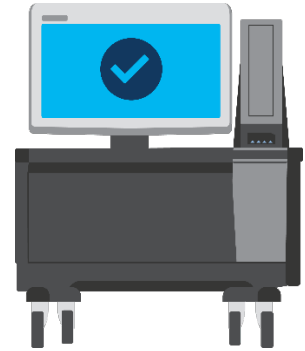# ExpressVote® XL

Universal Voting System

The purpose-built, paper-based ExpressVote XL Full-Face Universal Voting System maintains the highest levels of physical and digital security controls. Each unit provides voter confidence with various security features that control access to critical system components as well as with on-screen, printed and audio playback options for vote selection verification, including the unique ability to view printed and on-screen selections side-by-side.

Physical and System Access Controls

- The ExpressVote XL includes lockable doors with an optional unique key for each unit and built-in provisions to apply tamper-evident seals for detection and prevention of unauthorized access.
- Optionally, a locking bin plate can be mounted, locked and secured to the back of the unit, providing an extra layer of security to the secure card container and paper path module.
- All administrative access and functions require an access code from an authorized user.

Media Management

- All USB flash drives are validated to ensure that they are the approved type and are programmed for the expected function.
- The election programming and vote data are encrypted and digitally signed so that the system can verify that they are from a trusted source and have not been altered.

System Application Controls

- The firmware is designed to operate only as intended and protects against user error or nefarious manipulation.
- At startup, the ExpressVote XL performs a self-diagnostic test to verify internal functionality and alert users of any system errors. The unit also uses Secure Boot and application allowlisting to verify only the certified operating system, software and firmware are on the unit. For more information about these security features, see *Secure Boot & Application Allowlisting Security Fact Sheet*.
- Each unit generates a detailed audit log of all actions and events that occurred on the unit.

Encryption, Hash Validation and Digital Signatures

- To protect against modification, vote data is digitally signed as it is committed to memory. At poll close, files with vote data and results are encrypted and digitally signed.
- To protect voter privacy, files that contain voters' selections have the time stamp obscured.
- Administrators can validate the unit's firmware directly on the unit to check that the application files and the operating system are exactly as was written during the Trusted Build by the Voting Systems Test Laboratory (VSTL).

Cast Process

- The ExpressVote XL can use an optional one-way roller that prevents the unit from printing on a ballot card after the voter has reviewed their selections and cast their ballot.
- During the cast process, vote data that is read from the voter-verified paper record is recorded. The print head lifts out of contact with the paper path, allowing the ballot to pass through to the secure card container.

ExpressVote XL Tabulation and Auditing

Paper Ballot Card

- Provides a verifiable paper vote record for every voter, containing both human-readable selections and corresponding machine-readable barcodes
- Can be read by any ExpressVote XL unit before tabulation to verify the voter's intent was captured accurately

Is the Paper from the ExpressVote XL Auditable?

Yes. Just as hand-marked paper ballots can be inspected or audited by hand or by machine, so can ballot cards. A ballot card contains the same data as a hand-marked ballot, displayed in different ways. During a post-election hand-count audit, selected candidate names are used to count the vote.

ES&S fully supports the use of paper ballots and post-election audits to ensure accuracy and increase confidence in our country's election process. ES&S views paper records as critical for auditing. A physical paper record of the selected candidate names provides the means to a statistically valid post-election audit.

ES&S Security Philosophy

Nothing is more important to ES&S than protecting America's democracy by supporting secure, accessible and accurate elections. That's why every ES&S product reflects our three-part security philosophy:

- **Design:** All products are designed, without compromise, to meet the latest and ever-evolving standards in security, accuracy and reliability.
- **Testing**: In addition to ES&S testing protocols, all tabulation systems are rigorously tested and certified by the federal Election Assistance Commission (EAC), which reflects security and performance standards developed by scientists, academics and election officials. ES&S also takes security testing to the next level, executing penetration testing with independent, accredited laboratories. ES&S submitted our end-to-end voting configuration for Cybersecurity and Infrastructure Security Agency (CISA) critical product evaluation (CPE) at one of our nation's leading research labs.
- **Implementation:** The entire ES&S team is devoted to ensuring that each piece of technology performs as expected on Election Day, helping election officials uphold the laws of their jurisdiction, which mandate strict physical security and tight chain of custody of all voting machines.

Perhaps most importantly, ES&S' essence — its very being — is predicated on supplying America with equipment and software for secure, accurate and accessible elections. All of us at ES&S hold ourselves and each other accountable for this mandate and are proud to serve a role in this noble purpose.