



SELECTION GUIDE

STEPPER DRIVES
SERVO DRIVES
CONTROL SOFTWARE
CUSTOMIZED DESIGNS



MOTION CONTROL SOLUTIONS

Ark Electronic Motion Controls India Pvt Ltd is a young vibrant motion control technology company, specialized in the design, development and manufacture of motion control products and custom motion systems..

We produce customized motor controls that meet your highest demand of cost-efficiency and optimized performance. We deliver products to the customers which is a combination of hardware and software adapted to the customer environment and application needs.

By utilizing the latest motion control technology available and providing for the widest range of product solutions.

Ark Motion is able to satisfy a wide array of critical performance applications across many different industries: Medical, Biomedical Instruments, Advanced Robotics, Semiconductor, Laser Processing, Electronic Manufacturing and Test, Research and Development, and others requiring High Precision, High throughput Motion Solutions.

CONCEPT TO COMPLETION

COLLABORATE - Talk to us. Our innovative and forward thinking team of engineers are here to listen to your engineering challenges, partner with you and offer custom solutions and systems.

If you have application challenges with accuracy, space weight, torque, acceleration, deceleration and efficiency, we are your solution of choice.

INNOVATE - Ark Motion has earned a reputation of innovating custom ideas to solve the most challenging motor control issues. We create innovative solutions to the most challenging problems. We develop versatile custom solutions.

PROTOTYPE - Before moving to production we develop the working prototype in our R&D. The prototype is refined until we have met or exceeded our customer's specifications and expectations.

MANUFACTURE - We are capable of small to high volume manufacturing. We perform 100% board assembly and electro mechanical integration in-house using controlled documentation.

SERVICE & SUPPORT - Providing customer service tech support on the phone or in the field. We are here to keep you functioning.



SERVO AND STEPPER DRIVES

From traditional servo and stepper drives to intelligent networked architecture, Ark Motion has the solution for your system architecture.

Ark Motion's offering includes high performance - high power density servo drives and powerful control software for most motor technologies including servo motors (DC brush and brushless), micro stepping, and step motors. Advanced features include field buses (sinusoidal commutation, field oriented control, advanced PI filters and much more.



MOTORS AND COMPONENTS

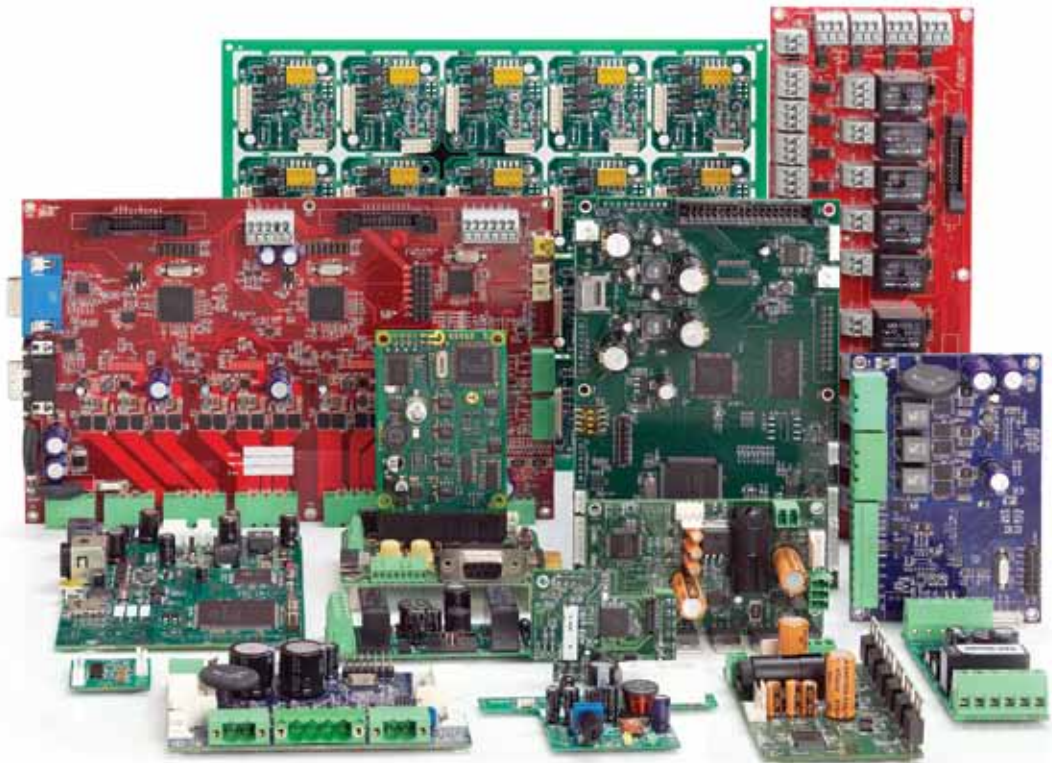
Ark Motion Distributes motors and components from its Partner companies

- ◆ Low Inertia DC Micromotors
- ◆ Low Inertia BLDC Micro Motors
- ◆ Hybrid Stepper motors
- ◆ BLDC/PMSM Motors
- ◆ Gearboxes
- ◆ Linear Actuators
- ◆ Linear Motors
- ◆ Motion Control Ics
- ◆ Servo Drives
- ◆ Encoders



CUSTOM DRIVES AND MOTION SUBSYSTEMS

Ark Motion provides competitive advantage to the OEM by tailoring designs to precisely fit the application. Our development engineers and application team will work closely with you to define your requirements and deliver a just-right solution.




TAILORED MOTION SOLUTIONS

Our strength lies in our customization capabilities. Our engineers are ready to take up challenging projects and strive hard to meet your requirements and create a product that will meet the desired application and benefits the customers.

◆ **Textile machines** ◆ **Diagnostic equipments** ◆ **Medical-hand tool** ◆ **Industrial automation-CNC** ◆ **Packaging machines** ◆ **Laboratory application** ◆ **Robotic**

MICRO STEPPING DRIVES

AMS/BSD 2411		Model	VDC	Irms	Ipeak
		AMS 2411	8-24	1.1	1.4
		BSD 2411	8-24	1.1	1.4
		Micro Stepping		1-1/16	

AMS/BSD 3630		Model	VDC	Irms	Ipeak
		AMS 3630	14-28	3	4
		BSD 3630	14-28	3	4
		Micro Stepping		1-1/16	

DST4812/ 2430		Model	VDC	Irms	Ipeak
		dST 4812	9-48	1.2	1.4
		dST 2430	9-24	2.8	4
		Micro Stepping		1-1/256	

DST 3640		Model	VDC	Irms	Ipeak
		dST 3640	9-36	3	4
		Micro Stepping		1-1/256	

dST 4860/dST4810		Model	VDC	Ic	Ip
		dST 4860	9-48	6	8
		dST 4810	9-48	10	12
		Micro Stepping		1-1/256	

MICRO STEPPING DRIVES



Product Code	AMS 2411	BSD 2411	AMS 3630	BSD 3630
Max. phase current RMS [A]	1.1	1.1	3	3
Supply voltage typical DC [V]	24	24	24	24
Supply voltage range DC [V]	8-24	8-24	14-28	14-28
Micro-step resolution	1, 1/2, ¼, ---1/16	1, 1/2, ¼, ---1/16	1, 1/2, ¼, ---1/16	1, 1/2, ¼, ---1/16
Motion Controller in hardware	Yes	Yes	Yes	Yes
Mode Selection	P & D /Auto	P & D /Auto	P & D /Auto	P & D /Auto
Interface: RS-232	No	No	No	No
Interface: RS-485	No	No	No	No
Interface: CAN	No	No	No	No
Interface: USB	No	No	No	No
Pulse & Direction (P&D)	Yes	Yes	Yes	Yes
Encoder interface	No	No	No	No
Micro-stepping selection	Dip switch	Rotary Dip Switch	Piano Dip Switch	Rotary Dip Switch
Current Selection	Factory set	Factory set	Factory set	Factory set
Control inputs (Opto isolated)	P&D, Disable/Enable	P&D, Disable/Enable	P&D, Disable/Enable	P&D, Disable/Enable
GP IN (analog)	No	No	No	No
Potentiometer	Yes (on board)	Yes (External)	Yes (External)	Yes (External)
Board Dimensions [mm ²]	42 X 42 X 14	42 X 42 X 14	67 X 71 X 18	67 X 71 X 18
Connector type	Molex	Molex	Terminal Block	Terminal Block
Weight (gm)	30	30	84	84

MICRO STEPPING DRIVES



Product Code	dST 4812	dST 2430	dST 3640	dST 4860/4810
Max. phase current RMS [A]	1.2	2.8	3	6/10
Supply voltage typical DC [V]	24	24	24	48
Supply voltage range DC [V]	9-48	9-24	9-36	9-48
Micro-step resolution	1, 1/2, ¼, ---1/256	1, 1/2, ¼, ---1/256	1, 1/2, ¼, ---1/256	1, 1/2, ¼, ---1/256
Motion Controller in hardware	Yes	Yes	Yes	Yes
Mode Selection	P &D /Auto	P &D /Auto	P &D /Auto	P &D /Auto
Interface: RS-232	Yes (optional)	Yes (optional)	Yes (optional)	Yes (optional)
Interface: RS-485	No	No	Yes (on request)	Yes (on request)
Interface: CAN	No	No	No	No
Interface: USB	Yes (on request)	Yes (on request)	Yes (on request)	Yes (on request)
Pulse & Direction (P&D)	Yes	Yes	Yes	Yes
Encoder interface	No	No	No	No
Micro-stepping selection	Rotary Dip Switch	Rotary Dip Switch	Piano Dip Switch	Rotary Dip Switch
Current Selection (16 level)	Rotary Dip Switch	Rotary Dip Switch	Piano Dip Switch	Rotary Dip Switch
Ref./End switch inputs	No	No	Yes (on request)	No
Control inputs (Opto isolated)	P&D, Disable/Enable	P&D, Disable/Enable	P&D, Disable/Enable	P&D, Disable/Enable
GP IN (digital)	–	–	2	–
GP IN (analog) V	0 - 10 (on request)	0 - 10 (on request)	0 - 10 (on request)	0 - 10 (on request)
Potentiometer	Yes (on board)	Yes (on board)	Yes (External)	Yes (External)
Board Dimensions [mm²]	62 X 62 X 22	62 X 62 X 22	127 X 77 X 37	165 X 77 X 37
Connector type	JST	JST	Terminal Block	Molex
Weight (gm)	70	70	350	470

STEPPER MOTOR WITH INTEGRATED DRIVES

Motors with Integrated Micro-stepping drives

We have developed a series of miniature Drives that can be integrated on to the Stepper motors. These are miniature Drives with Only Pulse and Direction facility and micro-stepping resolution of 1/ 256. The size starts from 20 X 20 mm up to 57 mm and with current from 1.1 A to 3 A rms and up to 5 A peak depending on the size. These are developed for miniature cost sensitive applications.



INTEGRATED MICRO STEPPING DRIVES



Product Code	ISD 20SH		ISD 25SH	ISD 28SHF	ISD 28SH		
Motor flange size (mm)	20		25	28	28		
Motor Length (mm)	33	42	23	10	32	45	51
Motor Holding Torque (NM)	0.0175	003	0.003	0.0098	0.06	0.095	0.12
Supply voltage typical DC [V]	24		24	24	24		
Supply voltage range DC [V]	9-24		9-24	9-24	9-24		
Micro stepping	5200		3200	3200	3200		
Full step Angle	1.8°		1.8°	1.8°	1.8°		
Motion Controller in hardware	No		No	No	No		
Interface: RS-232	No		No	No	No		
Interface: RS-485	No		No	No	No		
Interface: CAN	No		No	No	No		
Interface: USB	No		No	No	No		
Pulse & Direction	Yes		Yes	Yes	Yes		
Control inputs (Opto isolated)	P&D		P&D	P&D, Disable	P&D, Disable		
Analog Input	No		No	No	No		
GP IN (digital)	No		No	No	No		
Connector type	JST		JST	JST	JST		
Weight (kg)	0.06		0.08	0.04	0.11		
Protection type	Open Frame		Open Frame	Open Frame	Open Frame		
Micro-step interpolation	16 to 256		16 to 256	16 to 256	16 to 256		

INTEGRATED MICRO STEPPING DRIVES



Product Code	ISD 42SH33	ISD 42SH38	ISD 42SH47	ISD 42SH38-1004
Motor flange size (mm)	42	42	42	42
Motor Length (mm)	33	38	47	38
Motor Holding Torque (NM)	0.22	0.36	0.44	0.36
Supply voltage typical DC [V]	24	24	24	24
Supply voltage range DC [V]	9-24	9-24	9-24	9-24
Micro stepping	Up to 1/256	Up to 1/256	Up to 1/256	Up to 1/256 Factory set
Full step Angle	1.8°	1.8°	1.8°	1.8°
Motion Controller in hardware	Yes	Yes	Yes	Yes
Interface: RS-232	Option	Option	Option	No
Interface: RS-485	No	No	No	No
Interface: CAN	No	No	No	No
Interface: USB	No	No	No	No
Pulse & Direction (Opto isolated)	Yes	Yes	Yes	Yes
Control inputs	P&D, Disable	P&D, Disable	P&D, Disable	P&D, Disable
Analog Input	No	No	No	No
Connector type	JST	JST	JST	Terminal Block
Weight (kg)	0.25	0.28	0.35	0.28
Protection type	Open Frame	Open Frame	Open Frame	Closed Frame
Product status	Preview	Preview	Preview	Active

INTEGRATED MICRO STEPPING DRIVES



Product Code	ISD 57SH51	ISD 57SH76	ISD 60SH65	ISD 60SH86
Motor flange size (mm)	57	57	60	60
Motor Length (mm)	51	76	65	86
Motor Holding Torque (NM)	1	1.8	2.2	3.1
Supply voltage typical DC [V]	24	24	48	48
Supply voltage range DC [V]	9-48	9-48	9-48	9-48
Micro-step resolution	1, 1/2, ¼, ---1/256	1, 1/2, ¼, ---1/256	1, 1/2, ¼, ---1/256	1, 1/2, ¼, ---1/256
Full step Angle	1.8°	1.8°	1.8°	1.8°
Motion Controller in hardware	Yes	Yes	Yes	Yes
Interface: RS-232	Option	Option	Option	Option
Interface: RS-485	No	No	No	No
Interface: CAN	No	No	No	No
Interface: USB	No	No	No	No
Pulse & Direction (P&D)	Yes	Yes	Yes	Yes
Micro-stepping selection	Rotary Dip Switch	Rotary Dip Switch	Rotary Dip Switch	Rotary Dip Switch
Current Selection (16 level)	–	–	–	–
Ref./End switch inputs	–	–	–	–
Control inputs (Opto isolated)	P&D, Enable/Disable	P&D, Enable/Disable	P&D, Enable/Disable	P&D, Enable/Disable
GP IN (digital)	–	–	–	–
GP IN (analog) V	–	–	–	–
Motor weight (kg)	0.7	1	1.2	1.4
Protection type	Open Frame	Open Frame	Open Frame	Open Frame
Product status	Preview	Preview	Preview	Preview



SERVO DRIVES

BLDC/ PMSM and Brushed DC Low voltage Servo drives

Ark Motion has developed 1, 2 & 3 axis servo drives for controlling BLDC as well as brushed DC servo motors. Ark Motion also developed a complete de-centralized motion control solution for leading customers in Textile, Medical and Robotic applications.

SERVO DRIVES

IBLS 400



IBLS 400 is a Fully Digital Servo Driver with Sensor less FOC (Filed Oriented Control) for Precise, accurate and smooth control of three phase BLDC /PMSM motors.

Sensorless Field Oriented Control

Control Modes

- ◆ Velocity, Torque

Command & Communications

- ◆ RS-232/RS-485 ◆ 0-10 V analog

Model	VDC	Irms	Ipeak
IBLS 400	12-48	8	12

SBL 400



SBL 400 is a Fully Digital Servo Driver with Encoder based FOC (Field Oriented Control) for Precise, accurate and smooth control of three phase BLDC/PMSM motors in Position, Velocity and Torque mode.

Control Modes

- ◆ Electronic Gearing
- ◆ Position, Velocity, Torque

Command & Communications

- ◆ CAN ◆ RS 485 ◆ Step/Direction ◆ 0-10V, position/velocity/torque

Feedback

- ◆ Incremental quadrature encoder
- ◆ Hall Sensor

Model	VDC	Irms	Ipeak
SBL 400	12-48	8	12

DBL 240/ DBL 500



DBL 400 is a Fully Digital BLDC Driver with trapezoidal control for accurate and smooth control of three phase BLDC/ PMSM motors on Velocity mode.

Control Modes

- ◆ Velocity

Command & Communications

- ◆ RS 485 ◆ 0-10V

Feedback

- ◆ Hall Sensor

Model	VDC	Irms	Ipeak
DBL 240	12-48	10	12
DBL 500	12-48	10	12

SERVO DRIVES

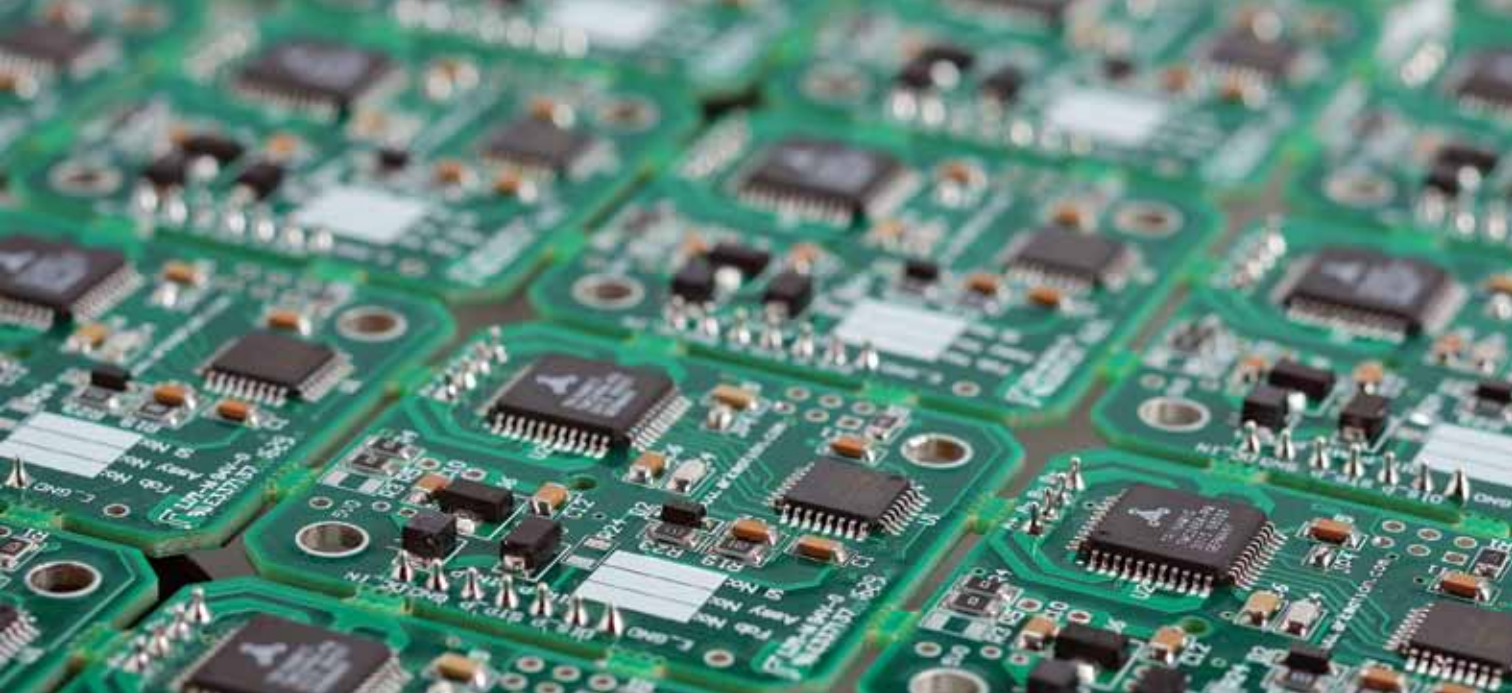


Product Code	IBLS 400	SBL 400	DBL 240	DBL 500
Main Feature	Sensorless FOC	Sensor FOC	Trapezoidal Drive	Trapezoidal Drive
Number of axes	1	1	1	1
Continuous output [W]	400	400	240	480
Rated Motor Current [A]	8	8	10	10
Supply voltage typical DC [V]	48	48	24	48
Supply voltage range DC [V]	24-48	24-48	12-24	24-48
Current Control	Yes	Yes	Yes	Yes
Velocity Control	Yes	Yes	Yes	Yes
Position Control	No	Yes	No	No
Speed Control range (rpm) 4 pole motor	30 rpm to Max Motor Speed	1 rpm to max Motor speed	250 rpm to Max Motor speed	250 rpm to Max Motor speed
Interface: RS232	Yes (optional)	No	Option	Option
Interface: RS485	Option	Option	Option	Option
Interface: CAN	No	Yes (on request)	No	No
Interface: USB	No	Yes (on request)	No	No
Interface: S/D	No	Yes	No	No
Encoder Interface	No	Yes	No	No
Hall Interface	No	Yes	Yes	Yes
Analog (0-10V)	Yes	Yes	Yes	Yes
Ref./End switch input	Digital input can be configured	Digital input can be configured	Digital input can be configured	Digital input can be configured
Brake input	Yes	Yes	Yes	Yes
Digital input	Disable, Direction	Enable, Fwd, Rev, Brake	Disable, Direction, Brake	Disable, Direction, Brake
Digital output	No	Drive ready, Motor Run	Tacho output	Tacho output
Dimensions [mm ²]	127 X 77 X 37	127 X 77 X 37	127 X 77 X 37	127 X 77 X 37
Field Oriented Control	Yes	Yes	No	No
Operating Temperature	0°C to 50 °C	0°C to 50 °C	0°C to 50 °C	0°C to 50 °C
Weight	350g	350g	350g	350g

SERVO DRIVES



Product Code	BD 300-1	BD 300-2	BD 600-1	BD 600-2
Main Feature	DC Servo Driver	DC Servo Driver	DC Servo Driver	DC Servo Driver
Number of axes	1	2	1	2
Continuous output [W]	300	300 + 300	300	300 + 300
Rated Motor Current [A]	10	10 +10	5	5 + 5
Supply voltage typical DC [V]	24	24	60	60
Supply voltage range DC [V]	12-24	12-24	24-60	24-60
Current Control	Yes	Yes	Yes	Yes
Velocity Control	Yes	Yes	Yes	Yes
Position Control	Yes	Yes (both axis)	Yes	Yes (both axis)
Interface: RS232	No	No	No	No
Interface: RS485	Option	Option	Option	Option
Interface: CAN	Option	Option	Option	Option
Interface: USB	No	No	No	No
Interface: S/D	Yes	Yes (1+1)	Yes	Yes (1+1)
Stand Alone Operation	Yes	Yes	Yes	Yes
Encoder Interface	Yes	Yes (both)	Yes	Yes (both)
Hall Interface	No	No	No	No
Analog (0-10V)	Yes	Yes (1+1)	Yes	Yes (1+1)
Ref./End switch input	Can be configured	Can be configured	Can be configured	Can be configured
Brake input	1	2	1	2
Digital input	4	8	4	8
Digital output	2	2	2	2
Dimensions [mm ²]	127 X 77 X 37	127 X 77 X 37	127 X 77 X 37	127 X 77 X 37
Field Oriented Control	–	–	–	–
Operating Temperature	0°C to 50 °C	0°C to 50 °C	0°C to 50 °C	0°C to 50 °C
Weight	350g	350g	350g	350g



MOTION PRODUCTS COMBINED WITH MOTION APPLICATION EXPERTISE

More than 10 years of experience in various motion control applications.

Ark Motion's strength lies in its customization capabilities. Our Engineer's accumulated market experience has helped us hasten the development process, using building blocks that have been tried and tested for specific industry requirements.



BIOMEDICAL MOTION SOLUTIONS



E-Dispenser

Ark Motion has developed high performance precision motion control systems dedicated to the precise movement of liquids. The Card integrates a Linear actuator driver, Battery charger, Resistive touch display etc.



Precision liquid handling

We developed a customized hardware for Electronic micro pipetting which delivers very high precision up in microliters. This innovative design integrated a stepper motor control, Battery charger management with a LCD Display module into a very small form factor.



Miniature Blowers

The new IBL 400 is an ideal choice for running Low inertia 3 Phase BLDC motors from 100 rpm to 50000 rpm making it an ideal driver for a Medical Blowers used in portable Ventilator applications.

The Driver working with Sensorless FOC algorithm and high PWM frequency is a perfect choice for Low inertia motors.

Ark Motion would be the natural partner for customized motor control applications for demanding customers with high technical requirements. Based on our unique motor control competence and system perspective we maximize the value of our customer applications.

BIOMEDICAL MOTION SOLUTIONS



Custom design motion control system drives biomedical innovation

Ark Motion has designed a motion control card, mother boards and HMI solution with co-ordinated X-Y-Z movement to precise fluid handling and dispensing using motorized pipettes and miniature pumps.



The 6 layer PCB board controls

- ◆ 6 stepper motors
- ◆ Solenoids
- ◆ Syringe pump
- ◆ HMI
- ◆ Printer modules
- ◆ Light source

And all the other peripherals



This compact BLDC driver housed inside a BLDC motor of 30W was designed within a period off one month for a Blower application for neonatal incubator. The motor was supplied with a customized shaft as per the drawing.

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BIOMEDICAL MOTION SOLUTIONS



Dual axes brushed DC servo driver for wheel drive

The new BD 600 driver with dual DC drive is designed for Driving the dual wheel of a Mobile X ray.

The driver features, independent DC drives Powered by a DSP with two separate Brake and Encoder input for controlling two motors independently.



The IBLS 400 Sensorless Driver is configured for fast Oscillating motion with low inertia BLDC motor a surgical hand tool application.



Ark Motion Designed a compact BLDC driver of 33 mm dia for a surgical drill to be housed inside the compact space.

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INDUSTRIAL MOTION SOLUTIONS



Custom design stepper motor with integrated driver for textile applications

Ark Motion has designed a a stepper motor with integrated driver working stand alone for a special textile application. The motor can provide very low speed up to to 1 rpm to 75 rpm.



Custom design BLDC driver for a textile BLDC driver

This driver is specifically custom designed for a Textile application to control a BLDC motor from 200 to 10000 rpm. This driver is a cost effective one designed for high volume production.



Custom design brushed DC driver for venetian blind application

Ark Motion has designed the miniature Brushed DC driver with a customized software for Venetian Blind Motor control application.

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INDUSTRIAL MOTION SOLUTIONS



Custom specified multi axes design for a machine automation project with 3 BLDC servo motor drives and 3 stepper motors drives

The board is controlled by dual DSPs which run the BLDC motors in Field Oriented Control with speed, Position and Torque mode. The board also feature controller for the machine automation with CAN and RS485 interface for networking.



We had developed 10 axis controller board to synchronize 6 to 8 BLDC motors and two stepper motor to guide textile Yarn with an accuracy of speed less than ± 0.5 rpm.

The BLDC motors run on FOC mode with and with out Encoder feedback for a speed variation from 10 to 12,000 rpm yet maintain a very tight synchronization and speed accuracy.



Ark Motion was one of the first company in India to Introduce BLDC motors and Customized BLDC drives for Textile machines replacing AC induction motors. Here we had designed BLDC motors with integrated servo Drives with Optical encoders for Textile Yarn winding application. The drives followed Distributed motion control architecture.

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SPECIAL MOTION SOLUTIONS



Thin film coating

Custom designed sensorless FOC algorithm drives spin coater to perfect smooth motion

100 W BLDC Motor with Hollow shaft.
IBLS BLDC Driver with customized software.
Speed variation from 10 to 10000 rpm.
Accuracy and repeatability ± 1 rpm.
Acceleration/ Deceleration ± 1 rpm/ Sec.



Universal converter

The USC device is a low-cost interface converter that supplies a simple-to-use RS485 interface to a PC with an USB port. The device can be used every where where an RS485 interface is needed, since it does not require special software.



Under Voltage Relay

We have designed the UVR that has contacts that operate when the voltage drops below a set voltage. The UVR is made with a 17.5 mm Size and are used for protection against voltage drops, to detect short-circuit faults, etc.

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NEW PRODUCTS

NEMA 23 (57mm) BLDC Servo



57BLSH60

No of Poles : 8
Size (mm) : 57X57X 96 mm
Rated Torque : 0.6NM
Rated Voltage : 36 VDC
Rated Speed : 3000 RPM
Rated Power : 188 W



57BLSH40

No of Poles : 8
Size (mm) : 57X57X 74 mm
Rated Torque : 0.4NM
Rated Voltage : 36 VDC
Rated Speed : 3000 RPM
Rated Power : 125 W

BLDC DRIVES

Our following drives are ideal for driving the motors with various Commutation Modes



SBL 400

Sensored FOC (encoder)
Speed range : 1 – 3000 rpm

Velocity and Torque & Position
Power : 400 W
Rated Voltage : 12- 48 VDC
Rated Current : 8A
CAN, RS 485, USB
0 -10VDC Analog. Pulse & Dir



IBLS 400

Sensorless FOC
Speed range : 20 – 3000 rpm

Velocity and Torque Mode
Power : 400 W
Rated Voltage : 12- 48 VDC
Rated Current : 8A
RS 232
0 -10VDC Analog



DBL 500

Hall Sensor Based
Speed range : 250 – 3000 rpm

Velocity mode
Power : 400 W
Rated Voltage : 12- 48 VDC
Rated Current : 8A
RS 232, RS 485
0 -10VDC Analog