

№ 125



Joe Blackwell Director, Parts Sales & Technical Support Susan White Parts Sales Manager

Tashia Miles Customer Service Representative Patty Schraps Parts Stockroom Manager

Jim Thornton Technical Support Engineer

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Chas Siddigi Technical Support Engineer Jay Alfer Technical Support Doc. Administrator

Parts & Service Managers

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SUBJ: Quick Tip for Display Troubleshooting:

U201 White Star Board System™

Sumptom:

The DOT DISPLAY is not functioning in Game *Mode*, however, game functions are **OK**. Upon Power-Up, the Display shows the "Display Version of Software" then goes BLANK.

Problem:

U201 Failed. U201 is a 74HCT273 Data Latch (see the CPU Sound Bd. pictorial, lower right).

Solution:

Replace U201.

Troubleshooting Tips:

First check that all the Ribbon Cables & Connecters are secure.

Depress the Begin Test Button (inside the Coin Door, #3 Black Button) to enter Diagnostics (Note: You do not need a working display to perform this test). Though you will not see any display graphics you have just entered the Portals Service Menu; by actuating the Flipper Buttons you will be forcing a display call. If this is performed with a working Display, you will see that you are moving an icon across the screen. A state change at the outputs of **U201** will occur if **U201** is good. Due to the slow speed the ouputs toggle at, a Multimeter can be used to check the outputs of U201 at Pins 2, 5, 6, 9, 12, 15, 16 & 19.

In *Normal Operation*, the **OUTPUTS** are typically in a high or low state toggling 0 volt to 5 volts as a byte of data is being latched to the ouput. This byte of data can also be referred to as a Display *Call.* This would indicate the latch is **operating** correctly.

If U201 has failed, the OUTPUTS may have one or more of the following conditions:

- erratic or oscillating signal
- have no clean 0v to 5v transistions (e.g. 3.2v)
- one or more bits stuck high or low

Continued on the next page.

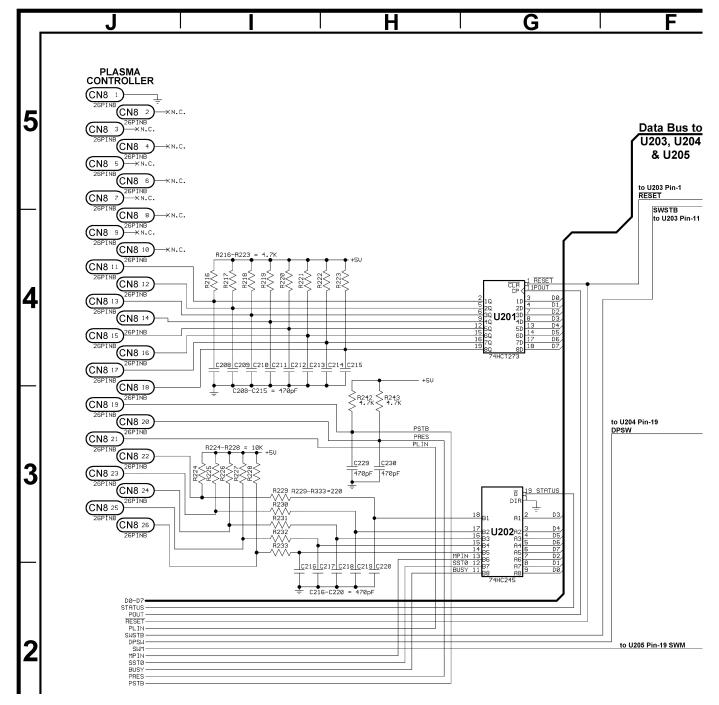
R421 M19 P422 1483 PH16 BAT1 **J**P417 R407 R408 R485 MIS C499 C491 405 402 P418 406 VBATT U209 U212 U210 **74LS** U209 6264/MS62256 L201 SW200 GND1 74HC245 L200 **u201** R302 74LS374 R217 74LS374 U201 74HCT74 . R219 R218 R295 R220 R221 R222 R223 R242 74HC245 C23 R243 R224 E21 R225 R226 C218 R231 I_{R227} R228 (-) CN'

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Excerpt from CPU/Sound Board Theory of Operation (re: Plasma Interface):

Plasma Interface: The data path for communication to and from the Plasma Controller Board is 8 bits wide. There are separate *Input* and *Output Busses*. The *Input Bus* from the Plasma Controller to the CPU/Sound Board comes in on CN8 [PLASMA CONTROL]-Pins 3-10 and is fed into U200 for input to the CPU's *Data Bus*. Data going out to the controller comes from the CPU's *Data Bus* through U201 and onto CN8-Pins 11-18. Status back from the Plasma Controller comes in on CN8-Pins 22-26 and is fed into U202 for input to the CPU's *Data Bus*. Two control signals that go out to the Plasma Controller are PRES [PLASMA RESET] and CN8-Pin 19 [PSTB - *Plasma Strobe*]. The Plasma Reset is software controllable through U216/B and also has a test point "Plasma Reset". The *Plasma Strobe Signal* to the controller is generated from U216/A and is *used to latch data* into the Plasma Controller.

CPU/Sound Board Schematic (Sheet 3 of 3)



Please phone or eMail with any questions or comments at the below numbers or address.

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