



# VRG-I SERIES

- ▶ Direct drive, zero backlash linear motor
- ▶ Two configurations H (dual motor dual encoder), T (single motor single encoder)
- ▶ High peak and fast continuous thrust response time
- ▶ Short settling time and high efficiency

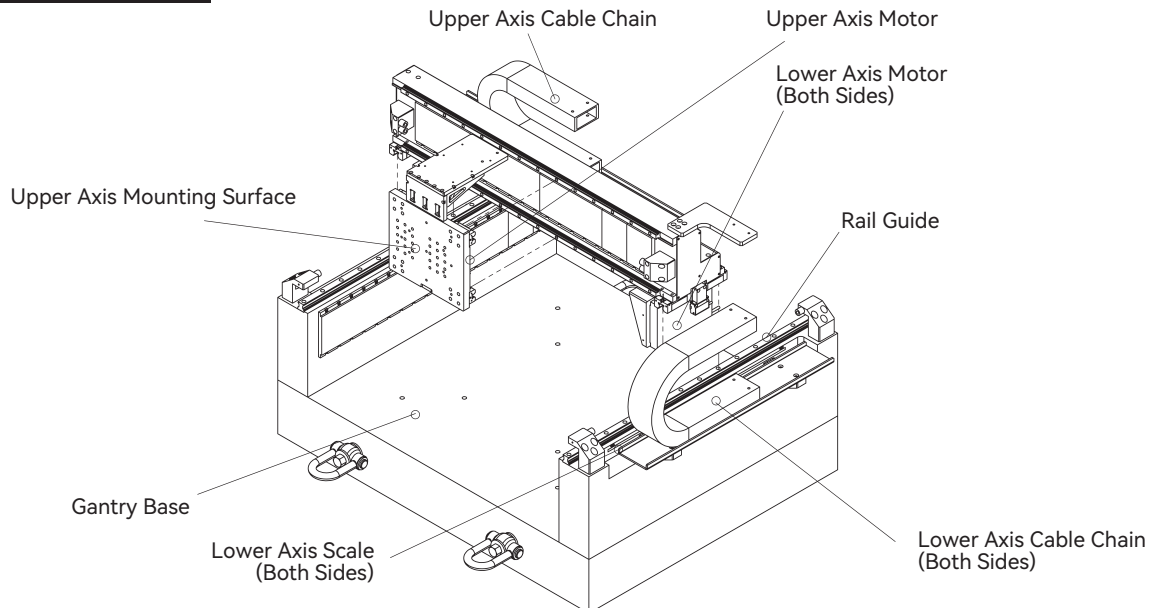
## VRG-I

Motor Specifications		Unit	VRG1-H- L300N-U300N	VRG1-H- L400N-U400N	VRG1-H- L500N-U500N	VRG1-H- L600N-U600N
Motor Model	Lower	-	AJM100-B4×2			
	Upper	-	AJM100-B4			
Continuous Force (NC) @100°C	Lower	N	893.6			
	Upper	N	446.8			
Peak Force	Lower	N	1409.1×2			
	Upper	N	1409.1			
Force Constant ±10%		N/Arms	97.1			
Back EMF Constant ±10%		Vpeak/(m/s)	79.3			
Resistance (L-L) @25°C ±10%		Ω	5.2			
Inductance (L-L) ±30%		mH	23.6			
Continuous Current (NC) @100°C		Arms	4.6			
Peak Current		Arms	18.0			
Max. Bus Voltage		Vdc	600			
Magnetic Period		mm	20			
Mechanical Specifications		Unit	VRG1-H- L300N-U300N	VRG1-H- L400N-U400N	VRG1-H- L500N-U500N	VRG1-H- L600N-U600N
Effective Stroke		mm	300×300	400×400	500×500	600×600
Maximum Linear Acceleration		m/s <sup>2</sup>	3			
Maximum Travel Speed		m/s	2			
Encoder Resolution		μm	0.1/0.5/SINCOS			
Repeatability		μm	±3			
Orthogonality		arcsec	10			
Nominal System Weight (Base not included)		kg	103	116	131	148
No-load Moving Mass	Lower	kg	41.0	45.0	48.0	52.0
	Upper	kg	7.0			
Material		-	Aluminum, Granite Optional			
Finish		-	Black Anodized			

- ① Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment.
  - ② Resistance is measured by DC current with standard 0.5m lead wire.
  - ③ Inductance is measured by current frequency of 1 kHz.
- The contents of datasheet are subject to change without prior notice.

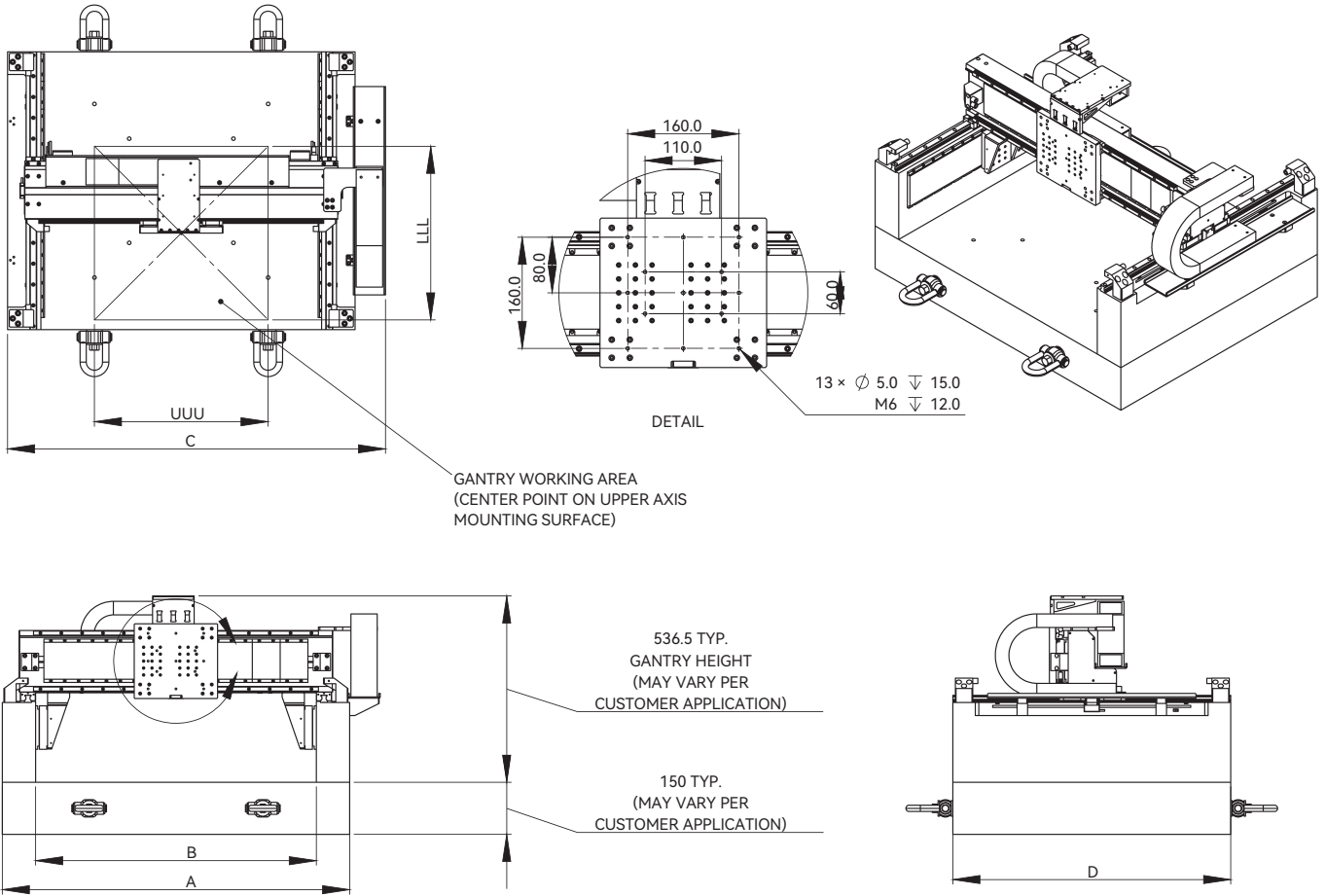
- Values of velocity, acceleration and no-load moving mass may vary based on customer applications and requirements.
- All specifications listed in the table are based on H-gantry design (dual motor, dual encoder). Other configurations T-gantry (single motor, single encoder) will have limited performance parameters.
- Products can be customized to meet specific working environment, please contact [cust-service@akribis-sys.com](mailto:cust-service@akribis-sys.com).

## Exploded View



## Dimensional Drawing

Introduction | String Guide | Q&A | Motion Control of Gantry Stages | Dual Guide Modules | Cross Roller Modules | Voice Coil Modules | Miniature Modules | Picker Modules | Air Bearing Modules | Stacked Stages | Gantry Stages | Water Stages



"LLL" LOWER-AXIS NOMINAL TRAVEL (mm)	"UUU" UPPER-AXIS NOMINAL TRAVEL (mm)	"A" GANTRY WIDTH (mm)	"B" UPPER-AXIS GANTRY SPACING (mm)	"C" SYSTEM WIDTH (mm)	"D" SYSTEM DEPTH (mm)
300	300	800	608	888	600
400	400	900	708	988	700
500	500	1000	808	1088	800
600	600	1100	908	1188	900

**Note:**

- Other nominal travel lengths and different nominal travel combinations are available.
- "A", "B", "C", "D" dimensions are shown for reference only and may vary per customer application.
- Electrical and mechanical limits included in gantry system.
- Dimensions in millimeters.

## Ordering Part Number (OPN)

**VRG1-H0202-J01J01AD01-A1**

Model:

VRG1

Gantry Config:<sup>1</sup>

H: H-Gantry  
T: T-Gantry

Lower Axis Stroke:<sup>2</sup>

02: 200mm  
03: 300mm  
04: 400mm  
05: 500mm  
06: 600mm  
07: 700mm  
08: 800mm

Upper Axis Stroke:<sup>2</sup>

02: 200mm  
03: 300mm  
04: 400mm  
05: 500mm  
06: 600mm  
07: 700mm  
08: 800mm

Lower Axis Motor:

J01: AJM30-B2-J (Peak Force: 214.7N)  
J02: AJM30-B2-K (Peak Force: 214.7N)  
J03: AJM30-B4-J (Peak Force: 429.4N)  
J04: AJM30-B4-K (Peak Force: 429.4N)  
J15: AJM50-B2-J (Peak Force: 369.0N)  
J16: AJM50-B2-K (Peak Force: 369.0N)  
J17: AJM50-B4-J (Peak Force: 738.1N)  
J18: AJM50-B4-K (Peak Force: 738.1N)  
J30: AJM80-B2-J (Peak Force: 550.2N)  
J31: AJM80-B2-K (Peak Force: 550.2N)  
J32: AJM80-B4-J (Peak Force: 1100.4N)  
J33: AJM80-B4-K (Peak Force: 1100.4N)  
J45: AJM100-B2-J (Peak Force: 704.5N)  
J46: AJM100-B2-K (Peak Force: 704.5N)  
J47: AJM100-B4-J (Peak Force: 1409.1N)  
J48: AJM100-B4-K (Peak Force: 1409.1N)

Termination:

1: Motor: Flying Leads/  
Encoder: DSUB 15/Hall: DSUB 9  
2: Motor: DSUB 9W4/  
Encoder: DSUB 15/Hall: DSUB 9

Cable Length:

A: 0.5m  
B: 3.0m

Scale Type:

1: Steel Tape, 11ppm/K

Encoder Type:

AD0: ABA-20, BiSS C (50nm)  
A71: ABA-50, Mitsubishi 2-Wires (50nm)  
A73: ABA-50, EnDat 2.2 (50nm)  
ABA: ABI-51X, SINCOS (1Vpp)  
ABF: ABI-51X, TTL (0.5µm)  
ABH: ABI-51X, TTL (0.1µm)  
R2F: Quantic, TTL (0.5µm)  
R2H: Quantic, TTL (0.1µm)

Upper Axis Motor:

J01: AJM30-B2-J (Peak Force: 214.7N)  
J02: AJM30-B2-K (Peak Force: 214.7N)  
J03: AJM30-B4-J (Peak Force: 429.4N)  
J04: AJM30-B4-K (Peak Force: 429.4N)  
J15: AJM50-B2-J (Peak Force: 369.0N)  
J16: AJM50-B2-K (Peak Force: 369.0N)  
J17: AJM50-B4-J (Peak Force: 738.1N)  
J18: AJM50-B4-K (Peak Force: 738.1N)  
J30: AJM80-B2-J (Peak Force: 550.2N)  
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J45: AJM100-B2-J (Peak Force: 704.5N)  
J46: AJM100-B2-K (Peak Force: 704.5N)  
J47: AJM100-B4-J (Peak Force: 1409.1N)  
J48: AJM100-B4-K (Peak Force: 1409.1N)

Note:

<sup>1</sup> All Gantries are Black Anodized. H= Dual motor dual encoder, T= Single motor single encoder.

<sup>2</sup> Standard stroke in intervals of 100mm only, for more options, customization is required.

★ Products can be customized to meet specific working environment, please contact cust-service@akribis-sys.com.