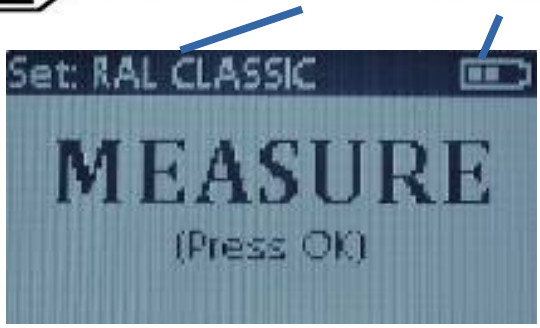


Figure 4. Main display

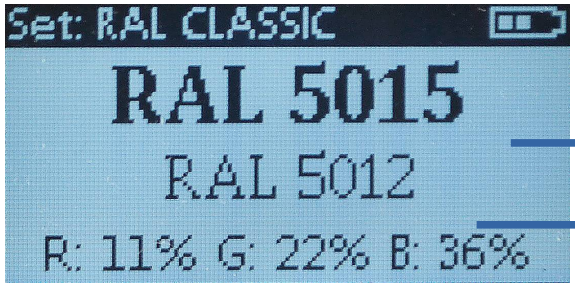


Figure 5. Display with a measurement result

8. Menu description

To enter the menu, press and hold down for 3 ▲▼ seconds. To navigate through the menu, use ▲▼. To select the illuminated item, press "OK" .

Menu options:

- Back
- Multiple measure
- Check white point
- Color Palette
- USB
- Language

- **Back,**

"Back" brings you back to the main display.

- **Multiple measure,**

Perform several measurements displaying only the percentage RGB value of the measured color.

- **White point check**

It allows you to check the optical system. To make the measurement you need a separate plate with a reference white point.

- **Color Palette,**

Use ▲▼ to change the color palette to which the measurement will be compared. You may choose between Ral Classic, Ral Effect, Ral Design, Sikkens 5051, NCS, Pantone, PPG The Voice of Color, PPG Chromatic or Caparol 3D-System PLUS.

- **USB,**

Enables connecting the colorimeter to a computer by means of microUSB – USB.

- **Language,**

Use ▲▼ to change the language: German, Dutch, French, Italian, English, Czech or Swedish.

9. Quick selection of color palette

From the main window (Figure 4) of the measurement result (Figure 5) you can quickly change the current color palette. To see the list of available palettes, press one of the buttons ▲▼ . Using select ▲▼ desired element in the color palette and confirm with "OK' ⏻ .

10. Making measurements

The sample to be examined should be dry and opaque. The samples can be placed horizontally (on the table), vertically (on the wall) or at an angle.

The colours matched by the instrument are for guidance only. Visually confirm that the colour given by the instrument is similar to that of the sample. Depending on the environmental conditions, colour identification may not be accurate. Final colour confirmation should be based on the physical template.

This instrument contains a sensitive optical system that must be kept dry and dust free preferably at room temperature. Keep it in the case till just before using it and put it back directly after use. Clean it only with a microfiber cloth and gently blow off dust if needed from the optical system. Any contamination may affect readings.

1. Turn the instrument on by means of ⏻.
2. Select the desired color palette by means of the fast selection menu.
3. Place the instrument on the surface under examination. **Caution!** The part with the sensor must touch the surface with all edges.
4. To make a measurement, press the button "OK" ⏻ . **Caution!** While making a measurement, take care that the instrument remains motionless.
5. After the measurement has been finished, the result will be shown in the display.
6. You can make another measurement by pressing "OK" ⏻.

When the measurement is complete, two colour numbers will appear on the screen that best match the sample being tested. The first colour (Fig. 5a) is the best fit, the second (Fig. 5b) is the next best fit.

Factors that may affect the measurement result:

- Optical system obstruction
- Low or high temperature
- Inappropriate use of the instrument
- Measurement carried out incorrectly
- The instrument was not stable
- Contaminated sample
- Uneven sample surface
- A sample that changes appearance depending on the viewpoint
- Metallic or husked dye content
- Samples with extremely high brightness (can contain fluorescent pigments)

11. Turning the instrument off

- To turn the instrument off at any time, press and hold down for 3 seconds , and then release the button.
- The colorimeter turns off automatically after 3 minutes of not being used.
- If the battery charge is too low, an icon will pop up showing a discharged battery and the instrument will turn off. The battery must be replaced.

12. Maintenance and service

Paint Checker is designed and constructed to provide many years of reliable operation. However, if a fault occurs that impairs the instrument's correct functioning, then remove the batteries to prevent the risk of further damage.
For more information about preventing faults or damage to your Paint Checker, please read the Instrument Care section below.

Warranty

Notwithstanding the statutory warranty claims, CAISSON provides a warranty in accordance with the laws of the Customer's country for a period of at least two years from the date of sale of the instrument to the end user. The warranty covers only those faults which are caused by defects in material or workmanship. A warranty claim must be accompanied by a proof of purchase with the date of sale specified. Warranty repairs shall only be performed by an authorized distributor of CAISSON. The following are excluded from the warranty:

- Use of force, damage caused by external factors or foreign bodies such as sand or water;
- Damage caused by failure to comply with the instructions for use;
- Normal wear and tear.

The warranty does not cover instruments that are partially or entirely disassembled

Instrument Care

- Protect the instrument from impact. Do not drop it or subject it to rough handling.

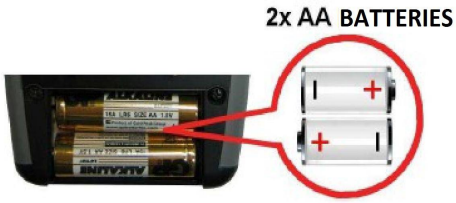
Transport it in the supplied carrying case.

- Do not immerse the instrument in liquids.
- Do not look directly at the measuring optics when the instrument is turned on.
- Never mix fresh and partially-used batteries.
- Protect the instrument from water, dust, extreme temperatures, high humidity and direct sunlight during storage and use.
- For long-term storage, remove the batteries. Do not leave exhausted batteries in the instrument, as they may leak and cause damage.
- If the instrument casing becomes dirty, then wipe it with a lightly dampened cloth. Do not use abrasive cleaners and solvents. Do not allow moisture to enter connectors, sensor or casing.

13. Power supply

The Paint Checker is powered by two AA batteries. You may use either disposable or rechargeable batteries. The battery status indicates the battery charge level. If an empty battery icon is displayed,

replace the batteries. Batteries should be replaced with a new set of batteries of the same kind. Do not use a rechargeable battery in combination with a disposable battery or a partially discharged battery with a full battery.
The figure below shows the location of the batteries in the battery compartment.



14. Specifications

ENVIRONMENTAL EFFECTS
Storage temperature: -30 to 55°C
Operating temperature: 10 to 40°C
Low and high ambient temperatures can affect the data display speed and color matching accuracy. Do not expose the instrument to high temperature, do not leave it directly in the sun.

MEASUREMENT ACCURACY:
The average color recognition basis of two results (Figure 5a and Figure 5b) is 99,5%. Taking only the first best fit the accuracy is approx. 95%. The device may not recognize unambiguously about 0,5% of colors.

BATTERIES: Two 1.5V LR6/AA-size alkaline batteries
Power consumption during normal operation: 350mW
Lifetime (at room temperature): approximately 18h

PHYSICAL CHARACTERISTICS
Dimensions: 128 mm x 79 mm x 25 mm
Weight: 162 g including batteries/116 g without batteries