

Electronic Voting Machine Information Sheet

Danaher/Shouptronic/Guardian Voting Systems ELECTronic 1242

Name / Model: ELECTronic 1242¹ (a/k/a Shouptronic 1242)

Vendor: Guardian Voting Systems, Inc. (division of Danaher Controls, Inc.),

Federally-Qualified Voter-Verified Paper Audit Trail 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 EEPROM³ memory, one bank of EPROM⁴ 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.

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 in each race on the ballot.

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.



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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

Past Problems

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.⁷

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.⁸

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.⁹

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

⁷ 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>

⁸ 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>

⁹ "Mistaken vote may have led to Smyrna election tie." THE ASSOCIATED PRESS STATE & LOCAL WIRE, November 19, 2003.



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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.¹⁰

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.¹¹

November 2000: Tennessee. In Fayette County (Oakland, TN), problems, including double counting of some ballots, were resolved after borrowing a tabulation machine from a neighboring county.¹²

November 2000: Delaware. New Castle County had a 3.6% undervote rate for the presidential race in 2000. This means that as many as 3.6% of the votes for president were uncounted.¹³

November 1998: Ohio. In Franklin County, “Votes for congressional candidates were incorrectly tabulated in 95 of the county's 735 voting precincts because memory cartridges did not match ballot faces for 371 voting machines.”¹⁴

August 1998: Tennessee. In Memphis, memory problems with laptop computers and a central tabulation computer used to read memory cartridges garbled vote results.¹⁵

June 1992: Ohio. 40 out of 758 machines used in Franklin County had problems that required service. Seven memory cartridges could not be read and were entered in by hand. Finally, there were problems combining DRE results with hand-entered lever machine results.¹⁶

¹⁰ “City Council Primary Election Results Certified; Accurate Ballot Count Finally Obtained From Malfunctioning Machine.” KNOXVILLE NEWS-SENTINEL (TENNESSEE), October 7, 2001.

¹¹ “Report on voting difficulties due within a week; Voters get chance to detail problems.” KNOXVILLE NEWS-SENTINEL (TENNESSEE), November 14, 2000.

¹² “Mullins Repeats As Mayor After Voting Irregularities In Oakland.” THE COMMERCIAL APPEAL (MEMPHIS, TN), November 11, 2000.

¹³ Votes at risk in some states. Scripps Howard News Service. July 9, 2004. By Thomas Hargrove and Michael Collins. <http://www.cincypost.com/2004/07/09/vote070904.html>

¹⁴ “Miscount Could Have Been Avoided.” COLUMBUS DISPATCH (OHIO), December 11, 1998.

¹⁵ “Simple ‘Reboot’ Might Have Averted Election Glitch.” THE COMMERCIAL APPEAL (MEMPHIS, TN), August 29, 1998.

¹⁶ “New Voting Machines Don't Satisfy County.” COLUMBUS DISPATCH (OHIO), June 12, 1992.



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NASED Qualification Status:¹⁷

07/09/96: ELECTronic 1242 DRE

11/01/01: Firmware 5T, 6T

12/05/02: Firmware 4T10, 5T2, 6T5

03/06/06: Firmware 5M1

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).

www.seventy.org/electioninfo/DREReceipts2004.html

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://www.state.de.us/doe_ncc/Pubs/VM_Report.pdf

¹⁷ NASED Qualified Voting Systems (10/25/2006). National Association of State Election Directors. See: <http://www.nased.org/NASED%20Qualified%20Voting%20Systems%20031706.pdf>



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