



NextMove ESB-2

Multi-Axis Machine Controller

- › 3 or 4 axes of servo control
- › 4 axes of stepper control
- › 1 or 2 auxiliary encoder channels for following applications and position verification
- › Fast floating point processor
- › Large complement of onboard digital and analog I/O
- › CANopen for distributed control and I/O expansion
- › RS232/485 and USB communications
- › Multitasking Mint[®], ActiveX or C programmable



Baldor's NextMove ESB-2 machine controller is a drop in replacement for the versatile NextMove ESB controller, but with the added benefit of an optional 4th axes of servo control. The standard product is now available with 1 or 2 auxiliary encoder channels (depending up on the number of servo axes) for following applications, position verification or dual encoder feedback.

The NextMove ESB-2 controller is available as a 3 axis servo, 4 axis stepper variant, or a 4 axis servo and 4 axis servo variant. The 3 axis servo controller has two additional encoder interfaces. The 4 axis variant has one additional encoder input.

NextMove ESB-2 offers the same level of flexibility as NextMove ESB, with the powerful Mint motion programming language. Program development has been made even easier with new features within the Mint WorkBench programming environment. New features include breakpoints and watchpoints, single stepping, variable watch and auto-complete of Mint keywords.



NextMove ESB-2

Flexible Machine Controller

NextMove ESB-2 is an economic stand-alone motion controller, running multitasking Mint or C programs, for up to 4 axes of servo/vector and 4 axes of stepper. Application versatility is boosted by onboard I/O and a CANbus interface for implementing PLC-style machine control functions.

NextMove ESB-2's complement of onboard digital and analog I/O allows the controller to be employed as a complete machine controller, in many cases eliminating the need for an external PLC or other host device. The I/O can be expanded easily by means of the controller's CANbus port. CAN I/O devices are available from Baldor or alternatively, using the standard CANopen protocol, industry standard DS401 CAN analog and digital I/O can be used.

The controller's low profile, form factor and two part screw terminal connectors makes it simple to wire into a control panel. Where panel space is at a premium, NextMove ESB-2 can even be mounted on the panel door. The onboard USB port is easily accessible for system setup and configuration providing a fast and reliable connection to the PC.

Stand-alone Operation

Onboard flash memory and NextMove's Mint or C programming capabilities allows the controllers to be operated stand-alone without the need for an external PLC or PC. The onboard communications channels, including RS232/485, CANopen or USB make it easier to interface to these devices should the application dictate. A simple ASCII protocol allows data transfer between the host and the NextMove controller.

Flexible Programming

Programming flexibility is further enhanced with the ability to develop Windows applications using the supplied ActiveX® control. The ActiveX control allows motion and I/O sequencing to be performed in any Windows programming tool, such as Visual Basic.

Closed Loop Control

Servo and vector axes are controlled from the industry standard ±10V analog outputs and encoder feedback. The NextMove ESB-2 has a fast 6 term PID loop for fine control of the servo axes.

NextMove ESB-2 is ideally matched with Baldor's FlexDrive-II and MicroFlex™ range of servo drives, BSM servo and linear motor range for a complete servo control system.

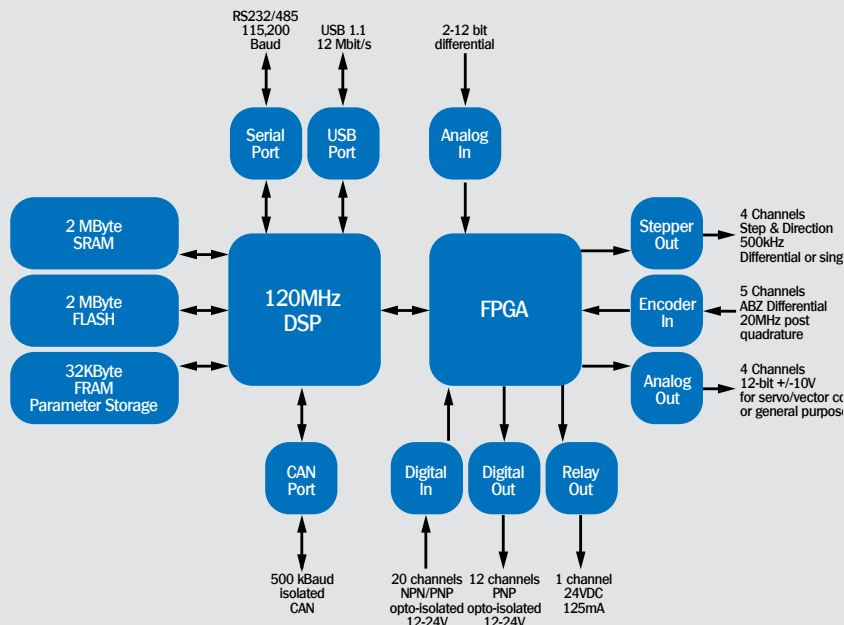
Open Loop Control

Stepper axes can be controlled from any of the four step and direction outputs. The stepper outputs can also be used to interface to Baldor's FlexDrive-II or MicroFlex™ servo drives, which combined with the 3 closed loop axes, can give up to 8 axes of servo control.

Baldor's new range of DSM integrated stepper motors/drivers are ideally suited for use with NextMove ESB-2. The DSM motor/driver combination requires only power and pulse/direction in order to operate.

Technical Data

Number of Axes	Option of 3 servo axes or 4 servo axes plus 4 stepper axes
Axis Type	Closed loop servo/vector: PID with velocity and acceleration feed forward terms. 100µsec update Open loop stepper: pulse/direction. 500kHz max. frequency. Differential or 5V open collector option available
Position Feedback	Servo/Vector: Incremental encoder: RS422 differential AB signals with index (Z) pulse. 20MHz max. frequency Can be used as a master position reference for following applications
Auxiliary Encoders	2 available with 3 axis servo variant. 1 available with 4 axis servo variant. Can be used for position following, position verification or dual encoder feedback
On-board Memory	2MByte Flash for firmware and program storage. 2MByte SRAM. 32kBytes FRAM for parameter storage
Connector Types	Two part screw terminals and D-type connectors
Digital Inputs	20 opto-isolated 24VDC. 1ms sample rate May be connected to positive or negative common (for use with NPN or PNP output transistors) Software configurable for limits (forward and reverse), home, stop and drive error
Fast Position Latch Inputs	The first 4 of digital inputs can be configured for high speed position capture of axis position 1µsec capture time
Digital Outputs	12 opto-isolated 12-24VDC PNP Software configurable for drive enable 50mA per channel, 350mA max source per channel, 500mA max for 8 channels
Relay Output	Single output for drive enable. Form C (SPDT) relay rated at 24V (150mA) Common, normally open, normally closed. Fail safe operation-relay de-energized on an error

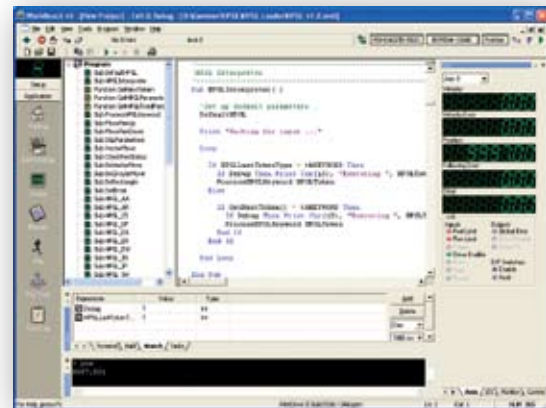


Application Development Tools

Mint® WorkBench is a Windows front end which is common across Baldor's range of NextMove motion controllers and servo drives. Mint WorkBench offers an easy to use Windows development front end for Mint programming, with its color highlighting of keywords and context sensitive help. The Program Navigator makes it a breeze to navigate the source code, no matter how complicated.

Features include:

- › Program Navigator for rapid program development
- › Full debugging capabilities such as breakpoints
- › Auto-complete of Mint keywords within Editor
- › Mint code library for re-use of commonly used Mint code sections
- › Spy window to monitor common motion variables and I/O
- › Software oscilloscope eases tuning and diagnostics
- › Watch window for variable and task monitoring
- › Command line interface to interrogate the controller even when the program is running
- › SupportMe function with automatic e-mail generation for rapid technical support
- › Web updates of firmware within Mint WorkBench



Analog Inputs	2 differential inputs. ±10V operation. 12-bit resolution
Analog Outputs	3 or 4 outputs for drive command signals. ±10V, 12-bit resolution 1 general purpose ±10V 12-bit output - 3 axis servo variant only
Serial Port	RS232 via 9-pin D-type. Maximum Baud rate 115,200 Optional RS485 port via 9-pin D-type USB 1.1 (12 Mbit/sec) supported by Windows 2000/XP. A 2m (6ft) USB cable is supplied
CANbus Port	Single CAN port via RJ45 connector. Software configurable for CANopen or Baldor CAN CANopen DS301: Support for CANopen DS401 I/O devices Master functionality for peer-to-peer communications with other Mint nodes Baldor CAN: Support for Baldor's range of digital I/O expansion units Maximum of 63 nodes supported on the network
Power Requirements	+24VDC ±10% - 70W
Environmental Limits	Operating temperature 0°C to 45°C (32°F to 113°F)
Weight	0.85kg (1.87 lbs.)
Dimensions	L: 262mm (10.31"); W: 135mm (5.32"); H: 45mm (1.77")
Programming	Mint® - Multitasking Motion Basic Embedded C. Texas Instruments compiler must be purchased separately Windows 9X/NT/2000/XP via ActiveX control (Note: USB only supported on Windows 2000/XP) All Windows and embedded programming libraries supplied free of charge

› Servo Drive Solutions

Whether you are looking for a simple servo drive or a fully programmable drive, Baldor has the answer. Baldor servo drives have been at the heart of automation for over 20 years and have been used in thousands of applications across the world. Our latest drives build on the reputation of quality and ease of use and are ideally matched to Baldor's range of NextMove motion controllers, rotary servo motors and linear servo motors. Commissioning and setup use the same acclaimed Mint® WorkBench Windows tool as the NextMove controllers, reducing the learning curve and improving productivity.



› Motor Solutions

For over 20 years, Baldor has been manufacturing and supplying high reliability servo motor solutions to worldwide applications. Baldor's servo motors are designed for industrial applications, superior durability and proven reliability. Our range of rotary motors are available as a high performance, low inertia family, or as a higher inertia family for more cost effective applications. Baldor's new stainless steel motors lead the way in solutions for harsh and washdown environments.



With the widest range of linear motors and stages on the market today, Baldor's linear motors lead the way and are ideally suited to applications requiring higher speeds or improved accuracy.



› Ordering Information

Catalog Number	Description	Serial Port	Stepper Axes
NSB202-501	NextMove ESB-2 controller with USB. 3 Servo Axes. 4 Stepper Axes	RS232	Differential
NSB202-502	NextMove ESB-2 controller with USB. 3 Servo Axes. 4 Stepper Axes	RS485	Differential
NSB203-501	NextMove ESB-2 controller with USB. 3 Servo Axes. 4 Stepper Axes	RS232	Single Ended
NSB203-502	NextMove ESB-2 controller with USB. 3 Servo Axes. 4 Stepper Axes	RS485	Single Ended
NSB204-501	NextMove ESB-2 controller with USB. 4 Servo Axes. 4 Stepper Axes	RS232	Differential
NSB204-502	NextMove ESB-2 controller with USB. 4 Servo Axes. 4 Stepper Axes	RS485	Differential
NSB205-501	NextMove ESB-2 controller with USB. 4 Servo Axes. 4 Stepper Axes	RS232	Single Ended
NSB205-502	NextMove ESB-2 controller with USB. 4 Servo Axes. 4 Stepper Axes	RS485	Single Ended

For accessories such as cables, power supplies and HMI panels, please refer to brochure **BR1202-H**

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