



THE BASICS OF SILK SCREENING

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Introduction

Silk screening, also known as screen-printing or serigraphy, is a printing technique that involves passing ink through a porous fabric, thus creating a sharp-edged single-color image [1] created from a stencil. Multiple color images are realized by incorporating multiple stencils, one graphic and screen for each color. Silk screening is the process Protocase utilizes to provide labeling for connectors, switches, ports and other components, as well as company logos, graphics or text.

The Silk Screen Process

The process begins with the client providing either an electronic image of the required print or a sketch of the required print with enough detail so a Protocase technical representative can create a suitable electronic image. When providing an electronic image, clients must be aware that the image quality is critical to the resulting final screened image that can be achieved. The porous fabric Protocase uses for its screens contains 300 threads per inch; therefore the image we receive from our clients must be of at least that much detail. In other words, images less than 300 dots per inch (dpi) will not be of desired quality and may result in either blurred or jagged edges.

Once the image (one image for each color to be screened) is received from the client, it is then printed on velum using a laser printer. Screens are prepared to have the image burnt in by first applying a swipe of emulsion, an ultra-violet sensitive liquid, to the screen and then let dry in a dark room for 2 hours. The print is then taped to the screen and burned under an ultra-violet light for 6 minutes. The screen is then washed with a high pressure washer which removes all the emulsion hidden by the image, thus leaving a sharp, porous, representation of the image in the screen.

The screen is then fitted to an apparatus that allows the enclosure or panel to be mounted under the screen and properly aligned. Ink is then applied to the top surface of the screen and is then squeezed over the porous image allowing the ink to pass through to the enclosure or panel underneath. The panel is then removed and baked in an oven for 15 minutes. The process is then repeated for each color applied.

The following information offers tips and suggestions that will help optimize the silk-screening process

Graphics Process

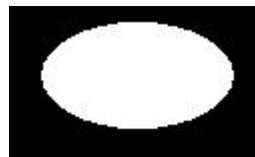
Images can be provided in a variety of formats. We can accept most file formats, but the most common are the following, in order of our preference:

- Adobe Illustrator (AI),
- Portable Document Format (PDF),
- Photoshop Document (PSD)

- Drawing (DWG), and
- Drawing Exchange Format (DXF) format.

For other file format please contact our [technical support](#).

As mentioned previously when providing an electronic image, clients must be aware that the image quality is critical to the resulting final screened image that can be achieved. The porous fabric Protocase uses for its screens contains 300 threads per inch; therefore the image we receive from our clients must be of at least that much detail. In other words, images less than 300 dots per inch (dpi) will not be of desired quality and may result in either blurred or jagged edges.



Resolution less than 300 Dpi



Resolution greater than 300 Dpi

Please note that the final quality of the screen print is affected by the type of powder coat finish chosen for the enclosure. Heavily textured finishes can degrade the screen print quality. We recommend selecting a smooth or lightly textured powder coat where silk-screening is required.

Text

Most of our customers are interested in having text printed on their custom electronic enclosures. Text can be used to identify components such as connectors, switches, and push-buttons or to show company names or caution statements.

We prefer to receive text files in the same format as described above under 'Image file format', but will also accept an email with the following information:

- Text you wish to have printed
- Font (Arial, Times New Roman, etc.)
- Font Size (12, 14, 16 etc.)
- Font Color (See below for color samples or contact us for more information)
- Other Font Characteristics (bold, italic, underline, etc.)
- Location (Measurements describing the placement of text on enclosure)

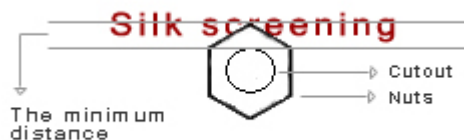
Text silk screening example



- Text: Silkscreen
- Font type: Arial
- Font size: 14 pt
- Font color: Black
- Style: Bold
- Measurement: (1,3) inches from the origin, OR (-1,2) inches from the cutout

Other TIPS

- Your custom enclosure design should ensure that fasteners or other hardware do not cover the silk screening (both the graphics and the text). Fasteners often leave small creases that result in breaks in silk-screened lines (see below).



- Enclosure sides have slightly rounded edges which cannot be screen printed, thus the graphics and the texts should be placed at least ¼ inches from the edges of an enclosure [2].
- Exercise caution when selecting colors to be used for screen printing. Placing dark texts and/or graphics over a black finish will result in an almost unreadable text. Similarly, placing a light color texts and/or graphics on a light background will be almost unreadable.



Powder coat color: black
Silkscreen color: dark red

» POOR CONTRAST



Powder coat color: black
Silkscreen color: white

» WHITE CONTRAST

- d. More than two colors graphics and texts
If your graphics and text contain more than one color and overlap, please provide each colored image as a separate file or group them separately.



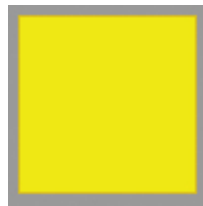
Each distinct colored groups (or layer) are silk screened one at a time.

Color

Protocase stocks a variety of standard ink colors, some of which are shown below. Please contact your customer service representative if you require a non-standard color.



White



Lemon Yellow



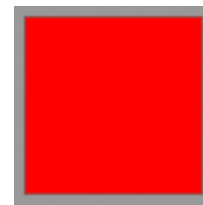
Pantone 123 C Yellow



Pantone 142 Yellow



Brilliant Orange



Red



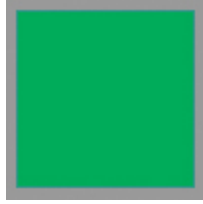
Pantone 649 C Blue



Pantone Process Blue C



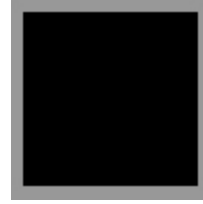
Reflex Blue



Green



Purple



Black

Silk Screen Samples





Questions / Comments

If you still have questions or comments please do not hesitate to contact us at tech@protocase.com or 1-866-849-3911 (toll free US & Canada).