Pluto

Pluto 5 Amusement Machine Control System

The **Pluto 5** control system is available for manufacturers who need a `state of the art' electronic controller to produce modern amusement equipment. Being a standard `off the shelf' system, it enables machine producers to minimise their risk and maximise the market potential of their amusement machines.

With over 180,000 **Pluto** systems sold internationally, the reliability and performance of the **Pluto** family is well proven. **Pluto 5 / Pluto 5 Casino** will satisfy all the demands of a modern amusement machine. The system is cost effective and provides each **Pluto** user with complete software security for their game.

At the heart of the system is the **Pluto 5** controller. It uses a Motorola 68340 processor and has the capacity for up to 2Mbyte of EPROM and 1Mbyte battery backed RAM. **Pluto 5** has sufficient I/O for a complex machine. Yet further facilities for non standard machines can easily be added by using **Pluto 5** expansion boards.

Expansion is available to cover such requirements as Lamp and LED matrices, **RS-485** interface, RAM Expansion, etc. Each expansion module follows the **Pluto** philosophy of being easy to use, readily available and cost effective.

In addition to the **Pluto 5** control board, **Pluto 5 Casino** is also available. This board offers enhanced communication facilities. A Video Card is also available that will plug into either **Pluto 5** or **Pluto 5 Casino** for poker type video machines (see datasheet).

Latest Technology
One of the key features of **Pluto** is that it uses an FPGA chip to achieve software security. This FPGA also performs and assists with a number of functions, some are traditional hardware functions such as I/O mapping, while others are traditionally software functions such as multiplexing the lamps and DMA control of the sound.

The FPGA therefore minimises the component count on the board, reducing cost and improving reliability. It also relieves the CPU loading.

HEBER

Advanced Security

Pluto 5 contains inherent security. Unlike EPROM's, an FPGA cannot be read and therefore cannot be copied. Its function is complex and copying it would be like trying to copy a PCB by only looking at what the signals on the external connectors are doing, i.e. *impossible*.

Once you start to use **Pluto** in volume we will provide our `MASTER' security facility free of charge. A unique FPGA will be generated for your company to use in your machines. This protects your software from being copied as your EPROMs will not run in any **Pluto** boards other than your own. This system adds levels of security previously unheard of within the industry.

The system is called `MASTER' because it uses a master security key. This key will typically be held by one of the company directors. When your software is complete the data for the EPROM's is given to the key holder.

The key is actually a program we supply which is run on the key holders PC. The key holder does not need any technical knowledge as the program automatically changes the EPROM data so as it will only run with one specific FPGA code.

With `MASTER' security encoding the contents of the EPROM are checked during software initialisation. If the code has changed since it was processed by the MASTER KEY the board simply refuses to run. It is the FPGA that does the checking, so no amount of decompiling of the EPROM contents will defeat this system. Indeed boards with this protection will not even run new software that has not been processed through your MASTER KEY.
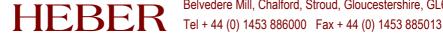
The other security feature that `MASTER' Security gives is to protect upgrades and conversions. You can use different FPGA's on different games. This means that conversion kits can include a new FPGA rendering EPROM copies useless and preventing unauthorised duplication.

SEE FOR YOURSELF

The **Pluto 5** Devleopment Kit will allow you to see just how flexible and effective **Pluto** is for your products. The kit comes complete with all the basic hardware and software you need. Full documentation is also provided on CD-ROM. For more information please see the **Pluto 5** Development Kit datasheet. If you need to develop your game on a short timescale, **Pluto 5** 'FastTrack' Software is also available.

Availability List for the Pluto 5 System

- Pluto 5 / Pluto 5 Casino Controller
- Calypso 16 Video Graphics Card
- EPROM and RAM Expansion Boards
- EPROM/RAM Expansion Board
- 64 Lamp Expansion Board
- LED boards (standard and Dot Matrix)

- Trial and Relay Drivers
- 8 digit LED Expansion Board
- E² Module
- HII / ccTalk
- RS485 (isolated and non-isolated)