

circuit connector **315**, and providing status signals to the status indicator LEDs on label holder **150**. Alternatively, circuit connector **315** may connect to a signal splitter that duplicates electrical signals for the status of connection ports of electrical device **105** and provides the duplicated signals to the status indicators of label holder **150**, via circuit connector **315**.

In an exemplary embodiment, a label indicator, for example label indicator **160**, receives a steady signal to indicate an active-waiting mode, in which the connection port is active, but is waiting for input to be received or output to be sent. The label indicator receives an intermittent signal to indicate actively transmitting or receiving, and receives no signal and displays an absence of a visual indicator, such as not displaying any light, when the connection is not enabled. In another embodiment, different signals may be used to indicate specific information regarding the state or condition of the connection.

FIG. 4A illustrates a flexible label holder including status indicators, in accordance to embodiments of the present invention. Alternative status indicators may be used in presenting the status information associated with corresponding actual connection ports on faceplate **110**. Shown in FIG. 4A is label holder **150** including label displays **410**, **415** and **420**, which are positioned to correspond to associated connection ports on faceplate **110**. In one embodiment of the present invention, label displays **410**, **415** and **420** are micro-sized liquid crystal displays, commonly known as LCDs, attached to electrical circuit connection points on label holder **150**. Label displays **410**, **415**, and **420** receive electrical signals via signal circuitry **310** and display status information that is associated with their respective corresponding connection port on faceplate **110**. Active matrix LCDs have dot matrix display capability, in which the LCD display area is comprised of pixels that are individually controlled. This enables label displays **410**, **415**, and **420** to display text, numerals, graphical images or scrolling messages that can identify a connection port, indicate the connection port's state, display error codes and even stream a diagnostic message. LCDs require a microcontroller to receive and transmit the data to display on an LCD as well as managing which data to display on which LCD. Flexible label holders that include attached LCDs may require a label holder with a larger diameter, or an alternative retraction technique requiring a reduced amount of label holder bending.

For example, label display **410** is shown indicating that the corresponding connection port is active by displaying the text "ACTIVE", and label display **420** is shown presenting a scrolling message of information that is associated with the corresponding connection port on faceplate **110**. Label display **415** is shown presenting the text "ERROR", indicating an error has occurred with the corresponding connection port on faceplate **110**. Label display **415** may alternate between displaying an error state and displaying an error code or error message, which is useful in diagnosing problems with the corresponding connection port on faceplate **110**. In addition to displaying the status or error message associated with a corresponding connection, label displays can present the label port ID associated with the connection port, minimizing the need for additional identification markings on the label. Attaching LCDs to label holder **150** that correspond to connection ports on faceplate **110**, enables label holder **150** to provide information beyond what is available by LED status indicators and makes the information more accessible.

Label holder **150** is shown to include circuit controller **440**, which receives status signals from electronic device **105** associated with the connection ports of faceplate **110** and distrib-

utes the signals to the corresponding LCD on label holder **150**. Circuit controller **440** is shown connected to signal circuitry **310** and is positioned at an end of label holder **150** to minimize the stress and impact of label holder **150** bending when retracting into label housing **130**. Alternatively, circuit controller **440** is positioned to be unaffected by the bending of label holder **150** when retracted, for example circuit controller **440** may be positioned within label housing **130**, at or near circuit connector **315** or within electronic device **105**, or circuit controller **440** may reside within electronic device **105**, for example, on the main circuit board connected to label holder **150** via an adapted connector **315**.

Label holder **150** also is also shown as including label indicators **425** and **430**. Label indicators **425** and **430** are LEDs that indicate the status of their corresponding connection port, and are shown to indicate that implementations of embodiments of the present invention may include combinations of status indicator types. Label indicator **425** and **430** will present status information conveyed by various light displays, whereas label displays **410**, **415**, and **420** convey text or graphical information associated with the corresponding connection port on faceplate **110**.

In another embodiment of the present invention, the status indicators of FIG. 4A are radio-frequency identification (RFID) chips, which are attached to label holder **150** and provide identification of the corresponding connection ports. Attached RFID chips are referred to as "tags" and passive tags transmit identification information when exposed to the radio energy transmitted by an RFID reader, or interrogator. RFID tags can also be "active tags" having battery power or access to an electrical power source used to transmit their associated identification information. RFID tags used as status indicators on label holder **150** can transmit identification of corresponding connection ports to an RFID reader, and receiving status information from electronic device **105**, can transmit status information, in the form of a code.

In another embodiment of the present invention, the status indicators depicted in FIG. 4A are micro-sized electronic speakers, which present an audio identification of an identification mark for a corresponding connector port of faceplate **110**, and an audio indication of the status of the corresponding connector port. The electronic speaker is activated by an initiating switch, which for this embodiment may be on label holder **150** in the position held by label indicator **425**. The delivery of information includes connector port identification and status information in an audio format including a message including one or more of: synthesized or recorded language, sounds, and codes.

FIG. 4B is a block diagram illustrating a label for a label holder that includes LCD status indicators, in accordance with an embodiment of the present invention. Label **155** is shown including label port ID **450**, label LCD space **460**, label indicator space **480** and label indicator ID **470**. Label LCD space **460** is an open area of label **155**, free of label material, or alternatively, label LCD space **460** is comprised of transparent material. Label **155**, when applied to label holder **150**, is positioned in an orientation that allows full view of label display **410** (FIG. 4A), with label LCD space **460** surrounding label display **410**. Label **155** includes additional label LCD space areas corresponding to additional LCD label displays on label holder **150**. Label port ID **450** provides identification for label display **410** and corresponds to the connection port on faceplate **110** for which label display **410** provides status information. In one embodiment, label port ID **450** is optional if label display **410** also displays the ID of the corresponding connection port.

What is claimed is: