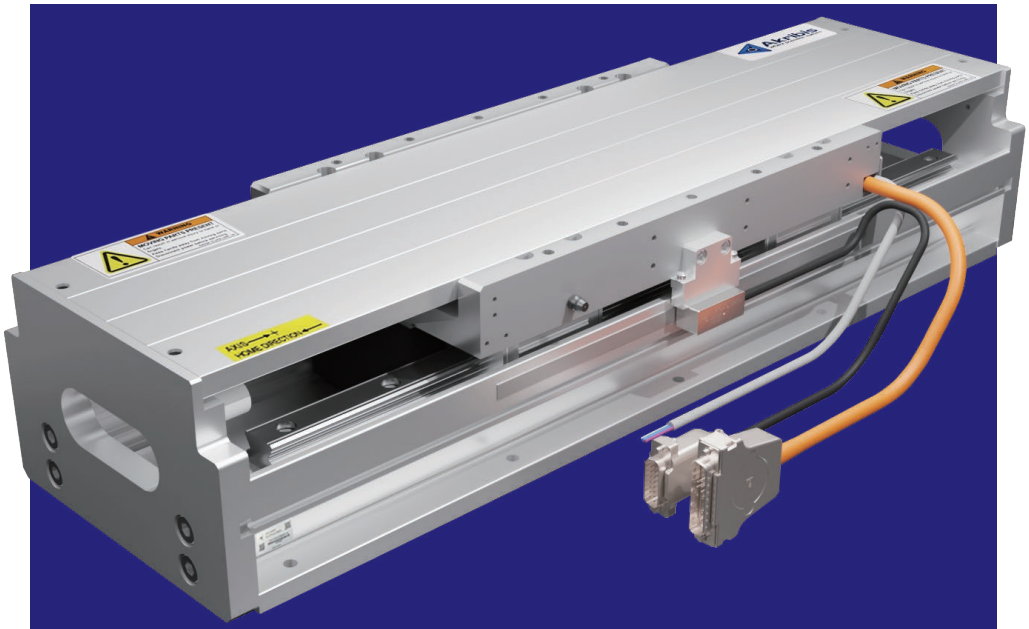


DGC SERIES

- Linear motor positioning system
- Short lead time
- High price-performance ratio
- Easy installation

EN-26.3.1

Introduction

Akribis' DGC series are compact linear motor positioning modules with dual linear guides and aluminum base.

Four sizes are available: DGC90, DGC130B, DGC175B and DGC235.

The DGC series are powered by AQM and AKM series iron-cored linear motors. The AQM motors are economical linear motors with a excellent price-performance ratio while the AKM motors maximize force density to satisfy aggressive positioning requirements.

The DGC series is optimally suited for rapid point-to-point rapid positioning applications requiring micron-level position repeatability.

Continuous Force F_{cn} = 60.8N~1445.3N
Peak Force F_{pk} = 149.2N~3221.1N

Features

- Economical dual guide linear motor stage
- Built-in flat type linear motors with iron core
- Stroke from 100mm to 1400mm, customizable
- Optional resolution of 0.05μm, 0.5μm or 1μm
- A variety of absolute and incremental feedback options available
- Aluminium profile base, fewer parts, economical configuration

Applications

Suitable for point to point micron level fast positioning, can meet 3m/s or even higher speed, accept customization.

For example: electronic semiconductors, photovoltaic and lithium batteries, glass and LCD panels, medical equipments, industrial printing machines, laser processing, precision assembly and other equipment and production lines, where high speed and high precision positioning is required for handling situations.

Dual Guide Modules Series	Linear Motor Series		Continuous Force (F_{cn}) ■ Peak Force (F_{pk}) Unit: N (100 / 300 / 500 / 1000 / 3000 / 5000)	Stroke (mm) ❶	Repeatability (μm)	Page
 DGC90	 AQM24	AQM24-B1	60.8 / 149.2	100 ~ 800	Optical scale up to ±2 Magnetic scale up to ±4	63
 DGC130B	 AKM30	AKM30-B1	108.4 / 241.6	100 ~ 1200		65
		AKM30-B2	216.8 / 483.2			66
		AKM30-B4	433.6 / 966.3			67
 DGC175B	 AKM50	AKM50-B1	180.7 / 402.6	100 ~ 1400		69
		AKM50-B2	361.3 / 805.3			70
		AKM50-B3-D67	542.0 / 1208.0			71
		AKM50-B4	722.6 / 1610.5			72
 DGC235	 AKM100	AKM100-B2	722.6 / 1610.5	100 ~ 1400		74
		AKM100-B3-D69	1084.0 / 2416.0			75
		AKM100-B4	1445.3 / 3221.1			76

Note:
❶ Longer stroke available upon request.
★ Products can be customized to meet specific working environments, please contact cust-service@akribis-sys.com.

DGC90 Series

Motor Specifications	Unit	Value
Motor	-	AQM24-B1
Continuous Force (NC) @100℃ ❶	N	60.8
Peak Force	N	149.2
Force Constant ±10%	N/Arms	24.3
Back EMF Constant ±10%	Vpeak/(m/s)	19.8
Resistance (L-L) @25℃ ±10% ❷	Ω	5.1
Inductance (L-L) ±40% ❸	mH	39.1
Continuous Current (NC) @100℃ ❶	Arms	2.5
Peak Current	Arms	9.0
Max. Bus Voltage	Vdc	600
Magnetic Period	mm	30
Mechanical Specifications	**Unit**	**Value**
Linear Guide Nominal Size	-	12
Resolution	μm	Magnetic scale: 1.0
		Optical scale: 0.5/0.05
Repeatability	μm	Magnetic scale: ±4
		Optical scale: ±2
Straightness	μm/mm	±7/300
Maximum Velocity	m/s	1.5
Maximum Bearing Load	N	640
Rated Payload ❹	kg	7
No-load Moving Mass	kg	1.7
Mounting Orientation	-	Horizontal or side orientation

❶ Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment.
❷ Resistance is measured by DC current with standard 0.5m lead wire.
❸ Inductance is measured by current frequency of 1 kHz.
❹ Rated payload based on 1.5m/s velocity and continuous force 100% duty. Module load capacity can be better based on actual condition, please contact sales engineer.
The contents of datasheet are subject to change without prior notice.

Ordering Part Number (OPN)

DGC90-S01-Q10A731-A1

Model:
DGC90

Cover Type:
S: Standard (Clear Anodized)

Effective Stroke: ❶
01: 100mm
02: 200mm
03: 300mm
04: 400mm
05: 500mm
06: 600mm
07: 700mm
08: 800mm

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
7: Magnetic Tape, 17ppm/K

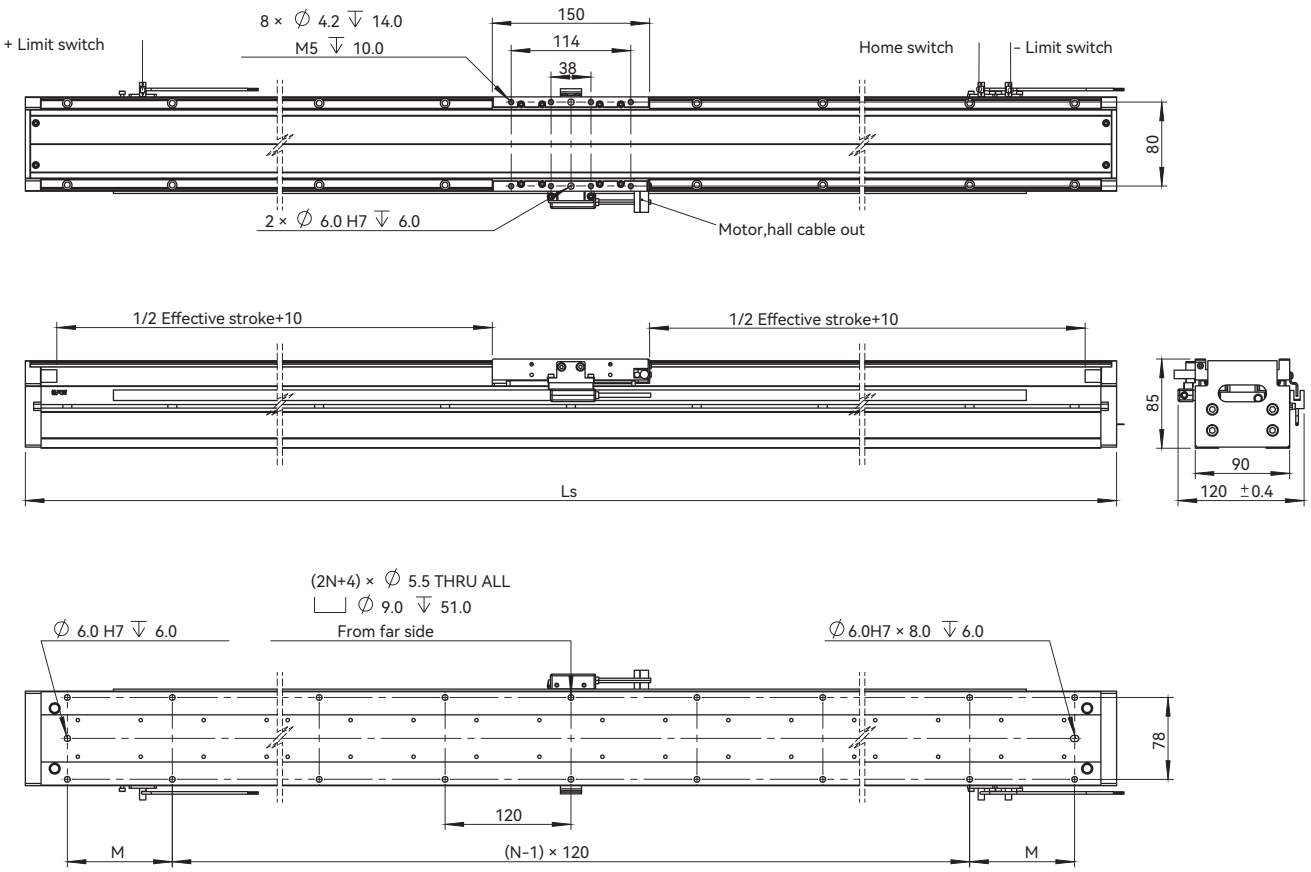
Encoder Type:
A73: ABA-50, EnDat 2.2 (50nm)
A0F: ABI-21 (0.5μm)
S1E: MAGNET (1.0μm)

Motor Type:
Q10: AQM24-B1-J (Peak Force: 149.2N)

Note:
❶ Standard stroke in intervals of 100mm only. For more options, please contact Akribis sales engineers.
★ Products can be customized to meet specific working environment, please contact cust-service@akribis-sys.com.

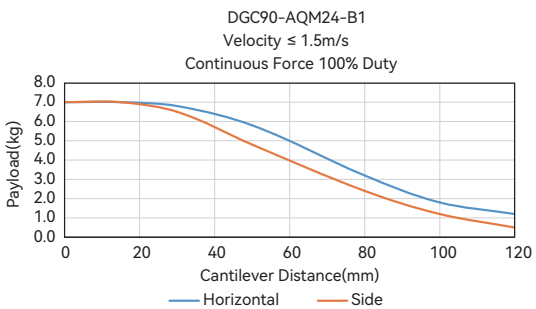
DGC90 Series

DGC90-AQM24-B1 Dimensional Drawing



Effective Stroke(mm)	Module Length, Ls (mm)	N	M (mm)	Module Mass (kg)
100★	340	1	130	6.5
200	430	3	55	7.5
300	530	3	105	8.5
400★	640	5	40	9.5
500	730	5	85	10.5
600	830	7	15	11.5
700	930	7	65	12.5
800	1030	7	115	13.5

Cantilever-Payload Curve



Note:

★For 100mm effective stroke module, total stroke is 130mm.
★For 400mm effective stroke module, total stroke is 430mm.

DGC130B Series

Motor Specifications	Unit	Value		
Motor	-	AKM30-B1	AKM30-B2	AKM30-B4
Continuous Force (NC) @100℃ ❶	N	108.4	216.8	433.6
Peak Force	N	241.6	483.2	966.3
Force Constant ±10%	N/Arms	23.0	45.9	45.9
Back EMF Constant ±10%	Vpeak/(m/s)	18.7	37.5	37.5
Resistance (L-L) @25℃ ±10% ❷	Ω	1.1	2.2	1.1
Inductance (L-L) ±30% ❸	mH	21.0	42.0	21.0
Continuous Current (NC) @100℃ ❶	Arms	4.8	4.8	9.6
Peak Current	Arms	14.4	14.4	28.8
Max. Bus Voltage	Vdc	600	600	600
Magnetic Period	mm	42	42	42
Mechanical Specifications	**Unit**	**Value**		
Linear Guide Nominal Size	-	15		
Resolution	μm	Magnetic scale: 1.0		
		Optical scale: 0.5/0.05		
Repeatability	μm	Magnetic scale: ±4		
		Optical scale: ±2		
Straightness	μm/mm	±7/300	±7/300	±7/300
Maximum Velocity	m/s	3	3	3
Maximum Bearing Load	N	1950	3120	4680
Rated Payload ❹	kg	15	25	40
No-load Moving Mass	kg	2.7	4.6	8.4
Mounting Orientation	-	Horizontal or side orientation		

❶ Measurement is taken at ambient temperature 25℃. Value depends on the thermal environment.
❷ Resistance is measured by DC current with standard 0.5m lead wire.
❸ Inductance is measured by current frequency of 1 kHz.
❹ Rated payload based on 2m/s velocity and continuous force 100% duty. Module load capacity can be better based on actual condition, please contact sales engineer.
The contents of datasheet are subject to change without prior notice.

Ordering Part Number (OPN)

DGC130B-S01-K01ABF1-A2

Model:
DGC130B

Cover Type:
S: Standard (Clear Anodized)

Effective Stroke: ❶
01: 100mm
02: 200mm
03: 300mm
04: 400mm
05: 500mm
06: 600mm
07: 700mm
08: 800mm
09: 900mm
10: 1000mm
11: 1100mm
12: 1200mm

Motor Type:
K01: AKM30-B1-J (Peak Force: 241.6N)
K03: AKM30-B2-J (Peak Force: 483.2N)
K05: AKM30-B4-J (Peak Force: 966.3N)

Encoder Type:
A73: ABA-50, EnDat 2.2 (50nm)
ABF: ABI51X (0.5μm)
S1E: MAGNET (1.0μm)

Scale Type:
1: Steel Tape, 11ppm/K
7: Magnetic Tape, 17ppm/K

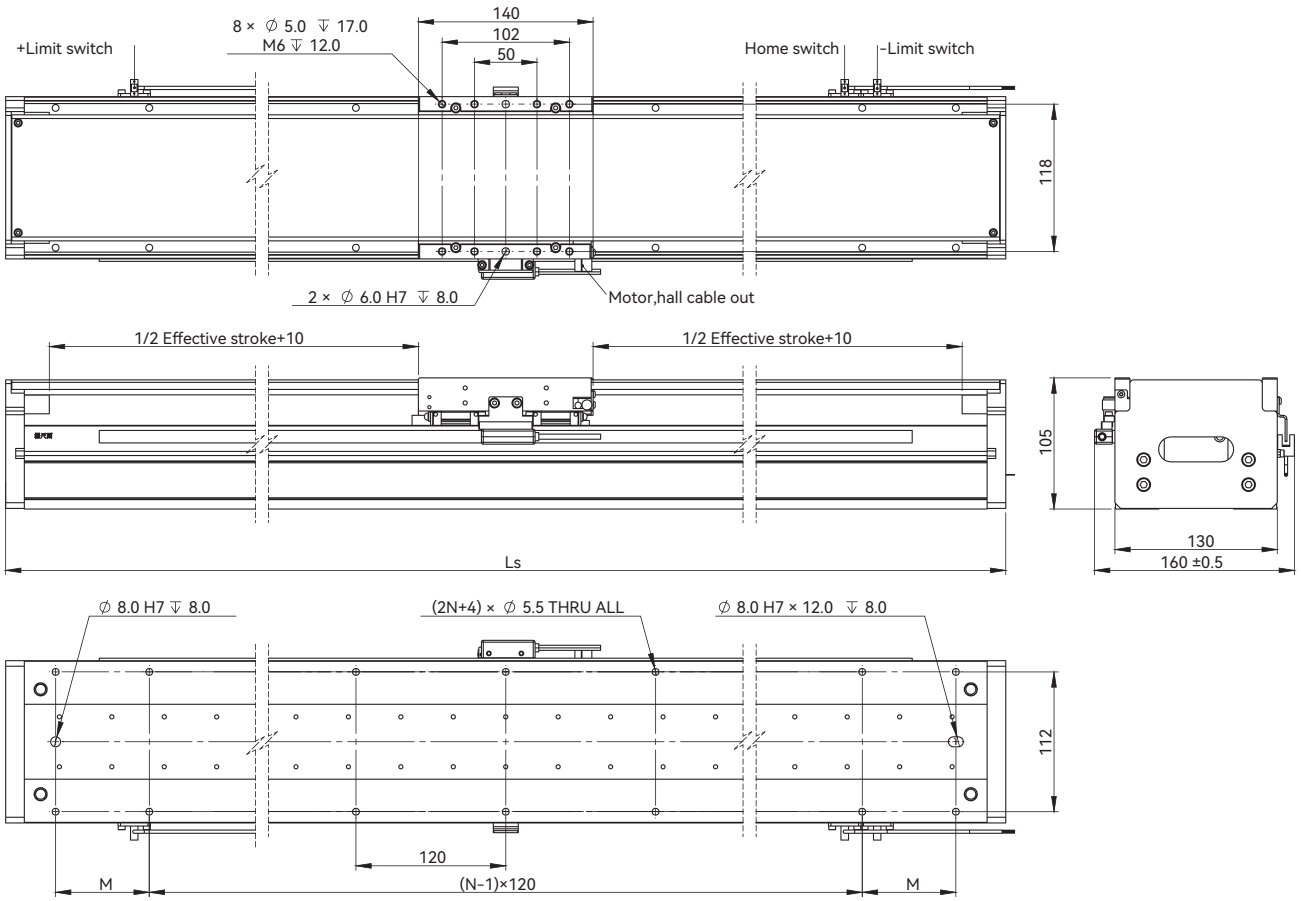
Cable Length:
A: 0.5m
B: 3.0m

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

Note:
❶ Standard stroke in intervals of 100mm only. For more options, please contact Akribis sales engineers.
★ Products can be customized to meet specific working environment, please contact cust-service@akribis-sys.com.

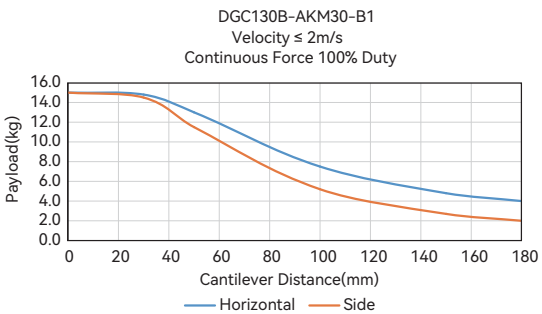
DGC130B Series

DGC130B-AKM30-B1 Dimensional Drawing



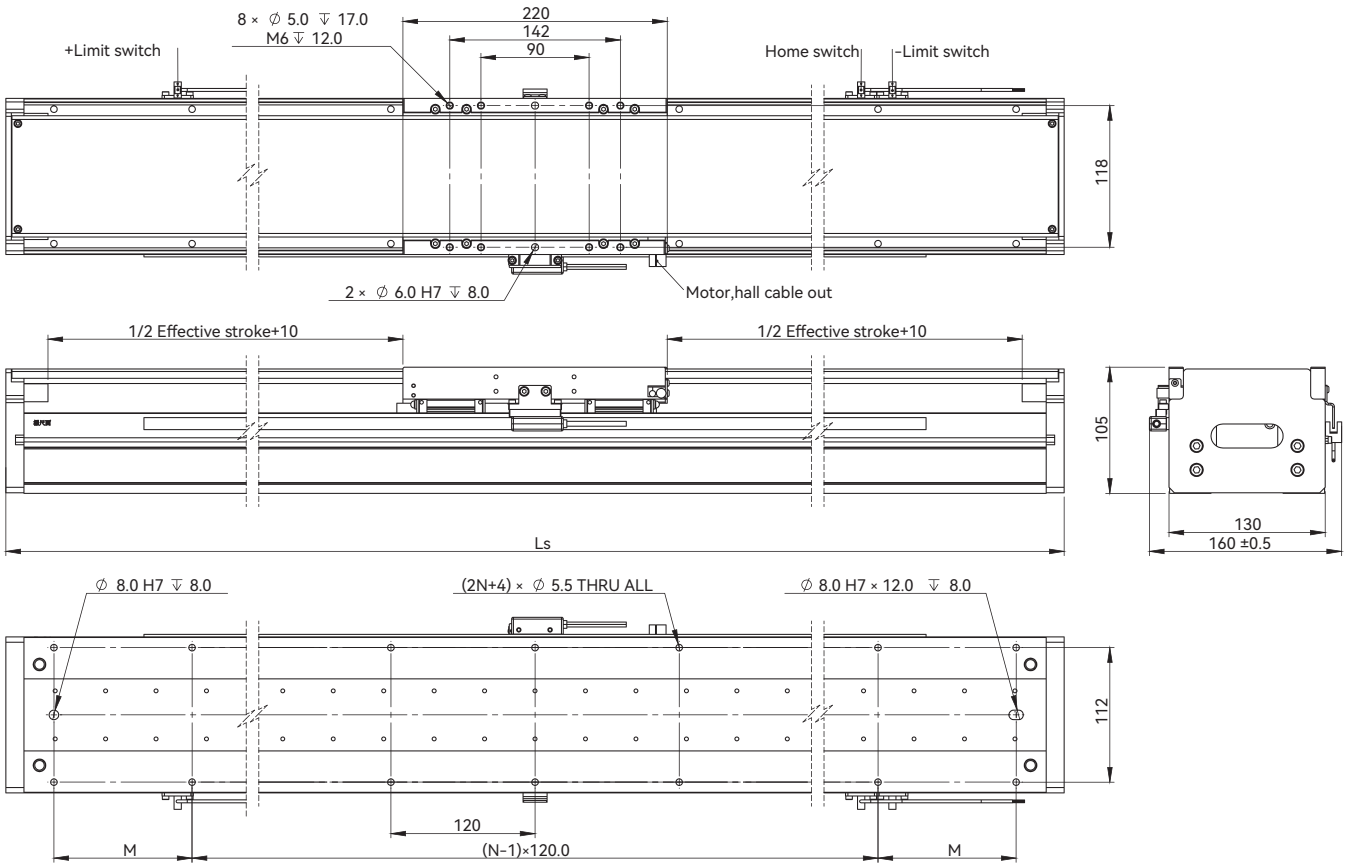
Effective Stroke(mm)	Module Length,Ls (mm)	N	M (mm)	Module Mass (kg)
100	330	1	125	8.3
200	430	3	55	9.8
300	530	3	105	11.4
400	630	5	35	13.0
500	730	5	85	14.6
600	830	7	15	16.3
700	930	7	65	17.8
800	1030	7	115	19.4
900	1130	9	45	21.0
1000	1230	9	95	22.6
1100	1330	11	25	24.1
1200	1430	11	75	25.8

Cantilever-Payload Curve



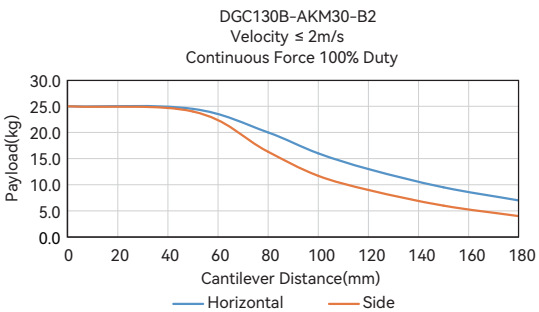
DGC130B Series

DGC130B-AKM30-B2 Dimensional Drawing



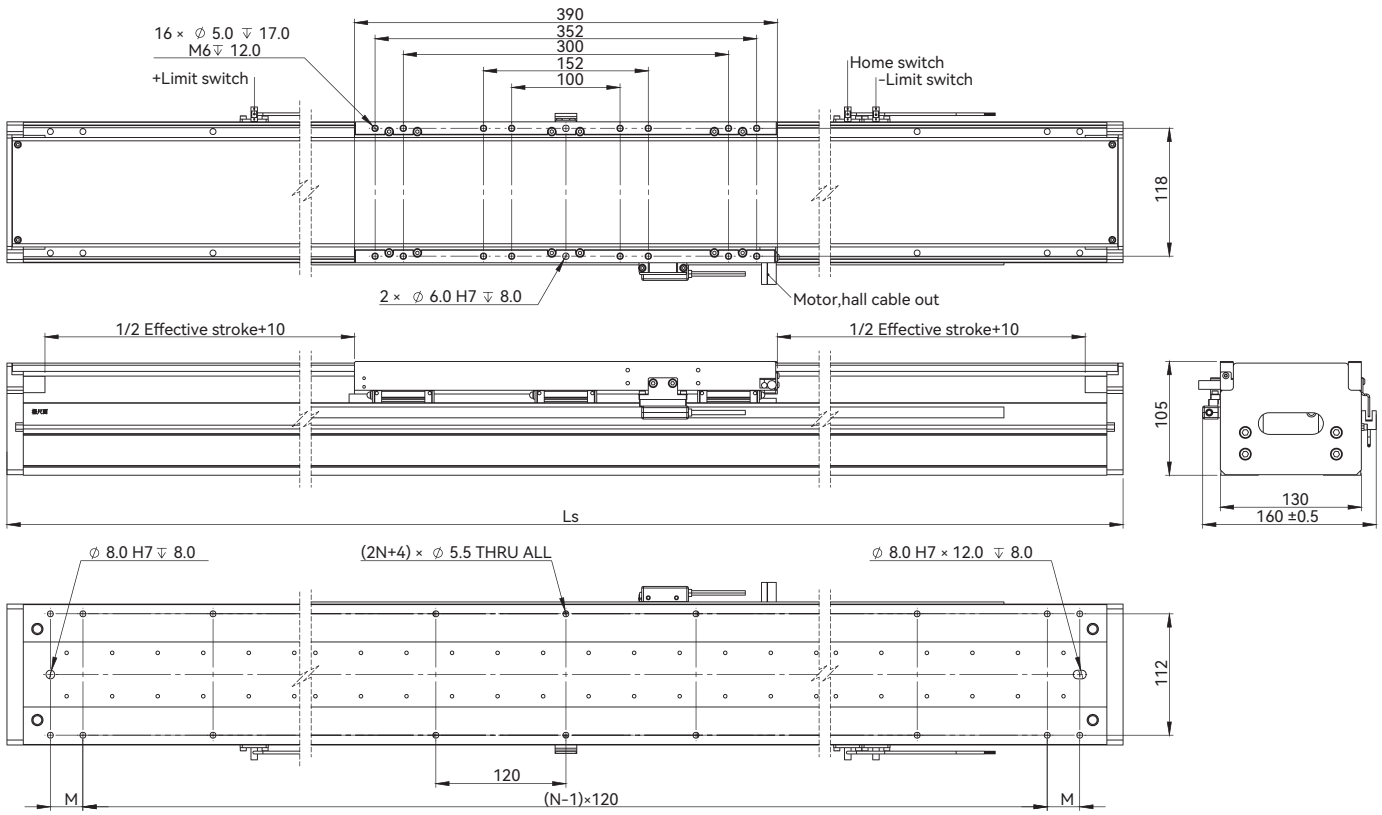
Effective Stroke(mm)	Module Length,Ls (mm)	N	M (mm)	Module Mass (kg)
100	410	3	45	11.4
200	510	3	95	13.0
300	610	5	25	14.5
400	710	5	75	16.2
500	810	5	125	17.8
600	910	7	55	19.3
700	1010	7	105	21.0
800	1110	9	35	22.5
900	1210	9	85	24.2
1000	1310	11	15	25.8
1100	1410	11	65	27.3
1200	1510	11	115	29.0

Cantilever-Payload Curve



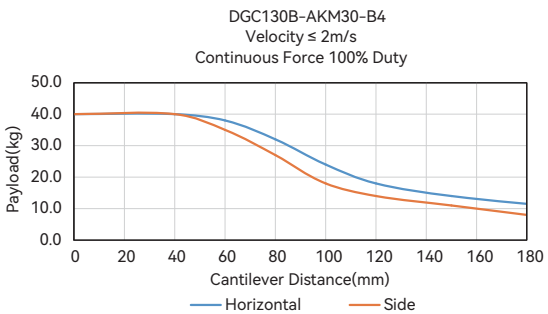
DGC130B Series

DGC130B-AKM30-B4 Dimensional Drawing



Effective Stroke (mm)	Module Length,Ls (mm)	N	M (mm)	Module Mass (kg)
100	580	3	130	17.9
200	680	5	60	19.5
300	780	5	110	21.0
400	880	7	40	22.7
500	980	7	90	24.2
600	1080	9	20	25.9
700	1180	9	70	27.5
800	1280	9	120	29.0
900	1380	11	50	30.7
1000	1480	11	100	32.2
1100	1580	13	30	33.8
1200	1680	13	80	35.5

Cantilever-Payload Curve



DGC175B Series

Motor Specifications	Unit	Value			
Motor	-	AKM50-B1	AKM50-B2	AKM50-B3-D67	AKM50-B4
Continuous Force (NC) @100℃ ❶	N	180.7	361.3	542.0	722.6
Peak Force	N	402.6	805.3	1208.0	1610.5
Force Constant ±10%	N/Arms	38.3	76.5	57.0	76.5
Back EMF Constant ±10%	Vpeak/(m/s)	31.2	62.5	47.0	62.5
Resistance (L-L) @25℃ ±10% ❷	Ω	1.4	2.8	1.1	1.4
Inductance (L-L) ±30% ❸	mH	31.8	63.6	23.9	31.8
Continuous Current (NC) @100℃ ❶	Arms	4.8	4.8	9.6	9.6
Peak Current	Arms	14.4	14.4	28.8	28.8
Max. Bus Voltage	Vdc	600	600	600	600
Magnetic Period	mm	42	42	42	42
Mechanical Specifications	**Unit**	**Value**			
Linear Guide Nominal Size	-	20			
Resolution	μm	Magnetic scale: 1.0			
		Optical scale: 0.5/0.05			
Repeatability	μm	Magnetic scale: ±4			
		Optical scale: ±2			
Straightness	μm/mm	±7/300	±7/300	±7/300	±7/300
Maximum Velocity	m/s	3	3	3	3
Maximum Bearing Load	N	2770	4050	4050	6050
Rated Payload ❹	kg	30	50	60	70
No-load Moving Mass	kg	4.0	7.0	9.6	12.5
Mounting Orientation	-	Horizontal orientation	Horizontal or side orientation		

❶ Measurement is taken at ambient temperature 25ºC. Value depends on the thermal environment.
❷ Resistance is measured by DC current with standard 0.5m lead wire.
❸ Inductance is measured by current frequency of 1 kHz.
❹ Rated payload based on 2m/s velocity and continuous force 100% duty. Module load capacity can be better based on actual condition, please contact sales engineer.
The contents of datasheet are subject to change without prior notice.

Ordering Part Number (OPN)

DGC175B-S01-K20ABF1-A2-CG-CLS

Model:
DGC175B

Cover Type:
S: Standard (Clear Anodized)

Effective Stroke: ❶
01: 100mm
02: 200mm
03: 300mm
04: 400mm
05: 500mm
06: 600mm
07: 700mm
08: 800mm
09: 900mm
10: 1000mm
11: 1100mm
12: 1200mm
13: 1300mm
14: 1400mm

Motor Type:
K20: AKM50-B1-J (Peak Force: 402.6N)
K22: AKM50-B2-J (Peak Force: 805.3N)
K26: AKM50-B3-J (Peak Force: 1208.0N)
K24: AKM50-B4-J (Peak Force: 1610.5N)

Lubrication Method:
Unmarked: Normal Lubrication
CLS: Centralized Lubrication

Mounting Orientation:
Unmarked: Horizontal Orientation
CG: Side Orientation

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

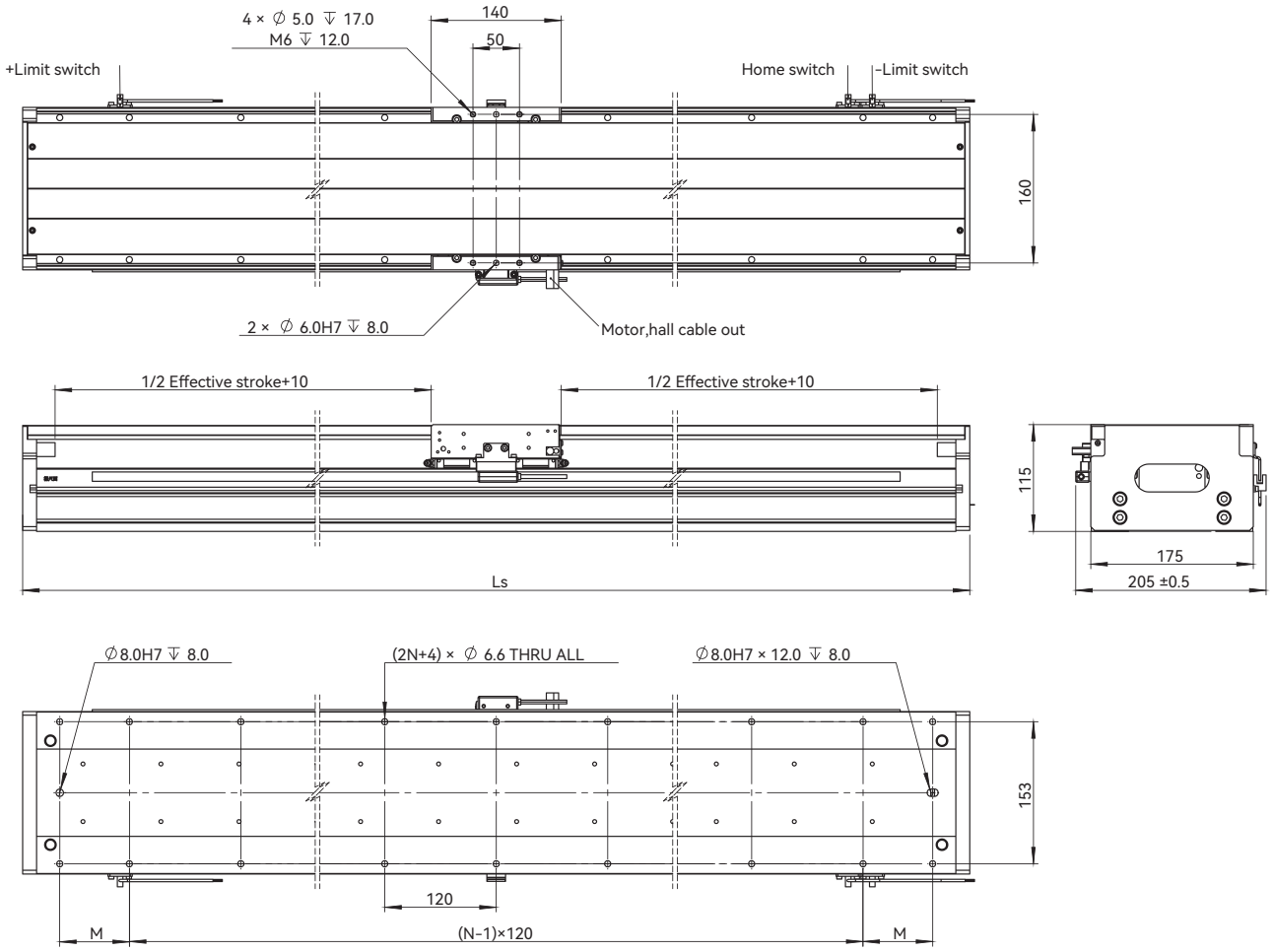
Scale Type:
1: Steel Tape, 11ppm/K
7: Magnetic Tape, 17ppm/K

Encoder Type:
A73: ABA-50, EnDat 2.2 (50nm)
ABF: ABI51X (0.5μm)
S1E: MAGNET(1.0μm)

Note:
❶ Standard stroke in intervals of 100mm only. For more options, please contact Akribis sales engineers.
★ Products can be customized to meet specific working environment, please contact cust-service@akribis-sys.com.

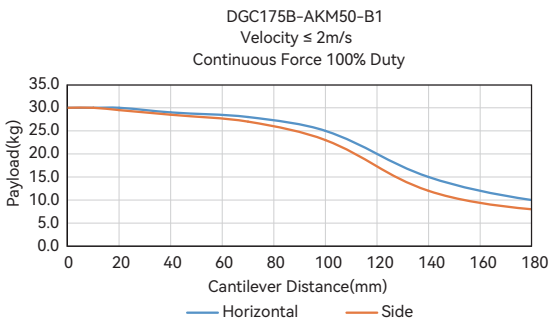
DGC175B Series

■ DGC175B-AKM50-B1 Dimensional Drawing



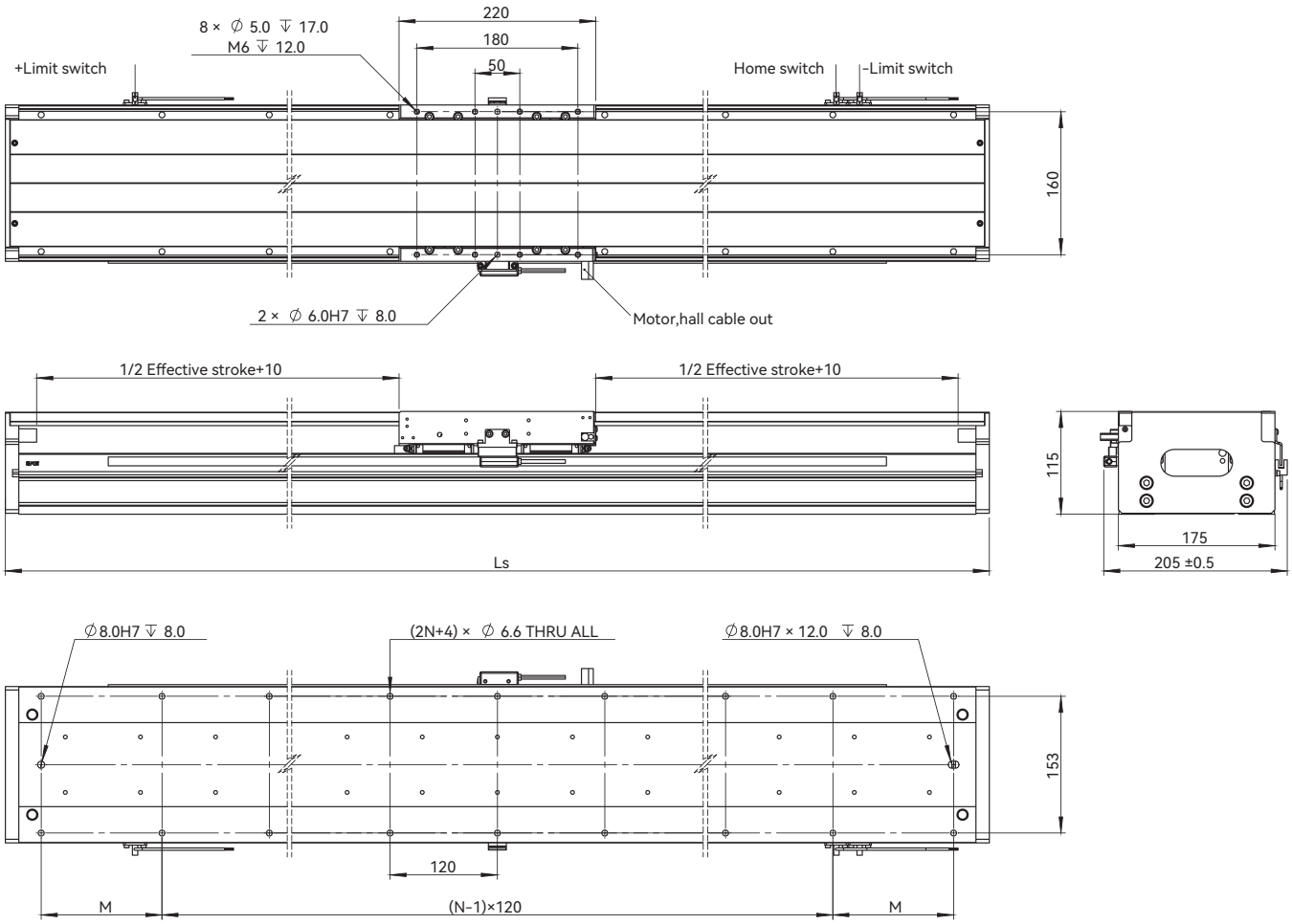
Effective Stroke(mm)	Module Length Ls (mm)	N	M (mm)	Module Mass (kg)
100	330	1	125	11.7
200	430	3	55	13.9
300	530	3	105	16.4
400	630	5	35	18.8
500	730	5	85	21.0
600	830	5	135	23.2
700	930	7	65	25.4
800	1030	7	115	27.8
900	1130	9	45	30.2
1000	1230	9	95	32.5
1100	1330	11	25	34.7
1200	1430	11	75	36.9
1300	1530	11	125	39.3
1400	1630	13	55	41.7

■ Cantilever-Payload Curve



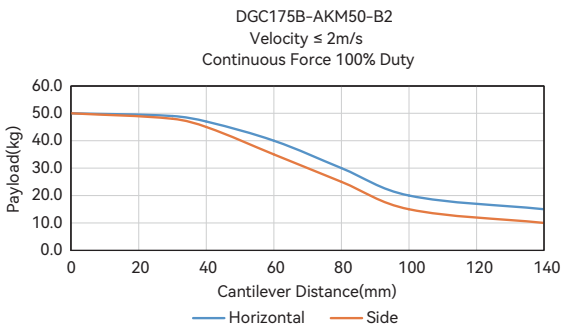
DGC175B Series

DGC175B-AKM50-B2 Dimensional Drawing



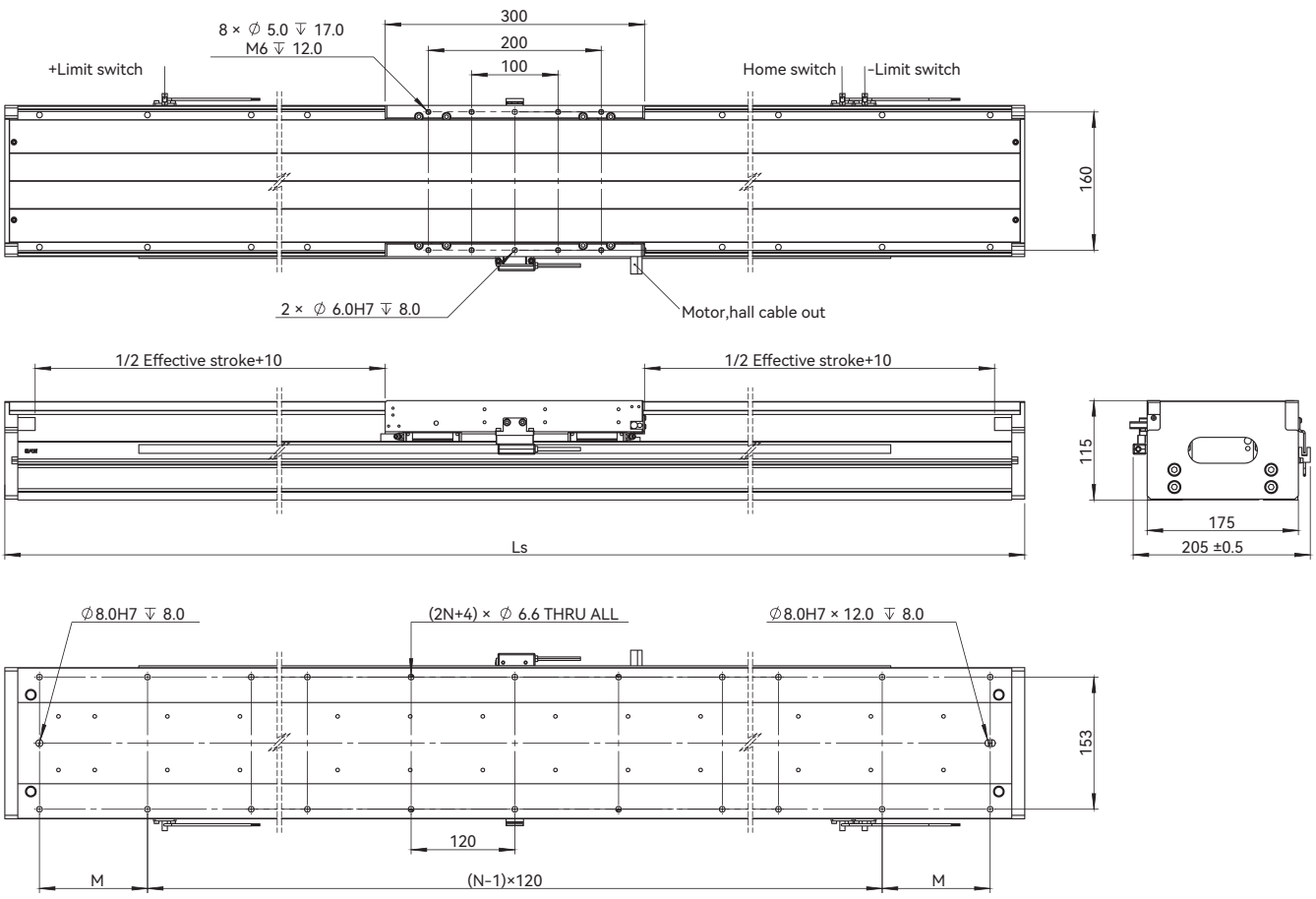
Effective Stroke(mm)	Module Length,Ls (mm)	N	M (mm)	Module Mass (kg)
100	410	3	45	16.6
200	510	3	95	18.8
300	610	5	25	21.2
400	710	5	75	23.6
500	810	5	125	25.9
600	910	7	55	28.1
700	1010	7	105	30.3
800	1110	9	35	32.7
900	1210	9	85	35.1
1000	1310	9	135	37.3
1100	1410	11	65	39.5
1200	1510	11	115	41.7
1300	1610	13	45	44.2
1400	1710	13	95	46.4

Cantilever-Payload Curve



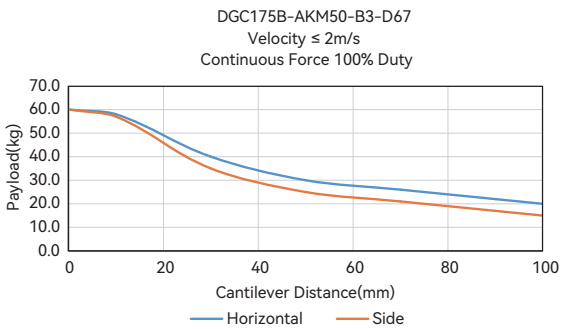
DGC175B Series

DGC175B-AKM50-B3-D67 Dimensional Drawing



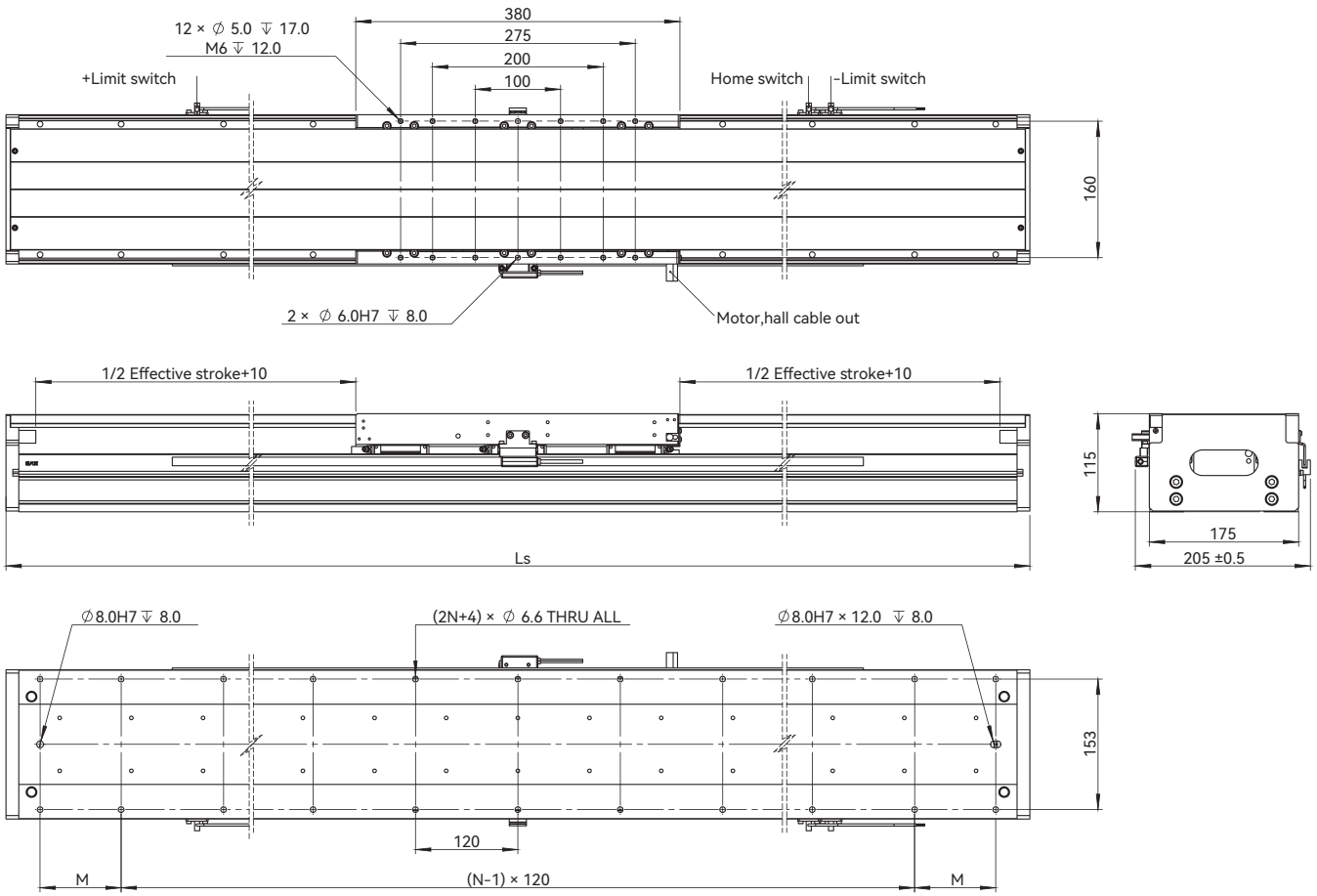
Effective Stroke(mm)	Module Length Ls (mm)	N	M (mm)	Module Mass (kg)
100	490	3	85	21.0
200	590	3	135	23.2
300	690	5	65	25.6
400	790	5	115	28.0
500	890	7	45	30.3
600	990	7	95	32.5
700	1090	9	25	34.7
800	1190	9	75	37.1
900	1290	9	125	39.3
1000	1390	11	55	41.7
1100	1490	11	105	43.9
1200	1590	13	35	46.1
1300	1690	13	85	48.6
1400	1790	13	135	50.8

Cantilever-Payload Curve



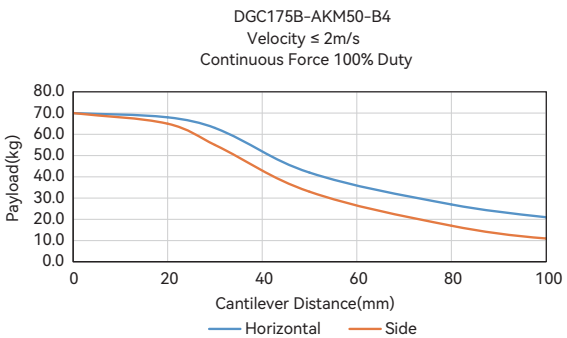
DGC175B Series

DGC175B-AKM50-B4 Dimensional Drawing



Effective Stroke(mm)	Module Length,Ls (mm)	N	M (mm)	Module Mass (kg)
100	570	3	125	25.8
200	670	5	55	28.0
300	770	5	105	30.5
400	870	7	35	32.7
500	970	7	85	35.1
600	1070	7	135	37.3
700	1170	9	65	39.5
800	1270	9	115	41.9
900	1370	11	45	44.1
1000	1470	11	95	46.5
1100	1570	13	25	48.7
1200	1670	13	75	51.0
1300	1770	13	125	53.4
1400	1870	15	55	55.6

Cantilever-Payload Curve



DGC235 Series

Motor Specifications	Unit	Value		
Motor	-	AKM100-B2	AKM100-B3-D69	AKM100-B4
Continuous Force (NC) @100°C [1]	N	722.6	1084.0	1445.3
Peak Force	N	1610.5	2416.0	3221.1
Force Constant ±10%	N/Arms	153	77	153
Back EMF Constant ±10%	Vpeak/(m/s)	124.9	62.0	124.9
Resistance (L-L) @25°C ±10% [2]	Ω	4.6	0.8	2.3
Inductance (L-L) ±30% [3]	mH	116.0	19.0	58.0
Continuous Current (NC) @100°C [1]	Arms	4.8	14.4	9.6
Peak Current	Arms	14.4	43.2	28.8
Max. Bus Voltage	Vdc	600	600	600
Magnetic Period	mm	42	42	42
Mechanical Specifications	**Unit**	**Value**		
Linear Guide Nominal Size	-	25		
Resolution	μm	Magnetic scale: 1.0		
		Optical scale: 0.5/0.05		
Repeatability	μm	Magnetic scale: ±4		
		Optical scale: ±2		
Straightness	μm/mm	±7/300	±7/300	±7/300
Maximum Velocity	m/s	3	3	3
Maximum Bearing Load	N	6480	6480	9720
Rated Payload [4]	kg	70	80	100
No-load Moving Mass	kg	11.5	15.5	20.5
Mounting Orientation	-	Horizontal or side orientation		

[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.
[4] Rated payload based on 2m/s velocity and continuous force 100% duty. Module load capacity can be better based on actual condition, please contact sales engineer.
The contents of datasheet are subject to change without prior notice.

Ordering Part Number (OPN)

DGC235-S01-K42ABF1-A2-CG-CLS

Model:
DGC235

Cover Type:
S: Standard (Clear Anodized)

Effective Stroke: [1]
01: 100mm
02: 200mm
03: 300mm
04: 400mm
05: 500mm
06: 600mm
07: 700mm
08: 800mm
09: 900mm
10: 1000mm
11: 1100mm
12: 1200mm
13: 1300mm
14: 1400mm

Motor Type:
K42: AKM100-B2-J (Peak Force: 1610.5N)
K46: AKM100-B3-J (Peak Force: 2416.0N)
K44: AKM100-B4-J (Peak Force: 3221.1N)

Lubrication Method:
Unmarked: Normal Lubrication
CLS: Centralized Lubrication

Mounting Orientation:
Unmarked: Horizontal Orientation
CG: Side Orientation

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

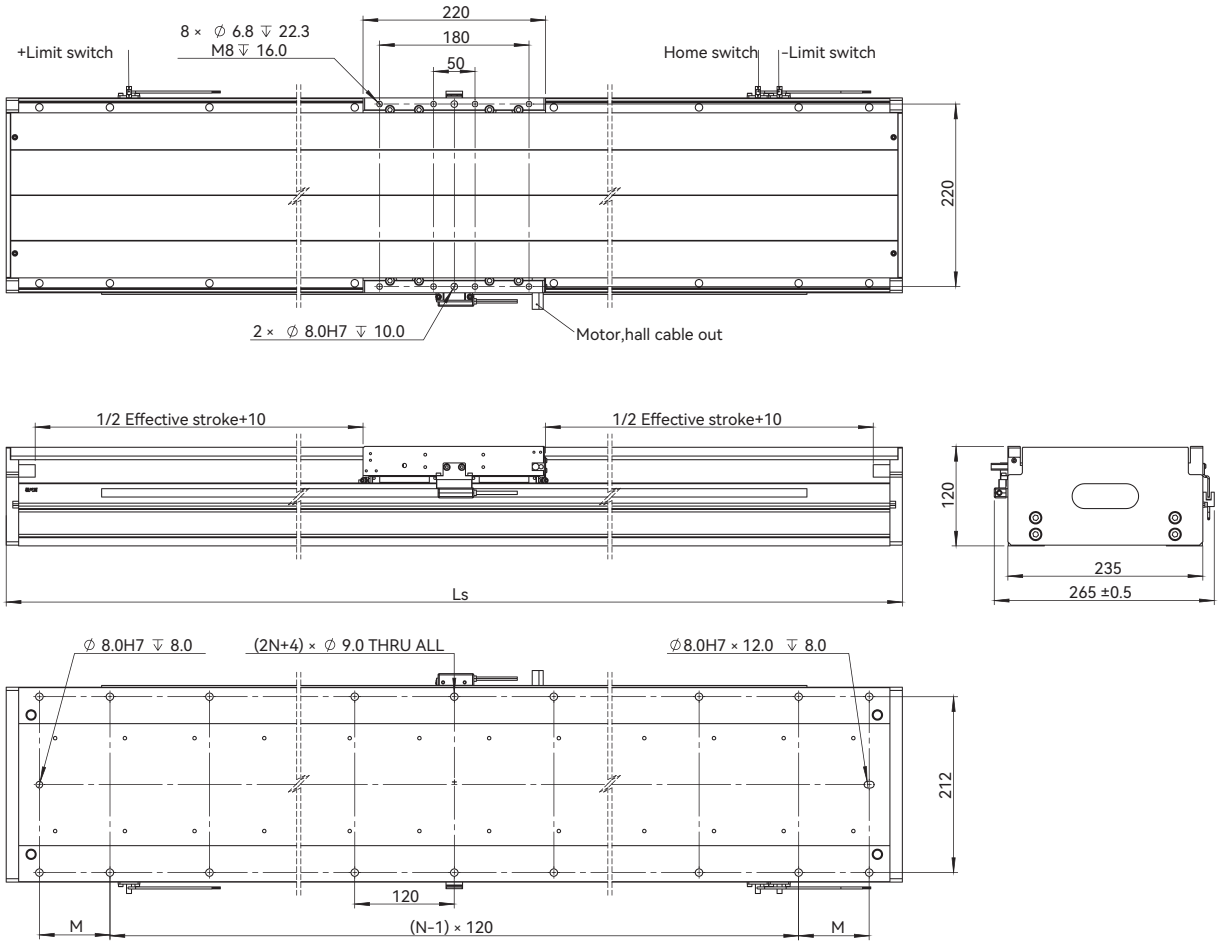
Scale Type:
1: Steel Tape, 11ppm/K
7: Magnetic Tape, 17ppm/K

Encoder Type:
A73: ABA-50, EnDat 2.2 (50nm)
ABF: ABI51X (0.5μm)
S1E: MAGNET(1.0μm)

Note:
[1] Standard stroke in intervals of 100mm only. For more options, please contact Akribis sales engineers.
★ Products can be customized to meet specific working environment, please contact cust-service@akribis-sys.com.

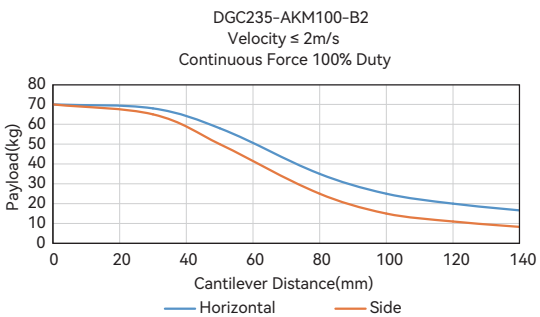
DGC235 Series

DGC235-AKM100-B2 Dimensional Drawing



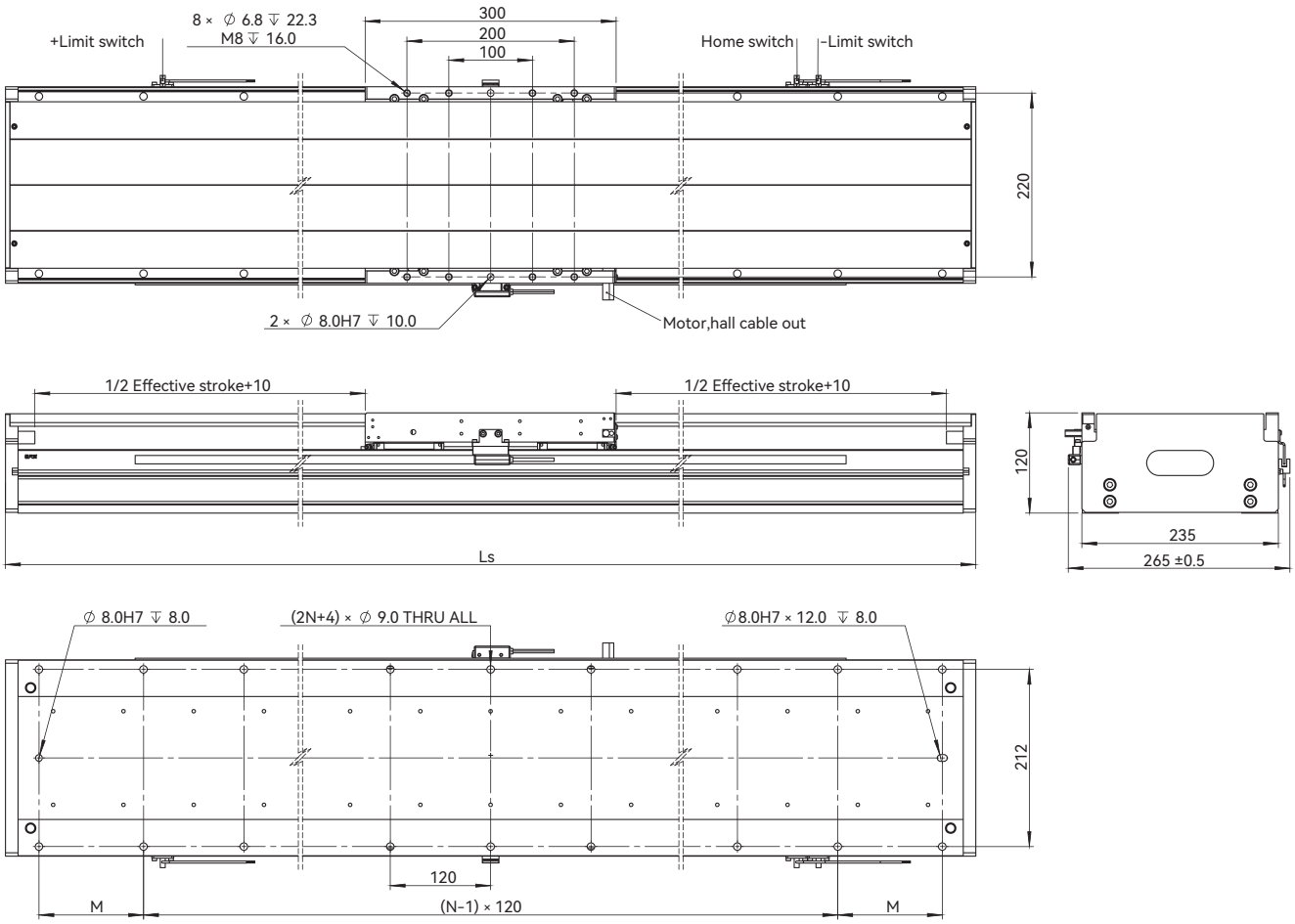
Effective Stroke(mm)	Module Length Ls (mm)	N	M (mm)	Module Mass (kg)
100	410	3	45	25.1
200	510	3	95	28.3
300	610	5	25	31.4
400	710	5	75	35.3
500	810	5	125	38.4
600	910	7	55	41.5
700	1010	7	105	44.7
800	1110	9	35	47.8
900	1210	9	85	51.7
1000	1310	9	135	54.8
1100	1410	11	65	58.0
1200	1510	11	115	61.1
1300	1610	13	45	64.2
1400	1710	13	95	68.1

Cantilever-Payload Curve



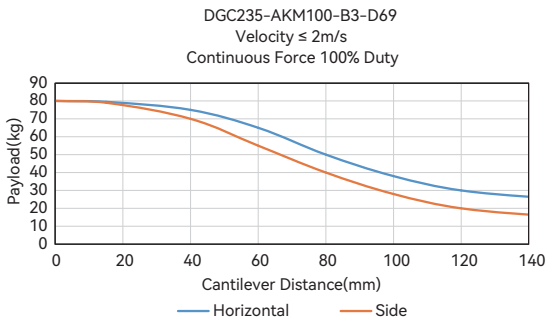
DGC235 Series

DGC235-AKM100-B3-D69 Dimensional Drawing



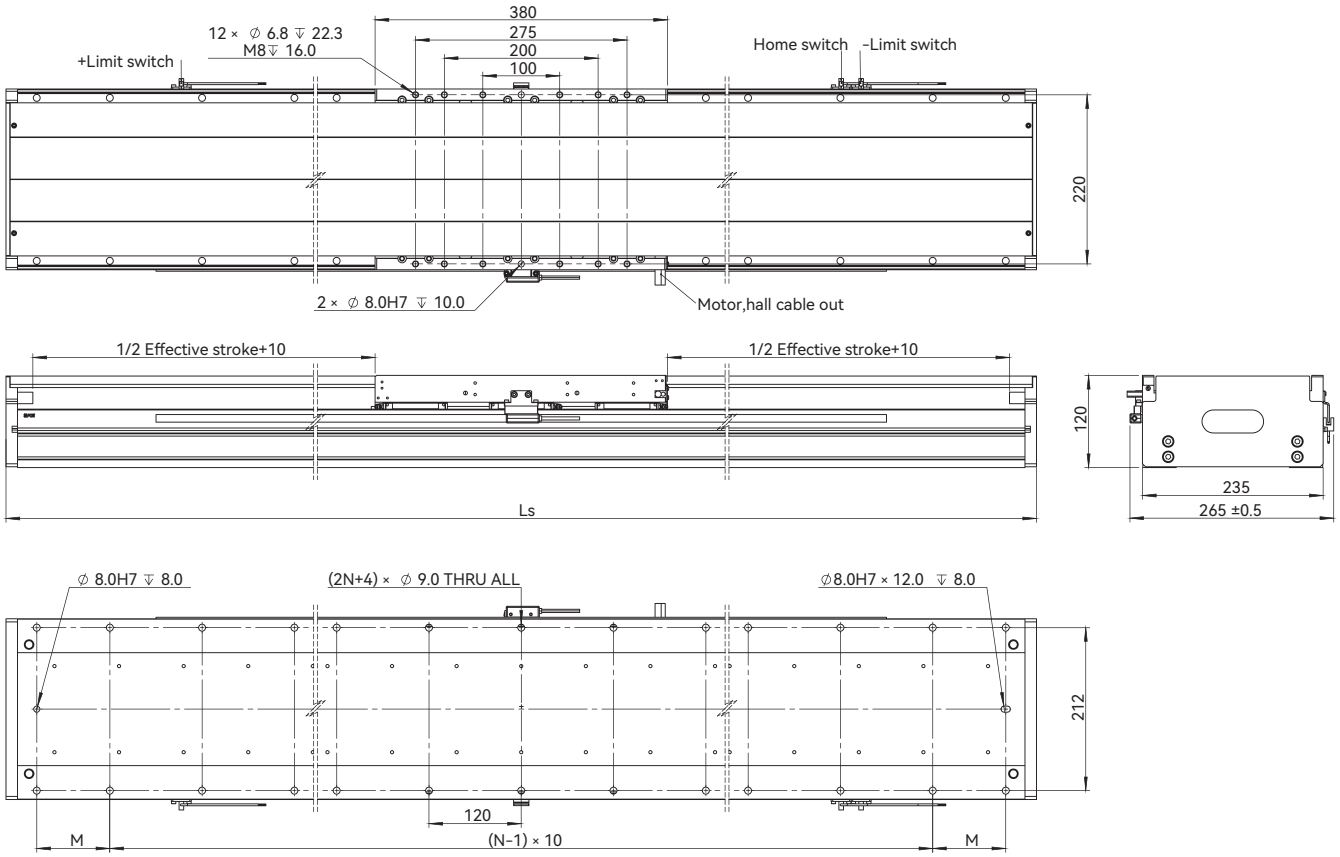
Effective Stroke(mm)	Module Length Ls (mm)	N	M (mm)	Module Mass (kg)
100	490	3	85	31.9
200	590	3	135	35.0
300	690	5	65	38.2
400	790	5	115	42.0
500	890	7	45	45.2
600	990	7	95	48.3
700	1090	9	25	51.4
800	1190	9	75	54.6
900	1290	9	125	58.5
1000	1390	11	55	61.6
1100	1490	11	105	64.7
1200	1590	13	35	67.8
1300	1690	13	85	71.0
1400	1790	13	135	74.2

Cantilever-Payload Curve



DGC235 Series

DGC235-AKM100-B4 Dimensional Drawing



Effective Stroke(mm)	Module Length,Ls (mm)	N	M (mm)	Module Mass (kg)
100	570	3	125	39.6
200	670	5	55	42.7
300	770	5	105	45.9
400	870	7	35	49.7
500	970	7	85	52.9
600	1070	7	135	56.0
700	1170	9	65	59.2
800	1270	9	115	62.3
900	1370	11	45	65.4
1000	1470	11	95	69.3
1100	1570	13	25	72.4
1200	1670	13	75	75.6
1300	1770	13	125	78.7
1400	1870	15	55	81.9

Cantilever-Payload Curve