

tively, label **155** may include transparent material for label indicator clearance spaces **380** and **390**. Open areas or transparent materials for label clearance spaces **380** and **390** allow the visual status of label indications **160** and **320** to be viewed.

Label **155** is attached to label holder **150** by techniques that hold label **155** in a stable position, which may include the use of adhesives, compression clips, or hook-and-loop fasteners, to attach label **155** to attachment surface **350** (FIG. 3B), of label holder **150**. For example, in one embodiment of the present invention, label **155** is produced by applying a photographic image of a faceplate, such as faceplate **110**, which is printed onto photographic paper material with an adhesive backing and applied to attachment surface **350** of label holder **150**. In another embodiment, label **155** is detachably attached to label holder **150** using corresponding hook-and-loop connections; one connection attached to label holder **150** and the other corresponding hook-and-loop connection attached to label **155**, making label **155** removable. The photographic image of the faceplate is a digital image and may be edited using photo editing software. The image of the faceplate is edited to enhance the labeling information on the faceplate to improve recognition and identification as appropriate, for example, increasing size, adding colors, or changing contrast.

In an alternative embodiment, label **155** includes markings that provide information associated with components within electronic device **105**, for example a hard drive, and label holder **150** includes label indicators that provide visual status information associated with the components of electronic device **105**. In one embodiment, label holder **150** may include a label on the front side of label holder **150** that includes a visual representation of faceplate **110** and corresponding electrical status indicators, and a label on the back side of label holder **150** that includes one or both of: information associated with electronic device **105** and components of electronic device **105**. A second label (not shown) in Label **155** and label holder **150** are used together to enhance accessibility to general information, identification, and status for connections to and components of electronic devices.

Label port ID **355** identifies an adjacent label connection port image, which corresponds to an actual connection port at the same respective position on the connection port faceplate of an electronic device. For example, label port ID **355**, designated as "A", is the identification for label port image **360**. Each label connection port image on label **155** has a corresponding label connection port ID, for example, label port IDs **355** and **365** correspond to label port images **360** and **370**, respectively. In one embodiment of the present invention, label port ID **355** is included in a photographic image of a faceplate of an electronic device, for example, faceplate **110** of electronic device **105**. In other embodiments, label port ID **355** results from editing a digital photographic image of a faceplate, using photo editing software, or other editing technique.

FIG. 3B depicts a block diagram of label holder **150**, including signal circuitry and label status indicators, in accordance with an embodiment of the present invention. Label holder **150** is shown as including connection point **187** at the distal end of label holder **150**, connection point **185** at the proximal end, circuit connector **315**, signal circuit **310**, and label indicators **160** and **320**.

In one embodiment, label holder **150** is constructed of polyimide sheets at least one of which has a copper surface that has been processed to form signal circuit **310** by using photolithography and chemical etching techniques. Photolithography is a technique that exposes a pattern to a light-sensitive photo resist applied to a substrate material. The photo resist pattern protects the underlying material. A series

of chemical treatments then either removes excess conductive material, revealing the exposed pattern on the material underlying the resist, or enables deposition of a new material in the exposed pattern as defined by the resist, onto the underlying substrate material. Signal circuit **310** is comprised of circuit lines that transmit electrical current to status indicators, such as label indicators **160** and **320**. Each status indicator corresponds to a respective connection port and duplicates or replaces the status display of status indicators on faceplate **110** (FIG. 1A). Label indicator **160** displays the status signal of a connection port on faceplate **110**, by connecting a small light emitting diode (LED) to a circuit of signal circuit **310**, on or within label holder **150**. LEDs are attached to the circuit contacts of signal circuit **310**, for example, by applying a soldering process. Label indicators **160** and **320** are connected to respective circuits of signal circuit **310**, such that the status signals received by label indicators **160** and **320** correspond to their respective connection ports on faceplate **110**.

In other embodiments, other base materials may be used to create label holder **150**, such as: polyester, polyethylene naphthalate, or fluropolymers materials, for example, and conductive surfaces, such as copper foil, may be applied with an adhesive and signal circuitry created by etching or milling processes. Alternatively, signal circuit lines may be applied with a screening process using conductive pastes, or lasers may be used to define circuit patterns. A protective coating can be applied to one-sided circuitry instead of using a second sheet of base material to insulate and protect circuitry. In yet other embodiments, a logic circuit may be used to control the display of status indicators, which may reduce the required circuitry. In still other embodiments, wireless technology, for example Bluetooth®, may be used to provide status signal logic to the status indicators on label holder **150**.

In one embodiment of the present invention, a second sheet of polyimide is combined with the circuit-containing polyimide sheet that includes LED status indicators, so that the circuitry is insulated by polyimide. The second sheet has polyimide material removed from the areas that correspond to the LED status indicators locations of the first polyimide sheet. The polyimide material may be manually removed from the LED indicator areas by drilling, for example, or by use of photolithography patterning and chemical etching. In this manner the circuitry remains protected and the status indicator LEDs are visible.

For example, a first sheet of polyimide material is laminated with copper foil and a photo-sensitive resist is applied to the copper surface. The circuitry image is projected on the photo-sensitive resist using a light source appropriately matched to photo-sensitive material. Developing the photo-sensitive resist that does not cover the desired circuit pattern is removed. The exposed copper surface is removed using a chemical etch, and the photo-sensitive resist remaining is stripped off, leaving the circuitry pattern that it covered. LEDs are placed on exposed copper pads and attached by soldering the LED pads to the circuit copper pads on the polyimide material. A second sheet of polyimide material is applied to the first polyimide sheet by lamination, adhesive, or other bonding technique. Material from the second sheet of polyimide is removed from areas that correspond to the LED attachment pads of the circuitry pattern on the first sheet of polyimide.

Circuit connector **315** connects to electrical device **105** and provides electrical signals to the status indicator LEDs on label holder **150** that correspond to their respective connection port. Circuit connector **315** may connect by plugging into the main circuit board or mother board of the electrical device that is configured with a receiving connector corresponding to