

April 2007

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April 2007

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(drum roll please)

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On the cover: The Stellaris Casino
at the Marriott Resort in Palm
Beach, Aruba. The Stellaris is
Aruba's largest casino.



Peace

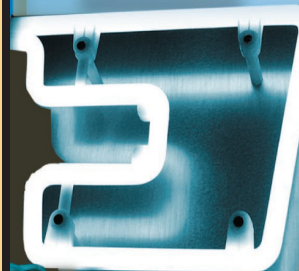
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Slot Tech Editorial

I don't have much to say. I am in the middle of a full month of slot tech training in Aruba. Here's what we're doing:



Jack Geller of JCM lead a full day on WBA and UBA Bill Acceptors. And what did Jack Geller do on his two precious days off in Aruba? Sat in his hotel room and worked on a new service manual for JCM's amazing new "Table Safe" product.



Ray Holdren (Kristel, Nevada) took a full two days to cover LCD monitor repair.



Queency and Team Stellaris



We had a lot of fun fixing monitors!

Randy Fromm's Slot Tech Magazine

Editor

Randy Fromm

Technical Writers

Ted Befus, Michael Brennan, Jason Czito,
Herschel W. Peeler, Pat Porath

International Contributor

Martin Dempsey

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92020-2827 tel.619.593.6131 fax.619.593.6132
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Randy Fromm



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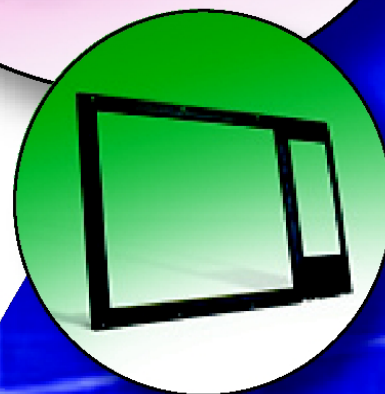
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Introducing.....

(drum roll please)

By Ted Befus



Today, I'd like to introduce you to our new best friend and successor to our Royal Ascot, the Unidesa Wild Race.

The what? From who?

The WILD RACE from UNIDESA. I'm sure there are some of you who are familiar with the name Unidesa. For those of you who aren't, I'll give you a little bit of information.

Unidesa was founded in 1983 as part of the Cirsa business corporation. It has offices around the world and holds licenses throughout Europe, USA and Canada.

All games produced by Unidesa are engineered and built in Spain, then shipped around the world. That may seem odd that they do not have a production facility in the USA, however there are a lot of OEMs that didn't get their start in North America. Aristocrat and Atronic immediately come to mind.

Anyway, back to the game. We were researching for some time trying to find a replacement for the Ascot long before it took its last breath. We looked at games for nearly two years before we settled on the Unidesa game. They certainly weren't the only viable option.

The game is quite interesting technically. Each station is connected to the main computer through an Ethernet connection. To make things less complicated, each station is addressed on its main board and PC so the main unit can talk to it. Each station is run through an Ethernet switch which is run

into the main unit and PC.

The main unit controls all the race odds and the overall payout percentage. The main unit is really nothing more than a processor board running as a server. Each station (including the main) is equipped with a PC to run the game graphics and handle all the Ethernet information.

Let's start by looking at the station itself. Before I get too far into this, I'd like to say here and now that the opinions stated in this article are my own and they may not reflect the opinions of this magazine or its sponsors. Ok, now that is out of the way



Figure 1 showing a close up view of the cam with the cables coming off it.



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we can get started.

The overall appearance of the station is aesthetically pleasing, but as we all know, looks aren't everything. The very first thing that caught my eye about these stations was the door locking mechanism. It could use some improvement. Instead of a conventional lock/cam combination combined with a latch, Unidesa has gone with a non-standard design. The lock cam is attached to two cables that run to each corner of the station and run around a pulley that is connected to a spring loaded door latch at each corner. As the cam is turned, it applies tension to both cables releasing both latches. The problems begin when the cables start to stretch. If the cables are stretched, they don't apply enough force to open the latches or will open only one. This means that you have to open the bottom doors and crawl inside with your flashlight and open the latches by hand. This is easier said than done; the latches are tucked away in the front corners of the game and are not easy to get to. Figure 1 shows us a close up view of the cam with the cables coming off it.

That takes me to the bill validator. The location of the bill validator is good; it's in plain view of the customer and is readily accessible. However, like some slant top games, they rely on a hydraulic shock system to raise the validator to make clearance possible. I personally don't like the shock, not just in this game but in anything requiring them. The shocks fail and

depending on the game, aren't easily replaced.

It would be nice to see a validator that is recessed on an angle, meaning that the cassettes would be accessible without the need for a shock. Looking at the overall design of the station this may not have been feasible though.

Secondly, when the validator is raised it brings to light another issue. The validator harness is located on the side of the validator and can come in direct contact with the side of the station. This wouldn't be an issue if some better measures were taken to protect the harness. Our harnesses are wrapped in electrical tape. Not much protection there. Moving the harness to the rear of the station may afford more protection. Also, we've seen instances where the validator top door was bent, allowing the door to open without a key. A heavier gauge metal

would solve this problem. See figure 2 for a view of what I mean in regard to the harness.

The printer location on these games is similar to what I've seen from some other OEMs. The printer is mounted on the front of the cabinet, with the paper exit coming out the side into the chip tray. This isn't a big deal. I can see why the manufacturer would have this, since the game can do either ticket or coin out.

We have seen issues where the printer was not pushed back into place and not noticed by attendants. Guess what happens when the door is closed? CRUNCH! The bezel on the printer breaks. I won't fault Unidesa for that. Operator error is always an issue.

The overall cabinet is fairly clean inside and without a hopper, it affords a lot of room for anything you may

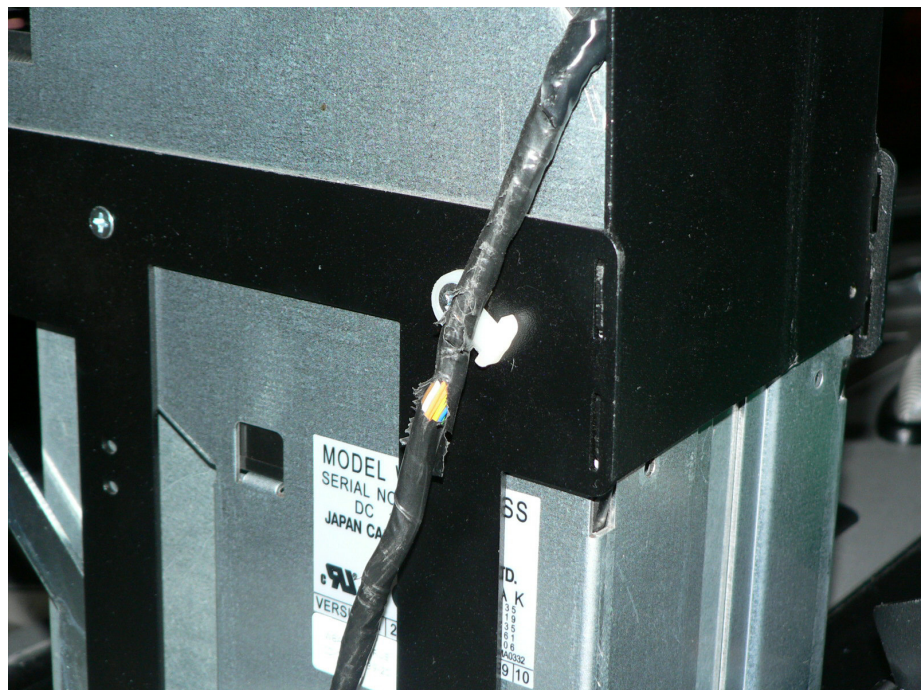


Figure 2 - The harness

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want to put inside. One thing that would be nice to see would be an unswitched 120V output. All the 120V outputs are switched with station power. This means that we had to run separate power for our SDS Mastercom 250s (before you start sending me emails about modifying an output to unswitched, let me say that we did not go this route since the machine was here on a trial basis to start).

Figure 3 shows the overall cabinet interior. Here you can see how much space there is inside, as well as the location of the printer. Notice, on the left hand side of the picture is the door latch I spoke of. Now you can see how it can be difficult to get to when the top door does not open.

On the bottom left corner of the cabinet is the PC enclosure. The PC handles all Ethernet communications between the main unit and the station. Each PC is addressed to match the address on the station. The station address is set by dipswitches on the station main board. The PC address is set when initially setting up the PC. Unidesa set up all our PCs with software they brought with them. I asked if they leave the software in case we needed it but they don't make it standard practice. If you have a PC die or need to re-configure it, Unidesa will either have to send you the software or come to your site and make the necessary repairs.

Each game needs two Ethernet cables run to it.

Both cables connect to the rear of the station. One cable is for the satellite main board, the other is for the PC. The main unit also uses two cables going to the Ethernet switch.

The main unit comes in its own enclosure. We opted to remove it and place it in a locked cabinet in our SDS/MIKOHN room. As I said earlier, the main unit consists of a station PCB and a PC like every other station. However, when the PC is configured, it is set up as the host instead of a player station.

There are also a few other things to mention. The main unit comes with an array of cherry switches for security, if any of these switches are opened, the game halts and is not playable until all the doors are closed.

The main unit also comes with a bank of toggle switches

and a keyswitch to initiate test mode. The toggle switches help you move from option to option. There is however, one feature I really like concerning the test mode. That is the ability to use any connected satellite to connect to the host, meaning that if your host is locked away like ours, you can initiate tests or change settings remotely from any connected station. How cool is that?

There is an audio output from the main unit that can be run to amplifier. We ran separate coaxial cables for the left and right inputs and placed an amplifier under our gaming floor with 2 home stereo speakers connected for audio. The PC for the main unit provides the video output for the game monitor; we purchased a 42 inch LCD monitor and 100 foot video cable to run from the PC to our LCD. Our maintenance guys fabricated a really nice

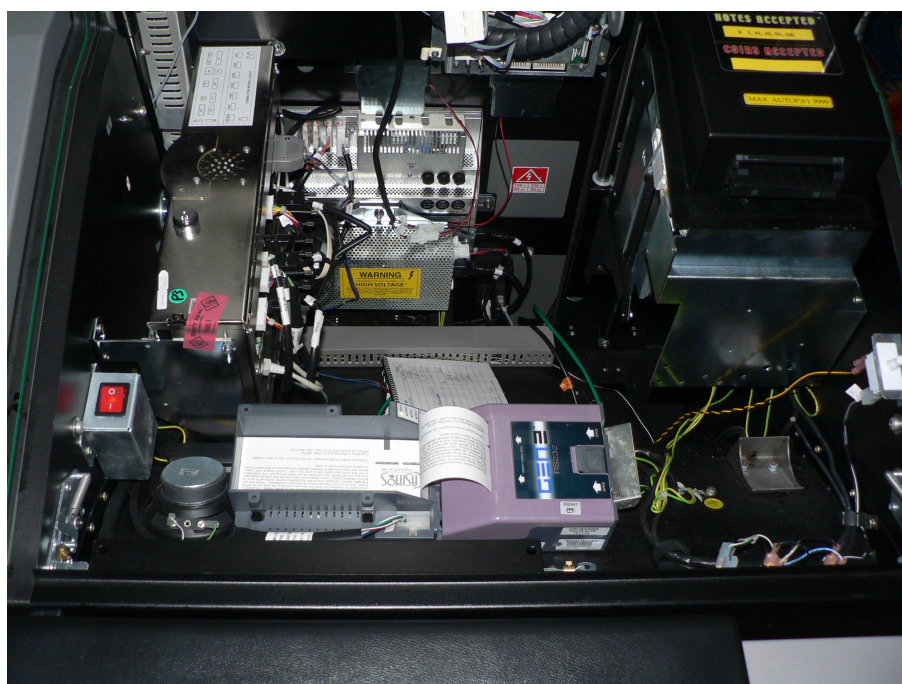


Figure 3 showing the overall cabinet interior. Here you can see how much space there is inside, as well as the location of the printer.

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Data Comm



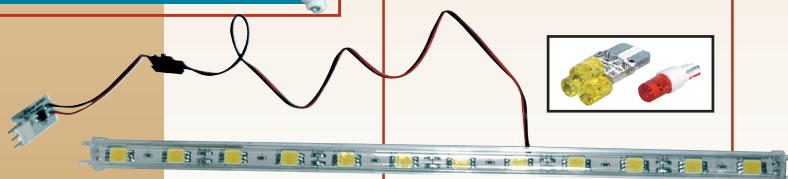
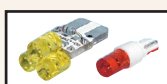
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mounting stand for it. We couldn't attach the monitor to the wall since the wall is protected by a "heritage" committee. Our casino is inside a 100+ year old train station so we can't put a lot of things on walls or pillars in some areas of the building.

Figure 4 shows the main unit after we removed it from the enclosure and placed it in our cabinet. From here you can see the PC, main unit and ethernet switch. No, you aren't seeing things. There are two Ethernet switches. We only have 12 stations but since there are two cables for each station, we needed an extra switch (remember the main needs two cables also). The switch they sent only had 24 ports, so they had to give us a smaller one to go with it. On the far left of the main unit you may be able to see the two coaxial audio cables we ran out to our amplifier. On the right of the main unit is an individual left/right volume control.

I enjoy the overall game play. There is a side game for customers who are willing to make a large enough bet to qualify (that parameter is set by the casino). Customers who qualify for the WILD REELS feature can win extra credits if the six horses finish in the order that the bonus indicates. At the start of the race there are three small reels located in the bottom right of the play screen. These reels spin, and if three horse heads (or knights for you chess buffs) appear, a multiplier appears in the box (the parameters for low and high values can be set by the

casino). If all six horses finish in the correct order, you win your total bet multiplied by the multiplier in the box.

There's also a neat feature that allows the player to choose the camera view that they want. They can view several different angles. They can watch each individual horse, watch the view that is on the big screen or can flip between a few other choices.

The graphics are clean, and the race is well animated. When the game is not being played, there is an attract feature with accompanying music. I have to admit I'm not a fan of the music it plays. It kinda sounds like something Enrique Iglesias would play.

- Ted Befus
tbefus@slot-techs.com

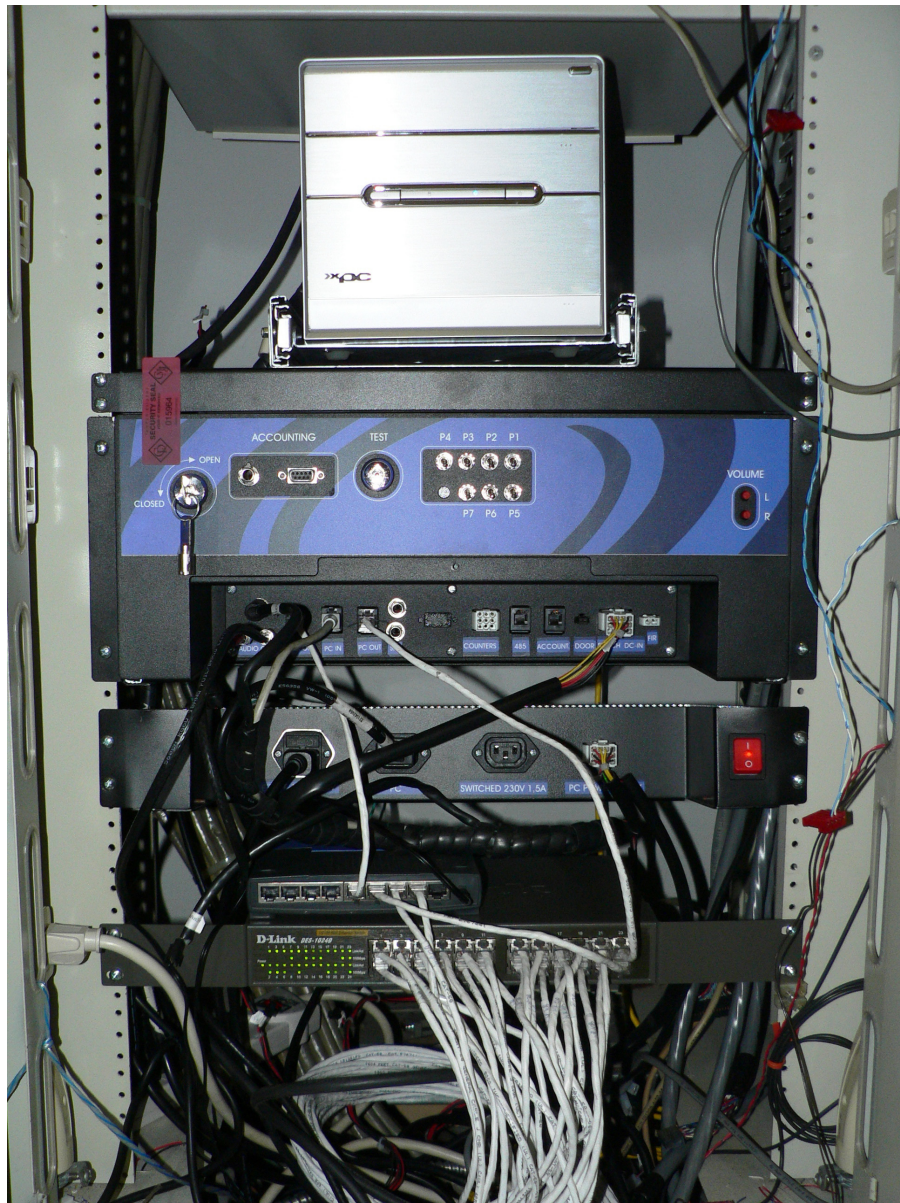


Figure 4 shows the main unit after removing it from the enclosure and placing it in a cabinet. From here you can see the PC, main unit and ethernet switch.



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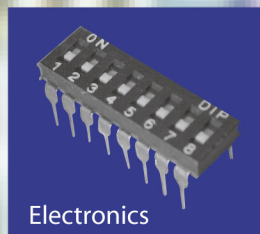
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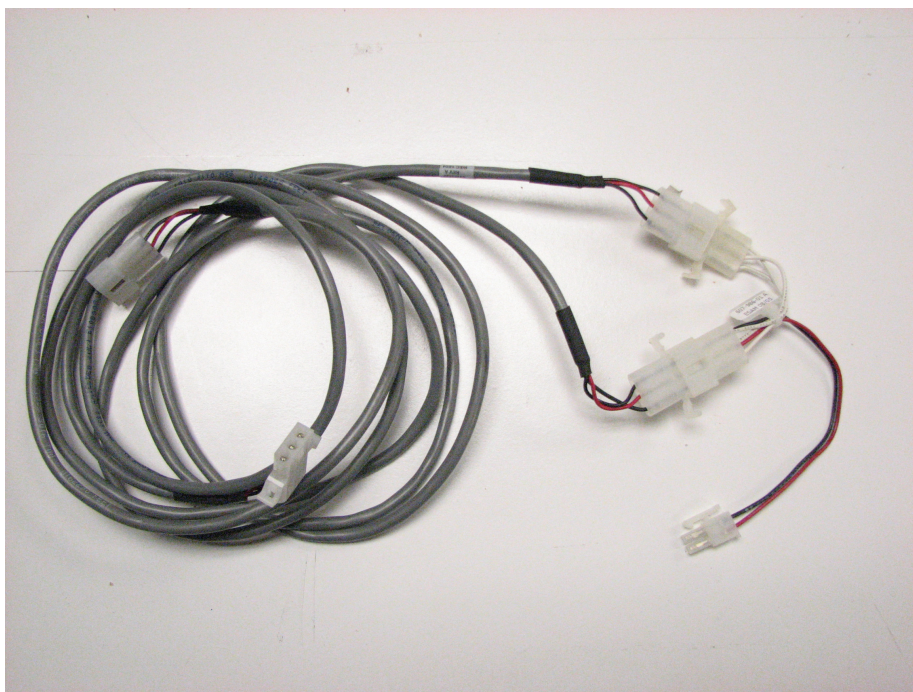
By Jason Czito

IGT has somewhat recently been providing fiber optic converter boards with their wide area progressive games. These provide a property with the necessary equipment to install their player tracking hardware in one of these machines via fiber optics without needing specialized player tracking hardware. Using Oasis as an example, fiber optic communication required special fiber optic boards in both the Sentinel and DPU. These are an additional cost with a few drawbacks compared to the standard copper connections. For example, if a Sentinel using fiber optic hardware loses power, machines beyond this point in the daisy chain will be offline. With copper, this same situation would only leave the individual machine offline. Installing and troubleshooting

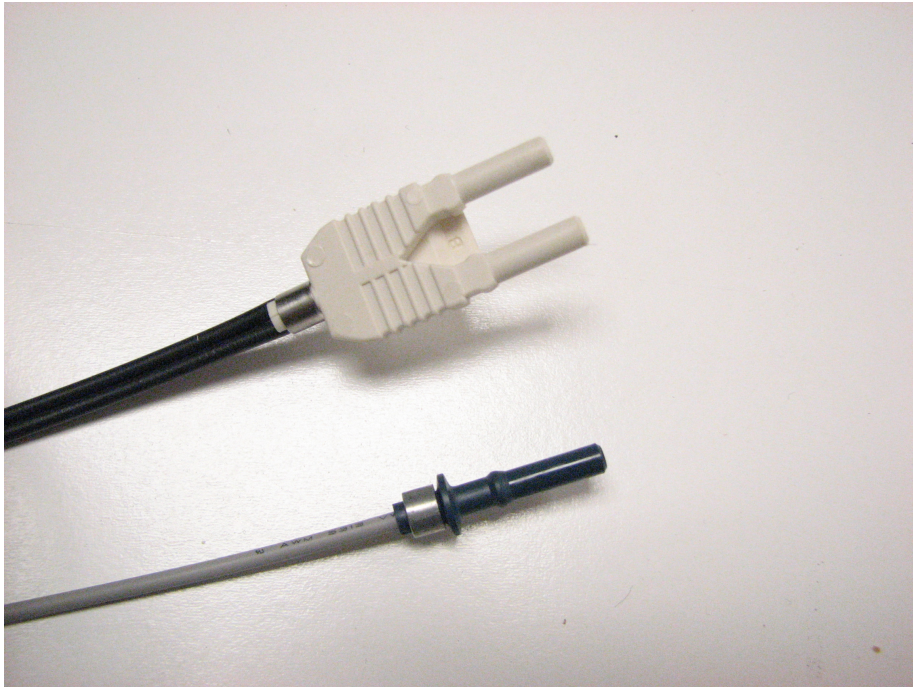
a fiber optic network for the Sentinel/DPU communication also requires a separate knowledge set (board versions must match, jumpers have to be set, drop doors are monitored differently, etc.), and, needless to say, these parts cost extra. IGT's fiber optic boxes allow a property to use its existing copper-based network hardware to make a fiber optic connection to a machine. This article will show how to install one of these fiber optic converters in an Oasis environment.

First, the package that the equipment comes in will have enough wiring to cover quite a few different player tracking systems. You'll need to triage the cables to separate the cables you need from those you don't. For this example, you'll need the following cables:

Single-line fiber optic
Dual-line fiber optic
Standard Power cable w/ splitter (IEC320 C13 to NEMA 5-15P)
Two Daisy Chain cables (gray with Molex ends)
Two Daisy



Note how the daisy chain cables (gray, coiled) connect to the feed cable (white/red/black).

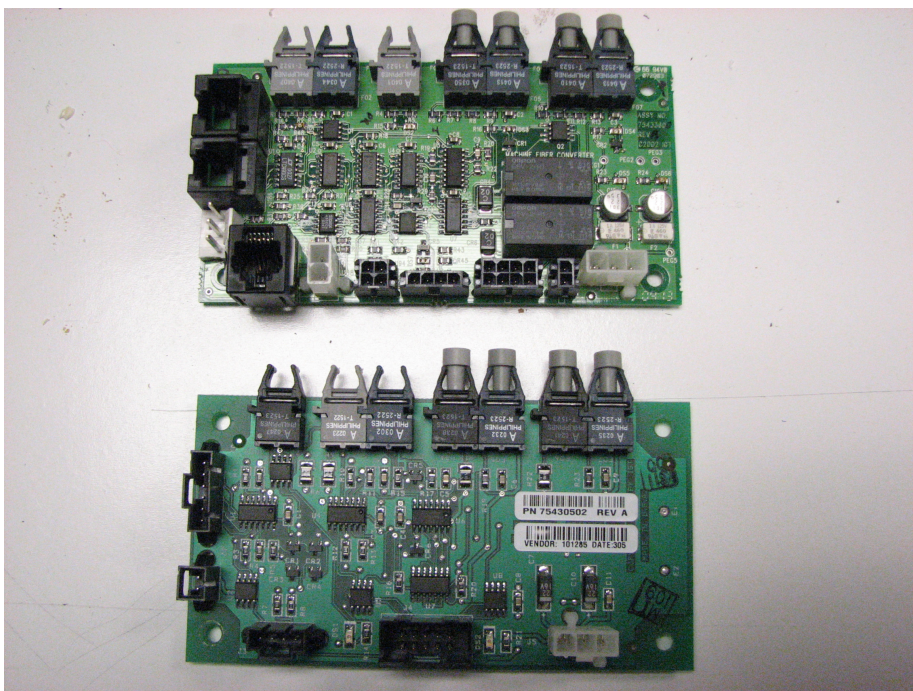


The fiber-optic terminators

Chain feeds (3-way: 1 female Molex, 1 male Molex, 1 2-pin AMP connector)

Second, you'll need to make sure the machine has a newer UPTI board. Sometimes pronounced 'uptee' by seasoned techs, this stands

for Universal Player Tracking Interface. The package should come with a new one whether or not it's needed, but if the machine already has a new one, you've got a spare. If not, replace the old one with the new. The newer version needed for this sys-



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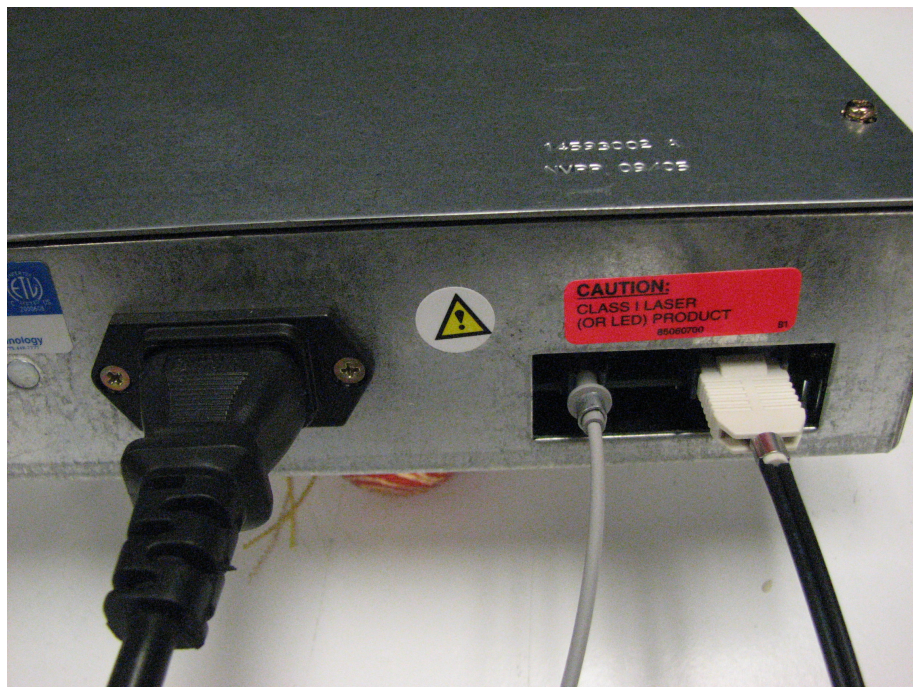
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tem is shown on top.

Now you're ready to begin connecting the cables. The silver box needs to go into the base of the machine. The power cable has a clever plug that will allow it to share an outlet if necessary. The business end goes into the standard power connector jack on the box. When powered up, you should get a steady red "+5V" light on the front of the box.

The new daisy chain cables connect to the ends of your existing daisy chain cables, and are run just like a typical Oasis daisy chain: male connectors on one side, female connectors on the other. Conveniently, the connectors on these cables are the same as on the stock daisy chain cables in an Oasis system, so if you have a networking scheme in place, this should conform. Where these cables meet beneath each machine, they need to be joined by the daisy chain feed cable. This will leave a two-pin connector of the daisy chain feed cable at each machine, which plugs into the jack on the front of the box marked "CDS."

On the back of the box (next to the power jack) are three fiber optic ports: one for a dual line and one for a single line. Connect the dual and single line fiber optic cables into the appropriate ports and run them up into the machine itself. These will connect to the fiber optic ports on the UPTI board as

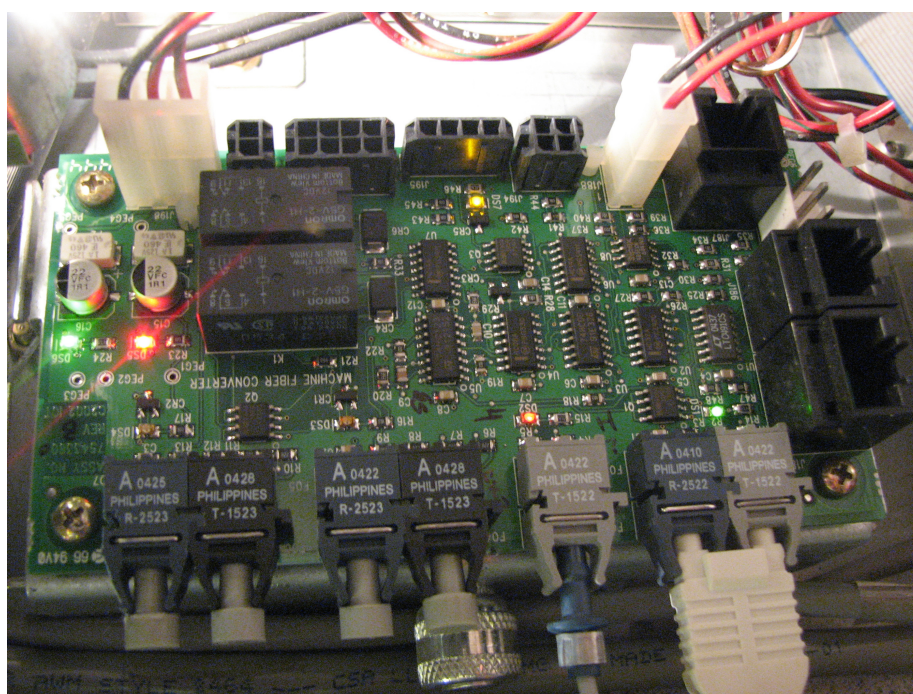


On the back of the box (next to the power jack) are three fiber optic ports: one for a dual line and one for a single line.

shown in the picture (above).

Finally, look on the UPTI board for a 2-pin connector identical to the one marked "CDS" on the front of the silver box (J188). The other daisy chain feed cable will connect to this (at the top-

right of the picture below). Then connect the Molex end of the Sentinel's normal "Bank In" cable (should be female) to this daisy chain feed cable. Next connect the dual- and single-line fiber optic cables according to the picture (closest to the RJ-45



Look on the UPTI board for a 2-pin connector identical to the one marked "CDS" on the front of the silver box (J188). The other daisy chain feed cable will connect to this.

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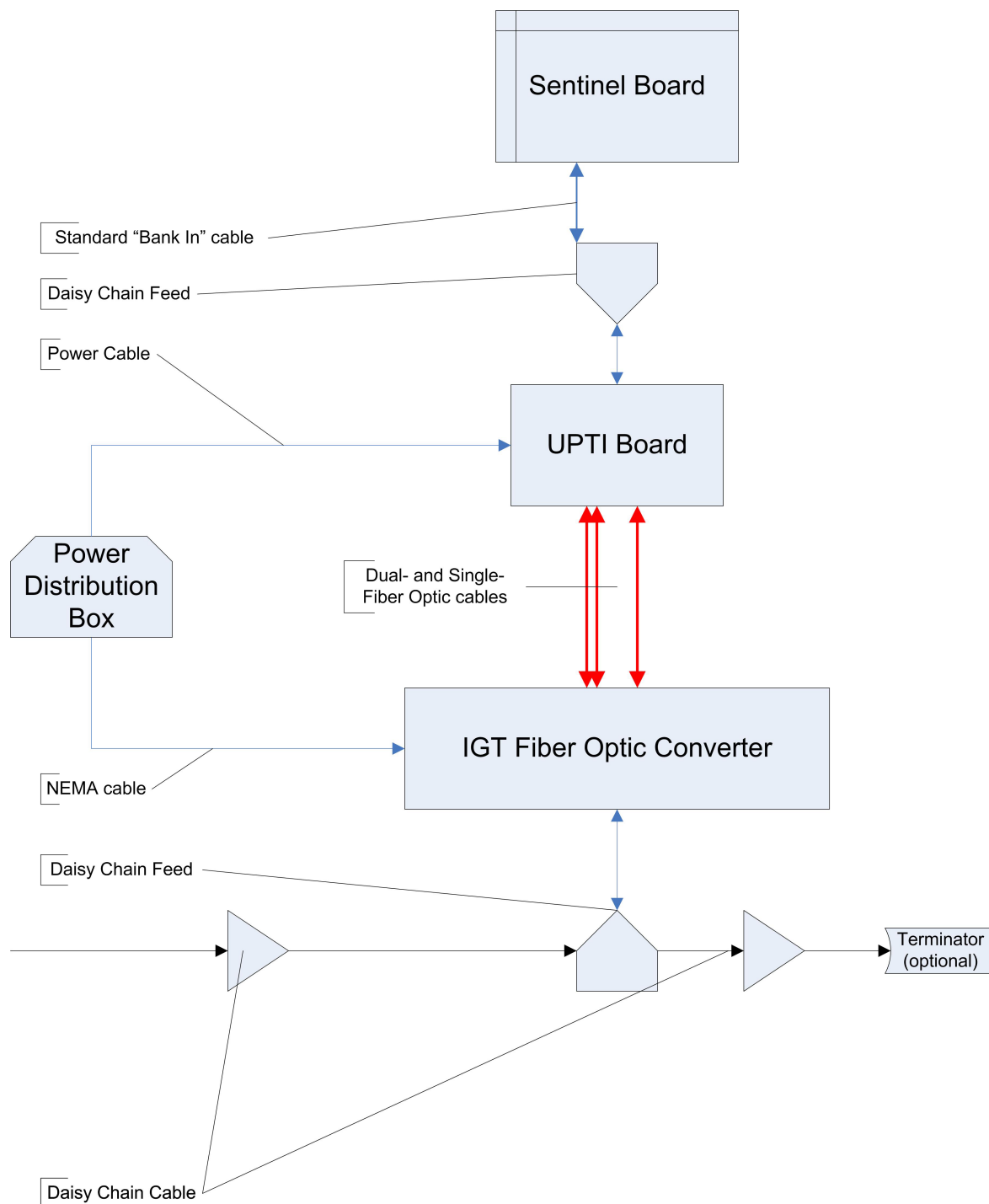
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connector). There should already be a power cable but if not, you can see one end of it at the top-left of the picture. The other end connects to the power distribution box (J243 of the “COMM/PT/SV LT Power Assembly.” For AVP platforms, this

connects elsewhere.) Another advantage to this system (for Oasis environments anyway) is that typically, unless you run fiber optics from the DPU closet all the way to the machine, you’ll have to keep the DPU at the

slot bank. This decentralizes DPU maintenance and exposes DPUs to the environment of the floor. This will also typically limit the DPU to only handling those machines on the bank that it’s installed in – a DPU can run fiber or copper,



not both. With this equipment from IGT, you can include WAP games on regular DPUs and keep them in a safe place. This will either save you money in DPU purchases if you're opening a new casino or free up existing DPUs for spares or expansions if you are currently using Oasis' fiber optic hardware. Note that this article does not cover monitoring the drop door by way of this system. If you need to monitor your drop doors with this equipment, your local IGT service tech should have the scoop.

The system basically feeds a 'copy' of the communication going over the daisy chain into the Fiber Optic Converter where it's converted to fiber optic signals, passed to the UPTI board where it's converted back to copper and then fed to the Sentinel board. There's no connection to the "Bank Out" because it's not needed. The bank out connector is simply the continuation of the daisy chain in a typical setup, not outgoing signals from the Sentinel. RS-485 is bi-directional, so the Sentinel's incoming and outgoing signals both go through its "Bank In" connector/cable. For termination purposes (since you can't use the standard terminators on the "Bank Out" connector as it is functionally no longer part of the daisy chain in this system) there's a terminator supplied with the kit. It's a Molex connector with a resistor connecting pins 1 and 2 (wrapped in heat shrink). Simply connect it to the end of the new daisy chain running between Fiber Optic Converters. It's part number 607-986-00 if you're trying to weed it out of the bundle of cables that come with the kit.

- Jason Czito
jczito@slot-techs.com

April 2007

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76932500 MCB2 USB Light Controller Board

By Herschel Peeler

Surrounding the 15 inch LCD screen of Game King Deluxe is this colorful ring of LEDs. The display ring itself is part number 75131500. The controller for this board is part number 76932500. The control of this assembly comes from the Socket 370 CPU (75513390). Although there is a NETPLEX cable going to this board, all the circuit uses from NETPLEX is the RESET line. It passes the Reset on to the Socket 370 CPU. It is the Socket 370 CPU that controls this LED ring controller and thus the LED ring, through the SOCKET 370's USB bus.

To follow this along, you will have to have a set of IGT prints with you. If you have the games you likely have the schematics somewhere around the shop. If not, you can get them from the IGT web site. In writing this, I referenced a total of fourteen 11

x 17 inch pages including the overall wiring diagrams that show how all the assemblies are tied together. That would be a bit much to include in the magazine. See the list, below.

769-325-10, Page 1 of 2

J8 is the connection to the Socket 370 CPU. Here we have coming in two USB ports. One goes down to J9 and to the touch screen on the LCD. The other USB port goes up to U1. U1 is a CY7C63743 that is a USB ported microcontroller with two 8-bit ports on it. This is a full capability microcontroller with 8K of Program Memory, RAM, Timers, etc. It's a whole system in a chip. If you are interested, you can download a data sheet from Cypress Semiconductor or places like

www.alldatasheet.com and get the complete scoop on how these guys work. The outputs of U1 go to strings of shift registers that drive the LEDs. There is a string of six shift registers for the red LEDs, another string of six shift registers for the blue LEDs and a third string of six shift registers for the green LEDs.

Worth noting in this design is there is only one Clock and Serial Out Data line. These lines go to all three strings (751-315-10, Page 1, U1, U2 and U3). U1 feeds the green string. U2 feeds the blue string. U3 feeds the red string. We will pick this up again when we cover the 751-315-10 schematic. In addition, each color string has a Latch and Enable signal.

769-325-10, Page 2 of 2

Follow along with these schematics from the IGT website

76932510 PCB, MCB2 USB LIGHT CONTROL SCHEMATIC, 2 pages
75131500 LCD (MCB2) RING LIGHT BOARD ASSEMBLY, 3 pages
75131510 LCD (MCB2) RING LIGHT BOARD SCHEMATIC, 6 pages
82049054 LCD ASSEMBLY, 15-INCH MCB2, WIRING DIAGRAM, 2 pages
76932500 LCD (MCB2) USB LIGHT CONTROLLER BOARD ASSEMBLY

U3 and U9. Here is where this board takes the RESET signal from the NETPLEX bus, buffers it through optoisolator U3, processes it through a PIC12C509 microcontroller U9 and passes the reset on to J10 to the Socket 370 CPU. The obvious question is why they use a whole microcontroller to just handle one signal. The PIC12C509 is so cheap that if you use more than two normal logic ICs in a circuit, it may actually be cheaper to use a microcontroller. The part number, PIC12C509, should start sounding familiar. Just about every board I have written about lately seems to have one in it. Today's games might easily have a dozen microcontrollers in them. You really can't understand how the games work without understanding how microcontrollers work and how they interact on the board as a system.

U2 is a switching voltage regulator that takes the +13 Volt line and brings it down to +5 Volts for both the logic circuits on this board and the logic circuits on the LED ring. This supplies about 1 Amp of current. The Blue LED (DS1) on the board is an indicator that the +5 Volts is at least there to some degree. Fuse F1 is a 1 Amp fuse for this circuit.

U4 is a switching voltage regulator that takes the +13 Volt line and converts it to +4 Volts to power the LEDs on the ring. This circuit supplies about 4.3 Amps to the LEDs

and is fused by F2, a 2 Amp fuse on the +13 Volt side of the supply. The Amber LED (DS2) gives an indication that some voltage is there on the line.

Troubleshooting the 769-325-00 board

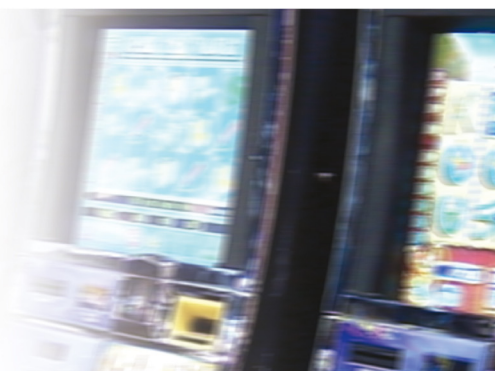
"Totally Dead"

Check incoming voltage, +13 Volts at F1 or F2. Check both sides of the fuses to see that they are okay.

Check for +5 Volts at L1. The LED being on indicates some kind of voltage is there but does not say how close it is

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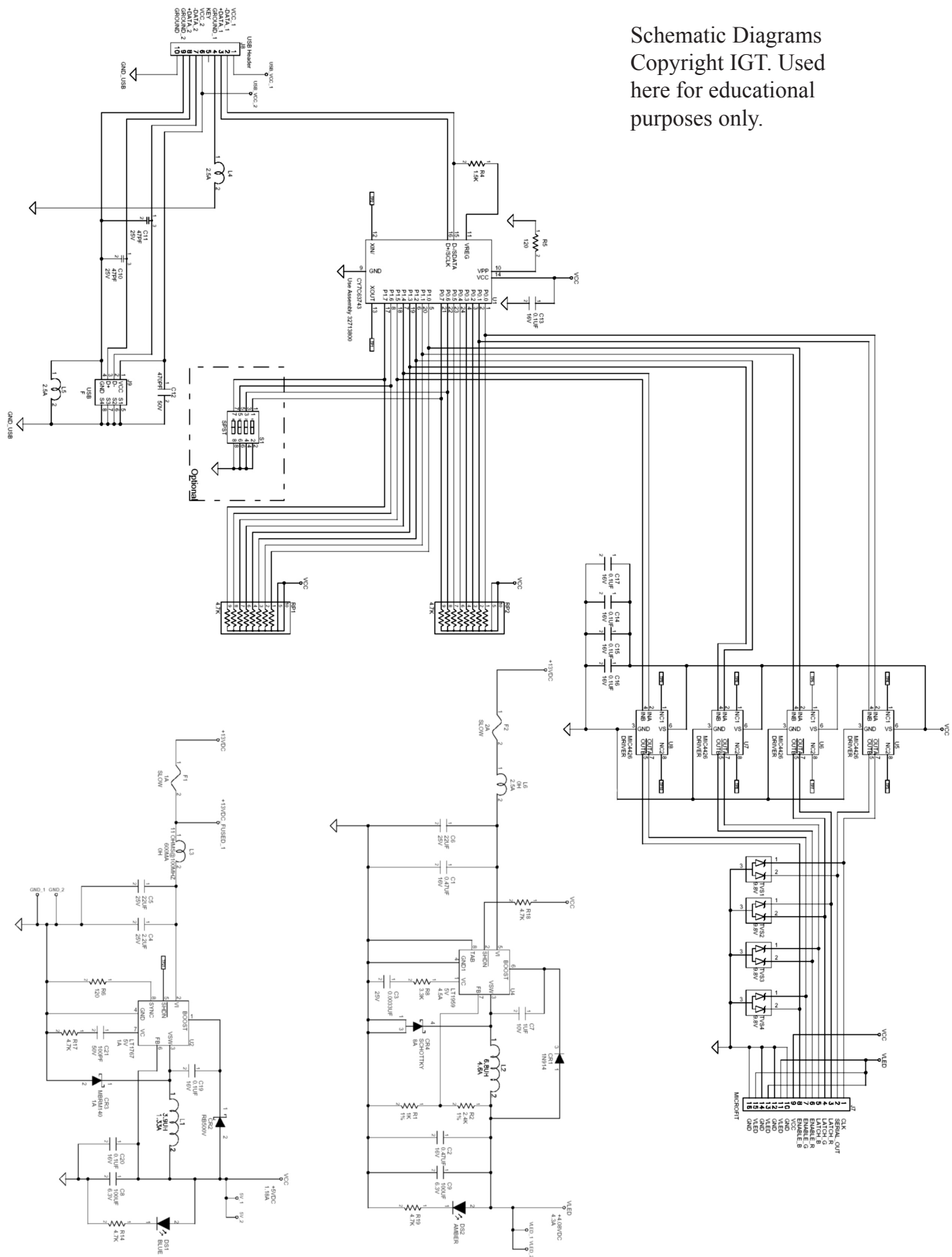
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Troubleshooting the 751-315-00 LED Ring

“All dead”

Check +5 Volts at fuse F1. Check fuse F1. Check +4 Volts to the LEDs at pin 2 of any of the LEDs. U10, “Clock” and “Serial In” signal buffer.

“All red dead”

U20, pins 1 and 6. U24, pins 3 and 4. U3.

“All blue dead”

U24, pins 1 and 6. U25, pins 3 and 4. U2.

“All green dead”

U20, pins 3 and 4. U25, pins 1 and 6. U1.

“DS1 through DS16, red problem” – U3. Or just one LED is bad.

“DS1 through DS16, blue problem” – U2. Or just one LED is bad.

“DS1 through DS16, green problem” – U1. Or just one LED is bad.

“DS17 and all after, red only” – U21.

“DS17 and all after, blue only” – U23.

“DS17 and all after, green only” – U22.

“DS17 through DS32, red problem” – U5. Or just one LED is bad.

“DS17 through DS32, blue problem” – U4. Or just one LED is bad.

“DS17 through DS32, green problem” – U6. Or just one LED is bad.

“DS33 and all after, red only” – U26. “DS33 and all after, blue only” – U28.

“DS33 and all after, green only” – U27.

“DS33 through DS48, red problem” – U8. Or just one LED is bad.

“DS33 through DS48, blue problem” – U7. Or just one LED is bad.

“DS33 through DS48, green problem” – U9. Or just one LED is bad.

“DS49 and all after, red only” – U29.

“DS49 and all after, blue only” – U31.

“DS49 and all after, green only” – U30.

“DS49 through DS64, red problem” – U11. Or just one LED is bad.

“DS49 through DS64, blue problem” – U10. Or just one LED is bad.

“DS49 through DS64, green problem” – U12. Or just one LED is bad.

“DS65 and all after, red only” – U32.

“DS65 and all after, blue only” – U34.

“DS65 and all after, green only” – U33.

“DS65 through DS80, red problem” – U14. Or just one LED is bad.

“DS65 through DS80, blue problem” – U13. Or just one LED is bad.

“DS65 through DS80, green problem” – U15. Or just one LED is bad.

“DS81 and all after, red only” – U35.

“DS81 and all after, blue only” – U37.

“DS81 and all after, green only” – U36.

“DS81 through DS90, red problem” – U17. Or just one LED is bad.

“DS81 through DS90, blue problem” – U16. Or just one LED is bad.

“DS81 through DS90, green problem” – U18. Or just one LED bad may also be the LED.

Also a possibility on a board this large is cracked traces from the board bending, or bad resistor packs.

- Herschel Peeler
hpeeler@slot-techs.com

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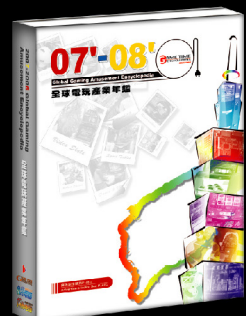
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AmEx 2007 Reflects Expanding Irish Gaming Market

The 28th Irish Amusement & Gaming Trade Exhibition & Seminars was held at the Lynch Green Isle Hotel, Dublin on Tuesday 6 & Wednesday 7 March 2007.

Following the revitalisation of the Irish amusement and gaming sector and the success of AmEx 2006, the 2007 event resulted in further expansion. The show had a definite upbeat atmosphere, contributed to by an increase in both exhibitors and visitors.

This year's event had a very busy first day and busier than usual second day with many visitors returning on the Wednesday. The hotel bar ran out of Guinness for a time on Tuesday night and staff had to order emergency supplies!

The number of exhibitors was up from 42 to 48 and the number of visitors by five percent. New exhibitors resulted in a greater variety of products being offered and additional visitors were made up of new entrants to the traditional amusement and gaming market, alongside visitors from the casino, betting and vending sectors.

The Civil Law (Miscellaneous Provisions) Bill 2006, which includes provisions designed to increase the legal limits on stake and prize money (to EUR 0.50 and EUR 30) in gaming machines (AWPs) is currently at the Committee Stage in the Dáil (Parliament).

The Casino Committee has presented its report to the Minister For Justice and is awaiting his instructions to prepare legislation for Ireland's growing casino sector. It is also possible that the same committee may examine arcade gaming and other aspects of the gaming and betting business.

The show's sponsor IAEA - the Irish Amusement Equipment Association (Member of EUROMAT) held its AGM at show time. The association decided to change its name to the Irish Gaming & Amusement Association (IGAA) to better reflect developments in the industry in recent years.

There was a wide variety of gaming equipment shown in anticipation of new regulations for AWP's and Casinos in Southern Ireland; also gaming products suitable for the very different Northern Ireland market and other international markets including Britain.

Technical Seminars included Ardac Elite Bill Acceptor by Ken Dharwar, Money Controls and Cash Audit Systems & Data Capture by Ray Hazelton, Hazel Electronics. In addition to exhibitor to visitor sales, AmEx also continued its role of fostering exhibitor to exhibitor sales and visitor to visitor sales.

The number of international visitors and exhibitors has increased considerably in recent years, to include companies from Britain, USA, Spain, Germany, Austria, France, Russia, Hungary, Czech Republic, Bulgaria, Belgium, Japan, Italy, Poland and Slovenia.

Coin-Op Expo - AmEx 2008 will be held on Tuesday 4 & Wednesday 5 March 2008!

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Santiago Vinas Gil, R. Franco and Liam Clancy, Olympic Sales Bundoran with Circus Maximus.

"Best show in years" is how Kimble Managing director Jim Mc Cann described his company's view of this year's Amex exhibition in Dublin. "We now have a two month waiting list on our Emerald Isle video slots. The interest and number of confirmed orders at the show were unbelievable"

"In my opinion, it was our busiest show ever," said Kimble sales manager Seoirse Mc Cann. "It was a combination of two things: First, the Emerald Isle video slots are now firmly established as some of the best games in the market and word has been spreading about just how good these machines are. Secondly, there was a great buzz around the build up to the show with all the talk of the law changes so this attracted a large number of visitors."

Kimble unveiled their newest addition to their extensive games line up. Flying Age is a 25 line video slot with three random jackpots, three bonus games and a free spin feature.

"Flying Age has been a massive success on trial and we have the figures to prove it," said Mc Cann. "Black beard, our nine-line video slot is now firmly established as one of the best video slots on the market so when our customers come on to our stand we are able to guarantee the



Seoirse McCann, Kimble with their latest game Flying Age.

success of our games. Our main objective now is to fill the orders we received at the show and build on this success."

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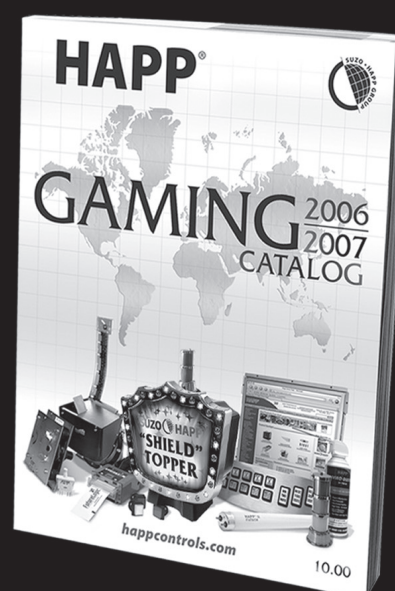


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Slot Machine University

As readers of this magazine know, here at Slot Tech Magazine, we are all about slot machine technology and especially, educating the industry's technical community about repair tricks and techniques. In my opinion, there is a real dearth of resources when it comes to slot tech training for casinos. The few good entry-level classes that are offered to the "man-on-the-street" are all but useless for a slot tech that is already working as such. The companies that manufacture the ticket printers and bill validators often hold training sessions at casinos all over the world and I teach a class in monitor repair but that's only a small part of the big picture of being a well-rounded slot tech.

There seems to be a big piece of the training puzzle missing. Casinos need a training program for their slot techs that will provide a real, practical knowledge base that can be put to use immediately on the slot floor. They need a training program that will enable their slot techs to properly configure, troubleshoot and repair slot machines, without making costly and time-consuming errors. It would also be very nice if this training could be done in-house.

Enter Slot Machine University

"Slot Machine University is a first-to-market online gaming technology learning solution that is universal to all slot machine manufacturer designs," said Cris Challenger, Director of Slot Machine University. "SMU helps slot floor personnel learn the science and engineering

of slot technology so they can effectively work on all types of machines and network systems."

"Our goal at Slot Machine University is to provide the tools needed to succeed in the ever-changing industry of gaming technology," continued Challenger. "We've combined custom-developed slot machine courses with network and systems courses selected from industry-standard IT certification programs to create the SMU learning difference."

The backing for all of this comes from WMS, who tapped Challenger to create this unique training program. To prevent trademark or license issues, Slot Machine University uses the WMS Bluebird platform for the teaching concepts of slot repair. However, Challenger stresses that the techniques and principles are applicable to all slot brands.

What is it?

Slot Machine University is an interactive, online training program. Using multimedia tools and animations, students can not only read about configuration and testing procedures, they can actually perform them on a virtual slot machine. It's really a neat system that makes learning painless. Frequent testing alerts students to their deficiencies and corrects them on the spot, before the mistakes end up on the gaming floor.

Because it's an online instructional program, students progress at their own pace and

at the times that suit their schedule. This makes it possible to schedule slot tech training during any shift and at any time. Students can even participate from home.

Various Levels and Programs Offered

Slot Machine University has many programs, from beginning slot tech to advanced networking. Networking skills are going to be more important than ever in the server-based gaming environment that we are sure to see in the near future.

SMU is offering the following programs:

Gaming Machine Support (Level M1) Certification Track Courses

- * Introduction to Slot Machines
- * Understanding Slot Machine Math
- * Preparing and Installing the Upright Video Slot Machine
- * Software Configuration and Troubleshooting the Upright Video Slot Machine
- * Preparing and Installing the Slant Top Video Slot Machine
- * Software Configuration and Troubleshooting the Slant Top Video Slot Machine
- * Preparing and Installing the Upright Mechanical Reel Slot Machine
- * Software Configuration and Troubleshooting the Upright Mechanical Reel Slot Machine
- * Customer Satisfaction (Printable reference document)

The Gaming Machine Support (Level M1) certification track is generally intended to address the fundamental knowledge and skill requirements to install, convert, and option many com-

mon gaming machines.

Prerequisite knowledge and skills: None

As a bonus, this level one certification will be offered at no extra charge to those attending TechFest 15 at Mystic Lake Casino, May 1-3 2007.

Gaming Machine Service (Level M2) Certification Track Courses

* Introduction to Troubleshooting Slot Machines * Removing and Replacing Slot Machine Components * Slot Machine Preventative Maintenance * Installing Progressive Games * Troubleshooting Progressive Games * Introduction to Computers * Setting Up a Computer * Network Theory * Network Communications and Data Delivery * Network Media and Hardware * Network Implementations * Networking with TCP/IP * TCP/IP Services

The Gaming Machine Service (Level M2) certification track is generally intended to address the fundamental knowledge and skill requirements to perform preventative maintenance, basic service, and basic repair on many common networked and stand-alone gaming machines.

Gaming Machine Expert (Level M3) Certification Track Courses

* Circuitry Fundamentals * Troubleshooting Components & Peripherals * Troubleshooting Player Tracking Systems * Network Troubleshooting * Installing or Removing Internal Hardware 1 * Installing or Removing Internal Hardware 2 * Upgrading System Components 1 * Upgrading System Components 2 * Troubleshooting Device Problems 1 * Troubleshooting Device Problems 2 * Local Area Network (LAN) Infrastructure * Introduction to Servers * Exploring the System Processing Core

The Gaming Machine Expert (Level M3) certification track is

generally intended to address the fundamental knowledge and skill requirements to troubleshoot, diagnose, and resolve complex problems with many common networked and stand-alone gaming machines, associated peripheral devices, and network interoperability with games.

Recommended prerequisite knowledge and skills: Comple-

tion of Gaming Machine Service (Level M2) certification.

For further information about Slot Machine University, contact: Christopher K. Challender
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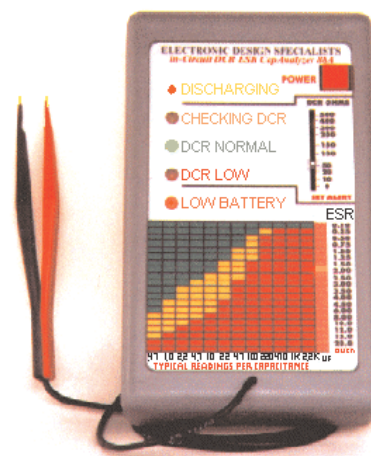
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Slot Tech Training, Aruba Style!

If you know the difference between Aruba and Arabia, you're way ahead of FedEx, who managed to send a box of junk monitor chassis (generously provided by Wells-Gardner Electronics for soldering practice) on an around-the-world trip from Chicago to Paris to Kuwait to Memphis to Puerto Rico and finally, Aruba.

Aruba is a small, independent island nation, located about 25 km north of Venezuela in the Caribbean. There are nine casinos here. Slot Tech Magazine held two training sessions here during the month of March. Slot techs from various properties attended the two-week class, which was sponsored by and held at the luxurious Marriott Resort and Stellaris Casino in Palm Beach.

The class featured two days of LCD monitor repair, instructed by LCD expert and Slot Tech Magazine contributing writer Ray Holdren of Kristel Nevada. Ray had a suite of Sencore test equipment flown in for the presentation and showed students how LCD monitors work and, most importantly, how to troubleshoot them when they fail. He also covered CCFL replacement.

Also featured was a full day of bill Acceptor repair, taught by Jack Geller of JCM. Jack covered diagnostics and repair of both the WBA and their latest UBA bill acceptor.

The bulk of the class was devoted to learning component-level monitor repair. Following the classroom instruction, two full days were spent in a hands-on monitor repair lab, working on bad monitors. The majority of these were the Effinet monitor, found in Ainsworth machines. The Ainsworth games are popular in Aruba. Thanks to some excellent customer service from the folks at Ainsworth, I was able to obtain a schematic diagram. We repaired quite a few monitors during the hands-on portion of the class.

I am impressed with the skills and dedication of the slot techs in Aruba. Often, they are working with a crippling lack of spare parts and generally have to wait a minimum of five days to get anything shipped in from the USA. On top of all that, they have to wait for customs clearance and pay 25% import duty on electronics. These folks are heroes! It was a great pleasure to work with them all.

- Slot Tech Magazine



Attending the first session were Nick Maduro, Ramsey Rasmijn, Ray Murray, Stellaris Casino, Nerso Wilson, Radisson, Roberto Wever, Gilbert Wernet, Alhambra Casino, Michael Peterson, Marlon Ollivierre, Rolando Jacobs, Andres Dirks, David Odor, Crystal & Seaport Casinos, Ricky Panneflek, Queeny van Haaften, Excelsior Casino, Rudolf Hernandez and Danilo Hernandez, West-In Casino.



Attending the second session were Jerson Arends, Ronald Boezem, Hubert Gonzalez, Danny Peterson, Stellaris Casino, Mario Paskel, Ludwig Molenaar, Occidental Casino, Royce Baarh, Douglas Rollack, Radisson, Francis Silva, Key Largo Casino, Anthony van der Linden, Andrick Fingal, Javier Sneek, Mariano Arends, Crystal & Seaport Casinos, Joselito Romero, Excelsior Casino, Marcia CHIN-A-Loi, West-in Casino and Joshua Marchena, Hyatt Regency Hotel & Casino

Slot Tech Press Release

Happ Upgrades Website

Happ has made major improvements to its web site. Thousands of illustrations have been converted from line art to color photographs. The search engine has been significantly improved so customers can now search Happ's entire database of parts. Technical information has been updated and expanded with a Machine Component List, Material Safety Data Sheets, and FAQ's. Requests for information are now sent directly to the appropriate department resulting in quicker responses. Tiered promotional items have been added giving customers who order a choice of free gifts. Clearance items with deep discounts are regularly updated.

The domain name has been shortened to www.happ.com. Happ has also rolled out a new website: happindustrial.com. You can establish an e-happ account on-line or contact your sales representative at 888-BUY-HAPP (289-4277).

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Quick & Simple Repairs #24

By Pat Porath



NETPLEX Errors on an IGT Video Slot

I received a call on an IGT Video slot. It had a printer error, a bill validator error and a touch screen error. This is all part of the complex "NETPLEX" system of an IGT game. It acted like one of the input/output cards was loose but all three were correctly in place. The last thing that was done on the game was a paper fill so this would be a good place to start since the game was working fine beforehand. The power light was lit up on the "Gen 2" printer and when the cable was inspected, the problem was obvious. It was simply a loose connection at the ticket printer. I could see that it wasn't properly seated. With the power turned off and the printer cable snug back in place, it was time to power the game back up. Bingo! The problem was cured. All of the errors disappeared once the main door was closed.

No "Coin In" on a Game for a Couple of Days

Every day we (the slot techs) get reports from the accounting department. These include the "no handle" report, "bad meter" report, slot variance and others. I would like to focus on the "no handle" report and how it can be used as a tool. What is a no handle report? At the casino I work at, we run the CDS Oasis

system. In the report, there are games that did not have ANY coin in for two days. Coin in doesn't mean ACTUAL coins that went into the game but any credits played on it. It may be actual coins that were put into the game, bills in, tickets or even promotional cash. In other words, any credits that were bet on the game. In a nutshell, "no handle" means the slot machine was not played. On occasion, there are a few of our games that do not get played for a day or two such as our \$100 game. That puppy only accepts \$100 bills if you know what I mean.

So why would a multi-denomination game show that it didn't have any coin in on a Saturday? The problems that I run across vary. Sometimes there is a communication loss between the game and the Sentinel. In some cases, a reboot of both will bring it back. Other times the bill acceptor is so dirty it won't take any more bills. Even a faulty stacker access door switch will cause problems. When the game reads a door open, it won't accept any money.

How do you know what to look for on the "no handle" report? I use the "diagnostic monitor" screen and the "meter check" tab. Simply type in the machine number and it will show all of the coin in, coin out, and bill meters for the past few weeks. When a game has steady coin in and within the last two days the meters didn't increment, then there is a problem. Go back to the "current diagnostic monitor," type in the game number then click on the "transactions" tab. This will tell darn near everything that has happened with the game. A few

examples are: Sentinel memory errors, game memory errors, bill acceptor errors, printer errors, the last paper fill, etc. So with the game number, the no handle report and diagnostic monitor, the system will more than likely SHOW you what is wrong with the game. A good example would be: Slot machine number 1234 is on the no handle report. "Transactions" are checked and the game shows that it has numerous "bill acceptor errors." More than likely, it is a dirty bill acceptor and that's why it doesn't have any "coin in."

Older Bally Progressive Error "C 1"

We have a nickel progressive bank of Bally 6000's that are still pretty popular, even though they have been running for around seven years. Customers still enjoy putting in their nickels, four at a time and hoping to hit the progressive or even some 7's for \$50.00. I received a call that the progressive was down. When looking at the meter (a Mikohn type system) it displayed "C 1." This told me that there was a communication problem somewhere within the main controller and the sign. Was the unit on the South end of the bank of games or on the North end? Naturally I started at the South end and it was in the North. Now that the controller was found, time to check for anything obvious. Did a janitorial employee accidentally disconnect a cable while cleaning (I've run into that one before)? Did the power strip overheat and trip? No, I had power because there were LEDs blinking on the controller. Everything appeared to be connected.






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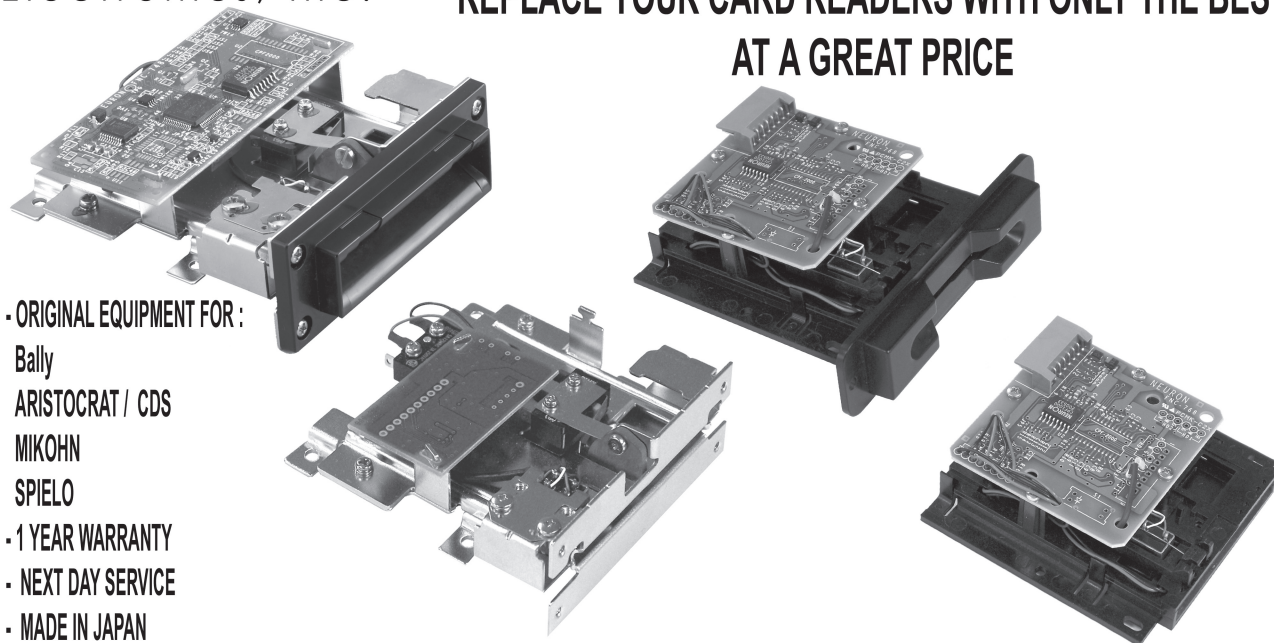
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Nothing looked loose at all, so I wiggled a few of the connections and the security guard stated that the error cleared for a moment (I needed a security guard with me because these were coin games and I had the drop door key. Also, the controller is located in the slot base). Looks like we have a loose connection. After a moment or two we found out which one it was. The connector was reseated and haven't heard a complaint from it yet.

Aristocrat Locking Up For Hand Pays

When a slot machine has a ticket printer and locks up for a "hand pay" or "payout" something is definitely wrong (if the amount is under the \$1200.00 taxable limit). That's the way our slots are optioned, anyway. Slot attendants don't like it when they have to process a "hand pay" every time a customer cashes out, even if the amount is the value of .05 cents! \$1000.00 or .05 cents, it doesn't matter. It's still the same procedure. When the game doesn't communicate with the tracking system or the communication board doesn't talk to the game AND the system, there will be problems.

On rare occasions, an Aristocrat will lose communication with the system. Both the game AND the CDS Sentinel need to be rebooted. This doesn't always work, but sometimes it DOES. If the game is a newer Aristocrat and has a COM board installed, proper communication can be identified by the flash state of the LED on the board. If the LED flashes rapidly, then the board is A-OK. If it flashes a code (such as it flashes five times and stops, flashes five times and stops, over and over) it is displaying an error code. RAM clearing the COM board will get it up and running sometimes too. Simply power down the board, insert a small wire into empty sockets 6 & 7 (they're

marked on the right hand side) and power back up the board. (Use the wire to short out pins 6 & 7, a paper clip can be used too). The LED will flash very rapidly when it is cleared. Power the board back down, then up again. Usually this will cure the problem. If the RAM procedure doesn't, try a replacement COM board. If that doesn't cure it, try a fresh Sentinel board. I have also seen games lose their "global setup." The "global setup" is a card that has options that can be set so the game communicates with the system such as the Sentinel I.D. Number, the speed of communication (the majority of our games are optioned at IGT Winner and SAS). Other options include "progressive," "hopper fill amount" and "ticketing." I don't have an answer but I have seen where games totally lose all of these option settings. Simply compare the options to an identical game next to it. With a little work, the game will be back online in no time.

WMS Bluebird - Black LCD

Did the LCD go black on an upright Bluebird? It may not necessarily be a bad monitor. While working on a bill acceptor problem on an Atronic, a slot attendant pointed out that the LCD was black on a Bluebird. No major thing. We have spares in the shop. Before grabbing a unit however, I checked out the game. The cooling fan on the LCD wasn't turning, so this told me I had a power problem. The connections were checked and they were OK. Everything was in its place. Next, the power supply was checked and the cooling fan on that wasn't working either. This was definitely a power issue now. The supply was removed and with one whiff, I knew it was toast. Ah! The famous smell of a cooked power supply. It was replaced with a new spare and the game came up perfectly.

A Mysterious Nut Threw a Wrench in the Gears

On an IGT S+ upright, have you ever had it act just plain weird? I thought I knew what the problem was but I was wrong once again. The symptoms acted like it was a loose connection on the mother board. I have run across this a few times. Power that was sent to the reels fluctuated and the game didn't have a display or sometimes the power to the reels would be absent with no game display. I checked to make sure the white connector closest to the hopper was properly in place. Everything on the game appeared to be in order. All of the connections at the mother board were snug, the main processor board was reseated and snug, all of the fuses checked out fine and nothing smelled like it was getting hot (that's always a good thing). At the time we were busy on the floor and it was time to call it a day, so the buck was passed to the next shift. The following day I checked the log book and read that the power supply had been changed. That didn't do it either. By this time I was thinking that the main processor needed to be replaced. Being that it was an older S+, it was possible. Situations have occurred in the past where games would act unusual and the main processor turned out to be bad. I continued my reading in our log book and to my surprise, there was a mysterious nut that had landed perfectly onto the handle solenoid, shorting it out though NOT shorting out anything severe enough to blow a fuse or have a major power loss such as the display and the reels being totally dead. The small mysterious nut was removed from the handle solenoid, the game rebooted, and it's back online.

- Pat Porath
pporath@slot-techs.com



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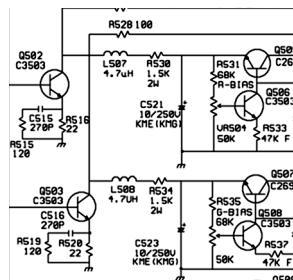
THE DIGITAL MULTIMETER

This relatively inexpensive piece of test equipment is easy to operate. Casino School students learn to use the digital multimeter to perform tests and measurements that will pinpoint the cause of a failure down to a single component.

ELECTRONIC COMPONENTS

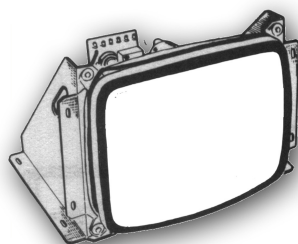
The individual components used in games are introduced. Parts such as resistors, capacitors, diodes, potentiometers and transistors are covered individually. Students learn how the components work and how to test them using the meter.

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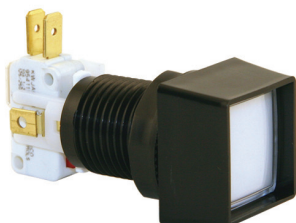
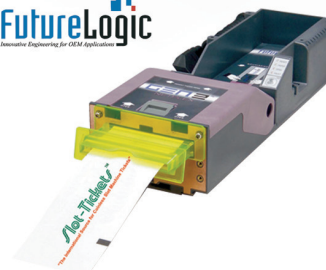
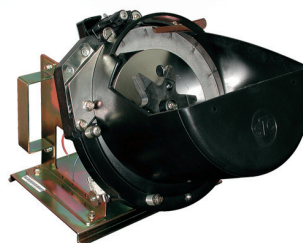
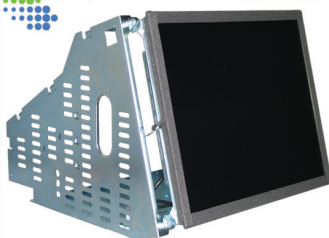
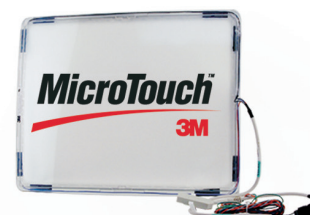
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