

WHITE PAPER



INDUSTRIAL INDEXING  
SYSTEMS, INC.

# Motion Control Technology



The heart of a multi-axis automation system is the ability to synchronize the motion of multiple motors to a designated "master" source device.

IIS's Emerald products offer universal motion technology that combines real-time functions in a unique, software-based mechanical/electrical environment to address the complexities of modern automation control.



Multi-axis synchronization using servos provides a powerful tool for precision motion control applications.

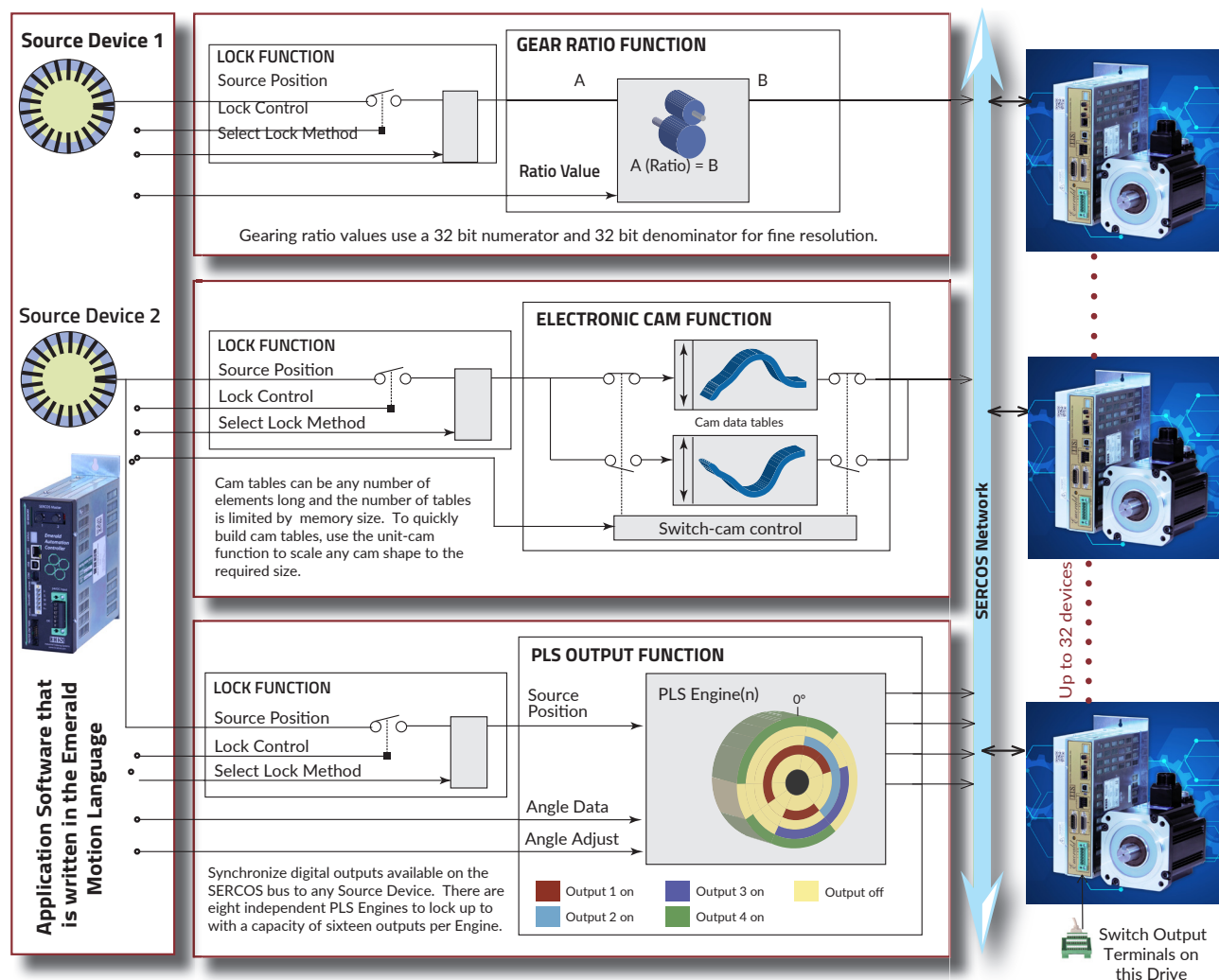
## Master/Slave Positioning Algorithms

Depending on the machine application, a source device may be an encoder device measuring web travel, position feedback from another motor that is driving a feed roll, or an Emerald Virtual (software) Motor. A Virtual Motor provides a software-configured internal master source with control over its virtual distance, speed and acceleration.

Synchronization between the source device and a servomotor is achieved using the Emerald electronic gear ratio or electronic cam motion functions. The process starts by locking the master source device to the slave servomotor. How the source device gets locked to the servomotor is critical especially when the source is running. The Emerald Automation Controller provides eight lock methods for smooth and accurate transition regardless of the speed of the source. The source device and the lock method are specified first. Then, the lock control is enabled to start the synchronization process.



Digital outputs are synchronized to a master source using the programmable limit switch (PLS) function. Up to eight independent PLS engines can be enabled with each engine controlling the action of sixteen outputs. Digital outputs can be located on the servo drive or on the SERCOS network using 3rd party I/O interface blocks.



Electronic gearing and cams offer key technology that can be coordinated in real-time with PLS digital outputs.

Copyright Clause: All materials are copyrighted. Users can NOT make changes to digital files, rewrite articles or use our materials without proper permission. Emerald, Emerald Automation Controllers, Emerald Servo Drives, Emerald Series, EMC-2005, Emerald Motion language, EML, Emerald Development Environment, EDE, EMax Positioner Drive, Luminary Motion Control, Luminary Servo Drives, Luminary Stepper Motor and Drives, and Luminary Series. DeviceNet is a trademark of the Open DeviceNet Vendors Association. SERCOS is a trademark of SERCOS N.A. Windows is a trademark of Microsoft Corporation. CC-Line is a trademark of CC-Link Partner Association. Ethernet is a trade mark of XEROX. Velconic and Toshiba are trademarks of Shibaura Machine. This data is subject to change without notice. © Copyright Industrial Indexing Systems, Inc, 2021



## Team IIS



Our objective is to bring state-of-the-art servo system products to practical use on the factory floor. Whether it is a complete turnkey system or servo components, IIS' commitment to quality products and personalized support is unsurpassed. Our business philosophy is pretty simple. We take responsibility for everything we sell. By doing that we make a long-term commitment to our customer's success.

## Headquarters in Victor NY



To accommodate the steady growth we've enjoyed over the years, our facility has been expanded several times to its present 17,000 square foot capacity. This location houses all critical departments - Sales, Marketing, Applications Engineering, R&D, Production, Warehouse, Panel Shop, Quality Control and Customer Support. Having everything under one roof speeds communications and provides better service to our customers.

## Sales Representatives

### ■ Applied Motion Solutions, Inc

Area: CT, ME, MA, NH, VT, RI  
George Fede (860)930-8066  
Email: georgefede@amsmotion.com  
  
Dawn MacKerron (617)489-4709  
Email: dawnmackerron@amsmotion.com

### ■ Brundage Associates, Inc

Area: NJ, Downstate NY, Eastern PA, DE, MD  
Bruce Kramer (610)393-9497  
Email: BruceKramer@Brundage-Inc.com  
  
Thomas Miceli (973)521-0552  
Email: TomMiceli@Brundage-Inc.com

### ■ New Age Industrial Sales

Area: CO, UT, WY  
Edward Rhoden (970)573-6398  
Email: e.rhoden@newageindustrialsales.com

### ■ Jake Rudisill Associates

Area: NC, SC, TN, GA, FL, VA, AL, MS  
Lantz Critel (704)910-9227  
Email: Lantz.critel@JakeRudisill.com  
  
Sam Thomas (704)907-2179  
Email: sam.thomas@jakerudisill.com  
  
Douglas Thackery (770)794-8111  
Email: doug.thackery@JakeRudisill.com

### ■ Satek Engineered Components, Inc

Area: WI, IL, IN  
Michael Gabel (312)813-0104  
Email: mike@satek.com

### ■ Motors, Drives & Gears + Controls

Area: TX, OK, AR, LA, NM  
Ray W. Zimbal Jr (817)307-1274 / (713)835-9753  
Email: Sales@MDGControls.com

### ■ Culpepper Solutions Group

Area: Western PA, OH, WV, KY  
Larry Culpepper (804)312-5985  
Email: larry@culpeppersolutions.com  
  
Ryne Culpepper (804)312-5985  
Email: ryne@culpeppersolutions.com

### ■ Axiom GB Ltd

Area: United Kingdom, Europe  
Matthew Nickson 011 44 1827 61212  
Email: Matthew.Nickson@AxiomGB.com

### ■ IIS Headquarters, Victor, NY US States, Canada and Mexico

|            |           |                |
|------------|-----------|----------------|
| Alaska     | Iowa      | Nevada         |
| Arizona    | Kansas    | North Dakota   |
| California | Michigan  | Oregon         |
| DC         | Minnesota | Puerto Rico    |
| Guam       | Missouri  | South Dakota   |
| Hawaii     | Montana   | Virgin Islands |
| Idaho      | Nebraska  | Washington     |

*If you would like to discuss the opportunity of becoming a Sales Representative for our organization, drive brand awareness, and develop business relationships with new and existing clients, please contact Mike Huf, Sales Manager at (585)924-9181*



Ready to elevate the efficiency, consistency, and repeatability in your operations? Call us today at (585)924-9181 to discuss your application needs

626 Fishers Run, Victor, NY. 14564 ~ (585) 924-9181 ~ [info@iis-servo.com](mailto:info@iis-servo.com) ~ [www.iis-servo.com](http://www.iis-servo.com)