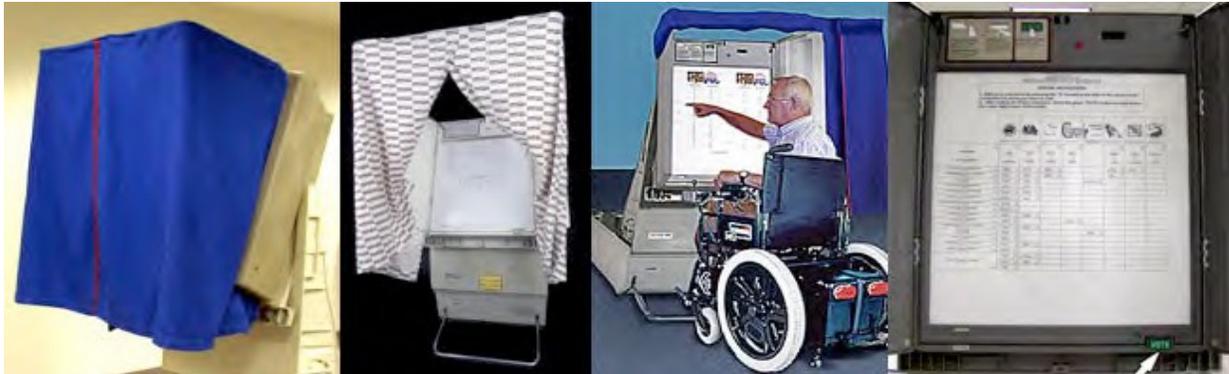# Electronic Voting Machine Information Sheet

Danaher/Guardian ELECTronic 1242

Name / Model: ELECTronic / 1242[1] (also known as the Shouptronic)
Vendor: Guardian Voting Systems, Inc. (division of Danaher Controls, Inc.)
Voter-Verifiable Paper Record Capability: None

Brief Description: The Guardian Voting Systems ELECTronic 1242 is a poll worker-activated full-face direct recording electronic voting system. Voters press the front of a mounted ballot (see rightmost image above) underneath which a touch-sensitive matrix of switches records choices. Poll workers activate the machine using an operator panel on the back of the machine to choose the ballot style and voters make choices by touching a numbered box next to their choice. When cast, voting records are recorded internally to eight memory locations: three banks of battery-powered RAM,[2] three banks of EEPROM[3] memory, one bank of EPROM[4] memory and a removable memory cartridge, which contains both EPROM and EEPROM memory. When polls are closed, poll workers remove the memory cartridge that contains the vote records from each machine. These cartridges are then either physically transported to a tabulation facility or their contents transmitted over modem using a cartridge reading device. This system is used in AR, DE, KY and PA.

Detailed Voting Process: When voters enter the precinct, poll workers confirm that they are properly registered to vote. The poll worker uses an operator's panel on the back of the machine to choose the ballot style appropriate for that voter.[5] The voter enters the curtains (see pictures at left above) and only the races for which they are permitted to vote are activated. The voter then votes by pressing a numbered box beside each choice

---

[1] http://guardianvoting.com/gvs/vs.html, accessed on October 26, 2006.
[2] This Random Access Memory (RAM) is similar to the memory that is used in a typical personal computer where a constant supply of power is necessary to keep data in memory. However, a 10-year life, lithium battery cell provides constant power to the ELECTronic 1242's RAM.
[3] EEPROM is electrically erasable, programmable read-only memory and retains data when un-powered.
[4] EPROM is erasable, programmable read-only memory and can only be erased with ultraviolet light.
[5] There may be different races for different precincts or political parties in one polling place.

verifiedvoting

ELECTION
PROTECTION
YOU
HAVE THE
RIGHT TO
VOTE
1-866-OUR-VOTE

Electronic Voting Machine Information Sheet
Danaher/Guardian ELECTronic 1242

in each race on the ballot. Flashing lights on the left-hand side of the ballot indicate races for which the voter has not yet voted. If the voter tries to choose more than one choice in a given race (over-voting), the machine will ignore the second choice. If the voter makes a mistake, they can press the numbered box again to deselect their choice; the indicator light will go out. The voter may then select the correct choice.

When done voting, the voter presses a large green "Vote" button in the lower-right corner of the voting machine. It is very important that the voter does not push the vote-casting button until they are done voting; a vote inadvertently cast may not be redone. Once cast, the vote is recorded internally to eight internal memory locations: three banks of battery-powered RAM that reside on the machine's central processor, two internal banks of EEPROM memory, one bank of EPROM memory and a removable memory cartridge, which contains one bank of EPROM and one bank of EEPROM memory. The vote records are stored in "vote tables" as aggregate vote tallies and also as ballot images both internally and to the removable memory cartridge.

When the polls close, the machines print out paper copies of the results and poll workers remove their memory cartridges, which contain the vote records from each machine. At this point, the cartridges are physically transported to a tabulation facility. At the tabulation facility, election officials use a cartridge reader to read the data off of the cartridges and into vote tabulation databases. The results are then combined to produce an aggregate vote tally. The printed total tapes and memory cartridges can then become part of the official record of the election.[6]

What to Look For
- Security Seals. Ideally, the 1242's exposed ports, memory card access areas and case seams would be covered with tamper-evident security seals. The integrity of these seals should be maintained at all times, and only breached under controlled, explained circumstances. A voided seal looks like this: http://www.flickr.com/photos/joebeone/2247733620/ . Seals should be logged to maintain chain of custody of sensitive materials.
- Memory Cards. The 1242 is an older type of machine that uses a particularly sensitive and volatile type of memory (battery-backed RAM memory). Care should be taken with memory cards and they should only be handled by pollworkers and authorized election officials, then in controlled circumstances such as the opening and closing of polls.
- Broken buttons, broken lights. The 1242 is a "button-matrix" DRE where the voter presses a button over which the machine's paper ballot face is placed (under

---

[6] Ballot images can be re-read off of the redundant memory inside the machine if a cartridge fails.

Electronic Voting Machine Information Sheet
Danaher/Guardian ELECTronic 1242

a plastic cover). A light lights up next to each selection by the voter. These buttons and lights, especially the frequently used ones in Federal races, can break or burn-out. If you see evidence of this – e.g., a light not lighting up after multiple button presses – you should request that the machine be pulled from service or that the button in question be serviced.

- Fleeing voters/premature voting. Some voters can be easily confused in that they press the large "VOTE" button too early or not at all. If a voter complains that they only were able to vote on the first few races, they probably pressed the "VOTE" button before they were finished voting their ballot. Unfortunately, there's not much to be done here other than emphasize that voters should make sure that they press the "VOTE" button *only after* they are certain they have voted as they want to in all races on the ballot. If a voter neglects to press the "VOTE" button and leaves a valid ballot on the machine, poll workers will probably have procedures to deal with this problem. We recommend that a poll worker reach in between the curtains and simply cast this vote.

- Incorrect ballot style. The 1242 can accommodate a number of different ballots, for different precincts, by disallowing voters to vote in contests for which they are not eligible. If a voter complains that their party (in a primary) races are not activated or that local races specific to their precinct are not activated, the poll worker probably pushed the incorrect ballot style option. The poll worker should cancel that ballot and activate the correct one.

Past Problems

April 2008: *Pennsylvania:* Danaher Shouptronic in Bucks, Delaware, and Philadelphia County malfunction, causing long lines at the polls.[7,8,9]

May 2007: Reports of Shouptronic malfunctions in Philadelphia.[10]

May 2005: *Pennsylvania*: Votes were lost on the Danaher 1242 Shouptronic paperless voting machines. Since the number of lost votes could affect the outcome of three races, the 199 people whose votes were lost may be asked to revote.[11]

---

[7] "Downed voting machines caused delays in Falls." Phillyburbs.com, April 22, 2008, available at: http://www.votersunite.org/article.asp?id=7650
[8] "Machines malfunction." Philly.com, April 22, 2008 , available at: http://www.votersunite.org/article.asp?id=7647
[9] "More voting machine malfunction." Philly.com, April 22, 2008 , available at: http://www.votersunite.org/article.asp?id=7646
[10] "Problems at the polls." ABC 6 Action News. May 15, 2007, available at: http://abclocal.go.com/wpvi/story?section=news/politics&id=5305908

Electronic Voting Machine Information Sheet
Danaher/Guardian ELECTronic 1242

November 2004: *Ohio*. Phantom votes appear in the presidential totals. Bush received 4,258 votes and Kerry received 260 in a precinct with only 638 voters.[12]

November 2003: *Tennessee.* A poll worker in Rutherford County inadvertently cast a vote during a demonstration that may have resulted in a tie for a Town Council position.[13]

October 2001: *Tennessee.* In Knox County, a voting machine showed an error code that corresponded to a discrepancy between internally stored vote tables. Local officials could not retrieve the data or have the machine print out the results. A Danaher technician was able to crosscheck the internal memory tables and provide results.[14]

November 2000: *Tennessee.* About 7% of memory cartridges in Knox County were temporarily unreadable and three cartridges remained unreadable. There were also problems with transmitting precinct-by-precinct vote totals.[15]

References

The Philadelphia City Commissioners Office. "Risk Assessment of Danaher Controls DRE Electronic [1242] Voting System and Philadelphia Procedures." Prepared by: Bob Lee, Voter Registration Administrator (March 9, 2004). http://josephhall.org/misc/danaher_1242_philly_report.pdf

The Department of Elections for New Castle County. "Report of the Committee to Review Physical and Operational Security of the Danaher Controls 1242 Electronic Voting Machine." (June 22, 2004). http://josephhall.org/misc/Delaware_VM_Report.pdf

---

[11] Berks County may ask people to vote again in two precincts. CentreDaily.com. May 18, 2005. Associated Press. http://www.centredaily.com/mld/centredaily/news/politics/11680418.htm. Archive at http://www.votersunite.org/article.asp?id=5408

[12] Computer error at voting machine gives Bush 3,893 extra votes. Akron Beacon Journal. November 5, 2004. Associated Press. http://www.ohio.com/mld/beaconjournal/news/state/10103910.htm?1c

[13] "Mistaken vote may have led to Smyrna election tie." Associated Press State & Local Wire, November 19, 2003.

[14] "City Council Primary Election Results Certified; Accurate Ballot Count Finally Obtained From Malfunctioning Machine." Knoxville News-Sentinel (Tennessee), October 7, 2001.

[15] "Report on voting difficulties due within a week; Voters get chance to detail problems." Knoxville News-Sentinel (Tennessee), November 14, 2000.