Title: LCD SCREENKEY

S P E C I F I C A T I O N

This invention relates in general to gaming machines but more particularly to programmable LCD screenkeys to replace traditional push button panels.

A standard gaming machine, normally, fitted with a button panel has 15 buttons on it. 10 of these 15 buttons are normally assigned for players ,to place different betting combination on a game, while the rest of the 5 buttons are normally assigned to dedicated functionality such as "Collect", "Reserve", "Take win", etc…. Each traditional push button's functionality is identified and explained thru a permanent printed label, sometimes also called "button legend", to a player.

Due to the size restriction of each traditional push button, there is only limited information that can be printed on button labels and used within a gaming machine. However, in the old days, without the presence of a powerful microprocessor, gaming machines only had limited functionality to perform, so by adding more buttons to the button panel, this kind of traditional

push buttons with the use of fix printed labels have served the gaming industry for the past 15 years without any big issue.

But since more and more extremely powerful microprocessors are being used in gaming machines, the life of the traditional push button is going to end. With the powerful support from microprocessors, manufacturers start to add more and more functionalities and game features into the machines in order to compete with each other and to attract players. For example, most manufacturers have added more bets, more lines, to guess and pick a box second screen feature. Some extreme manufacturers even added the Top Gun flying simulation feature into the machines.

Manufacturers, regulators, and operators are demanding more and more functionalities to be added into gaming machines to help them monitor the daily operation of gaming machines.

All those new features and functionalities require the use of extra buttons. But with limited number of buttons that can be installed on a button panel, manufacturers have to use methods of encoding multi-functionalities into one button to reduce the total

amount of buttons required. But as limited information can be printed on a button label, this method is definitely insufficient to explain the actual functionality of a button to a player.

The onset of multi-gaming systems, no matter if they are standalone or server based, is definitely making an end to the usage of traditional push buttons on gaming machines. With multi-gaming systems, the number of games on a gaming machine can be unlimited, as each game may have its unique betting combination and features, which in terms would require different button labels. There is just simply no way to print these unlimited information on a fixed button label to explain the button's actual functionality to a player.

The gaming industry is demanding a new kind of technology to solve this problem.

It is the object of the present invention to replace the traditional push buttons with the programmable LCD button since the LCD button has many advantages in handling massive gaming functionalities.

Another object is to provide an LCD button that supports real time information display. This is the perfect solution to the above-mentioned problem in multi-

gaming systems; game button information for different games can be built within the individual game's executable image, and be downloaded into buttons at the same time as the game is being selected. This has completely removed the insufficient size issue that are usually tied to fix printed button labels.

Still an object is that animations can be easily implemented with programmable LCD buttons, as animated graphics are much appealing to people. Game software can control the programmable LCD button to display fancy animation during game idle and game feature to attract players and give them a much stronger impression.

Moreover, the programmable LCD button can also make the switching and changing of games become much simpler, no more change of button labels are required, all buttons' labels can be downloaded from the new game image at the same time of the game switching.

These and other objects and advantages of the present invention would become apparent upon reading the following detailed description:

This programmable LCD key switches or ScreenKeys, are programmable electro-mechanical push button key switches. It combines a graphical LCD display with multi-

color LED backlighting and the traditional push button together. A programmable LCD key can change function and display text under software control in real time.

The emergence of programmable LCD buttons, with its ability of changing functionalities and display text under software control in real time is a perfect solution to the problem that traditional push buttons have. Although programmable LCD is still more expensive than traditional push buttons, this can be justified by the minimization of confusions and disputes in operation, due to the programmable LCD button's intelligence and the pertinent information presented in real time.

There are two uses of the programmable LCD buttons in a gaming machine.

One is to display button legends/labels to players according to the real time status of the game. For example, on winning a feature, the game software can change button legends/labels to better advice what the player should do, say turn on one button with text "Press to start" and the rest of the buttons with fancy animations.

Second is to use it in audit mode and to advise the operator of each buttons' functionality. At the moment,

every manufacturer is doing this thru the main screen, which in terms reduces the available screen size for displaying required audit information. So the use of this kind of buttons will be a perfect solution to this.

The programmable LCD buttons are used preferably in this manner. A player selects the game she wants to play from the machine's game selection interface, usually it is the machine's screen. The slot motherboard receives the request and then downloads the requested game from a game server. All images of that game including the details of the button labels and button animations are downloaded into the slot motherboard from the server. The slot motherboard would then separate the buttons' information from the downloaded image and then program the programmable LCD buttons according to game status in real time.

Downloading of the game from server is optional in a stand-alone multi-gaming system as all the buttons' information of the selected game is being included in its game executable image already. Once the selected games start to run, it can program the programmable LCD buttons with such information according to its own game status in real time.

In an audit mode, an operator selects an audit menu for examination from the machine's audit mode and/or test mode. The slot motherboard receives this request and then switches to the audit menu that the operator selected. At the same time, the slot motherboard would program the programmable LCD buttons with new texts that corresponds to the selected menu and to advise the operator with each button's functionality.

Comparison between programmable LCD button and traditional push buttons in functionalities and cost are listed below

FUNCTIONALITY	PROGRAMMABLE LCD buttons	PRINTED traditional Push buttons
Display quality	Good	Bad
Real time image Display	Supported	Not supported
Animate images	Supported	Not supported
Supporting run time game switching	Supported	Not supported
Supporting run time Advertising	Supported	Not supported
Fulfilling regulator's Concern	Yes	Not for complicated games
Separate development and circuits required	Yes	No

Price	HK$140-$201 Each base on LCD Resolution and quality	HK$10-15 each on production run

It is not cheap to install the programmable LCD button on a gaming machine. However, this high price can be justified by the minimization of confusions and disputes in operation, due to the programmable LCD button's intelligence and the pertinent information presented in real time. Also, this programmable LCD button is the only way to support multi-gaming systems with physical buttons, and because players, in this generation, love to play with button machines.

There is another available technology and equipment in the field that is directly competing with this programmable LCD buttons. It is known as "touch screen". Touch screen can support most of the functionalities that programmable LCD buttons have through the displaying of real time images/texts on the main screen. However, the use of touch screen has two major differences with using programmable LCD buttons. Firstly, touch screen would not be able to provide players with a kind of bash feeling because non-physical buttons are being installed. Secondly, due to the use of the main screen for

displaying images/texts, it in terms reduced the available screen size for displaying other information.

CLAIM:

1. A gaming machine being fitted with Programmable LCD buttons to replace the traditional push buttons.