

SLOT TECH MAGAZINE

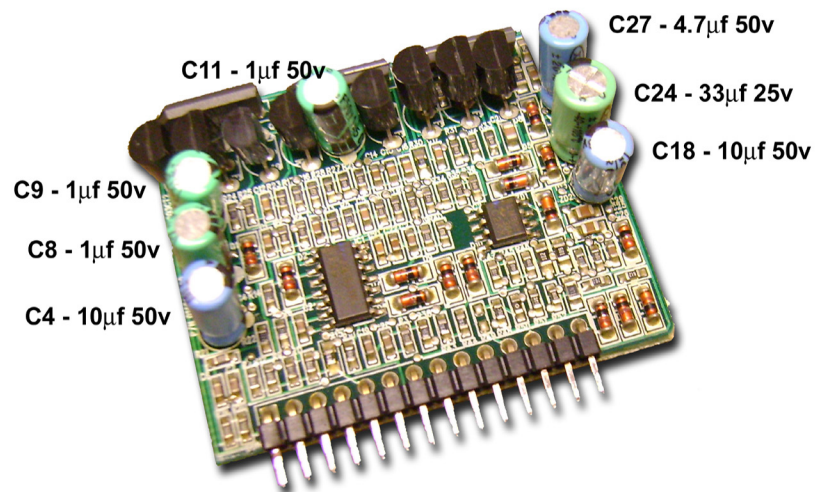
Slot Machine Technology for the North American Gaming Industry



IGT Power Supply Repair

The Life and Times of a Bulb?

Quick and Simple Repairs #48



The **Gold Standard** in Gaming Printers

25 YEARS
of Innovation
& Excellence
1983-2008



Driven by
Technology & Innovation

25 years of innovation and excellence
Setting the pace for thermal printer technology



Preferred by
Casino Operators

Leading supplier of TITO printers worldwide
More than 1 million printers installed worldwide



Praised by
Industry Experts

Most decorated TITO printers in the industry
Ten industry awards in five years



Chosen by
Manufacturers

TITO printer chosen by OEMs across the globe
Preferred by over 40 manufacturers worldwide



Supported by
World-Class Service

Service & Support unmatched in the industry
Local support in Asia, Australia, Europe, North America,
Russia, South America



www.FutureLogicInc.com



Visit our Website to See the
New Kiesub Fall Flyer and to
Order Online
www.kiesub.com

Free Shipping on Qualifying Orders Over \$200 See Website for Details!

LED Replacement Boards



Replace the F15 Fluorescent Lamp on
Upper with LED Technology

- Super High Intensity • Plug & Play
- Optional Diffuser Panel
- Horizontal or Vertical "Quik Plug" Brackets
- LB3001 \$2000 Belly Glass Board with Bracket \$85.08
- LB3002 Replaces F15 Lamp, Horizontal "Quik Plugs" \$80.65
- LB3003 Replaces F15 Lamp, Vertical "Quik Plugs" \$80.65
- LB3006 IGT Slant Top Machine Belly Glass LED Board CALL
- with "Z" Bracket. Mounts to Existing Fixture
- LB3000AP Diffuser Panel Accessory Plate \$12.99



Printer Arrow LED Board
Replaces the Present LED Board
K630-TPA IGT Slant Top \$14.95



Bill Validator LED Board
Replaces Plastic Light Board Holder
& Board

- Yellow and Green LED
- K621-BVD IGT Slant Top \$18.86
- K621-BVD-W (White LEDs) \$23.60

Call Kiesub for More Information on
Our Entire Line of LED Replacement Boards

Save Energy - Save Money - Go Green with Kiesub!

Cleaners & Chemicals



CAIG DustAll PRO
10 oz Canned Air

- 134a
- Non-Flammable

SALE PRICE:

1-11 \$5.95 ea

12-47 \$4.97 ea

48+ \$4.87 ea

Meters & Test Equipment



3-1/2 Digit
Digital Multimeter

- 10A with Hold
- Diode, Transistor & Continuity
- DVM830BL

SALE PRICE \$9.95

Flashlights



Duracell 8" Flashlight
Heavy Duty Shock-Absorbing Rubber

- Weather Resistant
- Bright Xenon Bulb
- D Batteries Sold Separately

PCXPDP SALE PRICE \$2.99

Cable Assemblies & Wire Harnesses



Contact Kiesub's Manufacturing
Division: assembly@kiesub.com

Battery Packs



Cat5e & Cat6 Cable & Patch Cords



Cat5e Patch Cords

- Molded Snagless Boots
- Colors: Black, Blue, Green, Gray, Orange, Red, Violet, Yellow, White

SALE PRICES:

DC-5E8Q-03 3' \$1.99 DC-5E8Q-14 14' \$4.99

DC-5E8Q-05 5' \$2.49 DC-5E8Q-25 25' \$8.99

DC-5E8Q-07 7' \$2.99 DC-5E8Q-50' \$15.99

DC-5E8Q-10 10' \$3.99 DC-5E8Q-75 \$19.99

CAT6 Shielded Harmonica Block



- Certified CAT6
- Triple Shielded
- 6PJS

SALE PRICE \$9.95

Fans



- 40x40x10
- 5VDC
- 3 Wire with Plug
- FD4010B05W5-71-VGA

SALE PRICE \$19.95

Soldering/Desoldering Equipment



Hakko Soldering Station
Delivers Superior Heat Transfer and Thermal Recovery.

- 4 Preset Soldering Heat Ranges
- Auto Power Shutoff
- Tips Not Included - visit www.kiesub.com

FP-102

SALE PRICE \$139.95

Reg. \$250.00 Quantities Limited



Weller Pro Series
Battery-Powered Soldering Iron

- 8W/11W
- Heats to Temperature in 11 Seconds

BP860MP

SALE PRICE \$15.95

**YOUR COMPLETE SOLUTION FOR
ELECTRONIC PARTS AND SUPPLIES**

LED REPLACEMENT BOARDS

CABLE HARNESSES

& MORE!

**KIESUB
ELECTRONICS**

3185 S. Highland Dr. Las Vegas, NV 89109

Call: 702-733-0024

info@kiesub.com

Fax: 702-733-0026

www.kiesub.com

CASINOTECH

kortek authorized service center



Parts and Service for:



We provide the parts and service needed to
help with ALL of your video monitor needs.

Free warranty Service
for all Kortek LCD,
CRT, and PDP Monitors

Low cost out of
warranty service on
LCDs and CRTs

Expedited Services
available

Service Info for all
Kortek Monitors

CRT Chassis Boards,
Touch Screens, and
Controllers

Low Cost replacement
LCD and CRT Monitors

Retrofit LCD monitors
and conversion kits for
alls models

LCD Panel Repair and
Backlight Replacement

Player Tracking System
Displays, Touch
Screens, and Backlights

Cold Cathode
Fluorescent Lights for
Panels and Slot Lamps

At CasinoTech, the Bench Tech is our
customer. We serve our customer well. Don't
trust your equipment to anyone but a
recognized leader in the
Casino Industry

The *Original* Authorized
Kortek Service Center
480 Mirror Court Suite 101
Henderson, NV 89011

P: 702.736.8472

P: 281.255.4388

F: 702.920.8678

SALES@CASINOTECH.COM

WWW.CASINOTECH.COM

March 2009

Page 4 - Editorial

Page 6 - Win-Tact WP203F11 Power Supply

Page 13 - The Life and Times of a Bulb

Page 20 - Quick and Simple Repairs #48

Page 26 - Subscriptions and Order Form

Dear Friends,

Every now and then, I get to spend some time on the bench at a casino, knocking out some repair items. Recently, I had a lot of fun fixing a big stack of IGT power supplies. The failure rate for these power supplies is extremely high. Even if your slot machine machine has yet to exhibit any symptom of the power supply failure, as soon as it is switched off, it likely will not come back on. This month, we'll take a look at this super-common failure and how to repair it. There is also a 16 minute video of the repair you can watch online. The article begins on page six.

The life expectancy of a bulb doesn't seem so long when so many just seem to die off on a daily basis. Statistics and performance along with datasheets are fine on print, but reality is a different ball game altogether. Our Maltese correspondent James Borg is back this month with another fun look at an interesting repair. This month, James tackles (drum roll, please) a light bulb replacement! No. I'm not kidding. But there's more to this repair than meets the eye and you'll just have to read the article to see what I mean. James' brilliant repair begins on page 13.

Wow. This month makes it four years that Pat Porath has been sharing his Quick and Simple Repairs with us. Number 48 takes us into the attic of the Island Resort and Casino and beyond. Thanks, Pat.

That's all for this month. Don't forget that TechFest 19 will be held May 12-14 2009 at Mystic Lake. See you there?



Randy Fromm - Publisher



Randy Fromm

Randy Fromm's Slot Tech Magazine

Editor

Randy Fromm

Technical Writers

Ted Befus, Kevin Noble, Pat
Porath, Vic Fortenbach,
James Borg

International Contributor

Martin Dempsey

Slot Tech Magazine is published
monthly by
Slot Tech Magazine
1944 Falmouth Dr.
El Cajon, CA 92020-2827
tel.619.593.6131 fax.619.593.6132
e-mail editor@slot-techs.com
Visit the website at slot-techs.com

SUBSCRIPTIONS

Domestic (North America)

1 year - \$60.00

2 years - \$120.00

International

1 year - \$120.00

2 years - \$240.00

Copyright 2009 under the Universal
Copyright Convention. All rights re-
served.

Slot Tech Magazine is an
official publication of



<http://www.digitechsys.co.kr>

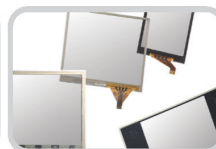
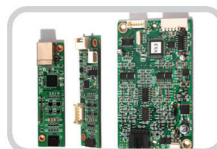
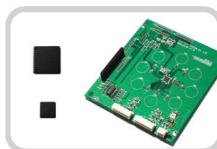
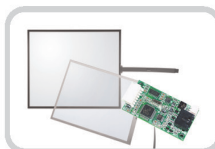
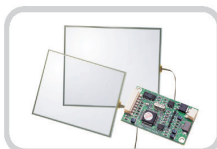
Touchscreen

Total Solution Provider for Touchscreen Technology

DIGITECH EST CAPACITIVE TOUCH TECHNOLOGY

Digitech's EST Capacitive Touch screens, employing its remarkable patented touch technology, are the ideal touchscreen solution for the public access and entertainment application such as Kiosk and Gaming machine. With the longest touchscreen warranty available, the EST Capacitive Touchscreens are the most preferred solution for the applications requiring accuracy, robustness, reliability, clarity, and unsurpassed performance.

EST Capacitive Touchscreen surface with protective hardcoat enables scratch and contaminant resistance to dirt, dust, liquid, and corrosive chemicals. With this transparent protective overcoat that minimizes the reflection and maximizes the light transmissions, DigiTech's EST Capacitive Touchscreens provide dramatic physical robustness.



Win-Tact WP203F11 Power Supply

View Repair Video at <http://tinyurl.com/igt-psrepair>



No matter how you look at it, the failure rate for these power supplies is extremely high. Even if the machine has yet to exhibit any symptom of the power supply failure, as soon as it is switched off, it likely will not come back on if it has this all-too-common power supply failure.

The cost to casinos worldwide for replacement and/or repair is enormous. As a service technician, high failure rates mean job security so in this regard, I am happy to see these power supplies fail in huge numbers. On the other hand, it's never a good thing for a casino to have to spend thousands of dollars on repairs due to bad power supplies when the only problem is bad electrolytic capacitors.

Following the publication of a technical article regarding this power supply in the January issue of Slot Tech Magazine, I received a couple of letters from readers informing me that the article didn't go far enough in describing all of the failures in this unit. Specifically, the article failed completely to

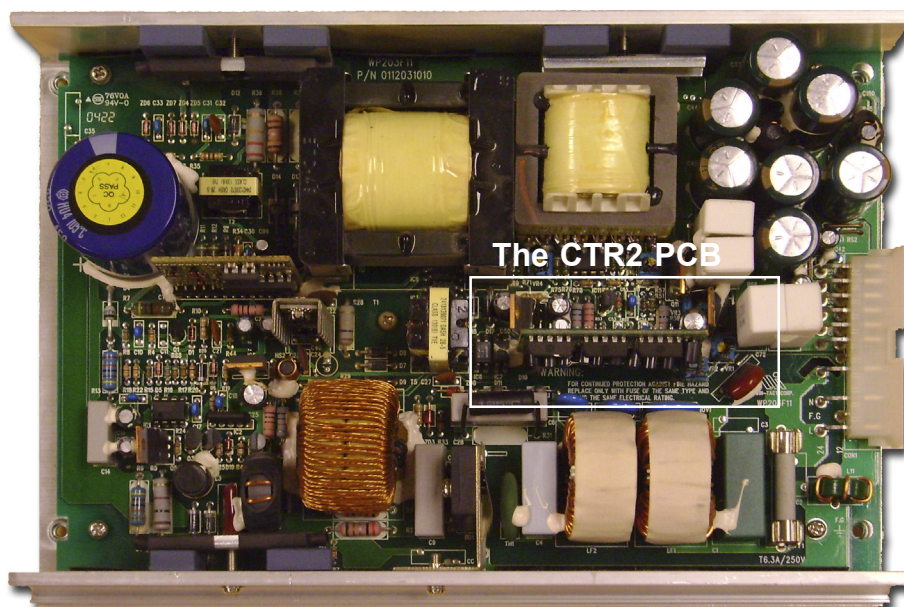
accurately describe the cause of the "netplex display link down" error which is caused by failure of a completely different set of electrolytic capacitors than the obviously bad output filter capacitors pictured and described in the article. If you tried to repair a bad Win-Tact power supply that caused a "netplex display link down" error by replacing the bad capacitors mentioned in the article, you would not have been successful.

Hopefully, you set the power supply(s) aside and didn't throw them out or send them away for repair because this month, we're going to look at how to repair this problem

once and for all. Here are the two letters:

Mr. Fromm-

I just read your article on repairing the power supplies from S2000 games. You were right about the caps being bad but if you put the power supply on an O-scope, you will most likely find that it will not have a correct wave form [at pin 7]. It will look sort of like a shark's fin. One of my techs built a power supply tester here in our shop and we use it to check these waveforms. What we have found is that you should change out all seven caps on the CTR2 board. While this will bring the power supply up to working condition, this





Touch Solutions for Interactive Gaming

For more than 20 years, MicroTouch™ touch screens have been the global standard for interactive gaming. MicroTouch ClearTek™ II capacitive touch sensors continue that distinction as the industry's preferred solution for fast, accurate, and durable touch.

- **ClearTek II touch sensors** offer at least 5 times the surface durability over other surface capacitive products due to additional hard coat and anti-scratch coatings.
- **EX II touch controllers** offer downloadable firmware to enhance custom gaming requirements.
- The **Tactile Touch** enhancement can entice players to play longer and can extend the life of older casino games.
- **Wide-aspect touch screens** are available for popular gaming displays ranging from 7" to 32".

To learn more about the **ClearTek II Difference** call 888-659-1080 or visit www.3m.com/touch

may not cure all of the problems. When we have a power supply go down (which here is frequent) we go ahead and replace all of the Aluminum Electrolytic capacitors, especially if they are over two years old. We do this because we have seen the power supplies come back for other problems that seem to point to individual caps.

I just wanted to add a little info that others may use and save their casino some money. I enjoy your magazine each month and I make sure that my techs also read it.

Thank you,

Dan Poole - Tech Supervisor
- Bally's Casino Tunica

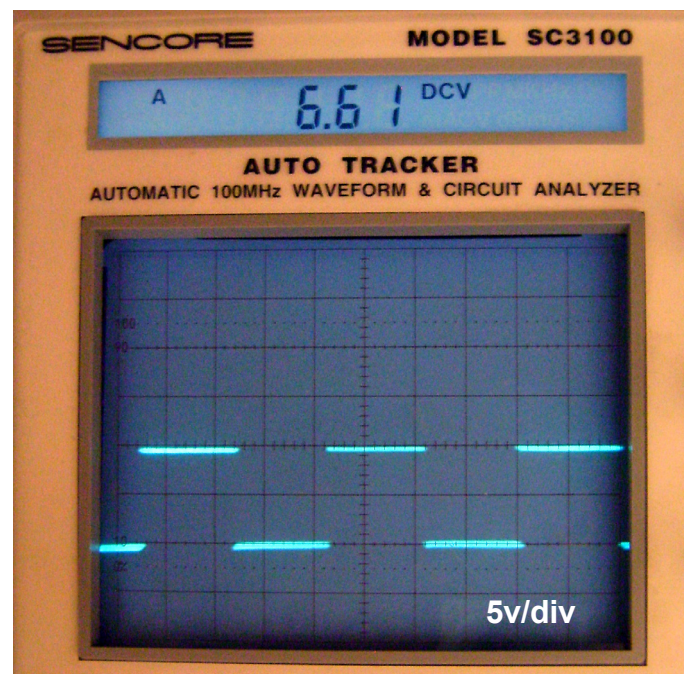
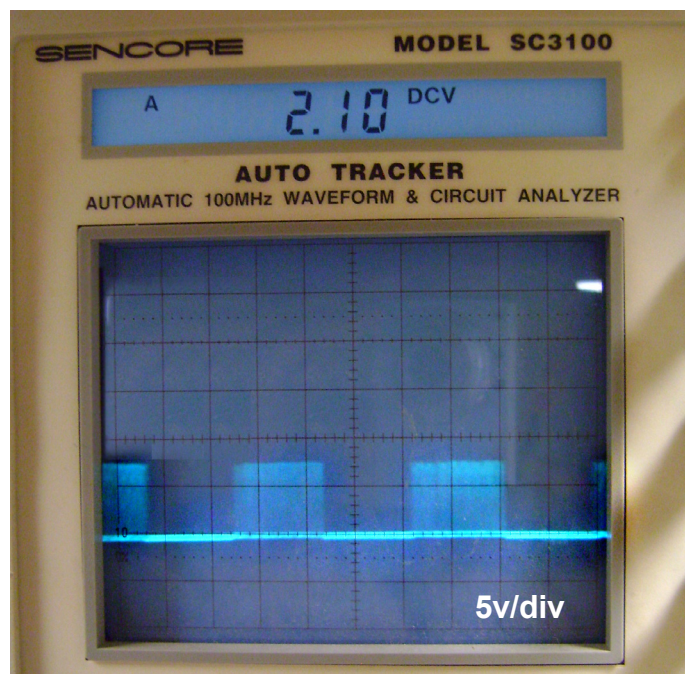
Hi Randy,

My name is Fred Thompson, I am Senior Slot Tech at SENECA ALLEGANY CASINO in Salamanca, NY. I found your "Logic Failure" article in the January 2009 issue of Slot Tech magazine quite interesting. I've only been a slot tech about 2½ years (my background is in consumer electronics repair) and have found myself scratching my head many times troubleshooting various problems, saying to myself, "this just doesn't make any sense." I can take your article to the next level of addressing the "netplex display link down" error, if you are interested.

These power supplies (manufactured by Win-Tact Electronics Corp.) seem to fail when the game is powered

down, for maintenance, to be moved, or as a result of a power outage. Another tech discovered that the "netplex display link down" error could be fixed by replacing the power supply. Soon I found my shop stacked up with power supplies having this problem. I remember the first supply I opened up and saw all the bulging caps (the ones listed in your article) and thought this repair would be a piece of cake. WRONG! After replacing all the caps, the error still persisted. Since I didn't have documentation on the supply, I tried doing comparative troubleshooting with a known "good" supply. It was readily apparent that this was not a voltage level or a filtering problem with the 13v or the 25v supplies.

What I did find was a discrepancy on pin 7 of the



This is the pin 7 output from the power supply. On the left is one possible bad output. Stretching the horizontal timebase would reveal a sort of "shark fin" waveform. In many cases, there is simply no output at all from pin 7. The image on the right shows a good output. It's a 60Hz square wave with an amplitude of around 12-13 volts. The 50% duty cycle gives us a DC average of 6.6 volts so if you don't have an oscilloscope, you can still test pin 7 for DC using a digital multimeter. If you are reading around 6 volts, the output is likely OK.



Here at CI Innovations we make COLD CATHODE REPLACEMENT LAMPS for all LCD MONITORS in all slot machines and video poker machines in your casino. We also make TOUCH SCREENS and protective Mylar sheets for PLAYER TRACKING SYSTEMS that use an LCD display.

See below for the replacement cold cathode lamp parts that we make for various types:

FOR IGT GAMES

- #8500- Single cold cathode lamp assembly for IGT NexGen player tracking system 6.2 inch Hitachi LCD #TX16D11VM2CAA
- #8560-4 wire touch screen for IGT NexGen player tracking system 6.2" Hitachi LCD #TX16D11VM2CAA
- #8610- Protective Mylar sheet with copper tape attached for 6.2" Hitachi LCD in IGT NexGen player tracking system
- #8570-6.2 inch Hitachi LCD #TX16D11VM2CAA with 4 wire touch screen for IGT NexGen player tracking system
- 8480-Single RAW cold cathode lamp for 10 inch LCD monitor in IGT games
- #8920- Single RAW cold cathode lamp for 15 inch LCD monitor in IGT games
- #9670- Single RAW cold cathode lamp for 15 inch LCD monitor in IGT games
- #9290- Single RAW cold cathode lamp for 19 inch LCD monitor in IGT games

FOR BALLY GAMES

- #8650- Single cold cathode lamp assembly for Bally IView player tracking system 6.2 inch "IDW" LCD
- #8950- Touch screen kit for Bally Iview player tracking system 6.2 inch "IDW" LCD (includes 5 wire touch screen & metal housing)
- #9190- Mylar protective sheet (peel & stick) for the touch screen on Bally Iview player tracking system 6.2 inch "IDW" LCD
- #9080- Single RAW cold cathode lamp for 19 inch LCD monitor in Bally games

FOR KONAMI GAMES

- #8700- Dual cold cathode lamp assembly & 12 volt inverter for Konami belly glass that is edge-lit with cold cathode
- #9240- LED edge-lit panel for Konami K2V belly glass cabinet
- #9780-"L" shaped cold cathode lamp assembly for Konami 7 inch bonus screen LCD
- #8600- Dual cold cathode lamp assembly for Konami slot machine with 17" LCD monitor

FOR WMS (Williams)GAMES

- #8520- Triple cold cathode lamp assembly for WMS slot machine with a 18" LCD monitor
- #9300- Single RAW cold cathode lamp for WMS games with 19 inch LCD monitor
- #8470- Single cold cathode lamp assembly for 6.4" LCD LG #LB064V02 in WMS BlueBird bonus screen
- 8490-6.4" LCD LG #LB064V02 for WMS Bluebird machines bonus screen (does **NOT** come with touch screen)

FOR ATRONIC GAMES

- #8690-Dual cold cathode lamp assembly for Atronic slot machine with 17" LCD monitor
- #9790-4 output Piezo cold cathode inverter with cable adapter for 17 inch Atronic E-Motion LCD monitor (includes 5 year warranty)

MISCELLANEOUS

- #9220-Bench top Cold Cathode Lamp test unit 110 volt with on/off switch

REPAIR SERVICES FOR COLD CATHODE LMAPS

- #8930- Single lamp assembly - extract old CCFL from reflective channel & install new lamp (price includes new cold cathode lamp)
- #8880- Dual lamp assemblies - extract old CCFL from reflective channel & install new lamps (price includes new cold cathode lamps)
- #8890- Triple lamp assemblies - extract old CCFL from reflective channel & install new lamps (price includes new cold cathode lamps)

[For more info or to place an order contact us or one of our distributors](#)



harry@ciinnovations.com

Phone 949-542-4188

www.ciinnovations.com

supply. From my limited research this signal is a low voltage, chopped AC signal used by comm/security circuits in the MPU. The "good" supply had a clean square wave of 13.3 V P-P and +6.6 VDC on this pin. The "bad" supply had a square wave but there were noise pulses present in the signal. It was only 8.8 V P-P and +.61 VDC. I traced this circuit back on the power supply board and found that it originated on the daughter board next to VR2. All the caps (seven) on the board looked normal. Since the daughter board can be difficult to remove, I elected to replace all of the electrolytics on the board. After reassembly the supply worked fine, no more "netplex display link down." I've since repaired the stack of 15 supplies in my shop. It seems that some electronic equipment manufactured today is on its way to the landfill after just a few years. It is up to us techs to slow that flow, squeeze a few more useful years of service from the equipment, and save our employers a few bucks in the process.

I hope you found this interesting.

Thanks,
Fred

Dear Dan and Fred,

I certainly DID find this interesting. Your letters couldn't have been timelier as I was looking at a stack of

some 30 of these power supplies on the "BAD STUFF" shelf at a casino where I was working at that exact moment. Talk about serendipity!

The problem in EVERY unit was almost exactly as you both mentioned (bad output from pin 7) although in most of the units, the signal was actually non-existent rather than just weak or noisy as you described. The output is supposed to be a 60Hz square wave. In most of these units, the output electrolytics were also bad. There were very few where the seven small caps on the little daughter PCB were bad but the output electrolytics were good.

Sitting down with a stack of bad power supplies, a big bag o' replacement capacitors and a power de-soldering station, I managed to whip through 14 power supplies in around ten hours. I could have gone a bit faster but I took the time to do some investigative troubleshooting on some of the units. I also made a little video of the process, which our readers

can view online at <http://tinyurl.com/igt-psrepair>

Needless to say, we can expect a 100% failure rate from this power supply so it's a good idea to stock up on these small capacitors in addition to the electrolytic capacitors mentioned in January's article. To reiterate, here is a complete list:

IGT Power Supply - Common Failures

40009003 / WP203F11

Main PCB

C37 6800uF 16v

C38 6800uF 16v

C39 6800uF 16v

C44 2200uF 35v

C45 2200uF 35v

C46 2200uF 35v

C47 2200uF 35v

Small cap between VR2 and VR3 330uF 25v

On the CTR2 PCB

C4 10mf 50v

C8 1mf 50v

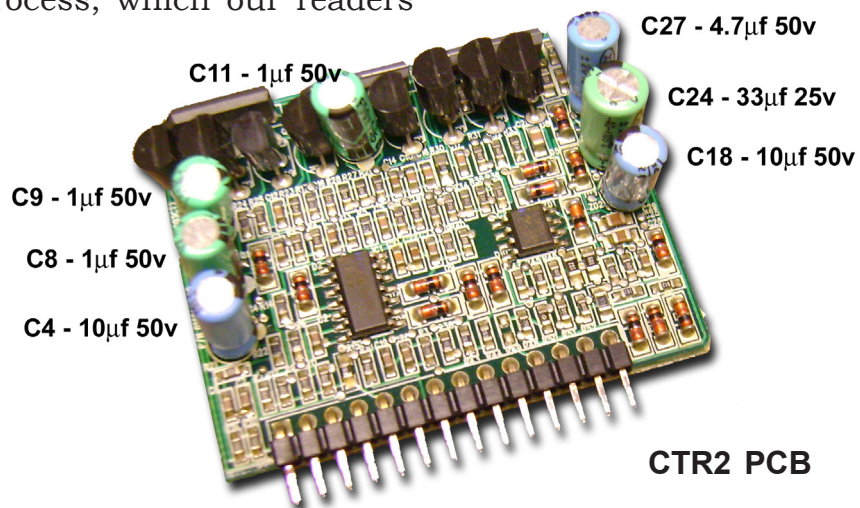
C9 1mf 50v

C11 1mf 50v

C18 10mf 50v

C24 33mf 25v

C27 4.7mf 50v



I contacted Win-Tact in order to obtain a schematic diagram for the unit. It had been my intention to write a complete circuit analysis for this article as I did for the Setec MK5PFC power supply last year. Here is the thread:

Dear David,

My name is Randy Fromm. I am the publisher of Slot Tech Magazine, a monthly trade journal for the casino industry (see <http://slot-techs.com>). Each month, we publish technical articles on slot machine operation and repair.

As you know, you manufacture a power supply used by slot machine manufacturer IGT. WP203F11

Currently, I am writing a feature article about this power supply and how to repair it. Naturally, when I write such an article, it is about how the power supply FAILS. To be balanced, I would like to include information in the article about how the power supply WORKS. That is to say, I would like to describe the theory of operation.

To this end, I am requesting a schematic diagram for the unit. The schematic diagram, which I will reproduce in the magazine as part of the article, will allow me to make a full description of how the power supply operates, rather than just an emphasis on how the unit fails. I have attached a copy of a similar article that I have published for a power supply used in

Aristocrat slot machines. Please note that nowhere in the article do I criticize the manufacturer for the failures found in the unit. This is because I had the schematic diagram and was able to spend a great deal of time discussing the operation of the unit.

Can you please provide a schematic diagram for the unit and give written permission in an e-mail for me to reproduce the schematic diagram in Slot Tech Magazine? The article is slated to appear

in the March issue of the magazine so I'd like to obtain the schematic diagram as soon as possible.

Thank you.

*Best regards,
Randy Fromm - Publisher
Slot Tech Magazine*

Dear Randy,

Thanks a lot for your mail, but we regret can not offer you the schematic diagram cause of :

Advertisement

TechFest 19

May 12-14 2009

Mystic Lake Casino Hotel

Prior Lake (Minneapolis) MN

It used to be that casinos could throw money at a problem and make it go away. Now more than ever, you can't afford to depend on others for your repairs and you can't afford costly mistakes.

Please consider attending TechFest 19 for the latest technical information on slot machine repair.

Note: There is another magazine out there promoting another "fest" with an almost identical name and an almost identical program. They often even hold it at the identical location (Mystic Lake). Please don't be confused between the two. There is only one Original TechFest, brought to you by Slot Tech Magazine.

To enroll in TechFest, please visit the website at slot-techs.com. Thank you for your continued support of TechFest and Slot Tech Magazine.

1. The WP203F11 power supply is a proprietary design for IGT. Win-Tact is not allowed to release the schematics to any third party without the permission of IGT. You must contact IGT and obtain their permission first.

2. Repair works done by a third party could potentially invalidate the approval status on the power supply by UL and other safety agencies, which could in turn jeopardize the approval status on the slot machine by various jurisdictions. We suggest customers who experience failures contact IGT if the units are still under warranty or Win-Tact if they are out of warranty for repair service.

Kindly please make allowance for our standpoint, thank you.

Warm regards,
David Chou
Win-Tact Electronics Corp.
Tel:+886-2-8227 8698 Ext :2200
Fax:+886-2-8227 8650
Your Ultimate Source For Advance Power Supplies
www.win-tact.com.tw

When pressed further about the electrolytic failures, I received this response:

Dear Randy,
Thanks for your understanding. We did notice that some electrolytic capacitors failed in the field cause of higher operating temperature inside some IGT slot machines. Based on feedback from the market, Win-Tact had taken

the following steps:

1. We had changed electrolytic capacitors vendor to Nippon Chemicon in 2006. We have not received any complaint about electrolytic capacitors failure since then.

2. The failure have been offered to exchange with refurbished units, unless the failed units have very old date code (2003 and 2004).

Once again, we do not recommend casino technicians carry out any repair work as it would potentially invalidate safety agency approval. We will do our best to support customers experiencing the failure. Let me know if I can be of further assistance.

Regards,

David Chou
Win-Tact Electronics Corp.

So, while this sort of failure is unfortunate, Win-Tact has corrected the problem and has offered to repair all but the oldest units. I must admit my own failure to make you aware of the problem earlier but in my defense, I don't work in a casino on a daily basis and I was simply unaware of the problem and

the solution offered by Win-Tact.

Naturally, dear readers, I have been unable to obtain the schematic diagram from IGT. I call upon IGT to be more forthcoming with a schematic diagram so that we might repair these units more efficiently. It seems very strange to me that IGT publishes the complete schematic diagrams for the motherboard and other PCBs but does not publish the schematic diagram for the power supply.

I also respectfully disagree with Mr. Chou's assertion that a slot department's repair of a power supply might somehow invalidate a slot machine's "approval" either in terms of safety or jurisdictional requirements. It has been my pleasure to visit slot departments all across the globe. The slot departments of the world's casinos are, in general, as professional and competent as any repair facilities in the world. We have the parts. We have the tools. We have the talent. All we lack is the schematic diagram.

- Randy Fromm
editor@slot-techs.com

What do YOU know about slot machine repair? We would like to hear from you. Slot Tech Magazine is always looking for technical contributions. Do you have a new slant on an old repair? WRITE about it. Did you just discover a common problem in a slot machine? WRITE about it! Writing is not easy and it's not fun but I pay! See <http://slot-techs.com/magazine/writers> for writer's guidelines.



The Life and Times of a Bulb

By James Borg

The life expectancy of a bulb doesn't seem so long when so many just seem to die off on a daily basis. Statistics and performance along with datasheets are fine on print, but reality is a different ball game altogether. I guess the fact that they aren't treated with much tender loving care by some slot machine players does play a major role in it. We very diplomatically ask our clients to treat the buttons

gently as hitting the crap out of them won't get the machine to work any better or to suddenly become mega generous and reward them with a nice juicy jackpot. It just doesn't work like that. Really, it doesn't. I usually get a surprised look back with a comment like "Oh, I'm sorry, I won't do that again, promise" while they look at me again smiling the nicest possible smile ever to show me that they are sorry. Actually I think that they really are at that moment in time as they don't mean any harm but get a little bit

too involved and sort of forget themselves somewhat. The gentleness would work for a few moments and then the bashing treatment would commence again.

The thought that these people could have shares in the bulb industry does come to mind occasionally but the idea will soon be discarded as a load of rubbish and utter nonsense. There are no shares involved at all. These people just do that to annoy me. I've got better things to do than to change button

NEURON
Electronics, Inc.

• APPROVED SUPPLIER FOR :

Bally

ARISTOCRAT / CDS

MIKOHN

SPIELO

IGT (IMPROVED DESIGN)

• 1 YEAR WARRANTY

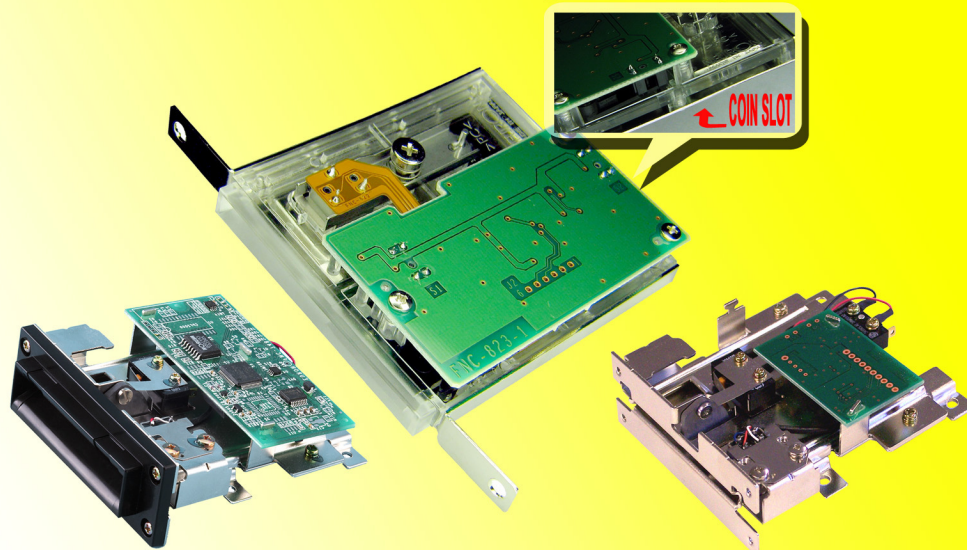
• NEXT DAY DELIVERY

• MADE IN JAPAN

GET 99.9% OUT OF YOUR INVESTMENT

OVER 1 MILLION UNITS SOLD

**REPLACE YOUR CARD READERS WITH ONLY THE BEST
AT A GREAT PRICE**



10618 BLOOMFIELD AVE. SANTA FE SPRINGS CA 90717
(562)946-1322 - www.neuron-usa.com - mario@neuron-usa.com

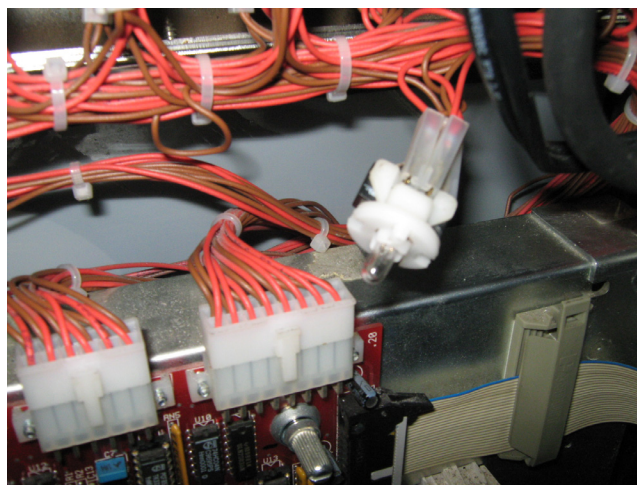
lights for the rest of my life. However, I found a great way of avoiding that . . . by telling my trusty side-kick Marco, the maintenance guru, to change them for me. He does a wonderful job. I think I would be lost without him as he really does a great deal in there.

As luck would have it, during a somewhat busy shift, my attention was channeled to one particular Atronic upright game. The machine had a touch screen installed but apparently this one wasn't behaving itself. It's awfully frustrating for a client when poking a particular area on the screen during a feature of the game and the response expected isn't the desired one. It would be even more frustrating if the area the client wanted to poke indicated a nice sum to be won and as destiny would have it, the screen would activate a different area with a much lower win. I wonder if "Machine Failure Voids All Plays and Wins" would apply in this situation. Very doubtful I would imagine. Many colourful verbal phrases of the extremely abusive nature would be heard in the background when this happens and we can't tolerate that sort of thing...such shocking behaviour...so the problem had to be seen to and rectified immediately, if not sooner. One slight snag though (wonder of wonders). There wasn't a spare screen to replace it

with (more wonder of wonders)... so it was a case of administering first aid on the spot. A quick calibration on the screen worked wonderfully and all signs showed green. All systems are GO. The source where the extremely abusive and colourful phrases were originating from seemed happy now that his screen has been calibrated and could carry on playing with some peace of mind. In such situations, a client's peace of mind is also my peace of mind. You just have to keep these people happy and things will work out nicely. It was just a question of waiting for the free features to pop up and the area on the screen poked and activated would be the desired one, leaving the client happy with the winnings showed.

It was slowly becoming one of those days for nasty comments as the client complained that the same thing had happened. He insisted that the machine's either fixed or we're pulling a fast one to rob him of his proper winnings. He demanded to see a manager and would take this to higher authorities as it's not fair on people like him who come to play there thinking the

place was regulated and end up being cheated. It went on for quite a while and my attempts to calm him down were futile. I felt a headache coming up. Who invented touch screens anyway? Who was that wise-guy that thought he was doing me a favour? Why do they not work as they should? If I'm poking a particular area, why on Earth is the response showing miles away? If I want to go up, why should I go down? If I want to go left, why should I go right? Not good. Not good at all. I ended up explaining to the client that the screen must be damaged (hardly surprising with all the punishment these get, Must be the same people that hit the buttons and blow the bulbs...and annoy me in the process) but all is not lost. Further explanations followed that the client can use the buttons instead of poking the screen to make his choice when need be and totally forget the screen. A life saver? A



Atronic Button Assembly

good alternative? A problem solver? Rather promising. At least he can't go wrong there (or so I thought).

It was supposed to be pretty simple. Four choices on the screen to choose from and four buttons light up, each corresponding to each choice accordingly. What can be simpler than that? Just to make sure that the screen isn't used again, I pulled out the dc connector from the touch screen interface which disabled it totally. One of the slots team (namely Jair, also known as "The man with the deadly hands") put a sticker on the machine saying "KINDLY USE BUTTONS DURING BONUS FEATURE".

Pretty neat actually and that should save me quite a bit of agro 'till the screen's up and running as it should. With that happy note, the client was left again to his own devices. I was feeling better now knowing that the screen has been temporarily eliminated since this was the cause of the problems, which generated vast amounts of words not possible to utter in church.

It wasn't too long into my shift and I still hadn't had my hot chocolate which was beginning to generate withdrawal symptoms. However, thoughts of such a nice warm drink with



When the touchscreen fails, the players can use the buttons. Or can they? It's tough when the buttons fail to light properly.

Editor's note: At the risk of offending Mr. Borg, I must comment that this button panel looks disgusting. The plastic caps are cracked and the panel is filthy. If I was a player, I wouldn't touch this game.

chocolate powder on top went up in smoke when the client with the previous problem stormed in the office stating that the same thing had happened. I answered back politely telling him that it's impossible as the touch screen on the game has been totally disabled. He came back with "I didn't use the touch screen; I used the buttons as you told me to!"

Oh help! What could have happened? How did it go wrong? Did the client touch the wrong button which obviously didn't get his desired response? Did an invisible hand from nowhere touch the wrong button for him just to irritate him? Was he pulling my leg? Come to think of it, I don't think the leg pulling business was plau-

Repair Monitors, Power Supplies, Gameboards?
Check any Electrolytic Capacitor In-Circuit with
100% Accuracy in 3 Seconds---GUARANTEED*



Automatically discharges capacitor

Checks DCR with alerts for shorts

Measures DCR to 500 ohms

Measures ESR from 0.1 to 20 ohms

Checks caps from .47uF to 2200uF

Beeps one to five beeps for quality

Three-color chart for good-fair-bad

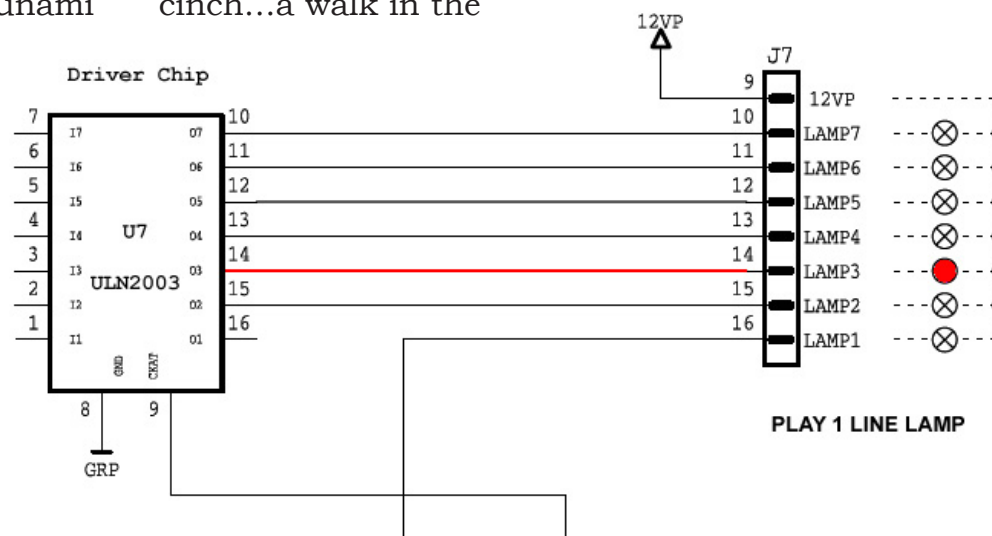
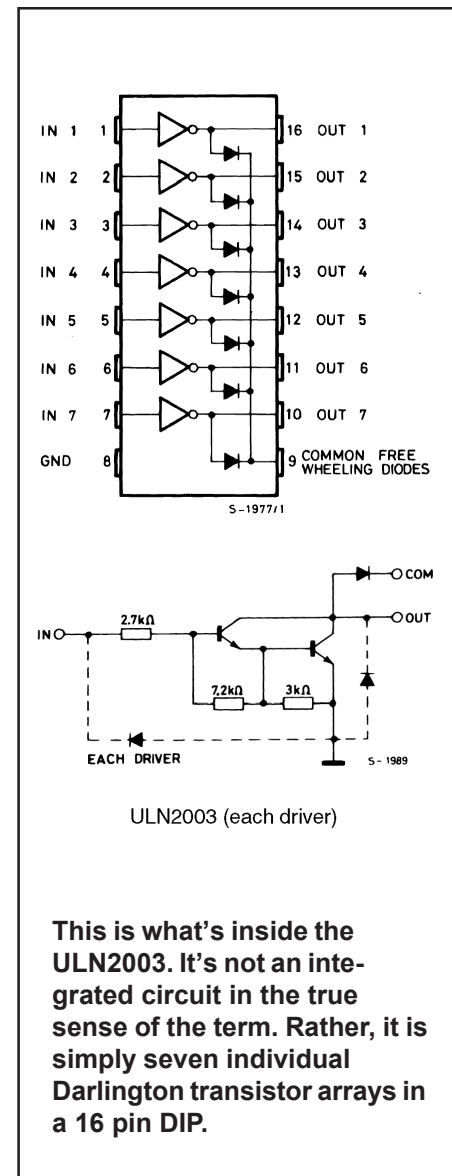
*range 0.47uF - 2.2K uF 90-day money-back guarantee

Portable, Easy to Use, Inexpensive, Highly Recommended by leaders in the industry. **CapAnalyzer 88A** by EDS, Inc.

At your favorite distributor, or call 561-487-6103 or www.eds-inc.com

A quick dash to the machine in question showed that one of the buttons, PLAY 1 LINE, the first to the left actually, was a goner. Not a speck of light was being emitted from it. This was supposed to correspond to the first left choice on the screen, which was the biggest amount the client could choose from the four options. It wasn't coming on to show the client that it's an option of the game and can be depressed as desired. This led to the client pressing the one next to it which was lit, namely PLAY 5 LINES which was the wrong button leading to the wrong choice which made waves...more like tsunami sized waves. I didn't know what to say as I was pretty sure that the button was coming on just the day before. Having said that, a lot can happen in 24 hours and losing a bulb over such a period wasn't exactly surprising. Things weren't looking so brilliant. The client wasn't amused. I

It felt awful. It felt like a really bad day all of a sudden and it wasn't going to get any better. I could feel it in the air. Composing myself and dwelling about the angry mob that had already gone to find a rope to lynch me, it suddenly hit me. It's just a bulb that's gone! No big deal. Only a two- minute operation. A cinch...a walk in the

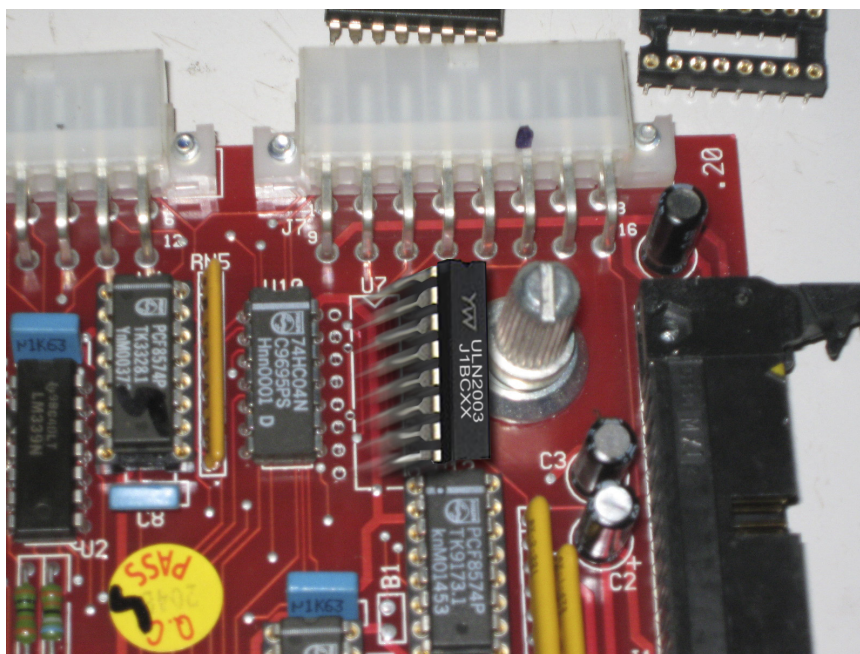


This is the schematic diagram of the lamp driver circuit. Note that the +12 vdc power supply is connected to one side of each of the lamps and it is the GROUND (the return path) that is switched on and off through the ULN2003 Darlington array.

park...don't know why all this panic in the first place. With that, I dashed off to my workshop to get a new bulb. The client in question was on my mind and how I can compensate him somehow for his losses. I mean after all, none of what had happened was his fault in the first place. Having said that, none of what had happened was my fault either. I don't think I'd make a great picture hanging from a tree but I kept having constant flashes of that haunting me.

The workshop wasn't far off from the machine in question, so I was back on the scene of the disaster within a few seconds. Up comes the Perspex button cover to expose the bulb and there it was looking at me from down this hole, all lonesome and somewhat dusty. I felt sorry for it as it had after all passed away but

that can't be helped. Life goes on. Out with the old and in with the new. I was expecting the FUBAR bulb to look black. It didn't. It looked fine actually which really wasn't a good sign. Still, it's best to change it just the same as even though it might look fine, it still won't be. Taking two steps back and waiting for the bulb to blind me with its brightness . . . Shock! Horror! It didn't come on. Oh. Why not? Could I have been that unlucky to have picked out the only dead new bulb out of a packet of a thousand? The trip to the workshop and back to the machine was performed one more time, but this time with a different new bulb. More shock and horror! Oh damn! I've changed quite a few of these lamps in the past and so



Replace the ULN2003 at U7 and you're good to go!

March 2009

Slot Tech Magazine

FLASH SMD LEDs



AT2520 PACKAGE

- Available in blue (12 lm), green (38 lm), yellow (14 lm), red (14 lm), white (38 lm)
- Constant forward current up to 250mA
- For white color, control of flash pulse duration achieves I_F up to 2AMPs
- Wide viewing angle of 120°
- Withstand ESD voltage up to 8000V
- Moisture Sensitivity Level: 2a (4 weeks of floor time)
- High Brightness package tailored for various gaming applications



Kingbright

TS 16949, ISO 9001 & ISO 14001 Manufacturer
225 Brea Canyon Rd., City of Industry, CA 91789
TEL : 1-909-468-0500 FAX : 1-909-468-0505
E-mail : sales6@KingbrightUSA.com
Website : www.KingbrightUSA.com

far all of them worked first time. I was quite surprised, to say the least, that this one didn't respond as expected, twice over. I told the client that I needed to see what the problem was and repair it before it can be played any more. With a moan and a very nasty look, he vacated it leaving me to work on it in peace. At least he didn't bring up the subject of compensation again thank goodness as I hadn't come up with any suitable ideas on that issue yet.

I pulled the whole thing out from the back for a better look. Nothing seemed out of place somehow so I got my multimeter out to do a couple of checks.

Entering into diagnostic mode and removing the bulb to check if the supply was actually arriving to the inside of the holder was a good move. There was supply on one of the pins to the bulb while none on the other. Fair enough. There's a potential difference, which will then allow current to flow through the bulb and make it work. It looked like the holder itself was damaged somehow. No problem as I had loads of those. A third trip to the workshop was made and a new holder was in place of the original one in a jiffy. Bulb in place and I felt myself trembling with great Expectations but nothing. Nada. Pause... Blank look... Confused look... Cheesed

off look? I suddenly had this urge for a hot chocolate so I retired to the office to take five and re-group my thoughts as I seemed to be on the wrong track on this job somehow. It just wasn't making much sense. When something as simple as changing a bulb becomes a full-scale operation, it's time to plan the campaign properly.

Rooting out the schematic and having a look at the possible cause of this dilemma, the bulb itself was connected to the button board through connector J7 pin 14 and then to U7 (ULN2003) pin 14. This chip is a high voltage and high current Darlington transistor array and it's been designed to take some punishment. It's used widely on stepper motors, relay driver applications and of course to drive bulbs on these machines.

Several continuity tests from the bulb holder to the chip itself were fine. DC checks on the chip were giving unexpected results so at this stage the best thing to do was to pull it out, solder an IC socket and put in a new chip. Luckily I found one running around (even more wonder of wonders). I don't always find what I need so it looked like my luck was beginning to turn at last.

Removing it from the board wasn't a big problem as I had a good solder pump

handy and the through plating holes were nice and wide. I was quite happy with the soldering operation and after cleaning the excess flux from underneath, I usually admire the joints as most of the time one can't make out which were the ones I did to the original ones from the factory.

DC checks on the related pins on U7 when compared to other pins were all similar now which seemed very promising indeed. Now the only thing left to do was to take it to its machine, plug it in and wait for it to come on. It just had to come on now. Nothing else could be wrong surely. With that positive thought still fresh in my mind, I had a last smoke and went to do the deed. The client with the colourful language wasn't to be seen. I suppose it's not so bad at this stage as if he saw me going to 'his' machine and switching it on, he might think that it's fixed and would want to play on it. It was a bit dicey as I didn't know if it was going to work or not myself but I was very hopeful. I'm a forever hopeful type of guy actually.

Fitting in the board and all its related plugs in their corresponding sockets was quickly seen to. It was just a matter of turning the machine on whilst holding my breath and keeping my fingers crossed. I suppose it was now or never and

with that, the machine's juice switch was flicked ON and it came to life. Within seconds the screen came up and so far so good. Will there be light at the end of this tunnel at least?

Entering diagnostic mode to check the state of the bulbs brought a silent 'Yipppeeeeeeee!' I couldn't really shout it out loud or start jumping up and down for joy as there were people around and I didn't want them to think that I was completely mental. Just to make sure, I went 'Yipppeeeeeeee' again, always silently of course. I breathed a sigh of relief.

The PLAY 1 LINE bulb had actually come on. What a nice fault to tackle this was. Pretty logical – usually is once the fault has been located. Have to admit that it had me thinking for a while but after saying that, life's never boring in here in more ways than one, and the beauty about it is that there are thousands of similar bulbs out there just waiting to stop glowing and be changed. What joy but surely it's just a two minute operation (or is it)?

- James Borg
jborg@slot-techs.com

Don't forget about TechFest 19!
May 12-14 2009
Mystic Lake Casino

NOTICE

For schematic diagrams, service manuals, drivers, software and more, visit the Slot Technical Department at
slot-tech.com

For batch downloads, use ftp. Point your ftp client to
slot-tech.com
username=Slot Tech
password=kxkvi8



Exclusive CERONIX Distributor

Update Your Old Equipment to Look New with CERONIX LCD Kits



Go Online or Call Today for Our Full Color Gaming Catalog



Toll Free Phone: 888-289-4277 Fax: 800-593-4277 **suzohapp.com**



When Good Voltage Goes Bad

This was a pretty wild ordeal and, as Randy Fromm would say, I “let the smoke out” of some stuff. All I did was to replace the main game power supply and wow! Something got really hot. It happened to be on an Aristocrat game where the printer is located in the top part of the machine (Aristocrat Mark VI with a GEN 1 ticket printer). I was told that the game was blowing fuses and wouldn’t power up. The main power fuse was checked and it looked ok, so what was the problem? When the power switch was turned on, the game did nothing. No sign of life with the exception of the tracking system. The Oasis Sentinel, card reader and display were working fine. I checked the connections at the main game power supply and everything looked good. The connections were checked at the backplane board too. Nothing looked loose or out of place.

Quick and Simple Repairs #48

By Pat Porath

No power, possible bad power supply right? I replaced it with a spare and flipped the main power switch back on. Again, nothing! What the . . .? Oops! I had forgotten to plug the AC power cable back into it. Corrected that little item and hit the power switch again. This time I had some action and the game started booting up.

I thought to myself, “Awesome! The game is back up and running again.”

I finished putting it back together and walked away. I was half way across the gaming floor when a co-worker approached me.

“Pat, it smells like that game you just worked on is burning up!”

Darn! What happened? I returned to the game right away and sure enough, you could smell something burning. It smelled electrical and it smelled bad. Right away, I turned the machine off and put my hand on the power supply. It was cold. Hmmmm. Interesting. I examined different areas of the game (such as power connections on the backplane board) but I didn’t see anything that had started to melt. Next, I looked at the upper part of the game. At the same time, I was feeling for anything that was warm. Wow, there

it was. The “power board” (aka COM board) located directly behind the ticket printer-the ribbon cable plugs into it-was extremely hot to the touch.

I started to remove the complete printer assembly but the cable that connects the power board to the game (on the printer side) had started to melt and it wouldn’t come disconnected! I had to take it off from the backplane board side. You could see that the board had actually started to melt! It was pretty bad.

Now the tricky part. What in the world CAUSED it to go into a meltdown? I thought about trying to repair the wire harness. Luckily, we had just ordered a replacement. When it arrived the following week, I installed the cable along with a replacement printer and, of course, a replacement power board. I admit I was a bit nervous to turn on the power switch this time. Well, here goes. “Fire in the hole!” The power was turned back on.

I didn’t smell anything burning (a good sign) and I felt the power board to make sure that it wasn’t heating up, and it wasn’t. I waited a few minutes and closed the door of the game. Now I had a “printer disconnected” error that didn’t want to clear. What else happened?

Did something on the game I/O board get fried too? Maybe something on the main processor board? I checked a few things and remembered that I wasn't sure of one of the connectors, was it plugged in or not? The game next door was opened for comparison. It was suppose to be plugged in. I installed the connector, turned the game back on and closed the main door once again. This time no errors at all, the bill acceptor was lit up and, most importantly, there was no smoke! I went into test mode and printed six test tickets. All of them were OK. Finally the game was back online. But what caused the printer's power board/ COM board to burn up? One theory I came up with is that a small nut or bolt somehow got behind the board and directly shorted it out because there were a few nuts and bolts rolling around the topbox area. My other theory is the caps on the board simply went bad and caused it to burn up. There were two small caps on it that were totally burned off. Either way, the game is back online and best of all, no smoke.

Funny thing, the incendiary incident was the talk of the day and even into the next morning. First thing in the morning, before I even started my shift, a co-worker asked me "Pat, what are you going to burn up today?" We laughed.

"Other Duties"

Don't get me wrong, I usually enjoy my job. You know, working on slot machines, our casino signage once in a March 2009



Ceronix, the company you have relied upon to provide you the highest-quality video display monitors for almost 25 years now brings you
New Kits for your Bally Game Maker

Turn your old 13" CRT Game
 Maker & Game Maker Plus
 Cabinets into New Machines with
 the Ceronix 15" LCD
 Replacement Kits

**CPA3001- Bally Game
 Maker Upright**

**CPA4001- Bally Game
 Maker Plus Upright**



CERONIX

FOR MORE INFORMATION CONTACT YOUR LOCAL CERONIX DISTRIBUTOR OR CERONIX AT 530-886-6400

SUPERIOR LIGHTING AT YOUR FINGERTIPS

WEDGE BASED LEDs, GAS FILLED LAMPS, AND COLD CATHODE FLUORESCENTS



LAMPS AND LIGHTING
 FOR SLOT MACHINES,
 CURRENCY VALIDATION,
 DISPLAY LIGHTING,
 LCD BACKLIGHT
 REPLACEMENT LAMPS
 AND INVERTERS.

JKL[®]
Components
Corporation

CALL US TODAY!
(800) 421-7244

SEE MORE AT WWW.JKLLAMPS.COM

while, ticket printers and so on. When “other duties” come along, they can be kind of fun too. On this particular day, our slot tournament lights needed to be moved to a different area of the gaming floor because the tournament machines had been moved. I had helped set up the variety of lights so I also helped in taking them down. The lights are pretty neat. They include a variety of DJ light assemblies such as a multi-colored “disco ball” that rotates and others that flash on and off with the music. My project of the day was to crawl up into the attic above the old slot tournament area and disconnect the lights, power cables, and power controller. All of the lights plugged into the power controller. Each one had its own channel on the light controller which has pre-programmed settings or can be set to “go with the beat” of the music. Not only the lights needed to be disconnected but all of the extension cords and such needed to be taken out too. My concern was falling through the ceiling! There were only some planks for a walkway. One wrong step would not be good. The power plugs needed to be taken off of the lights too. We couldn’t drill a 2” hole into the ceiling to run power so we cut off the end and drilled a 1/2” hole instead. The cable was run through the ceiling and the power plug was put on up there. While I was working, I thought I would take a couple of pictures. Is it very often you get to see pictures of the attic of a casino? It didn’t take a very long and the task was complete. All of

the power cords, cables, and extension cords were removed, another project complete.

Atronic e-motion Presentation Error

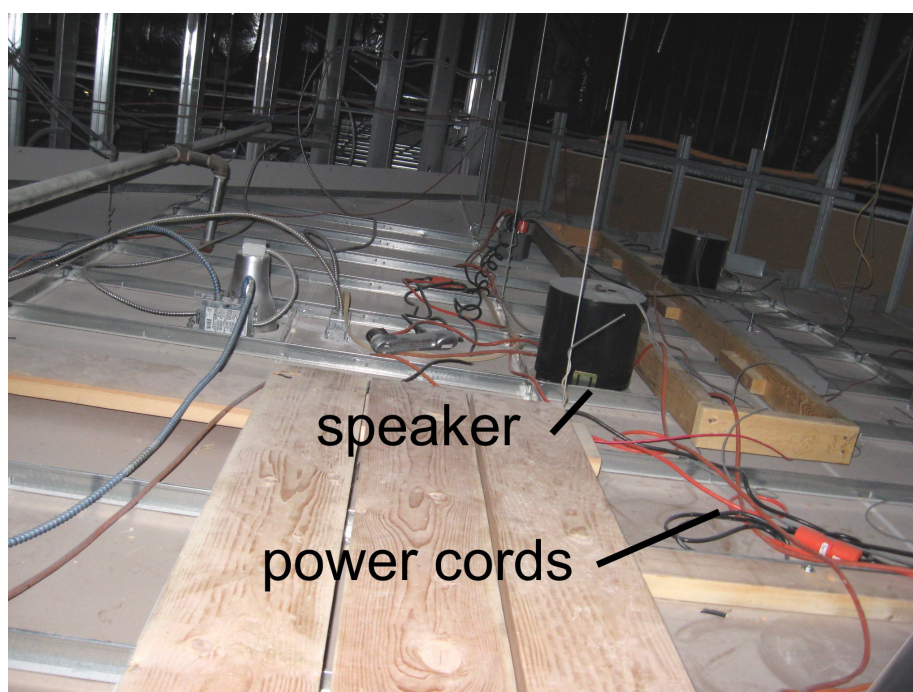
When I first was told that an Atronic game was out of service because of a “presentation error” I admit I didn’t have a clue what it meant. Later on I was told that it meant “paper jam.” After the game’s power supply was replaced (it had gone bad during a reboot) and after the Oasis Sentinel was replaced (somehow it went bad too) the error remained. The game was RAM cleared but the “presentation error” still remained. Then it was noticed that the printer had a ticket jammed in it. Of course once the ticket jam was cleared and the machine reset was done with the key, the game was fine. It was kind of weird though, we were unaware what a “presentation error” was at first. Now we know what the

error means and where to look for the problem.

Bluebird Machine Move-Topper Problem

“Topper” (not to be confused with “topbox”) is the very top part of a machine which has a type of theme in it (such as “Hot Hot Penny) and the candle (AKA service light or tower) sits on top of it. The unit almost always has flashing and or rotating small lights on it too. They come in a variety of shapes such as oval, shield and round. A “topbox” on a WMS usually consists of the bonus part of a game. These games are also tall in form factor. Two different examples of games that have topboxes are Top Gun and The Wizard of Oz.

Anyway, some regular games were moved to a different location on the floor and toppers needed to be put on them. So, the move was completed and toppers were installed. Here is where it



starts to get a bit interesting. This game had been moved and now it would not boot up. I checked the 110 Vac main lines in the game and they were all connected and in place. I was told that the power supply had been replaced so more than likely that wasn't the problem. I turned the game off and on a few times and checked the "voltage indicator lights" located on the motherboard. I noticed something. When the game was turned on, ALL of the lights flash on, and then the majority went out. This looked like power supply problem to me but since it had already been replaced, there may be a short somewhere in the game. As stated earlier, I checked the 110v lines and they all looked ok. At the time I only thought the game was only moved to a different location. Then I was trying to think (sometimes scary) what else has been done to the game? Was it converted, were drops just done on it, or did it have a problem before it was moved? Then I remembered. Toppers were just installed! The game was working just fine before, now it isn't. With the power turned off, I removed the topglass and disconnected EVERYTHING that had to do with the topper. Now it was time to turn on the power switch, once again, to see what happens this time. Awesome! All of the "voltage indicator lights" stayed lit and the game started booting up! This told me that there was a good chance that there was a wire that was shorting out to ground. I took the topper off and right away there were two spots in a wire that were bare. I cut the wire, stripped

March 2009

the ends and put a long piece of heat shrinkable tubing over the place that was cut and the other bare spot. I had to borrow a lighter-my Zippo happened to be out of fluid-and heated up the heat shrink clamping it tightly to the wire. Everything was put back together (topper put back on, connectors plugged back in, and the top glass of the game put back in) and the power was turned back on again. The wire repair was good, the voltage was OK and held, and the game started booting up. Awesome! Another game repaired and back online.

Aristocrat Viridian Wouldn't Boot

I was called to a Viridian (Aristocrats newest game on the market) because it

wouldn't boot up all the way. The machine would start to boot, then it would stop at "checking smart card" and freeze up. I reseated the smart card and the main processor, but no luck. Thinking that the smart card may be the problem, I swapped it with the game next to it. They were both "Mr. Woo" programs so it shouldn't be a problem. The known good card was put into the game that had the problem and it was turned



DON'T JUST CLEAN IT, PLOW IT

<div style="text-align: center;"> WCM-01 </div> <div style="display: flex; align-items: center; justify-content: center;"> <div style="margin-left: 10px;"> <p>FOR USE WITH THE FOLLOWING CARD READER SYSTEM</p> <p>PANASONIC #711-M2121S352</p> </div> </div>	<div style="text-align: center;"> The Original Plow </div> <div style="display: flex; align-items: center; justify-content: center;"> <div style="margin-left: 10px;"> <p>FOR USE WITH THE FOLLOWING CARD READER SYSTEMS</p> <p>XICO Card Reader XS Technologies and most single or double limiting post card readers.</p> </div> </div>
---	---

"THE CARD READER CLEANING TOOL THAT REALLY WORKS"

The Plow™ is a patented Card Reader Cleaning Card that incorporates a notch technology that allows the cleaning card to slide beyond the card travel limit post or posts. Plow™ is saturated with a tested cleaning fluid that not only efficiently and effectively cleans the concealed magnetic head, but also cleans the card pathway and pushes dirt out of the back of the card reader. Other cleaning cards simply clean the magnetic head. Over time dirt accumulates in the back of the card reader, causing it to fail. Regular use of the Plow™ will maintain card readers in excellent working condition; reduce down time, technician man-hours and repair cost, and most of all increase performance and customer satisfaction. For a free sample contact us on our website or call our toll free number.

Visit our website at: www.waltem.com 1-866-695-PLOW (7569)

back on and started booting up perfectly. When it went past the part of “checking smart card” it looked like the card was indeed bad. Sure enough it booted up all the way and was fine. Just to make sure that the card was bad, I put it in the other game and it froze up. The card was definitely bad. I was hoping we had a spare but unfortunately we didn’t so one had to be ordered. You have to love “swaptronics”. The suspected part was swapped and the problem found.

Older IGT S2000 Reel 3 Tilts

I had a complaint that this particular game was having a lot of reel 3 tilts. I dropped a coin in to give it a spin (yes, we still have a few coin games) and the third reel basket had a bit of a bounce when it stopped. From past experience, this indicated to me that the stepper motor was getting tired. Figure the third reel spins about three times longer than the first reel, or so, it makes sense that the motor would wear first. In the shop a spare assembly was found. The only thing needed to be done was to put the “basket with reel strip” on the replacement. I brought the complete reel assembly to the game for the test. Even though it was on the “good parts shelf” I wanted to make sure it did in fact work and I wanted to do a quick payable test.

The reel was put into the game and a quick partial payable test was done and all looked fine. Sevens were in line and triple bars were in line. I also did a reel stop (three reel game) of 03-03

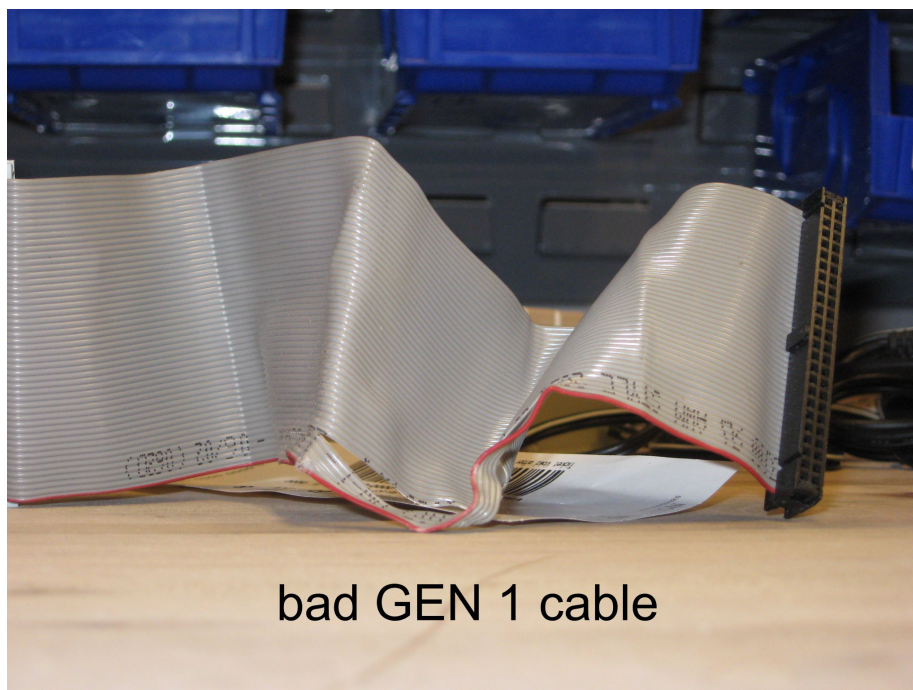
and 04, to make sure the symbols were in the correct position, and they were. Two symbols were lined up with one off by a “step.” The game passed that test too, even without tilts so far. Next I dropped in some coins and spun the game four times. All appeared to be fine and the game was put back in play. Granted, I could have swapped reels with another game, done reel tests at the game, and played the game myself just to make SURE that the reel motor was bad but I figured just to replace it. So far so good, the reel assembly is still working as far as I know. I haven’t heard of any complaints yet.

GEN 1 Printer Cable Problem

When I arrived at the printer problem, an IGT slant top S2000, the display showed “paper out.” The game was opened up and obviously it was not out of paper so that wasn’t the problem. Next, I turned the game off and removed the printer from the game. Could the ribbon cable

that is torn up and has a few bare wires showing be the problem? The answer is yes, without a doubt. Since the printer is out of the game why not check to see if it needs to be brought to the shop for a good cleaning? It was checked out and wasn’t bad. A little bit of dust here and there but I didn’t see the need to put it on the bench so I only went to the shop for a new cable. Back at the game, the new cable was put on and the printer was installed back in the game. Soon after the power switch was turned back on, paper was fed into the printer head. It took the paper and it didn’t have an error! This was a very good sign. I closed the door on the machine and there weren’t any errors. Will it print some test tickets? There is only one way to find out. Three tickets printed perfectly. It looks like the only thing bad was the cable. Once again, another game back online.

- Pat Porath
pporath@slot-techs.com



bad GEN 1 cable

	Monday	Tuesday	Wednesday	Thursday	Friday
Two Week Class	Beginning Electronics for Slot Techs Components, Schematics, Testing, NO MATH! <div>Soldering</div>			Power Supplies	CRT Monitors
	LCD Monitors	Hands-On Repair Lab CRT Monitors, LCD Monitors, Power Supplies, etc.		FutureLogic Printers	JCM UBA Bill Acceptors
One Week Intermediate Level Class	Power Supplies	CRT Monitors	LCD Monitors	Hands-On Repair Lab CRT Monitors, LCD Monitors, Power Supplies, etc.	
One Week Intermediate Level Class	Power Supplies	CRT Monitors	LCD Monitors Hands-On Repair Lab CRT Monitors, LCD Monitors, Power Supplies, etc.		JCM or FutureLogic or Ithaca or MEI
Another One Week Alternative Class	LCD Monitors	Slot Ticket Printers	JCM UBA Bill Acceptor	OASIS Training	
One Week Class	OASIS Training		JCM UBA Training	FutureLogic Ticket Printers	3M Touch Systems
Four Day Class	Power Supplies	CRT Monitors	LCD Monitors	Hands-On Repair Lab	
Four Day Class	Power Supplies	CRT Monitors	LCD Monitors	3M Touch Systems	
Classes can accommodate up to 15 students. Other classes can be organized by special request. Just ask and we'll see what we can do for you. If we can't accommodate your request, we'll help you find someone who can.					

Subscriptions & Back Issues

Why back issues of Slot Tech Magazine are important to own . . .

Slot Tech Magazine is strictly technical. As such, the magazine's contents are not time critical. The repair information and technical data contained in past issues is just as valid today as it was the day it was published.

Additionally, current and future articles more-or-less assume that readers are already familiar with what has been covered in past issues. This editorial policy assures that Slot Tech Magazine's contributing writers are not limited to "writing down" to the level of a novice technician but are free to continue to produce the most comprehensive technical articles in the gaming industry.

Randy Fromm's Slot Tech Magazine is published monthly by:

Slot Tech Magazine
1944 Falmouth Dr.
El Cajon, CA 92020-2827
tel.619.593.6131
fax.619.593.6132
e-mail editor@slot-techs.com

Subscription rates:

Domestic (USA & Canada)

1 year - \$60.00
2 years - \$120.00

International

1 year - \$120.00
2 years - \$240.00

Back Issues

Printed back issues are available for only one year from the date of publication. All single issues of Slot Tech Magazine are \$10.00/ea.

For further details on the contents of each issue, please refer to the website at slot-techs.com. To order, fax a PO or e-mail a note listing the issues you need.

Complete archive (2001 to present) available online. Visit slot-techs.com for details.

Invoice me!

PO Number _____

Company Name _____

Contact _____

Address _____

Address _____

City _____ **State/Prov.** _____

Country _____ **Zip/Postal Code** _____

Telephone _____

E-mail _____

Type of card: ☐ American Express

☐ Discover

☐ MasterCard

☐ Visa

☐ 1 year subscription, domestic

☐ 1 year subscription, international

☐ 2 year subscription, domestic

☐ 2 year subscription, international

Account Number: _____

Expiration Date: _____

**We Buy
and Sell Used
Machines
and
Gaming Parts**

**Patriot Gaming has
product solutions
to fit every budget.**

*We focus on you the
customer. To provide the
very best service and
products to fit your ever
changing needs. Our pride
rests on the fact that we offer
a wide variety of products
and alternatives, lower cost
solutions and top notch
repair services.*

**One Call...One Voice...
One Choice!**

**Call Patriot today for your
FREE Catalog!**

Service Center

• All repairs have a 90 day warranty

LCD Retro Kits



**Remanufactured
Bill validators
Monitors
Printers
LCD's**



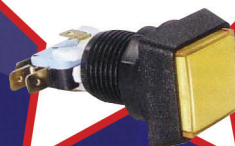
**Touch Screens
3M
Touch INT**



Lighting & LED's



Buttons & Switches



Bill validators



**TRANSACTION
Technologies Incorporated
Printers**



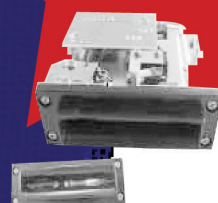
Cleaning Supplies



**Monitors
Ceronix
Tatung
Kristel
WG
Tovis
Kortek**



**Used OEM
Slot parts**



Seating



**Repair Center
Bill validators
Monitors
Printers**



**Metal
Fabrication
Brackets**

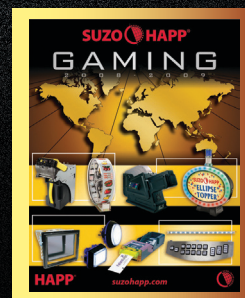


217 N. Lindberg Street • Griffith, Indiana 46319 • Office: 219-922-6400 • Fax: 219-922-6466

SUZO HAPP TOPPERS



Order 3 ways:
Toll free phone: 888-289-4277
Toll free fax: 800-593-4277
Online: www.suzohapp.com



*ask for a full
color catalog*