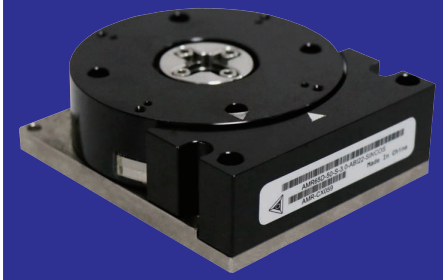
Akribis
where precision matters



AM SERIES

Akribis Miniature Stages

where precision matters

20.8.1

Akribis is a Latinized Greek word that means “Precision”. On the Akribis logo, the letter “a” is formed by a line and a circle, representing linear and rotary motions. These are supported by a tetrahedron structure, the same structure as the diamond crystal which has many exceptional physical properties.

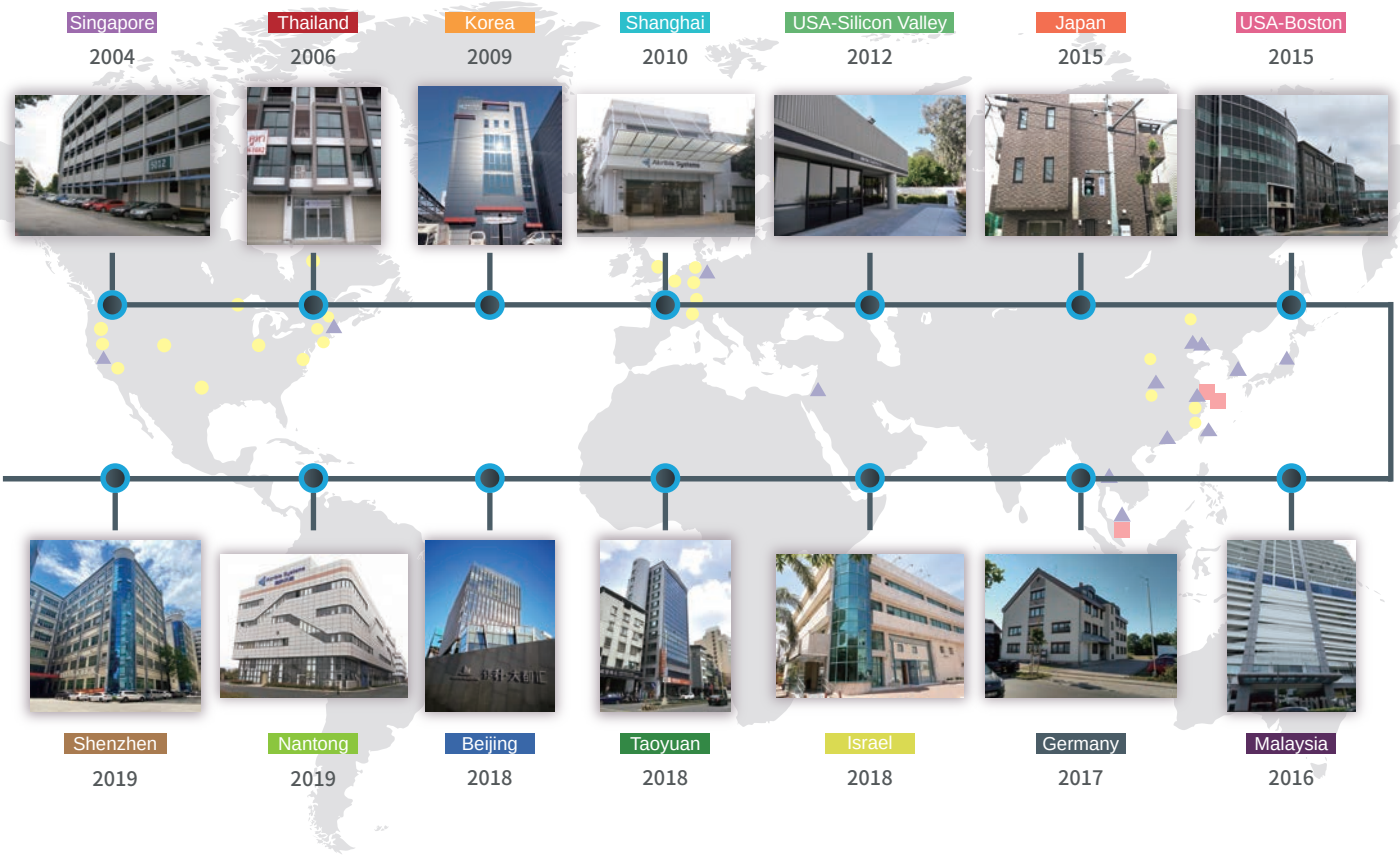
The logo signifies that Akribis Systems’ sound engineering expertise is the basis of the company’ s foundation, and this enables us to provide customers with precise, direct drive motion control solutions.

Akribis Systems Pte Ltd was founded in Aug 2004. We design and manufacture direct drive motors, stages and precision systems that are used in equipment for manufacturing, inspection and testing. Akribis Systems supports a wide range of industries including semiconductor, solar, flat panel, hard disk, LED, printed circuit board, printing, photonics and biomedical manufacturing.

From the beginning, the company has been focusing on innovation and development of new technologies and solutions in motion control, with more than 44 patents applied. Backed by a very strong and committed engineering team, the company continues to develop custom motors and systems for the most demanding applications.

The corporate headquarters of Akribis Systems is situated in Singapore. We have manufacturing facilities in Singapore and in Shanghai, Nantong, Shenzhen, China.

Our sales network includes our sales offices in USA, South Korea, Japan, Thailand, Malaysia and Taiwan, and is reinforced by our comprehensive distribution channels in Asia, Europe and North America.



CONTENTS

AML Series Linear Module

- Compact design
- Direct drive technology
- High precision optical encoder
- High response
- Stackable configuration

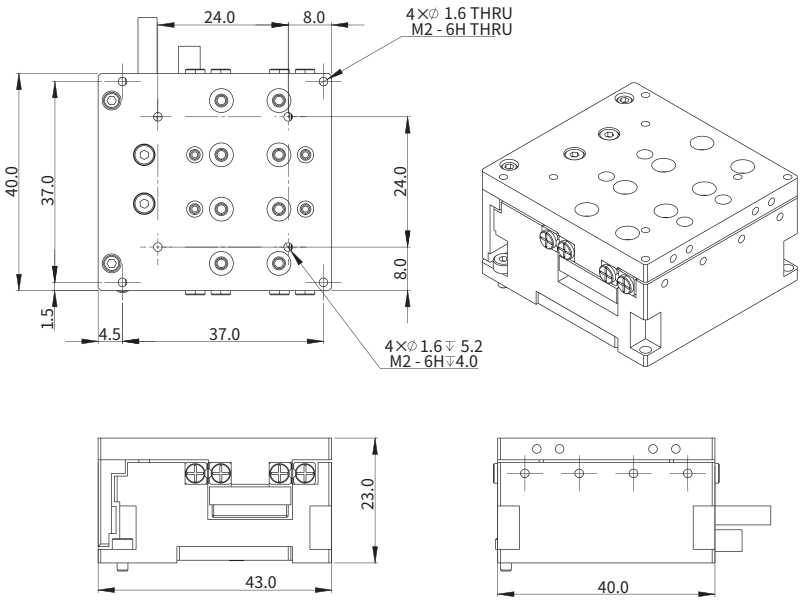
Akribis systems

AML40-10

Specifications	Unit	Value
Stroke	mm	10
Continuous Force	N	2.3
Peak Force	N	6.9
Resolution	μm	ABI22: SINCOS
		ABI21: 0.5 / 0.2
		AT2: SINCOS
		AT2:0.2 / 0.05
Bidirectional Repeatability	μm	ABI22 SINCOS: ±0.4 (4096X)
		AB21 0.5 / 0.2 : ±1.0
		AT2 0.2 / 0.05 : ±0.5
		AT2 SINCOS: ±0.3 (4096X)
Straightness	μm	±1.5
Flatness	μm	±1.5
Rated Payload❶	kg	0.4
Moving Mass❷	kg	0.06
Total Mass❷	kg	0.16
Max. Payload	kg	2.0
Max. Roll Moment Load	Nm	1.0
Max. Pitch Moment Load	Nm	1.6
Max. Yaw Moment Load	Nm	1.8

❶ The rated load is based on the load in which the acceleration of the mass is at least 1G.
❷ The moving mass and total mass do not include the rated payload.

Dimension Drawing

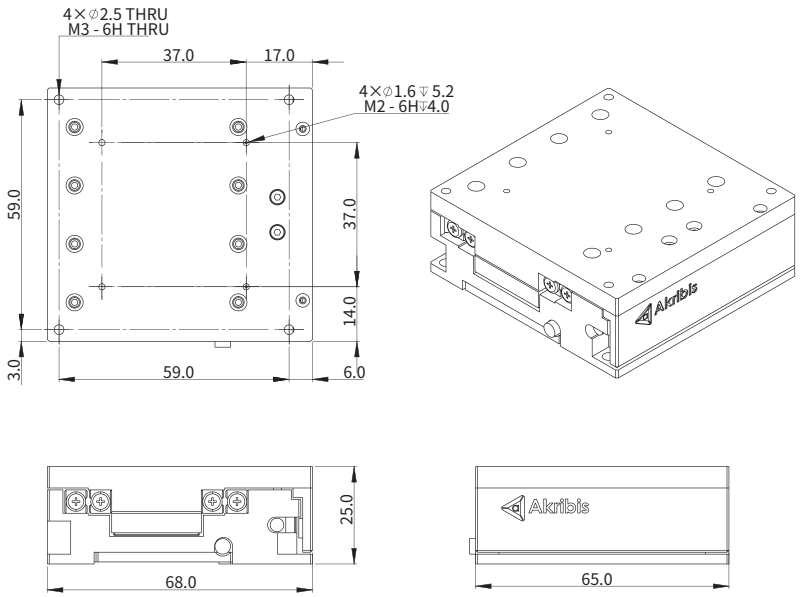


AML65-15

Specifications	Unit	Value
Stroke	mm	15
Continuous Force	N	5.9
Peak Force	N	17.7
Resolution	μm	ABI22: SINCOS
		ABI21: 0.5 / 0.2
		AT2: SINCOS
		AT2:0.2 / 0.05
Bidirectional Repeatability	μm	ABI22 SINCOS: ±0.4 (4096X)
		AB21 0.5 / 0.2 : ±1.0
		AT2 0.2 / 0.05 : ±0.5
		AT2 SINCOS: ±0.3 (4096X)
Straightness	μm	±1.5
Flatness	μm	±1.5
Rated Payload❶	kg	1.1
Moving Mass❷	kg	0.18
Total Mass❷	kg	0.39
Max. Payload	kg	6.0
Max. Roll Moment Load	Nm	5.4
Max. Pitch Moment Load	Nm	7.0
Max. Yaw Moment Load	Nm	8.4

❶ The rated load is based on the load in which the acceleration of the mass is at least 1G.
❷ The moving mass and total mass do not include the rated payload.

Dimension Drawing

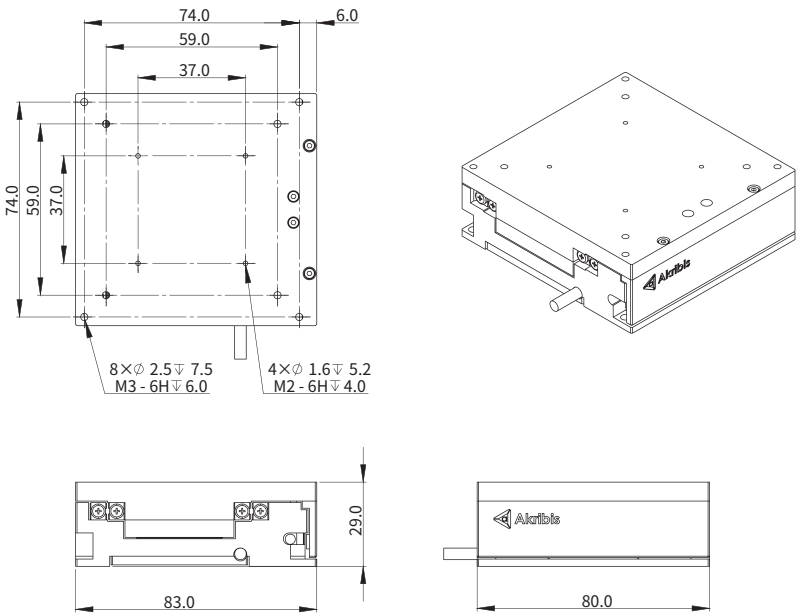


AML80-20

Specifications	Unit	Value
Stroke	mm	20
Continuous Force	N	9.6
Peak Force	N	28.8
Resolution	μm	ABI22: SINCOS
		ABI21: 0.5 / 0.2
		AT2: SINCOS
		AT2:0.2 / 0.05
Bidirectional Repeatability	μm	ABI22 SINCOS: ±0.4 (4096X)
		AB21 0.5 / 0.2 : ±1.0
		AT2 0.2 / 0.05 : ±0.5
		AT2 SINCOS: ±0.3 (4096X)
Straightness	μm	±1.8
Flatness	μm	±1.8
Rated Payload❶	kg	1.3
Moving Mass❷	kg	0.32
Total Mass❷	kg	0.61
Max. Payload	kg	8.5
Max. Roll Moment Load	Nm	9.0
Max. Pitch Moment Load	Nm	9.7
Max. Yaw Moment Load	Nm	11.7

❶ The rated load is based on the load in which the acceleration of the mass is at least 1G.
❷ The moving mass and total mass do not include the rated payload.

Dimension Drawing



Ordering Part Numbering

AML1 T E0A 1 A 1 A

Model:
AML1:AML40-10
AML2:AML65-15
AML3:AML80-20

Cover Type:
T:Black Anodized

Encoder Type:
E0A:ABI-22 (SINCOS)
E0F:ABI-21 (0.5um)
E0G:ABI-21 (0.2um)
ECA:ATOM2 (SINCOS)
ECG:ATOM2 (0.2um)
ECJ:ATOM2 (0.05um)

Guide Option:
A:Anti-creep cross roller
B:Non anti-creep cross roller

Termination:
1:Flying Lead

Cable Length(m):
A:0.5 / B:3.0

Scale Type:
1:Steel tape,11ppm/K❶
2:Glass G8 Soda Lime, 8ppm/K❷

❶ ABI-21 only steel.
❷ ATOM2 only glass.

AMR Series Rotary Module

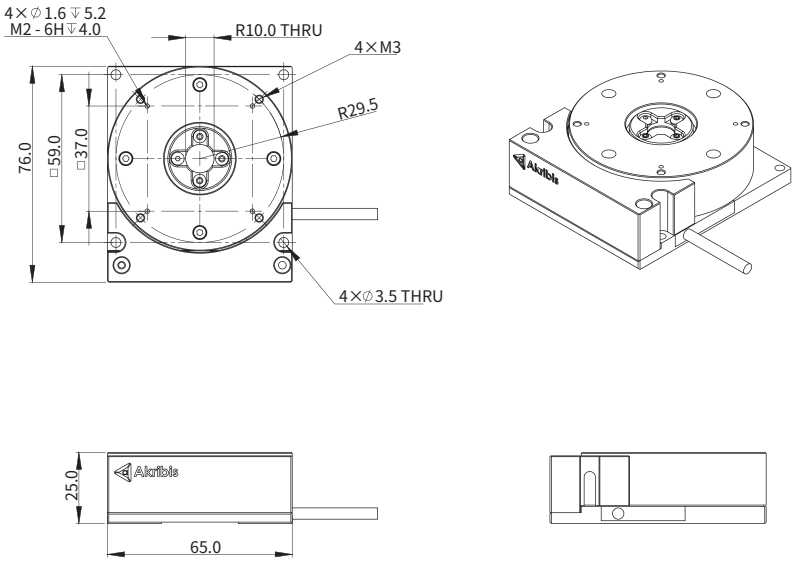
- Compact design
- Direct drive technology
- Cogging free
- High precision optical encoder
- Stackable configuration

Akribis systems

AMR65D

Specifications	Unit	Value
Stroke	degree	50
Continuous Torque	Nm	0.13
Peak Torque	Nm	0.51
Resolution	lines/rev	ABI22 (SINCOS): 2568
		AT2 (SINCOS): 10272
Bidirectional Repeatability	arc sec	ABI22 SINCOS: ±0.5 (4096X)
		AT2 SINCOS: ±0.5 (4096X)
Max. Speed	degree/s	720
Axial Runout	μm	5
Radial Runout	μm	10
Rotor Inertia	kg.m²	0.00014
Total Mass	kg	0.52
Max. Axial Load	N	30
Max. Moment Load	Nm	0.84

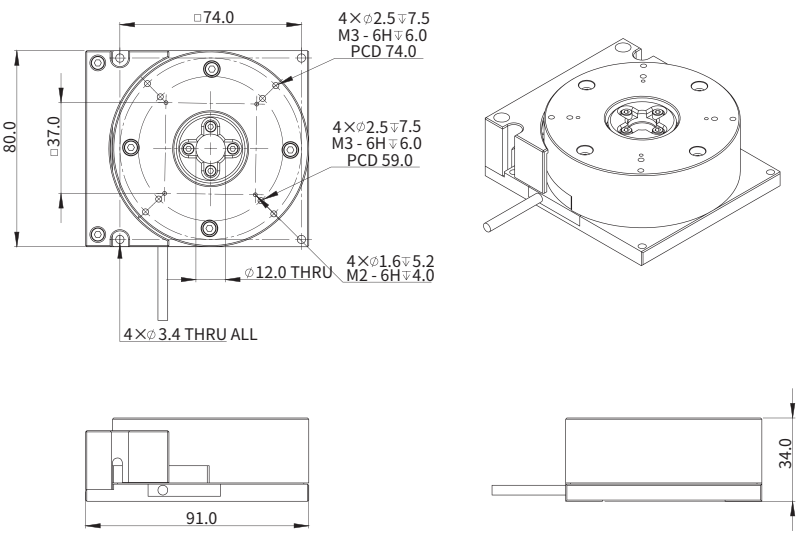
Dimension Drawing



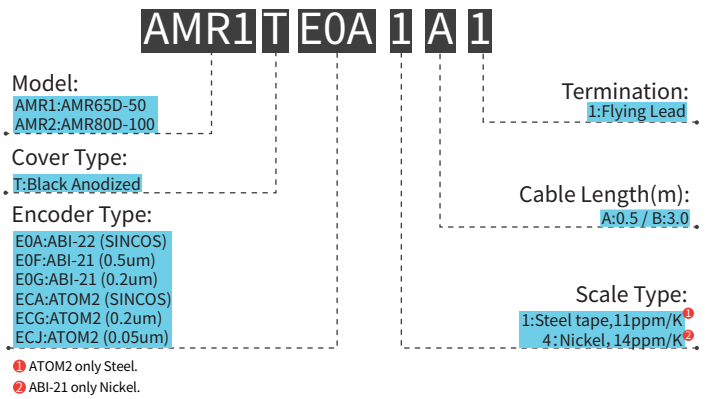
AMR80D

Specifications	Unit	Value
Stroke	degree	100
Continuous Torque	Nm	0.2
Peak Torque	Nm	0.79
Resolution	lines/rev	ABI22 (SINCOS): 3142
		AT2 (SINCOS): 12568
Bidirectional Repeatability	arc sec	ABI22 SINCOS: ±0.5 (4096X)
		AT2 SINCOS: ±0.5 (4096X)
Max. Speed	degree/s	720
Axial Runout	μm	5
Radial Runout	μm	10
Rotor Inertia	kg.m²	0.00016
Total Mass	kg	1.1
Max. Axial Load	N	60
Max. Moment Load	Nm	2.0

Dimension Drawing



Ordering Part Numbering



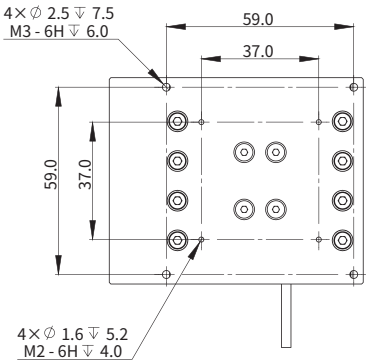
AMG Series Gonio Module

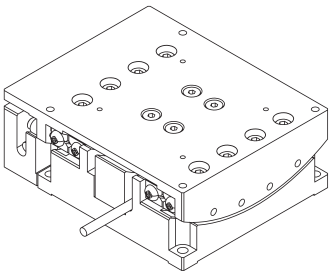
- Compact design
- Direct drive technology
- High torque density
- High precision optical encoder
- Stackable configuration

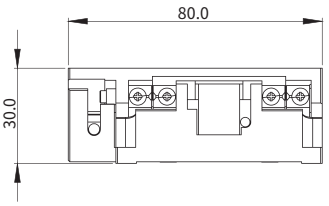
AMG65

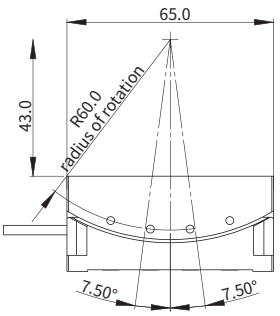
Specifications	Unit	Value
Stroke	degree	15
Continuous Torque	Nm	0.57
Peak Torque	Nm	1.36
Resolution	lines/rev	ABI22 (SINCOS): 4469
		AT2 (SINCOS): 17876
Bidirectional Repeatability	arc sec	ABI22 SINCOS: ±5 (4096X)
		AT2 SINCOS: ±4 (4096X)
Max. Speed	degree/s	720
Rotor Inertia	kg.m²	0.00046
Total Mass	kg	0.52
Max. Load	kg	2
Max. Roll Moment Load	Nm	5.3
Max. Pitch Moment Load	Nm	5.8
Max. Yaw Moment Load	Nm	7.0

Dimension Drawing









Ordering Part Numbering

AMG1 T E0A 1 A 1

Model:
AMG1:AMG65-15

Cover Type:
T:Black Anodized

Encoder Type:
E0A:ABI-22 (SINCOS)
E0F:ABI-21 (0.5um)
E0G:ABI-21 (0.2um)
ECA:ATOM2 (SINCOS)
ECG:ATOM2 (0.2um)
ECJ:ATOM2 (0.05um)

Cable Length(m):
A:0.5 / B:3.0

Termination:
1:Flying Lead

Scale Type:
1:Steel tape,11ppm/K❶
4:Nickel, 14ppm/K❷

❶ ATOM2 only Steel.
❷ ABI-21 only Nickel.

AMZ Series
Vertical Z Module

- Compact design
- Direct drive technology
- High response
- High precision optical encoder
- Stackable configuration

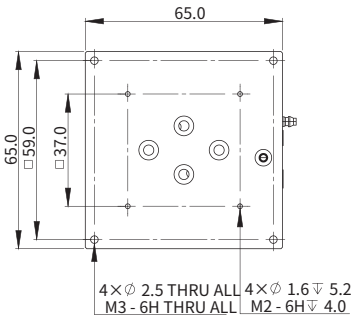
Akribis systems

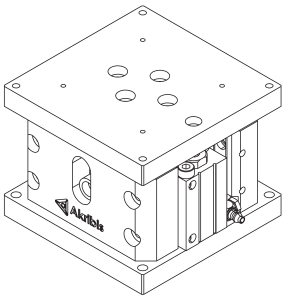
AMZ65

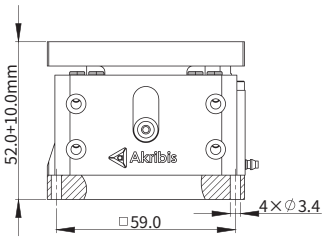
Specifications	Unit	Value
Stroke	mm	8
Continuous Force	N	7.35
Peak Force	N	29.4
Resolution	μm	ABI22: SINCOS
		ABI21: 0.5 / 0.2
		AT2: SINCOS
		AT2:0.2 / 0.05
Bidirectional Repeatability	μm	ABI22 SINCOS: ±0.2 (4096X)
		AB21 0.5 / 0.2 : ±1.0
		AT2 0.2 / 0.05 : ±0.5
		AT2 SINCOS: ±0.1 (4096X)
Straightness	μm	±1.5
Flatness	μm	±1.5
Rated Payload[1]	kg	0.5
Moving Mass[2]	kg	0.26
Total Mass[2]	kg	0.60
Max. Payload	kg	7.0
Max. Roll Moment Load	Nm	7.4
Max. Pitch Moment Load	Nm	4.0
Max. Yaw Moment Load	Nm	4.8

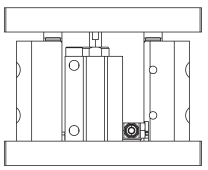
[1] The rated load is based on the load in which the acceleration of the mass is at least 1G
[2] The moving mass and total mass do not include the rated payload.

Dimension Drawing









Ordering Part Numbering

AMZ1 T E0A 1 A 1

Model:
AMZ1:AMZ65-8

Cover Type:
T:Black Anodized

Encoder Type:
E0A:ABI-22 (SINCOS)
E0F:ABI-21 (0.5um)
E0G:ABI-21 (0.2um)
ECA:ATOM2 (SINCOS)
ECG:ATOM2 (0.2um)
ECJ:ATOM2 (0.05um)

Termination:
1:Flying Lead

Cable Length(m):
A:0.5 / B:3.0

Scale Type:
1:Steel tape,11ppm/K[1]
2:Glass G8 Soda Lime, 8ppm/K[2]

[1] ABI-21 only steel.
[2] ATOM2 only glass.

AMS Series Linear Module

- Low profile
- Direct drive technology
- High response
- High precision optical encoder
- Stackable configuration

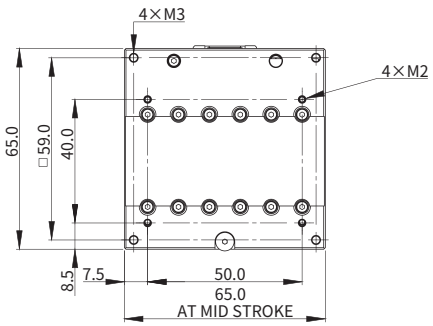
Akribis systems

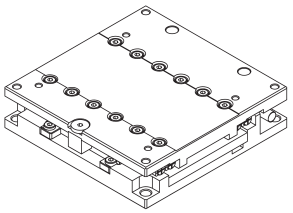
AMS65X

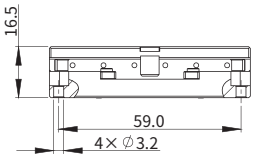
Specifications	Unit	Value
Stroke	mm	15
Continuous Force	N	4.6
Peak Force	N	8.4
Resolution	μm	ABI22: SINCOS
		ABI21: 0.5 / 0.2
		AT2: SINCOS
		AT2:0.2 / 0.05
Bidirectional Repeatability	μm	ABI22 SINCOS: ±0.4 (4096X)
		AB21 0.5 / 0.2 : ±1.0
		AT2 0.2 / 0.05 : ±0.5
		AT2 SINCOS: ±0.3 (4096X)
Straightness	μm	±1.5
Flatness	μm	±1.5
Rated Payload❶	kg	0.3
Moving Mass❷	kg	0.18
Total Mass❷	kg	0.42
Max. Payload	kg	6.0
Max. Roll Moment Load	Nm	1.6
Max. Pitch Moment Load	Nm	2.0
Max. Yaw Moment Load	Nm	2.4

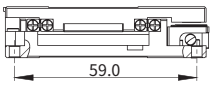
❶ The rated load is based on the load in which the acceleration of the mass is at least 1G.
❷ The moving mass and total mass do not include the rated payload.

Dimension Drawing









Ordering Part Numbering

AMS1 E E0A 1 A 1 A

Model:
AMS1:AMS65X-15

Cover Type:
E:EN

Encoder Type:
E0A:ABI-22 (SINCOS)
E0F:ABI-21 (0.5um)
E0G:ABI-21 (0.2um)
ECA:ATOM2 (SINCOS)
ECG:ATOM2 (0.2um)
ECJ:ATOM2 (0.05um)

❶ ABI-21 only steel.
❷ ATOM2 only glass.

Guide Option:
A:Anti-creep cross roller
B:Non anti-creep cross roller

Termination:
1:Flying Lead

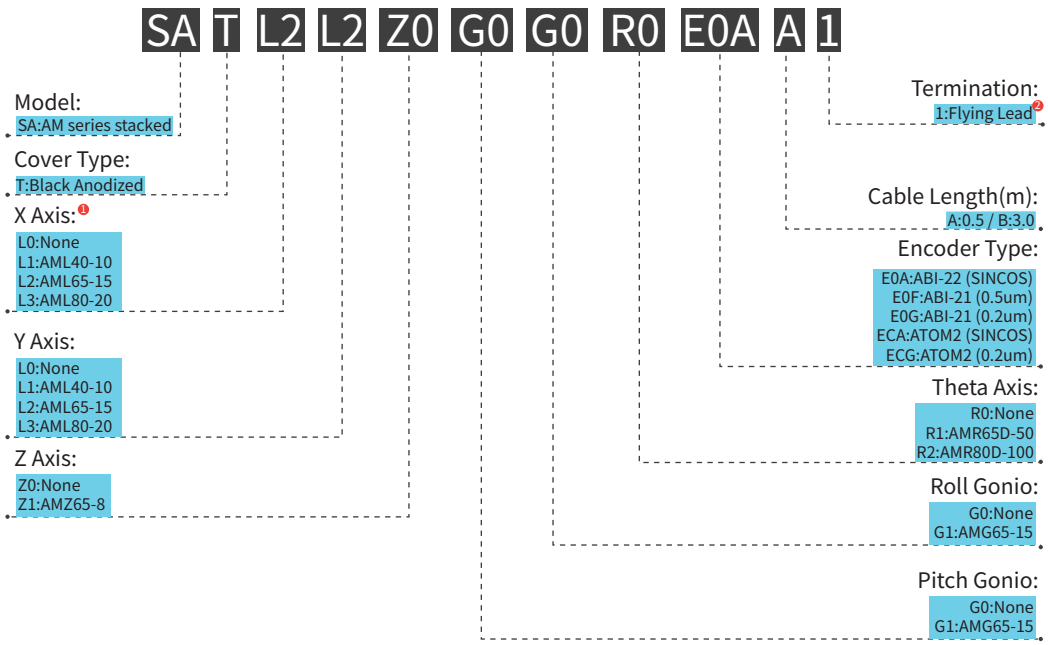
Cable Length(m):
A:0.5 / B:3.0

Scale Type:
1:Steel tape,11ppm/K❶
2:Glass G8 Soda Lime, 8ppm/K❷

AM Series
Stacked

In AM series, the stacked option is available. Each AM module can be stacked directly with each other. The flexible modular design provides possible solution to different applications. We provide up to 6 axis stacked option. If needs customization, please contact us.

Ordering Part Numbering



❶ The upper axis' platform size should be smaller than or equal to lower axis'. (for example, AML65 can be stacked on AML65 or AML80).
❷ For motor, encoder's is DB conecto.

Controller

AGD200

AGD301

AME3

AGD200

AGD200 has the same control capability as AGC300. It comes with 2 integrated amplifiers, allowing it driving 2 motors directly and controlling a third axis through an external drive. It can drive any motors, like steppers, voice coils, brushed or brushless motors, including direct-drive linear and rotary motors. While designed to be a very compact integrated drive, it supports a very wide range of bus-voltage from 12Vdc to 90Vdc and each axis can supply up to 5.6Arms continuous current and 11.2Arms peak current concurrently. It is suitable to drive very small voice coils or brushed motors with sub-millihenry inductance, it can also drive 2 big motors with 1kW peak power each.

Equipped with a luxurious number of I/Os: 11 digital inputs, 4 digital outputs, 4 analog inputs, 4 analog outputs and 8 differential Inputs, as well as a comprehensive support for multi-tasking user programs, this product is fully capable of handling standalone applications. This product is typically used in 3D printers, security surveillance camera systems, mobile robots and factory automations.

AGD200 General Specifications

Description	AGD200-ET-2D01	AGD200-ET-2D02	AGD200-ET-2D05
Number Of Axes	2	2	2
Power Supply	12-90 VDC	12-90 VDC	12-90 VDC
Continuous Current	1.4 Arms	2.8 Arms	5.6 Arms
Peak Current	2.8 Arms	5.6 Arms	11.2 Arms
Isolated Inputs [1]	11	11	11
Isolated Outputs [2]	4	4	4
Differential Inputs	8	8	8
Differential Outputs	4	4	4
Analog Inputs	4 (12-bit)	4 (12-bit)	4 (12-bit)
Analog Outputs	4 (16-bit)	4 (16-bit)	4 (16-bit)
Brake Output [3]	2	2	2
Encoder Inputs	3 ports (all ports are software configurable as AquadB inputs, first 2 encoder ports are configurable as Sin/Cos 1Vpp, Absolute Biss-C or Absolute EnDat2.2)		
Motor Types	Voice Coil, Brushed/Brushless Linear or Rotary Motor, Steppers (Open and Close Loop, micro-stepping)		
Communication	Ethernet, RS232, CAN, USB, RS485		
Control Sampling Rate	16 KHz		
Operational Modes	Position, Velocity, Force or Current mode		
Motion Modes	Point to Point, Repetitive, Jog, ECAM, Gearing, Joystick, Handwheel, Pulse & Direction, Gantry, CNC sequential contour (G-codes). Support on-the-fly switching between Position, Velocity, Force and Current modes.		
Features	Encoder Error Mapping: 1D, 2D or 3D, Auto-Loop Shaping (auto-tuning), Frequency Domain System Identification and Modelling, Flexible Gain Scheduling, Position Lock and Event, Ultra-Precision Mode (UPM), Input-Shaping, Profile-Shaping, Machine Vibration Control, Spring and Friction Compensation, Complex-Kinematics (robot kinematics), etc.		
Programming Interfaces	Standalone User Program – script-based program executed in the controller(up to 8 multi-threading programs with priority setting for each thread). Windows .Net API – available in NuGet Manager. Standard TCP/IP communication – ASCII string commands or binary CAN format.		

[1] Digital isolated input can be configured as NPN or PNP, in groups of 3 or 4.
[2] Digital isolated output can sink up to 500mA or source up to 300mA.
[3] Brake output up to 48VDC, 2A each.

AGD Series – Integrated Drives

AGD301

AGD301 has the same control capabilities as AGC301, but it comes with 3 integrated amplifiers. It can drive up to 3 voice coils, brushed or brushless motors, allowing very flexible configuration of the motors in the multi-axis system. It supports a very wide range of bus-voltage from 12Vdc to 90Vdc (120Vdc in some variants) and each axis can supply up to 5.6Arms continuous current and 11.2Arms peak current concurrently. It is suitable to drive from small voice coil or brushed motors at 12Vdc to 3 big motors with 1kW peak power each.

Equipped with a luxurious number of I/Os, this product is fully capable of handling standalone applications. This product is typically used in 3D printers, security surveillance camera systems, mobile robots and factory automations.

AGD301 General Specifications

Description	AGD301-ET-2D05	AGD301-ET-2D09-001
Number Of Axes	3	3
Power Supply	12-90 VDC	12-90 VDC
Continuous Current	5.6 Arms per axis	9 Arms per axis, limited to 20 Arms for 3 axes in total
Peak Current	11.2 Arms per axis	11.2 Arms per axis
Isolated Inputs [1]	27	27
Isolated Outputs [2]	17	17
Bi-Directional Differential I/Os (RS422)	8	8
Analog Inputs [3]	4 (12-bit)	4 (16-bit)
Analog Outputs	4 (16-bit)	4 (16-bit)
PT100/PT1000 Inputs [4]	3	3
Brake Output [5]	3	3
Regeneration Output	1	1
Encoder Inputs	3 Ports (all ports are software configurable as AquadB, Sin/Cos 1Vpp, Absolute Biss-C or Absolute EnDat2.2)	
Motor Types	Voice Coil, Brushed/Brushless Linear or Rotary Motor, Steppers (Open and Close Loop, micro-stepping)	
Communication	Ethernet, RS232, CAN, USB, RS485	
Control Sampling Rate	16 KHz	
Operational Modes	Position, Velocity, Force or Current mode	
Motion Modes	Point to Point, Repetitive, Jog, ECAM, Gearing, Joystick, Handwheel, Pulse & Direction, Gantry, CNC sequential contour (G-codes). Support on-the-fly switching between Position, Velocity, Force and Current modes.	
Features	Encoder Error Mapping, Auto-Loop Shaping (auto-tuning), Frequency Domain System Identification and Modelling, Flexible Gain Scheduling, Position Lock and Event, Ultra-Precision Mode (UPM), Input-Shaping, Profile-Shaping, Machine Vibration Control, Spring and Friction Compensation, etc.	
Programming Interfaces	Standalone User Program – script-based program executed in the controller (up to 8 multi-threading programs with priority setting for each thread). Windows .Net API – available in NuGet Manager. Standard TCP/IP communication – ASCII string commands or binary CAN format.	

1. Digital isolated input can be configured as NPN or PNP, in groups of 3 or 4.
2. Digital isolated output can sink up to 500mA or source up to 300mA.
3. 16-bit analog inputs available in some product options. Consult your sales channel.
4. Hardware switch to select between PT100 and PT1000.
5. Brake output up to 48VDC, 3A each.

AME3-90V-0510

AME3-90V-0510 (Akribis 3-axis Module Ethercat Driver) is 3-axis, high performance, DC powered drive . This product allows position, velocity and torque control using EtherCAT.

Each of the axis support cyclic synchronous position/velocity/torque, profile position velocity, Interpolated position mode (PVT) and homing. In micro stepping, mode, stepper command pulses and master encoder for camming or gearing is supported.

This product features with 19x High speed inputs, 3x MOSFET outputs, 6x CMOS High speed outputs, where the 3x MOSFETS outputs are 24V compatible can power motor brakes.

General Specifications

Description	AME3-90V-0510	
Vbus Voltage		+14 V to +90 V
VAux Voltage		+21.6V to 26.4V, 12.3W max with all encoders @ 500mA
Input Power Current Consumption (peak)		15 A (1 second)
Input Power Current Consumption (continuous)		30 A
Output Power (each axis)	Peak Current	10 A
	Peak Time	1 Second
	Continuous Current	5 A
Encoder Feedback Interface Support		Analog 1Vpp (incremental encoder)
		Digital A quad B (incremental encoder)
		EnDat (absolute encoder)
		BISS C (absolute encoder)
		SSI (absolute encoder)
		Hall Sensor
EtherCAT Interface		100BASE-TX cabling system
		2x RJ45 (EtherCAT Network port)
Control I/O Interface		19x HS Digital Input (*High speed)
		3x MOSFET Digital Output
		6x CMOS HS Digital Output (*High speed)
		3x Differential Analog Input (12-bit)
Operating Temperature		0°C to 45°C

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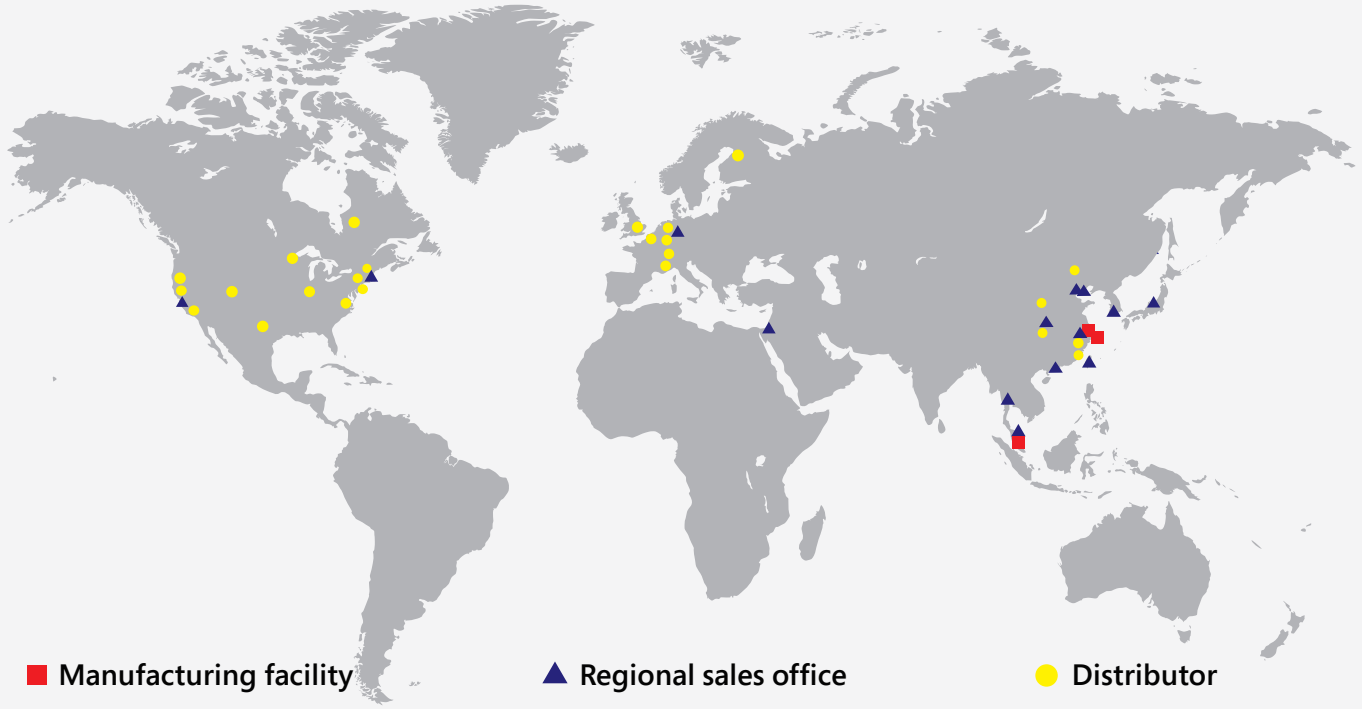
Akribis Worldwide Offices and Distribution Network



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