

# V+ Programming Software Specifications



The Adept V+ real-time and multi-tasking operating system is the core software of Adept's embedded and distributed control architecture. V+ offers a real-time environment for efficiently managing motion and IO sequence.

In addition, V+ is capable of managing all system-level operations, such as IO, program execution, task management, memory management, and disk file operations.

As a programming language, V+ has a rich history and has evolved into the most powerful, safe, and predictable robot programming language available today. V+ remains the only language to provide an integrated solution for all programming needs in a robotic workcell, including safety, robot motion, vision operations, force sensing, and I/O.

## Specifications

### V+ Extensions

With the V+ Extensions license, additional capabilities are available in the operating system and programming language, including:

- 28 user tasks per processor
- Multiple mechanism support
- Fast interrupt handling using INT.EVENT
- Belt tracking
- Dynamic path modification

### Standard Utility Disk includes:

- V+ file management tools
- System configuration tools
- Vision and conveyor belt calibration utilities
- FTP client/server applications
- System task profiler
- Duty cycle monitor
- Manual Mode Safety Package (MMSP) commissioning utility

## Motion Applications

- Full Adept mechanism support
- Multiple axis support
  - Single mechanism - up to 12 axes
  - Multiple mechanisms - up to 15 mechanisms, 24 axes
- Custom path following for dispensing
- Support for over 30 different robot kinematics
- Distributed, embedded architecture provides more scalability and limits cabinet space using high speed FireWire bus

## Integrated Vision-Guided Motion Applications

- Locate arbitrarily positioned parts using vision and move the robot to acquire the parts
- Built-in calibration tools
- Supports any camera mounting position
- High speed ( $\mu$ s) robot and belt position and picture latching
- Fast communication between motion and vision
- On-the-fly imaging

## Force Guided Motion Applications

- Perform force-guarded, force-thresholded motions

## Factory Information Systems

- Internet Protocol Suite
- Network File Server (NFS) client
- DDE Server for data exchange (Microsoft™, WonderWare™, Intellution)
- FTP server/client

## V+ Utility Software

- Advanced Servo Library available
- Enhanced Kinematics libraries available

## Conveyor Belt Tracking Applications

- High-speed conveyor belt tracking
- Part picking from or placing to moving conveyor lines
- Motion and vision guidance functionality
- Tracking of two or more independent conveyor belts

## Workcell Control

- DeviceNet (standard on Adept SmartController™ CX)
- 10/100BASE-T Ethernet
- RS-232/RS-485 serial ports
- High-speed interrupts (2ms)
- 512 I/O points

## Peripheral Control

- Conveyors, feeders, end of arm tooling
- Communication with tray feeders, PLCs
- Operator interface/panel

## Programming Environment

- V+ programming with complete syntax checking
- Fully integrated with Adept ACE™
- Online program debugger



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09366-006 Rev. A