



# Accessible and Verifiable Voting Technology: Vision

The latest version of this chart appears at <http://www.verifiedvotingfoundation.org/accesscharts>

| <a href="#">Vendor</a>              | Model  | <a href="#">Display Font Size</a> | <a href="#">Display Contrast</a> | <a href="#">Display Color Shift</a> | <a href="#">Audio Device</a>   | <a href="#">Audio Speed</a> | <a href="#">Audio Volume</a> | <a href="#">Voice Type</a>  | <a href="#">VVPR Readback</a> | <a href="#">Tactile Keypad</a> | <a href="#">Additional Features</a>  | <a href="#">All Units Accessible</a> | <a href="#">VVPR on All?</a> |
|-------------------------------------|--|-----------------------------------|----------------------------------|-------------------------------------|--------------------------------|-----------------------------|------------------------------|-----------------------------|-------------------------------|--------------------------------|--|--------------------------------------|------------------------------|
| <a href="#">AccuPoll</a>            | <a href="#">AVS 1000</a><br><a href="#">1</a>                | yes <a href="#">2</a>             | yes <a href="#">1</a>            | yes <a href="#">1</a>               | yes <a href="#">1</a>          | no <a href="#">3</a>        | yes <a href="#">4</a>        | human <a href="#">4</a>     | yes <a href="#">1</a>         | yes <a href="#">1</a>          | braille keypad, <a href="#">1</a><br>navigable audio ballot<br><a href="#">1</a> | yes                                  | always                       |
| <a href="#">AutoMARK (ES&amp;S)</a> | <a href="#">ballot marking device</a><br><a href="#">5</a>   | yes <a href="#">5</a>             | yes <a href="#">6</a>            | yes <a href="#">8</a>               | yes <a href="#">5</a>          | yes <a href="#">5</a>       | yes <a href="#">7</a>        | synth <a href="#">8</a>     | yes <a href="#">9</a>         | yes <a href="#">7</a>          | instructions in braille,<br>repeat key <a href="#">6</a>                         | yes                                  | always                       |
| <a href="#">Avante</a>              | <a href="#">Vote Tracker</a><br><a href="#">10</a>           | yes <a href="#">11</a>            | no <a href="#">12</a>            | yes <a href="#">11</a>              | yes <a href="#">13</a>         | yes <a href="#">13</a>      | no <a href="#">12</a>        | synth <a href="#">12</a>    | yes <a href="#">14</a>        | yes <a href="#">11</a>         | navigable audio ballot<br><a href="#">15</a>                                     | yes                                  | always                       |
| <a href="#">Avante</a>              | <a href="#">Vote Tracker Full Face</a><br><a href="#">16</a> | yes <a href="#">17</a>            | yes <a href="#">16</a>           | yes <a href="#">16</a>              | yes <a href="#">16</a>         | -                           | -                            | -                           | yes <a href="#">16</a>        | yes <a href="#">16</a>         | -  | yes                                  | always                       |
| <a href="#">Diebold</a>             | <a href="#">AccuVote TS</a><br><a href="#">18</a>            | yes <a href="#">18</a>            | no <a href="#">19</a>            | no <a href="#">19</a>               | optional<br><a href="#">18</a> | no <a href="#">12</a>       | yes <a href="#">20</a>       | human<br><a href="#">12</a> | -                             | no <a href="#">21</a>          | -  | no                                   | optional                     |
| <a href="#">Diebold</a>             | <a href="#">AccuVote TSX</a><br><a href="#">22</a>           | yes <a href="#">22</a>            | yes <a href="#">23</a>           | yes <a href="#">23</a>              | optional<br><a href="#">22</a> | yes <a href="#">24</a>      | -                            | -                           | -                             | no <a href="#">21</a>          | -  | no                                   | optional                     |
| <a href="#">ES&amp;S</a>            | <a href="#">iVotronic</a><br><a href="#">25</a>              | yes <a href="#">2</a>             | no <a href="#">12</a>            | -                                   | yes <a href="#">25</a>         | no <a href="#">26</a>       | no <a href="#">26</a>        | human<br><a href="#">12</a> | -                             | yes <a href="#">27</a>         | braille keypad<br><a href="#">27</a>   | no                                   | optional                     |
| <a href="#">ES&amp;S</a>            | <a href="#">iVotronic LS</a><br><a href="#">28</a>           | yes <a href="#">28</a>            | yes <a href="#">28</a>           | -                                   | yes <a href="#">28</a>         | -                           | -                            | -                           | -                             | -                              | -  | no                                   | optional                     |

| <u>Vendor</u>                   | <u>Model</u>                                       | <u>Display Font Size</u> | <u>Display Contrast</u> | <u>Display Color Shift</u> | <u>Audio Device</u>    | <u>Audio Speed</u> | <u>Audio Volume</u> | <u>Voice Type</u>   | <u>VVPR Readback</u> | <u>Tactile Keypad</u>  | <u>Additional Features</u>   | <u>All Units Accessible</u> | <u>VVPR on All?</u> |
|---------------------------------|--|--------------------------|-------------------------|----------------------------|------------------------|--------------------|---------------------|---------------------|----------------------|------------------------|------------------------------|-----------------------------|---------------------|
| <a href="#">Hart Intercivic</a> | <a href="#">eSlate</a> <sup>29</sup>               | yes <sup>2</sup>         | yes <sup>30</sup>       | -                          | optional <sup>31</sup> | no <sup>12</sup>   | yes <sup>32</sup>   | human <sup>12</sup> | -                    | yes <sup>30</sup>      | -                            | no                          | optional            |
| <a href="#">Populex</a>         | <a href="#">Digital Paper Ballot</a> <sup>33</sup> | yes <sup>34</sup>        | yes <sup>35</sup>       | yes <sup>35</sup>          | yes <sup>3</sup>       | no <sup>3</sup>    | yes <sup>35</sup>   | synth <sup>3</sup>  | yes <sup>35</sup>    | -                      | -                            | yes                         | optional            |
| <a href="#">Sequoia</a>         | <a href="#">AVC Edge</a> <sup>36</sup>             | yes <sup>2</sup>         | no <sup>12</sup>        | -                          | optional <sup>37</sup> | no <sup>38</sup>   | yes <sup>38</sup>   | human <sup>12</sup> | -                    | optional <sup>37</sup> | braille keypad <sup>39</sup> | no                          | optional            |

**Key to Vision Chart:**

- A. "Display Font Size" = capability to enlarge font so that voters with limited vision can more easily read the text.
- B. "Display Contrast" = increase or change contrast so text stands out, for voters with color-blindness and/or limited vision.
- C. "Display Color Shift" varies the colors shown on the screen, for voters with color-blindness and/or limited vision.
- D. "Audio Device" refers to a feature which allows voters to hear the instructions and ballot choices read to them through headphones. Some systems use synthesized voice, while others use human voice. Only the AutoMARK offers synchronized audio/video (enables the audio interface to be synchronized to the text being displayed on the screen, an important benefit for voters with a variety of cognitive impairments). New draft NIST Voluntary Voting Systems Guidelines indicate "it is anticipated that this will become a requirement in future versions [of the VVSG]."
- E. "Audio Speed" refers to a feature which allows voters to adjust the speed at which text is read to them through headphones.
- F. "Audio Volume" refers to a feature which allows voters to adjust the volume at which text is read to them through headphones.
- G. "Voice Type" refers to recorded human speech or synthesized computer speech.
- H. "VVPR Readback" is an audio readback of the voter-verified paper record (VVPR) enabling the visually impaired voters to verify that their votes are recorded as intended and to make changes as necessary. In order to provide this feature, audio readback must be from the paper record itself and not from the voting machine's internal memory.
- I. "Tactile Keypad" refers to manual controls which may include Braille, specially raised or shaped buttons, etc., to facilitate the selection of choices as the voter goes through the ballot.

## Footnotes for Vision Chart:

1. <http://www.accupoll.com/TheAccuPollAdvantage/Brochures/accessibility.pdf>
2. [http://www.capc.umd.edu/rpts/md\\_evote\\_ContempVotingMach.pdf](http://www.capc.umd.edu/rpts/md_evote_ContempVotingMach.pdf) p.7
3. Missouri Assistive Technology Council (<http://www.at.mo.gov/>) accessibility comparison table created by Diane Cordry Golden, Spring 2005.
4. <http://www.accupoll.com/TheAccuPollAdvantage/WhitePapers/Accessible.pdf>
5. <http://www.essvote.com/HTML/docs/AutoMark.pdf> (Note: Although some maintain that ballot-marking devices are not accessible to mobility-impaired and dexterity-impaired individuals due to the need to move the paper ballot from the device to the secure ballot box, in most areas election workers insert the ballots into the ballot box for all voters, and since it is possible to use privacy sleeves to maintain ballot secrecy for all voters, the ballot-marking devices provide as much accessibility to mobility-impaired and dexterity-impaired voters as to all other voters.)
6. [http://www.solidworks.com/pages/popups/viewrelease.html?prfile=11\\_01\\_2004.html](http://www.solidworks.com/pages/popups/viewrelease.html?prfile=11_01_2004.html)
7. <http://www.automarkts.com/> under tutorial under navigation
8. <http://www.johnson-county.com/auditor/min/050502vote.htm>
9. <http://vote.nist.gov/NISTEACResaultest.pdf> under “ensuring access to voting”
10. <http://www.vote-trakker.com/White%20Papers/ACCESSIBLE%20VOTING%20with%20voter%20verifiable%20paper%20records%20in%20DRE%20Voting%20System.pdf> and [http://www.vote-trakker.com/accessible\\_optical\\_voting.html](http://www.vote-trakker.com/accessible_optical_voting.html)
11. [http://www.uhavavote.org/vendorfair/survey\\_results/avante\\_4.5.doc](http://www.uhavavote.org/vendorfair/survey_results/avante_4.5.doc)
12. <http://www.cvfieldsmbp.org/Voting%20Technology%20for%20People%20With%20Disabilities.pdf> p.42
13. <http://www.afb.org/afbpres/pub.asp?DocID=aw050404&select=1#1> under Voting Machines: Vote-Trakker
14. <http://www.votersunite.org/info/ElectronicVotingInBrief.pdf> p. 3
15. [http://www.verifiedvoting.org/downloads/Avante\\_AccessibleVVPB.pdf](http://www.verifiedvoting.org/downloads/Avante_AccessibleVVPB.pdf) p.4
16. <http://www.vote-trakker.com/White%20Papers/fullfaceballottouchscreensystem.pdf> and [http://www.vote-trakker.com/accessible\\_optical\\_voting.html](http://www.vote-trakker.com/accessible_optical_voting.html)

17. <http://www.vote-trakker.com/evc308sprff.html>
18. [http://www6.diebold.com/dieboldes/accuvote\\_ts.htm](http://www6.diebold.com/dieboldes/accuvote_ts.htm)
19. Email letter from Carrie Frank at Diebold Corporation, July 5, 2005 (with attached chart).
20. <http://www.cs.umd.edu/~bederson/voting/umd-dre-report.pdf>
21. Diebold claims that their machines have a tactile keyboard, but in their letters they describe it as a telephone keypad with a dotted five key, which is a regular telephone keypad.
22. [http://www6.diebold.com/dieboldes/accuvote\\_tsx.htm](http://www6.diebold.com/dieboldes/accuvote_tsx.htm)
23. Email letter from Buck Jones at Diebold Corporation, July 3, 2005.
24. [http://www.tbpc.state.tx.us/cat\\_page/578-N1DieboldAccuVoteTSX.pdf](http://www.tbpc.state.tx.us/cat_page/578-N1DieboldAccuVoteTSX.pdf) p. 3
25. <http://www.essvote.com/HTML/docs/iVotronic.pdf>
26. <http://www.cvfieldsmbp.org/Voting%20Technology%20for%20People%20With%20Disabilities.pdf> p.22
27. <http://www.essvote.com/HTML/products/ivotronic.html> right column
28. [http://www.essvote.com/HTML/docs/ESS\\_iVotronic\\_LS.pdf](http://www.essvote.com/HTML/docs/ESS_iVotronic_LS.pdf)
29. [http://www.hartintercivic.com/files/accessible\\_DLA\\_12\\_rev.pdf](http://www.hartintercivic.com/files/accessible_DLA_12_rev.pdf)
30. [http://www.uhavavote.org/vendorfair/survey\\_results/hart\\_4.5.doc](http://www.uhavavote.org/vendorfair/survey_results/hart_4.5.doc) p.1
31. <http://www.hartintercivic.com/innerpage.php?pageid=26> DAU section
32. <http://www.cvfieldsmbp.org/Voting%20Technology%20for%20People%20With%20Disabilities.pdf> p.27
33. <http://www.populex.com/dfb.htm>
34. <http://www.advocacyla.org/whatsnew.html>
35. [http://www.populex.com/DPB\\_Features.htm](http://www.populex.com/DPB_Features.htm) in "Allows blind and visually impaired voting" section

36. <http://www.sequoiavote.com/docs/AVCEdge.pdf>

37. [http://www.dcboee.org/pdf\\_files/AVC\\_Edge\\_Web\\_Instructions.pdf](http://www.dcboee.org/pdf_files/AVC_Edge_Web_Instructions.pdf) p.5

38. <http://www.cvfieldsmbp.org/Voting%20Technology%20for%20People%20With%20Disabilities.pdf> p.33

39. [http://www.capc.umd.edu/rpts/md\\_evote\\_ContempVotingMach.pdf](http://www.capc.umd.edu/rpts/md_evote_ContempVotingMach.pdf)

Acknowledgements: Thanks to Verified Voting Foundation interns Jason Kim and Sarah Glaubman for the research required to prepare these charts.

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