

# **Liberty Election Systems, LLC**

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## **DRE Voting Machines**

### **System Description**

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## 1. Introduction

Liberty Election Systems, LLC is very confident that the Liberty Election System is a very secure, tested and approved voting system available today.

The Liberty Election System, consisting of LIBERTYVOTE (DRE) and LIBERTYCONTROL (EMS), meets the NASED stringent 2002 Voting Systems Specifications. Meeting stringent ADA accessibility guidelines, Liberty's election system allows all voters the ability to enter, edit, and cast ballot selections in complete security and privacy utilizing a familiar full-face ballot format. In addition to meeting or exceeding all of NASED's requirements, independent third party testing facilities have extensively tested the Liberty solution and found it to be a completely secure and robust DRE voting system; an accolade that no other full-face voting machine company has achieved.

## 2. The Liberty Election System

This section describes the Liberty Election System and how it supports the election process

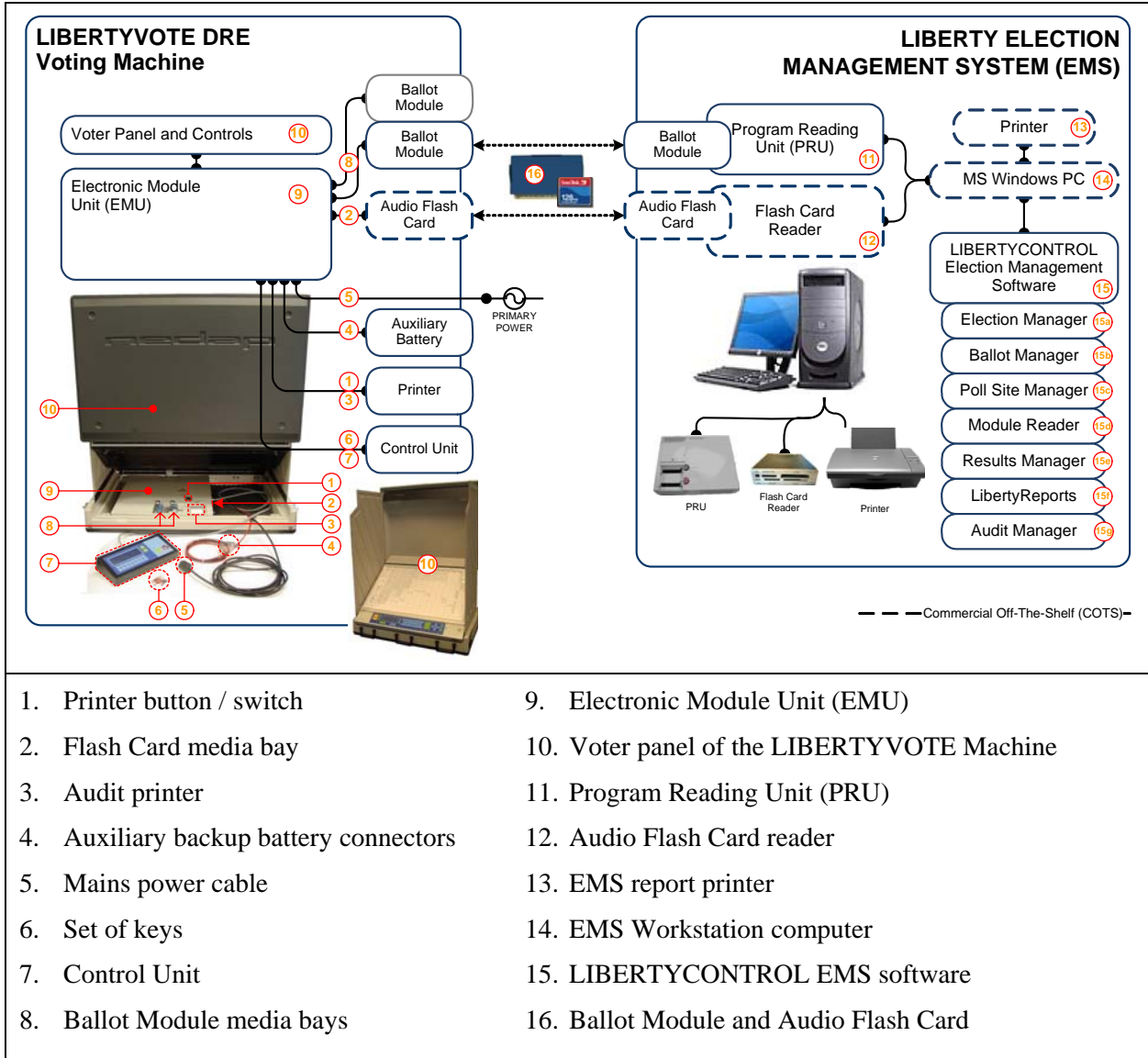
### 2.1 System overview

Liberty Election System's offering is in full compliance with the NASED 2002 standards and can be divided into two major components (1) the LIBERTYCONTROL EMS and (2) the LIBERTYVOTE DRE Voting Machine.

The LIBERTYCONTROL is Liberty's Election Management Software application. Election officials utilize the LIBERTYCONTROL to define, tabulate and audit an election. The LIBERTYCONTROL consists of the Election Manager, Ballot Manager, Poll Site Manager, Module Reader, Results Manager, Liberty Reports, Audit Manager.

The LIBERTYVOTE Voting Machine collects and processes votes entered by voters. The LIBERTYVOTE is a technology advanced DRE voting machine of a full face type. It also includes a printer for printing the opening statements and the results, a back-up battery and a control unit.

Each LIBERTYVOTE machine utilizes two ballot modules. One ballot is permanently stored into the machine, and a second module is removable. The ballot modules capture and store all voter selections entered into the LIBERTYVOTE's to which they are connected. The removable ballot module is utilized as a removable storage device acting as an interface between the LIBERTYCONTROL election management software and the LIBERTYVOTE machine. In addition to storing voter selections during an election, ballot modules also store the ballot layout as defined by the LIBERTYCONTROL election management software.



**Figure 1: System Overview**

Each LIBERTYVOTE is equipped with a battery in case of a power failure. It automatically allows the unit to operate.

The control module of the LIBERTYVOTE is used to control the functionality of the electronic voting machine and is operated by the pollworker.

The Programmable Reading Unit (PRU) facilitates the communication between LIBERTYCONTROL software and the LIBERTYVOTE's ballot modules. The PRU must be connected to a Windows based computer that is loaded with the LIBERTYCONTROL software application.

The printer is applied for printing of reports, ballot overlay proofs etc.

## 2.2 Entire Election process

From start to finish, utilizing the LIBERTYVOTE Election System to administer an election is a straightforward and intuitive process from the perspective of both election officials and voters. In advance of the election, the user-friendly graphical interface of the LIBERTYCONTROL software allows election officials to prepare ballots and enter election information in a familiar windows-based environment. Once this is completed, LIBERTYVOTE machines can be quickly configured with the election's information utilizing easily transportable ballot modules that contain secure election definition layouts. Furthermore, the compact and lightweight design of the LIBERTYVOTE machine allows poll workers to efficiently prepare polling locations with minimal staffing levels.

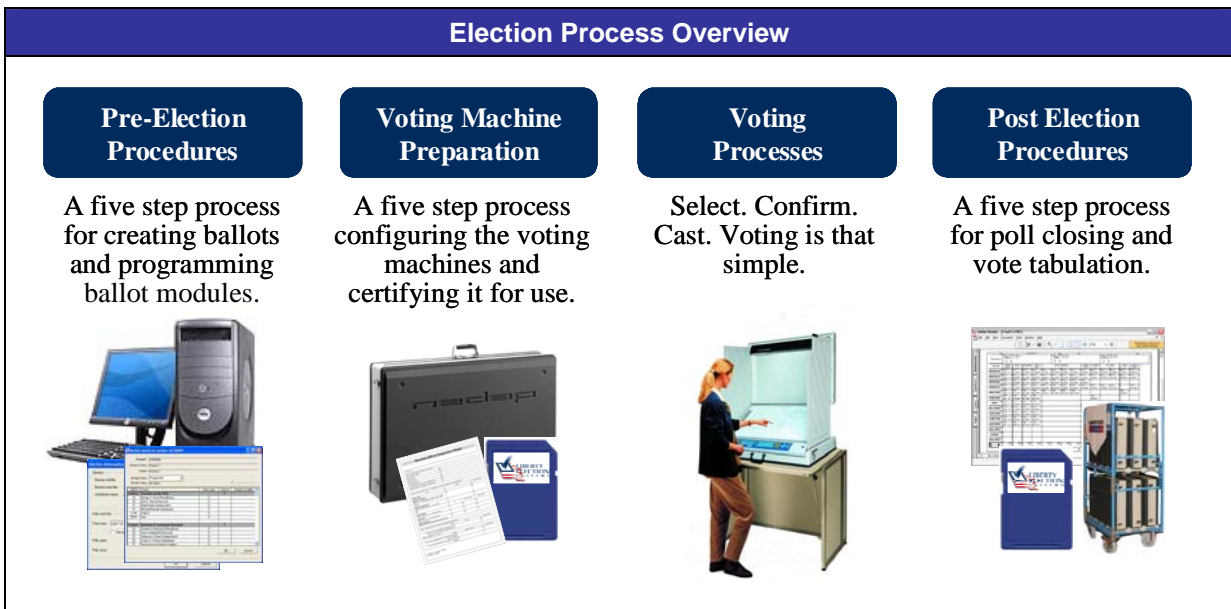


Figure 2: Election Process Overview

On Election Day, LIBERTYVOTE presents voters with a state of the art, full-face ballot DRE system that securely and accurately allows voters, regardless of any disabilities, to enter, edit, and cast ballots. During the poll closing process, the intelligent design of the removable memory devices allows poll workers to quickly and efficiently tabulate ballot selections and relay them to state election headquarters. Throughout the voting process, voters can rest assured that their votes have been accurately recorded and tabulated thanks to the LIBERTYVOTE's quadruple redundant memory and paper audit capabilities. The robust design of Liberty's system requires virtually no maintenance procedures or special storage conditions making the Liberty solution both long-term and cost effective.

## 2.3 Supported election types

LIBERTYVOTE and LIBERTYCONTROL support general - , primary - and special elections:

- A general election supports partisan offices, non-partisan offices and propositions. In a general election all contests are released to the voter at all times.

- A primary election supports only partisan offices and a maximum of 16 political parties. A primary election can be closed or open with public declaration. For a closed primary election the voter has to demonstrate his/her registered political affiliation. For an open primary election with public declaration the voter has to declare to the election official which political party he/she wants to vote for. Only the contests for the requested political party are released to the voter.
- Special elections supported are recall issues, with or without options. In case of a recall issue with options the contests for the options are unconditional, (i.e. all contests are always activated for the voter).

For each office in an election the maximum number of allowed choices has to be defined. The maximum number ranges from 1 to 90 (maximum number of choices per voter within a contest).

### **3. LIBERTYVOTE DRE Voting Machine**

The LIBERTYVOTE machine is powered by an external power source from a 115 VAC, 60 Hz, single phase power source or by an internal battery in case of a power failure.

Designed from the ground-up as a fully accessible full-face ballot DRE voting solution, the LIBERTYVOTE is a technologically advanced voting system that allows all voters to efficiently enter, edit, and cast their vote.

The items below address the high-level features of the LIBERTYVOTE-DRE Voting Machine, which include:

- **2002 NASED Qualified – HAVA compliant and meeting all Federal voting standards**  
The system type DRE Full Face LIBERTYVOTE with firmware version ESU\_V1\_02C012 has been NASED certified according to the VSS2002 by Wyle Laboratories, Inc, 7800 Highway 20 West, Huntsville, Alabama 35806 see Report No.: 48519-01, “Hardware Qualification Testing of The Liberty Election Systems, LLC LIBERTYVOTE DRE Voting Machine”, dated November 23, 2004.

- **Suite Case Design – Compact durable design equates to reliability and affordability**  
The size of a large suit case in storage configuration, the LIBERTYVOTE’s lightweight and compact design allows the voting machine to be efficiently stored and transported.

- **Storage Simplicity – Reduces cost of ownership to the municipality**  
The compact design of the LIBERTYVOTE machine allows it to be a highly transportable and easily storable DRE voting solution. Enclosed in a protective case when in storage configuration, the LIBERTYVOTE can be safely stored as a single unit, or in a custom made six-unit carrier available from Liberty Election Systems.

- **Full-Face Ballot Display – Paper ballot machine facing allows for seamless transition to e-voting.**

LIBERTYVOTE presents voters with a state of the art, full-face ballot DRE system that securely and accurately allows voters, regardless of any disabilities, to enter, edit, and cast ballots.

- Secure – Operating system uses tamper-proof firmware technology

The firmware of the LIBERTYVOTE runs directly on the processor. Because no operating system is used and the LIBERTYVOTE has no external connectors that allow access to the firmware, the LIBERTYVOTE is not vulnerable to viruses and hacks.

- Accessible – Meets ADA requirements

The LIBERTYVOTE system is 2002 NASED qualified and meets all ADA requirements with such features as a Braille embossed keypad interface, multi-directional navigation pad with LED choice display, and audio sample MP3 digital sound ballots – expanding its usability to the disabled. Furthermore, the compact table-top design is fully wheelchair accessible without the need for complicated, heavy ratcheting devices or input from election volunteers.

The LIBERTYVOTE DRE voting machine consists of a base unit and multiple sub-components combine to form a complete stand-alone full-face DRE voting machine.

### **3.1 LIBERTYVOTE Unit**

This section describes the LIBERTYVOTE base unit.

#### **3.1.1 Compact and Lightweight Suite Case Design**

Every component of the LIBERTYVOTE-DRE has been designed with utility in mind. The size of a large suit case in storage configuration, the LIBERTYVOTE's lightweight and compact design allows the voting machine to be efficiently stored and transported. These inherent benefits enable State municipalities to forego significant logistical preparations and expensive storage requirements. Specifically, with regards to acceptance testing and Election Day polling locations, the LIBERTYVOTE Election System will not require any ancillary facilities other than a precinct's existing polling area and accompanying amenities.

The LIBERTYVOTE machine measures 24' tall, 36' wide, and 7' deep in its storage/transportation ("the suitcase") configuration. In addition to the machine's compact rugged design, it is also exceptionally lightweight, weighing only 55 pounds. This compact and lightweight design allows easy maneuvering of the machine by two people. Two people can easily maneuver a LIBERTYVOTE machine through a standard 30-inch doorway when the machine is in storage/transportation configuration.



Figure 3: LIBERTYVOTE – Storage Configuration

In addition to being exceptionally maneuverable, the compact and lightweight design of the LIBERTYVOTE machine facilitates the quick setup of a polling station prior to an election. The LIBERTYVOTE requires only two people a matter of minutes to convert a machine from storage/transportation configuration to standard, voter-ready configuration. As illustrated in Figure 4 below, setting up the LIBERTYVOTE is as easy as opening a brief case.



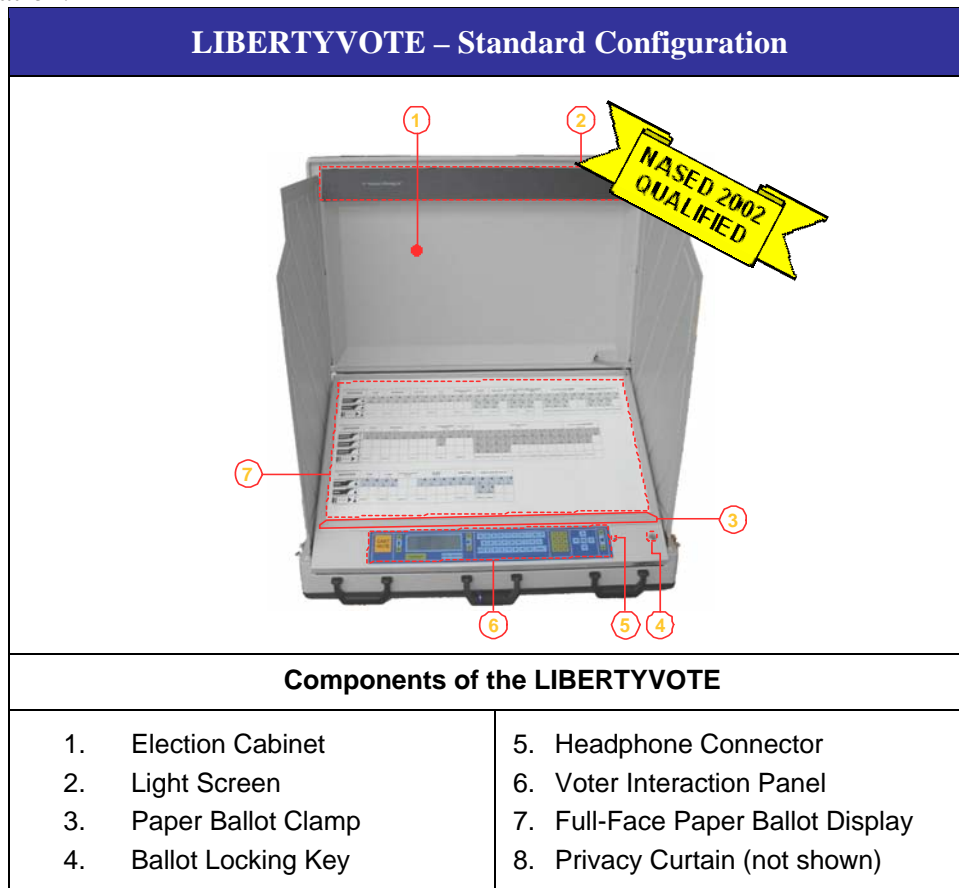
Figure 4: LIBERTYVOTE's Lightweight Design

### 3.1.2 Secure – Firmware Driven Operating System

The LIBERTYVOTE system functions as a tabletop stand-alone and secure system. In contrast to “smart-card” driven devices, LIBERTYVOTE is not networked– which means that the integrity of the machine cannot be compromised. As a standalone unit, the LIBERTYVOTE features a firmware driven embedded operating system. System integrity is protected via multiple methods including an anti-tampering cover, security seal, and locking ballot modules. In addition, with quadruple redundant data storage and randomized ballot storage, voters, poll workers, and election officials are assured that votes are securely cast, stored, and tabulated.

### 3.1.3 Intelligent Flexible Design

The LIBERTYVOTE has been designed to accommodate a wide audience of voters with minimal training. To the extent possible, voter-error has been eliminated through the use of intelligent design features such as undervote and overvote protection, which is built into the firmware of the LIBERTYVOTE machine. In addition, ballots are laid out in an easy to read, logical, and intuitive design that voters, who are familiar with lever machines, will find easy to adapt to with little need for training. The LIBERTYVOTE also allows voters to cast ballots with minimal risk of doing so accidentally. Each ballot is laid out with contests running from left to right across the top of the ballot and parties listed vertically on the left side of the ballot. Figure 5 below details the components of the LIBERTYVOTE in standard configuration.



**Figure 5: LIBERTYVOTE – Standard Configuration**



### 3.1.4 DRE properties

The voter panel has a maximum of 576 active voting positions, each accompanied by a LED light for indication purposes. Up to 46 contests can be held simultaneously on the LIBERTYVOTE, with a maximum of 15 propositions.

Per contest a maximum of 118 candidates can be programmed. Candidates for contests in a general election can be affiliated to a political party or can run without affiliation. Candidates in a primary election are affiliated to a political party at all times.

For a contest write-in positions can be programmed, allowing the voter to enter write-in candidates. The number of choices the voter has to make in a contest can be programmed, with a maximum of 90. The maximum number of choices per ballot (= the sum of the number of choices of all contests) that can be stored in the ballot module is 90. In a ballot module approx. 27,000 choices can be stored, of which approx. 800 write-in candidates.

The LIBERTYVOTE features two languages in print, display and audio: English and Spanish. All feedback and instructions are available in both languages.

### 3.1.5 Technical Specifications

This section details hardware technical specifications for the LIBERTYVOTE machine.

Liberty's Election System Hardware Specifications	
Component Type	Description
<b>DRE Voting Machine</b>	
Model Type/Number	LIBERTYVOTE/ESU1
Operational Speed and Memory Capacity	19,000 Votes
Footprint in Square Feet	2' x 3' (6 sq. ft)
Floor loading/Special Flooring Requirements	None
Weight and dimensions	55 lbs 24" x 36" x 7"
Electrical Connection Specifications – Storage	None
Electrical Connection Specifications – Operation	110 Vac
Permissible Variations in Voltage and Frequencies	100 – 240 Vac 50 – 60 Hz
Power Consumption during Usage/Storage	0.6A at 140 Vac
Cooling required in BTUs	Negligible
Mean Time To Failure	13,826 Hours
Mean Time To Repair* *During Election Day we recommend to exchange any LYBERTYVOTE DRE Voting Machine encountering a failure by a spare machine	1 Hour
Temperature minimum / maximums	Operating Temps: 50° F - 95° F Storage Temps: -4° F - 140° F

**Table 1: Liberty's Election System Hardware Specifications**

## 3.2 LIBERTYVOTE subcomponents

Within each LIBERTYVOTE unit, multiple sub-components combine to form a complete stand-alone full-face DRE voting machine. These subcomponents include the control unit, ballot module, flashcard and the battery back up.

### 3.2.1 Control Module

The control module for the LIBERTYVOTE DRE allows poll workers to control access to the voting system, to monitor the number of votes cast on each machine, and to view error messages and other pertinent operational information. Figure 6 below illustrates the control module.

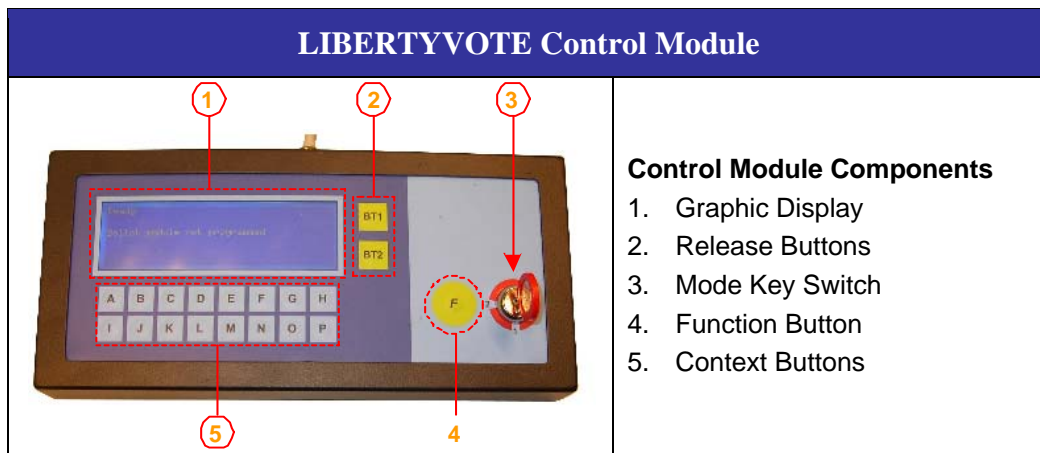


Figure 6: LIBERTYVOTE Control Module

### 3.2.2 Ballot module

Ballot modules act as removable and reusable memory storage devices, which stores vote information and ballot configuration information for multiple ballot styles. Each ballot module contains two separate memory storage devices and each LIBERTYVOTE machine is configured to hold two ballot modules allowing each machine to securely record election data with 4x redundancy.



Each of the memory modules contained within a LIBERTYVOTE machine can store a maximum of 19,000 votes and can be used in any LIBERTYVOTE machine. In addition, the ballot module has the ability to retain votes cast prior to a power failure, ensuring votes are secure at all times.

Figure 7: Ballot Module

In the event of a power failure, the ballot module retains voter data just as it does on a regular basis fully supporting standard vote count tabulation methods.

Ballot modules are plugged into the rear of LIBERTYVOTE machines underneath the unit's anti-tampering rear cover. Poll workers access the ballot modules by removing this anti-tampering cover to retrieve ballot modules for tabulation. Once a ballot module has been disconnected from a LIBERTYVOTE, it cannot be reinstalled until it has been fully reconfigured to avoid tampering with election results.

To ensure that ballot selections remain completely secure, ballot modules store votes in random order to ensure that an individual voter's selections cannot be identified on a ballot module. The modules are equipped with two EEPROMs in which the votes are stored redundantly with security checks.

### 3.2.3 Flash card module

Each LIBERTYVOTE machine utilizes a single compact flash card module. The flashcard module acts as a removable storage device used to store the audio files required to support the LIBERTYVOTE's audio-guided ballot features.



Figure 8: Flash card

### 3.2.4 Battery back-up

Each LIBERTYVOTE unit is equipped with a backup battery that allows the unit to operate for at least 2 hours (according to VSS-2002) without an external power supply. The backup battery will be placed in the interior of each unit during Election Day.

In the event of a power failure of the main external power supply to the voting system, the machine has the capacity to retain all data stored on the internal ballot modules and continue voting for an additional 2 hours minimum using the auxiliary backup battery. In the event of a power failure, the LIBERTYVOTE machine retains all votes cast prior to a power failure as well as all votes cast during the time the machine is running on its auxiliary backup battery power.

## 3.3 Selection of choices

Selections of choices can be made in three different manners: direct choice selection, coordinate selection and by means of navigation:

- Direct choice selection is done by pressing the corresponding active voting position on the voter panel, indicated on the ballot overlay.
- Coordinate selection is done by entering the coordinate of the choice, as printed on the ballot overlay, using the voter interaction panel and confirming the coordinate. Coordinate selection is not available when audio feedback and instructions is enabled.
- Navigation is done using the arrow keys on the voter interaction panel. The voter can scroll through the ballot by contest and by choice. Feedback is given for highlighted choices. A choice can be confirmed by pressing the OK button on the voter interaction panel.

If a choice has been selected, the corresponding LED will be activated. If a choice is deselected, the corresponding LED will be deactivated.

If for a contest all necessary choices have been made, the LED indicating the contest will be deactivated and no other choice in that contest can be selected to prevent overvoting. If the voter tries to select another choice, corresponding feedback and instructions will be given.

If all necessary selections have been made by the voter, the LIBERTYVOTE instructs the voter to review his choices and to cast the completed ballot. If the voter wishes to cast an incomplete ballot, i.e. for which not all necessary choices have been made, the voter is informed of the undervote situation with the applicable instructions. It is also possible to cast a blank ballot under the same conditions.

### **3.4 Voters with visual impairments and limited reading capabilities**

The LIBERTYVOTE utilizes a voice-guided voting system, which supports votes with visual impairments. The audio system guides voters through the voting process on a step by step basis, allowing the voter to enter, edit and confirm selections in a manner that imitates the voting process of sighted voters. For voters with limited visual capabilities, the unit utilizes an LCD display, which displays text in larger fonts by selecting a button on the front of the unit. The unit also provides both sound and visual cues for certain conditions, such as an overvote alert to alarm voters that cannot see a visual cue or hear a sound cue.

Voters with limited reading capabilities can vote on the LIBERTYVOTE machine using the same process as voters with visual impairments. These voters would be instructed to use the headphones provided with unit to allow the prompts of the audio voting system.

The volume level of the sound on the headphones can be adjusted by dedicated buttons on the voter interaction panel.

### **3.5 Security measures**

The LIBERTYVOTE has several security measures:

- All removable parts are sealed and/or locked: the ballot overlay is locked by means of a key, the ballot modules are locked by means of keys and a seal and the audio flash card is locked by a seal. Each seal has a unique ID, which can also be checked by the election officials against the IDs written down during election preparation.
- Access to the enclosure of the electronic circuitry of the voting machine is sealed.
- The ballot modules have a proprietary interface, such that the information can only be retrieved using the Data Transfer Unit.
- The data in the ballot modules is stored in two physically separated memory chips and twice in each chip. All data is stored with a checksum.
- The control unit can only be operated when the proper key has been inserted.

### **3.6 Election process on the LIBERTYVOTE during Election Day**

In addition to Clause 2.2 where the entire election process from start to finish is described this section provides information about the election process on the LIBERTYVOTE DRE Voting Machine during Election Day.

The election process on the LIBERTYVOTE follows the following four stages:

- Prior to the opening of the polls, the programming in the ballot module can be checked. In the 'check election programming mode' the operator can press every button on the voter panel to check its correct programming against the ballot overlay and every button on the voter interaction panel against its indicated use. When leaving this mode, the LIBERTYVOTE prints a statement of the check, indicating how many times each buttons has been pressed, in order to verify the logic and accuracy.
- Opening of the polls requires two steps: printing of the open poll statement, which lists the counters for all contests and choices showing zero, and the acceptance of the open poll statement after verification by the election officials in the polling place.
- After completion of the open poll procedure, the election can be released for voters using the control unit of the LIBERTYVOTE. In case of a primary, only the part of the election the voter is allowed to vote on can be released. In case a voter leaves the voting booth without casting the ballot, the operator can deactivate the ballot and release the machine for the next voter.
- At the end of Election Day, the polls must be closed by the election officials. Closing the polls locks the ballot module for further storage of ballots and calculates the vote totals. After the calculation the close poll statement is stored in the backup ballot module and printed. If necessary, copies of the close poll statement and all ballot images can be printed (in random order).

After having completed the close poll procedure, the ballot module can be transported to the central count location and the LIBERTYVOTE can be stored again.

#### **4. LIBERTYCONTROL EMS description**

LIBERTYCONTROL runs on standard Windows personal computers, which have been installed according to a specific procedure in order to guarantee security issues.

The Election Management System LIBERTYCONTROL software version SIPRU 1.00\_C08 and Build 112 has been NASED certified according to the VSS2002 within the certification of the complete election system by SysTest labs, LLC, 216 16<sup>th</sup> St. Suite 700, Denver, CO 80202 see Report NASED certification number (2002) NASED # N-2-14-22-22-001

“**Software Qualification Report** Liberty Election Systems, LLC. LIBERTYCONTROL, developed by the N.V. Nederlandsche Apparatenfabriek “NEDAP” Rev. 01 NASED certification number (2002) NASED # N-2-14-22-22-001”, dated 11/18/04.

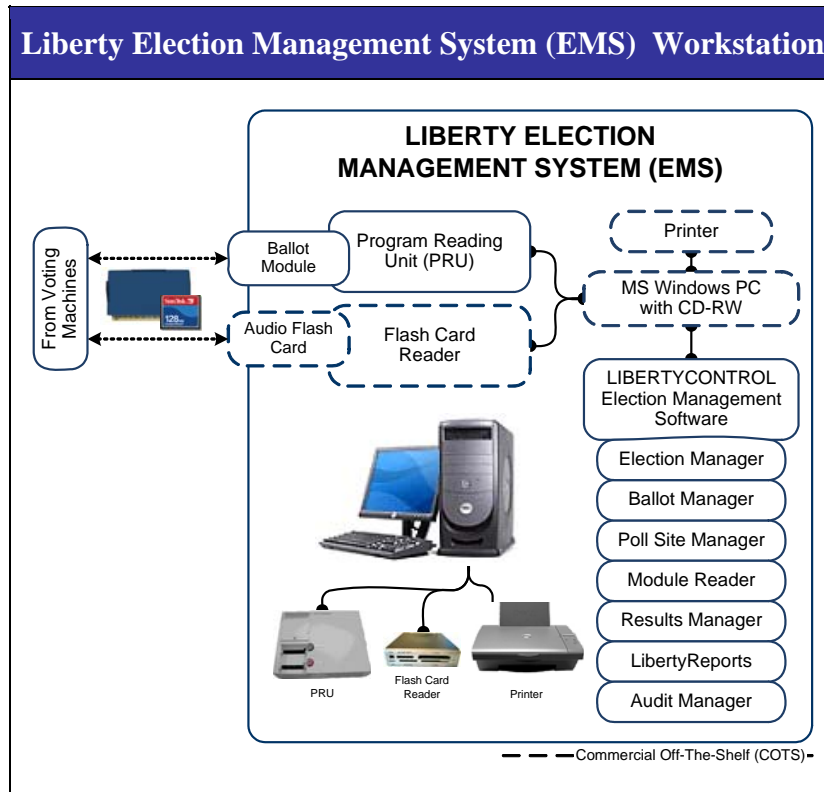


Figure 9: Liberty Election Management System (EMS) Workstation

Hardware components are utilized to interface with the LIBERTYVOTE's ballot modules and audio flash cards as there are a Programming Reading Unit (PRU) and a flashcard reading unit.

A personal computer and a printer complete the system.

## 4.1 LIBERTYCONTROL Overview

LIBERTYCONTROL is the Election Management System (EMS), dedicated to the electronic voting machine LIBERTYVOTE. It consists of 7 software applications: Election Manager, Ballot Manager, Poll Site Manager, Module Reader, Results Manager, Liberty Reports, Audit Manager.

Each application covers a specific step in the election process. After each step an official review of the results of the step has to be performed, after which the election archive is locked for changes by that application. Subsequent steps cannot be performed until the former step has been locked.

### 4.1.1 LIBERTYCONTROL Election Manager

The Election Manager application is an election administration tool used in the pre-election period to configure election information and ballots. Specifically, the Election Manager enables the municipal and city officials to work independently to configure Poll Site locations; configure voting municipalities; configure contest groups and grouping levels;

define contests and choices; define propositions and questions; manage candidate affiliations; and manage candidate rotation.

The Election Manager application gives election officials a way to define the election in terms of the contest groups in your jurisdiction, the contests each of those contest groups have, the choices for each of those contests, etc. After configuring municipalities, the application automatically generates the ballot styles based on the contest group assignments to the municipalities.

#### **4.1.2 LIBERTYCONTROL Ballot Manager**

The ballot overlays itself have to be printed by an (external) printing facility.

The Ballot Manager is an election administration tool used in the pre-election period to generate ballots for each municipality. Ballots may be generated automatically or manually from the election data created in the Election Manager. The Ballot Manager also includes provisions for controlling the proof and final ballot prints with approval and locking features. The ballot overlays itself have to be printed by an (external) printing facility.

#### **4.1.3 LIBERTYCONTROL Poll Site Manager**

The Poll Site Manager application is an election administration tool used in the pre-election period to program the Ballot Modules for each Voting Machine for each Poll Site. The Ballot Modules are programmed at the centrally located LIBERTYCONTROL System main workstation, which is connected through a serial port to the Programming/Reading Unit (PRU) and to a compact flash drive (for audio files). The programmed Ballot Module(s), audio Flash Cards, and instructional Poll Worker Report are then packaged with the DRE(s) and distributed to each Poll Site.

#### **4.1.4 LIBERTYCONTROL Module Reader**

The Module Reader is the application that allows Election Officials to retrieve the election results from individual electronic Ballot Modules post-election.

#### **4.1.5 LIBERTYCONTROL Results Manager**

The Results Manager application is an election administration tool used to input poll results to the election data archive. Prior to the electronic tabulation of votes, they are downloaded from the individual electronic Ballot Modules using the PRU and the Module Reader application; in the case of absentee ballots or damaged DRE modules, vote counts are manually entered.

#### **4.1.6 LIBERTYCONTROL Reports**

The LIBERTYCONTROL Report application is used to tabulate the results that were captured using the Results Manager. Election Officials can produce reports to depict results on the module level, poll site level, precinct level and overall level. The reports also contain intermediate status (non-final) results, election information, and total ballot counts.

For candidates that are affiliated to more than one party, tabulation is always separated in every report. This means that the names of these candidates might show up on the reports more than once as per their party affiliation.

#### **4.1.7 LIBERTYCONTROL Audit Manager**

Similar to the audit logs stored in the Voting Machines, the LIBERTYCONTROL Audit Manager records a log for the Election Management System. The audit log provides another layer of security to track every event during both election setup and vote tabulation.

Utilization of the data in these logs is not necessary for typical operation, however may be useful to investigate possible errors or to support litigation when appropriate.

### **4.2 EMS properties**

LIBERTYCONTROL, the Election Management Software, has the following constraints:

- Automatic layout of a primary election can only be done for maximum 4 affiliations.
- Automatic layout of a general election can be done for maximum 14 affiliations (15 when no propositions are used).
- Automatic layout of a general election only allows one affiliation per row.
- Automatic layout of elections always uses a horizontal layout (rows are designated to affiliations, columns to contests).
- Automatic layout of a general election always places the propositions on the top rows of the ballot paper.
- The length of the text of a proposition is limited to 1024 characters.

The layout of all other elections must be done outside of LIBERTYCONTROL, but the mapping of the choices to the voting machine LIBERTYCONTROL has to be entered into LIBERTYCONTROL in order to program the voting machines.

### **4.3 Election features**

LIBERTYCONTROL supports all election types as described in Clause 2.3, with the remark that for each office in the elections as many write-in positions as the maximum number of allowable choices for that office are defined. Only for questions/propositions no write-in positions are defined.

LIBERTYCONTROL also supports multiple affiliations per candidate within an office. This “cross party endorsement” means that the candidate is placed on the ballot for each political party he/she is nominated by, but the voter can only choose such a candidate once per office. Vote consolidation is possible per affiliation or over the affiliations of the candidate, dependent on the way the office has been defined.

A special form of multiple affiliations is the form that the candidate is placed on a ballot position for a specific affiliation, but that the description shows another affiliation as well. If affiliation graphics are used, graphics of both affiliations are placed with the candidate. This specific functionality is called “multi party/ cross party endorsement”.

### **4.4 Security measures**

LIBERTYCONTROL uses the following security measures:

- The LIBERTYCONTROL computers have to be installed and configured by a special procedure for the applications to work properly.

- Access to the LIBERTYCONTROL computers is secured with the login system of the Windows operating system. For the applications special user groups have to be configured.
- The LIBERTYCONTROL applications use password protected databases for data storage.
- Each step of the election process has to be finalized and locked before any action in the next step can be executed.
- Only ballot modules that have been programmed for the current election can be read in after the polls have closed. Results from other ballot modules will not be processed by Results Manager.

## 4.5 Additional hardware components

In this section the hardware components are described that are utilized to interface with the LIBERTYVOTE's ballot modules and audio flash cards as there are a Programming Reading Unit (PRU), a personal computer, a printer and a flashcard reading unit.

### 4.5.1 Programmable Reading Unit

The programmable reading unit (PRU) is an electronic device that allows the LIBERTYCONTROL to read on record data on LIBERTYVOTE ballot modules. PRU's must be connected to a computer that has been loaded with the LIBERTYCONTROL operating software. PRU's are utilized during election preparation to record the ballot layout onto the ballot modules before the modules are distributed to LIBERTYVOTE storage locations. After an election has been conducted, the PRU is used to read and download voter information recorded onto ballot modules during an actual vote.

### 4.5.2 Personal Computer

A Personal Computer (PC) is used for running the LIBERTYCONTROL software. The PC is a generic IBM-Compatible PC.

The LIBERTYCONTROL software application requires a Windows based PC that is networked to a PRU and a flash card reading unit to facilitate the communication, programming and data collection from both ballot modules and flash card modules.

The PC will have the following minimum configuration:

Processor	: Pentium III; 1.0 GHz or better.
Memory	: Minimum of 256 MB RAM.
Video card	: Support 1024x768 or better, small fonts (default).
Hard disk	: Minimum size of 10 GB.
CD Rom	: IDE CD-ReWritable drive (min. 32x speed).
Operating System	: Windows XP Professional U.S. Edition with Service Pack 1 installed.
Additional software	: Windows Office XP Professional US Edition with Service Pack 3 installed.

Min. 1 RS232, min. 1 standard parallel communication port, min. 2 USB ports, network card, mouse, keyboard, sound card, speakers.

### 4.5.3 Printer

The EMS printer is used for printing of reports, ballot overlay proofs etc.

The printer will have the following minimum configuration:

- Black and White Laser printer.
- Capable of handling 8.5 x 11" Letter paper size.
- USB and/or parallel connection interface.
- Software driver available for the EMS Personal Computer configuration.

### 4.5.4 Flash Card Reading Unit

The flash card reading unit is an electronic device that allows the LIBERTYCONTROL software to interface with the LIBERTYVOTE's flash card memory devices. These flash card memory devices are used to store audio files to support the LIBERTYVOTE's audio voting capabilities. The flashcard reading unit is used to transfer the audio files to and from the LIBERTYCONTROL software and the flash card memory devices.

## 5. Storing the voting machines



Enclosed in a protective case when in storage configuration, the LIBERTYVOTE can be safely stored as a single unit, or in a custom made six-unit carrier available from Liberty Election Systems as illustrated below.

**Figure 10: Six Unit Storage Case**