Part Codes
GC1890

GREY&WHITE CARD

FOR PHOTO A VIDEO APPLICATIONS

INSTRUCTION PAPER

Grey card is designed for photographers to aid in determining lighting conditions on the scene and in balancing image in computer before print.
The card has matt neutral grey surface with 18% reflectance (grey area reflects 18% of the light hitting it).

Exposure meters (incl. digital camera meters) are calibrated to the reflection of an average scene so that the camera will record it in the optimum of the sensitometric/OECF curve. A grey card represents the standard reference value which all photo light meters are calibrated against.

The hypothetic average scene and the grey card reflect the same - approx. 18%. Real scene does not have average reflection very often, so it is necessary to use grey card.

THE 18% GREY CARD IS DESIGNED

- **to determine EXPOSURE LEVEL**
- **to evaluate COLOUR BALANCE**
- **to set up WHITE BALANCE**
- **to measure LIGHTING RATIO**

A) EXPOSURE DETERMINATION

Place the grey card so that it received the same light as your subject, without shadows and glares on card itself. Measure the exposure either by camera with built-in exposure meter, or by hand meter from the distance approx. 15 cm. When measuring, avoid casting a shadow on the card.

- For artificial light, place the card close to the subject, aimed between the main light and camera.
- For daylight place the card in front of the subject, pointing at the camera. You can measure the exposure with the card near your camera; be sure, that the card is in the same relationship to the light source as the subject.
- If the subject is very dark, increase measured exposure by 1/2 or 1 stop; for very light subject decrease the exposure to the same extent.

B) COLOUR BALANCING

Optimal reproduction of the grey card is not absolute neutral grey in all cases. Cameras and films often do not reproduce a neutral grey precise when everything else is balanced properly.

- **FILM CAMERA (prints)**

The grey card can be used to shot an average negative (or slide) to be used to balance prints. Because the card reflects all colours equally it effectively illustrates the colour bias of the light and the film. Comparing the photo print and original subject you should make corrective filtration much easier.

Place grey card in your scene as a reference that records the colour of illuminator. Colour variations of lighting are the major reason for filtration variance. Be sure, that the card is illuminated in the same way as the subject. By carefully placing the card it can be masked out of the finished print, or simply make two exposures one with and one without the grey card.

- **DIGITAL CAMERA (shots)**

Take a shot using the same method as above (B)
Open Photoshop, open your grey card image.

Choose IMAGE > ADJUSTMENT > LEVELS, click Option, choose Middle Grey patch, set levels L=50, a=0, b=0.
Position the eye dropper over the grey card and click.
You should see an instant improvement in colour.
Leave the LEVELS dialogue box open, then click on SAVE. Use saved "Custom Colour Balance" for all shots taken under the same lighting conditions.

C) SETTING THE WHITE BALANCE (DIGITAL CAMERA)

Reverse side of the grey card is white (reflectance 91%, L*a*b* coordinates: L*=96, a*=0, b*=1), without any optical brightening agents. It is really white under any illumination.

You can use white side of grey card for white balancing, before taking a shot (preset):

- Set the White Balance switch on your camera to appropriate position (Custom / PRE). Arrange your chart in the same way as (A), but turn the chart by WHITE side towards the camera. Measure white readings and save them to "white memory" of the camera.
- Use this "Custom White Balance" for all shots taken under the same lighting conditions.

D) LIGHTING RATIO

LIGHTING RATIO is a relationship between entire illumination (main plus fill-in) and fill-in illumination alone. This ratio should not exceed 3:1 (or max. 5:1 - according to the type of the final positive: either paper print or slide, black&white or colour, for exhibition or for print). Using grey card you can determine your lighting arrangement to achieve the appropriate lighting ratio. For measurement, place the grey card in close proximity of the subject.

- Let all lights on to measure entire illumination of the subject. Turn the card to obtain the highest reading on your meter (mostly it is when the card is aimed towards the main light). Be sure, that no of your lights shine directly to the meter (you must switch off such light). Record the reading.
- Turn off the main light to measure fill-in illumination. Aim the card toward the camera. Record the reading.
- Compute difference of both readings in stops. The table will give you the lighting ratio:

stops difference	lighting ratio	stops difference	lighting ratio
1/3	1,3 : 1	2 1/3	5 : 1
2/3	1,6 : 1	2 2/3	6 : 1
1	2 : 1	3	8 : 1
1 1/3	2,5 : 1	3 1/3	10 : 1
1 2/3	3 : 1	3 2/3	13 : 1
2	4 : 1	4	16 : 1